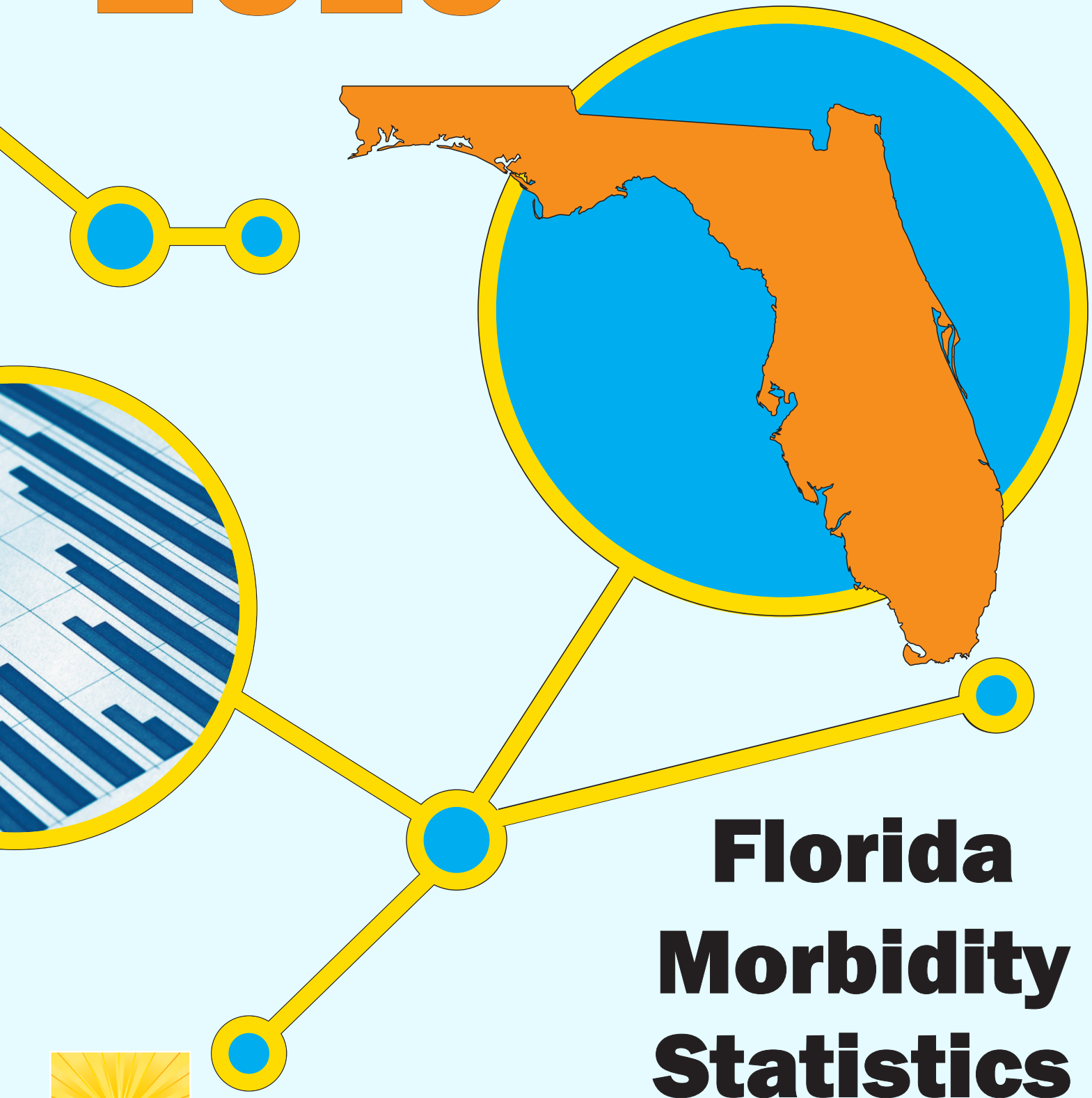
2016



Florida Morbidity Statistics Report

Florida HEALTH

Florida Morbidity Statistics Report

2016

Florida Department of Health
Division of Disease Control and Health Protection
Bureau of Epidemiology
4052 Bald Cypress Way, Bin #A-12
Tallahassee, Florida 32399-1720
850-245-4401

Florida Department of Health:
www.FloridaHealth.gov

Florida Morbidity Statistics Reports:
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Table of Contents

Table of Contents (Continued)

Table of Contents (Continued)

Introduction

Background

The *Florida Morbidity Statistics Report* is the official record of the occurrence of reportable diseases in Florida and this edition marks the 61st publication since 1945. Numerous reports describing disease burden are produced throughout the year while investigations are ongoing. This report is noteworthy as the data contained here are final, with a few exceptions. Most notably, deduplication of HIV and AIDS cases continues after the publication of this report so numbers in future reports may change. The mission of the Florida Department of Health is to protect, promote, and improve the health of all people in Florida through integrated state, county, and community efforts. Per section 381.0031, Florida Statutes, "The Department shall conduct a communicable disease prevention and control program as part of fulfilling its public health mission." This report directly supports the mission of the Florida Department of Health by identifying patterns and trends in the incidence of disease that are used as the scientific basis for development of disease control and prevention strategies and policies.

Disease control and prevention are core functions of any public health agency. Protection of the public's health from existing, emerging, and re-emerging diseases requires diligence in all aspects of public health. The public health partners identifying and characterizing emerging trends in disease are the physicians, nurses, laboratorians, hospital infection preventionists, and other health care professionals who participate in reportable disease surveillance. Without their participation, the ability to recognize and intervene in emerging public health issues would be much more limited.

Acknowledgements

The Bureau of Epidemiology thanks all program areas within the Florida Department of Health that contributed to this report, including the sections of HIV/AIDS, Immunization, Sexually Transmitted Diseases (STDs) and Viral Hepatitis, and Tuberculosis Control. Finally, many thanks are extended to the local health office staff and other public health professionals who are involved in reportable disease surveillance, either through disease control activities, case investigations, data collection, laboratory testing, or other essential functions.

Purpose

The *Florida Morbidity Statistics Report* is compiled in a single reference document to:

- Summarize annual morbidity from reportable communicable diseases and diseases of environmental origin in Florida.
- Describe patterns of disease that can be assessed over time, compared with trends from other states, and act as an aid in directing future disease prevention and control efforts.
- Provide a resource to medical and public health authorities at county, state, and national levels.
- Serve as the final data record, describing cases and morbidity once investigations are closed and data reconciliation with the Centers for Disease Control and Prevention (CDC) is complete.

Data Sources

Data presented in this report are based on reportable disease information received by county and state health department staff from physicians, hospitals, and laboratories throughout the state obtained through passive and active surveillance. Reporting of suspected and confirmed reportable diseases and conditions in the state of Florida is mandated under section 381.0031, Florida Statutes and Florida Administrative Code Chapter 64D-3. People in charge of laboratories, hospitals, medical facilities, or other facilities providing health services (which can include schools, nursing homes, and state institutions) are required to report certain diseases and conditions and the associated laboratory test results as listed in the Table of Notifiable Diseases or Conditions to Be Reported, Florida Administrative Code Chapter 64D-3. Reporting of test results by a laboratory does not nullify a practitioner's obligation to report the disease or condition. These data are the basis for providing useful information on reportable diseases and conditions in Florida to health care workers and policymakers, and would not be possible without the cooperation of the extensive network involving both private and public sector participants. Data in this report are collected by a variety of means described on the following page.

Introduction

Case-based passive surveillance is the most common surveillance approach for reportable diseases. Passive surveillance relies on physicians, laboratories, and other health care providers to report diseases to the Florida Department of Health confidentially in one of three forms: electronically, by telephone, or by facsimile. Increasingly, information about cases of reportable diseases and conditions is passed from providers, especially laboratories, to the Department as electronic records. This occurs automatically, without the involvement of a person once the electronic transmission process has been established between the Department and the reporting partner. Case-based reporting implies that some action is taken for every case, such as interviewing the case to identify risk factors or detect outbreaks.

Laboratory-based surveillance is when laboratory data are used to assess trends. In Florida, laboratory-based surveillance is used to monitor antimicrobial resistance patterns in the community and is the primary means of monitoring diseases such as chronic hepatitis in Florida. Laboratories participating in electronic laboratory reporting (ELR) are required to submit antimicrobial susceptibility testing for a variety of bacteria. These laboratories are also required to submit all positive and negative results to the Department for hepatitis viruses, human papillomavirus, influenza virus, respiratory syncytial virus (RSV), and *Staphylococcus aureus*. Individual cases of these diseases are not investigated (except for acute hepatitis infections); surveillance relies entirely on laboratory results. Additionally, the CDC's National Respiratory and Enteric Virus Surveillance System (NREVSS) is a laboratory-based system used to monitor temporal and geographic circulation patterns of RSV and other respiratory viruses in Florida.

Sentinel surveillance is when a sample of providers or laboratories are used to represent a wider population. ILINet is a nationwide surveillance system of sentinel providers, predominately outpatient health care providers, to monitor influenza and influenza-like illness (ILI) in the community.

Syndromic surveillance uses existing health-related data that precede diagnosis to identify cases of reportable diseases that would have otherwise gone unreported, identify outbreaks, monitor health trends in the community, and provide situational awareness during public health responses. Florida uses the Electronic Surveillance System for the Early Notification of Community-Based Epidemics (ESSENCE-FL) to monitor influenza, ILI, and RSV trends across the state through chief complaints and discharge diagnoses from participating emergency departments and urgent care centers.

Registries are another passive surveillance approach. The Florida Cancer Data System (FCDS) is Florida's legislatively mandated, population-based, statewide cancer registry. All hospital and outpatient facilities licensed in Florida must report each patient admitted for treatment of cancer to the Department. The Florida Birth Defects Registry (FBDR) is a passive, statewide, population-based surveillance system. FBDR utilizes and links multiple datasets, including vital statistics and hospital records, to identify infants with birth defects.

Active surveillance entails Department staff regularly contacting hospitals, laboratories, and physicians in an effort to identify all cases of a given disease or condition. This approach can be used in outbreak situations or to support an event or case investigation of urgent public health importance.

References

The following references were used in many of the disease-specific chapters within Section 2: Data Summaries for Selected Reportable Diseases/Conditions of Frequent Occurrence.

Centers for Disease Control and Prevention. CDC A-Z Index. Available at www.cdc.gov/az/a.html.

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Heymann DL (ed). 2015. *Control of Communicable Diseases Manual*. 20th ed. Washington, D.C.: American Public Health Association Press.

Interpreting the Data

Information in this report should be interpreted in light of the limitations below.

1. Under-Reporting
   The data presented in this report are primarily based on passive reporting by health care providers and laboratories across Florida. Case reporting is most often dependent upon a person becoming ill, seeking medical attention, the health care provider ordering laboratory testing, and finally the health care provider or laboratory reporting the case. Frequently, not all steps in this process occur, so the number of reported cases represents a fraction of the true number of cases of reportable illnesses occurring in Florida each year. Evaluations of infectious disease reporting systems have indicated that the completeness of reporting varies by disease. The less common but more severe reportable diseases such as bacterial meningitis, diphtheria, polio, botulism, anthrax, tuberculosis, and congenital syphilis are more completely reported than the more common diseases with less severe symptoms such as hepatitis A or campylobacteriosis. Variation in identified disease incidence at the local level probably reflects, to varying degrees, both differences in the true incidence of disease and differences in the vigor with which surveillance is performed.

2. Reliability of Rates
   All incidence rates in this report are expressed as the number of reported cases of a disease or condition per 100,000 population unless otherwise specified. All population estimates are from the Community Health Assessment Resource Tool Set (CHARTS), a Florida Department of Health web-based data query system with community tools, health indicators, and data queries for public consumption (www.FLHealthCHARTS.com). Population estimates within CHARTS are provided by the Florida Department of Health, Division of Public Health Statistics and Performance Management, in consultation with the Florida Legislature's Office of Economic and Demographic Research. Estimates in CHARTS are updated at least once per year, and population data were extracted from CHARTS for this report on October 23, 2017, after revisions to population estimates were made to the annual update in CHARTS. Note that previous editions of this report may show somewhat different populations for a given year than the ones shown here, as these estimates are revised periodically. Revisions to population estimates can also impact disease rates.

   Animal rabies is not expressed as a rate; it is only expressed as the number of cases because no reliable denominators exist for animal populations.

   Rates for diseases with only a few cases reported per year can be unstable and should be interpreted with caution. The observation of zero events is especially difficult to interpret. Rates were not generally calculated in this report when there were less than 20 cases, except as part of graphs and maps. In some cases, even though maps and graphs (e.g., by year, gender, race) may have small individual counts, rates were calculated. These maps include footnotes as a reminder that rates based on less than 20 cases are not reliable.

3. Determining How Cases Are Counted: Reporting Period and Cases Included
There are important differences by disease that determine how cases are counted and summarized in this report. The date of illness onset or the date of diagnosis may not be available for all cases. Cases reported early in 2016 may have actually had onset or diagnosis in 2015; rarely, cases reported in 2016 may have onset or diagnosis dates prior to 2015. Additionally, cases with illness onset or diagnosis late in 2016 may not have been reported to public health by the end of the 2016 report year, and thus would not be included in this report for most diseases. Information by disease is listed below.

AIDS and HIV Cases

Year: Data are aggregated by calendar year.

Cases included: HIV cases are based on the date, county of residence, and state of residence of the first confirmed HIV test. AIDS cases are based on the date, county of residence, and state of residence of the first CD4 count below 200 cells/mm^3 or AIDS-defining opportunistic infection in a person with HIV. The 2016 HIV and AIDS case dataset was frozen on June 30, 2017. Changes occurring after that point that affect the number of cases in 2016 or earlier will be updated in the following year's dataset.

Please note that prior to 2014, HIV and AIDS cases were assigned to a report year based on the date the case was entered into the surveillance system. For more information about how AIDS and HIV cases are counted, please see the HIV Data Center website (www.floridahealth.gov/diseases-and-conditions/aids/surveillance/index.html).

Sexually Transmitted Diseases (STDs)

Year: Data are aggregated by calendar year.

Cases included: Cases are assigned to a report year based on the date the case was entered into the surveillance system. Occasionally, STD reports are received after the end of the reporting year that should have been included based on the laboratory result date. For these cases, the laboratory result date is used for the report date.

Tuberculosis

Year: Data are aggregated by the standard reporting year as outlined by the CDC, where every year has at least 52 reporting weeks and some years have 53 (there were 52 weeks in 2016). This is referred to as the Morbidity and Mortality Weekly Report (MMWR) year.

Cases included: Cases are assigned to a report year based on the date when the suspected diagnosis is confirmed by clinical, radiographic, and laboratory testing (often referred to as "date counted").

Zika Virus Disease and Infection (Including Congenital)

Year: Data are aggregated by MMWR year (see tuberculosis above for explanation of MMWR year).

Cases included: Cases are assigned to a report year based on the earliest date associated with the case (onset date, diagnosis date, laboratory report date, or date the Department was notified of the case). In the surveillance application, Merlin, this is referred to as "event date."

All Other Diseases

Year: Data are aggregated by MMWR year (see tuberculosis on the previous page for explanation of MMWR year).

Cases included: Cases are assigned to a report year based on the date the case was determined to have enough information to be submitted by local health office epidemiology staff to the Florida Department of Health Bureau of Epidemiology (BOE) for state-level review. In the surveillance application, Merlin, this is referred to as "date reported to BOE."

Disease-specific reports describing data by other dates, such as disease onset and diagnosis dates, may also be published and available on the Florida Department of Health website; numbers may vary from this report based on different inclusion criteria.

4. Case Definition

Cases of most diseases are classified as confirmed, probable, or suspect at the state level using a published set of surveillance case definitions consistent with national case definitions where appropriate (*Surveillance Case Definitions for Selected Reportable Diseases in Florida*, available at www.FloridaHealth.gov/DiseaseCaseDefinitions). Case classifications are reviewed at the state level for most diseases. Following CDC MMWR print criteria (available at www.cdc.gov/nndss/script/downloads.aspx), only confirmed and probable cases have been included in this report unless otherwise specified (i.e., suspect cases are excluded) .

Changes to case definitions can affect the number of cases reported, which can impact calculated incidence rates, but ultimately case definition changes do not change the true incidence of a disease. Each year case definitions are evaluated for necessary revisions. A number of changes were made to reportable disease case definitions in 2016 as a result of position statements approved by the Council of State and Territorial Epidemiologists (CSTE) in 2015.

Summary of case definition changes effective January 2016:

a. Diphtheria: specified that clinical specimen must be from the nose or throat and eliminated the epidemiological linkage criteria from the probable case classification.

b. Ehrlichiosis/anaplasmosis: removed positive IgM from presumptive laboratory criteria.

c. Hepatitis B, acute: expanded presumptive laboratory criteria to include a negative test result other than HBsAg followed within 6 months by a positive test result.

d. Hepatitis C, acute:
   - Lowered alanine aminotransferase (ALT) cut-point from <400 to <200 IU/L for clinical criteria.
   - Updated maximum time between a negative hepatitis C virus (HCV) antibody (anti-HCV) result and a positive laboratory result from 6 months to 12 months for the confirmatory laboratory criteria.
   - Revised confirmatory laboratory criteria by adding HCV antigen test and removing anti-HCV with signal-to-cutoff ratio.

e. Hepatitis C, chronic:
   - Revised confirmatory laboratory criteria by adding HCV antigen test and removing anti-HCV with signal-to-cutoff ratio and presumptive criteria by removing ALT values.
   - Revised probable case classification to be a positive anti-HCV test in the absence of negative nucleic acid test for HCV RNA or a negative HCV antigen test.
   - Removed suspect case classification.

f. Hepatitis C, perinatal: created a new case definition.

g. Rocky Mountain spotted fever and spotted fever rickettsiosis: removed positive IgM from presumptive laboratory criteria.

h. Typhoid fever:
- Added non-culture-based methods as supportive laboratory criteria and created a corresponding new suspect case classification.
- Added a new suspect case classification for asymptomatic people.

i. Vibriosis: added non-culture-based methods as supportive laboratory criteria and created a corresponding new suspect case classification.

j. Zika fever: created new case definitions for imported, non-pregnant cases and for locally acquired or pregnant cases.

5. Assigning Cases to Counties
Cases are assigned to Florida counties following national guidance and based on the county of residence at the time of the disease identification, regardless of where they became ill or were hospitalized, diagnosed, or exposed. Cases who reside outside of Florida are not counted as Florida cases regardless of whether they became ill or were hospitalized, diagnosed, or exposed in Florida. Zika virus disease and infection cases do include residents of other states; however cases of other diseases in out-of-state residents are not included in this report unless specifically noted. These cases are referred through an interstate reciprocal notification system to the state where the person resides.

6. Population Estimates
All population estimates are from the Community Health Assessment Resource Tool Set (CHARTS), a Florida Department of Health web-based data query system with community tools, health indicators, and data queries for public consumption (www.FLHealthCHARTS.com). Population estimates within CHARTS are provided by the Florida Department of Health Division of Public Health Statistics and Performance Management in consultation with the Florida Legislature's Office of Economic and Demographic Research. Estimates in CHARTS are updated at least once per year, and population data were extracted from CHARTS for this report on October 23, 2017, after revisions to population estimates were made to the annual update in CHARTS. Note that previous editions of this report may show somewhat different populations for a given year than the ones shown here, as these estimates are revised periodically. Revisions to population estimates can also impact disease rates.

7. Florida Disease Codes in Merlin
Reported case data for most reportable diseases (excluding HIV/AIDS, STDs, and tuberculosis) are stored in Merlin, Florida's web-based reportable disease surveillance system. When entering case data into Merlin, users assign a Florida Disease Code based on the disease. Due to changes in case definitions over time, new codes have been added and outdated codes have expired. In addition, some diseases have multiple disease codes that represent different clinical manifestations.

Diseases that include cases from **multiple or expired** Florida Disease Codes in this report:

a. Amebic Encephalitis
Amebic Infections (*Acanthamoeba*) - 13621
Amebic Infections (*Balamuthia mandrillaris*) - 13625
Amebic Infections (*Naegleria fowleri*) - 13629
Amebic Encephalitis - 13620 (EXPIRED)

b. California Serogroup Virus Disease
California Serogroup Virus Neuroinvasive Disease - 06250
California Serogroup Virus Non-Neuroinvasive Disease - 06251

c. Dengue Fever
Dengue Fever - 06100
Dengue Fever, Severe - 06101

d. Eastern Equine Encephalitis
Eastern Equine Encephalitis Neuroinvasive Disease - 06220
Eastern Equine Encephalitis Non-Neuroinvasive Disease - 06221

e. Ehrlichiosis
Ehrlichiosis (*Ehrlichia ewingii*) - 08383
Ehrlichiosis, HME (*Ehrlichia chaffeensis*) - 08382

f. *Haemophilus influenzae* Invasive Disease in Children <5 Years Old
Haemophilus influenzae Invasive Disease - 03841
Cellulitis (*Haemophilus influenzae*) - 69290 (EXPIRED)
Epiglottitis (*Haemophilus influenzae*) - 46430 (EXPIRED)
Meningitis (*Haemophilus influenzae*) - 32000 (EXPIRED)
Pneumonia (*Haemophilus influenzae*) - 48220 (EXPIRED)
Septic Arthritis (*Haemophilus influenzae*) - 71100 (EXPIRED)

g. Hantavirus Infection
Hantavirus Infection, Non-Pulmonary Syndrome - 07870
Hantavirus Pulmonary Syndrome - 07869

h. Listeriosis
Listeriosis - 02700
Meningitis (*Listeria monocytogenes*) - 32070 (EXPIRED)

i. Plague
Plague, Bubonic - 02000
Plague, Pneumonic - 02050

j. Poliomyelitis
Poliomyelitis, Nonparalytic - 04520
Poliomyelitis, Paralytic - 04590

k. Q Fever (*Coxiella burnetii*)
Q Fever, Acute (*Coxiella burnetii*) - 08301
Q Fever, Chronic (*Coxiella burnetii*) - 08302
Q Fever - 08300 (EXPIRED)

l. Rocky Mountain Spotted Fever and Spotted Fever Rickettsiosis
Rocky Mountain Spotted Fever and Spotted Fever Rickettsiosis - 08309
Rocky Mountain Spotted Fever - 08200 (EXPIRED)

m. Rubella
Rubella - 05690
Rubella, Congenital Syndrome - 77100

n. Salmonellosis
Paratyphoid Fever (Salmonella Serotypes Paratyphi A, B, C) - 00210
Salmonellosis - 00300

o. Shiga Toxin-Producing *Escherichia coli* Infection
Escherichia coli, Shiga Toxin-Producing (STEC) Infection - 00800
Shiga Toxin-Producing *Escherichia coli* (STEC) Infection, Non-O157 - 41602 (EXPIRED)
Shiga Toxin-Producing *Escherichia coli* (STEC) Infection, O157:H7 - 41601 (EXPIRED)

p. St. Louis Encephalitis
St. Louis Encephalitis Neuroinvasive Disease - 06230
St. Louis Encephalitis Non-Neuroinvasive Disease - 06231

q. Typhus Fever
Typhus Fever, Epidemic (*Rickettsia prowaz*ekii) - 08000
Typhus Fever, Endemic (*Rickettsia typhi*) - 08100 (EXPIRED)
Typhus Fever - 08190 (EXPIRED)

r. Venezuelan Equine Encephalitis
Venezuelan Equine Encephalitis Neuroinvasive Disease - 06620
Venezuelan Equine Encephalitis Non-Neuroinvasive Disease - 06621

s. Vibriosis (Excluding Cholera)
Vibriosis (*Grimontia hollisae*) - 00196
Vibriosis (*Vibrio alginolyticus*) - 00195
Vibriosis (*Vibrio cholerae* Type Non-O1) - 00198
Vibriosis (*Vibrio fluvialis*) - 00194
Vibriosis (*Vibrio mimicus*) - 00197
Vibriosis (*Vibrio parahaemolyticus*) - 00540
Vibriosis (*Vibrio vulnificus*) - 00199
Vibriosis (Other *Vibrio* Species) - 00193

t. Viral Hemorrhagic Fever
Crimean-Congo Hemorrhagic Fever - 06591
Ebola Hemorrhagic Fever - 06592
Guanarito Hemorrhagic Fever - 06593
Junin Hemorrhagic Fever - 06594
Lassa Fever - 06595
Lujo Virus - 06596
Machupo Hemorrhagic Fever - 06597
Marburg Fever - 06598
Sabia-Associated Hemorrhagic Fever - 06599
Viral Hemorrhagic Fever - 06590 (EXPIRED)

u. West Nile Virus Disease
West Nile Virus Neuroinvasive Disease - 06630
West Nile Virus Non-Neuroinvasive Disease - 06631

v. Western Equine Encephalitis
Western Equine Encephalitis Neuroinvasive Disease - 06210
Western Equine Encephalitis Non-Neuroinvasive Disease - 06211

Summary of Key Disease Trends in 2016

Zika virus emerged in 2016 as a serious public health threat in Florida, resulting in a large-scale response by the Florida Department of Health. Over 1,000 imported cases and 285 locally acquired cases were identified in Florida in 2016. For more information on Zika virus, see 2016 Focus: Zika Virus in Florida. Other mosquito-borne diseases continued to occur in Florida in 2016, though in low volume. The incidence of malaria increased from 2015. All cases were imported from other countries, primarily in Africa (66%). Fewer cases of dengue fever were reported in 2016 than the two previous years. It is possible some dengue fever cases were counted as Zika virus infection or disease cases, therefore the true extent of the decrease in dengue fever incidence is unknown. There were three local introductions of dengue virus (DENV) identified in Miami-Dade County (for more information on these cases, see Section 2: Data Summaries for Selected Reportable Diseases/Conditions of Frequent Occurrence). Central America and the Caribbean continued to be the regions in which most imported dengue fever cases were exposed (64%). Tick-borne diseases, including Lyme disease, ehrlichiosis, and anaplasmosis, continued to be identified in Florida in 2016. Lyme disease is the most common illness transmitted by ticks. The increase in cases was primarily due to cases imported from 14 highly endemic states in the northeast and upper midwestern U.S. Consistent with previous years, 73% of cases were imported from other states. Ehrlichiosis and anaplasmosis incidence in Florida remained low with 28 and 6 cases reported in 2016, respectively.

Sexually transmitted diseases (STDs), HIV, and AIDS are among the most common reportable diseases in Florida, particularly among 20- to 54-year-olds. Generally, incidence of chlamydia and syphilis have been increasing over the past 10 years, while incidence of HIV and AIDS have been decreasing. While AIDS continued to decline in 2016, the rate of HIV was 4% higher than the previous five-year average. Linkage to care plays a key role in preventing AIDS in people infected with HIV. In 2016, there were 114,772 people living with HIV, of whom 66% were retained in care and 60% had suppressed viral loads. In contrast, STDs, particularly gonorrhea and syphilis, continued to increase in 2016. The rate of gonorrhea was 28% higher than the previous five-year average and the rate of syphilis was 49% higher. Chlamydia remained the highest-volume reportable disease in Florida, with over 90,000 cases reported in Florida in 2016.

In the mid-1980s, tuberculosis (TB) re-emerged as a public health threat in the U.S. Since 1994, the number of cases of TB in Florida has decreased every year and increased very slightly in 2016. Over the past 20 years, the number of TB cases counted in foreign-born people has remained relatively constant while decreasing dramatically in U.S.-born people. The proportion of all TB cases in people born in a foreign country grew to 59.7% in 2016 in Florida.

Florida consistently has one of the highest rates of enteric diseases in the nation, with 11,000 to 14,000 cases reported annually. Enteric diseases are disproportionately reported in children <5 years old, though the distribution of cases within that age range varies by disease. Salmonellosis is the most common enteric disease with more than 5,600 cases reported in 2016. The rate of salmonellosis in infants <1 year old is >3.5 times as high as in 1- to 4-year-olds, the next highest incidence group, and >12 times as high as in any other age group. No other reportable enteric disease has such a dramatic decrease in incidence rates with age. Campylobacteriosis incidence rates also peak in <1-year-olds, but the disease is relatively more common among other age groups. Unlike other enteric diseases, the distribution of campylobacteriosis cases is bimodal, with peaks in young children and increasing incidence starting around age 45 years. Other enteric diseases, including cryptosporidiosis, giardiasis, shigellosis, and Shiga toxin-producing *E. coli* (STEC), peak in the 1- to 4-year-old age group. Giardiasis incidence increased very slightly in 2016 compared to 2015, while campylobacteriosis, cryptosporidiosis, salmonellosis, shigellosis, and STEC all decreased. Culture-independent diagnostic testing for enteric diseases has been widely implemented over the past few years, improving case detection. The reason for the decrease in most enteric diseases in 2016 is not well understood. Historically, shigellosis has a cyclic temporal pattern with large, community-wide outbreaks, frequently involving daycare centers, every three to five years. Shigellosis activity peaked in 2007, 2011, and again in 2014. Following the 2014 peak, incidence decreased dramatically in 2015 and 2016.

Introduction

Hepatitis continues to account for a large bulk of infectious disease burden in Florida with 4,000 to 5,000 chronic hepatitis B cases and 19,000 to 23,000 chronic hepatitis C cases reported each year. The rate of reported chronic hepatitis C has increased very slightly each year for the past 10 years, then increased dramatically to over 29,000 cases in 2016 due to a change in case definition that expanded the case classification criteria. The rate of reported chronic hepatitis B has been relatively stable since 2009. Over the past few years, improvements in electronic laboratory reporting (ELR) and increased focus on surveillance are believed to have improved case ascertainment of chronic hepatitis. In 2014, reporting requirements were updated to include mandatory reporting of all positive and negative hepatitis results, as well as all liver function tests, to support the identification of acute hepatitis cases. ELR continued to expand and in 2016, 96.1% of all chronic hepatitis B virus and 97.7% of all chronic hepatitis C virus (HCV) laboratory results were received by the Department electronically. The expansion of ELR has contributed to the increase in chronic hepatitis C case reporting, but a similar increase has not been observed for chronic hepatitis B. Although the overall rate of chronic hepatitis C has gradually increased over the past 10 years, the rate in young adults increased substantially. In response to the increased rate in young adults, an enhanced surveillance project focusing on hepatitis in young adults was funded and implemented in 2012 in Florida. The incidence of both acute hepatitis B and acute hepatitis C increased in 2016. The enhanced surveillance project for young adults and the change in reporting requirements to include both positive and negative hepatitis results has likely contributed to the increases. In 2016, 8% of acute hepatitis B cases and 36% of acute hepatitis C cases were determined to be acute based on negative results preceding positive results, which were received due to the change in Department requirements. These cases would otherwise have been misclassified as chronic. A large number of new hepatitis C infections in young adults in Florida are due to injection drug use (IDU).[1] In Florida and other states, the dual increases in newly identified hepatitis C infections and IDU among young adults has been associated with the proliferation of highly addictive prescription opioid painkillers.[2] About 6% of HCV-infected mothers transmit the infection to their infants, and that risk doubles if a women is co-infected with HIV or has high levels of HCV. The number of women of childbearing age testing positive for HCV increased by 80% from 2012 to 2016 in Florida. This is partially due to better case ascertainment as described above, but also likely reflects a true increase in disease. Despite this very large increase, the number of babies infected with HCV has not increased. For more information about perinatal hepatitis C, see Section 9: Congenital and Perinatal Conditions. Acute hepatitis A incidence has declined drastically over the past 15 years, largely due to increased vaccination coverage. There was a slight decrease in the rate of hepatitis A in 2016 compared to 2015 and the previous five-year average. Almost half of the cases reported in 2016 were imported from outside Florida; primarily Central and South America and the Caribbean (64%). Approximately 40% of hepatitis A infections in 2015 were acquired in other countries where transmission is higher due to lower vaccination coverage.

Despite high vaccine coverage in Florida, vaccine-preventable diseases (VPDs) continue to occur. Vaccination coverage in Florida and nationally for 2015 was published by the CDC in 2016.[3] Varicella incidence has been steadily declining since 2008 due to effective vaccination programs. Beginning with the 2008-2009 school year, children entering kindergarten were required to receive two doses of varicella vaccine. Incidence increased in 2015 for the first time since 2008 but remained stable in 2016. Pertussis incidence has generally increased nationwide over the past decade, despite routine vaccine use. However, incidence in Florida decreased dramatically in 2015, with less than half the number of reported cases compared to 2014. Factors contributing to the decrease are not well understood. Incidence in 2016 was just slightly lower than in 2015. The number of reported meningococcal disease cases reached a historic low in 2016 in Florida, similar to U.S. trends. Vaccines for prevention of the five common serogroups of *Neisseria meningitidis* that cause meningococcal disease are recommended for targeted populations. The explanation for the decrease in cases in Florida and the U.S. is unknown, but it is likely partially attributable to vaccination rates among some subgroups.

Cancer, excluding non-melanoma skin cancer and including benign and borderline intracranial and central nervous system tumors, is also reportable in Florida. At the time this report was published, the most recent Florida cancer data available were from 2014. Over 110,000 primary cancers among Floridians were diagnosed in 2014. The most common cancers types were lung and bronchus (15%), female breast (14%), prostate (10%), and colorectal (9%).

For additional information on disease-specific trends, see Section 1: Summary of Selected Reportable Diseases/Conditions, Section 2: Data Summaries for Selected Reportable Diseases/Conditions of Frequent Occurrence, Section 3: Narratives for Selected Reportable Diseases/Conditions of Infrequent Occurrence, Section 8: Cancer Surveillance, and Section 9: Congenital and Perinatal Conditions.

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2016 Focus: Zika Virus in Florida

Zika fever is a febrile illness caused by a mosquito-borne flavivirus similar to those that cause dengue and West Nile virus infection. Prior to local transmission of the virus in Brazil in 2015, cases were previously reported in Africa, Southeast Asia, and the Pacific Islands. Since then, local Zika virus transmission has been identified throughout the Americas and Caribbean. The outbreak in the Americas resulted in large numbers of imported Zika virus cases being reported in the U.S. as well as the identification of local transmission in several U.S. territories, Florida, and Texas. In Florida, 1,122 imported cases were reported in 2016 and in mid-July 2016, Florida became the first state in the continental U.S. with local mosquito-borne transmission of Zika virus. In 2016, 285 cases associated with local transmission occurred in four counties. Although local transmission was identified in four counties, active ongoing transmission of Zika virus was only identified in Miami-Dade County. Four areas in Miami-Dade County had active transmission of Zika virus (Wynwood, North and South Miami Beach, and Little River communities). In addition, 49 infected people reported spending time in both active transmission areas in Miami-Dade County and countries or territories with widespread Zika virus transmission; therefore exposure location could not be determined. Extensive measures to stop ongoing transmission were implemented and the last symptom onset for a case associated with areas of active transmission was October 18, 2016. At the time of this report, no active transmission has been identified since then and Zika virus did not become established as endemic in Florida, despite having the competent mosquito vector present in the state. For additional information on these cases, please see Section 2: Data Summaries for Selected Reportable Diseases/Conditions of Frequent Occurrence and Section 9: Congenital and Perinatal Conditions.

Zika is primarily spread through the bite of a mosquito, specifically *Aedes aegypti* and *Aedes albopictus*. Although mosquito transmission is most common, Zika virus has the potential to spread through perinatal or sexual transmission, and rarely through blood transfusions and organ or tissue donations. Illness is characterized by rash, fever, arthralgia, and conjunctivitis. Only about 1 in 5

people are symptomatic. Severe disease requiring hospitalization is uncommon; however, there have been some reports of Guillain-Barré syndrome following Zika virus infection. Zika virus infection during pregnancy has been linked to fetal abnormalities, including microcephaly. Adverse pregnancy and infant outcomes associated with Zika virus infection during pregnancy are being studied and the full spectrum of fetal outcomes is yet to be determined.

In response to the identification of imported Zika virus cases in Florida, the Governor of Florida directed the State Surgeon General and Secretary of the Department to declare a public health emergency on February 3, 2016, and directed local jurisdictions with imported Zika cases to take precautionary actions to prevent local transmission of Zika virus. Thirty-nine counties declared public health emergencies due to the identification of travel-associated Zika virus infections in 2016. In addition, each impacted county convened a meeting with community partners, developed a community action plan for execution of prevention programs, and developed an outreach program targeting local medical professionals to increase Zika virus awareness. Impacted counties were also provided maps developed by the Florida Department of Health Environmental Public Health Tracking Program highlighting Florida populations that may be difficult to reach and in need of targeted messaging or that lack access to care (e.g., low income, non-English speaking, non-white, women of childbearing age).

The Department activated an internal incident command system and worked closely with external partners, including the Florida Department of Agriculture and Consumer Services (FDACS), local mosquito control districts, state wildlife and state environmental protection agencies. Ongoing Zika preparedness, surveillance, and response was a concerted effort among Department programs, local county health departments (CHDs), local mosquito control, and other key partners throughout the state. Protocols related to the investigation of local dengue and chikungunya introductions were modified for use during local Zika virus investigations. Zika virus guidance from the Centers for Disease Control and Prevention (CDC) was also adapted and distributed to health care providers statewide, including District XII of the American Congress of Obstetricians and Gynecologists and midwives. In collaboration with the Department, CDC subject matter experts provided webinars for Florida health care providers. Response plans developed with blood banks for dengue (2013) and chikungunya virus (2014) introductions were reviewed and updated. A call center for public inquiries regarding Zika virus was set up through the Florida Poison Information Center Network starting in February, which received over 8,000 calls.

Due to the possibility of adverse pregnancy and fetal outcomes associated with Zika virus infection during pregnancy, outreach to pregnant women and their providers was a high priority for the Department. On August 3, 2016, the Governor directed the Department to provide free Zika virus infection risk assessments and testing for pregnant women statewide. The Department's Bureau of Public Health Laboratories (BPHL) partnered with both CDC and commercial laboratories to help support this testing. Process maps were developed for different scenarios by which CHDs would identify pregnant women for testing, including steps for ensuring that both women and infants exposed to Zika virus would be linked to care in each scenario. This project was accomplished through a collaborative workgroup that included representatives from the Department, Healthy Start Coalitions, and local Early Steps offices. Early Steps, an early intervention program in Florida, also updated its inclusion criteria so that infants with microcephaly and infants with laboratory evidence of Zika virus infection had immediate access to their services. In order to learn more about the impacts of Zika virus infection during pregnancy, the Department participated in CDC's Zika Pregnancy Registry and is following up on affected pregnant women and infants for at least one year after birth. In addition, the Department's Birth Defects Registry team began a retrospective and prospective analysis of registry data to help identify microcephaly cases or other Zika virus-related conditions and help evaluate the overall incidence of these conditions in Florida.
After local Zika virus transmission was identified in Brazil in 2015, BPHL rapidly added Zika virus testing capacity at their Tampa and Jacksonville laboratories. The BPHL Miami laboratory also added Zika virus testing capacity following the identification of local Zika virus cases in Miami-Dade County.

BPHL was instrumental in identifying urine as an important sample type to help diagnose acute Zika virus infections and played an important role in steering changes in national Zika virus testing guidelines. In addition, BPHL testing helped identify some of the first pregnant women with prolonged Zika virus viremia. Over 23,000 Zika virus tests were performed by BPHL in 2016.

Local mosquito control districts worked closely with CHDs to respond to travel-related Zika fever cases and any suspected locally acquired infections. Because of Florida's history of arbovirus introductions and to minimize the risk of Zika virus introduction, CHDs contacted mosquito control districts upon notification of a suspected Zika virus case. Local mosquito control programs conducted mosquito abatement activities within one-eighth of a mile of the home of the suspected cases. Additional funding was provided to several mosquito control programs in high risk areas in Florida to help support surveillance and control efforts. FDACS also partnered with the Department to offer several trainings for mosquito control and CHD personnel.

An emergency rule was issued on February 5, 2016, requiring immediate reporting of suspected or confirmed cases of Zika virus infection to the Department. In October 2016, the Florida Administrative Code was updated to require reporting of suspected Zika infections upon initial suspicion. Reports to CHDs were primarily made by health care providers and laboratories. However, self-reporting, syndromic surveillance, blood bank testing, and active surveillance were also important sources of case identification and reporting. Active surveillance for locally acquired cases included household investigations, workplace investigations, and community urine collections (urosurveys). Three different types of urosurveys were performed: door-to-door sampling of homes within a 150-meter radius of the property of interest, sampling at businesses with known local Zika cases and other symptomatic employees or customers, and community clinics that were open to members of the public who lived or worked in a specified area where local transmission was suspected. Urosurveys were initially performed for each local case as they were identified but were refined over time to include more high-risk situations such as clusters of cases (not in the same household) and workplaces with additional ill employees. Over 2,000 people were tested through active investigations, resulting in the identification of 55 additional local cases.

List of Reportable Diseases/Conditions in Florida, January 2016

Subsection 381.0031(2), Florida Statutes, provides that "Any practitioner licensed in this state to practice medicine, osteopathic medicine, chiropractic medicine, naturopathy, or veterinary medicine; any hospital licensed under part I of Chapter 395, Florida Statutes; or any laboratory licensed under Chapter 483, Florida Statutes that diagnoses or suspects the existence of a disease of public health significance shall immediately report the fact to the Department of Health." This list of reportable diseases and conditions is maintained in Florida Administrative Code Rule 64D-3.029. The Rule was revised in October 2016; a summary of changes and the updated list are on the following page.

Any disease outbreak
Any grouping or clustering of disease
Acquired immune deficiency syndrome (AIDS)
Amebic encephalitis
Anthrax
Arsenic poisoning
Arboviral diseases not otherwise listed
Botulism
Brucellosis
California serogroup virus disease
Campylobacteriosis
Cancer (excluding non-melanoma skin cancer and including benign and borderline intracranial and CNS tumors)
Carbon monoxide poisoning
Chancroid
Chikungunya fever
Chlamydia
Cholera (*Vibrio cholerae* type O1)
Ciguatera fish poisoning
Congenital anomalies
Conjunctivitis in neonates <14 days old
Creutzfeldt-Jakob disease (CJD)
Cryptosporidiosis
Cyclosporiasis
Dengue fever
Diphtheria
Eastern equine encephalitis
Ehrlichiosis/anaplasmosis
Escherichia coli infection, Shiga toxin-producing
Giardiasis, acute
Glanders
Gonorrhea
Granuloma inguinale
Haemophilus influenzae invasive disease in children <5 years old (all ages for electronic laboratory reporting laboratories)
Hansen's disease (leprosy)
Hantavirus infection
Hemolytic uremic syndrome (HUS)
Hepatitis A
Hepatitis B, C, D, E, and G
Hepatitis B surface antigen in pregnant women or children <2 years old
Herpes B virus, possible exposure
Herpes simplex virus (HSV) in infants <60 days old with disseminated infection and liver involvement; encephalitis; and infections limited to skin, eyes, and mouth; anogenital HSV in children <12 years old
Human immunodeficiency virus (HIV) infection
HIV, exposed infants <18 months old born to an HIV-infected woman
Human papillomavirus (HPV), associated laryngeal papillomas or recurrent respiratory papillomatosis in children <6 years old; anogenital papillomas in children <12 years old (all HPV DNA for electronic laboratory reporting laboratories)
Influenza A, novel or pandemic strains
Influenza-associated pediatric mortality in children <18 years old
Lead poisoning
Legionellosis
Leptospirosis
Listeriosis
Lyme disease
Lymphogranuloma venereum (LGV)
Malaria
Measles (rubeola)
Melioidosis
Meningitis, bacterial or mycotic
Meningococcal disease
Mercury poisoning
Mumps
Neonatal abstinence syndrome (NAS)
Neurotoxic shellfish poisoning
Pertussis
Pesticide-related illness and injury, acute
Plague
Poliomyelitis
Psittacosis (ornithosis)
Q Fever
Rabies (human, animal, possible exposure)
Ricin toxin poisoning
Rocky Mountain spotted fever and other spotted fever rickettsioses
Rubella
St. Louis encephalitis
Salmonellosis
Saxitoxin poisoning (paralytic shellfish poisoning)
Severe acute respiratory disease syndrome associated with coronavirus infection
Shigellosis
Smallpox
Staphylococcal enterotoxin B poisoning
Staphylococcus aureus infection, intermediate or full resistance to vancomycin (VISA, VRSA)
Streptococcus pneumoniae invasive disease in children <6 years old (all ages for electronic laboratory reporting laboratories)
Syphilis
Tetanus
Trichinellosis (trichinosis)
Tuberculosis (TB)
Tularemia
Typhoid fever (*Salmonella* serotype Typhi)
Typhus fever, epidemic
Vaccinia disease
Varicella (chickenpox)
Venezuelan equine encephalitis
Vibriosis (infections of *Vibrio* species and closely related organisms, excluding *Vibrio cholerae* type O1)
Viral hemorrhagic fevers
West Nile virus disease
Yellow fever

Electronic laboratory reporting laboratories only:
Antimicrobial susceptibility results for isolates from a normally sterile site for *Acinetobacter baumannii*, *Citrobacter* species, *Enterococcus* species, *Enterobacter* species, *Escherichia coli*, *Klebsiella* species, *Pseudomonas aeruginosa*, and *Serratia* species
Hepatitis B, C, D, E, and G viruses, all test results (positive and negative) and all liver function tests
Influenza virus, all test results (positive and negative)
Respiratory syncytial virus, all test results (positive and negative)
Staphylococcus aureus isolated from a normally sterile site

List of Reportable Diseases/Conditions in Florida, October 2016

Florida Administrative Code Rule 64D-3.029 was updated in 2016 to modify the list of reportable diseases and conditions, effective October 20, 2016. Additions are highlighted below in red. Babesiosis was added to the list. Zika fever and paratyphoid fever were added as explicitly reportable, though they were previously reportable under arboviral diseases and salmonellosis, respectively. Updates will be made to the list of reportable diseases and conditions in future years and these updates will continue to be reflected as appropriate in future *Florida Morbidity Statistics Reports*.

Any disease outbreak
Any grouping or clustering of disease
Acquired immune deficiency syndrome (AIDS)
Amebic encephalitis
Anthrax
Arsenic poisoning
Arboviral diseases not otherwise listed
Babesiosis
Botulism
Brucellosis
California serogroup virus disease
Campylobacteriosis
Cancer (excluding non-melanoma skin cancer and including benign and borderline intracranial and CNS tumors)
Carbon monoxide poisoning
Chancroid
Chikungunya fever
Chlamydia
Cholera (*Vibrio cholerae* type O1)
Ciguatera fish poisoning
Congenital anomalies
Conjunctivitis in neonates <14 days old
Creutzfeldt-Jakob disease (CJD)
Cryptosporidiosis
Cyclosporiasis
Dengue fever
Diphtheria
Eastern equine encephalitis
Ehrlichiosis/anaplasmosis
Escherichia coli infection, Shiga toxin-producing
Giardiasis, acute
Glanders
Gonorrhea
Granuloma inguinale
Haemophilus influenzae invasive disease in children <5 years old (all ages for electronic laboratory reporting laboratories)
Hansen's disease (leprosy)
Hantavirus infection
Hemolytic uremic syndrome (HUS)
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Hepatitis B, C, D, E, and G
Hepatitis B surface antigen in pregnant women or children <2 years old
Herpes B virus, possible exposure
Herpes simplex virus (HSV) in infants <60 days old with disseminated infection and liver involvement; encephalitis; and infections limited to skin, eyes, and mouth; anogenital HSV in children <12 years old
Human immunodeficiency virus (HIV) infection
HIV, exposed infants <18 months old born to an HIV-infected woman
Human papillomavirus (HPV), associated laryngeal papillomas or recurrent respiratory papillomatosis in children <6 years old; anogenital papillomas in children <12 years old (all HPV DNA for electronic laboratory reporting laboratories)
Influenza A, novel or pandemic strains
Influenza-associated pediatric mortality in children <18 years old
Lead poisoning
Legionellosis
Leptospirosis
Listeriosis
Lyme disease
Lymphogranuloma venereum (LGV)
Malaria
Measles (rubeola)
Melioidosis
Meningitis, bacterial or mycotic
Meningococcal disease
Mercury poisoning
Mumps
Neonatal abstinence syndrome (NAS)
Neurotoxic shellfish poisoning
Paratyphoid fever (*Salmonella* serotypes Paratyphi A, B, C)
Pertussis
Pesticide-related illness and injury, acute
Plague
Poliomyelitis
Psittacosis (ornithosis)
Q Fever
Rabies (human, animal, possible exposure)
Ricin toxin poisoning
Rocky Mountain spotted fever and other spotted fever rickettsioses
Rubella
St. Louis encephalitis
Salmonellosis
Saxitoxin poisoning (paralytic shellfish poisoning)
Severe acute respiratory disease syndrome associated with coronavirus infection
Shigellosis
Smallpox
Staphylococcal enterotoxin B poisoning
Staphylococcus aureus infection, intermediate or full resistance to vancomycin (VISA, VRSA)
Streptococcus pneumoniae invasive disease in children <6 years old (all ages for electronic laboratory reporting laboratories)
Syphilis
Tetanus
Trichinellosis (trichinosis)
Tuberculosis (TB)
Tularemia
Typhoid fever (*Salmonella* serotype Typhi)
Typhus fever, epidemic
Vaccinia disease
Varicella (chickenpox)
Venezuelan equine encephalitis
Vibriosis (infections of *Vibrio* species and closely related organisms, excluding *Vibrio cholerae* type O1)
Viral hemorrhagic fevers
West Nile virus disease
Yellow fever
Zika fever

Electronic laboratory reporting laboratories only:
Antimicrobial susceptibility results for isolates from a normally sterile site for *Acinetobacter baumannii*, *Citrobacter* species, *Enterococcus* species, *Enterobacter* species, *Escherichia coli*, *Klebsiella* species, *Pseudomonas aeruginosa*, and *Serratia* species
Hepatitis B, C, D, E, and G viruses, all test results (positive and negative) and all liver function tests
Influenza virus, all test results (positive and negative)
Respiratory syncytial virus, all test results (positive and negative)
Staphylococcus aureus isolated from a normally sterile site

Florida County Boundaries

Florida Population Estimates by Year, Age Group, Gender, Race, and Ethnicity

Year	Population
2007	18,500,958
2008	18,636,837
2009	18,711,844
2010	18,820,280
2011	18,941,742
2012	19,118,938
2013	19,314,396
2014	19,579,871
2015	19,897,762
2016	20,231,092

Gender	2015 Population	2016 Population	Percent Change
Female	10,172,238	10,343,928	+1.7%
Male	9,725,524	9,887,164	+1.7%
Race	**2015 Population**	**2016 Population**	**Percent Change**
White	15,492,935	15,722,428	+1.5%
Black	3,344,939	3,408,734	+1.9%
Other	1,059,888	1,099,930	+3.8%
Ethnicity	**2015 Population**	**2016 Population**	**Percent Change**
Non-Hispanic	15,106,559	15,268,108	+1.1%
Hispanic	4,791,203	4,962,984	+3.6%
Total	19,897,762	20,231,092	+1.7%

In 2016, the estimated population increased 1.7% from 2015. Note that increases are not uniform across all demographic groups. Groups where the population change was substantially different from the overall 1.4% increase are highlighted in gray (i.e., groups that increased more than 3.4% or decreased more than 1.7%). There was a disproportionate increase in adults 65-74 years old, other races, and Hispanics. The estimated number of infants <1 year old decreased slightly (0.2%) and adults 20 to 24 years old decreased by 1.6%.

Age	2015 Population	2016 Population	Percent Change
<1	221,333	220,904	-0.2%
1-4	868,873	889,872	+2.4%
5-9	1,124,392	1,130,984	+0.6%
10-14	1,136,562	1,141,142	+0.4%
15-19	1,171,629	1,179,821	+0.7%
20-24	1,315,643	1,295,161	-1.6%
25-34	2,532,191	2,608,186	+3.0%
35-44	2,424,296	2,443,227	+0.8%
45-54	2,736,706	2,742,649	+0.2%
55-64	2,572,268	2,645,654	+2.9%
65-74	2,082,092	2,175,153	+4.5%
75-84	1,187,221	1,218,261	+2.6%
85+	524,556	540,078	+3.0%
Total	19,897,762	20,231,092	+1.7%

All population estimates are from the Community Health Assessment Resource Tool Set (CHARTS), a Florida Department of Health web-based data query system with community tools, health indicators, and data queries for public consumption (www.FLHealthCHARTS.com). Population estimates within CHARTS are provided by the Florida Department of Health Division of Public Health Statistics and Performance Management in consultation with the Florida Legislature's Office of Economic and Demographic Research. Estimates in CHARTS are updated at least once per year, and population data were extracted from CHARTS for this report on October 23, 2017, after revisions to population estimates were made to the annual update in CHARTS. Note that previous editions of this report may show somewhat different populations for a given year than the ones shown here, as these estimates are revised periodically. Revisions to population estimates can also impact disease rates.

Florida Morbidity Statistics Report Editors and Contributors

Editors

Leah Eisenstein, MPH (Lead Editor)	Division of Disease Control and Health Protection, Bureau of Epidemiology
Janet Hamilton, MPH (Senior Editor)	Division of Disease Control and Health Protection, Bureau of Epidemiology
Maura Comer, MPH, CPH (Section Editor)	Division of Disease Control and Health Protection, Bureau of Communicable Diseases, STD and Viral Hepatitis Section
Jamie DeMent, MNS (Section Editor)	Division of Disease Control and Health Protection, Bureau of Epidemiology
Tara Hylton, MPH (Section Editor)	Division of Community Health Promotion, Public Health Research Unit
Heather Lake-Burger, MS, MPH (Section Editor)	Division of Community Health Promotion, Public Health Research Unit
Andrea Morrison, PhD, MSPH (Section Editor)	Division of Disease Control and Health Protection, Bureau of Epidemiology
Julia Munroe, MS (Section Editor)	Division of Disease Control and Health Protection, Bureau of Epidemiology
Juliana Prieto, MPH, CPH (Section Editor)	Division of Disease Control and Health Protection, Bureau of Epidemiology
Scott Pritchard, MPH (Section Editor)	Division of Disease Control and Health Protection, Bureau of Epidemiology
Heather Rubino, PhD (Section Editor)	Division of Disease Control and Health Protection, Bureau of Epidemiology
LaTweika Salmon, MPH (Section Editor)	Division of Disease Control and Health Protection, Bureau of Epidemiology
Jon Teter, MS, CIC, NREMT (Section Editor)	Division of Disease Control and Health Protection, Bureau of Epidemiology
Michael Wydotis (Reviewer)	Division of Disease Control and Health Protection, Bureau of Epidemiology
Russell Eggert, MD, MPH, FACPM, FAAFP	Division of Disease Control and Health Protection, Bureau of Epidemiology, Chief
Carina Blackmore, DVM, PhD, Dipl ACVPM	Division of Disease Control and Health Protection, Director
Celeste Philip, MD, MPH	Florida Department of Health State Surgeon General and Secretary

Florida Department of Health (DOH) Contributors

David Atrubin, MPH	Division of Disease Control and Health Protection, Bureau of Epidemiology
Dean Bodager, RS, DAAS, MPA	Division of Disease Control and Health Protection, Bureau of Epidemiology
Emily Cason, MPH	DOH-Nassau
Maura Comer, MPH, CPH	Bureau of Communicable Diseases, STD and Viral Hepatitis Section
Jenny Crain, MS, MPH, CPH	Division of Disease Control and Health Protection, Bureau of Epidemiology
Jamie DeMent, MNS	Division of Disease Control and Health Protection, Bureau of Epidemiology
Tricia Foster, MPH	Division of Disease Control and Health Protection, Bureau of Epidemiology
Dana Giandomenico, MPH, CPH	Division of Disease Control and Health Protection, Bureau of Epidemiology
Robert Griffin	Division of Disease Control and Health Protection, Bureau of Epidemiology
Megan Gumke, MPH	Division of Disease Control and Health Protection, Bureau of Epidemiology
Lori Johnston	Bureau of Communicable Diseases, Tuberculosis Control Section
Ashley Joseph, MPH	DOH-Pinellas
Ken Kampert, MS, MPH	Bureau of Communicable Diseases, STD and Viral Hepatitis Section
Katie Kendrick, MPH	Division of Disease Control and Health Protection, Bureau of Epidemiology
Nicole Kikuchi, MPH	Division of Disease Control and Health Protection, Bureau of Epidemiology
Benjamin Klekamp, MSPH, CPH	DOH-Orange
JoAnne Lamb, MPH	DOH-Pinellas
Candy Luciano-Green, RN	DOH-Escambia
Patrick Lynch, MPH	DOH-Escambia
Lorene Maddox, MPH	Bureau of Communicable Diseases, HIV/AIDS Section
Laura Matthias, MPH	Division of Disease Control and Health Protection, Bureau of Epidemiology
Sharon Mayfield, RN	Division of Disease Control and Health Protection, Bureau of Epidemiology
Andrea Morrison, PhD, MSPH	Division of Disease Control and Health Protection, Bureau of Epidemiology

Prakash Mulay, MBBS, MPH	Division of Disease Control and Health Protection, Bureau of Epidemiology
Barbara Nolen, MSN, RN	Division of Disease Control and Health Protection, Bureau of Epidemiology
Scott Pritchard, MPH	Division of Disease Control and Health Protection, Bureau of Epidemiology
Sudha Rajagopalan, MPH	Division of Disease Control and Health Protection, Bureau of Epidemiology
Laura Reeves	Bureau of Communicable Diseases, HIV/AIDS Section
Kelsey Rondini	DOH-Polk
Heather Rubino, PhD	Division of Disease Control and Health Protection, Bureau of Epidemiology
Pat Ryder, MD, MPH	Bureau of Communicable Diseases, Chief
Tania Slade, MPH	DOH-Seminole
Danielle Stanek, DVM	Division of Disease Control and Health Protection, Bureau of Epidemiology
Kimberly Stockdale, MSPH	Division of Disease Control and Health Protection, Bureau of Epidemiology
Juan Suarez	Division of Disease Control and Health Protection, Bureau of Epidemiology
Frances Vaughn, MPH	DOH-Seminole
Ruth Voss, MPH, RN	DOH-Duval
Janet Wamnes, MS	Division of Disease Control and Health Protection, Bureau of Epidemiology
Clayton Weiss, MPH	Bureau of Communicable Diseases, STD and Viral Hepatitis Section
Craig Wilson	Bureau of Communicable Diseases, STD and Viral Hepatitis Section

Selected Division of Disease Control and Health Protection Contacts

Bureau of Epidemiology
(850) 245-4401 (accessible 24 hours a day, 7 days a week, 365 days a year)

Immunization Section
(850) 245-4342

Bureau of Communicable Diseases

HIV/AIDS Section
(850) 245-4334

STD and Viral Hepatitis Section
(850) 245-4303

Tuberculosis Control Section
(850) 245-4350

Section 1

Summary of Selected Reportable Diseases/Conditions

for Selected Reportable Diseases/Conditions of Frequent Occurrence.

Table 1 (Part 1): Reported Confirmed and Probable Cases and Incidence Rates (Per 100,000 Population) of Reportable Diseases/Conditions of Frequent Occurrence, Florida, 2007-2016

Reportable disease/condition	2007		2008		2009		2010		2011		2012		2013		2014		2015		2016	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
AIDS[1]	4,024	21.8	4,152	22.3	3,860	20.6	3,156	16.8	3,020	15.9	2,845	14.9	2,876	14.9	2,166	11.1	2,129	10.7	2,119	10.5
Arsenic Poisoning	NR	NR	NR	NR	9	--	14	--	7	--	5	--	13	--	2	--	16	--	21	0.1
Campylobacteriosis	1,017	5.5	1,118	6.0	1,120	6.0	1,211	6.4	2,039	10.8	1,964	10.3	2,027	10.5	2,195	11.2	3,351	16.8	3,262	16.1
Carbon Monoxide Poisoning	NR	NR	NR	NR	43	0.2	172	0.9	85	0.4	69	0.4	161	0.8	157	0.8	227	1.1	224	1.1
Chlamydia (Excluding Neonatal Conjunctivitis)[1]	57,817	312.5	70,716	379.4	72,911	389.7	74,745	397.2	76,050	401.5	77,871	407.3	80,787	418.3	83,127	424.6	90,633	455.5	94,720	468.2
Ciguatera Fish Poisoning	29	0.2	53	0.3	49	0.3	20	0.1	48	0.3	30	0.2	49	0.3	63	0.3	56	0.3	33	0.2
Creutzfeldt-Jakob Disease (CJD)	12	--	23	0.1	15	--	13	--	16	--	23	0.1	20	0.1	24	0.1	28	0.1	20	0.1
Cryptosporidiosis	738	4.0	549	2.9	497	2.7	408	2.2	437	2.3	470	2.5	409	2.1	1,905	9.7	856	4.3	582	2.9
Cyclosporiasis	32	0.2	59	0.3	40	0.2	63	0.3	58	0.3	25	0.1	47	0.2	33	0.2	32	0.2	37	0.2
Dengue Fever[2]	46	0.2	33	0.2	55	0.3	195	1.0	71	0.4	124	0.6	160	0.8	92	0.5	79	0.4	62	0.3
Ehrlichiosis[2]	18	--	10	--	11	--	10	--	15	--	23	0.1	21	0.1	29	0.1	18	--	28	0.1
Giardiasis, Acute	1,268	6.9	1,391	7.5	1,981	10.6	2,139	11.4	1,255	6.6	1,095	5.7	1,114	5.8	1,165	6.0	1,038	5.2	1,128	5.6
Gonorrhea (Excluding Neonatal Conjunctivitis)[1]	23,396	126.5	23,232	124.7	20,878	111.6	20,169	107.2	19,704	104.0	19,554	102.3	21,006	108.8	20,597	105.2	24,186	121.6	28,153	139.2
Haemophilus influenzae Invasive Disease in Children <5 Years Old[2,3]	28	2.5	25	2.2	29	2.5	32	3.0	23	2.1	24	2.2	22	2.1	32	3.0	37	3.4	34	3.1
Hepatitis A	171	0.9	165	0.9	191	1.0	178	0.9	110	0.6	118	0.6	133	0.7	107	0.5	122	0.6	122	0.6
Hepatitis B, Acute	368	2.0	358	1.9	318	1.7	315	1.7	235	1.2	292	1.5	375	1.9	408	2.1	519	2.6	709	3.5
Hepatitis B, Chronic[4]	569	3.1	1,617	8.7	4,268	22.8	4,265	22.7	4,279	22.6	4,180	21.9	4,271	22.1	4,914	25.1	4,827	24.3	4,972	24.6
Hepatitis B, Pregnant Women[3]	643	18.1	599	16.9	598	17.0	438	12.4	481	13.4	413	11.5	482	13.3	510	14.0	476	12.9	447	12.0
Hepatitis C, Acute	46	0.2	53	0.3	77	0.4	105	0.6	100	0.5	168	0.9	220	1.1	183	0.9	210	1.1	301	1.5
Hepatitis C, Chronic (Including Perinatal)[4]	15,238	82.4	18,690	100.3	15,111	80.8	15,488	82.3	18,363	96.9	19,018	99.5	19,757	102.3	22,412	114.5	22,981	115.5	29,456	145.6
HIV (Including Perinatal)[1]	6,498	35.1	6,066	32.6	5,195	27.8	4,721	25.1	4,667	24.6	4,507	23.6	4,370	22.6	4,599	23.5	4,708	23.7	4,972	24.6
Lead Poisoning Cases in Children <6 Years Old[1,3]	--	--	--	--	--	--	239	18.8	179	13.8	153	11.9	172	13.3	153	11.8	146	11.1	166	12.4
Lead Poisoning Cases in People ≥6 Years Old[1,3]	--	--	--	--	--	--	677	3.9	563	3.2	699	3.9	436	2.4	514	2.8	573	3.1	501	2.7
Legionellosis	153	0.8	148	0.8	193	1.0	172	0.9	185	1.0	213	1.1	250	1.3	280	1.4	306	1.5	328	1.6
Listeriosis[2]	34	0.2	50	0.3	25	0.1	54	0.3	38	0.2	33	0.2	41	0.2	49	0.3	42	0.2	43	0.2
Lyme Disease	30	0.2	88	0.5	110	0.6	84	0.4	115	0.6	118	0.6	138	0.7	155	0.8	166	0.8	216	1.1
Malaria	56	0.3	65	0.3	93	0.5	139	0.7	99	0.5	59	0.3	54	0.3	52	0.3	40	0.2	62	0.3
Meningitis, Bacterial or Mycotic (Excluding *Neisseria meningitidis*)	135	0.7	199	1.1	210	1.1	183	1.0	192	1.0	191	1.0	153	0.8	132	0.7	122	0.6	112	0.6
Pertussis	211	1.1	314	1.7	497	2.7	328	1.7	312	1.6	575	3.0	732	3.8	719	3.7	339	1.7	334	1.7
Pesticide-Related Illness and Injury, Acute[5]	448	2.4	451	2.4	402	2.1	396	2.1	451	2.4	71	0.4	68	0.4	75	0.4	58	0.3	30	0.1

1 The number of cases reported in past years should not change for most reportable diseases. Starting in 2016, gonorrhea and chlamydia neonatal conjunctivitis infections were excluded from gonorrhea and chlamydia counts and presented separately as neonatal infections (see Table 2: Reported Confirmed and Probable Cases of Reportable Diseases/Conditions of Infrequent Occurrence, Florida, 2007-2016). Therefore, the numbers of gonorrhea and chlamydia cases will not match previous reports. Different reconciliation processes are in place for AIDS and HIV. As a result, case numbers for prior years in the above tables may vary from previous reports. In 2016, lead poisoning cases were reviewed and re-evaluated, resulting in small changes in the number of cases reported in previous reports.

2 For information on what is included in this disease category, see Florida Disease Codes in Merlin within Interpreting the Data in the Introduction.

3 For congenital syphilis, the rate is per 100,000 live births and fetal deaths. For *Haemophilus influenzae*, the rate is per 100,000 children <5 years old. For lead poisoning in children <6 years old, the rate is per 100,000 children <6 years old. For lead poisoning in people ≥6 years old, the rate is per 100,000 people ≥6 years old. For hepatitis B surface antigen in pregnant women, the rate is per 100,000 women aged 15-44 years old.

4 Chronic hepatitis B and C were added to this report in 2015. Limitations associated with these data are discussed in the disease-specific chapters in Section 2: Data Summaries for Selected Reportable Diseases/ Conditions of Frequent Occurrence.

5 Acute pesticide-related illness and injury counts include suspect cases, unlike other diseases in this report. In 2016, pesticide cases were reviewed and re-evaluated, resulting in small changes in the number of cases reported in previous reports.

6 Zika virus disease and infection was not explicitly reportable prior to 2016, but would have been reportable under “arboviral disease, other” had any cases occurred. It became explicitly reportable in 2016.

-- Not applicable. Rates calculated for less than 20 cases are unreliable and therefore are not included in this table. Animal rabies is only expressed as the number of cases because no reliable denominators exist for animal populations. Prior to 2010, lead poisoning case data were primarily stored outside of the state’s reportable disease surveillance system and are not included in this table.

NR Not reportable.

Note that changes in disease case definitions can affect case counts over time. For information on case definition changes that affected case counts, refer to the disease-specific chapters in Section 2: Data Summaries

Table 1 (Part 2): Reported Confirmed and Probable Cases and Incidence Rates (Per 100,000 Population) of Reportable Diseases/Conditions of Frequent Occurrence, Florida, 2007-2016

Reportable disease/condition	2007		2008		2009		2010		2011		2012		2013		2014		2015		2016	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Rabies, Animal	128	--	138	--	161	--	121	--	120	--	102	--	103	--	94	--	83	--	59	--
Rabies, Possible Exposure	1,474	8.0	1,618	8.7	1,853	9.9	2,114	11.2	2,410	12.7	2,371	12.4	2,721	14.1	2,995	15.3	3,364	16.9	3,302	16.3
Salmonellosis	5,022	27.1	5,312	28.5	6,741	36.0	6,282	33.4	5,923	31.3	6,523	34.1	6,133	31.8	6,019	30.7	5,924	29.8	5,621	27.8
Shiga Toxin-Producing *Escherichia coli* (STEC) Infection[2]	47	0.3	65	0.3	94	0.5	85	0.5	103	0.5	93	0.5	121	0.6	117	0.6	135	0.7	99	0.5
Shigellosis	2,288	12.4	801	4.3	461	2.5	1,212	6.4	2,635	13.9	1,702	8.9	1,018	5.3	2,396	12.2	1,737	8.7	753	3.7
Streptococcus pneumoniae Invasive Disease, Drug-Resistant	726	3.9	792	4.3	779	4.2	816	4.3	645	3.4	457	2.4	537	2.8	391	2.0	167	0.8	207	1.0
Streptococcus pneumoniae Invasive Disease, Drug-Susceptible	622	3.4	704	3.8	701	3.7	693	3.7	679	3.6	531	2.8	552	2.9	401	2.0	264	1.3	412	2.0
Syphilis (Excluding Congenital)	3,906	21.1	4,558	24.5	3,844	20.5	4,053	21.5	4,110	21.7	4,472	23.4	5,015	26.0	5,973	30.5	7,118	35.8	8,275	40.9
Syphilis, Congenital[3]	20	8.3	24	10.3	19	8.5	25	11.6	33	15.4	39	18.2	35	16.2	48	21.7	38	16.8	60	26.5
Tuberculosis	988	5.3	957	5.1	822	4.4	833	4.4	754	4.0	678	3.5	651	3.4	595	3.0	602	3.0	639	3.2
Varicella (Chickenpox)	1,321	7.1	1,735	9.3	1,125	6.0	977	5.2	861	4.5	815	4.3	659	3.4	570	2.9	740	3.7	733	3.6
Vibriosis (Excluding Cholera)[2]	97	0.5	94	0.5	112	0.6	130	0.69	155	0.8	147	0.8	191	1.0	166	0.8	196	1.0	187	0.9
Zika Virus Disease and Infection[6]	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	1,456	7.2

1 The number of cases reported in past years should not change for most reportable diseases. Starting in 2016, gonorrhea and chlamydia neonatal conjunctivitis infections were excluded from gonorrhea and chlamydia counts and presented separately as neonatal infections (see Table 2: Reported Confirmed and Probable Cases of Reportable Diseases/Conditions of Infrequent Occurrence, Florida, 2007-2016). Therefore, the numbers of gonorrhea and chlamydia cases will not match previous reports. Different reconciliation processes are in place for AIDS and HIV. As a result, case numbers for prior years in the above tables may vary from previous reports. In 2016, lead poisoning cases were reviewed and re-evaluated, resulting in small changes in the number of cases reported in previous reports.

2 For information on what is included in this disease category, see Florida Disease Codes in Merlin within Interpreting the Data in the Introduction.

3 For congenital syphilis, the rate is per 100,000 live births and fetal deaths. For *Haemophilus influenzae*, the rate is per 100,000 children <5 years old. For lead poisoning in children <6 years old, the rate is per 100,000 children <6 years old. For lead poisoning in people ≥6 years old, the rate is per 100,000 people ≥6 years old. For hepatitis B surface antigen in pregnant women, the rate is per 100,000 women aged 15-44 years old.

4 Chronic hepatitis B and C were added to this report in 2015. Limitations associated with these data are discussed in the disease-specific chapters in Section 2: Data Summaries for Selected Reportable Diseases/ Conditions of Frequent Occurrence.

5 Acute pesticide-related illness and injury counts include suspect cases, unlike other diseases in this report. In 2016, pesticide cases were reviewed and re-evaluated, resulting in small changes in the number of cases reported in previous reports.

6 Zika virus disease and infection was not explicitly reportable prior to 2016, but would have been reportable under “arboviral disease, other” had any cases occurred. It became explicitly reportable in 2016.

-- Not applicable. Rates calculated for less than 20 cases are unreliable and therefore are not included in this table. Animal rabies is only expressed as the number of cases because no reliable denominators exist for animal populations. Prior to 2010, lead poisoning case data were primarily stored outside of the state’s reportable disease surveillance system and are not included in this table.

NR Not reportable.

Note that changes in disease case definitions can affect case counts over time. For information on case definition changes that affected case counts, refer to the disease-specific chapters in Section 2: Data Summaries for Selected Reportable Diseases/Conditions of Frequent Occurrence.

Table 2: Reported Confirmed and Probable Cases of Reportable Diseases/Conditions of Infrequent Occurrence, Florida, 2007-2016

Reportable disease/condition	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Amebic Encephalitis	NR	NR	3	0	1	0	1	1	1	1
Anaplasmosis	3	2	3	3	11	5	2	7	5	6
Anthrax	0	0	0	0	1	0	0	0	0	0
Arboviral Disease, Other	NR	NR	NR	NR	NR	NR	NR	0	0	0
Babesiosis	NR	NR	NR	NR	NR	NR	NR	NR	NR	0
Botulism, Foodborne	0	0	0	0	0	0	0	0	0	0
Botulism, Infant	1	1	1	1	0	1	0	0	0	0
Botulism, Other	0	0	0	0	0	0	0	0	1	1
Botulism, Wound	0	0	0	0	0	0	0	0	0	0
Brucellosis	10	10	9	9	6	17	9	3	8	2
California Serogroup Virus Disease[1]	1	1	0	0	1	0	0	1	1	0
Chancroid	3	0	1	1	0	0	0	0	0	0
Chikungunya Fever	NR	NR	NR	NR	NR	NR	NR	442	121	10
Cholera (*Vibrio cholerae* Type O1)	0	0	0	4	11	7	4	2	3	1
Conjunctivitis in Neonates <14 Days Old, Chlamydia[2]	30	18	21	32	26	19	12	13	16	21
Conjunctivitis in Neonates <14 Days Old, Gonorrhea[2]	2	1	2	2	0	0	3	2	1	9
Diphtheria	0	0	0	0	0	0	0	0	0	0
Eastern Equine Encephalitis[1]	0	1	0	4	0	2	2	1	0	1
Flavivirus Disease and Infection	NR	NR	NR	NR	NR	NR	NR	NR	NR	0
Glanders (*Burkholderia mallei*)	0	0	0	0	0	0	0	0	0	0
Granuloma Inguinale	0	0	0	0	0	0	0	0	0	0
Hansen's Disease (Leprosy)	10	10	7	12	11	10	10	10	29	18
Hantavirus Infection[1]	0	0	0	0	0	0	0	0	0	0
Hemolytic Uremic Syndrome (HUS)	6	5	5	8	4	1	14	7	5	8
Hepatitis B, Perinatal	2	3	0	1	0	1	2	1	0	0
Hepatitis D	1	0	1	0	0	0	1	1	1	1
Hepatitis E	1	0	2	1	7	1	0	3	6	5
Hepatitis G	0	0	1	0	2	0	0	0	0	0
Herpes Simplex Virus in Infants <60 Days Old[2,3]	1	14	73	72	63	49	51	38	30	14
Human Papillomavirus in Children ≤12 Years Old	0	0	0	0	0	4	1	0	1	1
Influenza-Associated Pediatric Mortality	2	3	13	2	1	4	8	6	2	6
Leptospirosis	1	0	1	2	4	1	1	0	4	2
Lymphogranuloma Venereum	0	2	0	0	0	0	0	0	0	0
Measles (Rubeola)	5	1	5	1	8	0	7	0	5	5
Melioidosis (*Burkholderia pseudomallei*)	0	0	0	0	0	1	0	0	0	0
Meningococcal Disease	67	51	52	60	51	45	58	50	23	18
Mercury Poisoning	24	69	21	12	7	10	5	15	26	19
Middle East Respiratory Syndrome (MERS)	NR	NR	NR	NR	NR	NR	NR	1	0	0
Mumps	21	16	18	10	11	5	1	1	10	16
Neurotoxic Shellfish Poisoning	1	0	0	0	0	0	0	0	0	0
Plague[1]	0	0	0	0	0	0	0	0	0	0
Poliomyelitis[1]	0	0	0	0	0	0	0	0	0	0
Psittacosis (Ornithosis)	0	2	0	0	0	0	0	1	1	0
Q Fever (*Coxiella burnetii*)[1]	2	1	1	2	3	1	2	1	1	0
Rabies, Human	0	0	0	0	0	0	0	0	0	0
Ricin Toxin Poisoning	0	0	0	0	0	0	1	0	4	1
Rocky Mountain Spotted Fever and Spotted Fever Rickettsiosis[1]	19	19	10	14	12	31	24	29	21	12
Rubella[1]	0	3	0	0	0	0	0	0	0	1
Saxitoxin Poisoning (Paralytic Shellfish Poisoning)	0	0	0	0	0	0	3	0	0	1
Severe Acute Respiratory Syndrome (SARS)	0	0	0	0	0	0	0	0	0	0
Smallpox	0	0	0	0	0	0	0	0	0	0
St. Louis Encephalitis[1]	0	0	0	0	0	0	0	2	0	0
Staphylococcal Enterotoxin B Poisoning	0	2	0	0	0	0	0	0	0	0
Staphylococcus aureus Infection, Intermediate Resistance to Vancomycin (VISA)	1	3	6	1	3	7	5	4	4	4
Staphylococcus aureus Infection, Resistant to Vancomycin (VRSA)	0	0	0	0	0	0	0	0	0	0
Tetanus	5	2	0	5	3	4	5	2	4	5
Trichinellosis (Trichinosis)	0	1	0	0	0	0	0	0	0	0
Tularemia (*Francisella tularensis*)	0	0	1	0	0	0	1	1	0	0
Typhoid Fever (*Salmonella* Serotype Typhi)	15	18	19	22	8	11	11	13	6	12
Typhus Fever[1]	1	0	1	0	2	0	0	0	0	0
Vaccinia Disease	0	0	0	0	1	0	0	0	1	0
Venezuelan Equine Encephalitis[1]	0	0	0	0	0	0	0	0	0	0
Viral Hemorrhagic Fever[1]	0	0	0	0	0	0	0	0	0	0
West Nile Virus Disease[1]	3	3	3	12	23	74	7	17	13	8
Western Equine Encephalitis[1]	0	0	0	0	0	0	0	0	0	0
Yellow Fever	0	0	0	0	0	0	0	0	0	0

1 For information on what is included in this disease category, see Florida Disease Codes in Merlin within Interpreting the Data in the Introduction.
2 Age in days is determined by the age of the child on the specimen collection date.
3 The small number of herpes simplex virus cases in children reported in 2007 may be due to transition to a new reporting system.
NR Not reportable.

Note that changes in disease case definitions can affect case counts over time. For information on case definition changes that affected case counts, refer to the disease-specific chapters in Section 2.

Table 3: Reported Confirmed and Probable Cases and Incidence Rates (Per 100,000 Population) of Reportable Diseases/Conditions of Frequent Occurrence by Age Group,[1] Florida, 2016

Reportable disease/condition	<1 years		1-4 years		5-9 years		10-14 years		15-19 years		20-24 years		25-34 years		35-44 years		45-54 years		55-64 years		65-74 years		75-84 years		85+ years	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
AIDS	0	--	0	--	2	--	2	--	21	1.8	134	10.4	517	19.8	498	20.4	511	18.6	334	12.6	82	3.8	16	--	2	--
Arsenic Poisoning	0	--	0	--	0	--	0	--	0	--	0	--	1	--	4	--	3	--	6	--	7	--	0	--	0	--
Campylobacteriosis	125	56.6	347	39.0	158	14.0	96	8.4	128	10.9	148	11.4	301	11.5	267	10.9	373	13.6	426	16.1	489	22.5	296	24.3	108	20.0
Carbon Monoxide Poisoning	1	--	7	--	12	--	8	--	5	--	8	--	30	1.2	33	1.4	33	1.2	35	1.3	27	1.2	20	1.6	5	--
Chlamydia (Excluding Neonatal Conjunctivitis)[1]	0	--	2	--	5	--	560	49.1	23,722	2,011.0	35,763	2,761.0	26,335	1,010.0	5,752	235.4	1,860	67.8	582	22.0	117	5.4	19	--	3	--
Ciguatera Fish Poisoning	0	--	0	--	0	--	0	--	1	--	0	--	1	--	10	--	7	--	2	--	9	--	3	--	0	--
Creutzfeldt-Jakob Disease (CJD)	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	2	--	6	--	7	--	4	--	1	--
Cryptosporidiosis	7	--	81	9.1	36	3.2	31	2.7	21	1.8	28	2.2	84	3.2	66	2.7	56	2.0	59	2.2	66	3.0	28	2.3	19	--
Cyclosporiasis	0	--	0	--	1	--	1	--	0	--	1	--	5	--	6	--	6	--	9	--	6	--	2	--	0	--
Dengue Fever[2]	0	--	1	--	2	--	3	--	3	--	2	--	12	--	9	--	11	--	9	--	9	--	1	--	0	--
Ehrlichiosis[2]	0	--	0	--	0	--	0	--	2	--	0	--	3	--	3	--	5	--	6	--	6	--	3	--	0	--
Giardiasis, Acute	20	9.1	133	15.0	98	8.7	61	5.3	42	3.6	43	3.3	161	6.2	117	4.8	150	5.5	115	4.3	127	5.8	45	3.7	16	--
Gonorrhea (Excluding Neonatal Conjunctivitis)	0	--	2	--	6	--	150	13.1	4,781	405.2	8,335	643.5	9,317	357.2	3,158	129.3	1,612	58.8	644	24.3	135	6.2	13	--	0	--
Haemophilus influenzae Invasive Disease in Children <5 Years Old[2,3]	17	--	17	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--
Hepatitis A	0	--	2	--	2	--	1	--	4	--	6	--	30	1.2	18	--	20	0.7	18	--	12	--	7	--	2	--
Hepatitis B, Acute	0	--	0	--	0	--	0	--	4	--	12	--	95	3.6	235	9.6	201	7.3	105	4.0	39	1.8	14	--	4	--
Hepatitis B, Chronic[1]	1	--	4	--	6	--	15	--	107	9.1	183	14.1	904	34.7	1,077	44.1	1,129	41.2	842	31.8	489	22.5	171	14.0	42	7.8
Hepatitis B, Pregnant Women[3]	0	--	0	--	0	--	0	--	6	--	55	8.7	263	20.4	122	9.9	1	--	0	--	0	--	0	--	0	--
Hepatitis C, Acute	0	--	1	--	0	--	0	--	9	--	40	3.1	100	3.8	63	2.6	47	1.7	31	1.2	7	--	3	--	0	--
Hepatitis C, Chronic (Including Perinatal)[1]	13	--	37	4.2	22	1.9	29	2.5	298	25.3	1,923	148.5	6,402	245.5	4,663	190.9	5,293	193.0	7,397	279.6	2,658	122.2	529	43.4	179	33.1
HIV (Including Perinatal)	9	--	3	--	3	--	5	--	170	14.4	684	52.8	1,548	59.4	1,056	43.2	870	31.7	470	17.8	126	5.8	25	2.1	3	--
Lead Poisoning Cases in Children <6 Years Old[3]	8	--	147	16.5	11	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--
Lead Poisoning Cases in People ≥6 Years Old[3]	0	--	0	--	23	2.5	30	2.6	26	2.2	51	3.9	119	4.6	85	3.5	82	3.0	53	2.0	24	1.1	8	--	0	--
Legionellosis	0	--	0	--	0	--	0	--	2	--	3	--	8	--	22	0.9	47	1.7	86	3.3	76	3.5	46	3.8	38	7.0
Listeriosis[2]	3	--	0	--	0	--	0	--	0	--	0	--	1	--	6	--	2	--	7	--	10	--	10	--	4	--
Lyme Disease	0	--	4	--	11	--	13	--	10	--	13	--	17	--	16	--	26	0.9	29	1.1	54	2.5	21	1.7	2	--
Malaria	0	--	2	--	0	--	1	--	2	--	5	--	14	--	9	--	15	--	9	--	5	--	0	--	0	--
Meningitis, Bacterial or Mycotic (Excluding *Neisseria meningitidis*)	35	15.8	2	--	1	--	1	--	3	--	4	--	9	--	10	--	15	--	16	--	14	--	1	--	1	--
Pertussis	94	42.6	49	5.5	38	3.4	36	3.2	21	1.8	3	--	20	0.8	15	--	22	0.8	13	--	12	--	8	--	3	--
Pesticide-Related Illness and Injury, Acute[4]	0	--	1	--	0	--	1	--	0	--	0	--	7	--	9	--	6	--	0	--	2	--	3	--	1	--
Rabies, Possible Exposure[1]	23	10.4	127	14.3	177	15.7	192	16.8	221	18.7	288	22.2	552	21.2	436	17.9	501	18.3	389	14.7	243	11.2	98	8.0	31	5.7
Salmonellosis	1,063	481.2	1,121	126.0	401	35.5	188	16.5	184	15.6	175	13.5	343	13.2	301	12.3	422	15.4	503	19.0	506	23.3	279	22.9	135	25.0
Shiga Toxin-Producing *Escherichia coli* (STEC) Infection[2]	7	--	38	4.3	9	--	6	--	4	--	2	--	7	--	4	--	5	--	6	--	4	--	3	--	4	--
Shigellosis	8	--	182	20.5	145	12.8	50	4.4	19	--	29	2.2	97	3.7	61	2.5	60	2.2	48	1.8	29	1.3	19	--	6	--
Streptococcus pneumoniae Invasive Disease, Drug-Resistant	8	--	21	2.4	5	--	2	--	4	--	8	--	10	--	24	1.0	19	--	43	1.6	37	1.7	18	--	8	--
Streptococcus pneumoniae Invasive Disease, Drug-Susceptible	8	--	32	3.6	11	--	4	--	3	--	1	--	21	0.8	43	1.8	60	2.2	76	2.9	67	3.1	58	4.8	28	5.2
Syphilis (Excluding Congenital)	0	--	0	--	0	--	5	--	289	24.5	1,188	91.7	2,760	105.8	1,719	70.4	1,529	55.8	593	22.4	148	6.8	35	2.9	9	--
Syphilis, Congenital[3]	60	26.5	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--
Tuberculosis	2	--	11	--	7	--	3	--	16	--	26	2.0	96	3.7	98	4.0	123	4.5	99	3.7	79	3.6	57	4.7	22	4.1
Varicella (Chickenpox)	84	38.0	150	16.9	136	12.0	83	7.3	52	4.4	39	3.0	75	2.9	57	2.3	37	1.3	13	--	4	--	2	--	1	--
Vibriosis (Excluding Cholera)[2]	0	--	3	--	14	--	16	--	8	--	6	--	9	--	21	0.9	19	--	31	1.2	35	1.6	22	1.8	3	--
Zika Virus Disease and Infection	5	--	7	--	20	1.8	33	2.9	70	5.9	96	7.4	400	15.3	315	12.9	245	8.9	181	6.8	73	3.4	9	--	2	--

1 Age is unknown for two chronic hepatitis B cases, 13 chronic hepatitis C cases, and 24 rabies, possible exposure cases.

2 For information on what is included in this disease category, see Florida Disease Codes in Merlin within Interpreting the Data in the Introduction.

3 For congenital syphilis, the rate is per 100,000 live births and fetal deaths. For *Haemophilus influenzae*, the rate is per 100,000 children <5 years old. For lead poisoning in children <6 years old, the rate is per 100,000 children <6 years old. For lead poisoning in people ≥6 years old, the rate is per 100,000 people ≥6 years old. For hepatitis B surface antigen in pregnant women, the rate is per 100,000 women aged 15-44 years old.

4 Acute pesticide-related illness and injury counts include suspect cases, unlike other diseases in this report.

-- Not applicable. Rates calculated for less than 20 cases are unreliable and therefore are not included in this table. Rates for hepatitis B surface antigen in pregnant women are only calculated for women aged 15-44 years.

Note that this table includes all diseases from Table 1 except animal rabies.

Table 4: Top 10 Reported Confirmed and Probable Cases of Reportable Diseases/Conditions by Age Group, Florida, 2016

Rank	Age group (in years)												
	<1	1-4	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65-74	75-84	85+
1	Salmonellosis (Count: 1,063) (Rate: 481.2)	Salmonellosis (Count: 1,121) (Rate: 126.0)	Salmonellosis (Count: 401) (Rate: 35.5)	Chlamydia (Count: 560) (Rate: 49.1)	Chlamydia (Count: 23,722) (Rate: 2,010.6)	Chlamydia (Count: 35,763) (Rate: 2,761.3)	Chlamydia (Count: 26,335) (Rate: 1,009.7)	Chlamydia (Count: 5,752) (Rate: 235.4)	Hepatitis C, Chronic (Count: 5,293) (Rate: 193.0)	Hepatitis C, Chronic (Count: 7,397) (Rate: 279.6)	Hepatitis C, Chronic (Count: 2,658) (Rate: 122.2)	Hepatitis C, Chronic (Count: 529) (Rate: 43.4)	Hepatitis C, Chronic (Count: 179) (Rate: 33.1)
2	Campylobacteriosis (Count: 125) (Rate: 56.6)	Campylobacteriosis (Count: 347) (Rate: 39.0)	Rabies, Possible Exposure (Count: 174) (Rate: 15.4)	Salmonellosis (Count: 188) (Rate: 16.5)	Gonorrhea (Count: 4,781) (Rate: 405.2)	Gonorrhea (Count: 8,335) (Rate: 643.5)	Gonorrhea (Count: 9,317) (Rate: 357.2)	Hepatitis C, Chronic (Count: 4,663) (Rate: 190.9)	Chlamydia (Count: 1,860) (Rate: 67.8)	Hepatitis B, Chronic (Count: 842) (Rate: 31.8)	Salmonellosis (Count: 506) (Rate: 23.3)	Campylobacteriosis (Count: 296) (Rate: 24.3)	Salmonellosis (Count: 135) (Rate: 25.0)
3	Rabies, Possible Exposure (Count: 107) (Rate: 48.4)	Shigellosis (Count: 182) (Rate: 20.5)	Campylobacteriosis (Count: 158) (Rate: 14.0)	Rabies, Possible Exposure (Count: 187) (Rate: 16.4)	Hepatitis C, Chronic (Count: 298) (Rate: 25.3)	Hepatitis C, Chronic (Count: 1,923) (Rate: 148.5)	Hepatitis C, Chronic (Count: 6,402) (Rate: 245.5)	Gonorrhea (Count: 3,158) (Rate: 129.3)	Gonorrhea (Count: 1,612) (Rate: 58.8)	Gonorrhea (Count: 644) (Rate: 24.3)	Campylobacteriosis (Count: 489) (Rate: 22.5)	Salmonellosis (Count: 279) (Rate: 22.9)	Campylobacteriosis (Count: 108) (Rate: 20.0)
4	Pertussis (Count: 94) (Rate: 42.6)	Varicella (Chickenpox) (Count: 150) (Rate: 16.9)	Shigellosis (Count: 145) (Rate: 12.8)	Gonorrhea (Count: 150) (Rate: 13.1)	Syphilis (Count: 289) (Rate: 24.5)	Syphilis (Count: 1,188) (Rate: 91.7)	Syphilis (Count: 2,760) (Rate: 105.8)	Syphilis (Count: 1,719) (Rate: 70.4)	Syphilis (Count: 1,529) (Rate: 55.7)	Syphilis (Count: 593) (Rate: 22.4)	Hepatitis B, Chronic (Count: 489) (Rate: 22.5)	Hepatitis B, Chronic (Count: 171) (Rate: 14.0)	Hepatitis B, Chronic (Count: 42) (Rate: 7.8)
5	Varicella (Chickenpox) (Count: 84) (Rate: 38.0)	Lead Poisoning (Count: 147) (Rate: 16.5)	Varicella (Chickenpox) (Count: 136) (Rate: 12.0)	Campylobacteriosis (Count: 96) (Rate: 8.4)	Rabies, Possible Exposure (Count: 216) (Rate: 18.3)	HIV (Count: 684) (Rate: 52.8)	HIV (Count: 1,548) (Rate: 59.4)	Hepatitis B, Chronic (Count: 1,077) (Rate: 44.1)	Hepatitis B, Chronic (Count: 1,129) (Rate: 41.2)	Chlamydia (Count: 582) (Rate: 22.0)	Rabies, Possible Exposure (Count: 235) (Rate: 10.8)	Rabies, Possible Exposure (Count: 98) (Rate: 8.0)	Legionellosis (Count: 38) (Rate: 7.0)
6	Syphilis, Congenital (Count: 60) (Rate: 26.5)	Giardiasis, Acute (Count: 133) (Rate: 14.9)	Giardiasis, Acute (Count: 98) (Rate: 8.7)	Varicella (Chickenpox) (Count: 83) (Rate: 7.3)	Salmonellosis (Count: 184) (Rate: 15.6)	Rabies, Possible Exposure (Count: 286) (Rate: 22.1)	Hepatitis B, Chronic (Count: 904) (Rate: 34.7)	HIV (Count: 1,056) (Rate: 43.2)	HIV (Count: 870) (Rate: 31.7)	Salmonellosis (Count: 503) (Rate: 19.0)	Syphilis (Count: 148) (Rate: 6.8)	*S. pneumoniae* Invasive Disease (Count: 76) (Rate: 6.2)	*S. pneumoniae* Invasive Disease (Count: 36) (Rate: 6.7)
7	Meningitis, Bacterial or Mycotic (Count: 35) (Rate: 15.8)	Rabies, Possible Exposure (Count: 124) (Rate: 13.9)	Pertussis (Count: 38) (Rate: 3.4)	Giardiasis, Acute (Count: 61) (Rate: 5.3)	HIV (Count: 170) (Rate: 14.4)	Hepatitis B, Chronic (Count: 183) (Rate: 14.1)	Rabies, Possible Exposure (Count: 538) (Rate: 20.6)	AIDS (Count: 498) (Rate: 20.4)	AIDS (Count: 511) (Rate: 18.6)	HIV (Count: 470) (Rate: 17.8)	Gonorrhea (Count: 135) (Rate: 6.2)	Tuberculosis (Count: 57) (Rate: 4.7)	Rabies, Possible Exposure (Count: 30) (Rate: 5.6)
8	Giardiasis, Acute (Count: 20) (Rate: 9.1)	Cryptosporidiosis (Count: 81) (Rate: 9.1)	Cryptosporidiosis (Count: 36) (Rate: 3.2)	Shigellosis (Count: 50) (Rate: 4.4)	Campylobacteriosis (Count: 128) (Rate: 10.8)	Salmonellosis (Count: 175) (Rate: 13.5)	AIDS (Count: 517) (Rate: 19.8)	Rabies, Possible Exposure (Count: 426) (Rate: 17.4)	Rabies, Possible Exposure (Count: 487) (Rate: 17.8)	Campylobacteriosis (Count: 426) (Rate: 16.1)	Giardiasis, Acute (Count: 127) (Rate: 5.8)	Legionellosis (Count: 46) (Rate: 3.8)	Tuberculosis (Count: 22) (Rate: 4.1)
9	*H. influenzae* Invasive Disease in Children <5 Years (Count: 17) --	*S. pneumoniae* Invasive Disease (Count: 53) (Rate: 6.0)	Lead Poisoning (Count: 23) (Rate: 2.5)	Pertussis (Count: 36) (Rate: 3.2)	Hepatitis B, Chronic (Count: 107) (Rate: 9.1)	Campylobacteriosis (Count: 148) (Rate: 11.4)	Zika Virus (Count: 400) (Rate: 15.3)	Zika Virus (Count: 315) (Rate: 12.9)	Salmonellosis (Count: 422) (Rate: 15.4)	Rabies, Possible Exposure (Count: 382) (Rate: 14.4)	HIV (Count: 126) (Rate: 5.8)	Giardiasis, Acute (Count: 45) (Rate: 3.7)	Cryptosporidiosis (Count: 19) --
10	*S. pneumoniae* Invasive Disease (Count: 16) --	Pertussis (Count: 49) (Rate: 5.5)	Hepatitis C, Chronic (Count: 22) (Rate: 1.9)	Zika Virus (Count: 33) (Rate: 2.9)	Zika Virus (Count: 70) (Rate: 5.9)	AIDS (Count: 134) (Rate: 10.3)	Salmonellosis (Count: 343) (Rate: 13.2)	Salmonellosis (Count: 301) (Rate: 12.3)	Campylobacteriosis (Count: 373) (Rate: 13.6)	AIDS (Count: 334) (Rate: 12.6)	Chlamydia (Count: 117) (Rate: 5.4)	Syphilis (Count: 35) (Rate: 2.9)	Giardiasis, Acute (Count: 16) --

— Not applicable. Rates calculated for less than 20 cases are unreliable and therefore are not included in this table.

Table 4 includes the top 10 diseases based on frequency of report by age group. These diseases are grouped by color into a few general disease categories:

Enteric Diseases	Tuberculosis	Vector-Borne Diseases	Sexually Transmitted Diseases	Viral Hepatitis
Vaccine-Preventable Diseases	Invasive Bacterial Diseases	Environmental Poisonings	HIV Infection/AIDS	

Table 5: Reported Confirmed and Probable Cases of Reportable Diseases/Conditions of Frequent Occurrence by Month of Occurrence,[1] Florida, 2016

Selected reportable disease/condition	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Arsenic Poisoning	4	0	0	1	1	4	0	4	2	2	2	1
Campylobacteriosis	280	231	248	230	338	282	349	313	248	239	238	266
Carbon Monoxide Poisoning	34	8	10	23	16	18	17	13	18	25	12	30
Ciguatera Fish Poisoning	0	0	2	0	2	0	4	9	13	0	1	2
Creutzfeldt-Jakob Disease (CJD)	0	2	1	0	2	1	3	3	1	2	2	3
Cryptosporidiosis	41	43	21	33	31	40	81	55	103	55	40	39
Cyclosporiasis	0	0	0	0	3	17	10	5	1	0	0	1
Dengue Fever[2]	13	5	6	1	5	4	8	9	3	4	0	4
Ehrlichiosis[2]	0	0	0	1	9	5	3	3	2	2	3	0
Giardiasis, Acute	91	79	117	107	98	101	102	101	106	75	70	81
Haemophilus influenzae Invasive Disease in Children <5 Years Old[2]	2	1	2	1	7	1	2	1	2	1	10	4
Hepatitis A	8	9	3	17	6	7	17	12	9	8	14	12
Hepatitis B, Acute	61	50	54	52	60	53	65	66	66	75	57	50
Hepatitis B, Chronic	354	402	422	433	391	436	428	482	407	424	414	379
Hepatitis B, Pregnant Women	36	28	37	41	38	39	32	41	29	45	37	44
Hepatitis C, Acute	43	20	21	22	32	31	36	22	20	15	17	22
Hepatitis C, Chronic (Including Perinatal)	2,357	2,546	2,677	2,507	2,699	2,821	2,855	2,650	2,240	2,070	2,029	2,005
Lead Poisoning Cases in Children <6 Years Old	7	12	11	12	13	17	19	22	15	11	12	15
Lead Poisoning Cases in People ≥6 Years Old	29	45	43	57	48	37	39	57	32	65	25	24
Legionellosis	21	19	20	17	9	33	26	39	33	42	40	29
Listeriosis[2]	1	2	2	5	3	5	2	4	5	6	2	6
Lyme Disease	5	5	3	11	10	43	55	42	16	8	9	9
Malaria	2	3	2	1	6	8	13	12	5	4	3	3
Meningitis, Bacterial or Mycotic (Excluding *Neisseria meningitidis*)	11	12	11	12	7	5	8	8	9	8	7	14
Pertussis	33	24	24	35	26	21	33	31	26	22	26	33
Pesticide-Related Illness and Injury, Acute[3]	0	0	0	1	2	1	3	8	12	1	0	2
Rabies, Animal[4]	5	2	6	7	7	8	2	6	1	8	4	3
Rabies, Possible Exposure[5]	222	229	308	294	328	337	317	266	249	282	255	215
Salmonellosis	344	244	285	290	393	526	584	715	744	698	425	373
Shiga Toxin-Producing *Escherichia coli* (STEC) Infection[2]	6	12	3	5	7	11	13	11	0	7	12	12
Shigellosis	62	36	44	52	61	56	67	75	73	86	70	71
Streptococcus pneumoniae Invasive Disease, Drug-Resistant	25	24	21	30	11	12	7	9	11	14	21	22
Streptococcus pneumoniae Invasive Disease, Drug-Susceptible	51	43	47	71	32	25	27	14	23	24	22	33
Varicella (Chickenpox)	107	86	61	75	74	43	41	52	54	32	60	48
Vibriosis (Excluding Cholera)[2]	7	0	7	14	26	25	32	21	18	19	7	11
Zika Virus Disease and Infection	31	50	40	40	53	164	306	376	160	110	62	64

1 The earliest date associated with the case was used to determine month of occurrence, unless otherwise noted. Dates associated with cases include illness onset date, diagnosis date, laboratory report date, and the date the local health office was notified.
2 For information on what is included in this disease category, see Florida Disease Codes in Merlin within Interpreting the Data in the Introduction.
3 Acute pesticide-related illness and injury counts include suspect cases, unlike other diseases in this report.
4 Month of occurrence is based on the month of laboratory report.
5 Month of occurrence is based on the month of exposure.

Note that this table includes all diseases from Table 1 except AIDS, chlamydia, gonorrhea, HIV, syphilis, congenital syphilis, and tuberculosis.

Section 2

Data Summaries for Selected Reportable Diseases/Conditions of Frequent Occurrence

Disease Facts

Cause: HIV with low CD4 count (<200 cells/μL) or occurrence of AIDS-defining illness in an HIV-infected person

Type of illness: Decreased immune system function allows opportunistic infections and tumors to develop that do not usually affect people who have healthy immune systems

Transmission: Anal or vaginal sex; blood exposure (e.g., sharing drug needles, receiving infected blood transfusion [rare due to donor screening]); or from mother to child during pregnancy, delivery or breastfeeding

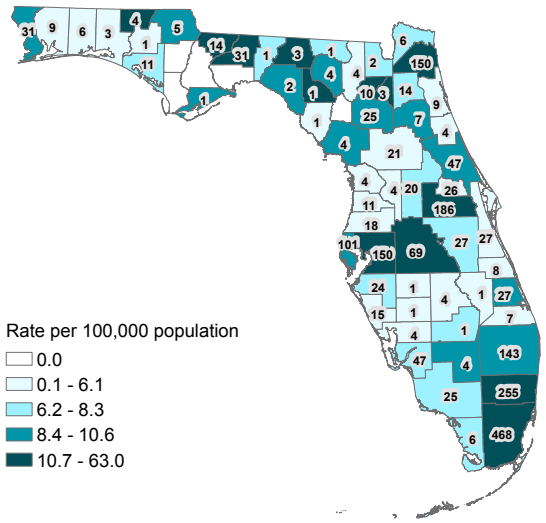
Reason for surveillance: Enhance efforts to prevent HIV transmission, improve allocation of resources for treatment services, and assist in evaluating the impact of public health interventions

Comments: Artificial incidence peaks in 2008 and 2013 were due to expansion of electronic laboratory reporting. Incidence has decreased in 2014 and has subsequently remained relatively stable. Expanded efforts to link and retain people in care may have contributed to the decrease.

Summary of Case Demographics

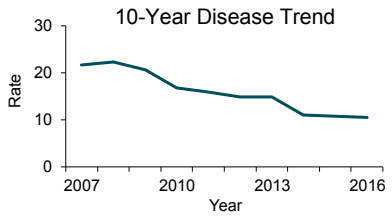
Summary			
Number of cases			2,119
Incidence rate (per 100,000 population)			10.5
Change from 5-year average incidence			-22.4%
Age (in Years)			
Mean			43
Median			42
Min-max			8 - 88
Gender	**Number**	**(Percent)**	**Rate**
Female	580	(27.4)	5.6
Male	1,539	(72.6)	15.6
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	950	(45.1)	6.0
Black	1,123	(53.3)	32.9
Other	33	(1.6)	3.0
Unknown race	13		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	1,595	(75.8)	10.4
Hispanic	510	(24.2)	10.3
Unknown ethnicity	14		

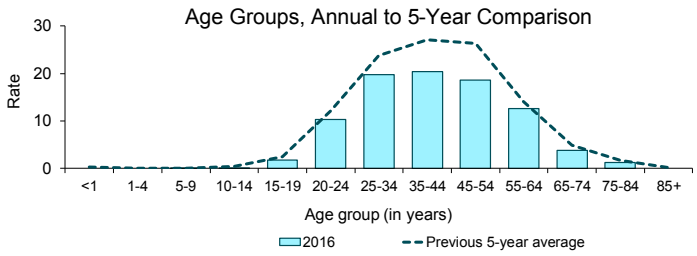
Diagnosed AIDS Cases and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2016 (N=2,119)

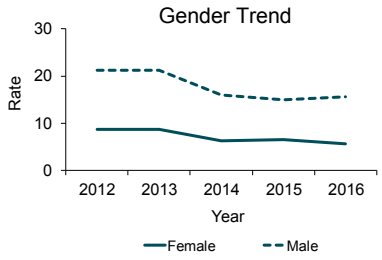


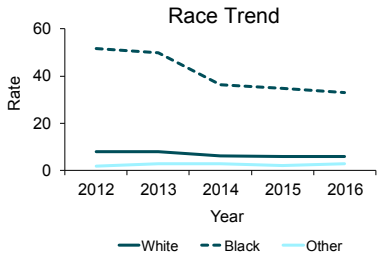
Note that rates based on <20 cases are not reliable and should be interpreted with caution.

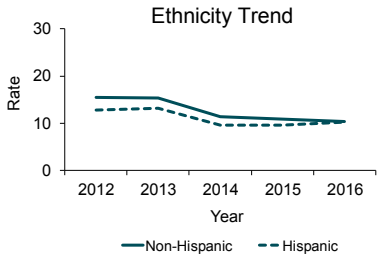
Incidence Rates Per 100,000 Population of Diagnosed AIDS Cases by Year, Age, Gender, Race, and Ethnicity, Florida











Additional Information

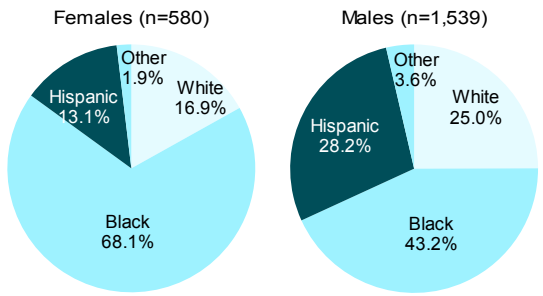
For AIDS cases, men are disproportionately impacted compared to women. In cases reported in adult men in 2016, male-to-male sexual contact was the most common risk factor (64.0%), followed by heterosexual contact (26.3%).

In 2012, the rate of AIDS cases was lower in Hispanics compared to non-Hispanics. AIDS rates have generally decreased among all races and ethnicities over the past five years, and AIDS cases among Hispanics and non-Hispanics are now similar. This is in contrast to the increases observed in the rate of HIV cases among Hispanics over this same time period. Blacks were over-represented among AIDS cases in 2016, particularly for women, accounting for 43.2% of adult cases among men and 68.1% of the adult cases among women.

Diagnosed AIDS Cases by Sex and Mode of Exposure, Florida, 2016

Mode of Exposure	Female Cases (n=580)		Male Cases (n=1,539)	
	Number	(Percent)	Number	(Percent)
Men who have sex with men (MSM)	NA		985	(64.0)
Heterosexual	495	(85.4)	405	(26.3)
Injection drug user (IDU)	67	(11.5)	70	(4.5)
MSM and IDU	NA		72	(4.7)
Other	18	(3.1)	8	(0.5)
Total	580		1,539	

Diagnosed AIDS Cases by Sex and Race/Ethnicity, Florida, 2016



The number of AIDS deaths and the time from AIDS diagnosis to death (median survival time) varies by gender, race, and ethnicity. The gender difference among whites and Hispanics is much larger than the difference between genders for Asians, American Indians, and blacks. Among Asians and American Indians, women live longer than men, whereas men live longer than women in blacks, whites, and Hispanics. Following a diagnosis of AIDS, the life expectancy is shortest for Asians compared to other race and ethnic groups, though the number of cases and deaths in Asians is very small. Other explanations for the short life expectancy in this population continue to be explored. The life expectancy for white men is the longest.

For information on HIV, please see the HIV chapter within this section (page 47).

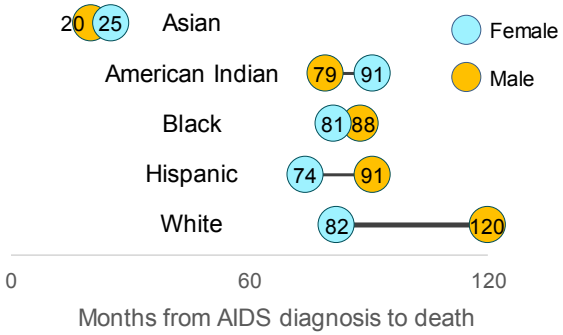
Please visit the AIDS surveillance website to access additional information at www.FloridaHealth.gov/diseases-and-conditions/aids/surveillance/index.html.

To locate services across the state please visit www.FloridaHealth.gov/diseases-and-conditions/aids/index.html.

AIDS Deaths for Cases Diagnosed in Florida by Sex, Race, and Ethnicity, 2010-2016

Race or Ethnicity	Male	Female	Total
Black	3,752	2,485	6,237
White	2,684	608	3,292
Hispanic	1,365	377	1,742
Asian	35	17	52
American Indian	20	14	37

Median Survival Time (in Months) From AIDS Diagnosis to Death for Cases Diagnosed in Florida by Sex, Race, and Ethnicity, 2010-2016



Arsenic Poisoning

Disease Facts

Cause: Inorganic arsenic

Type of illness: Severe gastrointestinal signs and symptoms (e.g., vomiting, abdominal pain, and diarrhea) which may lead rapidly to dehydration and shock; dysrhythmias (prolonged QT, T-wave changes), altered mental status, and multisystem organ failure may follow, which can ultimately result in death

Transmission: Ingestion of arsenic or inhalation of air containing arsenic

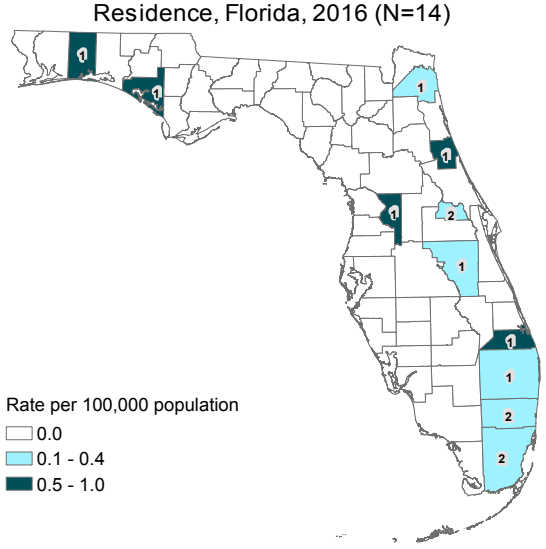
Reason for surveillance: Identify sources of arsenic exposure that are of public health concern (e.g., water source, workplace exposure, homeopathic medicines), prevent further exposure

Comments: Arsenic poisoning became a reportable condition in Florida in November 2008. The number of cases increased in 2016 compared to 2015 due to improved detection and reporting of cases. Incidence is concentrated in adults 25 to 74 years old.

Summary of Case Demographics

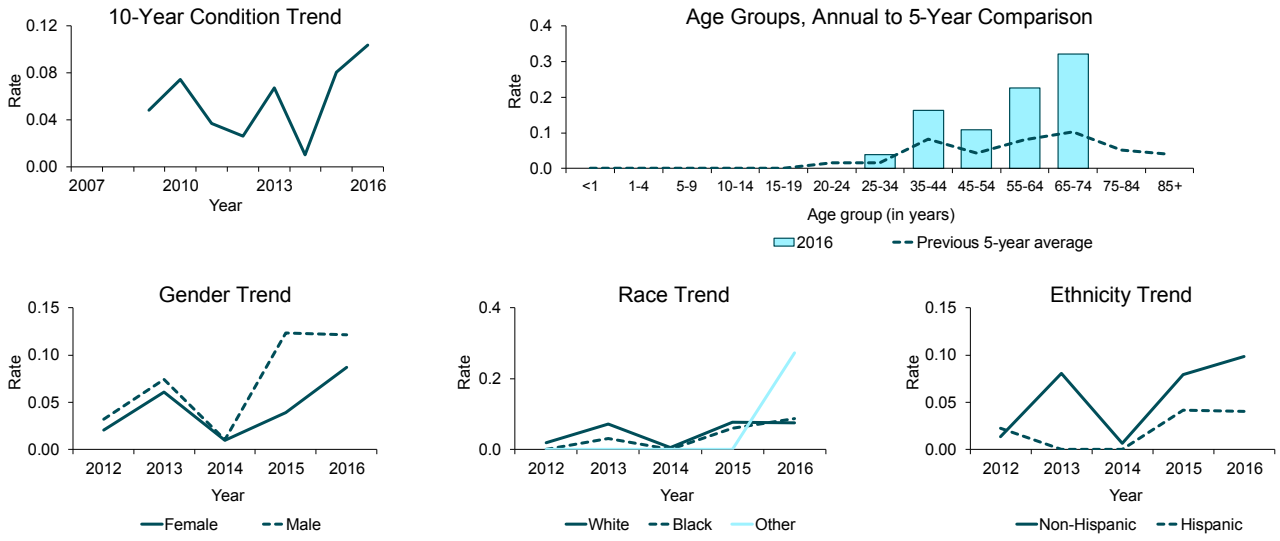
Summary			
Number of cases			21
Incidence rate (per 100,000 population)			0.1
Change from 5-year average incidence			+134.8%
Age (in Years)			
Mean			57
Median			58
Min-max			28 - 74
Gender	**Number**	**(Percent)**	**Rate**
Female	9	(42.9)	NA
Male	12	(57.1)	NA
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	12	(66.7)	NA
Black	3	(16.7)	NA
Other	3	(16.7)	NA
Unknown race	3		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	15	(88.2)	NA
Hispanic	2	(11.8)	NA
Unknown ethnicity	4		

Reported Arsenic Poisoning Cases and Incidence Rates Per 100,000 Population (Restricted to Exposures Occurring in Florida) by County of Residence, Florida, 2016 (N=14)



Note that rates based on <20 cases are not reliable and should be interpreted with caution.

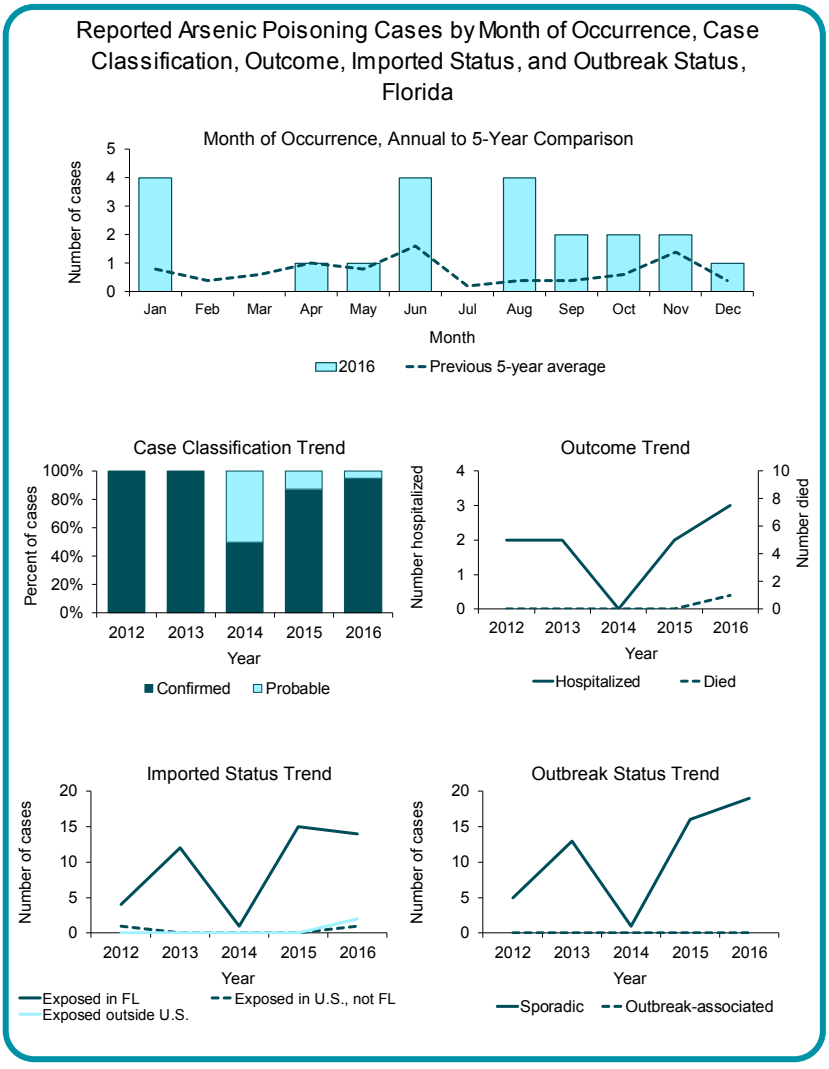
Incidence Rates Per 100,000 Population of Reported Arsenic Poisoning Cases by Year, Age, Gender, Race, and Ethnicity, Florida



Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Arsenic poisoning cases were missing 40.0% of ethnicity data in 2012, 40.0% of race data in 2012, 7.7% of ethnicity data in 2013, 7.7% of race data in 2013, 50.0% of ethnicity data in 2014, 50.0% of race data in 2014, 12.5% of ethnicity data in 2015, 12.5% of race data in 2015, 19.0% of ethnicity data in 2016, and 14.3% of race data in 2016.

Summary of Case Factors

Summary	Number	
Number of cases	21	
Case Classification	**Number**	**(Percent)**
Confirmed	20	(95.2)
Probable	1	(4.8)
Outcome	**Number**	**(Percent)**
Hospitalized	3	(14.3)
Died	1	(4.8)
Imported Status	**Number**	**(Percent)**
Exposed in Florida	14	(66.7)
Exposed in the U.S., not Florida	1	(4.8)
Exposed outside the U.S.	2	(9.5)
Exposed location unknown	4	(19.0)
Outbreak Status	**Number**	**(Percent)**
Sporadic	19	(90.5)
Outbreak-associated	0	(0.0)
Outbreak status unknown	2	(9.5)



Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in the hospitalized count as well as the death count. Hospitalized status means that a person was hospitalized at the time of their illness, though the hospitalization may not necessarily have been due to the illness. Deaths include all people with the illness who died, though the death may not necessarily have been due to the illness. Imported status refers to where the exposure most likely occurred. Outbreak-associated indicates that two or more cases are epidemiologically linked.

Additional Information

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. 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). Small peaks in activity consistently occur in June and November based on the previous five years. In 2016, a peak did occur in June, but did not occur in November. All cases reported in 2016 were sporadic and sources of exposure were not identified for most cases, making it difficult to interpret this trend. After the close of the 2016 morbidity dataset, two cases initially reported with an unknown outbreak status were determined to be sporadic cases.

Campylobacteriosis

Disease Facts

Cause: *Campylobacter* bacteria

Type of illness: Gastroenteritis (diarrhea, vomiting)

Transmission: Fecal-oral; including person-to-person, animal-to-person, foodborne, and waterborne

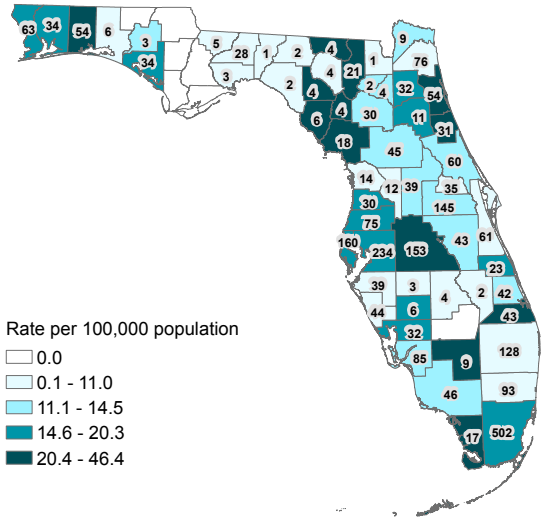
Reason for surveillance: Identify and control outbreaks, identify and mitigate common sources (e.g., contaminated food product, ill food handler), monitor incidence over time, estimate burden of illness

Comments: The use of culture-independent diagnostic testing for *Campylobacter* has increased dramatically in recent years. Florida changed the campylobacteriosis surveillance case definition in January and July 2011 and January 2015, increasing the number of reported cases in both years. Incidence is highest in children <4 years old, followed by adults 75 years and older. The rate in other races increased disproportionately in 2015 compared to whites and blacks and remained high in 2016; this trend is not well understood.

Summary of Case Demographics

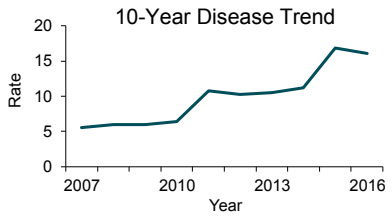
Summary			
Number of cases			3,262
Incidence rate (per 100,000 population)			16.1
Change from 5-year average incidence			+35.3%
Age (in Years)			
Mean			42
Median			46
Min-max			0 - 98
Gender	**Number**	**(Percent)**	**Rate**
Female	1,641	(50.3)	15.9
Male	1,621	(49.7)	16.4
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	2,449	(77.8)	15.6
Black	284	(9.0)	8.3
Other	416	(13.2)	37.8
Unknown race	113		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	2,198	(70.5)	14.4
Hispanic	918	(29.5)	18.5
Unknown ethnicity	146		

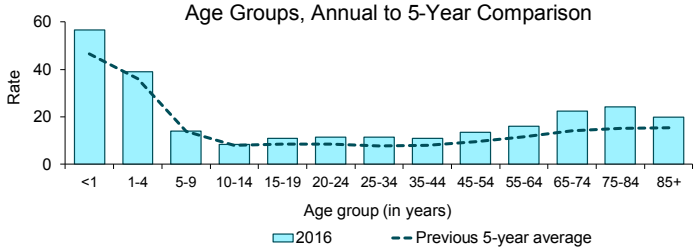
Reported Campylobacteriosis Cases and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2016 (N=2,770)

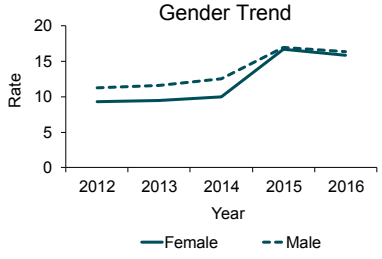


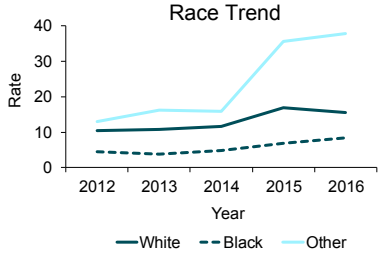
Note that rates based on <20 cases are not reliable and should be interpreted with caution.

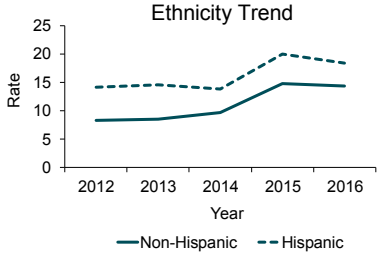
Incidence Rates Per 100,000 Population of Reported Campylobacteriosis Cases by Year, Age, Gender, Race, and Ethnicity, Florida









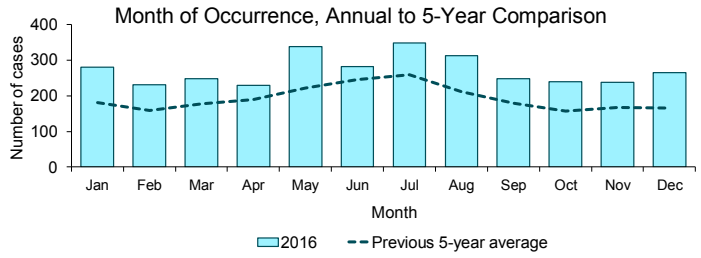


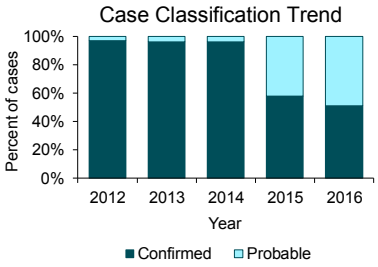
Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Campylobacteriosis cases were missing 6.2% of ethnicity data in 2012, 6.3% of race data in 2012, 5.2% of ethnicity data in 2013, and 5.0% of race data in 2013.

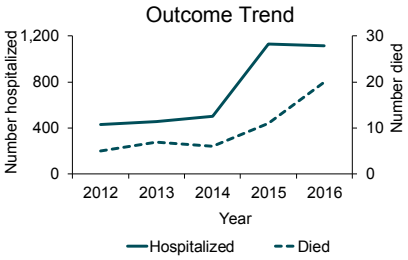
Summary of Case Factors

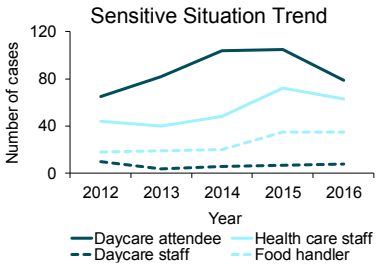
Summary	Number	
Number of cases	3,262	
Case Classification	**Number**	**(Percent)**
Confirmed	1,677	(51.4)
Probable	1,585	(48.6)
Outcome	**Number**	**(Percent)**
Hospitalized	1,114	(34.2)
Died	20	(0.6)
Sensitive Situation	**Number**	**(Percent)**
Daycare attendee	79	(2.4)
Daycare staff	8	(0.2)
Health care staff	63	(1.9)
Food handler	35	(1.1)
Imported Status	**Number**	**(Percent)**
Acquired in Florida	2,770	(84.9)
Acquired in the U.S., not Florida	74	(2.3)
Acquired outside the U.S.	280	(8.6)
Acquired location unknown	138	(4.2)
Outbreak Status	**Number**	**(Percent)**
Sporadic	3,039	(93.2)
Outbreak-associated	146	(4.5)
Outbreak status unknown	77	(2.4)

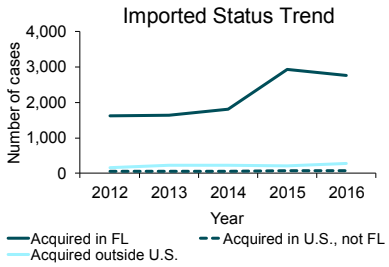
Reported Campylobacteriosis Cases by Month of Occurrence, Case Classification, Outcome, Sensitive Situation, Imported Status, and Outbreak Status, Florida

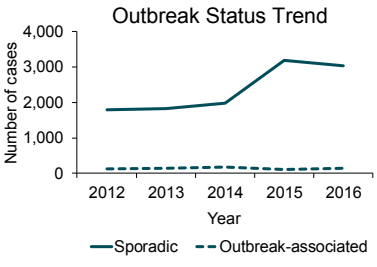












Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in the hospitalized count as well as the death count. Hospitalized status means that a person was hospitalized at the time of their illness, though the hospitalization may not necessarily have been due to the illness. Deaths include all people with the illness who died, though the death may not necessarily have been due to the illness. Sensitive situation categories are not mutually exclusive, and most cases do not fall into any of these categories. Imported status refers to where the infection was most likely acquired. Outbreak- associated indicates that two or more cases are epidemiologically linked.

Additional Information

The number of people hospitalized with campylobacteriosis increased dramatically in 2015, primarily driven by an increase in the number of overall cases reported. However, the percentage of cases hospitalized has risen each year from 22.0% in 2012 to 34.2% in 2016. Hospitalization rates are highest in children <1 and adults ≥80 years old. The percentage of campylobacteriosis cases reported in daycare attendees increased from 3.3% in 2012 to 4.7% in 2014 and subsequently decreased to 2.4% in 2016. Note that this percentage is much lower than other reportable enteric bacterial diseases, including salmonellosis (8.1%), Shiga toxin-producing *Escherichia coli* (17.0%), and shigellosis (22.8%). No campylobacteriosis outbreaks were reported in daycares from 2013 to 2016; outbreak-associated cases were reflective of household clusters.

Carbon Monoxide Poisoning

Disease Facts

Cause: Carbon monoxide (CO) gas

Type of illness: Common symptoms include headache, dizziness, weakness, nausea, vomiting, chest pain, and confusion; high levels of CO inhalation can cause loss of consciousness and death

Exposure: Inhaling CO gas from combustion fumes (produced by cars and trucks, generators, stoves, lanterns, burning charcoal and wood, and gas ranges and heating systems)

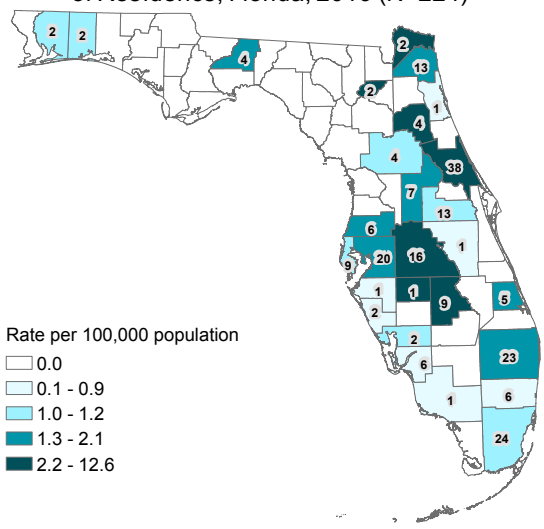
Reason for surveillance: Identify and mitigate persistent sources of exposure, identify populations at risk, evaluate trends in environmental conditions, measure impact of public health interventions

Comments: CO poisoning became a reportable condition in Florida in late 2008, so only cases from 2009 to 2016 are presented in this report. CO poisonings tend to increase during cold winter months and during large power outages (e.g., after a hurricane) when generator use increases.

Summary of Case Demographics

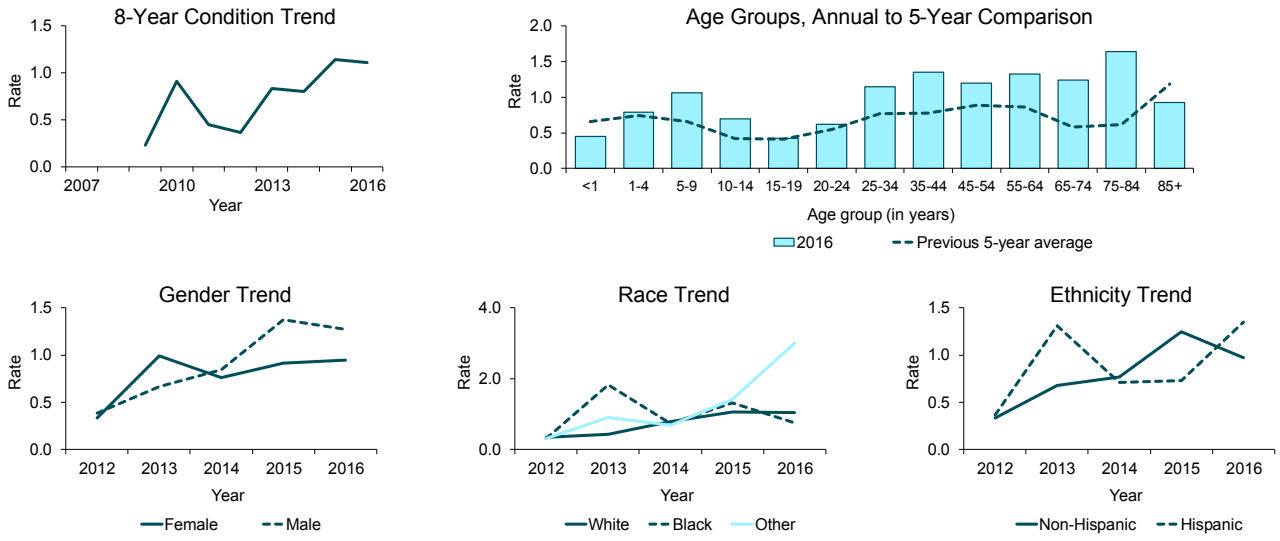
Summary			
Number of cases			224
Incidence rate (per 100,000 population)			1.1
Change from 5-year average incidence			+54.4%
Age (in Years)			
Mean			45
Median			47
Min-max			0 - 91
Gender	**Number**	**(Percent)**	**Rate**
Female	98	(43.8)	0.9
Male	126	(56.3)	1.3
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	164	(73.5)	1.0
Black	26	(11.7)	0.8
Other	33	(14.8)	3.0
Unknown race	1		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	149	(69.0)	1.0
Hispanic	67	(31.0)	1.3
Unknown ethnicity	8		

Reported Carbon Monoxide Poisoning Cases and Incidence Rates Per 100,000 Population (Restricted to Exposures Occurring in Florida) by County of Residence, Florida, 2016 (N=224)



Note that rates based on <20 cases are not reliable and should be interpreted with caution.

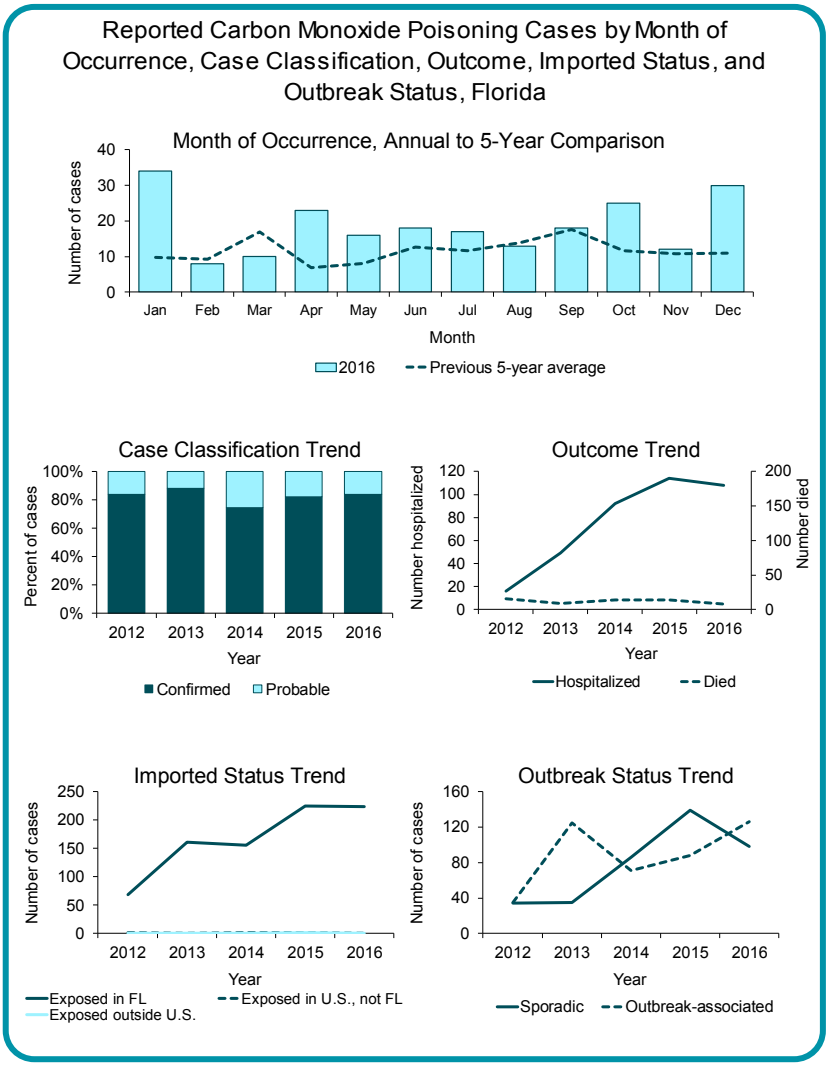
Incidence Rates Per 100,000 Population of Reported Carbon Monoxide Poisoning Cases by Year, Age, Gender, Race, and Ethnicity, Florida



Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Carbon monoxide poisoning cases were missing 5.8% of ethnicity data in 2012, 16.8% of race data in 2013, and 5.7% of ethnicity data in 2014.

Summary of Case Factors

Summary	Number	
Number of cases	224	
Case Classification	**Number**	**(Percent)**
Confirmed	188	(83.9)
Probable	36	(16.1)
Outcome	**Number**	**(Percent)**
Hospitalized	108	(48.2)
Died	8	(3.6)
Imported Status	**Number**	**(Percent)**
Exposed in Florida	224	(100.0)
Exposed in the U.S., not Florida	0	(0.0)
Exposed outside the U.S.	0	(0.0)
Exposed location unknown	0	(0.0)
Outbreak Status	**Number**	**(Percent)**
Sporadic	98	(43.8)
Outbreak-associated	126	(56.3)
Outbreak status unknown	0	(0.0)
Exposure Type	**Number**	**(Percent)**
Generator	49	(21.9)
Smoking	38	(17.0)
Automobile/RV	37	(16.5)
Fuel-burning appliances	24	(10.7)
Other	18	(8.0)
Portable-fuel burning grill/stove	18	(8.0)
Power tools (including mower)	9	(4.0)
Fire	8	(3.6)
Kerosene/gas space heater	1	(0.4)
Unknown	22	(9.8)



Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in the hospitalized count as well as the death count. Hospitalized status means that a person was hospitalized at the time of their illness, though the hospitalization may not necessarily have been due to the illness. Deaths include all people with the illness who died, though the death may not necessarily have been due to the illness. Imported status refers to where the exposure most likely occurred. Outbreak-associated indicates that two or more cases are epidemiologically linked.

Additional Information

CO poisoning cases have generally increased since reporting began in 2009 due to improved outbreak detection and reporting. CO poisoning cases were more common in men in 2016, which is consistent with national data. In 2016, cases in Florida peaked in January, October, and December, which is consistent with U.S. trends. The most common exposures causing CO poisoning vary by season. For the 64 cases that occurred in December and January, the most common exposures were generators (22 [34.4%]) and fuel-burning appliances (15 [23.4%]). Hurricane Matthew, a category 3 storm, moved parallel to the eastern coast of Florida in early October, causing widespread power outages in eastern parts of the state. In October, 18 (72.0%) of the 25 CO poisoning cases were due to generator use likely associated with power outages.

Many CO exposures affect more than one person, resulting in a high percentage of outbreak-associated cases. In 2016, there were 36 cluster investigations involving 126 outbreak-associated cases. Cluster size averaged three people and ranged from two to nine people. Of the 126 outbreak-associated cases, 41 (32.5%) were caused by exposure to generators, 22 (17.%) to automobile/RV, 22 (17.5%) to fuel-burning appliances, 17 (13.5%) to portable-fuel burning grill/stove, 2 (1.6%) to power tools, 17 (13.5%) to other sources, and 5 (4.0%) had unknown exposures.

Chlamydia (Excluding Neonatal Conjunctivitis)

Disease Facts

Cause: *Chlamydia trachomatis* bacteria

Type of illness: Frequently asymptomatic; abnormal discharge from vagina or penis, burning sensation when urinating; severe complications can include pelvic inflammatory disease, infertility, and ectopic pregnancies

Transmission: Sexually transmitted disease (STD) spread by anal, vaginal, or oral sex and sometimes from mother to child during pregnancy or delivery

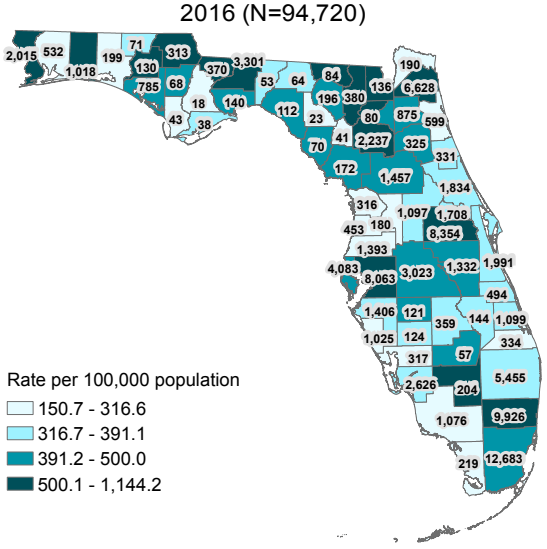
Reason for surveillance: Implement interventions immediately for every case, monitor incidence over time, estimate burden of illness, target prevention education programs, evaluate treatment and prevention programs

Comments: Chlamydia is the most commonly reported STD in Florida and the U.S; incidence rates have been slowly increasing in the past decade. Incidence is highest among 15- to 24-year-old women and non-Hispanic blacks. Because chlamydia is frequently asymptomatic, screening is necessary to identify most infections.

Summary of Case Demographics

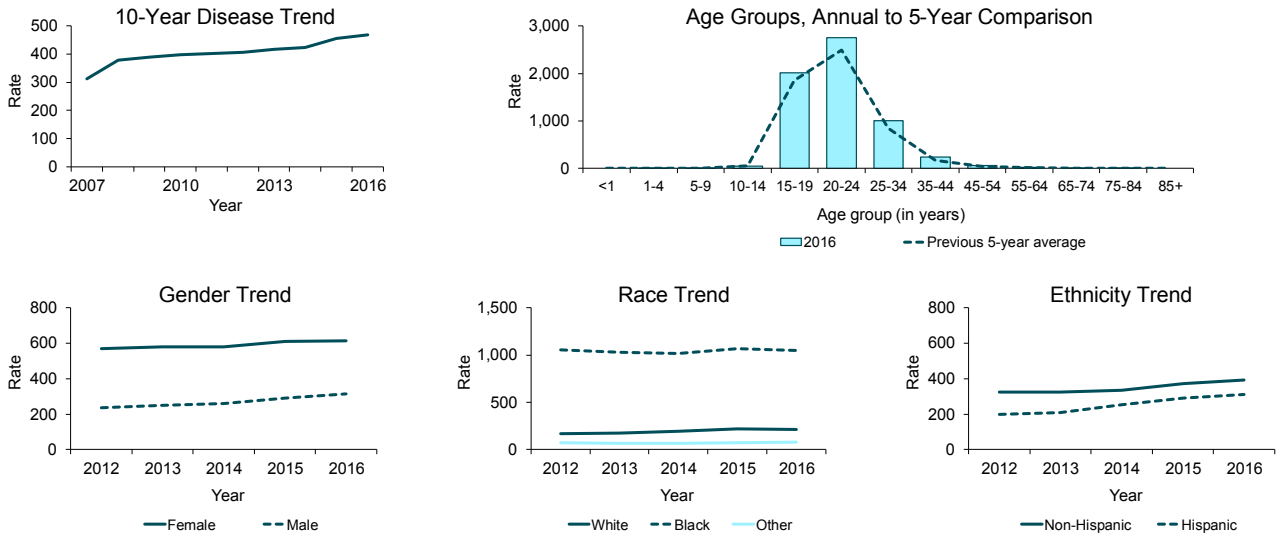
Summary			
Number of cases			94,720
Incidence rate (per 100,000 population)			468.2
Change from 5-year average incidence			+11.1%
Age (in Years)			
Mean			23
Median			22
Min-max			1 - 94
Gender	**Number**	**(Percent)**	**Rate**
Female	63,404	(67.0)	613.0
Male	31,264	(33.0)	316.2
Unknown gender	52		
Race	**Number**	**(Percent)**	**Rate**
White	33,906	(48.1)	215.7
Black	35,681	(50.7)	1,046.8
Other	837	(1.2)	76.1
Unknown race	24,296		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	59,768	(79.5)	391.5
Hispanic	15,403	(20.5)	310.4
Unknown ethnicity	19,549		

Reported Chlamydia Cases (Excluding Neonatal Conjunctivitis) and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2016 (N=94,720)



Note that rates based on <20 cases are not reliable and should be interpreted with caution.

Incidence Rates Per 100,000 Population of Reported Chlamydia Cases by Year, Age, Gender, Race, and Ethnicity, Florida



Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Chlamydia cases (excluding neonatal conjunctivitis) were missing 27.7% of ethnicity data in 2012, 23.8% of race data in 2012, 28.5% of ethnicity data in 2013, 25.1% of race data in 2013, 25.3% of ethnicity data in 2014, 23.3% of race data in 2014, 22.7% of ethnicity data in 2015, 21.7% of race data in 2015, 20.6% of ethnicity data in 2016, and 25.7% of race data in 2016.

Ciguatera Fish Poisoning

Disease Facts

Cause: Ciguatoxins produced by marine dinoflagellates associated with tropical/subtropical reef fish

Type of illness: Nausea, vomiting, and neurologic symptoms (e.g., tingling fingers or toes, temperature reversal); anecdotal evidence of long-term periodic recurring symptoms

Exposure: Foodborne; consuming fish contaminated with ciguatoxins

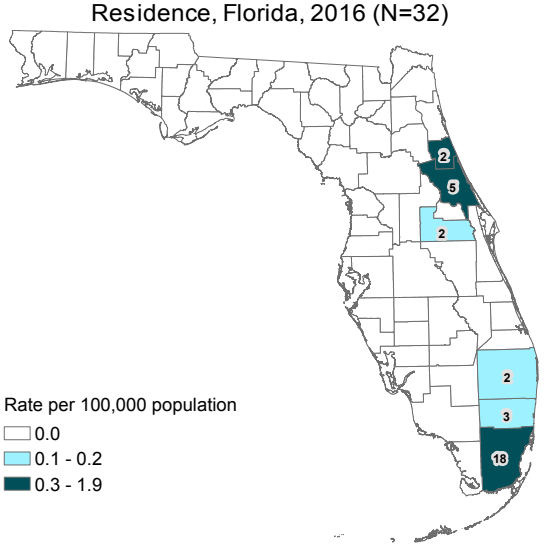
Reason for surveillance: Identify and control outbreaks, identify high-risk products (e.g., barracuda, grouper)

Comments: Outbreaks are usually associated with multiple people sharing an implicated fish. While case finding in Florida is thought to be more complete than in other states, under-reporting is still likely due to lack of recognition and reporting by medical practitioners. Marine dinoflagellates are typically found in tropical and subtropical waters and are eaten by herbivorous fish that are in turn eaten by larger carnivorous fish, causing the toxins to bioaccumulate in larger fish such as barracuda or grouper.

Summary of Case Demographics

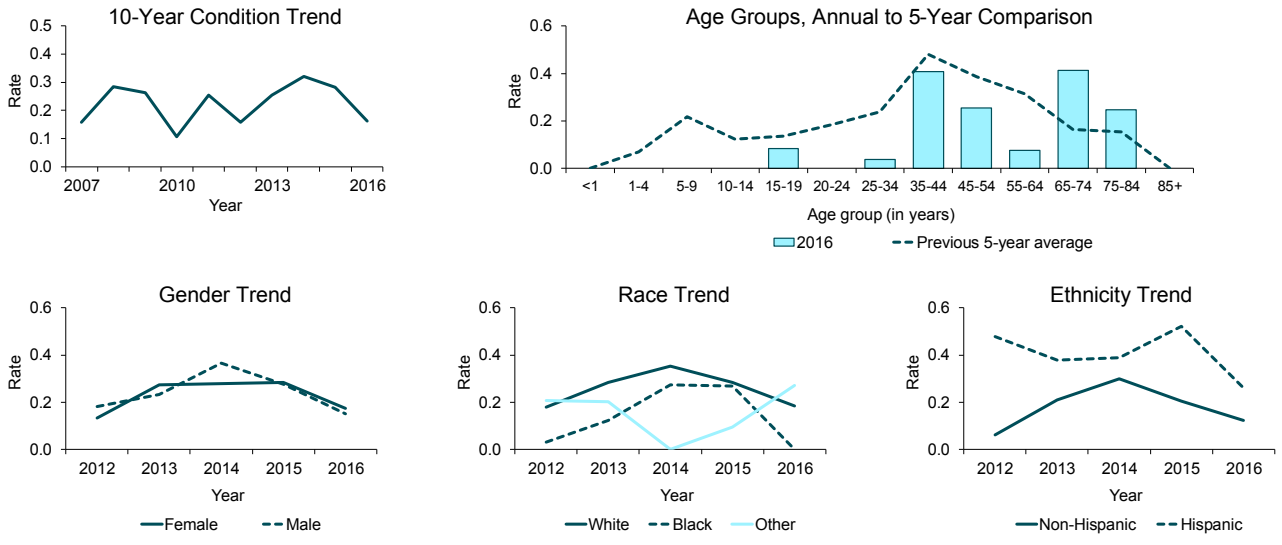
Summary			
Number of cases			33
Incidence rate (per 100,000 population)			0.2
Change from 5-year average incidence			-35.6%
Age (in Years)			
Mean			54
Median			52
Min-max			19 - 82
Gender	**Number**	**(Percent)**	**Rate**
Female	18	(54.5)	NA
Male	15	(45.5)	NA
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	29	(90.6)	0.2
Black	0	(0.0)	NA
Other	3	(9.4)	NA
Unknown race	1		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	19	(59.4)	NA
Hispanic	13	(40.6)	NA
Unknown ethnicity	1		

Reported Ciguatera Fish Poisoning Cases and Incidence Rates Per 100,000 Population (Restricted to Exposures Occurring in Florida) by County of Residence, Florida, 2016 (N=32)



Note that rates based on <20 cases are not reliable and should be interpreted with caution.

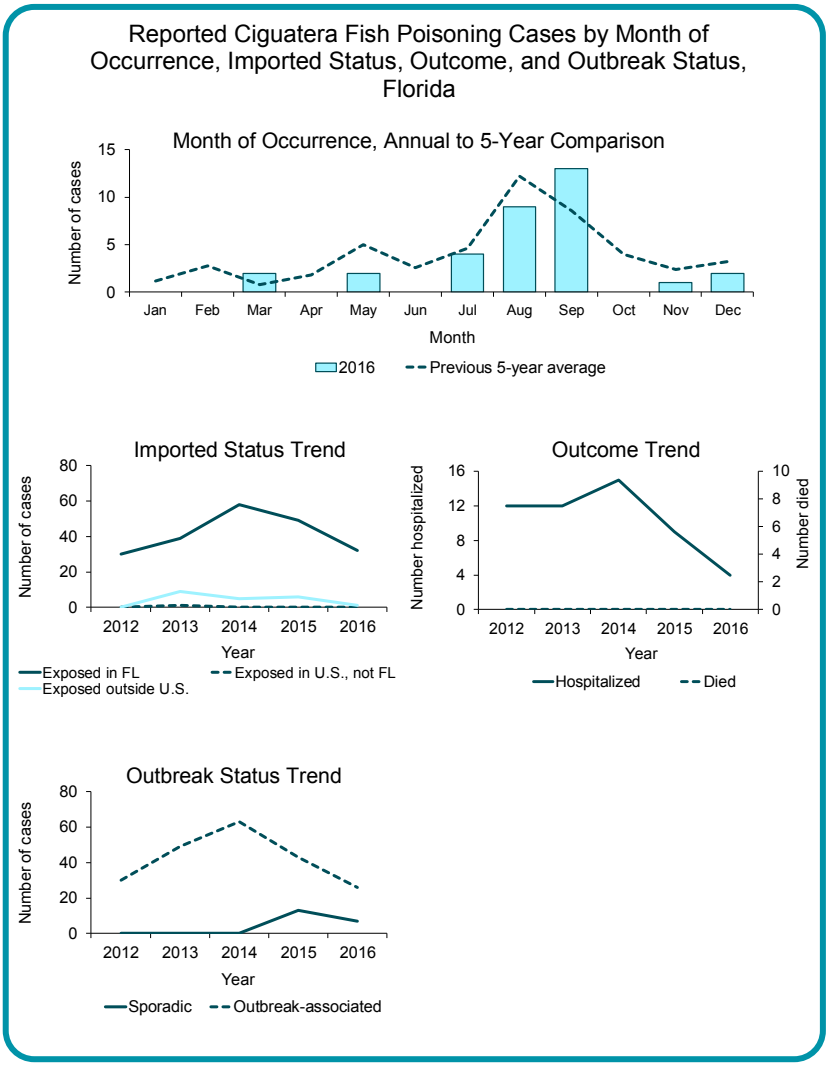
Incidence Rates Per 100,000 Population of Reported Ciguatera Fish Poisoning Cases by Year, Age, Gender, Race, and Ethnicity, Florida



Ciguatera Fish Poisoning

Summary of Case Factors

Summary	Number	
Number of cases	33	
Outcome	**Number**	**(Percent)**
Hospitalized	4	(12.1)
Died	0	(0.0)
Imported Status	**Number**	**(Percent)**
Exposed in Florida	32	(97.0)
Exposed in the U.S., not Florida	0	(0.0)
Exposed outside the U.S.	1	(3.0)
Exposed location unknown	0	(0.0)
Outbreak Status	**Number**	**(Percent)**
Sporadic	7	(21.2)
Outbreak-associated	26	(78.8)
Outbreak status unknown	0	(0.0)



Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in the hospitalized count as well as the death count. Hospitalized status means that a person was hospitalized at the time of their illness, though the hospitalization may not necessarily have been due to the illness. Deaths include all people with the illness who died, though the death may not necessarily have been due to the illness. Imported status refers to where the exposure most likely occurred. Outbreak- associated indicates that two or more cases are epidemiologically linked.

Additional Information

Single cases of ciguatera fish poisoning warrant a full investigation and are generally characterized as outbreaks for public health purposes. However, for surveillance purposes in this report, cases are classified outbreak-associated when at least two or more people have a common exposure. Sixteen investigations occurred in 2016 involving 34 cases (33 Florida residents one non-Florida resident).

Investigations involved an average of two cases with a range of one to six cases. Investigations identified eating barracuda (6), hogfish (3), snapper (2), amberjack (1), and mackerel (1) as the sources. The fish was unknown in one investigation. Two investigations identified consumption of multiple fish known to carry ciguatoxin, hogfish and mahi-mahi in one and amberjack (kingfish) and snapper in the other. Cases were more commonly associated with recreationally harvested fish. Nine (56%) investigations occurred in August and September, which is consistent with trends seen in previous years.

Cryptosporidiosis

Disease Facts

Cause: *Cryptosporidium* parasites

Type of illness: Gastroenteritis (diarrhea, vomiting)

Transmission: Fecal-oral; including person-to-person, animal-to-person, waterborne, and foodborne

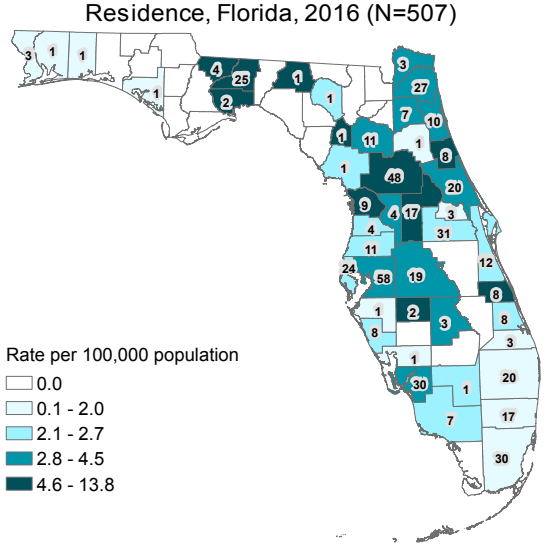
Reason for surveillance: Identify and control outbreaks, identify and mitigate common sources (e.g., contaminated food/water source, ill food handler), monitor incidence over time, estimate burden of illness

Comments: Diagnostic capabilities have improved over the years, making it easier to identify illnesses caused by this parasite. Cryptosporidiosis in Florida and the U.S. has a seasonal and cyclic trend. Cases increased starting in 2006 and declined in 2008. Following a sharp increase in cases in 2014 in all genders, races, and ethnicities, cases decreased in 2015, and continued decreasing in 2016. Incidence is consistently highest in 1- to 4-year-olds.

Summary of Case Demographics

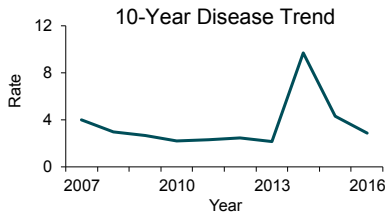
Summary			
Number of cases			582
Incidence rate (per 100,000 population)			2.9
Change from 5-year average incidence			-31.2%
Age (in Years)			
Mean			37
Median			35
Min-max			0 - 97
Gender	**Number**	**(Percent)**	**Rate**
Female	283	(48.6)	2.7
Male	299	(51.4)	3.0
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	430	(77.3)	2.7
Black	95	(17.1)	2.8
Other	31	(5.6)	2.8
Unknown race	26		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	454	(82.7)	3.0
Hispanic	95	(17.3)	1.9
Unknown ethnicity	33		

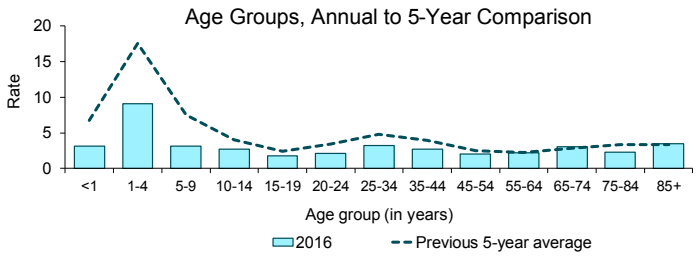
Reported Cryptosporidiosis Cases and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2016 (N=507)

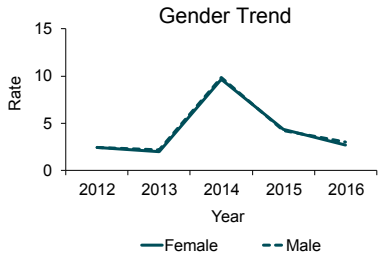


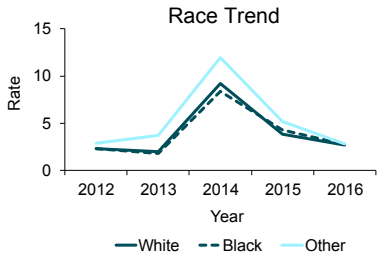
Note that rates based on <20 cases are not reliable and should be interpreted with caution.

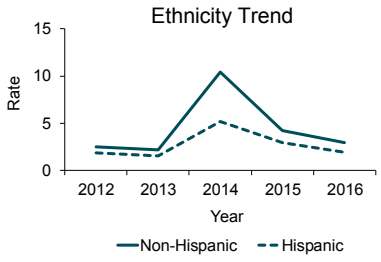
Incidence Rates Per 100,000 Population of Reported Cryptosporidiosis Cases by Year, Age, Gender, Race, and Ethnicity, Florida









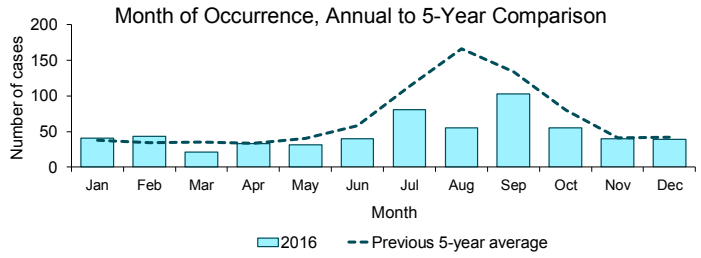


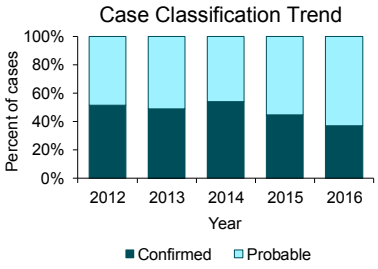
Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Cryptosporidiosis cases were missing 5.8% of ethnicity data in 2014, 5.1% of race data in 2014, 8.2% of ethnicity data in 2015, 6.5% of race data in 2015, and 5.7% of ethnicity data in 2016.

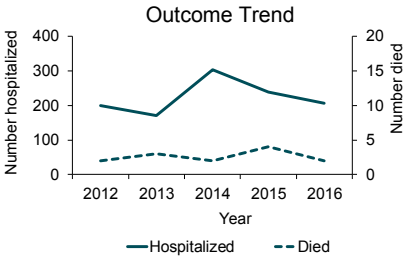
Summary of Case Factors

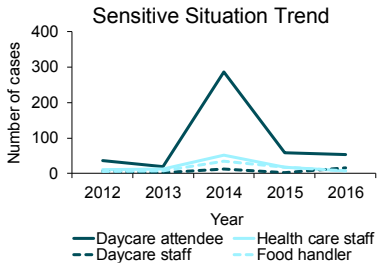
Summary	Number	
Number of cases	582	
Case Classification	**Number**	**(Percent)**
Confirmed	217	(37.3)
Probable	365	(62.7)
Outcome	**Number**	**(Percent)**
Hospitalized	206	(35.4)
Died	2	(0.3)
Sensitive Situation	**Number**	**(Percent)**
Daycare attendee	54	(9.3)
Daycare staff	16	(2.7)
Health care staff	8	(1.4)
Food handler	8	(1.4)
Imported Status	**Number**	**(Percent)**
Acquired in Florida	507	(87.1)
Acquired in the U.S., not Florida	17	(2.9)
Acquired outside the U.S.	27	(4.6)
Acquired location unknown	31	(5.3)
Outbreak Status	**Number**	**(Percent)**
Sporadic	455	(78.2)
Outbreak-associated	113	(19.4)
Outbreak status unknown	14	(2.4)

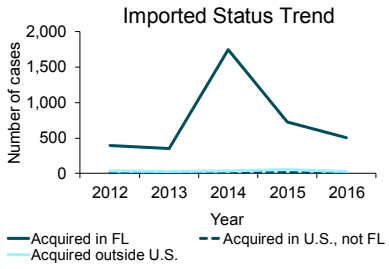
Reported Cryptosporidiosis Cases by Month of Occurrence, Case Classification, Outcome, Sensitive Situation, Imported Status, and Outbreak Status, Florida

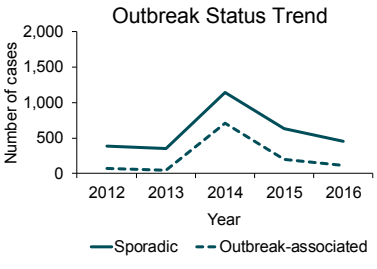












Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in the hospitalized count as well as the death count. Hospitalized status means that a person was hospitalized at the time of their illness, though the hospitalization may not necessarily have been due to the illness. Deaths include all people with the illness who died, though the death may not necessarily have been due to the illness. Sensitive situation categories are not mutually exclusive, and most cases do not fall into any of these categories. Imported status refers to where the infection was most likely acquired. Outbreak- associated indicates that two or more cases are epidemiologically linked.

Additional Information

In 2016, one foodborne cryptosporidiosis outbreak was investigated. This outbreak included three cases and was associated with consumption of raw milk. There were no waterborne outbreaks identified in 2016, which is a decrease from 2015. Additional clusters of illness were associated with person-to-person transmission and daycares. Cryptosporidiosis incidence peaked in 2014 when there were six waterborne outbreaks investigated, including 134 cases associated with swimming pools, a recreational water park, and kiddie pools. Additional community-wide outbreaks in 2014 were associated with person-to-person transmission and daycares.

Cyclosporiasis

Disease Facts

Cause: *Cyclospora* parasites

Type of illness: Gastroenteritis (diarrhea, vomiting)

Transmission: Fecal-oral; foodborne and less commonly waterborne

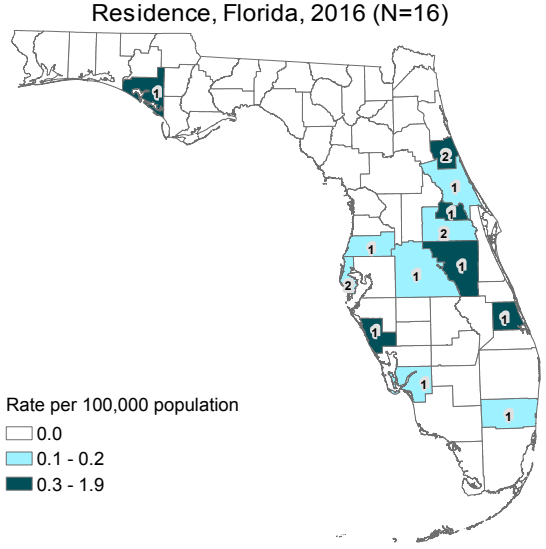
Reason for surveillance: Identify and control outbreaks, identify and mitigate common sources (e.g., contaminated food product), monitor incidence over time, estimate burden of illness

Comments: Incidence is strongly seasonal, peaking annually in June and July. Large multistate outbreaks of cyclosporiasis were identified in 2013, 2014, and 2015. In the U.S., foodborne cyclosporiasis outbreaks have been linked to various types of imported fresh produce, including raspberries, basil, cilantro, snow peas, and mesclun lettuce.

Summary of Case Demographics

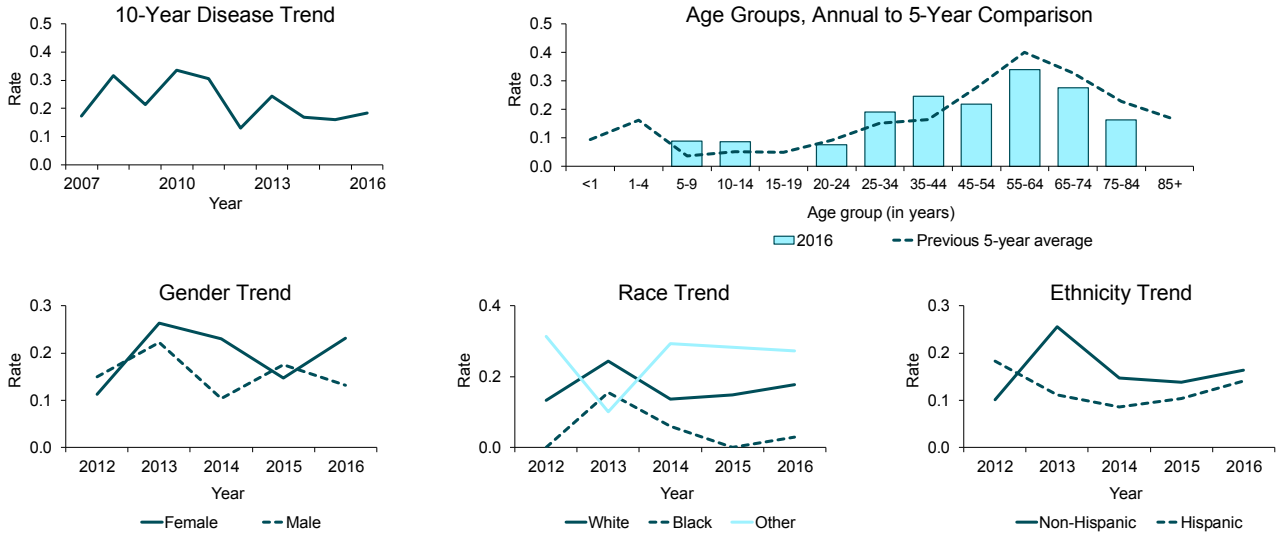
Summary			
Number of cases			37
Incidence rate (per 100,000 population)			0.2
Change from 5-year average incidence			-9.4%
Age (in Years)			
Mean			49
Median			51
Min-max			5 - 79
Gender	**Number**	**(Percent)**	**Rate**
Female	24	(64.9)	0.2
Male	13	(35.1)	NA
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	28	(87.5)	0.2
Black	1	(3.1)	NA
Other	3	(9.4)	NA
Unknown race	5		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	25	(78.1)	0.2
Hispanic	7	(21.9)	NA
Unknown ethnicity	5		

Reported Cyclosporiasis Cases and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2016 (N=16)



Note that rates based on <20 cases are not reliable and should be interpreted with caution.

Incidence Rates Per 100,000 Population of Reported Cyclosporiasis Cases by Year, Age, Gender, Race, and Ethnicity, Florida

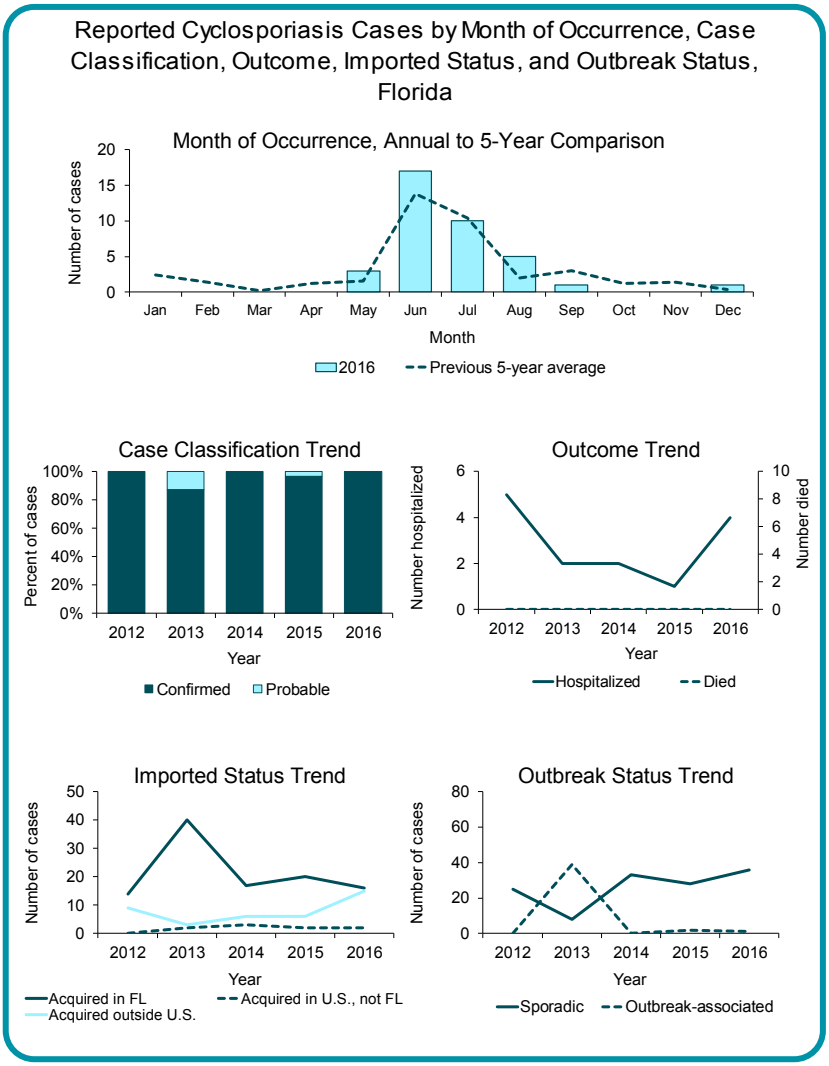


Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Cyclosporiasis cases were missing 8.0% of ethnicity data in 2012, 8.0% of race data in 2012, 8.5% of ethnicity data in 2013, 8.5% of race data in 2013, 21.2% of ethnicity data in 2014, 21.2% of race data in 2014, 18.8% of ethnicity data in 2015, 18.8% of race data in 2015, 13.5% of ethnicity data in 2016, and 13.5% of race data in 2016.

Cyclosporiasis

Summary of Case Factors

Summary	Number	
Number of cases	37	
Case Classification	**Number**	**(Percent)**
Confirmed	37	(100.0)
Probable	0	(0.0)
Outcome	**Number**	**(Percent)**
Hospitalized	4	(10.8)
Died	0	(0.0)
Imported Status	**Number**	**(Percent)**
Acquired in Florida	16	(43.2)
Acquired in the U.S., not Florida	2	(5.4)
Acquired outside the U.S.	15	(40.5)
Acquired location unknown	4	(10.8)
Outbreak Status	**Number**	**(Percent)**
Sporadic	36	(97.3)
Outbreak-associated	1	(2.7)
Outbreak status unknown	0	(0.0)



Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in the hospitalized count as well as the death count. Hospitalized status means that a person was hospitalized at the time of their illness, though the hospitalization may not necessarily have been due to the illness. Deaths include all people with the illness who died, though the death may not necessarily have been due to the illness. Imported status refers to where the infection was most likely acquired. Outbreak- associated indicates that two or more cases are epidemiologically linked.

Additional Information

Cyclosporiasis has a strong seasonal trend peaking in the summer months. In 2016, 384 laboratory-confirmed cases of cyclosporiasis were reported nationally as of September 16, 2016 (the most recent date for which national data were available). Of the 384 cases, 134 cases from 25 different states had illness onset on or after May 1. Sixteen cases were acquired in Florida. One Florida case was reported as outbreak-associated. This person traveled to Mexico with other family members who experienced similar symptoms, however no laboratory testing was available to confirm whether the family members' illnesses were caused by *Cyclospora* and no common vehicle was identified as the source of their illness.

Dengue Fever

Disease Facts

Cause: Dengue viruses (DENV-1, DENV-2, DENV-3, DENV-4)

Type of illness: Acute febrile illness with headache, joint and muscle pain, rash, and eye pain; dengue hemorrhagic fever or dengue shock syndrome symptoms include severe abdominal pain, vomiting, and mucosal bleeding

Transmission: Bite of infective mosquito, rarely by blood transfusion or organ transplant

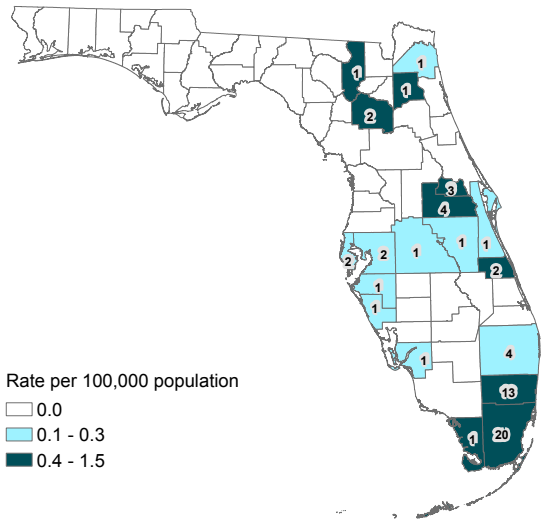
Reason for surveillance: Identify individual cases and implement control measures to prevent introduction and active transmission, monitor incidence over time, estimate burden of illness

Comments: An outbreak of locally acquired dengue fever occurred in Monroe County in 2009 and 2010 and in Martin County in 2013. At least one locally acquired case has been identified every year since 2009, primarily in south Florida.

Summary of Case Demographics

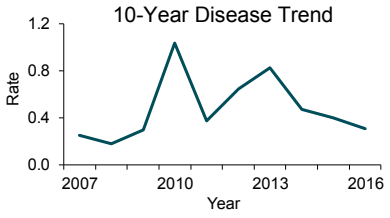
Summary			
Number of cases			62
Incidence rate (per 100,000 population)			0.3
Change from 5-year average incidence			-43.6%
Age (in Years)			
Mean			43
Median			43
Min-max			2 - 81
Gender	**Number**	**(Percent)**	**Rate**
Female	30	(48.4)	0.3
Male	32	(51.6)	0.3
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	38	(65.5)	0.2
Black	8	(13.8)	NA
Other	12	(20.7)	NA
Unknown race	4		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	27	(49.1)	0.2
Hispanic	28	(50.9)	0.6
Unknown ethnicity	7		

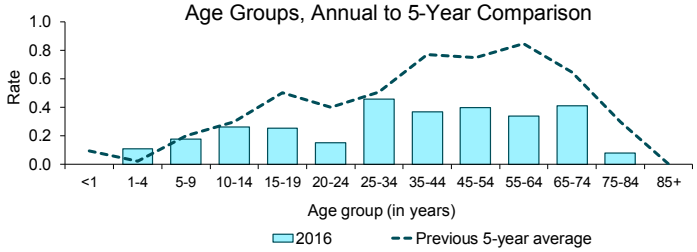
Reported Dengue Fever Cases and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2016 (N=62)

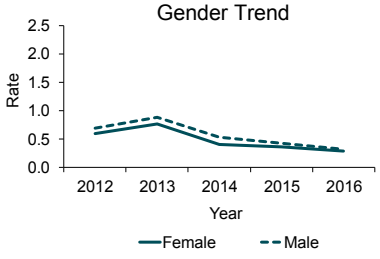


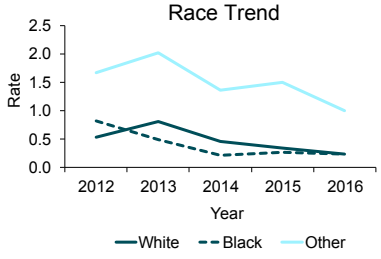
Note that rates based on <20 cases are not reliable and should be interpreted with caution.

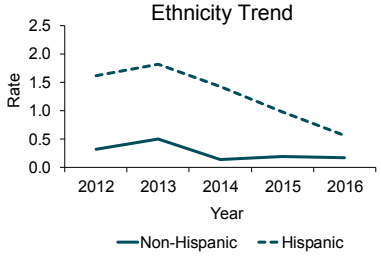
Incidence Rates Per 100,000 Population of Reported Dengue Fever Cases by Year, Age, Gender, Race, and Ethnicity, Florida











Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Dengue fever cases were missing 11.3% of ethnicity data in 2016 and 8.1% of race data in 2016.

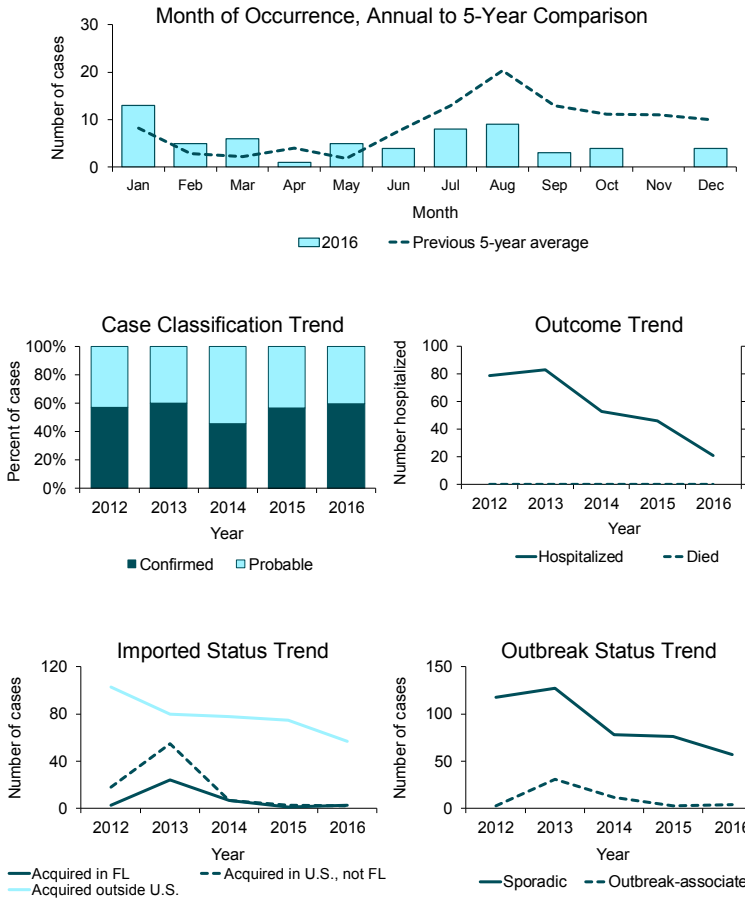
Note that the majority of dengue fever cases are acquired outside of Florida.

Summary of Case Factors

Summary	Number	
Number of cases	62	
Case Classification	**Number**	**(Percent)**
Confirmed	37	(59.7)
Probable	25	(40.3)
Outcome	**Number**	**(Percent)**
Hospitalized	21	(33.9)
Died	0	(0.0)
Imported Status	**Number**	**(Percent)**
Acquired in Florida	3	(4.8)
Acquired in the U.S., not Florida	2	(3.2)
Acquired outside the U.S.	57	(91.9)
Acquired location unknown	0	(0.0)
Outbreak Status	**Number**	**(Percent)**
Sporadic	57	(91.9)
Outbreak-associated	4	(6.5)
Outbreak status unknown	1	(1.6)
Region Where Infection Acquired	**Number**	**(Percent)**
Central America/Caribbean	38	(64.4)
South America	10	(16.9)
Asia	8	(13.6)
Puerto Rico (U.S.)	2	(3.4)
Africa	1	(1.7)
Reason for Travel*	**Number**	**(Percent)**
Visiting friends/relatives	18	(30.5)
Tourism	8	(13.6)
Missionary or dependent	2	(3.4)
Other	1	(1.7)
Unknown	30	(1.7)

*Data collection for travel reason was not implemented until late in 2016.

Reported Dengue Fever Cases by Month of Occurrence, Case Classification, Outcome, Imported Status, and Outbreak Status, Florida



Case counts and rates from this report may differ from those found in other vector-borne disease reports as different criteria are used to assemble the data. Other reports may use illness onset date instead of report date, or county of exposure instead of county of residence.

Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in the hospitalized count as well as the death count. Hospitalized status means that a person was hospitalized at the time of their illness, though the hospitalization may not necessarily have been due to the illness. Deaths include all people with the illness who died, though the death may not necessarily have been due to the illness. Imported status refers to where the infection was most likely acquired. Outbreak- associated indicates that two or more cases are epidemiologically linked.

Additional Information

Some dengue fever or Zika virus disease cases may have been misclassified due to potential cross-reactivity on antibody testing. Infected residents and non-residents who are infectious and bitten by mosquitoes while in Florida could pose a potential risk for introduction of dengue fever; however, cases in non-Florida residents are not included in counts in this report. **Locally acquired cases in Florida residents:** A single DENV-2 introduction in Miami-Dade County resulted in three locally acquired cases in Florida residents. Another DENV-2 infection acquired in Miami-Dade County was identified in 2016 but was reported in 2017 and will be included in next year's report. **Locally acquired case in non-Florida resident:** A non-Florida resident acquired DENV-4 infection in Monroe County while vacationing in Florida, which was the first locally acquired case reported there since the dengue outbreak in Key West in 2009 and 2010. No ongoing transmission was identified related to these local introductions. The first case identified in the Miami-Dade cluster and other local introductions in Miami-Dade and Monroe counties were initially reported as suspected local Zika virus infections until additional testing determined they were exposed to dengue virus. **Imported cases in non-Florida residents:** Five dengue fever cases were identified in non-Florida residents while traveling in Florida in 2016. One case initially reported with unknown outbreak status was later determined to be sporadic after the close of the 2016 morbidity dataset.

Ehrlichiosis

Disease Facts

Cause: *Ehrlichia chaffeensis*, *Ehrlichia ewingii*, *Ehrlichia muris*-like bacteria

Type of illness: Common symptoms include fever, headache, fatigue, and muscle aches

Transmission: Tick-borne; bite of infective tick

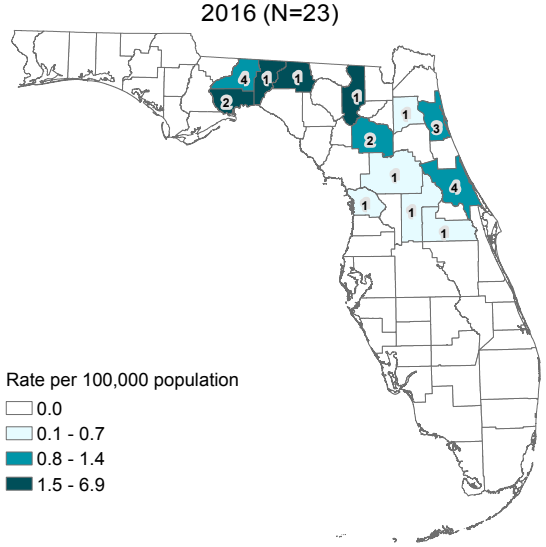
Reason for surveillance: Monitor incidence over time, estimate burden of illness, understand epidemiology of each species, target areas of high incidence for prevention education

Comments: Ehrlichiosis is the most common rickettsia infection acquired in Florida. Incidence was above average in 2016. Factors that may have contributed to this increase include weather patterns, host and animal reservoir population dynamics, and increased health care provider awareness. Most cases were acquired in Florida, particularly in the north central and northeast part of the state. Cases are most common in men and adults >50 years old. Immunosuppression and delays in treatment can result in severe outcome.

Summary of Case Demographics

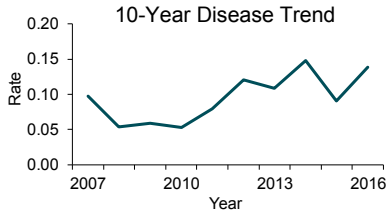
Summary			
Number of cases			28
Incidence rate (per 100,000 population)			0.1
Change from 5-year average incidence			+26.6%
Age (in Years)			
Mean			54
Median			58
Min-max			18 - 80
Gender	**Number**	**(Percent)**	**Rate**
Female	10	(35.7)	NA
Male	18	(64.3)	NA
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	25	(96.2)	0.2
Black	1	(3.8)	NA
Other	0	(0.0)	NA
Unknown race	2		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	26	(100.0)	0.2
Hispanic	0	(0.0)	NA
Unknown ethnicity	2		

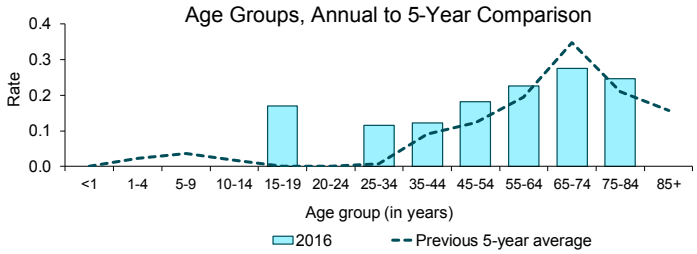
Reported Ehrlichiosis Cases and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2016 (N=23)

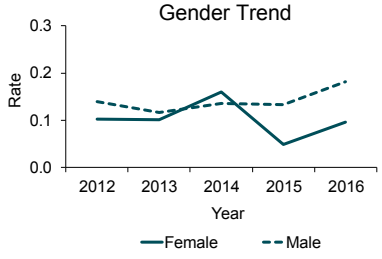


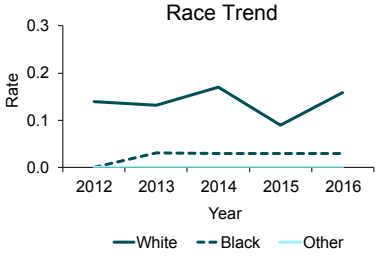
Note that rates based on <20 cases are not reliable and should be interpreted with caution.

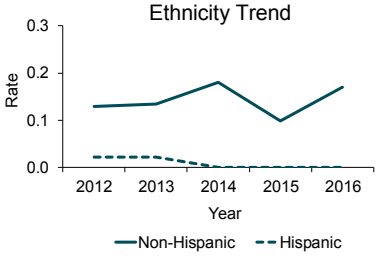
Incidence Rates Per 100,000 Population of Reported Ehrlichiosis Cases by Year, Age, Gender, Race, and Ethnicity, Florida









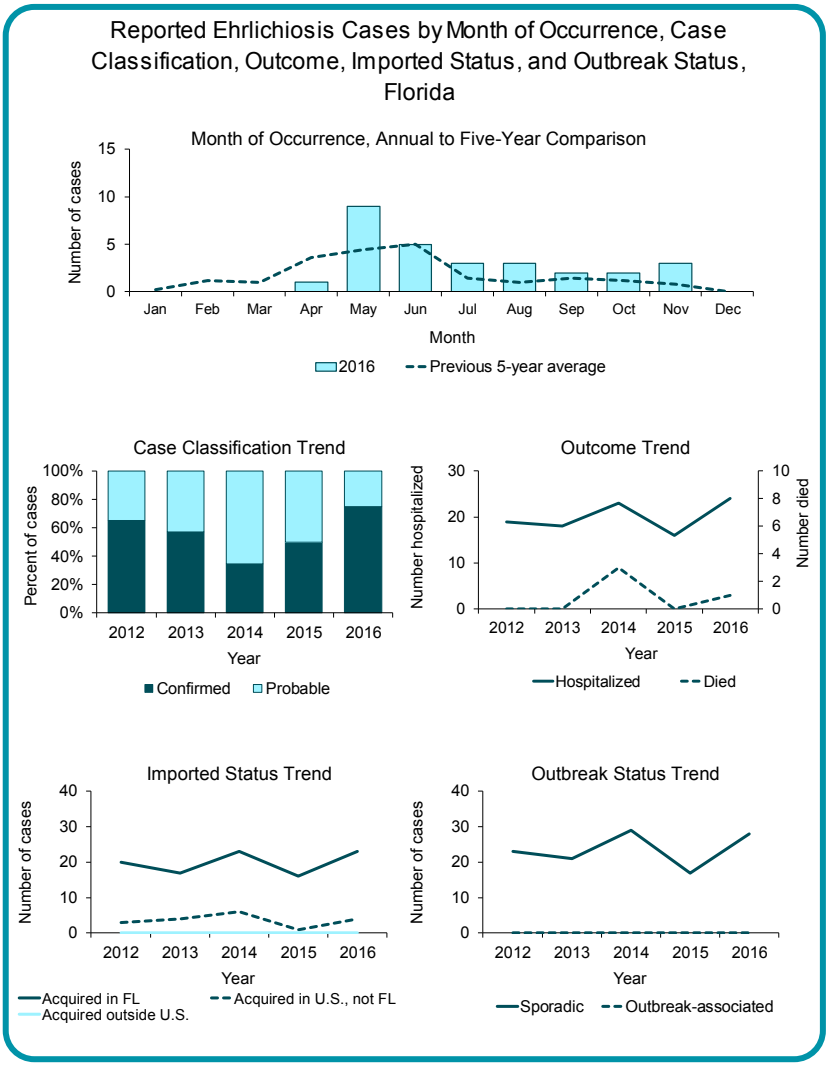


Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Ehrlichiosis cases were missing 13.0% of ethnicity data in 2012, 8.7% of race data in 2012, 6.9% of ethnicity data in 2014, 6.9% of race data in 2014, 16.7% of ethnicity data in 2015, 16.7% of race data in 2015, 7.1% of ethnicity data in 2016, and 7.1% of race data in 2016.

Ehrlichiosis

Summary of Case Factors

Summary	Number	
Number of cases	28	
Case Classification	**Number**	**(Percent)**
Confirmed	21	(75.0)
Probable	7	(25.0)
Outcome	**Number**	**(Percent)**
Hospitalized	24	(85.7)
Died	1	(3.6)
Imported Status	**Number**	**(Percent)**
Acquired in Florida	23	(82.1)
Acquired in the U.S., not Florida	4	(14.3)
Acquired outside the U.S.	0	(0.0)
Acquired location unknown	1	(3.6)
Outbreak Status	**Number**	**(Percent)**
Sporadic	28	(100.0)
Outbreak-associated	0	(0.0)
Outbreak status unknown	0	(0.0)



Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in the hospitalized count as well as the death count. Hospitalized status means that a person was hospitalized at the time of their illness, though the hospitalization may not necessarily have been due to the illness. Deaths include all people with the illness who died, though the death may not necessarily have been due to the illness. Imported status refers to where the infection was most likely acquired. Outbreak- associated indicates that two or more cases are epidemiologically linked.

Additional Information

Ehrlichiosis is a broad term used to describe a group of bacterial diseases. 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.

Case characteristics in 2016 were consistent with national patterns, with most cases occurring in adults >50 years old and men. The high rate of hospitalization (85.7%) highlights the seriousness of this disease. One death occurred involving a 78-year-old woman who was taking immunosuppressive medication; there was also some delay in initiation of doxycycline treatment.

Giardiasis, Acute

Disease Facts

Cause: *Giardia* parasites

Type of illness: Gastroenteritis (diarrhea, vomiting)

Transmission: Fecal-oral; including person-to-person, animal-to-person, waterborne, and foodborne

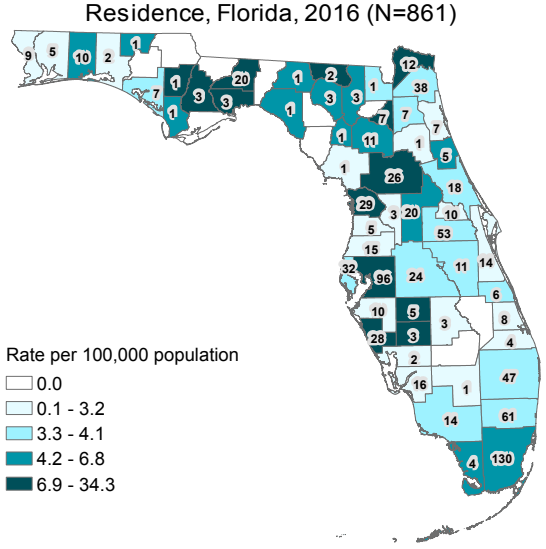
Reason for surveillance: Identify and control outbreaks, identify and mitigate common sources (e.g., contaminated food/water source, ill food handler), monitor incidence over time, estimate burden of illness

Comments: From August 2008 to January 2011, laboratory-confirmed cases no longer had to be symptomatic to meet the confirmed case definition, resulting in an increase in reported cases in 2009 and 2010. Incidence is highest in children 1 to 4 years old and is slightly higher in males. Incidence is dispersed geographically throughout the state. The percentage of cases reported in people in sensitive situations (i.e., food handlers, daycare staff and attendees, and health care workers) has decreased since 2012.

Summary of Case Demographics

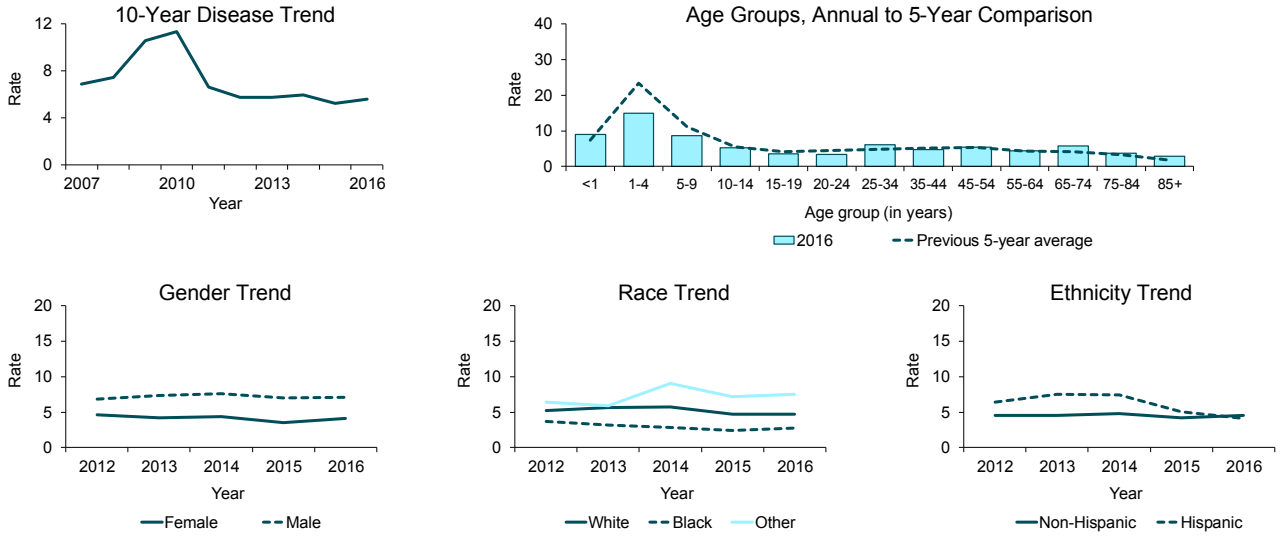
Summary			
Number of cases			1,128
Incidence rate (per 100,000 population)			5.6
Change from 5-year average incidence			-4.8%
Age (in Years)			
Mean			36
Median			35
Min-max			0 - 93
Gender	**Number**	**(Percent)**	**Rate**
Female	422	(37.4)	4.1
Male	706	(62.6)	7.1
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	740	(80.8)	4.7
Black	93	(10.2)	2.7
Other	83	(9.1)	7.5
Unknown race	212		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	693	(77.3)	4.5
Hispanic	204	(22.7)	4.1
Unknown ethnicity	231		

Reported Acute Giardiasis Cases and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2016 (N=861)



Note that rates based on <20 cases are not reliable and should be interpreted with caution.

Incidence Rates Per 100,000 Population of Reported Acute Giardiasis Cases by Year, Age, Gender, Race, and Ethnicity, Florida

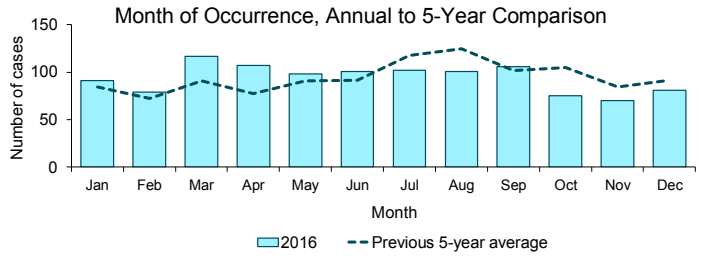


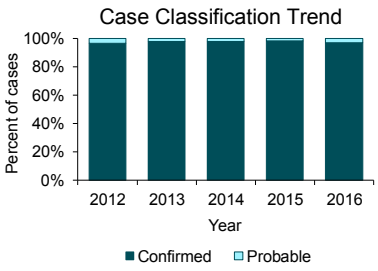
Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Acute giardiasis cases were missing 13.3% of ethnicity data in 2012, 12.4% of race data in 2012, 9.0% of ethnicity data in 2013, 9.3% of race data in 2013, 8.8% of ethnicity data in 2014, 8.8% of race data in 2014, 15.8% of ethnicity data in 2015, 14.2% of race data in 2015, 20.5% of ethnicity data in 2016, and 18.8% of race data in 2016.

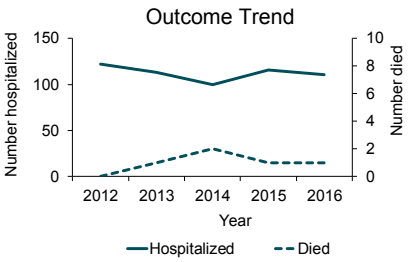
Summary of Case Factors

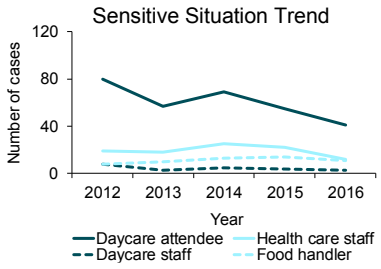
Summary	Number	
Number of cases	1,128	
Case Classification	**Number**	**(Percent)**
Confirmed	1,097	(97.3)
Probable	31	(2.7)
Outcome	**Number**	**(Percent)**
Hospitalized	111	(9.8)
Died	1	(0.1)
Sensitive Situation	**Number**	**(Percent)**
Daycare attendee	41	(3.6)
Daycare staff	3	(0.3)
Health care staff	12	(1.1)
Food handler	11	(1.0)
Imported Status	**Number**	**(Percent)**
Acquired in Florida	861	(76.3)
Acquired in the U.S., not Florida	56	(5.0)
Acquired outside the U.S.	126	(11.2)
Acquired location unknown	85	(7.5)
Outbreak Status	**Number**	**(Percent)**
Sporadic	990	(87.8)
Outbreak-associated	99	(8.8)
Outbreak status unknown	39	(3.5)

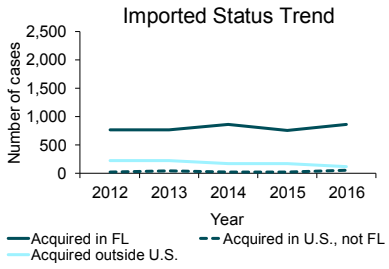
Reported Acute Giardiasis Cases by Month of Occurrence, Case Classification, Outcome, Sensitive Situation, Imported Status, and Outbreak Status, Florida

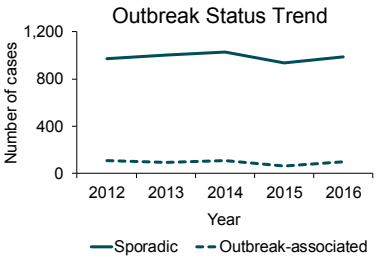












Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in the hospitalized count as well as the death count. Hospitalized status means that a person was hospitalized at the time of their illness, though the hospitalization may not necessarily have been due to the illness. Deaths include all people with the illness who died, though the death may not necessarily have been due to the illness. Sensitive situation categories are not mutually exclusive, and most cases do not fall into any of these categories. Imported status refers to where the infection was most likely acquired. Outbreak- associated indicates that two or more cases are epidemiologically linked.

Gonorrhea (Excluding Neonatal Conjunctivitis)

Disease Facts

Cause: *Neisseria gonorrhoeae* bacteria

Type of illness: Frequently asymptomatic; sometimes abnormal discharge from vagina or penis or burning sensation when urinating

Transmission: Sexually transmitted disease (STD) spread by anal, vaginal, or oral sex and sometimes from mother to child during pregnancy or delivery

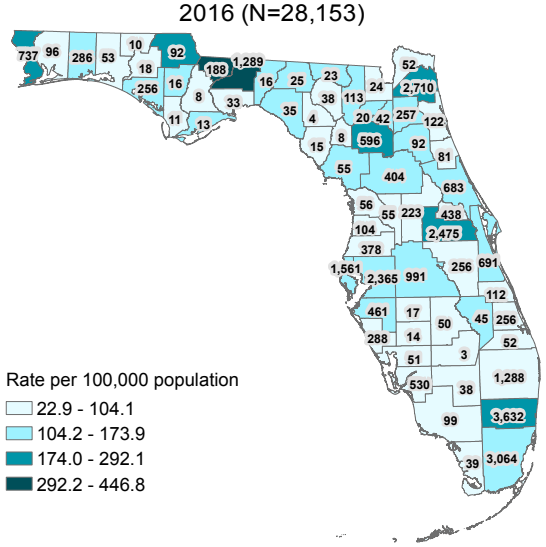
Reason for surveillance: Implement effective interventions immediately for every case, monitor incidence over time, estimate burden of illness, evaluate treatment and prevention programs

Comments: Incidence decreased from 2007 to 2012, but has subsequently increased. Incidence in 2016 was the highest it has been since 2000. Rates are highest among men, blacks, and 20- to 24-year-olds; however the relative rate increase from 2012 to 2016 was highest in whites, Hispanics, and 35- to 44-year-olds.

Summary of Case Demographics

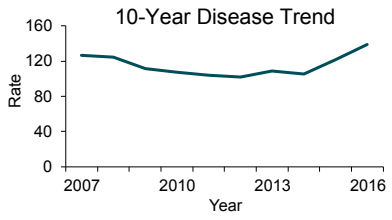
Summary			
Number of cases			28,153
Incidence rate (per 100,000 population)			139.2
Change from 5-year average incidence			+28.4%
Age (in Years)			
Mean			28
Median			25
Min-max			2 - 81
Gender	**Number**	**(Percent)**	**Rate**
Female	11,484	(40.8)	111.0
Male	16,656	(59.2)	168.5
Unknown gender	13		
Race	**Number**	**(Percent)**	**Rate**
White	9,008	(38.1)	57.3
Black	14,486	(61.2)	425.0
Other	168	(0.7)	15.3
Unknown race	4,491		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	20,640	(86.3)	135.2
Hispanic	3,288	(13.7)	66.3
Unknown ethnicity	4,225		

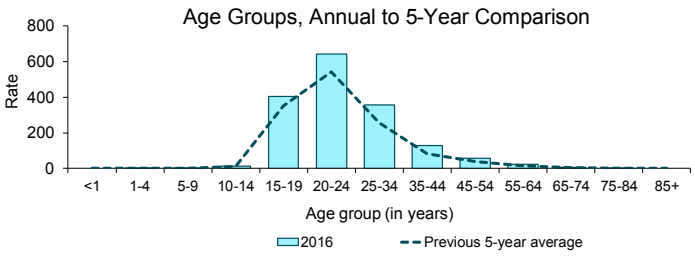
Reported Gonorrhea Cases (Excluding Neonatal Conjunctivitis) and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2016 (N=28,153)

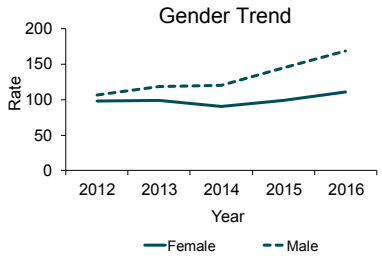


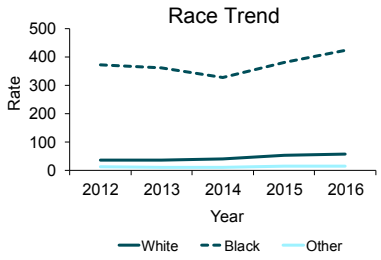
Note that rates based on <20 cases are not reliable and should be interpreted with caution.

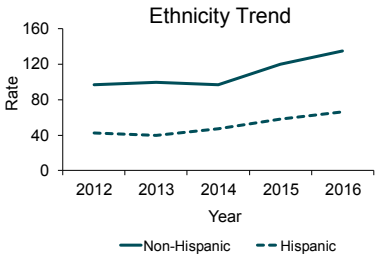
Incidence Rates Per 100,000 Population of Reported Gonorrhea Cases by Year, Age, Gender, Race, and Ethnicity, Florida











Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Gonorrhea cases (excluding neonatal conjunctivitis) were missing 17.3% of ethnicity data in 2012, 10.2% of race data in 2012, 20.9% of ethnicity data in 2013, 17.0% of race data in 2013, 18.9% of ethnicity data in 2014, 16.9% of race data in 2014, 13.2% of ethnicity data in 2015, 11.9% of race data in 2015, 15.0% of ethnicity data in 2016, and 16.0% of race data in 2016.

Haemophilus influenzae Invasive Disease in Children <5 Years Old

Disease Facts

Cause: *Haemophilus influenzae* bacteria

Type of illness: Can present as pneumonia, bacteremia, septicemia, meningitis, epiglottitis, septic arthritis, cellulitis, or purulent pericarditis; less frequently endocarditis and osteomyelitis

Transmission: Person-to-person; inhalation of infective respiratory tract droplets or direct contact with infective respiratory tract secretions

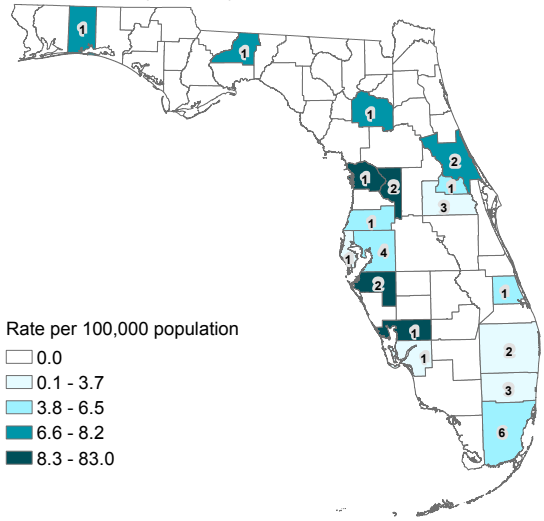
Reason for surveillance: Identify and control outbreaks, monitor incidence over time, monitor effectiveness of immunization programs and vaccines

Comments: *H. influenzae* serotype b (Hib) is a vaccine-preventable disease. Meningitis and septicemia due to Hib in children <5 years old have almost been eliminated since the introduction of effective Hib conjugate vaccines. No Hib cases in children <5 years old have been reported since 2014, when there were four cases.

Summary of Case Demographics

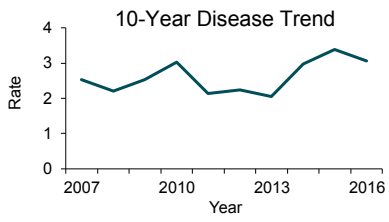
Summary			
Number of cases			34
Incidence rate (per 100,000 population)			3.1
Change from 5-year average incidence			+19.6%
Age (in Years)			
Mean			1
Median			1
Min-max			0 - 4
Gender	**Number**	**(Percent)**	**Rate**
Female	13	(38.2)	NA
Male	21	(61.8)	3.7
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	18	(52.9)	NA
Black	15	(44.1)	NA
Other	1	(2.9)	NA
Unknown race	0		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	27	(79.4)	3.5
Hispanic	7	(20.6)	NA
Unknown ethnicity	0		

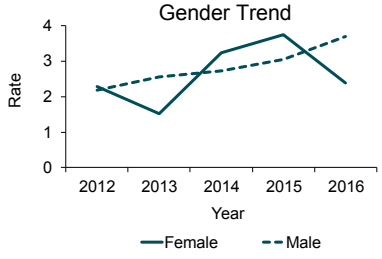
Reported *H. influenzae* Invasive Disease Cases in Children <5 Years Old and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2016 (N=34)

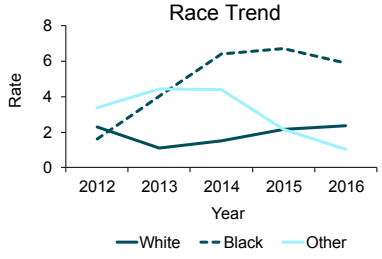


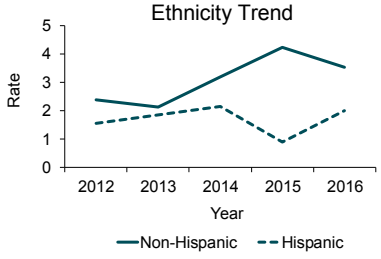
Note that rates based on <20 cases are not reliable and should be interpreted with caution.

Incidence Rates Per 100,000 Population of Reported *H. influenzae* Invasive Disease Cases in Children <5 Years Old by Year, Age, Gender, Race, and Ethnicity, Florida









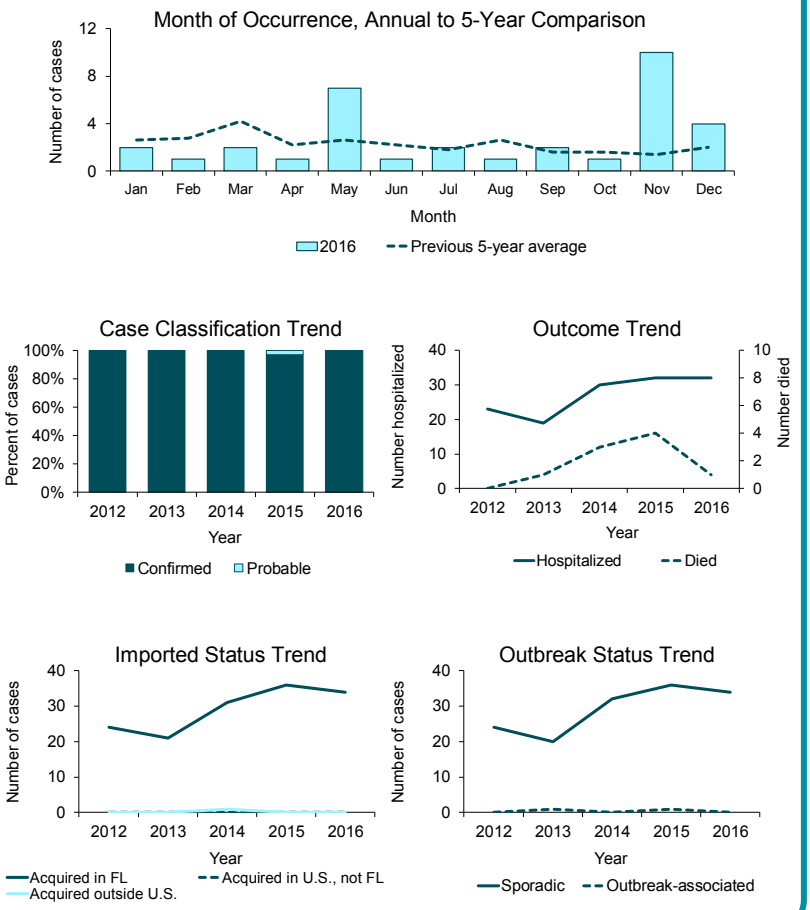
Note that trend graphs should be interpreted with caution when more than 5% of data are missing. *H. influenzae invasive* disease cases in children less than 5 years old were missing 5.4% of ethnicity data in 2015 and 5.4% of race data in 2015.

Haemophilus influenzae Invasive Disease in Children <5 Years Old

Summary of Case Factors

Summary	Number	
Number of cases	34	
Case Classification	**Number**	**(Percent)**
Confirmed	34	(100.0)
Probable	0	(0.0)
Outcome	**Number**	**(Percent)**
Hospitalized	32	(94.1)
Died	1	(2.9)
Imported Status	**Number**	**(Percent)**
Acquired in Florida	34	(100.0)
Acquired in the U.S., not Florida	0	(0.0)
Acquired outside the U.S.	0	(0.0)
Acquired location unknown	0	(0.0)
Outbreak Status	**Number**	**(Percent)**
Sporadic	34	(100.0)
Outbreak-associated	0	(0.0)
Outbreak status unknown	0	(0.0)
Serotype	**Number**	**(Percent)**
Type A	6	(17.6)
Type B	0	(0.0)
Type C	0	(0.0)
Type D	0	(0.0)
Type E	0	(0.0)
Type F	3	(8.8)
Not Type B	2	(5.9)
Unknown	5	(14.7)
Nontypeable	18	(52.9)

Reported *H. influenzae* Invasive Disease Cases in Children <5 Years Old by Month of Occurrence, Case Classification, Outcome, Imported Status, and Outbreak Status, Florida



Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in the hospitalized count as well as the death count. Hospitalized status means that a person was hospitalized at the time of their illness, though the hospitalization may not necessarily have been due to the illness. Deaths include all people with the illness who died, though the death may not necessarily have been due to the illness. Imported status refers to where the infection was most likely acquired. Outbreak- associated indicates that two or more cases are epidemiologically linked.

Additional Information

Nationally, between 54 and 60% of cases were in males each year from 2012 to 2015. In Florida, more cases were in females than males in 2014 (53.1%) and 2015 (54.1%). In 2016, the trend reversed and more cases were in males (61.8%), which is more in line with national data. Activity peaked in May and November in 2016 in Florida, with much higher peaks than seen in previous seasons where there was little seasonality. The cases reported in May and November were in residents of different counties and there were no known epidemiological linkages between these cases. There was one death in 2016, but the primary cause of death was not related to *H. influenzae* invasive disease.

Hepatitis A

Disease Facts

Cause: Hepatitis A virus (HAV)

Type of illness: Inflammation of the liver; sometimes asymptomatic; symptoms can include fever, malaise, loss of appetite, nausea, vomiting, abdominal discomfort, and jaundice

Transmission: Fecal-oral; including person-to-person, foodborne, and waterborne

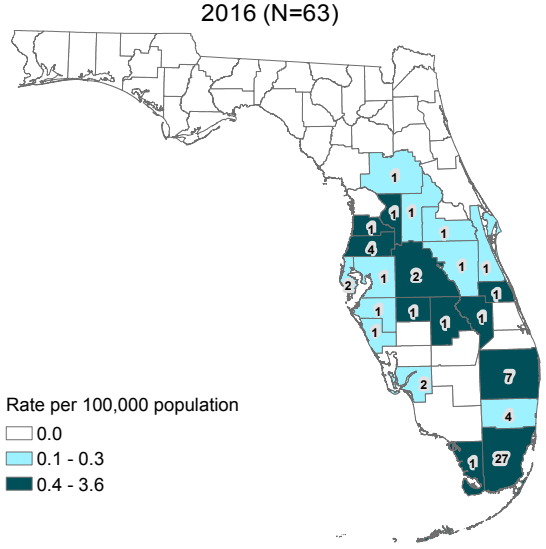
Reason for surveillance: Identify and control outbreaks, identify and mitigate common sources (e.g., contaminated food product, ill food handler), monitor effectiveness of immunization programs

Comments: Hepatitis A is a vaccine-preventable disease. A large portion of infections are acquired internationally (42.6% in 2016), primarily among unvaccinated people traveling internationally to countries that lack routine immunization programs and, as a result, have a high incidence of hepatitis A. Incidence in Florida has remained relatively stable since 2011. Incidence in the elderly in 2016 was lower than previous years.

Summary of Case Demographics

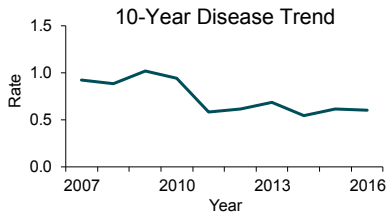
Summary			
Number of cases			122
Incidence rate (per 100,000 population)			0.6
Change from 5-year average incidence			-1.0%
Age (in Years)			
Mean			45
Median			43
Min-max			3 - 90
Gender	**Number**	**(Percent)**	**Rate**
Female	43	(35.2)	0.4
Male	79	(64.8)	0.8
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	86	(74.8)	0.5
Black	10	(8.7)	NA
Other	19	(16.5)	NA
Unknown race	7		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	52	(45.6)	0.3
Hispanic	62	(54.4)	1.2
Unknown ethnicity	8		

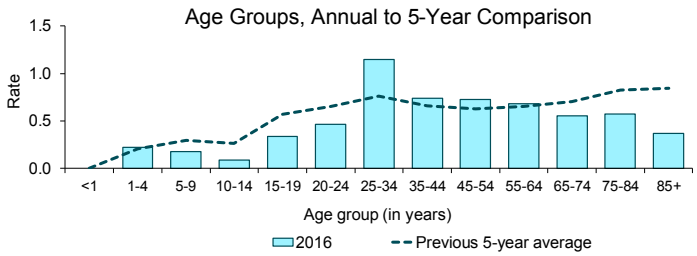
Reported Hepatitis A Cases and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2016 (N=63)

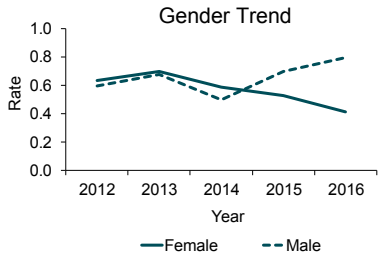


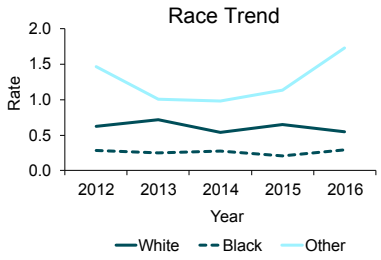
Note that rates based on <20 cases are not reliable and should be interpreted with caution.

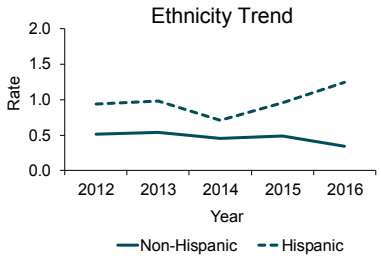
Incidence Rates Per 100,000 Population of Reported Hepatitis A Cases by Year, Age, Gender, Race, and Ethnicity, Florida









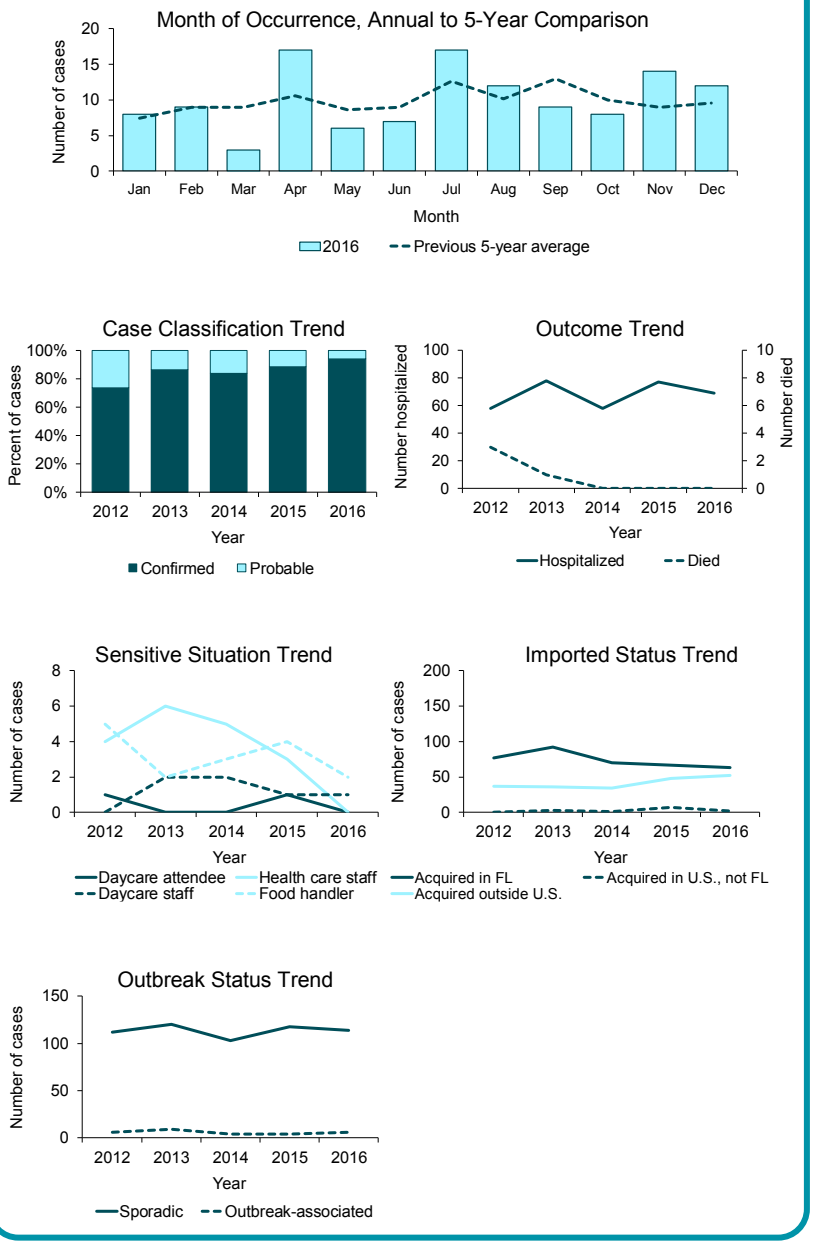


Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Hepatitis A cases were missing 6.8% of ethnicity data in 2013, 5.3% of race data in 2013, 5.6% of ethnicity data in 2014, 5.6% of race data in 2014, 6.6% of ethnicity data in 2016, and 5.7% of race data in 2016.

Summary of Case Factors

Summary	Number	
Number of cases	122	
Case Classification	**Number**	**(Percent)**
Confirmed	115	(94.3)
Probable	7	(5.7)
Outcome	**Number**	**(Percent)**
Hospitalized	69	(56.6)
Died	0	(0.0)
Sensitive Situation	**Number**	**(Percent)**
Daycare attendee	0	(0.0)
Daycare staff	1	(0.8)
Health care staff	0	(0.0)
Food handler	2	(1.6)
Imported Status	**Number**	**(Percent)**
Acquired in Florida	63	(51.6)
Acquired in the U.S., not Florida	2	(1.6)
Acquired outside the U.S.	52	(42.6)
Acquired location unknown	5	(4.1)
Outbreak Status	**Number**	**(Percent)**
Sporadic	114	(93.4)
Outbreak-associated	6	(4.9)
Outbreak status unknown	2	(1.6)
Region Where Infection Acquired	**Number**	**(Percent)**
Central America/Caribbean	27	(45.8)
South America	11	(18.6)
Asia	4	(6.8)
Europe	3	(5.1)
Multiple Regions	3	(5.1)
Puerto Rico (U.S.)	2	(3.4)
Africa	1	(1.7)
Unknown	8	(13.6)

Reported Hepatitis A Cases by Month of Occurrence, Case Classification, Outcome, Sensitive Situation, Imported Status, and Outbreak Status, Florida



Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in the hospitalized count as well as the death count. Hospitalized status means that a person was hospitalized at the time of their illness, though the hospitalization may not necessarily have been due to the illness. Deaths include all people with the illness who died, though the death may not necessarily have been due to the illness. Sensitive situation categories are not mutually exclusive, and most cases do not fall into any of these categories. Imported status refers to where the infection was most likely acquired. Outbreak-associated indicates that two or more cases are epidemiologically linked.

Additional Information

After the close of the 2016 morbidity dataset, two cases initially reported with an unknown outbreak status were determined to be sporadic cases and two persons not included in this report were found to meet the surveillance case definition based on epidemiological linkages to confirmed cases. A total of eight people were associated with four outbreaks in 2016, each involving two people. In each outbreak, an international traveler returned to Florida and likely infected another household member through close personal contact.

Hepatitis B, Acute

Disease Facts

Cause: Hepatitis B virus (HBV)

Type of illness: Inflammation of the liver; sometimes asymptomatic; symptoms can include malaise, loss of appetite, nausea, vomiting, abdominal discomfort, and jaundice; 2-6% of infections in adults become chronic

Transmission: Blood exposure, anal or vaginal sex, percutaneous exposure (e.g., tattooing, needle sticks), or from mother to child during pregnancy or delivery

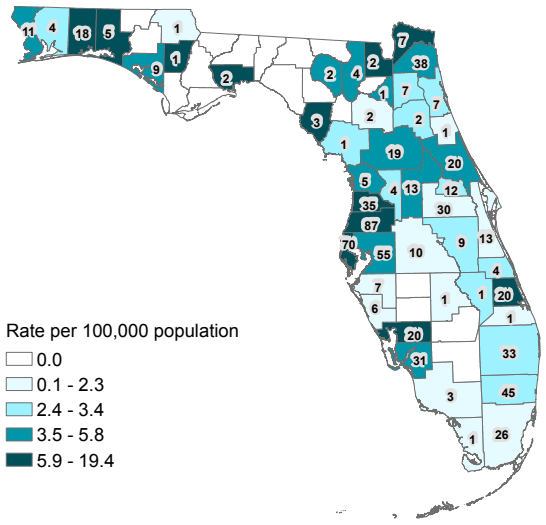
Reason for surveillance: Enhance efforts to prevent HBV transmission, identify and prevent outbreaks, improve allocation of resources for treatment services, assist in evaluating the impact of public health interventions, monitor effectiveness of immunization programs

Comments: Hepatitis B is a vaccine-preventable disease. Incidence is highest in white, non-Hispanic men and in counties in the central and northern part of the state.

Summary of Case Demographics

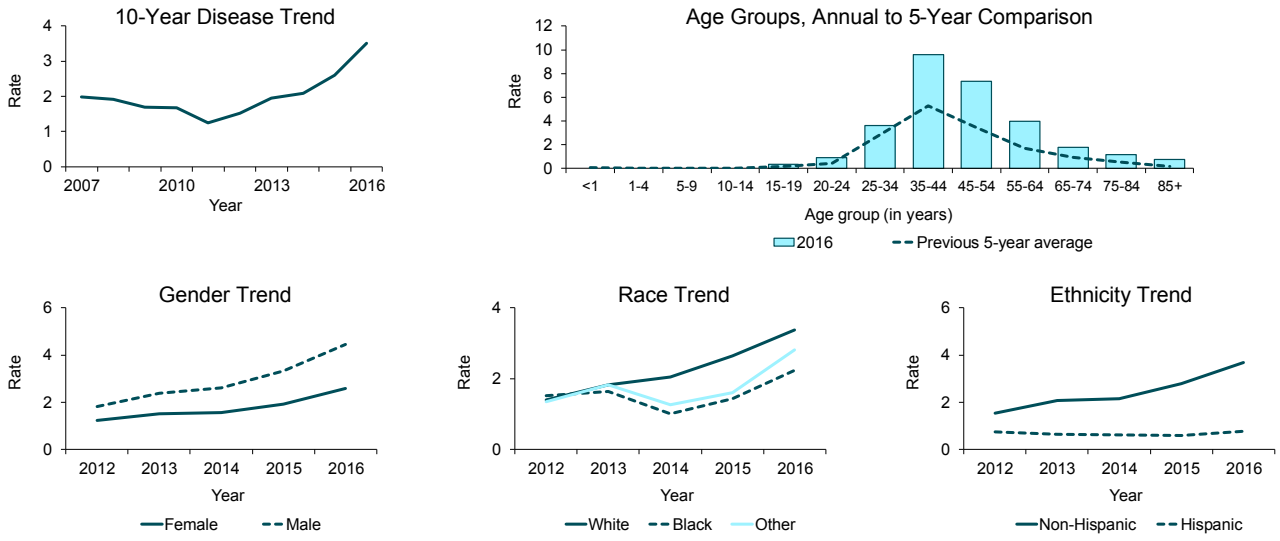
Summary			
Number of cases			709
Incidence rate (per 100,000 population)			3.5
Change from 5-year average incidence			+86.4%
Age (in Years)			
Mean			46
Median			45
Min-max			16 - 93
Gender	**Number**	**(Percent)**	**Rate**
Female	268	(37.8)	2.6
Male	441	(62.2)	4.5
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	531	(83.2)	3.4
Black	76	(11.9)	2.2
Other	31	(4.9)	2.8
Unknown race	71		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	563	(93.5)	3.7
Hispanic	39	(6.5)	0.8
Unknown ethnicity	107		

Reported Acute Hepatitis B Cases and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2016 (N=709)



Note that rates based on <20 cases are not reliable and should be interpreted with caution.

Incidence Rates Per 100,000 Population of Reported Acute Hepatitis B Cases by Year, Age, Gender, Race, and Ethnicity, Florida



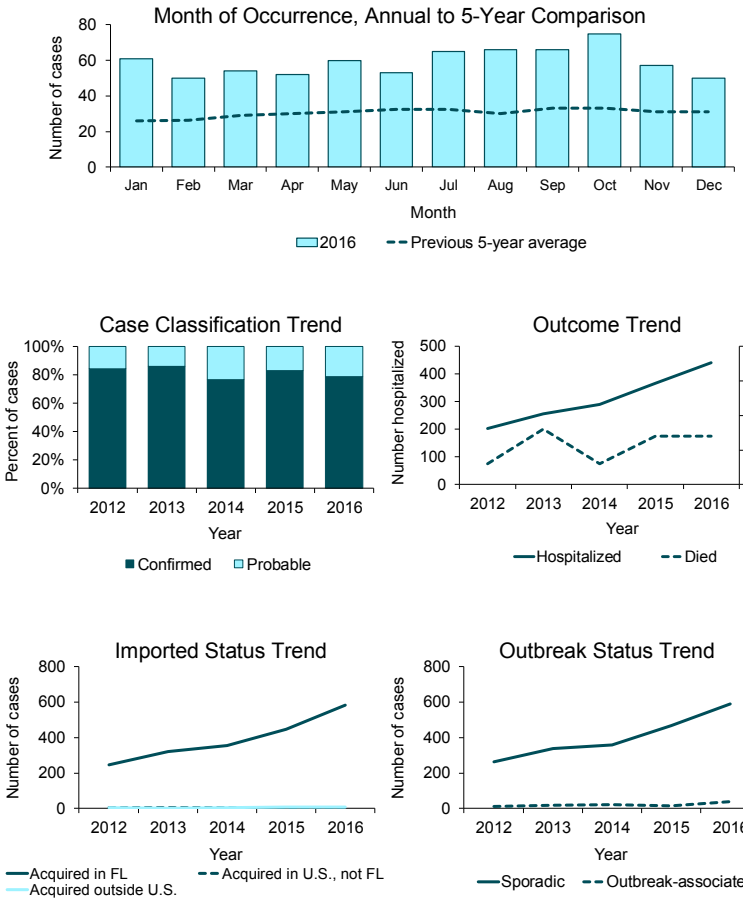
Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Acute hepatitis B cases were missing 10.3% of ethnicity data in 2012, 6.8% of race data in 2012, 10.1% of ethnicity data in 2013, 7.5% of race data in 2013, 14.2% of ethnicity data in 2014, 11.8% of race data in 2014, 13.3% of ethnicity data in 2015, 8.7% of race data in 2015, 15.1% of ethnicity data in 2016, and 10.0% of race data in 2016.

Summary of Case Factors

Summary	Number	
Number of cases	709	
Case Classification	**Number**	**(Percent)**
Confirmed	558	(78.7)
Probable	151	(21.3)
Outcome	**Number**	**(Percent)**
Hospitalized	441	(62.2)
Died	7	(1.0)
Imported Status	**Number**	**(Percent)**
Acquired in Florida	584	(82.4)
Acquired in the U.S., not Florida	5	(0.7)
Acquired outside the U.S.	9	(1.3)
Acquired location unknown	111	(15.7)
Outbreak Status	**Number**	**(Percent)**
Sporadic	590	(83.2)
Outbreak-associated	38	(5.4)
Outbreak status unknown	81	(11.4)

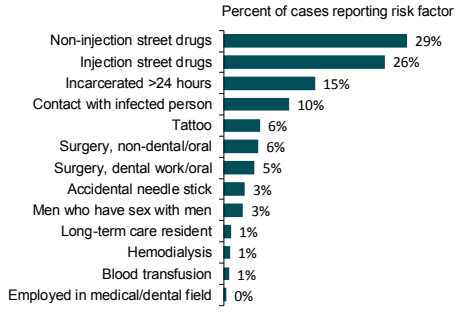
Acute clinical symptoms or prior negative laboratory results are required to differentiate acute hepatitis B from chronic, making surveillance challenging. Incidence declined over the last decade due to increased vaccination, but started increasing in 2011 and continued to increase in 2016. The identified increase is likely due to an enhanced surveillance project focusing on hepatitis infections in young adults initiated in 2012, changes in risk behaviors in young adults, and updated laboratory reporting guidance in June 2014 requiring laboratories participating in electronic laboratory reporting to submit all negative hepatitis results. In 2016, 55 cases (7.8%) were determined to be acute based on negative results preceding positive results.

Reported Acute Hepatitis B Cases by Month of Occurrence, Case Classification, Outcome, Imported Status, and Outbreak Status, Florida



In 2016, 683 cases (96.3%) were investigated and 437 cases (61.6%) were interviewed to determine risk factor information. Risk factors reported are shown to the right. Note that a person can report multiple risk factors. Acute viral hepatitis B infections are frequently associated with drug use and sharing injection equipment. Similar to past years, the top three risk factors include non-injection drug use, injection drug use, and incarceration. Twenty-eight clusters were identified among the 38 outbreak-associated cases, each of which involved 2 cases. Twelve cases were epidemiologically linked to chronic hepatitis B cases and four cases were epidemiologically linked to acute hepatitis B cases reported in previous years. Two cases were epidemiologically linked to people who had positive HBV laboratory results, but did not meet the Florida surveillance case definition for chronic or acute hepatitis B. Twenty-two of the 28 clusters (78.6%) were sexual contacts and six (21.4%) were household contacts.

Risk Factors for Reported Acute Hepatitis B Cases, Florida, 2016



Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in the hospitalized count as well as the death count. Hospitalized status means that a person was hospitalized at the time of their illness, though the hospitalization may not necessarily have been due to the illness. Deaths include all people with the illness who died, though the death may not necessarily have been due to the illness. Imported status refers to where the infection was most likely acquired. Outbreak- associated indicates that two or more cases are epidemiologically linked.

Hepatitis B, Chronic

Disease Facts

Cause: Hepatitis B virus (HBV)

Type of illness: Most often asymptomatic; many people have chronic liver disease including cirrhosis and liver cancer; 2-6% of infections in adults become chronic

Transmission: Blood exposure, anal or vaginal sex, percutaneous exposure (e.g., tattooing, needle sticks), or from mother to child during pregnancy or delivery

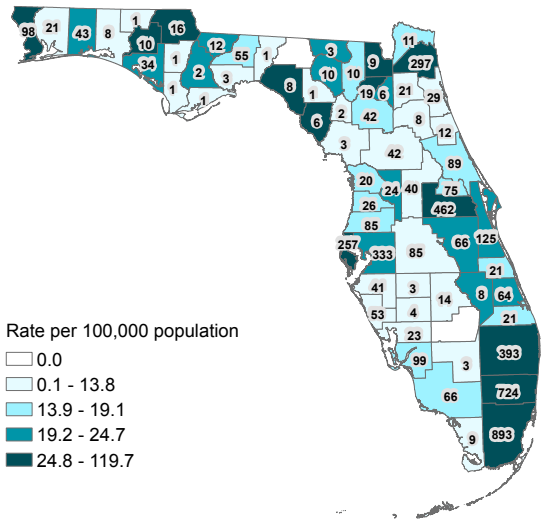
Reason for surveillance: Enhance efforts to prevent HBV transmission, identify acute infections and prevent outbreaks, improve allocation of resources for treatment services, assist in evaluating the impact of public health interventions, monitor effectiveness of immunization programs

Comments: Hepatitis B is a vaccine-preventable disease. Incidence is highest in adults 35 to 64 years old. Incidence remained relatively stable from 2009 to 2013, increased slightly in 2014, and remained high in 2016.

Summary of Case Demographics

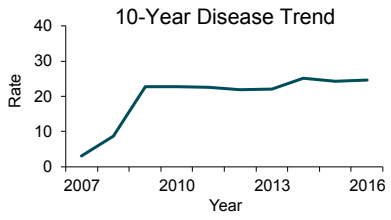
Summary			
Number of cases			4,972
Incidence rate (per 100,000 population)			24.6
Change from 5-year average incidence			+6.0%
Age (in Years)			
Mean			47
Median			46
Min-max			0 - 100
Gender	**Number**	**(Percent)**	**Rate**
Female	2,165	(43.7)	20.9
Male	2,791	(56.3)	28.2
Unknown gender	16		
Race	**Number**	**(Percent)**	**Rate**
White	1,033	(48.3)	6.6
Black	672	(31.4)	19.7
Other	434	(20.3)	39.5
Unknown race	2,833		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	1,265	(83.8)	8.3
Hispanic	245	(16.2)	4.9
Unknown ethnicity	3,462		

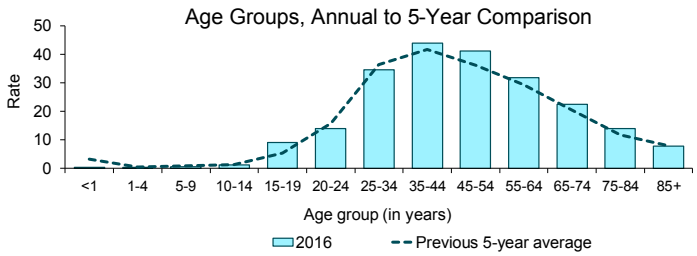
Reported Chronic Hepatitis B Cases and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2016 (N=4,972)

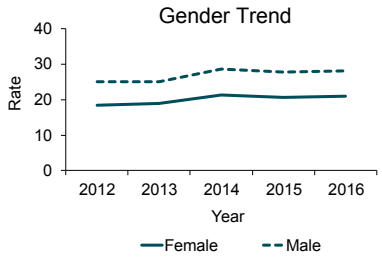


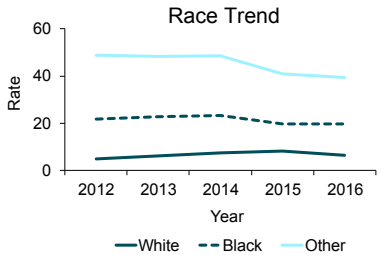
Note that rates based on <20 cases are not reliable and should be interpreted with caution.

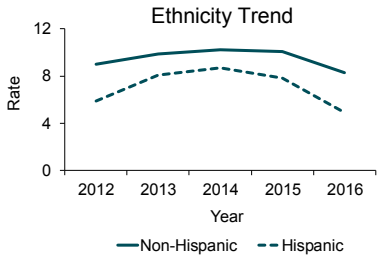
Incidence Rates Per 100,000 Population of Reported Chronic Hepatitis B Cases by Year, Age, Gender, Race, and Ethnicity, Florida









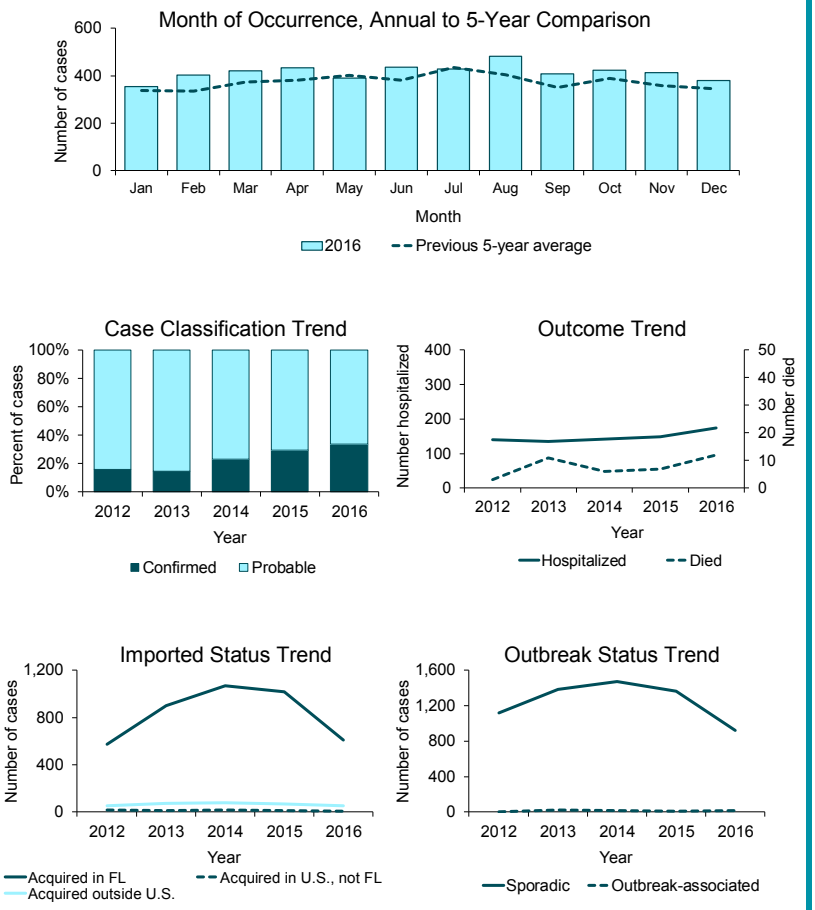


Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Chronic hepatitis B cases were missing 62.0% of ethnicity data in 2012, 54.6% of race data in 2012, 57.2% of ethnicity data in 2013, 49.9% of race data in 2013, 60.7% of ethnicity data in 2014, 50.6% of race data in 2014, 60.7% of ethnicity data in 2015, 50.7% of race data in 2015, 69.6% of ethnicity data in 2016, and 57.0% of race data in 2016.

Summary of Case Factors

Summary	Number	
Number of cases	4,972	
Case Classification	**Number**	**(Percent)**
Confirmed	1,684	(33.9)
Probable	3,288	(66.1)
Outcome	**Number**	**(Percent)**
Hospitalized	175	(3.5)
Died	12	(0.2)
Imported Status	**Number**	**(Percent)**
Acquired in Florida	610	(12.3)
Acquired in the U.S., not Florida	6	(0.1)
Acquired outside the U.S.	54	(1.1)
Acquired location unknown	4,302	(86.5)
Outbreak Status	**Number**	**(Percent)**
Sporadic	923	(18.6)
Outbreak-associated	15	(0.3)
Outbreak status unknown	4,034	(81.1)

Reported Chronic Hepatitis B Cases by Month of Occurrence, Case Classification, Outcome, Imported Status, and Outbreak Status, Florida



Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in the hospitalized count as well as the death count. Hospitalized status means that a person was hospitalized at the time of their illness, though the hospitalization may not necessarily have been due to the illness. Deaths include all people with the illness who died, though the death may not necessarily have been due to the illness. Imported status refers to where the infection was most likely acquired. Outbreak- associated indicates that two or more cases are epidemiologically linked.

Additional Information

Given the large burden of chronic hepatitis and limited county resources, there have been concerns regarding data completeness and case ascertainment in the past. Earlier data are less reliable, particularly prior to 2009. Since 2009, improvements in electronic laboratory reporting (ELR) and increased focus on surveillance have improved case ascertainment. Automated case classification and reporting logic in the surveillance application have improved data quality and sensitivity. In 2014, reporting requirements were updated to include mandatory reporting of all positive and negative hepatitis results, as well as all liver function tests, to support the identification of acute hepatitis B cases. ELR has continued to expand and in 2016, 97.7% of all chronic HBV laboratory results were received by the Department electronically. Acute clinical symptoms or prior negative laboratory results are required to differentiate acute hepatitis B from chronic. Given the volume of laboratory results received electronically for which no clinical information is available, it is likely that acute HBV infections are misclassified as chronic.

Hepatitis B, Surface Antigen in Pregnant Women

Disease Facts

Cause: Hepatitis B virus (HBV)

Type of illness: Acute or chronic illness; infection is identified when a woman tests positive for hepatitis B surface antigen (HBsAg) during pregnancy, regardless of symptoms; up to 90% of perinatal infections become chronic

Transmission: Anal or vaginal sex, blood exposure, percutaneous exposure (e.g., tattooing, needle sticks), or from mother to child during pregnancy or delivery

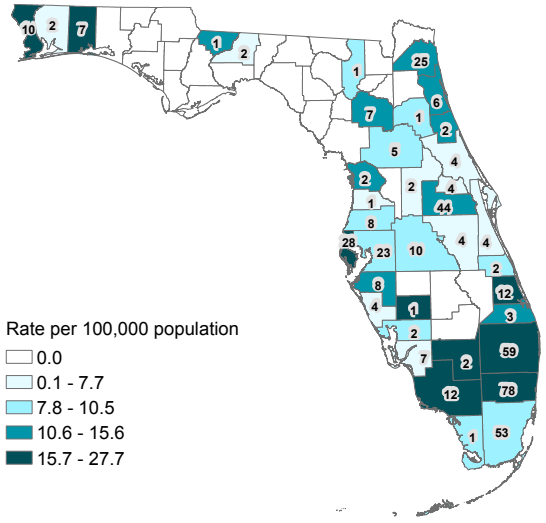
Reason for surveillance: Identify individual cases and implement control measures to prevent HBV transmission from mother to baby; evaluate effectiveness of screening programs

Comments: Hepatitis B is a vaccine-preventable disease. Identification of HBV in pregnant women allows for appropriate treatment of their infants, significantly reducing the infants' risk of contracting HBV. Rates for Hepatitis B surface antigen in pregnant women are per 100,000 women aged 15 to 44 years old.

Summary of Case Demographics

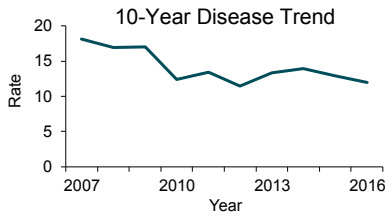
Summary			
Number of cases			447
Incidence rate (per 100,000 population)			12.0
Change from 5-year average incidence			-8.0%
Age (in Years)			
Mean			31
Median			31
Min-max			17 - 45
Gender	**Number**	**(Percent)**	**Rate**
Female	447	(100.0)	12.0
Male	0	(0.0)	NA
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	92	(22.3)	3.4
Black	193	(46.8)	25.0
Other	127	(30.8)	51.6
Unknown race	35		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	356	(89.7)	13.4
Hispanic	41	(10.3)	3.8
Unknown ethnicity	50		

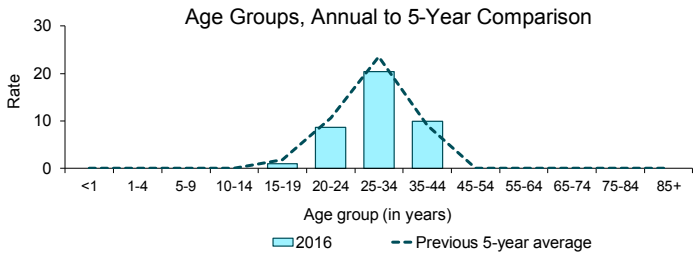
Reported Hepatitis B Surface Antigen Cases in Pregnant Women and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2016 (N=447)

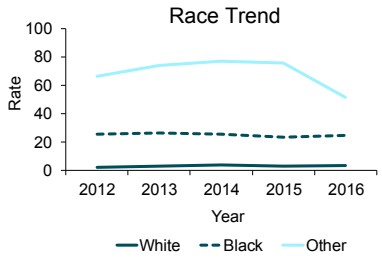


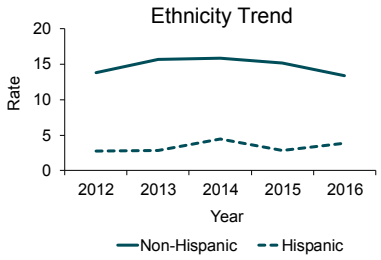
Note that rates based on <20 cases are not reliable and should be interpreted with caution.

Incidence Rates Per 100,000 Population of Reported Hepatitis B Surface Antigen Cases in Pregnant Women by Year, Age, Race, and Ethnicity, Florida









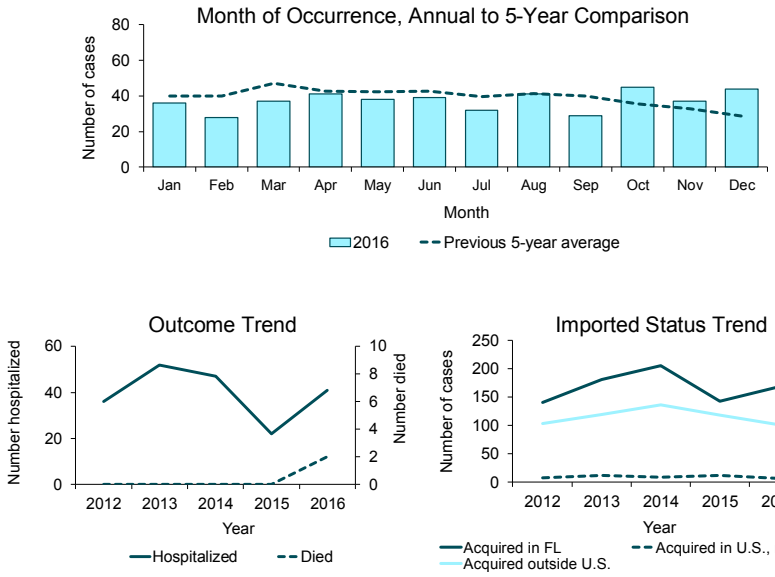
Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Hepatitis B surface antigen cases in pregnant women were missing 5.8% of ethnicity data in 2012, 8.9% of ethnicity data in 2013, 7.1% of race data in 2013, 9.4% of ethnicity data in 2014, 6.9% of race data in 2014, 9.5% of ethnicity data in 2015, 6.3% of race data in 2015, 11.6% of ethnicity data in 2016, and 8.1% of race data in 2016.

Hepatitis B, Surface Antigen in Pregnant Women

Summary of Case Factors

Summary	Number	
Number of cases	447	
Outcome	**Number**	**(Percent)**
Hospitalized	41	(9.2)
Died	2	(0.4)
Imported Status	**Number**	**(Percent)**
Acquired in Florida	168	(37.6)
Acquired in the U.S., not Florida	7	(1.6)
Acquired outside the U.S.	101	(22.6)
Acquired location unknown	171	(38.3)

Reported Hepatitis B Surface Antigen Cases in Pregnant Women by Month of Occurrence, Outcome, and Imported Status, Florida



Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in the hospitalized count as well as the death count. Hospitalized status means that a person was hospitalized at the time of their illness, though the hospitalization may not necessarily have been due to the illness. Deaths include all people with the illness who died, though the death may not necessarily have been due to the illness. Imported status refers to where the infection was most likely acquired.

Additional Information

The 2015 National Immunization Survey estimates that HBV vaccination coverage for birth dose administered from birth through 3 days of age was 72.4% in the U.S. and 53.2% in Florida. Birthing hospitals have a standing order to administer the birth dose; however, pediatricians sometimes choose to wait to give the first dose in their private offices. With lower-than-expected vaccination rates, Florida is currently working with the American Academy of Pediatrics to provide education reminding health care providers that the recommendation is to provide the birth dose within 24 hours to help decrease HBV infections in newborns.

Incidence of hepatitis in pregnant women has generally decreased over the past 10 years, possibly due to increased vaccination of women of childbearing age or changes in case ascertainment and protocol. In the U.S., Asians have a high HBV carrier rate (7-16%) and account for most infections in the other race category. In 2016, there were two deaths reported in women infected with HBV. One death was due to cardiac arrest and the cause of death in the second case was unknown; neither death was due to hepatitis B disease.

Hill HA, Elam-Evans LD, Yankey D, Singleton JA, Dietz V. 2016. Vaccination Coverage Among Children Aged 19–35 Months — United States, 2015. *Morbidity and Mortality Weekly Report*, 65(39):1065-1071. Available at www.cdc.gov/mmwr/volumes/65/wr/mm6539a4.htm.

Hepatitis C, Acute

Disease Facts

Cause: Hepatitis C virus (HCV)

Type of illness: Inflammation of the liver; sometimes asymptomatic; symptoms can include fever, malaise, loss of appetite, nausea, vomiting, abdominal discomfort, and jaundice; ~70-85% of acute infections become chronic

Transmission: Blood exposure, percutaneous exposure (e.g., tattooing, needle sticks), from mother to child during pregnancy or delivery, or rarely anal or vaginal sex.

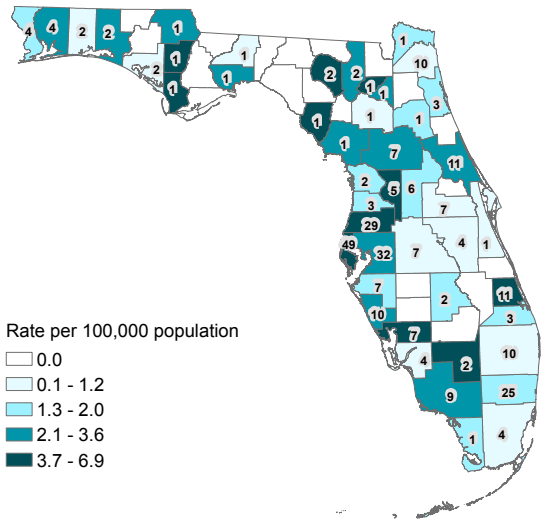
Reason for surveillance: Enhance efforts to prevent HCV transmission, identify and prevent outbreaks, improve allocation of resources for treatment services, assist in evaluating the impact of public health interventions and screening programs

Comments: Similar to past years, incidence was highest in non-Hispanic whites and was distributed throughout Florida. Pasco County increased outreach and testing in 2016, likely increasing cases identified in that area.

Summary of Case Demographics

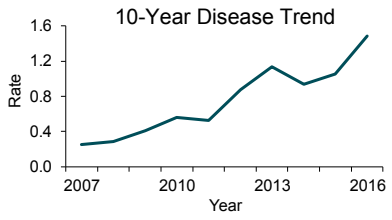
Summary			
Number of cases			301
Incidence rate (per 100,000 population)			1.5
Change from 5-year average incidence			+64.0%
Age (in Years)			
Mean			37
Median			35
Min-max			1 - 81
Gender	**Number**	**(Percent)**	**Rate**
Female	138	(45.8)	1.3
Male	163	(54.2)	1.6
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	252	(89.0)	1.6
Black	16	(5.7)	NA
Other	15	(5.3)	NA
Unknown race	18		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	239	(89.8)	1.6
Hispanic	27	(10.2)	0.5
Unknown ethnicity	35		

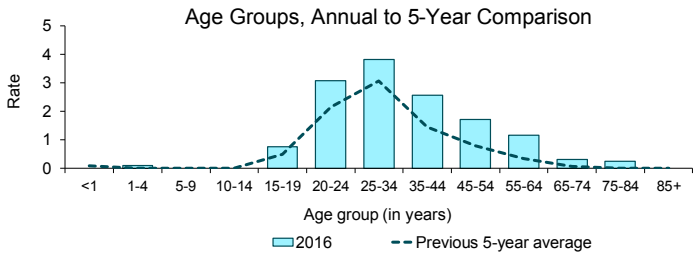
Reported Acute Hepatitis C Cases and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2016 (N=301)

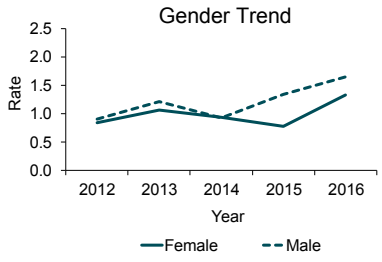


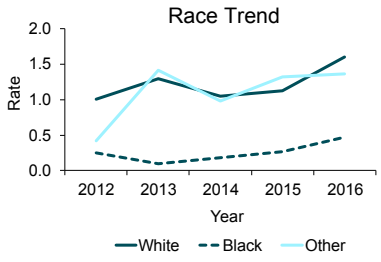
Note that rates based on <20 cases are not reliable and should be interpreted with caution.

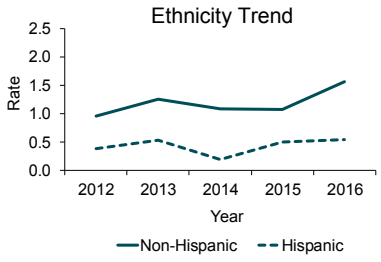
Incidence Rates Per 100,000 Population of Reported Acute Hepatitis C Cases by Year, Age, Gender, Race, and Ethnicity, Florida









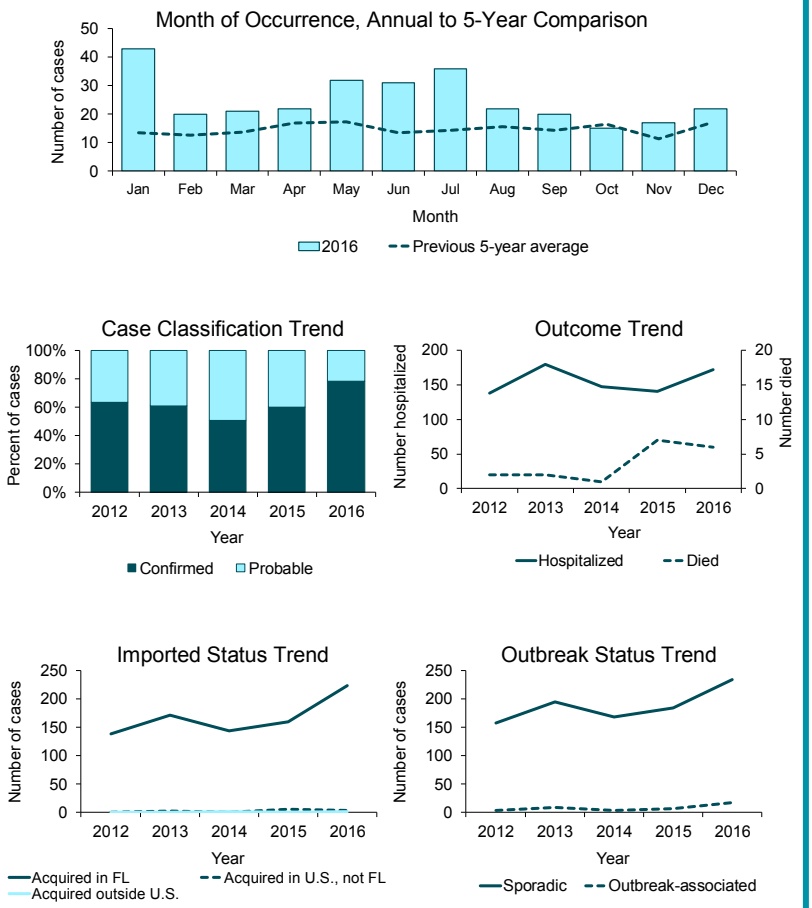


Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Acute hepatitis C cases were missing 6.0% of ethnicity data in 2012, 6.0% of ethnicity data in 2014, 11.0% of ethnicity data in 2015, 5.7% of race data in 2015, 11.6% of ethnicity data in 2016, and 6.6% of race data in 2016.

Summary of Case Factors

Summary	Number	
Number of cases	301	
Case Classification	**Number**	**(Percent)**
Confirmed	236	(78.4)
Probable	65	(21.6)
Outcome	**Number**	**(Percent)**
Hospitalized	172	(57.1)
Died	6	(2.0)
Imported Status	**Number**	**(Percent)**
Acquired in Florida	224	(74.4)
Acquired in the U.S., not Florida	4	(1.3)
Acquired outside the U.S.	2	(0.7)
Acquired location unknown	71	(23.6)
Outbreak Status	**Number**	**(Percent)**
Sporadic	234	(77.7)
Outbreak-associated	17	(5.6)
Outbreak status unknown	50	(16.6)

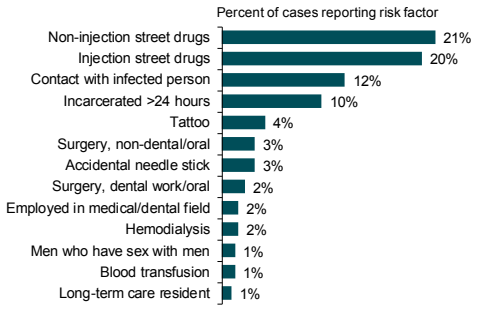
Reported Acute Hepatitis C Cases by Month of Occurrence, Case Classification, Outcome, Imported Status, and Outbreak Status, Florida



Acute clinical symptoms or prior negative laboratory results are required to differentiate acute hepatitis C from chronic, making surveillance challenging. Incidence has increased since 2007, likely due to a change in case definition in 2008, an enhanced surveillance project focusing on hepatitis infections in young adults initiated in 2012, changes in risk behaviors in young adults, and updated laboratory reporting guidance in June 2014 requiring some laboratories participating in electronic laboratory reporting to submit all negative hepatitis results. In 2016, 107 cases (35.5%) were determined to be acute based on negative results preceding positive results.

Six deaths were reported; one was due to cardiac complications, one was due to complications of dementia, one due to alcoholic cirrhosis, and the causes for the other three were unknown. In 2016, 282 cases (93.7%) were investigated and 175 cases (58.1%) were interviewed to determine possible risk factors. Risk factors reported are shown to the right. Note that a person can report multiple risk factors. New infections of viral hepatitis are frequently associated with drug use and sharing of injection equipment. Sixteen clusters were identified among the 17 outbreak-associated cases; one cluster involved four cases and the other 16 clusters each involved two cases. Fourteen cases were epidemiologically linked to chronic hepatitis C cases and one case was epidemiologically linked to an acute hepatitis C case reported in 2017. The four-person cluster was two acute hepatitis C cases and two chronic hepatitis C cases in people who lived together. Of the 16 clusters, 10 clusters (62.5%) were sexual contacts, 3 (18.8%) were personal contacts, 2 (12.5%) were household contacts, and 1 (6.2%) included sexual and household contacts.

Risk Factors for Reported Acute Hepatitis C Cases, Florida, 2016



Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in the hospitalized count as well as the death count. Hospitalized status means that a person was hospitalized at the time of their illness, though the hospitalization may not necessarily have been due to the illness. Deaths include all people with the illness who died, though the death may not necessarily have been due to the illness. Imported status refers to where the infection was most likely acquired. Outbreak- associated indicates that two or more cases are epidemiologically linked.

Hepatitis C, Chronic (Including Perinatal)

Disease Facts

Cause: Hepatitis C virus (HCV)

Type of illness: Inflammation of the liver; most often asymptomatic; many people have chronic liver disease including cirrhosis and liver cancer; ~70-85% of acute infections become chronic

Transmission: Blood exposure, percutaneous exposure (e.g., tattooing, needle sticks), from mother to child during pregnancy or delivery, or rarely anal or vaginal sex.

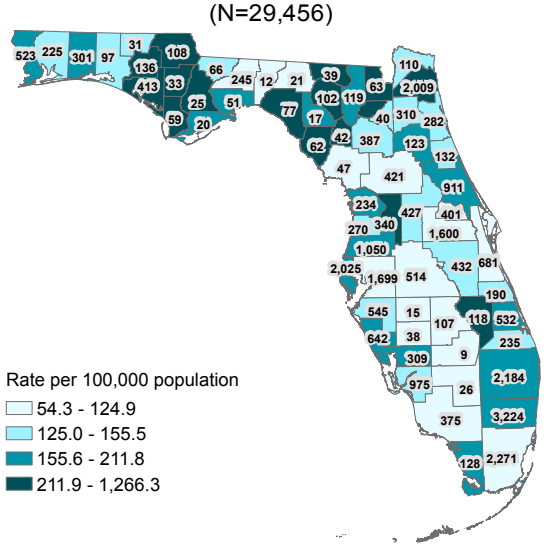
Reason for surveillance: Enhance efforts to prevent HCV transmission, identify acute infections and prevent outbreaks, improve allocation of resources for treatment services, assist in evaluating the impact of public health interventions and screening programs

Comments: Chronic hepatitis C is one of the most common reportable diseases in Florida. Incidence increased sharply in 2016, primarily due to a case definition change that expanded the probable classification criteria.

Summary of Case Demographics

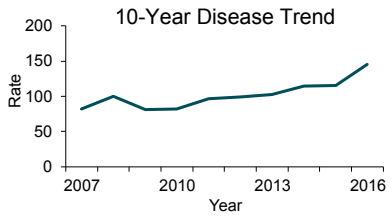
Summary			
Number of cases			29,456
Incidence rate (per 100,000 population)			145.6
Change from 5-year average incidence			+37.7%
Age (in Years)			
Mean			46
Median			48
Min-max			0 - 100
Gender	**Number**	**(Percent)**	**Rate**
Female	12,083	(41.1)	116.8
Male	17,301	(58.9)	175.0
Unknown gender	72		
Race	**Number**	**(Percent)**	**Rate**
White	11,158	(80.6)	71.0
Black	1,614	(11.7)	47.3
Other	1,072	(7.7)	97.5
Unknown race	15,612		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	8,662	(88.1)	56.7
Hispanic	1,172	(11.9)	23.6
Unknown ethnicity	19,622		

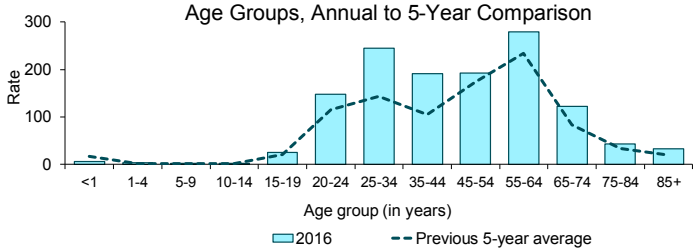
Reported Chronic Hepatitis C Cases (Including Perinatal) and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2016 (N=29,456)

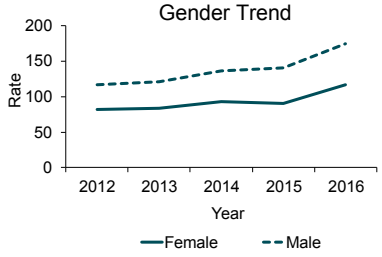


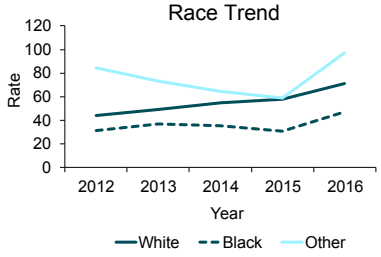
Note that rates based on <20 cases are not reliable and should be interpreted with caution.

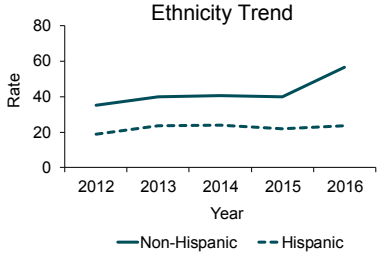
Incidence Rates Per 100,000 Population of Reported Chronic Hepatitis C Cases by Year, Age, Gender, Race, and Ethnicity, Florida











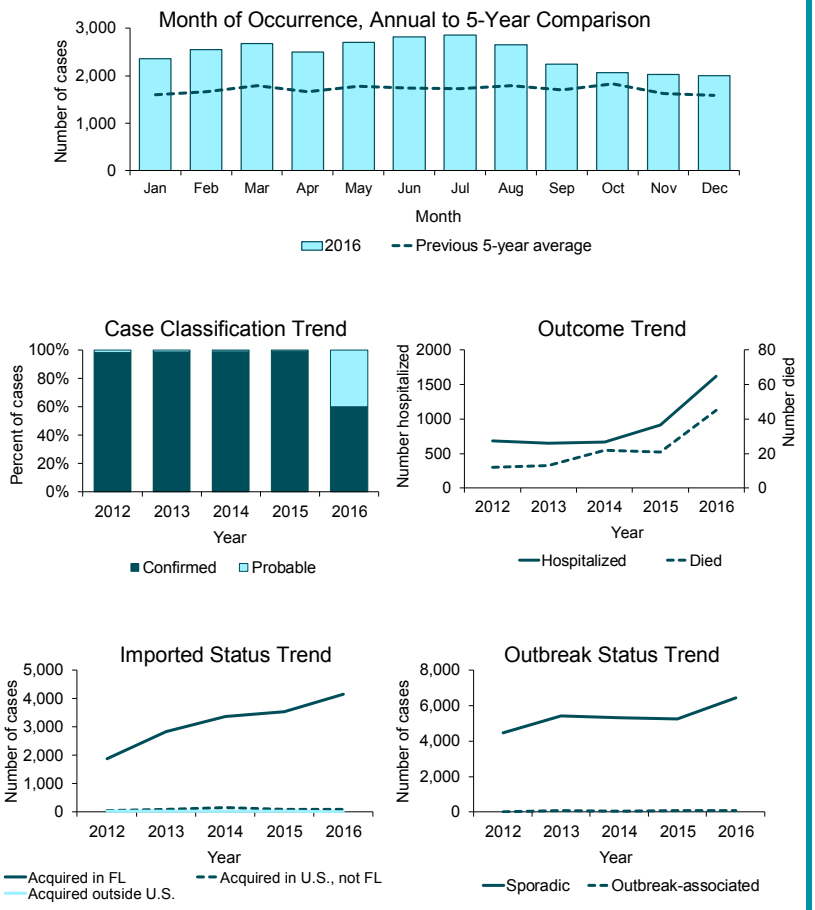
Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Chronic hepatitis C cases (including perinatal) were missing 68.3% of ethnicity data in 2012, 55.8% of race data in 2012, 64.7% of ethnicity data in 2013, 52.7% of race data in 2013, 68.0% of ethnicity data in 2014, 54.4% of race data in 2014, 69.1% of ethnicity data in 2015, 53.9% of race data in 2015, 66.6% of ethnicity data in 2016, and 53.0% of race data in 2016.

Summary of Case Factors

Summary	Number	
Number of cases	29,456	
Case Classification	**Number**	**(Percent)**
Confirmed	17,757	(60.3)
Probable	11,699	(39.7)
Outcome	**Number**	**(Percent)**
Hospitalized	1,617	(5.5)
Died	45	(0.2)
Imported Status	**Number**	**(Percent)**
Acquired in Florida	4,155	(14.1)
Acquired in the U.S., not Florida	84	(0.3)
Acquired outside the U.S.	19	(0.1)
Acquired location unknown	25,198	(85.5)
Outbreak Status	**Number**	**(Percent)**
Sporadic	6,444	(21.9)
Outbreak-associated	97	(0.3)
Outbreak status unknown	22,915	(77.8)

Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in the hospitalized count as well as the death count. Hospitalized status means that a person was hospitalized at the time of their illness, though the hospitalization may not necessarily have been due to the illness. Deaths include all people with the illness who died, though the death may not necessarily have been due to the illness. Imported status refers to where the infection was most likely acquired. Outbreak-associated indicates that two or more cases are epidemiologically linked.

Reported Chronic Hepatitis C Cases (Including Perinatal) by Month of Occurrence, Case Classification, Outcome, Imported Status, and Outbreak Status, Florida



Additional Information

HCV was not discovered until 1989. Lower infection control standards in the 1970s and 80s and use of blood products prior to the availability of diagnostic testing and the implementation of blood screening programs in 1992 is recognized as contributing to higher rates in adults. Incidence of hepatitis C is highest in the “baby boomers,” adults born between 1946 and 1965 who would be 51 to 70 years old in 2016. Most baby boomers were likely infected in the 1960s, 70s, and 80s when transmission of hepatitis C was highest. The high rate of chronic infections in young adults (an age group who should not be chronically infected yet) also supports the theory that acute infections are not initially identified. An enhanced surveillance project focusing on chronic infections in young adults was initiated in 2012 to help identify risk factors and acute infections.

Changes in treatment options for HCV have led to an increased focus on identifying HCV infections. Given the large burden of chronic hepatitis C and limited county resources, there have been concerns regarding data completeness and case ascertainment in the past. Earlier data are less reliable. Over the past few years, improvements in electronic laboratory reporting (ELR) and increased focus on surveillance are believed to have improved case ascertainment. Automated case classification and reporting logic in the surveillance application have improved data quality and sensitivity. In 2014, reporting requirements were updated to include mandatory reporting of all positive and negative hepatitis results, as well as all liver function tests, to support the identification of acute hepatitis C cases. ELR has continued to expand and in 2016, 96.1% of all chronic HCV laboratory results were received by the Department electronically. Acute clinical symptoms or prior negative laboratory results are required to differentiate acute hepatitis C from chronic. Given the volume of laboratory results received electronically for which no clinical information is available, it is likely that many acute HCV infections are misclassified as chronic. The increase in deaths may be partially due to more complete data; the percent of cases with death data increased from 3% in 2014, to 8% in 2015, to 12% in 2016. The completeness of hospital data has not improved; the increase in hospitalized cases is most likely associated with the increase in total cases identified. Consistent with 2015, high incidence rates are focused in the panhandle of Florida.

Disease Facts

Cause: Human immunodeficiency virus (HIV)

Type of illness: Flu-like illness at primary infection; causes severe damage to immune system leading to AIDS

Transmission: Anal or vaginal sex; blood exposure (e.g., sharing drug needles, receiving infected blood transfusion [rare due to donor screening]); or from mother to child during pregnancy, delivery, or breastfeeding

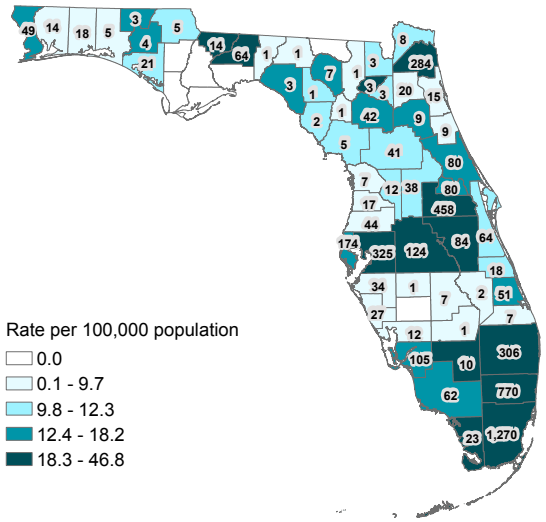
Reason for surveillance: Enhance efforts to prevent HIV transmission, improve allocation of resources for treatment services, and assist in evaluating the impact of public health interventions

Comments: HIV incidence has been gradually increasing since 2013. Incidence rates have been 3.8 times higher in men than women since 2014, and 3.8 to 4.1 times higher in blacks than whites. Rates are consistently highest in adults 20 to 34 years old. Increases in infected men who have sex with men contributed to the statewide increase in 2016.

Summary of Case Demographics

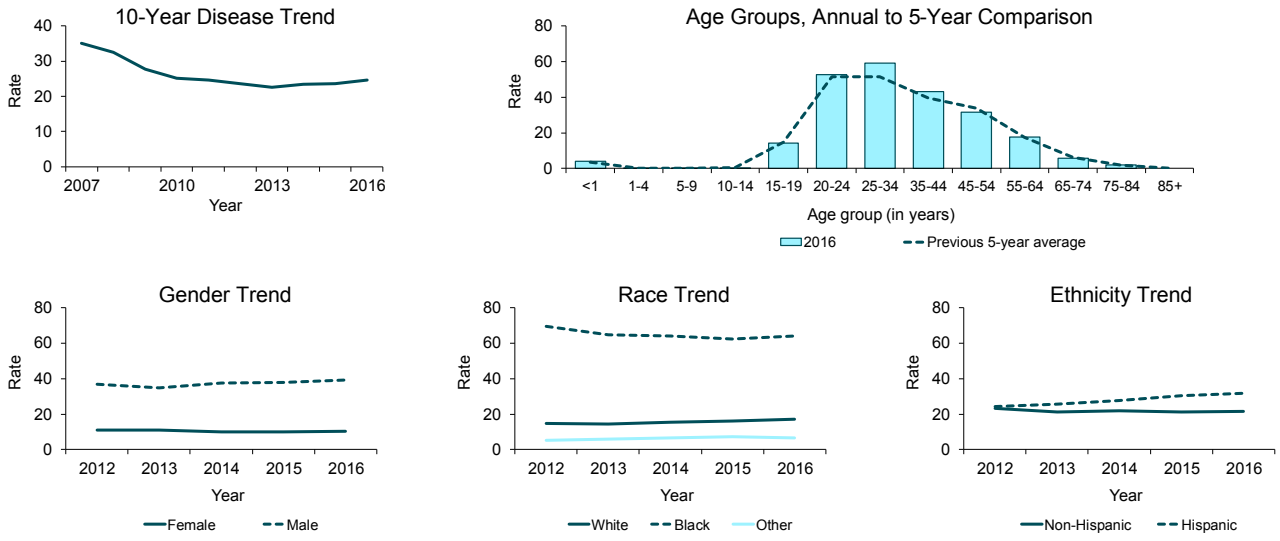
Summary			
Number of cases			4,972
Incidence rate (per 100,000 population)			24.6
Change from 5-year average incidence			+4.1%
Age (in Years)			
Mean			37
Median			35
Min-max			0 - 87
Gender	**Number**	**(Percent)**	**Rate**
Female	1,081	(21.7)	10.5
Male	3,891	(78.3)	39.4
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	2,675	(54.2)	17.0
Black	2,186	(44.3)	64.1
Other	74	(1.5)	6.7
Unknown race	37		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	3,319	(67.7)	21.7
Hispanic	1,585	(32.3)	31.9
Unknown ethnicity	68		

Diagnosed HIV Cases (Including Perinatal) and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2016 (N=4,869)



County totals exclude Florida Department of Corrections cases (n=103).
Note that rates based on <20 cases are not reliable and should be interpreted with caution.

Incidence Rates Per 100,000 Population of Diagnosed HIV Cases (Including Perinatal) by Year, Age, Gender, Race, and Ethnicity, Florida



Additional Information

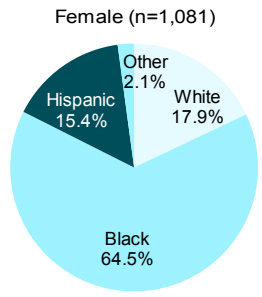
HIV cases tend to represent a more current picture of the AIDS epidemic as they are indicative of recent exposure. For HIV cases in men reported in 2016, male-to-male sexual contact was the most common risk factor (76.9%), followed by heterosexual contact (17.6%).

In 2012, the rate of HIV in Hispanics and non-Hispanics was very similar, but has diverged over the past five years and is now higher in Hispanics. Although the proportion of new cases among Hispanics has increased compared to non-Hispanic whites and blacks, the numbers of cases has increased among all races and ethnicities in the past few years. High-incidence counties are clustered in the central and southeast part of the state. In 2016, 64.5% of infected adult women were black compared to 35.7% of infected adult men.

Diagnosed HIV Cases by Sex and Mode of Exposure, Florida, 2016

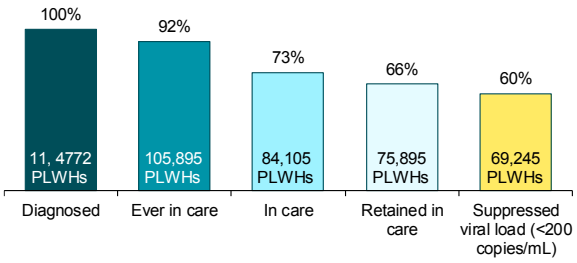
Mode of Exposure	Female Cases (n=1,081)		Male Cases (n=3,891)	
	Number	(Percent)	Number	(Percent)
Men who have sex with men (MSM)	NA		2,991	(76.9)
Heterosexual	979	(90.5)	686	(17.6)
Injection drug user (IDU)	92	(8.5)	102	(2.6)
MSM and IDU	NA		98	(2.5)
Other	10	(0.9)	13	(0.3)
Total	1,081		3,891	

Diagnosed HIV Cases by Sex and Race/Ethnicity, Florida, 2016



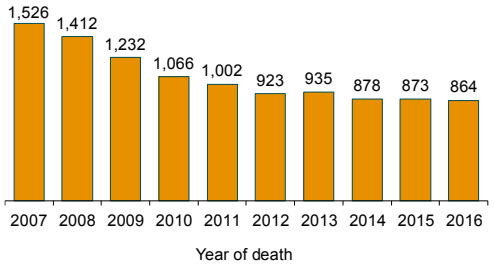
The HIV care continuum reflects stages of HIV medical care beginning with an initial diagnosis with the intent of achieving a very low level of HIV in the body (viral suppression). A person living with HIV (PLWH) with a suppressed viral load has a less than 1% chance of transmitting the virus. In 2016, there were 114,772 PLWHs in Florida, 66% of whom were retained in care and 60% of whom had a suppressed viral load.

Care Continuum for Persons Living With HIV (PLWHs) in Florida, 2016



HIV was the seventh leading cause of death for people aged 24 to 44 years in Florida in 2016. Following the advent of highly active anti-retroviral therapy, there has been an 80% decline in HIV deaths from 1995 to 2016 and a 43% decrease in deaths in the last 10 years.

HIV Deaths in Florida Residents by Year of Death, 2007-2016



For information on AIDS, please see the AIDS chapter within this section (page 11).

Please visit the AIDS surveillance website to access additional information at www.FloridaHealth.gov/diseases-and-conditions/aids/surveillance/index.html.

To locate services across the state please visit www.FloridaHealth.gov/diseases-and-conditions/aids/index.html.

Lead Poisoning in Children <6 Years Old

Disease Facts

Cause: Lead

Type of illness: Wide range of adverse health effects, from difficulty learning, sluggishness, and fatigue to seizures, coma, and death

Exposure: Most commonly ingestion of paint dust in houses built prior to elimination of lead in paints in 1978

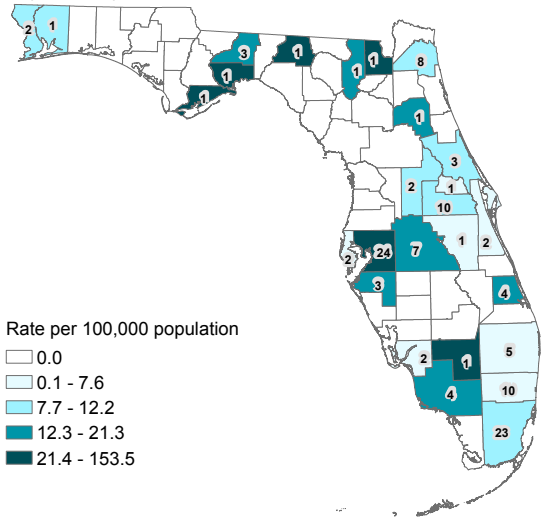
Reason for surveillance: Estimate burden among children, ensure follow-up care for identified cases, identify need for environmental remediation to prevent new cases and exacerbation of illness, help target public health interventions

Comments: Prior to 2010, lead poisoning case data were primarily stored outside the state's reportable disease surveillance system; therefore, only cases from 2010 to 2016 are presented in this report. Lead poisoning is most often identified in children as part of routine screening.

Summary of Case Demographics

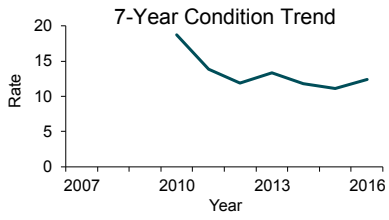
Summary			
Number of cases			166
Incidence rate (per 100,000 population)			12.4
Change from 5-year average incidence			+0.3%
Age (in Years)			
Mean			2
Median			1
Min-max			0 - 5
Gender	**Number**	**(Percent)**	**Rate**
Female	69	(41.6)	10.6
Male	97	(58.4)	14.2
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	69	(45.7)	7.5
Black	32	(21.2)	10.5
Other	50	(33.1)	43.5
Unknown race	15		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	104	(67.5)	11.3
Hispanic	50	(32.5)	12.0
Unknown ethnicity	12		

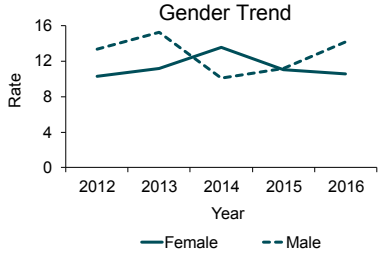
Reported Lead Poisoning Cases in Children <6 Years Old and Incidence Rates Per 100,000 Population (Restricted to Exposures Occurring in Florida) by County of Residence, Florida, 2016 (N=124)

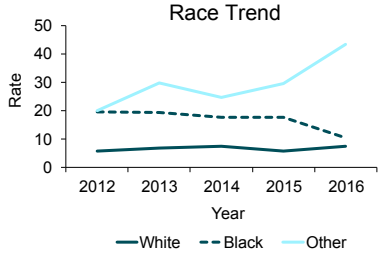


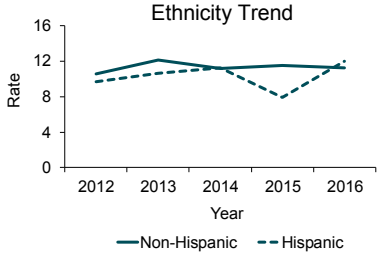
Note that rates based on <20 cases are not reliable and should be interpreted with caution.

Incidence Rates Per 100,000 Population of Reported Lead Poisoning Cases in Children <6 Years Old by Year, Gender, Race, and Ethnicity, Florida









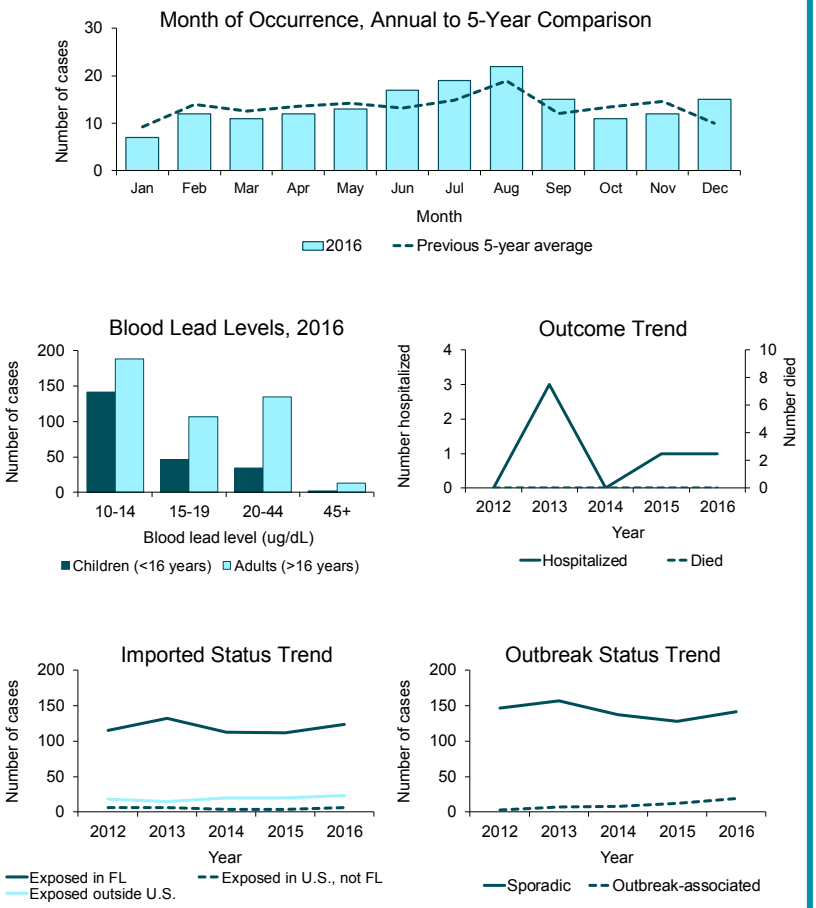
Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Lead poisoning cases in children <6 years old were missing 13.1% of ethnicity data in 2012, 14.4% of race data in 2012, 12.2% of ethnicity data in 2013, 12.2% of race data in 2013, 5.2% of ethnicity data in 2014, 6.2% of ethnicity data in 2015, 7.2% of ethnicity data in 2016, and 9.0% of race data in 2016.

Lead Poisoning in Children <6 Years Old

Summary of Case Factors

Summary	Number	
Number of cases	166	
Outcome	**Number**	**(Percent)**
Hospitalized	1	(0.6)
Died	0	(0.0)
Imported Status	**Number**	**(Percent)**
Exposed in Florida	124	(74.7)
Exposed in the U.S., not Florida	6	(3.6)
Exposed outside the U.S.	23	(13.9)
Exposed location unknown	13	(7.8)
Outbreak Status	**Number**	**(Percent)**
Sporadic	142	(85.5)
Outbreak-associated	19	(11.4)
Outbreak status unknown	5	(3.0)

Reported Lead Poisoning Cases in Children <6 Years Old by Month of Occurrence, Blood Lead Level, Outcome, Imported Status, and Outbreak Status, Florida



Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in the hospitalized count as well as the death count. Hospitalized status means that a person was hospitalized at the time of their illness, though the hospitalization may not necessarily have been due to the illness. Deaths include all people with the illness who died, though the death may not necessarily have been due to the illness. Imported status refers to where the exposure most likely occurred. Outbreak-associated indicates that two or more cases are epidemiologically linked.

Additional Information

Lead screening is required for children <6 years old who are Medicaid-enrolled or eligible, and recommended for children who are foreign-born or otherwise identified as high-risk. Children in this age group are more likely to put lead-contaminated hands, toys, or paint chips in their mouths, making them more vulnerable to lead poisoning than older children. The most common sources of lead exposure for children include paint dust, flakes, or chips in houses built prior to elimination of lead in paints in 1978. Less common sources include glazed ceramic dishes, children's toys or jewelry, parental occupations or hobbies involving lead, and folk medicines or cosmetics from other countries. Compared to lead poisoning in adults where occupational exposure results in much higher incidence rates in men than women, cases in children are more evenly distributed between boys and girls (though the incidence rate in 2016 was higher in boys than girls). Most children with lead poisoning have blood lead levels in the 10-14 µg/dL range. More lead poisoning cases consistently occur in July and August. Compared to the rest of the year, a larger proportion of cases occur in older children aged 3 to 5 years old in August (~50-55% in August compared to ~25-30% in other months). This pattern may be due to increased testing in preschool-aged children, such as Head Start enrollees.

Lead Poisoning in People ≥6 Years Old

Disease Facts

Cause: Lead

Type of illness: Often asymptomatic; can cause arthralgia, headache, cognitive dysfunction, adverse reproductive outcomes, gastrointestinal difficulties, renal failure, hypertension, and encephalopathy

Exposure: Inhalation or ingestion of lead, most often dust or fumes that occur when lead is melted

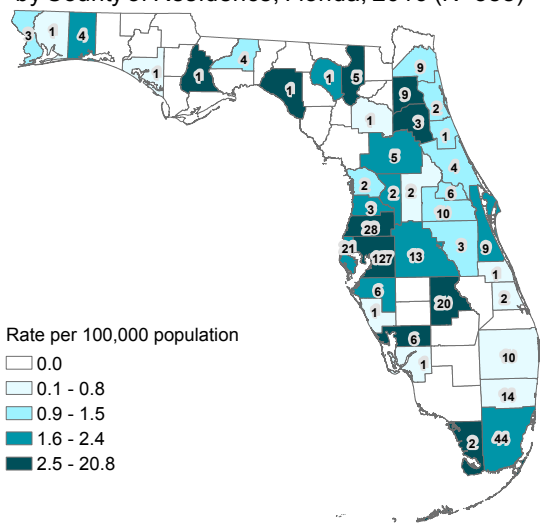
Reason for surveillance: Identify cases among adults with high-risk occupations or hobbies, need for environmental remediation to prevent new cases and exacerbation of illness, prevent take-home lead exposures, help target public health interventions for high-risk populations

Comments: Prior to 2010, lead poisoning case data were primarily stored outside the state's reportable disease surveillance system; therefore only cases from 2010 to 2016 are presented in this report. Lead poisoning in adults is much more common in men than women due to the types of occupations/hobbies with lead exposure.

Summary of Case Demographics

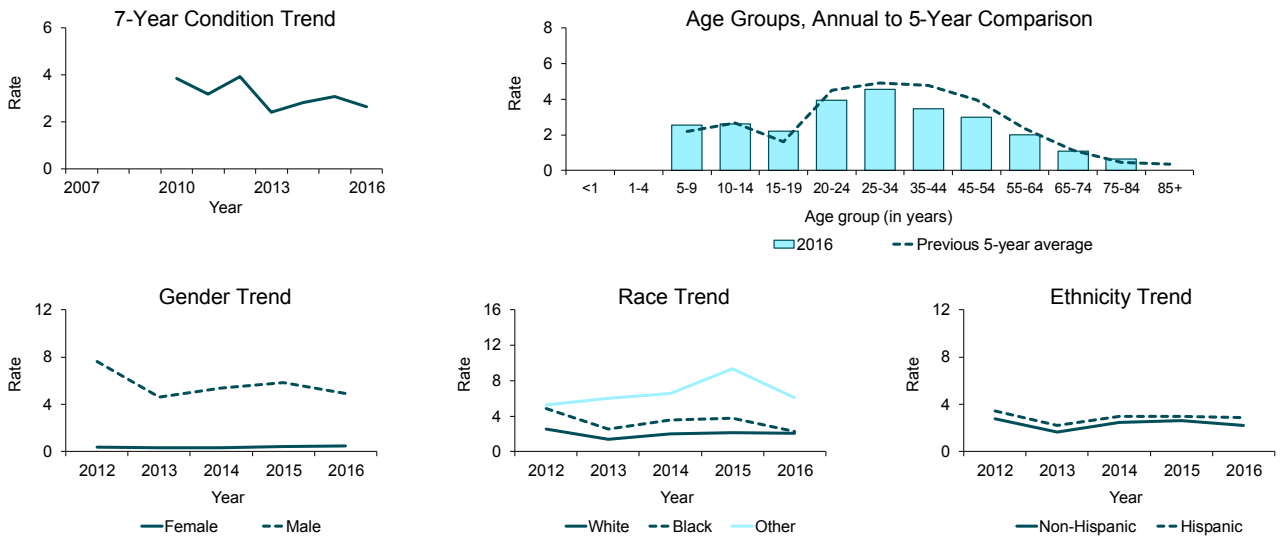
Summary			
Number of cases			501
Incidence rate (per 100,000 population)			2.7
Change from 5-year average incidence			-14.0%
Age (in Years)			
Mean			37
Median			35
Min-max			6 - 83
Gender	**Number**	**(Percent)**	**Rate**
Female	46	(9.2)	0.5
Male	455	(90.8)	4.9
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	304	(69.9)	2.1
Black	71	(16.3)	2.3
Other	60	(13.8)	6.1
Unknown race	66		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	316	(70.9)	2.2
Hispanic	130	(29.1)	2.9
Unknown ethnicity	55		

Reported Lead Poisoning Cases in People ≥6 Years Old and Incidence Rates Per 100,000 Population (Restricted to Exposures Occurring in Florida) by County of Residence, Florida, 2016 (N=388)



Note that rates based on <20 cases are not reliable and should be interpreted with caution.

Incidence Rates Per 100,000 Population of Reported Lead Poisoning Cases in People ≥6 Years Old by Year, Age, Gender, Race, and Ethnicity, Florida



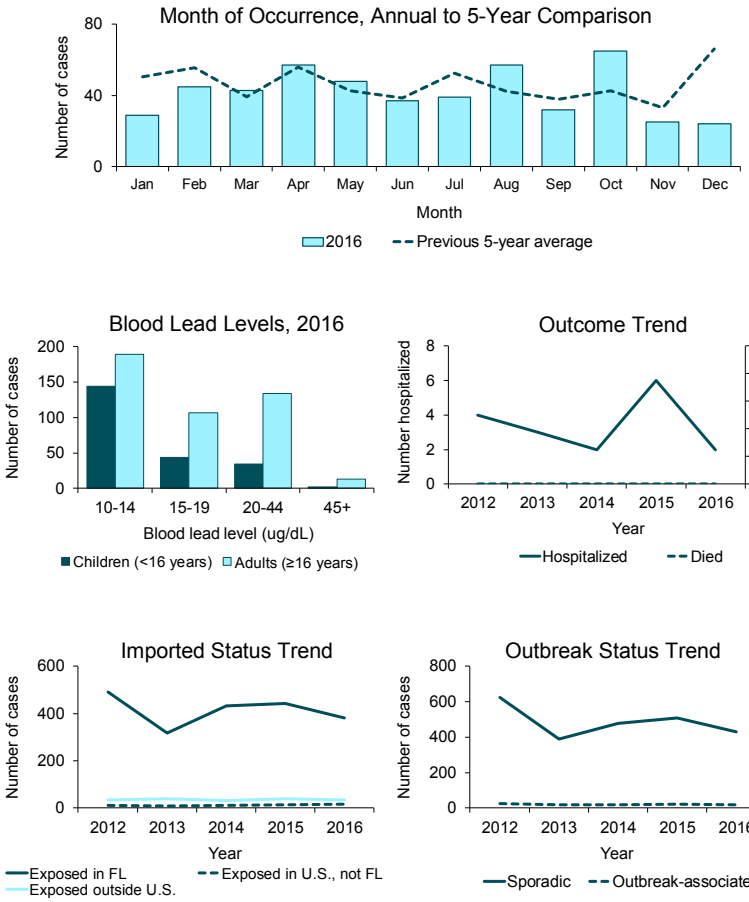
Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Lead poisoning cases in people ≥6 years old were missing 25.6% of ethnicity data in 2012, 22.2% of race data in 2012, 25.9% of ethnicity data in 2013, 26.1% of race data in 2013, 8.4% of ethnicity data in 2014, 10.9% of race data in 2014, 11.9% of ethnicity data in 2015, 10.3% of race data in 2015, 11.0% of ethnicity data in 2016, and 13.2% of race data in 2016.

Lead Poisoning in People ≥6 Years Old

Summary of Case Factors

Summary	Number	
Number of cases	501	
Outcome	**Number**	**(Percent)**
Hospitalized	2	(0.4)
Died	0	(0.0)
Imported Status	**Number**	**(Percent)**
Exposed in Florida	388	(77.4)
Exposed in the U.S., not Florida	17	(3.4)
Exposed outside the U.S.	36	(7.2)
Exposed location unknown	60	(12.0)
Outbreak Status	**Number**	**(Percent)**
Sporadic	441	(88.0)
Outbreak-associated	18	(3.6)
Outbreak status unknown	42	(8.4)

Reported Lead Poisoning Cases in People ≥6 Years Old by Month of Occurrence, Blood Lead Level, Outcome, Imported Status, and Outbreak Status, Florida



Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in the hospitalized count as well as the death count. Hospitalized status means that a person was hospitalized at the time of their illness, though the hospitalization may not necessarily have been due to the illness. Deaths include all people with the illness who died, though the death may not necessarily have been due to the illness. Imported status refers to where the exposure most likely occurred. Outbreak-associated indicates that two or more cases are epidemiologically linked.

Additional Information

Adult lead poisoning is primarily caused by exposure to lead in the workplace or during certain activities where lead is used. High-risk occupations include battery manufacturing, painting, nonferrous smelting, radiator repair, scrap metal recycling, work at firing ranges, and construction and renovation. High-risk activities include recreational target shooting, home remodeling, casting bullets and fishing weights, stained glass making, and consuming traditional remedies. The Occupational Safety and Health Administration requires regular lead screening for employees in high-risk occupations, making occupational lead poisoning cases more easily identifiable. Adults with non-occupational exposures are unlikely to be tested, making identification difficult. Compared to adults, the incidence of lead poisoning is lower in children ≥6 years old as they are screened less frequently. Screening is only recommended for children ≥6 years old if the child is foreign-born or otherwise identified as high-risk. Most cases (60-75%) in recent years have been identified through occupational screening. Similar to children, the largest number of cases in people ≥6 years old had blood lead levels between 10 and 14 µg/dL. However, compared to children, more cases had blood lead levels ≥15 µg/dL. Lead poisoning cases are reported all year with little seasonality. Each year, peaks occur in different months with no pattern year-to-year. The large peak in the previous five-year average in December is due to 119 cases reported in March and April 2012 that occurred in December 2011. The reason for the late reporting is unknown and the dramatic peak was not observed in other years. Hillsborough County has the largest number of reported cases due to occupational screening at a large battery and a metal recycling plant located there.

Legionellosis

Disease Facts

Cause: *Legionella* bacteria

Type of illness: Symptoms include fever, muscle pain, cough, shortness of breath; pneumonia can occur

Transmission: Inhalation of aerosolized water containing the bacteria

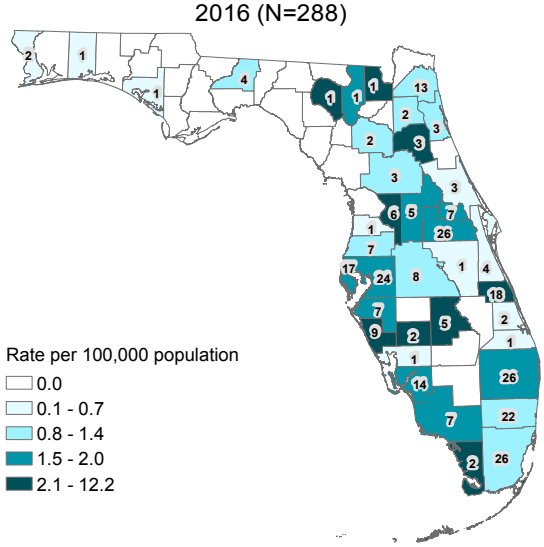
Reason for surveillance: Identify and control outbreaks, identify and mitigate common reservoirs, monitor incidence over time, estimate burden of illness

Comments: Recently identified sources in Florida and the U.S. include decorative fountains, hot tubs, cooling towers (air conditioning units for large buildings), and potable water systems. Increasing incidence in Florida is consistent with the increase observed nationally over the past decade. This increase is likely due to a number of factors, including aging infrastructure and a greater percentage of the population aged ≥64 years. The elderly and those with weakened immune systems are at highest risk for developing disease.

Summary of Case Demographics

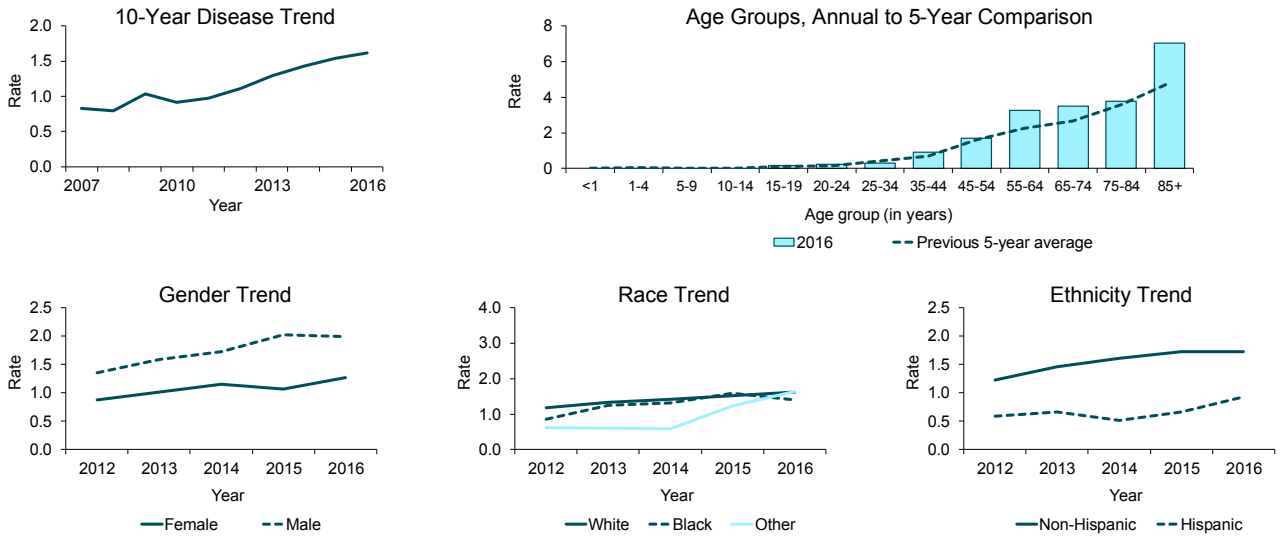
Summary			
Number of cases			328
Incidence rate (per 100,000 population)			1.6
Change from 5-year average incidence			+27.6%
Age (in Years)			
Mean			64
Median			64
Min-max			16 - 96
Gender	**Number**	**(Percent)**	**Rate**
Female	131	(39.9)	1.3
Male	197	(60.1)	2.0
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	255	(79.4)	1.6
Black	48	(15.0)	1.4
Other	18	(5.6)	NA
Unknown race	7		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	264	(85.2)	1.7
Hispanic	46	(14.8)	0.9
Unknown ethnicity	18		

Reported Legionellosis Cases and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2016 (N=288)



Note that rates based on <20 cases are not reliable and should be interpreted with caution.

Incidence Rates Per 100,000 Population of Reported Legionellosis Cases by Year, Age, Gender, Race, and Ethnicity, Florida

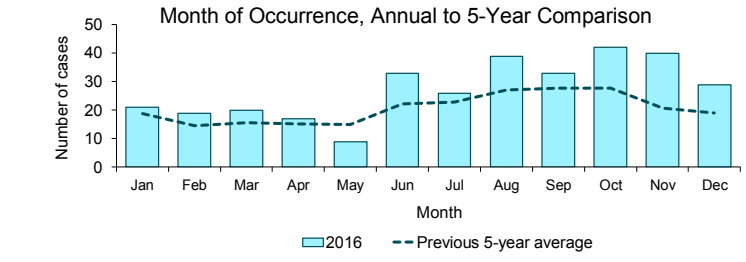


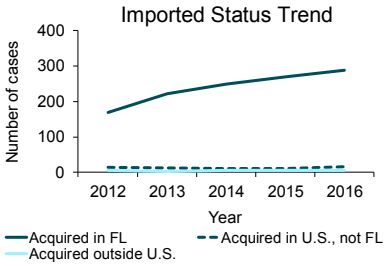
Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Legionellosis cases were missing 5.7% of ethnicity data in 2014 and 5.5% of ethnicity data in 2016.

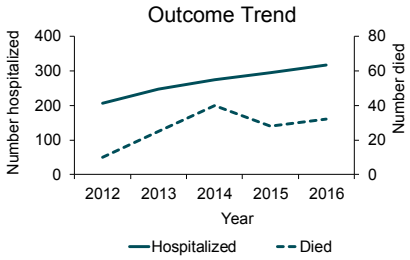
Summary of Case Factors

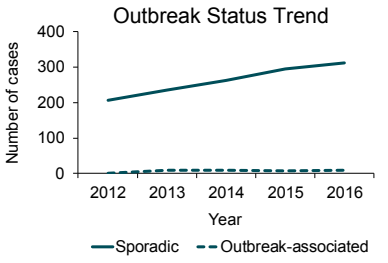
Summary	Number	
Number of cases	328	
Outcome	**Number**	**(Percent)**
Hospitalized	318	(97.0)
Died	32	(9.8)
Imported Status	**Number**	**(Percent)**
Acquired in Florida	288	(87.8)
Acquired in the U.S., not Florida	16	(4.9)
Acquired outside the U.S.	6	(1.8)
Acquired location unknown	18	(5.5)
Outbreak Status	**Number**	**(Percent)**
Sporadic	312	(95.1)
Outbreak-associated	10	(3.0)
Outbreak status unknown	6	(1.8)

Reported Legionellosis Cases by Month of Occurrence, Imported Status, Outcome, and Outbreak Status, Florida









Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in the hospitalized count as well as the death count. Hospitalized status means that a person was hospitalized at the time of their illness, though the hospitalization may not necessarily have been due to the illness. Deaths include all people with the illness who died, though the death may not necessarily have been due to the illness. Imported status refers to where the infection was most likely acquired. Outbreak- associated indicates that two or more cases are epidemiologically linked.

Additional Information

In Florida, sporadic cases of both Legionnaires' disease and Pontiac fever (two distinct presentations of legionellosis) are monitored. Single cases of legionellosis that occur at a health care facility or other facility where a person spent their entire incubation period warrant a full investigation and are generally characterized as outbreaks for public health purposes. However, these cases are not consistently classified as outbreak-associated and therefore not all cases are reflected in the table above. Fifteen outbreaks involving 31 cases were identified in Florida in 2016 (six cases were in non-Florida residents and therefore are not included in counts in this report). Outbreaks were associated with nursing homes, hotels, hospitals, a camp, an independent living facility, and an assisted living facility.

Listeriosis

Disease Facts

Cause: *Listeria monocytogenes* bacteria

Type of illness: Most people infected with *Listeria* have invasive infection, in which the bacteria has spread beyond the gastrointestinal tract; initial illness is often characterized by fever and diarrhea

Transmission: Foodborne; can be transmitted to fetus during pregnancy

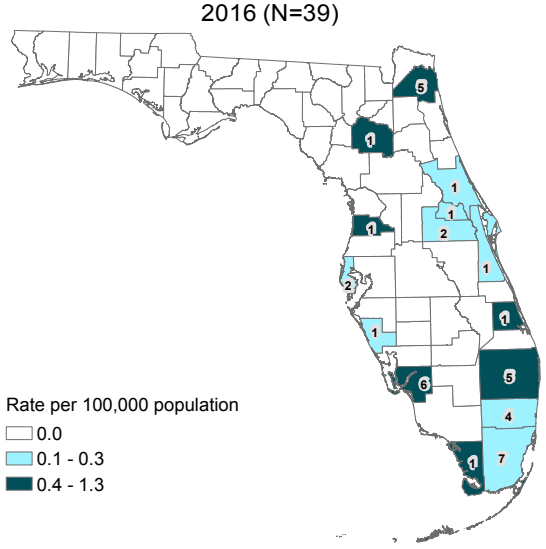
Reason for surveillance: Identify and control outbreaks, identify and mitigate common sources (e.g., contaminated food product), monitor incidence over time, estimate burden of illness, reduce stillbirths

Comments: Listeriosis primarily affects older adults, people with weakened immune systems, pregnant women, and infants born to infected mothers. Listeriosis is of particular concern for pregnant women because infection during pregnancy can cause fetal loss, preterm labor, stillbirths, and illness or death in newborn infants. Incidence is highest in infants and people ≥75 years old.

Summary of Case Demographics

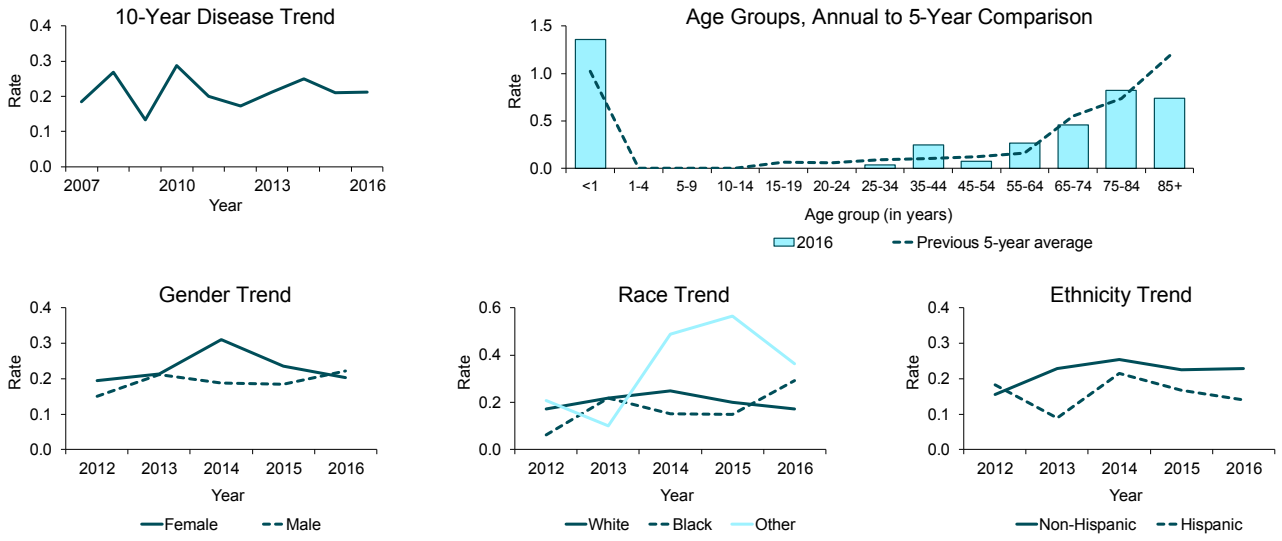
Summary			
Number of cases			43
Incidence rate (per 100,000 population)			0.2
Change from 5-year average incidence			+1.5%
Age (in Years)			
Mean			62
Median			70
Min-max			0 - 95
Gender	**Number**	**(Percent)**	**Rate**
Female	21	(48.8)	0.2
Male	22	(51.2)	0.2
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	27	(65.9)	0.2
Black	10	(24.4)	NA
Other	4	(9.8)	NA
Unknown race	2		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	35	(83.3)	0.2
Hispanic	7	(16.7)	NA
Unknown ethnicity	1		

Reported Listeriosis Cases and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2016 (N=39)



Note that rates based on <20 cases are not reliable and should be interpreted with caution.

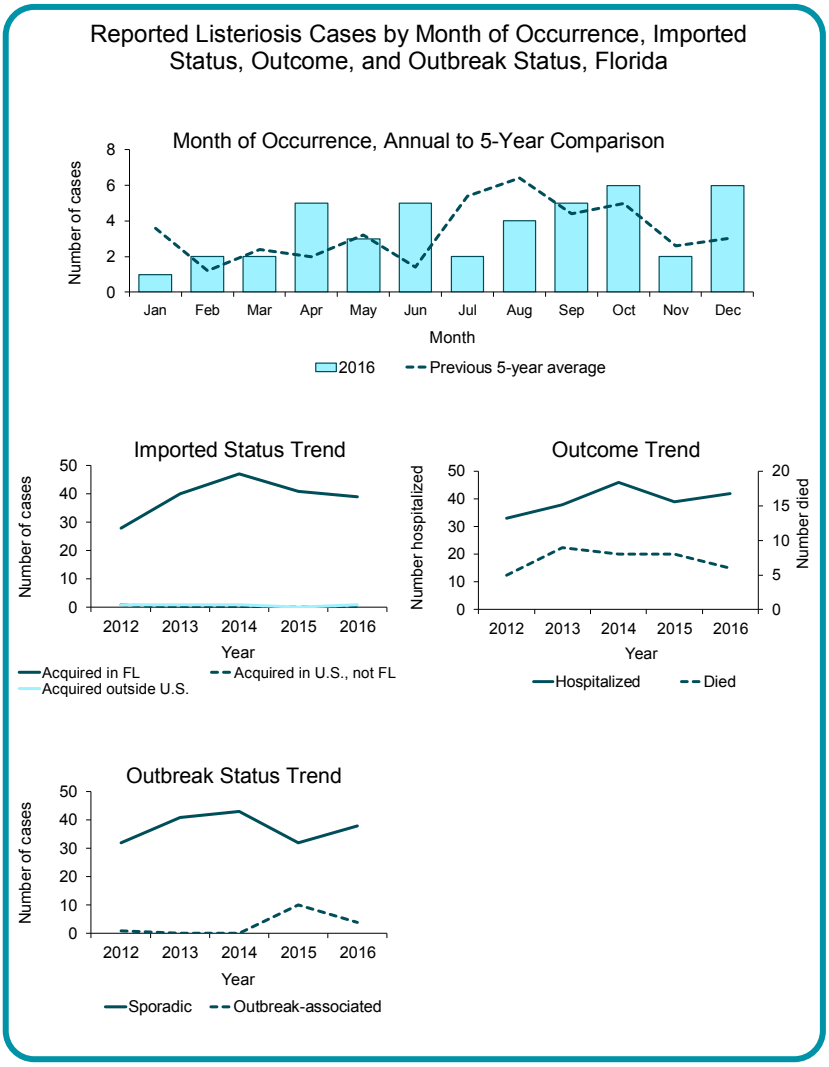
Incidence Rates Per 100,000 Population of Reported Listeriosis Cases by Year, Age, Gender, Race, and Ethnicity, Florida



Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Listeriosis cases were missing 6.1% of ethnicity data in 2012, 9.1% of race data in 2012, and 7.3% of ethnicity data in 2013.

Summary of Case Factors

Summary	Number	
Number of cases	43	
Outcome	**Number**	**(Percent)**
Hospitalized	42	(97.7)
Died	6	(14.0)
Imported Status	**Number**	**(Percent)**
Acquired in Florida	39	(90.7)
Acquired in the U.S., not Florida	0	(0.0)
Acquired outside the U.S.	1	(2.3)
Acquired location unknown	3	(7.0)
Outbreak Status	**Number**	**(Percent)**
Sporadic	38	(88.4)
Outbreak-associated	4	(9.3)
Outbreak status unknown	1	(2.3)



Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in the hospitalized count as well as the death count. Hospitalized status means that a person was hospitalized at the time of their illness, though the hospitalization may not necessarily have been due to the illness. Deaths include all people with the illness who died, though the death may not necessarily have been due to the illness. Imported status refers to where the infection was most likely acquired. Outbreak- associated indicates that two or more cases are epidemiologically linked.

Additional Information

Listeriosis cases occur all year and do not exhibit a strong seasonality, and low numbers make it difficult to interpret trends. When averaged over several years, slightly more cases occur in the summer months. Compared to previous years, more cases occurred in April, June, and December in 2016. In 2016, six cases, including two cases reported in previous years, were linked to five different multistate clusters. Whole-genome sequencing conducted on a 2014 Florida isolate linked the case to a raw chocolate milk product from a Pennsylvania farm. One 2015 case and four 2016 cases were linked to other four multistate clusters (sources for those clusters were not identified).

Lyme Disease

Disease Facts

Cause: *Borrelia burgdorferi* bacteria

Type of illness: Acute illness or late manifestation: fever, headache, fatigue, joint pain, muscle pain, bone pain, and erythema migrans (characteristic bull's-eye rash); late manifestation: Bell's palsy, severe joint pain with swelling, shooting pain, tingling in hands and feet, irregular heartbeat, dizziness, shortness of breath, and short-term memory loss

Transmission: Tick-borne; bite of infective *Ixodes scapularis* tick

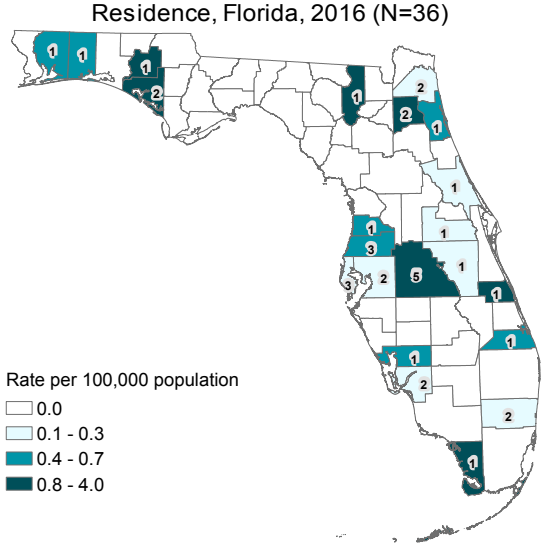
Reason for surveillance: Monitor incidence over time, estimate burden of illness and degree of endemicity, target areas of high incidence for prevention education

Comments: Lyme disease is the most common tick-borne disease in the U.S. The case definition changed in 2008; expanding the acceptable laboratory criteria contributed to an increase in cases starting in 2008.

Summary of Case Demographics

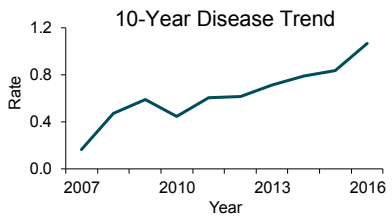
Summary			
Number of cases			216
Incidence rate (per 100,000 population)			1.1
Change from 5-year average incidence			+49.8%
Age (in Years)			
Mean			49
Median			54
Min-max			1 - 93
Gender	**Number**	**(Percent)**	**Rate**
Female	109	(50.5)	1.1
Male	107	(49.5)	1.1
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	162	(98.2)	1.0
Black	1	(0.6)	NA
Other	2	(1.2)	NA
Unknown race	51		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	151	(93.8)	1.0
Hispanic	10	(6.2)	NA
Unknown ethnicity	55		

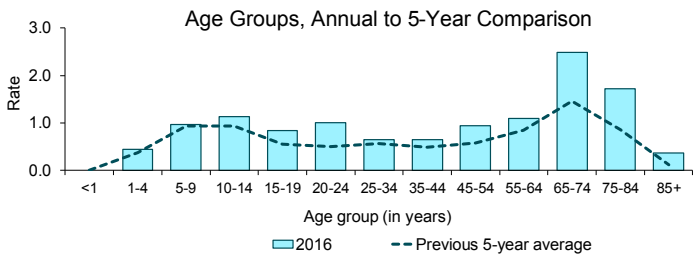
Reported Lyme Disease Cases and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2016 (N=36)

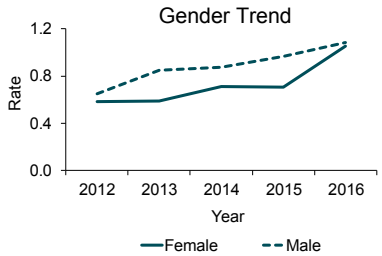


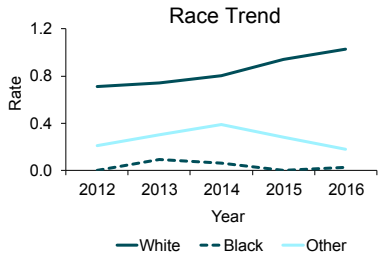
Note that rates based on <20 cases are not reliable and should be interpreted with caution.

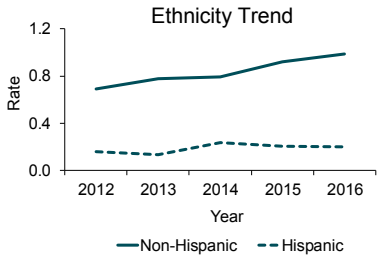
Incidence Rates Per 100,000 Population of Reported Lyme Disease Cases by Year, Age, Gender, Race, and Ethnicity, Florida











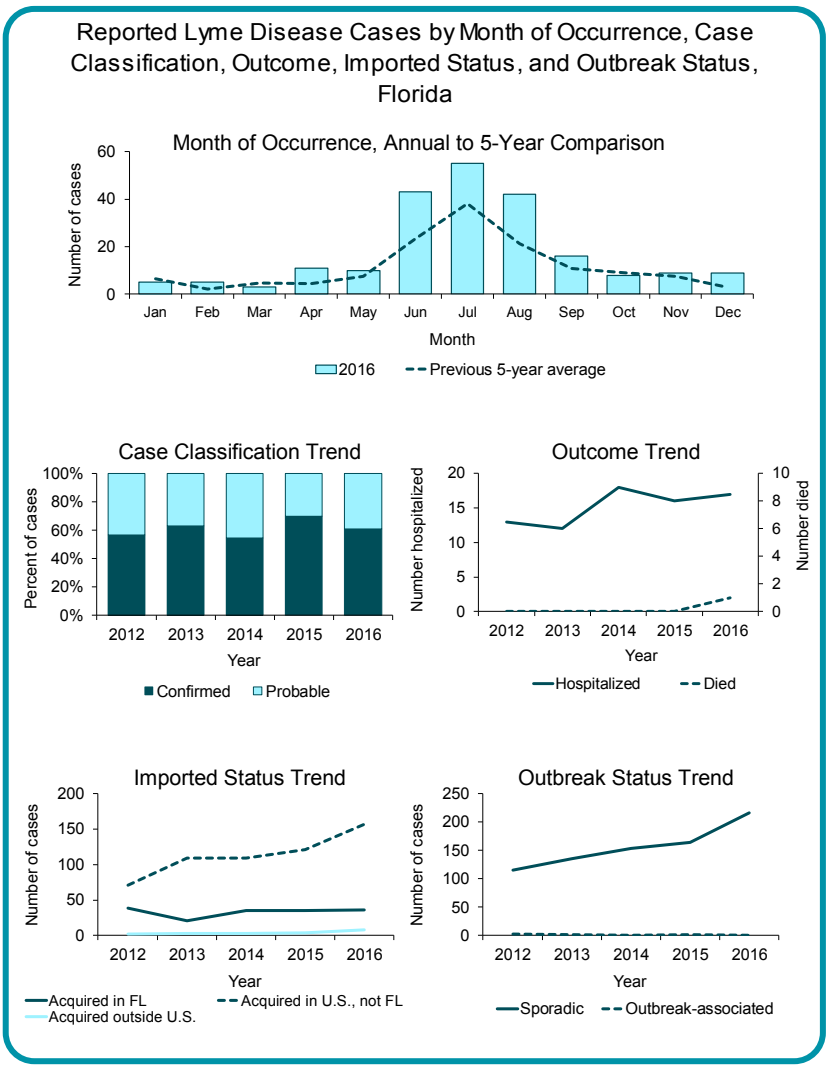
Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Lyme disease cases were missing 7.6% of ethnicity data in 2012, 7.6% of race data in 2012, 12.3% of ethnicity data in 2013, 14.5% of race data in 2013, 16.1% of ethnicity data in 2014, 16.8% of race data in 2014, 10.2% of ethnicity data in 2015, 10.2% of race data in 2015, 25.5% of ethnicity data in 2016, and 23.6% of race data in 2016.

Note that the majority of Lyme disease cases are acquired outside of Florida.

Summary of Case Factors

Summary	Number	
Number of cases	216	
Case Classification	**Number**	**(Percent)**
Confirmed	132	(61.1)
Probable	84	(38.9)
Outcome	**Number**	**(Percent)**
Hospitalized	17	(7.9)
Died	1	(0.5)
Imported Status	**Number**	**(Percent)**
Acquired in Florida	36	(16.7)
Acquired in the U.S., not Florida	157	(72.7)
Acquired outside the U.S.	8	(3.7)
Acquired location unknown	15	(6.9)
Outbreak Status	**Number**	**(Percent)**
Sporadic	216	(100.0)
Outbreak-associated	0	(0.0)
Outbreak status unknown	0	(0.0)

Case counts and rates from this report may differ from those found in other vector-borne disease reports as different criteria are used to assemble the data. Other reports may use illness onset date instead of report date, or county of exposure instead of county of residence.



Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in the hospitalized count as well as the death count. Hospitalized status means that a person was hospitalized at the time of their illness, though the hospitalization may not necessarily have been due to the illness. Deaths include all people with the illness who died, though the death may not necessarily have been due to the illness. Imported status refers to where the infection was most likely acquired. Outbreak- associated indicates that two or more cases are epidemiologically linked.

Additional Information

Erythema migrans rash associated with acute Lyme disease may also be seen with southern tick-associated rash illness (STARI), although chronic symptoms are not reported with STARI. There is also increased recognition of post-treatment Lyme disease syndrome, which is managed symptomatically and with lifestyle modifications.

The incidence of Lyme disease increased noticeably in 2016, primarily due to an increase in imported cases from 14 highly endemic states in the northeast and upper midwestern U.S. The increase in cases over the past decade may be due to increases in animal host and reservoir populations and the slowly expanding geographic range of the vector tick due to ecological factors. There were also five infections associated with travel to Europe, two with travel to Canada, and one possibly associated with travel to Afghanistan. The largest increase in cases was in adults ≥65 years old.

Malaria

Disease Facts

Cause: *Plasmodium vivax, P. falciparum, P. malariae, P. ovale* parasites

Type of illness: Uncomplicated or severe illness; common symptoms include high fever with chills, rigor, sweats, headache, nausea, and vomiting

Transmission: Bite of infective mosquito; rarely by blood transfusion or organ transplant

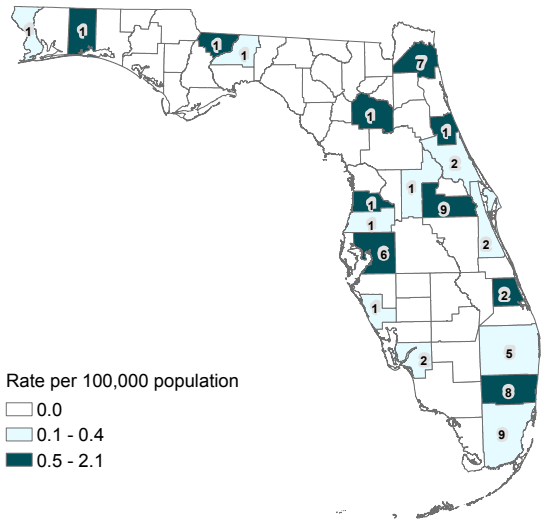
Reason for surveillance: Identify individual cases and implement control measures to prevent introduction and active transmission, monitor incidence over time, estimate burden of illness

Comments: All infections were among people traveling to countries with endemic transmission (primarily visiting friends and family in African countries). Imported malaria cases peaked in 2010 after the January 2010 earthquake in Haiti resulted in an influx of Haitians in Florida. The number of cases imported from Central America and the Caribbean has increased in recent years, though more cases are still infected in Africa.

Summary of Case Demographics

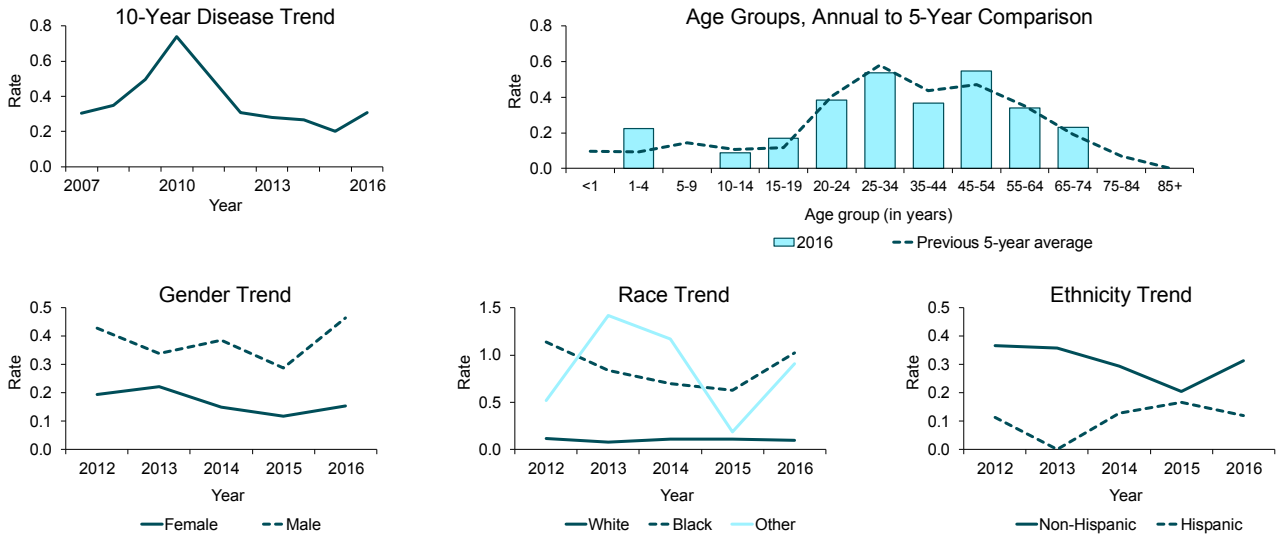
Summary			
Number of cases			62
Incidence rate (per 100,000 population)			0.3
Change from 5-year average incidence			-2.9%
Age (in Years)			
Mean			41
Median			43
Min-max			1 - 73
Gender	**Number**	**(Percent)**	**Rate**
Female	16	(25.8)	NA
Male	46	(74.2)	0.5
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	15	(25.0)	NA
Black	35	(58.3)	1.0
Other	10	(16.7)	NA
Unknown race	2		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	48	(88.9)	0.3
Hispanic	6	(11.1)	NA
Unknown ethnicity	8		

Reported Malaria Cases and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2016 (N=62)



Note that rates based on <20 cases are not reliable and should be interpreted with caution.

Incidence Rates Per 100,000 Population of Reported Malaria Cases by Year, Age, Gender, Race, and Ethnicity, Florida



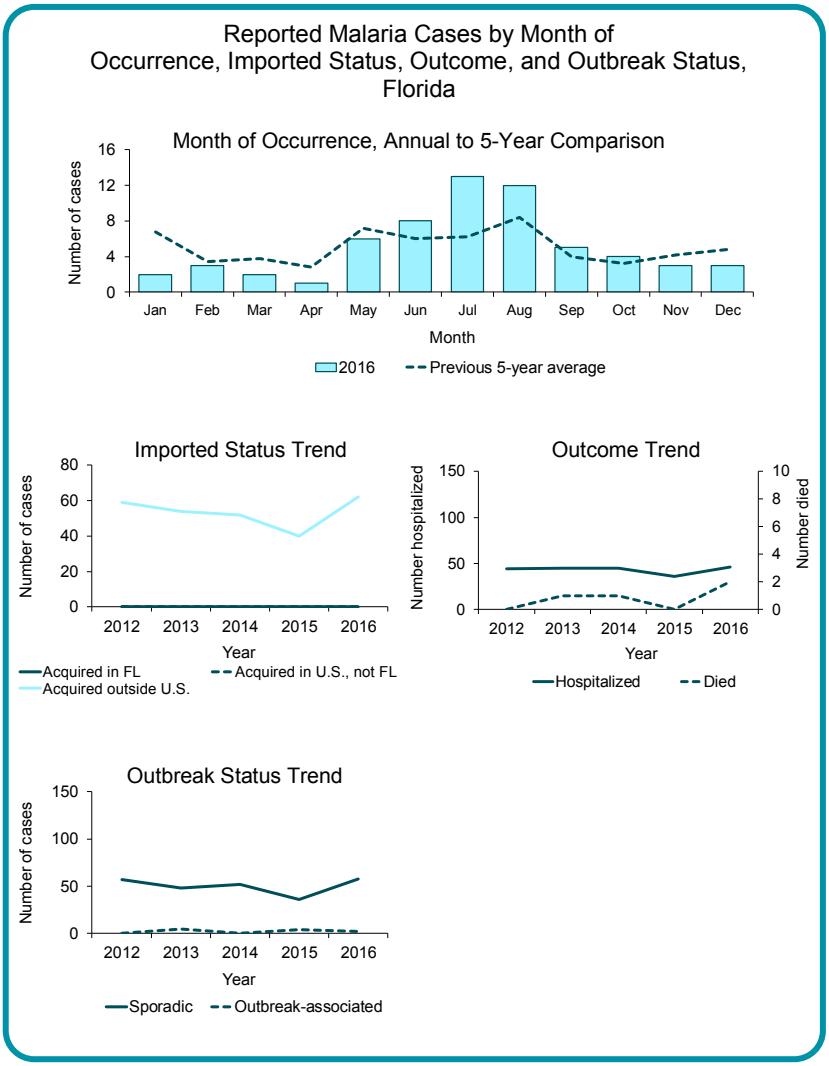
Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Malaria cases were missing 16.1% of ethnicity data in 2016.

Note that the majority of malaria cases are acquired outside of Florida.

Summary of Case Factors

Summary	Number	
Number of cases	62	
Outcome	**Number**	**(Percent)**
Hospitalized	46	(74.2)
Died	2	(3.2)
Imported Status	**Number**	**(Percent)**
Acquired in Florida	0	(0.0)
Acquired in the U.S., not Florida	0	(0.0)
Acquired outside the U.S.	62	(100.0)
Acquired location unknown	0	(0.0)
Outbreak Status	**Number**	**(Percent)**
Sporadic	58	(93.5)
Outbreak-associated	2	(3.2)
Outbreak status unknown	2	(3.2)
Region Where Infection Acquired	**Number**	**(Percent)**
Africa	41	(66.1)
Central America/Caribbean	14	(22.6)
Asia	5	(8.1)
South America	2	(3.2)
Reason for Travel	**Number**	**(Percent)**
Visiting friends/relatives	35	(56.5)
Tourism	8	(12.9)
Refugee/immigrant	6	(9.7)
Business	5	(8.1)
Missionary or dependent	4	(6.5)
Student/teacher	3	(4.8)
Unknown	1	(1.6)

Case counts and rates from this report may differ from those found in other vector-borne disease reports as different criteria are used to assemble the data. Other reports may use illness onset date instead of report date, or county of exposure instead of county of residence.



Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in the hospitalized count as well as the death count. Hospitalized status means that a person was hospitalized at the time of their illness, though the hospitalization may not necessarily have been due to the illness. Deaths include all people with the illness who died, though the death may not necessarily have been due to the illness. Imported status refers to where the infection was most likely acquired. Outbreak- associated indicates that two or more cases are epidemiologically linked.

Additional Information

In 2016, there were two deaths associated with *Plasmodium falciparum* infection; both people had traveled to West Africa. One death was associated with cerebral malaria while the other person had a high parasitemia level (>50%) and suffered from respiratory distress. It is important to note that infected residents and non-residents pose a potential malaria introduction risk since the malaria vector *Anopheles quadrimaculatus* is common In Florida. In 2016, 18 non-Florida residents were diagnosed with malaria while traveling in Florida (note that this report only includes Florida residents in case counts). The majority of these cases had traveled to Africa (13), followed by South America (3) and Asia (2). Two outbreak-associated cases were reported in 2016 involving a husband and wife who went to Nigeria to visit family and friends. The last malaria case possibly acquired in Florida was in 2010 in a Duval County resident. Two cases initially reported with unknown outbreak status were later determined to be sporadic after the close of the 2016 morbidity dataset.

Pertussis

Disease Facts

Cause: *Bordetella pertussis* bacteria

Type of illness: Respiratory infection; early symptoms last 1-2 weeks and include runny nose, low-grade fever, mild cough, and apnea; progresses to paroxysmal cough or "whoop" with posttussive vomiting and exhaustion

Transmission: Person-to-person; inhalation of infective, aerosolized respiratory tract droplets

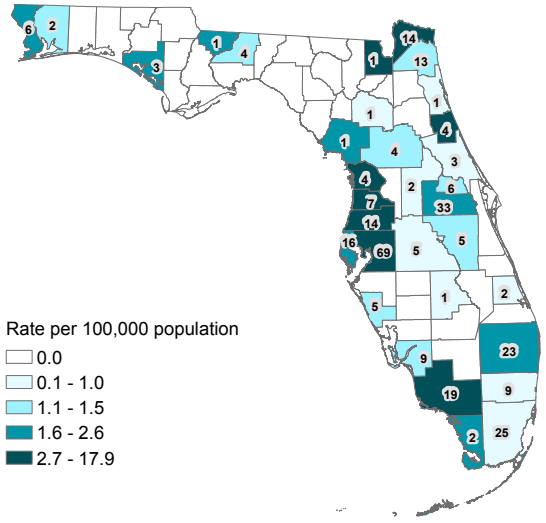
Reason for surveillance: Identify cases for treatment to prevent death, identify and prevent outbreaks, limit transmission in settings with infants or others who may transmit to infants, monitor effectiveness of immunization programs and vaccines

Comments: Pertussis incidence has increased nationwide since the 1980s. There was sharp increase in incidence in Florida in 2012 and 2013. Cases decreased dramatically in 2015 and stayed level in 2016; factors contributing to the decrease are not well understood. Incidence remained highest in infants <1 year old.

Summary of Case Demographics

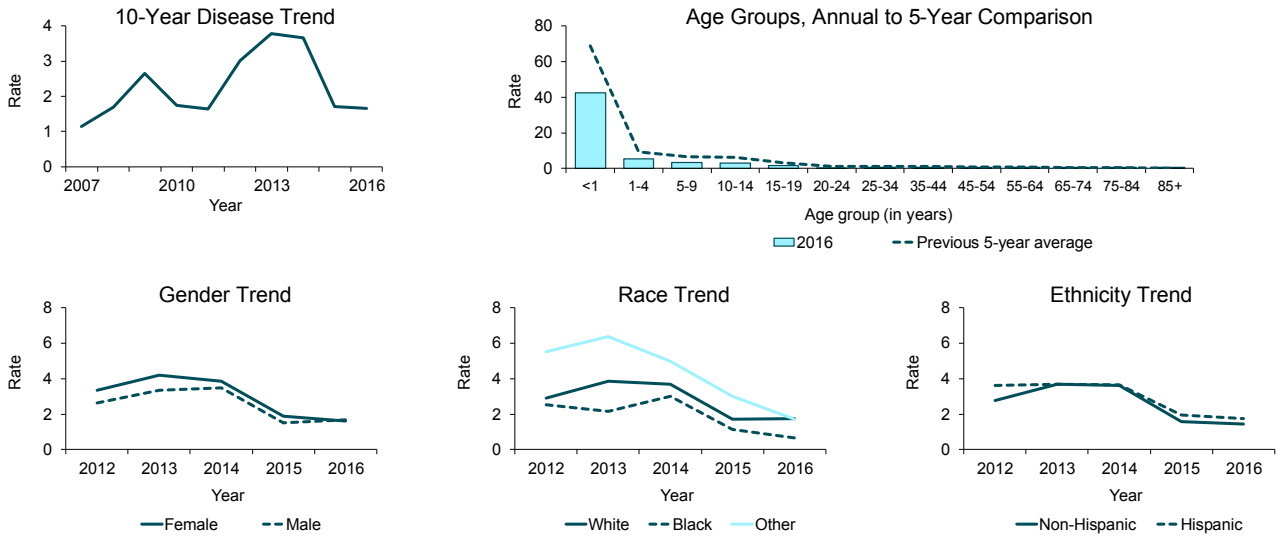
Summary			
Number of cases			334
Incidence rate (per 100,000 population)			1.7
Change from 5-year average incidence			-40.3%
Age (in Years)			
Mean			18
Median			8
Min-max			0 - 94
Gender	**Number**	**(Percent)**	**Rate**
Female	168	(50.3)	1.6
Male	166	(49.7)	1.7
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	274	(86.7)	1.7
Black	23	(7.3)	0.7
Other	19	(6.0)	NA
Unknown race	18		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	219	(71.6)	1.4
Hispanic	87	(28.4)	1.8
Unknown ethnicity	28		

Reported Pertussis Cases and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2016 (N=314)



Note that rates based on <20 cases are not reliable and should be interpreted with caution.

Incidence Rates Per 100,000 Population of Reported Pertussis Cases by Year, Age, Gender, Race, and Ethnicity, Florida

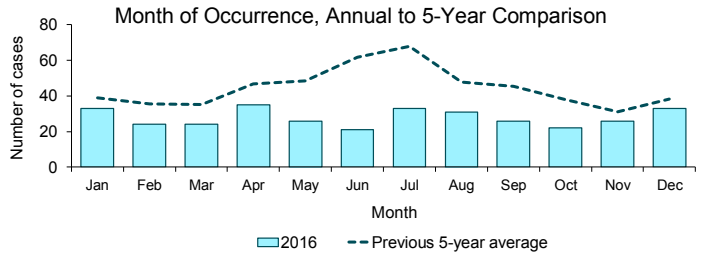


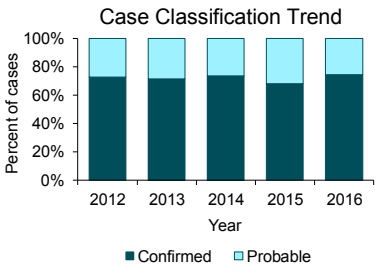
Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Pertussis cases were missing 8.4% of ethnicity data in 2016 and 5.4% of race data in 2016.

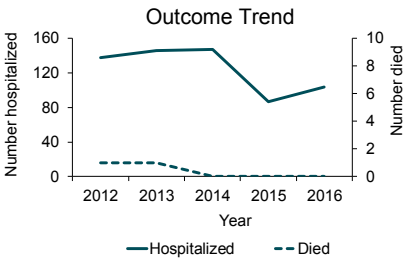
Summary of Case Factors

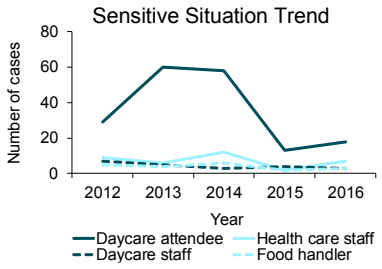
Summary	Number	
Number of cases	334	
Case Classification	**Number**	**(Percent)**
Confirmed	250	(74.9)
Probable	84	(25.1)
Outcome	**Number**	**(Percent)**
Hospitalized	104	(31.1)
Died	0	(0.0)
Sensitive Situation	**Number**	**(Percent)**
Daycare attendee	18	(5.4)
Daycare staff	3	(0.9)
Health care staff	7	(2.1)
Food handler	3	(0.9)
Imported Status	**Number**	**(Percent)**
Acquired in Florida	314	(94.0)
Acquired in the U.S., not Florida	11	(3.3)
Acquired outside the U.S.	3	(0.9)
Acquired location unknown	6	(1.8)
Outbreak Status	**Number**	**(Percent)**
Sporadic	196	(58.7)
Outbreak-associated	136	(40.7)
Outbreak status unknown	2	(0.6)

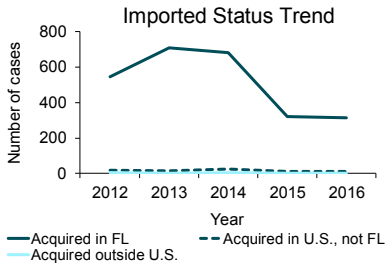
Reported Pertussis Cases by Month of Occurrence, Case Classification, Outcome, Sensitive Situation, Imported Status, and Outbreak Status, Florida

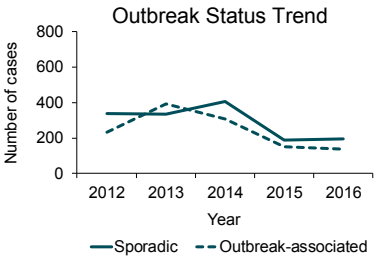












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Additional Information

Older adults often have milder infections and serve as the reservoirs and sources of infection for infants and young children. The highest rate and most severe outcomes from illness occur in infants <1 year old who are too young to be vaccinated, underscoring the importance of vaccinating pregnant women and family members of infants to protect infants from infection. It is recommended that all pregnant women receive a dose of Tdap (tetanus, diphtheria, pertussis) during their third trimester for each pregnancy to help protect their infants. One dose of Tdap vaccine became a requirement for children entering, attending, or transferring to the seventh grade during the 2009-2010 school year. Pertussis incidence remained steady after a sharp decrease in 2015. The decrease in cases is accompanied by a lack of seasonality, which may be due to small case numbers. Hospitalizations increased from 87 (25.7%) in 2015 to 104 (31.1%) in 2016. The number of pertussis cases that were outbreak-associated decreased slightly from 150 (44.2%) in 2015 to 136 (40.7%) in 2016. There were 16 pertussis outbreaks with ≥3 cases in 2016 with the majority (15) occurring in households and one occurring in an elementary school. Two cases initially reported with unknown outbreak status were later determined to be sporadic after the close of the 2016 morbidity dataset. Pertussis mortality is rare in Florida and though there were no deaths in 2016, one to two deaths in a year is not uncommon.

Pesticide-Related Illness and Injury, Acute

Disease Facts

Cause: Pesticides

Type of illness: Respiratory, gastrointestinal, neurological, dermal, etc., depending on the agent

Exposure: Depends on agent; dermal, inhalation, and ingestion are most common

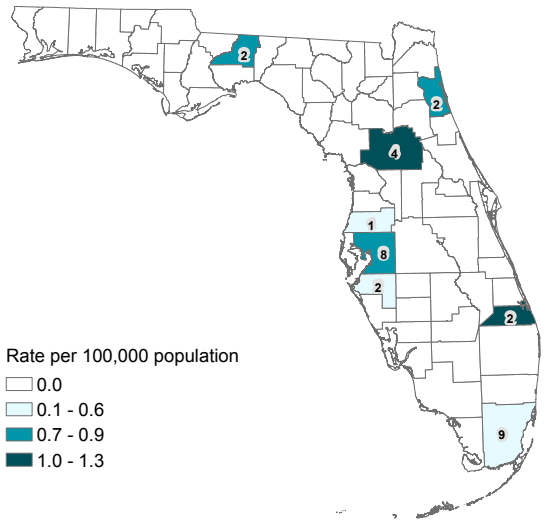
Reason for surveillance: Identify and mitigate persistent sources of exposure, identify populations at risk, evaluate trends in environmental conditions and occupational exposure, improve administration and proper use of pesticides to reduce exposure

Comments: Prior to January 2012, suspect sporadic cases (i.e., not part of a cluster) and suspect cases associated with non-occupational exposures (typically limited household exposures) met the surveillance case definition. The case definition was changed in January 2012 to exclude these cases, substantially decreasing the number of cases reported annually. All suspect cases meeting the definition are included here for all years.

Summary of Case Demographics

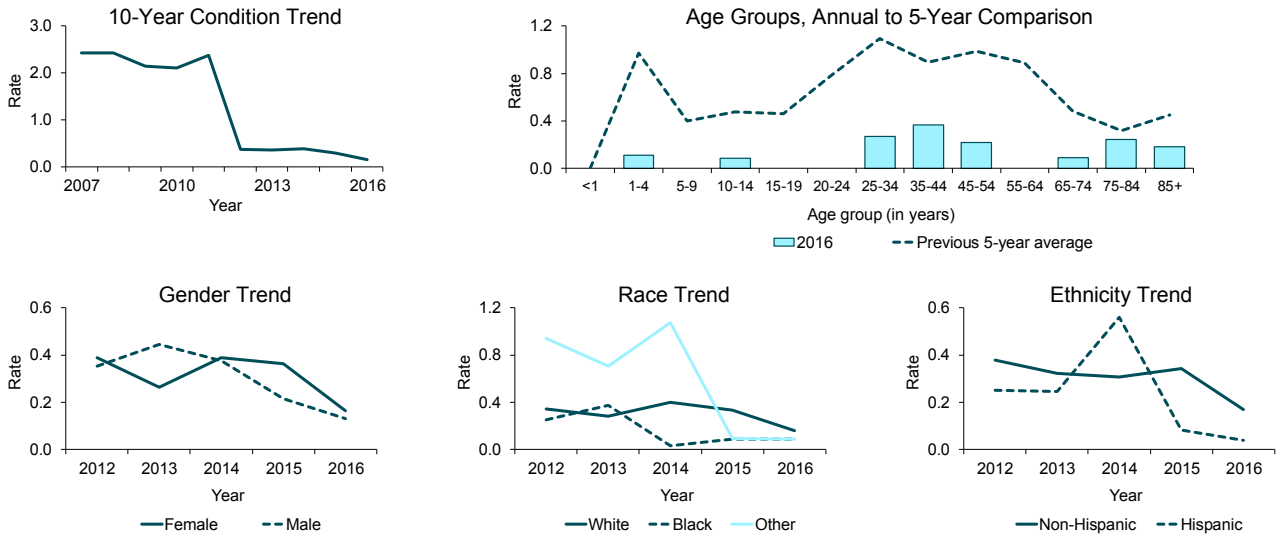
Summary			
Number of cases			30
Incidence rate (per 100,000 population)			0.1
Change from 5-year average incidence			-80.4%
Age (in Years)			
Mean			45
Median			40
Min-max			3 - 95
Gender	**Number**	**(Percent)**	**Rate**
Female	17	(56.7)	NA
Male	13	(43.3)	NA
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	25	(86.2)	0.2
Black	3	(10.3)	NA
Other	1	(3.4)	NA
Unknown race	1		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	26	(92.9)	0.2
Hispanic	2	(7.1)	NA
Unknown ethnicity	2		

Reported Acute Pesticide-Related Illness and Injury Cases and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2016 (N=30)



Note that rates based on <20 cases are not reliable and should be interpreted with caution.

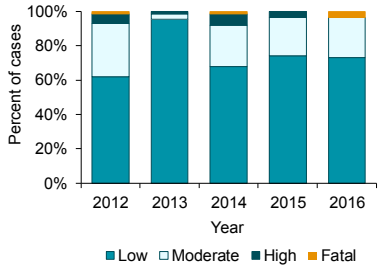
Incidence Rates Per 100,000 Population of Reported Acute Pesticide-Related Illness and Injury Cases by Year, Age, Gender, and Month of Occurrence, Florida



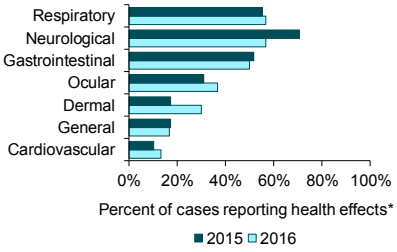
Additional Information

Reported Acute Pesticide-Related Illness and Injury Cases by Severity of Illness and Health Effects,* Florida

5-Year Trend for Severity of Illness

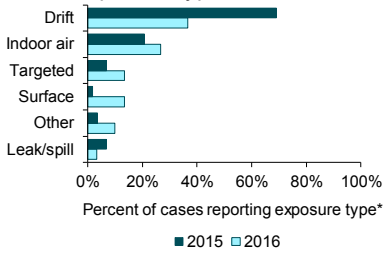


Health Effects,* 2015-2016

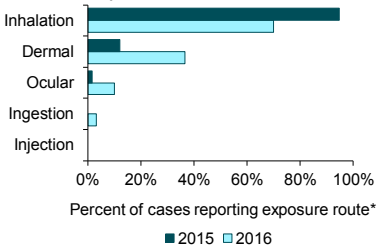


Reported Acute Pesticide-Related Illness and Injury Cases by Exposure Type,* Exposure Route,* Occupational Exposure, and Type of Activity at Time of Exposure, Florida

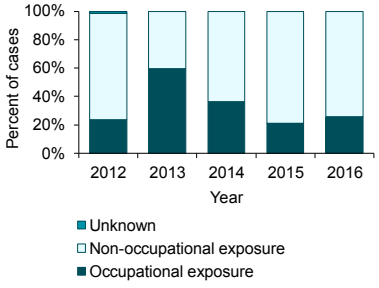
Exposure Type,* 2015-2016



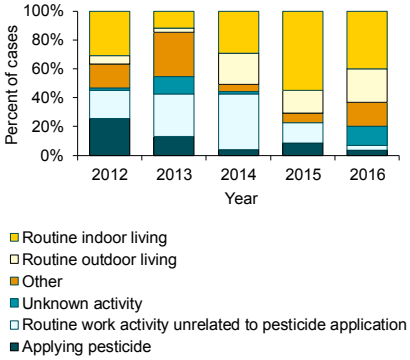
Exposure Route,* 2015-2016



5-Year Occupational Exposure Trend



5-Year Trend for Activity at Time of Exposure



*Note that there may be multiple exposure types and routes for one case, and multiple categories of health effects may be reported for one case.

Definitions of exposure types:

- Drift: Person was exposed via the movement of pesticides away from the treatment site
- Targeted: Person was exposed to an application of a pesticide material released at the target site, and not carried from the target site by air
- Indoor air: Person was exposed via indoor air contamination (this includes residential, commercial and greenhouse indoor air)
- Surface: Person was exposed via contact with pesticide residues on a treated surface (e.g., plant material, carpets, a treated animal) or entry into an outdoor treated area
- Leak/spill: Person was exposed to a leak or spill of pesticide material (e.g., from a leaking container or equipment, flood waters, emergency response)

Additional Information

In 2016, most cases experienced neurological symptoms (e.g., headache, weakness, dizziness) and respiratory symptoms (e.g., cough, shortness of breath) and had low severity of illness following pesticide exposure. One woman died from acute hydrogen sulfide poisoning after inhaling gas produced by mixing a solution containing lime sulfur with other cleaning agents while cleaning a restroom at work.

In 2016, seven cases (64.4%) were related to Paladin odor, a soil fumigant with dimethyl disulfide as the active ingredient. Paladin was applied in Hillsborough County in August and September, accounting for the clustering of cases in that county and the increased case count during those months.

Disease Facts

Cause: Rabies virus

Type of illness in humans: Fever, headache, insomnia, confusion, hallucinations, increase in saliva, difficulty swallowing, and fear of water; near 100% fatality rate, death usually occurs within days of symptom onset

Transmission: Infectious saliva or nervous tissue in contact with open wound or mucous membrane via bite

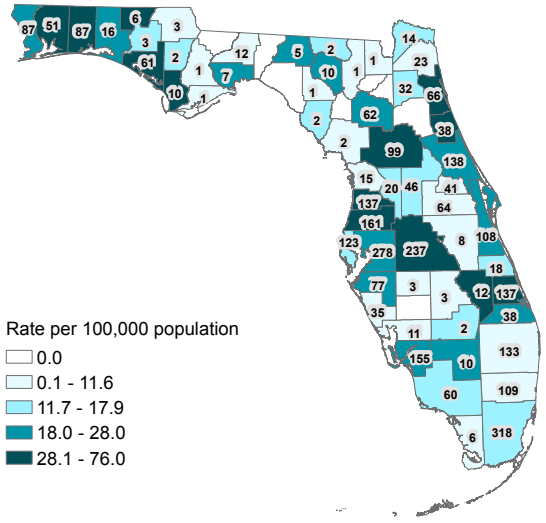
Reason for surveillance: Identify and mitigate sources of exposure, evaluate adherence to guidance on rabies post-exposure prophylaxis (PEP)

Comments: Incidence of human exposures to suspected rabid animals for which PEP is recommended has increased since case reporting was initiated primarily due to PEP recommendations related to dog bites. Contributing factors may include more animal bites, lack of rabies PEP training, and fewer local resources to find and confine or test biting animals. Florida was impacted by two hurricanes in 2016; animal bites frequently increase after hurricanes.

Summary of Case Demographics

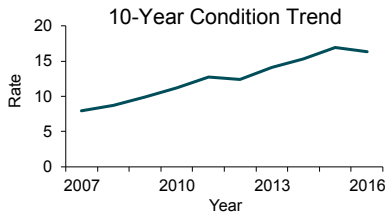
Possible Human Exposure to Rabies			
Number of cases with PEP recommended			3,302
Incidence rate (per 100,000 population)			16.3
Change from 5-year average incidence			+14.3%
Age (in Years)			
Mean			37
Median			36
Min-max			0 - 96
Gender	**Number**	**(Percent)**	**Rate**
Female	1,727	(52.3)	16.7
Male	1,575	(47.7)	15.9
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	2,276	(85.1)	14.5
Black	304	(11.4)	8.9
Other	94	(3.5)	8.5
Unknown race	628		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	2,237	(83.0)	14.7
Hispanic	457	(17.0)	9.2
Unknown ethnicity	608		

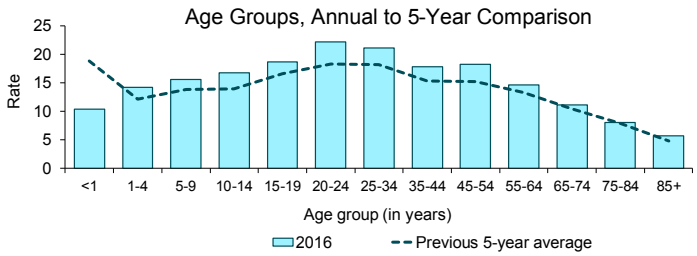
Reported Possible Human Exposure to Rabies Cases and Incidence Rates Per 100,000 Population (Restricted to Exposures Occurring in Florida) by County of Residence, Florida, 2016 (N=3,208)

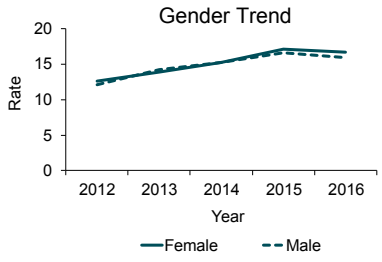


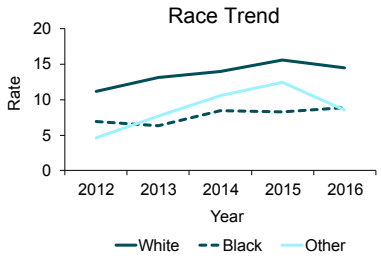
Note that rates based on <20 cases are not reliable and should be interpreted with caution.

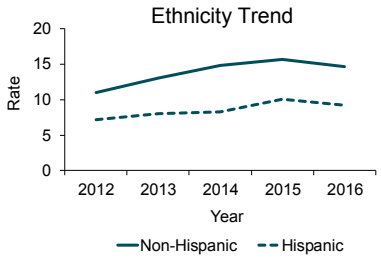
Incidence Rates Per 100,000 Population of Reported Possible Human Exposure to Rabies Cases by Year, Age, Gender, Race, and Ethnicity, Florida











Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Possible human exposure to rabies cases were missing 18.2% of ethnicity data in 2012, 18.2% of race data in 2012, 15.7% of ethnicity data in 2013, 16.6% of race data in 2013, 13.3% of ethnicity data in 2014, 15.6% of race data in 2014, 15.2% of ethnicity data in 2015, 15.8% of race data in 2015, 18.4% of ethnicity data in 2016, and 19.0% of race data in 2016.

Additional Information

The last case of human rabies acquired in Florida was in 1948. The animals most frequently diagnosed with rabies in Florida are raccoons, bats, unvaccinated cats, and foxes. Rabies is endemic in the raccoon and bat populations of Florida. Rabies frequently spreads from raccoons, and occasionally bats, to other animal species such as foxes and cats.

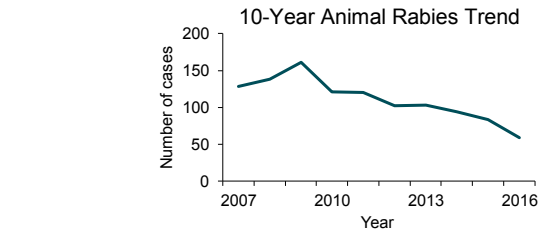
Laboratory testing for animal rabies is only done when animals potentially expose (e.g., bite) humans or domestic animals; thus, these data do not necessarily correlate with the true prevalence of rabies by animal species in Florida. A total of 59 laboratory-confirmed rabid animals were reported in 2016, which was a 41.2% decrease from the previous 5-year average.

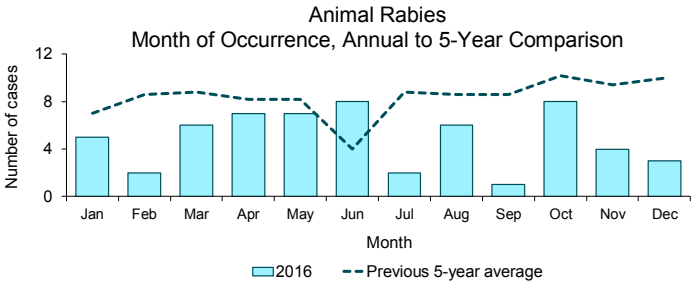
Case counts in this report may differ from those found in other rabies reports as different criteria are used to assemble the data. Other reports use the calendar year, while this report uses report year. For additional information on calendar year versus report year, please see the paragraph on Determining How Cases Are Counted: Reporting Period and Cases Included within Interpreting the Data in the Introduction.

In 2016, Sarasota County reported the first ever rabid deer in Florida. All mammals can be infected by rabies, although the primary reservoirs are meat-eating mammals and bats. The number of rabid animals remained low in 2016, which could be in part due to natural cycles in disease, strict use of testing criteria, or increased reliance on rabies PEP rather than animal testing or observation.

There is generally a much greater risk for rabies exposure to people when domestic animals are infected versus wildlife. Properly administered rabies vaccines are highly effective in protecting domestic animals like cats and dogs against rabies infection, and rabies vaccination is required by state law for these animals.

Reported Animal Rabies
by Year, Month of Occurrence, Animal, and County, Florida

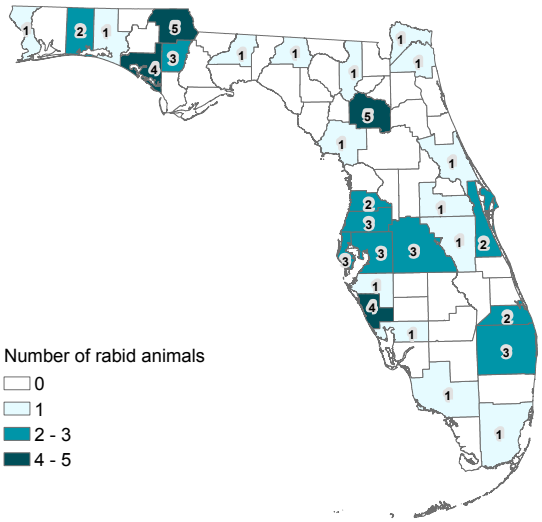




Laboratory-Confirmed Rabid Animals by Type of Animal, Florida, 2015 and 2016

Type of Animal	2015		2016	
	Number	(Percent)	Number	(Percent)
Raccoon	45	(54.2)	31	(52.5)
Bat	15	(18.1)	13	(22.0)
Fox	10	(12.0)	6	(10.2)
Cat	8	(9.6)	4	(6.8)
Horse	0	(0.0)	2	(3.4)
Bobcat	0	(0.0)	1	(1.7)
Deer	0	(0.0)	1	(1.7)
Otter	0	(0.0)	1	(1.7)
Skunk	1	(1.2)	0	(0.0)
Dog	2	(2.4)	0	(0.0)
Goat	2	(2.4)	0	(0.0)
Total	83		59	

Reported Animal Rabies Cases and Incidence Rates
Per 100,000 Population by County of Residence,
Florida, 2016 (N=59)



Salmonellosis

Disease Facts

Cause: *Salmonella* bacteria (excluding *Salmonella* serotype Typhi, which causes typhoid fever and is described in Section 3: Narratives for Selected Reportable Diseases/Conditions of Infrequent Occurrence)

Type of illness: Gastroenteritis (diarrhea, vomiting)

Transmission: Fecal-oral; including person-to-person, animal-to-person, foodborne, and waterborne

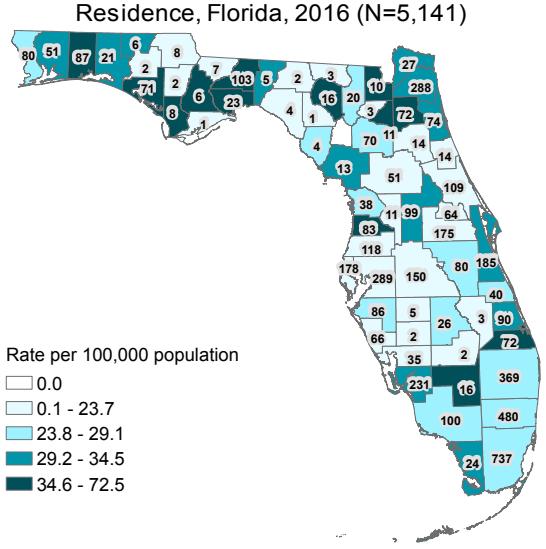
Reason for surveillance: Identify and control outbreaks, identify and mitigate common sources (e.g., contaminated food product, ill food handler), monitor incidence over time, estimate burden of illness

Comments: Florida frequently has the highest number and one of the highest rates of salmonellosis cases in the U.S. Rates are very high in <1-year-olds and decrease dramatically with age. The seasonal pattern is very strong, peaking in late summer. Geographic distribution is relatively consistent, though not well understood, with high rates clustered in northern Florida and the Panhandle (particularly in lower population counties).

Summary of Case Demographics

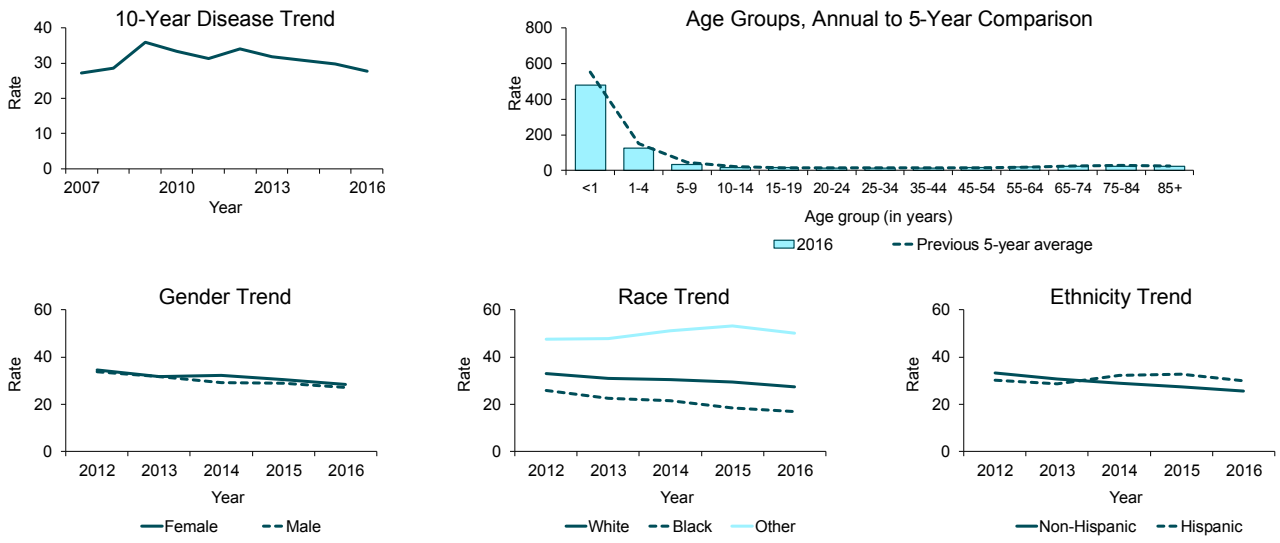
Summary			
Number of cases			5,621
Incidence rate (per 100,000 population)			27.8
Change from 5-year average incidence			-11.9%
Age (in Years)			
Mean			28
Median			16
Min-max			0 - 100
Gender	**Number**	**(Percent)**	**Rate**
Female	2,932	(52.2)	28.3
Male	2,689	(47.8)	27.2
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	4,317	(79.3)	27.5
Black	575	(10.6)	16.9
Other	551	(10.1)	50.1
Unknown race	178		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	3,913	(72.4)	25.6
Hispanic	1,494	(27.6)	30.1
Unknown ethnicity	214		

Reported Salmonellosis Cases and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2016 (N=5,141)



Note that rates based on <20 cases are not reliable and should be interpreted with caution.

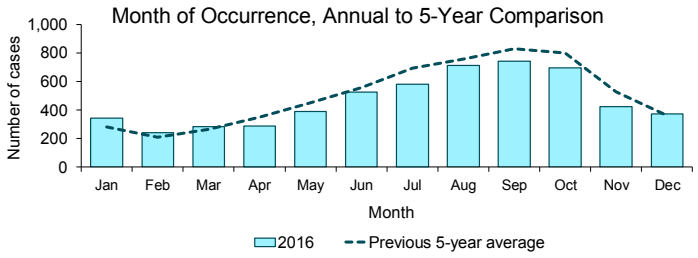
Incidence Rates Per 100,000 Population of Reported Salmonellosis Cases by Year, Age, Gender, Race, and Ethnicity, Florida

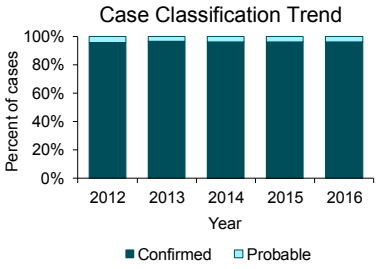


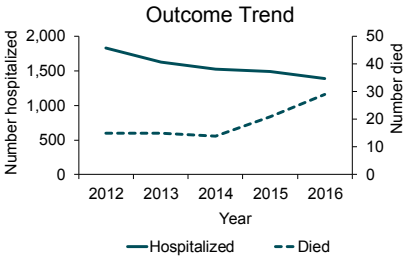
Summary of Case Factors

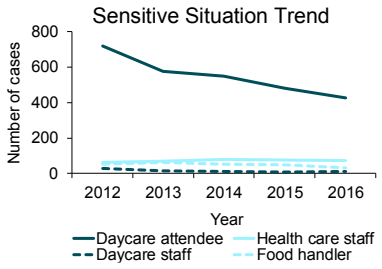
Summary	Number	
Number of cases	5,621	
Case Classification	**Number**	**(Percent)**
Confirmed	5,426	(96.5)
Probable	195	(3.5)
Outcome	**Number**	**(Percent)**
Hospitalized	1,388	(24.7)
Died	29	(0.5)
Sensitive Situation	**Number**	**(Percent)**
Daycare attendee	428	(7.6)
Daycare staff	13	(0.2)
Health care staff	72	(1.3)
Food handler	31	(0.6)
Imported Status	**Number**	**(Percent)**
Acquired in Florida	5,141	(91.5)
Acquired in the U.S., not Florida	110	(2.0)
Acquired outside the U.S.	193	(3.4)
Acquired location unknown	177	(3.1)
Outbreak Status	**Number**	**(Percent)**
Sporadic	5,037	(89.6)
Outbreak-associated	491	(8.7)
Outbreak status unknown	93	(1.7)

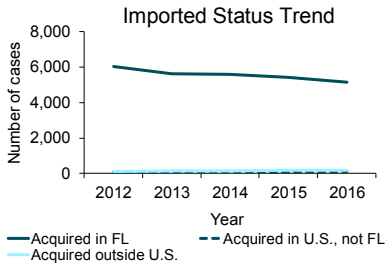
Reported Salmonellosis Cases by Month of Occurrence, Case Classification, Outcome, Sensitive Situation, Imported Status, and Outbreak Status, Florida

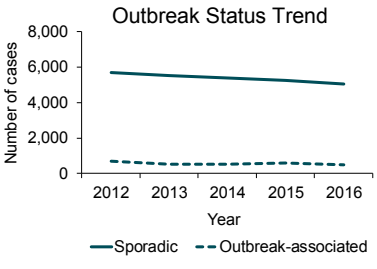












Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in the hospitalized count as well as the death count. Hospitalized status means that a person was hospitalized at the time of their illness, though the hospitalization may not necessarily have been due to the illness. Deaths include all people with the illness who died, though the death may not necessarily have been due to the illness. Sensitive situation categories are not mutually exclusive, and most cases do not fall into any of these categories. Imported status refers to where the infection was most likely acquired. Outbreak- associated indicates that two or more cases are epidemiologically linked.

Additional Information

The number of infected people who died increased in both 2015 and 2016, with deaths seen predominantly in white, non-Hispanic adults aged 55 years and older. While it is unknown if these deaths were a direct result of their *Salmonella* infection, the impacted age groups are more likely to have co-morbidities, which could increase their risk of serious complications and death.

Most outbreak-associated cases are due to household clusters; however, some outbreak-associated cases were part of national or multistate outbreaks linked to a particular source. In 2016, Florida had 64 outbreak-associated cases that were part of 25 different multistate outbreaks. An additional three cases were excluded from multistate outbreaks when whole-genome sequencing determined the isolates were not highly related to the outbreak isolates. A variety of vehicles were identified for multistate outbreaks, from animal exposures to organic powdered supplements. In 2016, 26 cases were investigated as part of five different in-state clusters. No common vehicles were identified for any in-state cluster.

Shiga Toxin-Producing *Escherichia coli* (STEC) Infection

Disease Facts

Cause: Shiga toxin-producing *Escherichia coli* (STEC) bacteria

Type of illness: Gastroenteritis (diarrhea, vomiting); less frequently hemolytic uremic syndrome (HUS)

Transmission: Fecal-oral; including person-to-person, animal-to-person, waterborne and foodborne

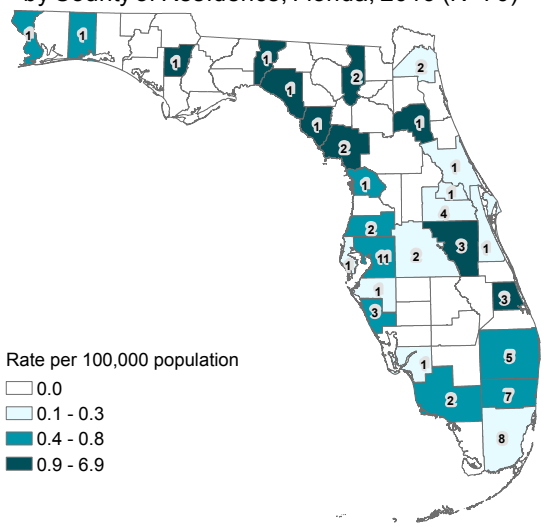
Reason for surveillance: Identify and control outbreaks, identify and mitigate common sources (e.g., contaminated food product, ill food handler), monitor incidence over time, estimate burden of illness

Comments: STEC incidence has generally increased over the past 10 years, likely due to advancements in laboratory techniques, resulting in improved identification of STEC infection. Incidence is highest in children <5 years old, a group particularly vulnerable to STEC infection. STEC incidence in women has remained steadily higher than men, except in 2014 when it decreased to a rate similar to men. Incidence is lowest in black people, and has been increasing in people of other races since 2013.

Summary of Case Demographics

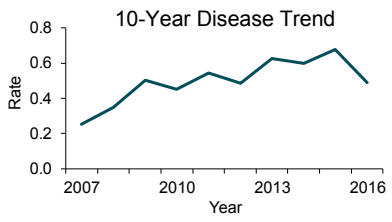
Summary			
Number of cases			99
Incidence rate (per 100,000 population)			0.5
Change from 5-year average incidence			-16.6%
Age (in Years)			
Mean			22
Median			7
Min-max			0 - 95
Gender	**Number**	**(Percent)**	**Rate**
Female	61	(61.6)	0.6
Male	38	(38.4)	0.4
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	70	(76.1)	0.4
Black	3	(3.3)	NA
Other	19	(20.7)	NA
Unknown race	7		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	47	(52.8)	0.3
Hispanic	42	(47.2)	0.8
Unknown ethnicity	10		

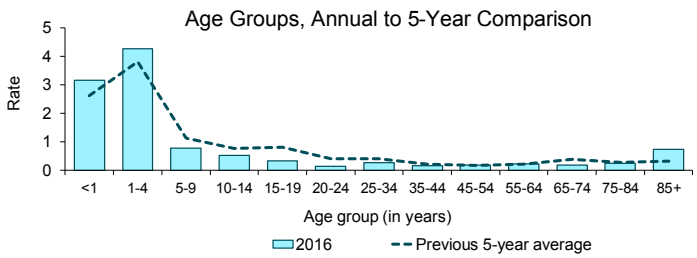
Reported Shiga Toxin-Producing *E. coli* Infection Cases and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2016 (N=70)

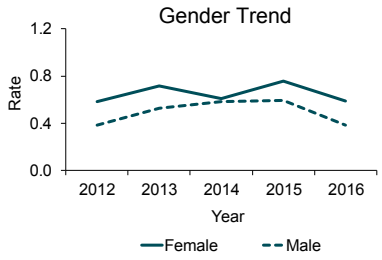


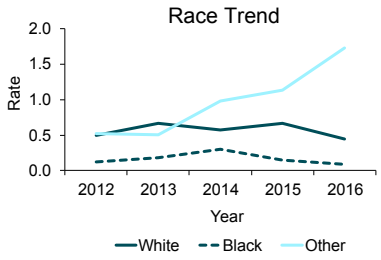
Note that rates based on <20 cases are not reliable and should be interpreted with caution.

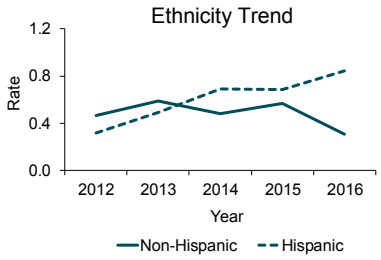
Incidence Rates Per 100,000 Population of Reported Shiga Toxin-Producing *E. coli* Infection Cases by Year, Age, Gender, Race, and Ethnicity, Florida









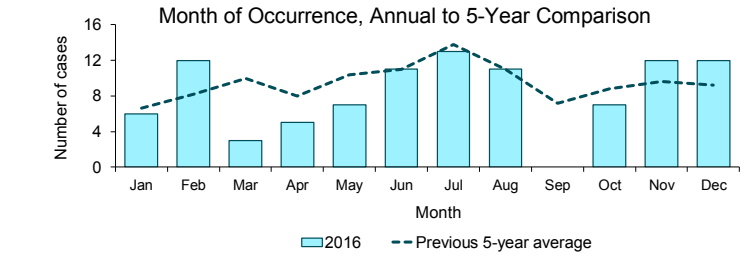


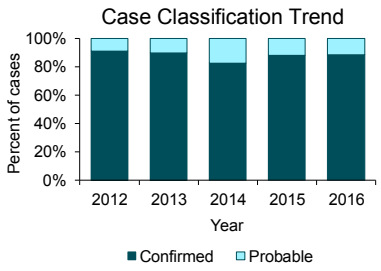
Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Shiga toxin- producing *E. coli* infection cases were missing 10.8% of ethnicity data in 2012, 9.7% of race data in 2012, 9.9% of ethnicity data in 2013, 7.4% of race data in 2013, 11.1% of ethnicity data in 2014, 7.7% of race data in 2014, 11.9% of ethnicity data in 2015, 10.4% of race data in 2015, 10.1% of ethnicity data in 2016, and 7.1% of race data in 2016.

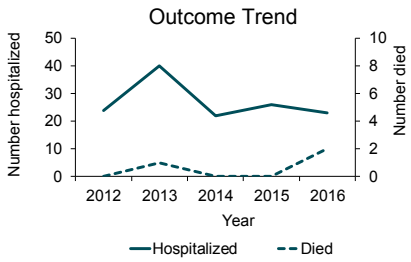
Summary of Case Factors

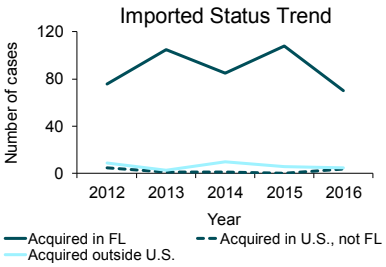
Summary	Number	
Number of cases	99	
Case Classification	**Number**	**(Percent)**
Confirmed	88	(88.9)
Probable	11	(11.1)
Outcome	**Number**	**(Percent)**
Hospitalized	23	(23.2)
Died	2	(2.0)
Sensitive Situation	**Number**	**(Percent)**
Daycare attendee	7	(7.1)
Daycare staff	0	(0.0)
Health care staff	2	(2.0)
Food handler	1	(1.0)
Imported Status	**Number**	**(Percent)**
Acquired in Florida	70	(70.7)
Acquired in the U.S., not Florida	4	(4.0)
Acquired outside the U.S.	5	(5.1)
Acquired location unknown	20	(20.2)
Outbreak Status	**Number**	**(Percent)**
Sporadic	68	(68.7)
Outbreak-associated	27	(27.3)
Outbreak status unknown	4	(4.0)
Serogroup	**Number**	**(Percent)**
O157	40	(45.5)
O26	16	(18.2)
O111	15	(17.0)
O103	10	(11.4)
O45	3	(3.4)
O121	2	(2.3)
Other	2	(2.3)

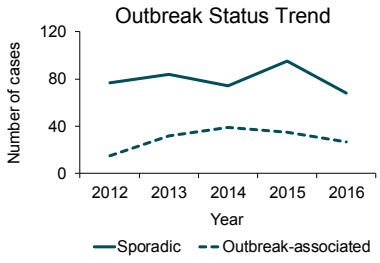
Reported Shiga Toxin-Producing *E. coli* Infection Cases by Month of Occurrence, Case Classification, Outcome, Sensitive Situation, Imported Status, and Outbreak Status, Florida

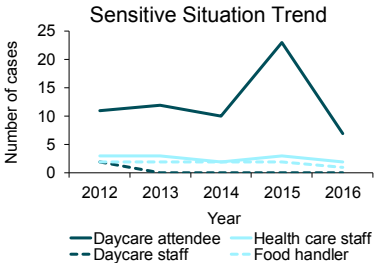












While O157 remains the most common serogroup identified in STEC infections, the top six non-O157 serogroups (O26, O45, O103, O111, O121, O145) are being increasingly identified due to advances in laboratory testing techniques.

Most outbreak-associated cases are due to household clusters; however, some cases are part of larger clusters or outbreaks. In 2015, Florida identified an in-state outbreak of 10 cases caused by STEC serogroup O26 in a single daycare. This outbreak is the cause of the notable increase in cases in daycare attendees and children 1 to 4 years old in 2015 compared to other years. In 2016, Florida identified two cases associated with two separate multistate outbreaks of STEC serogroup O157. The vehicle was not determined for either multistate outbreak.

Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in the hospitalized count as well as the death count. Hospitalized status means that a person was hospitalized at the time of their illness, though the hospitalization may not necessarily have been due to the illness. Deaths include all people with the illness who died, though the death may not necessarily have been due to the illness. Sensitive situation categories are not mutually exclusive, and most cases do not fall into any of these categories. Imported status refers to where the infection was most likely acquired. Outbreak- associated indicates that two or more cases are epidemiologically linked.

Shigellosis

Disease Facts

Cause: *Shigella* bacteria

Type of illness: Gastroenteritis (diarrhea, vomiting)

Transmission: Fecal-oral; including person-to-person, foodborne, and waterborne

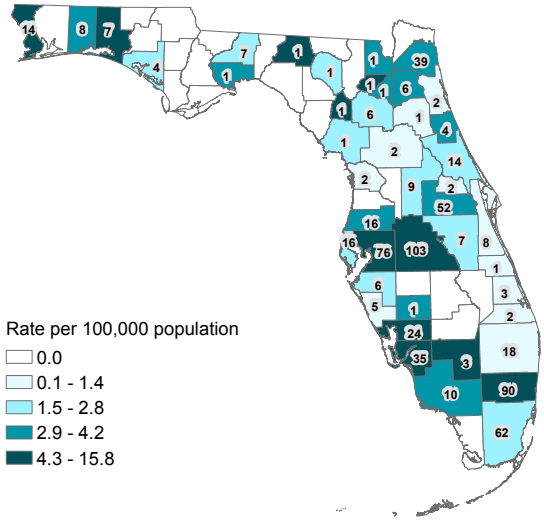
Reason for surveillance: Identify and control outbreaks, identify and mitigate common sources (e.g., ill daycare attendee), monitor incidence over time, estimate burden of illness

Comments: Shigellosis has a cyclic temporal pattern with large, community-wide outbreaks, frequently involving daycare centers, occurring every 3-5 years. Shigellosis incidence increased substantially in 2014, with a rate similar to the last large peak in 2011, followed by a decrease in 2015 and 2016. A large portion of cases are part of outbreaks, particularly in daycares; 36.6% of outbreak-associated cases were in daycare attendees in 2016. Shigellosis incidence is highest in children aged 1 to 9 years.

Summary of Case Demographics

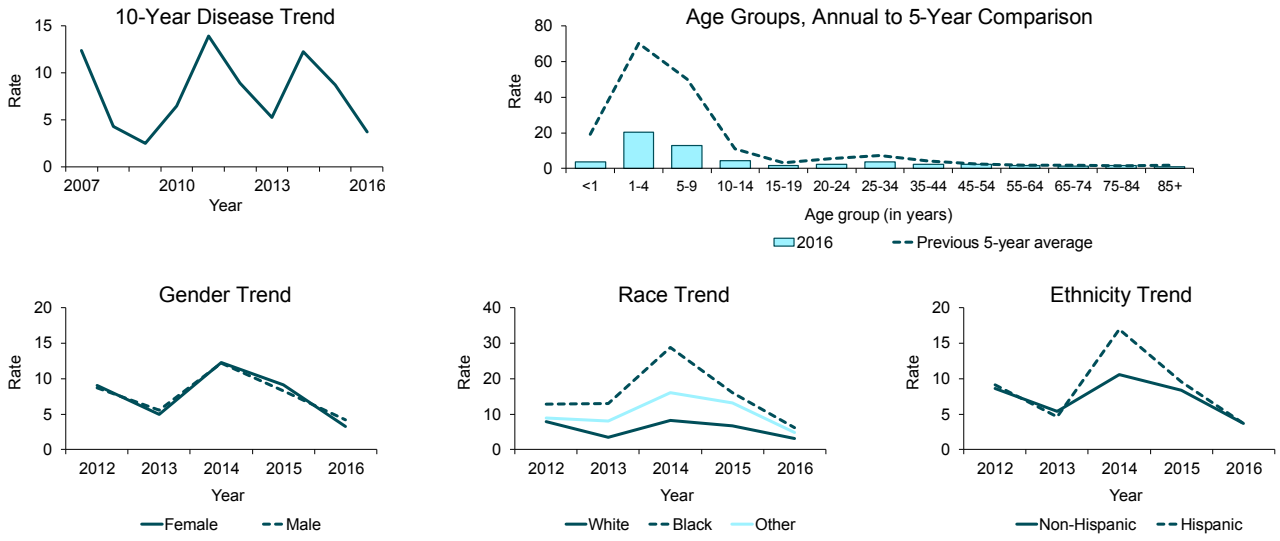
Summary			
Number of cases			753
Incidence rate (per 100,000 population)			3.7
Change from 5-year average incidence			-62.1%
Age (in Years)			
Mean			24
Median			13
Min-max			0 - 96
Gender	**Number**	**(Percent)**	**Rate**
Female	338	(44.9)	3.3
Male	415	(55.1)	4.2
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	481	(64.7)	3.1
Black	209	(28.1)	6.1
Other	53	(7.1)	4.8
Unknown race	10		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	558	(75.3)	3.7
Hispanic	183	(24.7)	3.7
Unknown ethnicity	12		

Reported Shigellosis Cases and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2016 (N=673)



Note that rates based on <20 cases are not reliable and should be interpreted with caution.

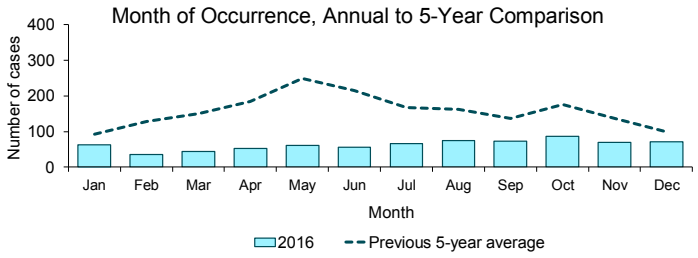
Incidence Rates Per 100,000 Population of Reported Shigellosis Cases by Year, Age, Gender, Race, and Ethnicity, Florida

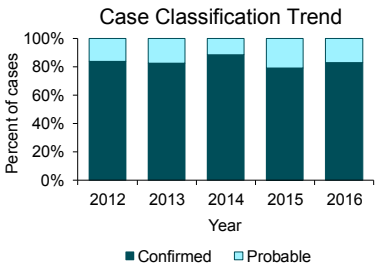


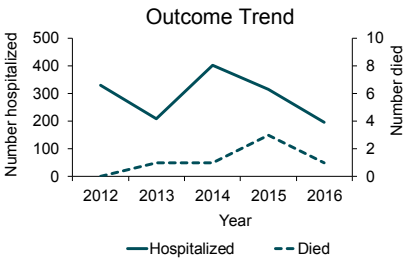
Summary of Case Factors

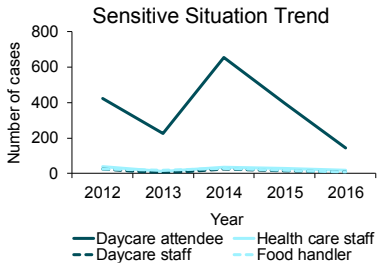
Summary	Number	
Number of cases	753	
Case Classification	**Number**	**(Percent)**
Confirmed	625	(83.0)
Probable	128	(17.0)
Outcome	**Number**	**(Percent)**
Hospitalized	196	(26.0)
Died	1	(0.1)
Sensitive Situation	**Number**	**(Percent)**
Daycare attendee	144	(19.1)
Daycare staff	7	(0.9)
Health care staff	20	(2.7)
Food handler	8	(1.1)
Imported Status	**Number**	**(Percent)**
Acquired in Florida	673	(89.4)
Acquired in the U.S., not Florida	20	(2.7)
Acquired outside the U.S.	47	(6.2)
Acquired location unknown	13	(1.7)
Outbreak Status	**Number**	**(Percent)**
Sporadic	511	(67.9)
Outbreak-associated	232	(30.8)
Outbreak status unknown	10	(1.3)

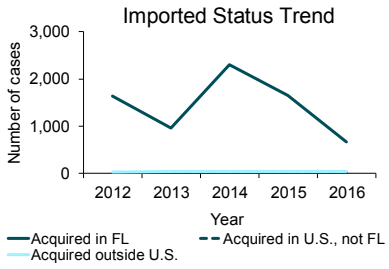
Reported Shigellosis Cases by Month of Occurrence, Case Classification, Outcome, Sensitive Situation, Imported Status, and Outbreak Status, Florida

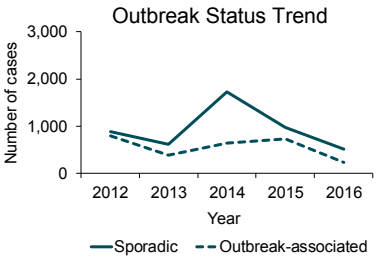












Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in the hospitalized count as well as the death count. Hospitalized status means that a person was hospitalized at the time of their illness, though the hospitalization may not necessarily have been due to the illness. Deaths include all people with the illness who died, though the death may not necessarily have been due to the illness. Sensitive situation categories are not mutually exclusive, and most cases do not fall into any of these categories. Imported status refers to where the infection was most likely acquired. Outbreak- associated indicates that two or more cases are epidemiologically linked.

Additional Information

In 2016, shigellosis incidence was high in central western and southwestern counties compared to central Florida in 2015 and south Florida in 2014. In the U.S., most *Shigella* is already resistant to ampicillin and trimethoprim/sulfamethoxazole, causing health care providers to rely on alternative drugs such as ciprofloxacin and azithromycin to treat *Shigella* infections. While antimicrobial resistance testing is regularly conducted on clinical specimens, treatment of shigellosis with antibiotics is not routinely recommended. Antimicrobial resistance testing results were available for 246 confirmed cases (39.4%) reported in 2016. Of those, 140 (56.9%) had resistance to one or more of these antibiotics, compared to only 33.8% of 671 confirmed cases reported in 2015 with antimicrobial resistance testing results available.

Resistance to Antibiotics for 246 Shigellosis Cases, Florida, 2016

Antibiotic	Resistant	
	Number	(Percent)
Trimethoprim/sulfamethoxazole only	80	(32.5)
Ampicillin only	12	(4.9)
Ciprofloxacin only	2	(0.8)
Azithromycin only	0	(0.0)
Trimethoprim/sulfamethoxazole, ampicillin	37	(15.0)
Trimethoprim/sulfamethoxazole, ciprofloxacin	5	(2.0)
Trimethoprim/sulfamethoxazole, ampicillin, ciprofloxacin	4	(1.6)
Not resistant to these antibiotics	106	(43.1)

Syphilis (Excluding Congenital)

Disease Facts

Cause: *Treponema pallidum* bacteria

Type of illness: Sores on genitals, anus, or mouth, or a rash on the body

Transmission: Sexually transmitted disease (STD) spread by anal, vaginal, or oral sex and sometimes from mother to infant during pregnancy or delivery

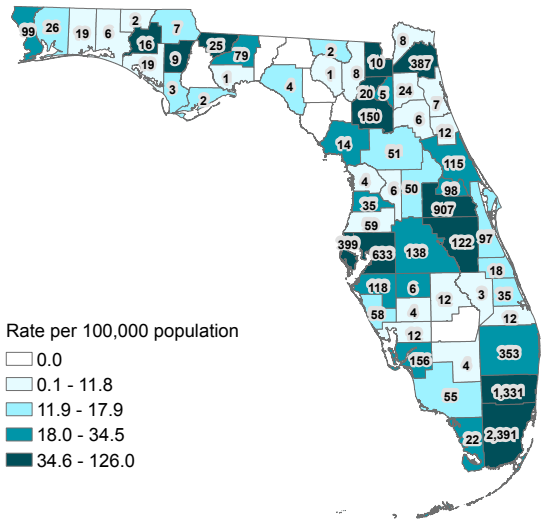
Reason for surveillance: Implement interventions immediately for every case, monitor incidence over time, estimate burden of illness, target prevention education programs, evaluate treatment and prevention programs

Comments: Syphilis is separated into early syphilis (i.e., syphilis <1 year duration, which includes latent and infectious stages) and late or late latent syphilis (i.e., syphilis diagnosed >1 year after infection). Rates are higher in men and blacks. Men who have sex with men (MSM) have a higher incidence of early syphilis than non-MSM men and are more likely to be co-infected with HIV. Incidence has increased every year since 2009.

Summary of Case Demographics

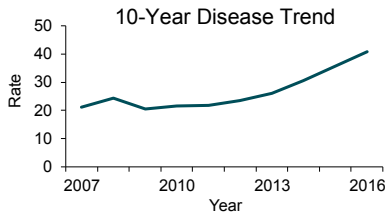
Summary			
Number of cases			8,275
Incidence rate (per 100,000 population)			40.9
Change from 5-year average incidence			+48.9%
Age (in Years)			
Mean			36
Median			34
Min-max			12 - 86
Gender	**Number**	**(Percent)**	**Rate**
Female	1,332	(16.1)	12.9
Male	6,942	(83.9)	70.2
Unknown gender	1		
Race	**Number**	**(Percent)**	**Rate**
White	4,562	(60.9)	29.0
Black	2,851	(38.1)	83.6
Other	79	(1.1)	7.2
Unknown race	783		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	5,076	(65.6)	33.2
Hispanic	2,664	(34.4)	53.7
Unknown ethnicity	535		

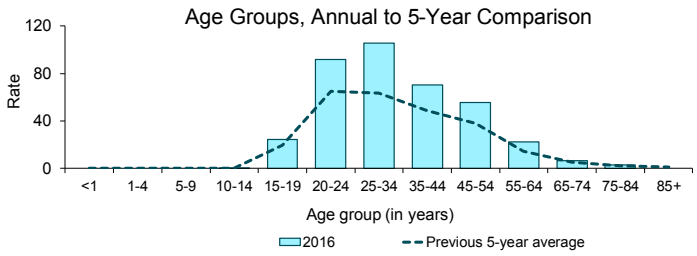
Reported Syphilis Cases (Excluding Congenital) and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2016 (N=8,275)

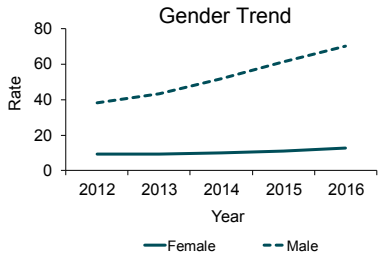


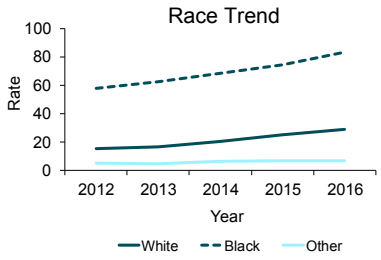
Note that rates based on <20 cases are not reliable and should be interpreted with caution.

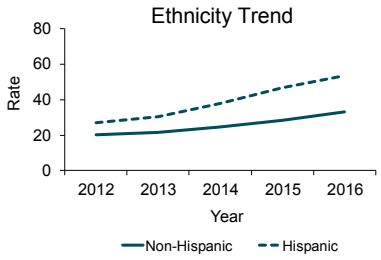
Incidence Rates Per 100,000 Population of Reported Syphilis Cases (Excluding Congenital) by Year, Age, Gender, Race, and Ethnicity, Florida











Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Syphilis cases (excluding congenital) were missing 6.6% of ethnicity data in 2012, 6.1% of race data in 2012, 8.7% of ethnicity data in 2013, 7.9% of race data in 2013, 9.1% of ethnicity data in 2014, 8.3% of race data in 2014, 8.3% of ethnicity data in 2015, 8.4% of race data in 2015, 6.5% of ethnicity data in 2016, and 9.5% of race data in 2016.

Disease Facts

Cause: *Mycobacterium tuberculosis* bacteria

Type of illness: Usually respiratory (severe cough, pain in chest), but can affect all parts of the body including kidneys, spine, or brain

Transmission: Airborne; inhalation of aerosolized droplets from people with active tuberculosis (TB)

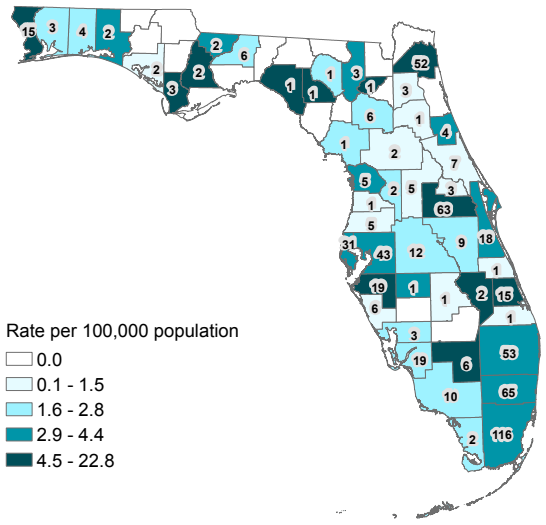
Reason for surveillance: Implement effective interventions immediately for every case to prevent further transmission, monitor directly observed therapy prevention programs, evaluate trends

Comments: TB continues to be a public health threat in Florida. Incidence has declined over the past decade but increased slightly in 2015 and 2016. Medically underserved and low-income populations, including racial and ethnic minorities, have high rates of TB. In most countries and in Florida, TB incidence is much higher in men than women. Southeast Florida has the highest incidence and accounted for 36% of reported cases in 2016.

Summary of Case Demographics

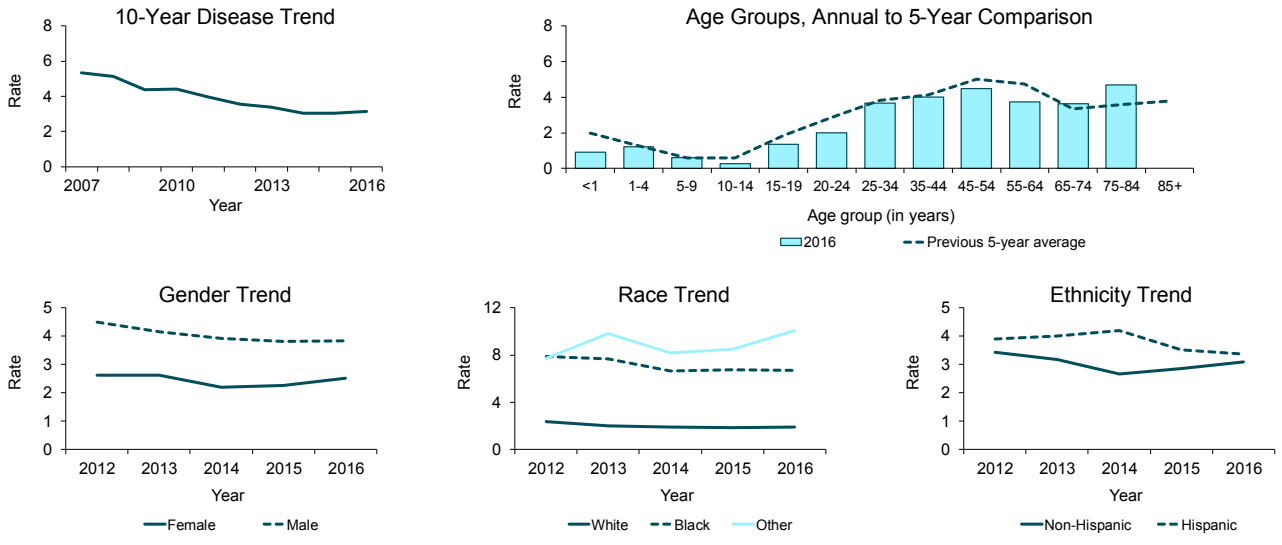
Summary			
Number of cases			639
Incidence rate (per 100,000 population)			3.2
Change from 5-year average incidence			-6.9%
Age (in Years)			
Mean			49
Median			50
Min-max			0 - 94
Gender	**Number**	**(Percent)**	**Rate**
Female	260	(40.7)	2.5
Male	379	(59.3)	3.8
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	299	(46.8)	1.9
Black	229	(35.8)	6.7
Other	111	(17.4)	10.1
Unknown race	0		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	472	(73.9)	3.1
Hispanic	167	(26.1)	3.4
Unknown ethnicity	0		

Counted Tuberculosis Cases and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2016 (N=639)



Note that rates based on <20 cases are not reliable and should be interpreted with caution.

Incidence Rates Per 100,000 Population of Counted Tuberculosis Cases by Year, Age, Gender, Race, and Ethnicity, Florida



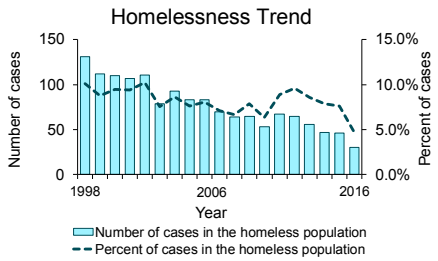
Additional Information

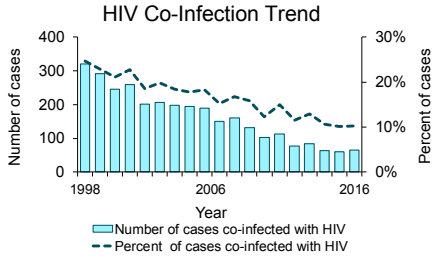
People experiencing homelessness are at increased risk for disease and are a focus for TB prevention and control efforts in Florida. Since 1998, the total number of TB cases among the homeless population in Florida has decreased by over 50%; however, in the same time period, the percent of people with TB who are homeless remained relatively stable (8-10%) until 2012. Since 2012, the percent of people with TB who are homeless decreased from 9.6% to 4.7% in 2016.

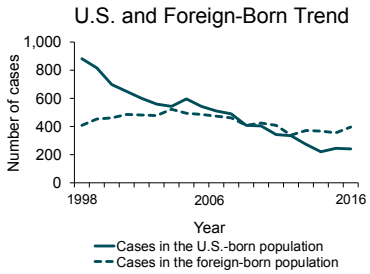
TB and HIV co-infection has been declining modestly but steadily over time in Florida. In the last three years the decline has leveled off around 10%. In 2015, 10.1% of TB cases were co-infected with HIV, and 10.3% were co-infected in 2016. Untreated HIV infection remains the biggest risk factor for developing active TB disease following infection with TB and is a focus for TB prevention and control efforts in Florida.

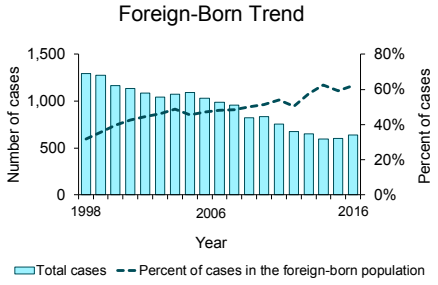
The rate of TB in the U.S.-born population in Florida has been decreasing faster than the rate among the foreign-born population. Being born in a country where TB is prevalent is one of the most significant risk factors for developing TB and is a focus for TB prevention and control efforts in Florida. In 2016, 62.1% of the total cases counted in Florida were in the foreign-born population. The most common countries of origin in 2016 included Haiti, Mexico, Vietnam, the Philippines, Guatemala, and Cuba, accounting for 237 of 397 (59.7%) cases identified in the foreign-born population.

Counted Tuberculosis Cases by Homeless Status, HIV Co-Infection, and Foreign-Born Status, Florida









Varicella (Chickenpox)

Disease Facts

Cause: Varicella-zoster virus (VZV)

Type of illness: Common symptoms include vesicular rash, itching, tiredness, and fever

Transmission: Person-to-person; contact with or inhalation of aerosolized, infective respiratory tract droplets or secretions, or direct contact with vesicular lesions of people infected with VZV

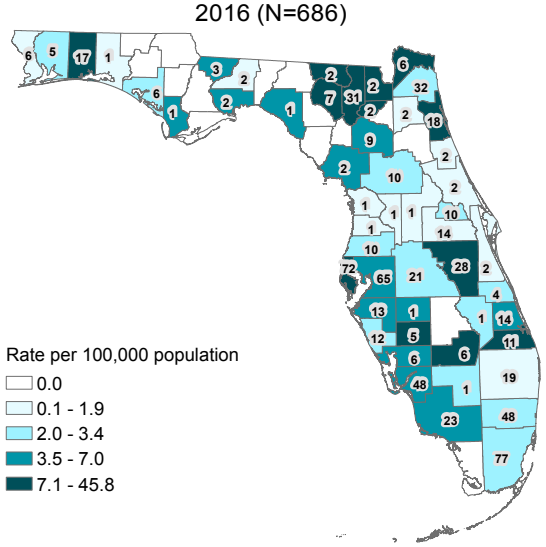
Reason for surveillance: Identify and control outbreaks, monitor effectiveness of immunization programs and vaccines, monitor trends and severe outcomes

Comments: Varicella is a classic childhood disease; a vaccine was released in the U.S. in 1995. It became reportable in Florida in late 2006 and has shown a steady decrease in incidence since 2008, due to effective vaccination programs. Incidence increased in 2015 for the first time since 2008. Beginning with the 2008-2009 school year, children entering kindergarten were required to receive two doses of varicella vaccine.

Summary of Case Demographics

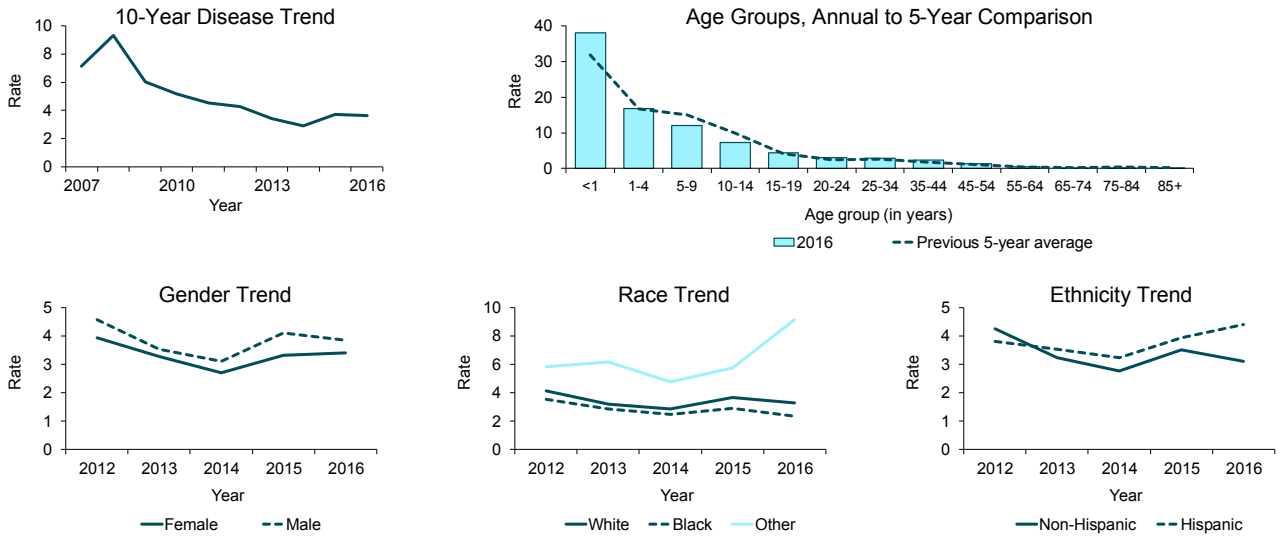
Summary			
Number of cases			733
Incidence rate (per 100,000 population)			3.6
Change from 5-year average incidence			-3.9%
Age (in Years)			
Mean			16
Median			9
Min-max			0 - 88
Gender	**Number**	**(Percent)**	**Rate**
Female	352	(48.0)	3.4
Male	381	(52.0)	3.9
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	520	(74.2)	3.3
Black	80	(11.4)	2.3
Other	101	(14.4)	9.2
Unknown race	32		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	474	(68.4)	3.1
Hispanic	219	(31.6)	4.4
Unknown ethnicity	40		

Reported Varicella Cases and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2016 (N=686)



Note that rates based on <20 cases are not reliable and should be interpreted with caution.

Incidence Rates Per 100,000 Population of Reported Varicella Cases by Year, Age, Gender, Race, and Ethnicity, Florida

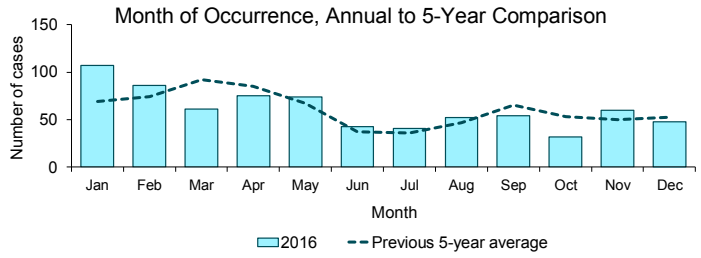


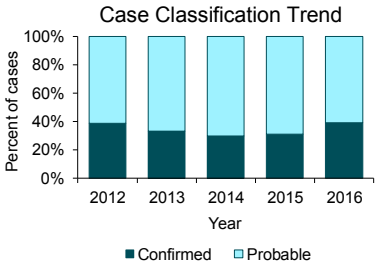
Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Varicella cases were missing 5.5% of ethnicity data in 2016.

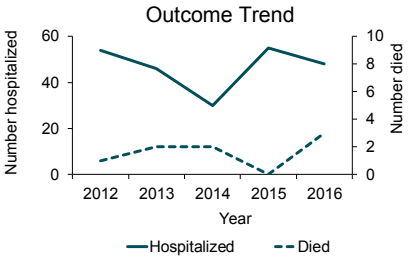
Summary of Case Factors

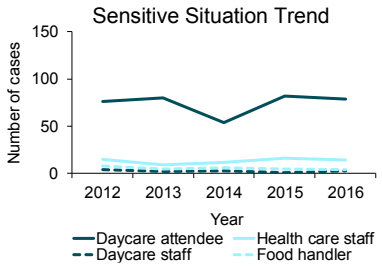
Summary	Number	
Number of cases	733	
Case Classification	**Number**	**(Percent)**
Confirmed	288	(39.3)
Probable	445	(60.7)
Outcome	**Number**	**(Percent)**
Hospitalized	48	(6.5)
Died	2	(0.3)
Sensitive Situation	**Number**	**(Percent)**
Daycare attendee	79	(10.8)
Daycare staff	3	(0.4)
Health care staff	14	(1.9)
Food handler	4	(0.5)
Imported Status	**Number**	**(Percent)**
Acquired in Florida	686	(93.6)
Acquired in the U.S., not Florida	9	(1.2)
Acquired outside the U.S.	16	(2.2)
Acquired location unknown	22	(3.0)
Outbreak Status	**Number**	**(Percent)**
Sporadic	503	(68.6)
Outbreak-associated	217	(29.6)
Outbreak status unknown	13	(1.8)

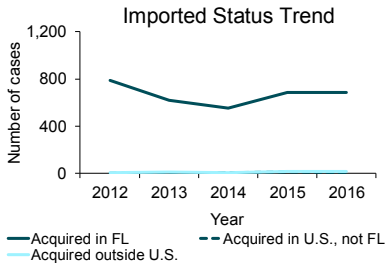
Reported Varicella Cases by Month of Occurrence, Case Classification, Outcome, Sensitive Situation, Imported Status, and Outbreak Status, Florida

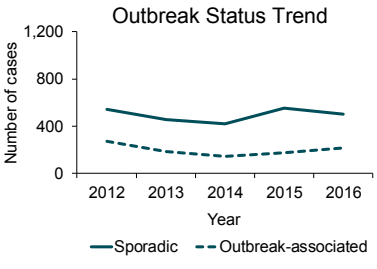












Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in the hospitalized count as well as the death count. Hospitalized status means that a person was hospitalized at the time of their illness, though the hospitalization may not necessarily have been due to the illness. Deaths include all people with the illness who died, though the death may not necessarily have been due to the illness. Sensitive situation categories are not mutually exclusive, and most cases do not fall into any of these categories. Imported status refers to where the infection was most likely acquired. Outbreak- associated indicates that two or more cases are epidemiologically linked.

Additional Information

Varicella incidence remained steady after a notable increase in 2015. Incidence among infants <1 year old remained high compared to the 5-year average. Infants <1 year old are too young to be vaccinated and as a result, vaccination of siblings and caregivers is particularly important to protect this group.

The number of infections acquired outside Florida increased from 12 in 2014 to 32 in 2015 and 25 in 2016. More varicella cases occur in winter and spring, particularly in school-aged children. There were two deaths, both in adults with underlying conditions. Neither death certificate identified varicella as the cause of death. The number of outbreak-associated cases increased from 174 (23.5%) in 2015 to 217 (29.6%) in 2016. Of the 217 outbreak-associated cases identified, most were small household clusters. Three outbreaks (defined as five or more cases linked in a single setting) were identified in schools, one outbreak was identified in a daycare, and one outbreak was identified in a correctional facility. Counties with 10 or more outbreak-associated cases included Broward (10), Collier (14), Columbia (30), Hillsborough (19), Lee (18), Pinellas (46), and St. Johns (10). Counties with the highest incidence rates were mostly low-population counties.

Vibriosis (Excluding Cholera)

Disease Facts

Cause: *Vibrio* species bacteria (see following page for list of species included)

Type of illness: Gastroenteritis (diarrhea, vomiting), bacteremia, septicemia, wound infection, cellulitis; other common symptoms include low-grade fever, headache, and chills

Transmission: Foodborne, waterborne, and wound infections from direct contact with brackish water or salt water where the bacteria naturally live, or direct contact with marine wildlife

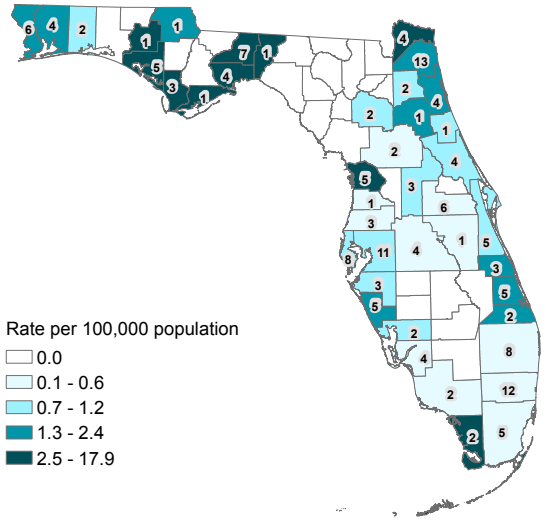
Reason for surveillance: Identify sources of transmission (e.g., shellfish collection area) and mitigate source, monitor incidence over time, estimate burden of illness

Comments: *Vibrio* species are endemic in Florida's seawater. Incidence is typically higher in the summer when exposure to seawater is more common and warmer water is conducive to bacterial growth. Incidence decreased slightly in 2016 compared to 2015. Incidence is consistently much higher in men than women.

Summary of Case Demographics

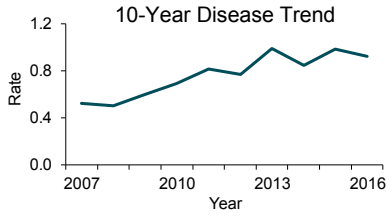
Summary			
Number of cases			187
Incidence rate (per 100,000 population)			0.9
Change from 5-year average incidence			+4.8%
Age (in Years)			
Mean			48
Median			54
Min-max			3 - 88
Gender	**Number**	**(Percent)**	**Rate**
Female	55	(29.4)	0.5
Male	132	(70.6)	1.3
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	148	(83.6)	0.9
Black	22	(12.4)	0.6
Other	7	(4.0)	NA
Unknown race	10		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	152	(88.4)	1.0
Hispanic	20	(11.6)	0.4
Unknown ethnicity	15		

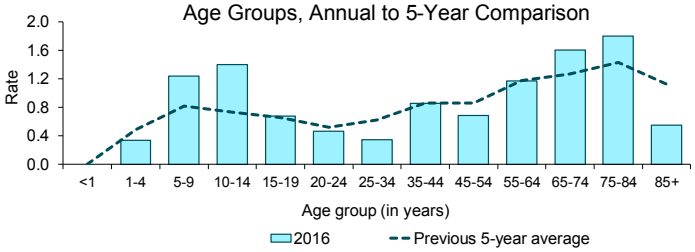
Reported Vibriosis Cases (Excluding Cholera) and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2016 (N=168)

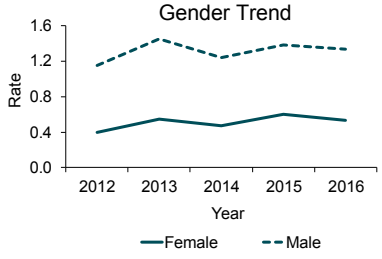


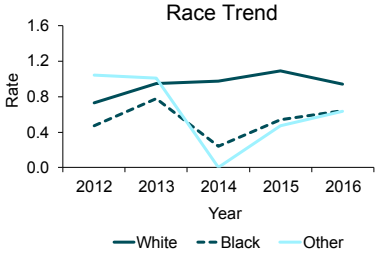
Note that rates based on <20 cases are not reliable and should be interpreted with caution.

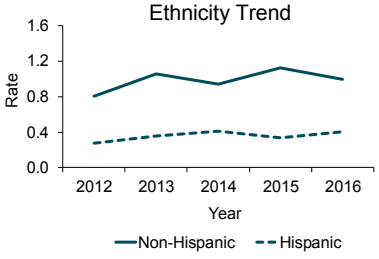
Incidence Rates Per 100,000 Population of Reported Vibriosis Cases (Excluding Cholera) by Year, Age, Gender, Race, and Ethnicity, Florida









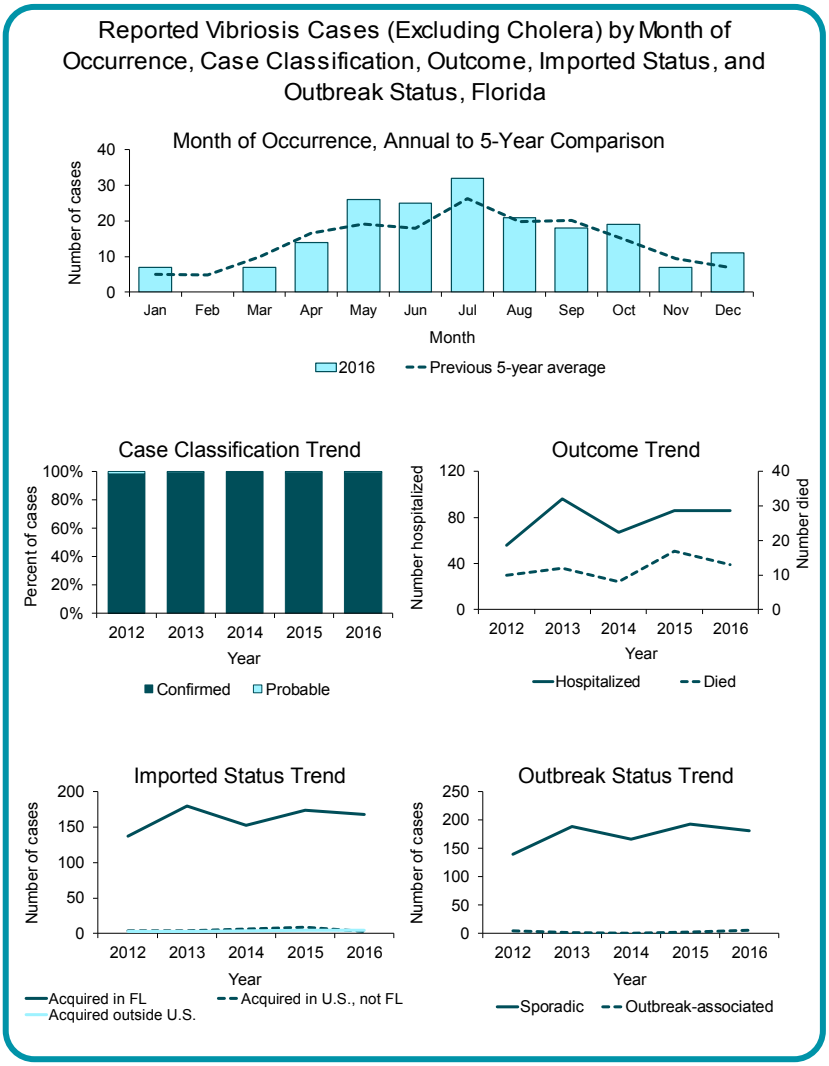


Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Vibriosis cases (excluding cholera) were missing 10.9% of ethnicity data in 2012, 8.2% of race data in 2012, 9.4% of ethnicity data in 2013, 6.8% of race data in 2013, 5.4% of race data in 2014, 5.1% of ethnicity data in 2015, 8.0% of ethnicity data in 2016, and 5.3% of race data in 2016.

Vibriosis (Excluding Cholera)

Summary of Case Factors

Summary	Number	
Number of cases	187	
Case Classification	**Number**	**(Percent)**
Confirmed	186	(99.5)
Probable	1	(0.5)
Outcome	**Number**	**(Percent)**
Hospitalized	86	(46.0)
Died	13	(7.0)
Imported Status	**Number**	**(Percent)**
Acquired in Florida	168	(89.8)
Acquired in the U.S., not Florida	3	(1.6)
Acquired outside the U.S.	5	(2.7)
Acquired location unknown	11	(5.9)
Outbreak Status	**Number**	**(Percent)**
Sporadic	181	(96.8)
Outbreak-associated	6	(3.2)
Outbreak status unknown	0	(0.0)
Species	**Number**	**(Percent)**
Vibrio alginolyticus	58	(31.0)
Vibrio vulnificus	48	(25.7)
Vibrio parahaemolyticus	46	(24.6)
Vibrio cholerae Type Non-O1	14	(7.5)
Vibrio fluvialis	5	(2.7)
Vibrio mimicus	4	(2.1)
Grimontia hollisae	3	(1.6)
Other Vibrio species	9	(4.8)



Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in the hospitalized count as well as the death count. Hospitalized status means that a person was hospitalized at the time of their illness, though the hospitalization may not necessarily have been due to the illness. Deaths include all people with the illness who died, though the death may not necessarily have been due to the illness. Imported status refers to where the infection was most likely acquired. Outbreak- associated indicates that two or more cases are epidemiologically linked.

Additional Information

Vibriosis incidence is usually highest in older adults aged 55 to 84 years. In 2016, incidence was also high in 5- to 14-year-olds. In 2016, the most commonly reported *Vibrio* infection was *V. alginolyticus*, accounting for 31.0% of cases, which is very similar to 2015 when 29.6% of infections were caused by this species. The number of *V. vulnificus* infections increased in 2016 slightly (48 compared to 45 in 2015) while the number of *V. parahaemolyticus* infections remained the same compared to 2015 (46 both years). *V. vulnificus* can cause particularly severe disease, with about 50% of bloodstream infections being fatal. Of the 48 cases due to *V. vulnificus* in 2016, 45 (93.8%) were hospitalized and 10 (20.8%) died, accounting for 10 of the 13 total deaths reported for vibriosis in 2016. The remaining three deaths were due to *V. parahaemolyticus*, *V. cholerae* non-O1, and an unidentified *Vibrio* species. Of the 13 people who died with vibriosis, five reported consuming seafood and two reported having a wound with seawater exposure. One case had multiple exposures and five had other or unknown exposures. *V. vulnificus* infections typically occur in people who have chronic kidney or liver disease, a history of alcoholism, or are immunocompromised. Of the 48 cases of *V. vulnificus*, 34 (70.8%) had underlying medical conditions.

Zika Virus Disease and Infection (Including Congenital)

Disease Facts

Cause: Zika virus

Type of illness: Frequently asymptomatic; common symptoms include fever, rash, headache, joint pain, conjunctivitis, and muscle pain; even asymptomatic infections can cause microcephaly and other severe fetal brain defects when mother is infected during pregnancy; post-infection Guillain-Barré syndrome has occurred

Transmission: Bite of infective mosquito, blood transfusions, sex with infected partner, or from mother to child during pregnancy

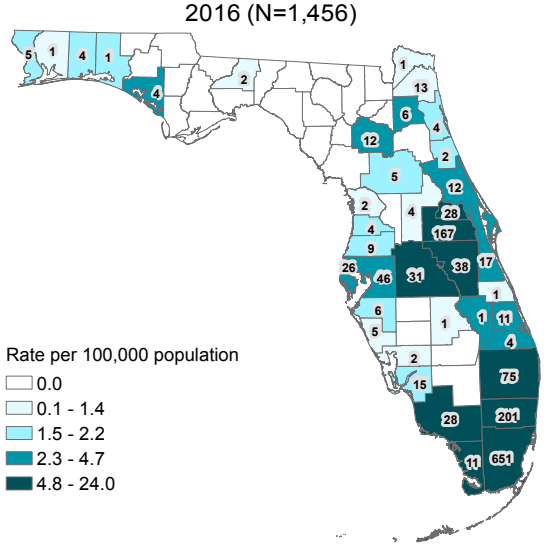
Reason for surveillance: Identify individual cases and implement control measures to prevent local transmission, monitor incidence over time, estimate burden of illness, identify infants born to infected mothers for follow-up

Comments: Zika emerged in 2016 with over 1,400 cases reported in Florida, including 285 locally acquired cases and five congenital cases (for more information on congenital cases, see Section 9: Congenital and Perinatal Conditions). Florida residents and non-Florida residents are included here.

Summary of Case Demographics

Summary			
Number of cases			1,456
Incidence rate (per 100,000 population)			7.2
Age (in Years)			
Mean			42
Median			43
Min-max			0 - 100
Gender	**Number**	**(Percent)**	**Rate**
Female	907	(62.3)	8.8
Male	549	(37.7)	5.6
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	994	(71.6)	6.3
Black	244	(17.6)	7.2
Other	151	(10.9)	13.7
Unknown race	67		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	536	(38.7)	3.5
Hispanic	850	(61.3)	17.1
Unknown ethnicity	70		

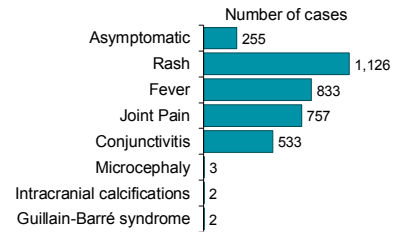
Reported Zika Virus Disease and Infection Cases (Including Congenital) and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2016 (N=1,456)



Non-Florida residents (n=108) are included by the county where the case was reported.
Note that rates based on <20 cases are not reliable and should be interpreted with caution.

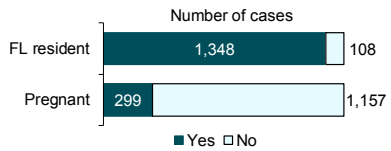
Characteristics of Zika Virus Disease and Infection Cases (Including Congenital) Florida, 2016

Symptoms

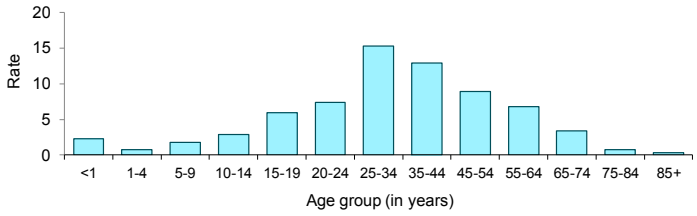


Note: One person can report more than one symptom.

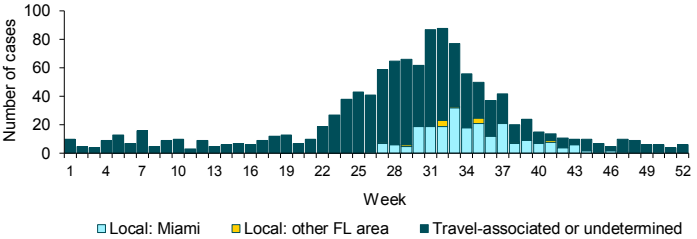
Residency and Pregnancy



Rate Per 100,000 Population by Age Group



Week of Onset by Imported Status

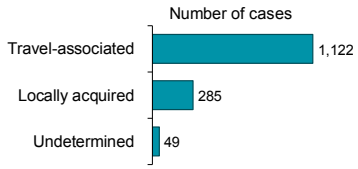


Note: 255 people were asymptomatic and onset was unknown for an additional 12 cases. These 267 cases are excluded here.

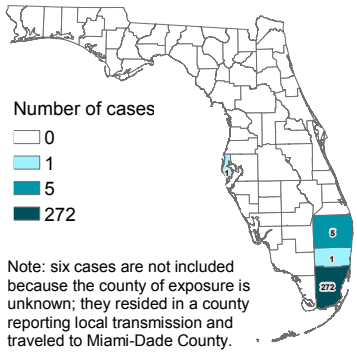
Zika Virus Disease and Infection (Including Congenital)

Summary of Case Factors

Imported Status
(See Additional Information)

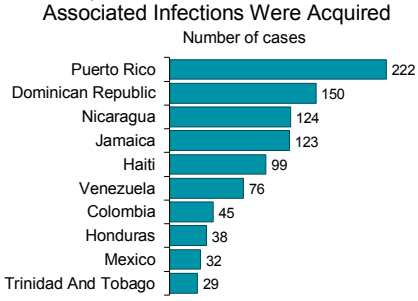


Counties Where Locally Acquired Cases Were Exposed (n=285)



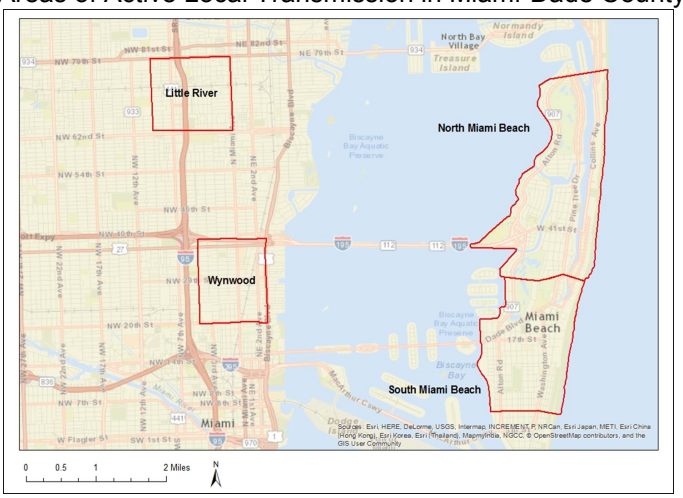
Note: six cases are not included because the county of exposure is unknown; they resided in a county reporting local transmission and traveled to Miami-Dade County.

Top 10 Locations Where Travel-Associated Infections Were Acquired

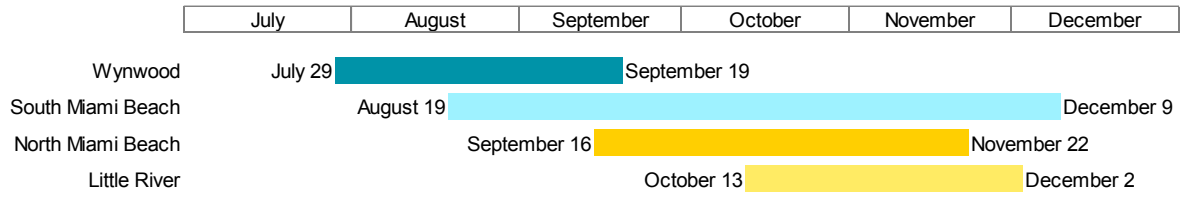


Florida and Texas were the only two states in the continental U.S. with local Zika transmission following introduction; 285 cases acquired in four Florida counties were identified in 2016. Active transmission of Zika virus was identified in four areas in Miami-Dade County in 2016 (Wynwood, North and South Miami Beach, and Little River communities). Active surveillance for locally acquired cases included household investigations, workplace investigations, and community urine collections (urosurveys). Door-to-door urosurvey methods were the first to identify that active ongoing transmission was occurring in Wynwood, with the identification of six asymptomatic individuals testing positive. Over 2,000 people were tested through active investigations, identifying 55 additional local cases. Workplaces were a common source of exposure (~33% of local cases).

Areas of Active Local Transmission in Miami-Dade County



Timeline of Active Local Transmission in Miami-Dade County



Additional Information

Due to the complexities of Zika testing, result interpretation, and high rate of asymptomatic individuals (referred to as Zika virus infection rather than disease), it can be challenging in some situations to definitively determine when an individual was exposed to the virus. Because of these challenges, a new undetermined category was developed to include individuals who spent time in Miami-Dade County and countries or territories with widespread Zika virus transmission during 2016 where the exact location of exposure was not able to be confirmed. Many of these undetermined exposure cases were tested months after they had traveled, making it hard to determine when and where they were exposed. Five travel-associated cases were congenital cases (four symptomatic, one asymptomatic) where the mother was exposed to Zika virus during pregnancy. Three travel-associated cases were the result of sexual transmission. Two of the cases had no recent international travel but their sexual partners reported travel to Nicaragua or Puerto Rico. One case had traveled to Jamaica with her sexual partner but developed symptoms more than two weeks after travel. All three cases involved male-to-female transmission. All three men had detectable viral RNA in their semen. Approximately 50% of people with imported infections indicated their reason for travel was to visit friends and family; this is important information to help direct targeted prevention messaging for Zika, dengue, chikungunya, and other emerging diseases in the Caribbean. About 15% of cases were in refugees or immigrants.

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 granulocytic 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 the elderly and 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. Co-infection with other pathogens found in these vectors is possible. Unlike ehrlichiosis, most HGA cases reported in Florida are due to infections acquired in the northeastern and midwestern U.S. *Anaplasma* infections can be acquired in Florida but it is uncommon. 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 2016.

All of six cases reported in 2016 were 60 years or older. Onset dates ranged from May to August of 2016. Five of the six cases were acquired in northeastern U.S. states where the vector is common, however one case was exposed in St. Johns County.

Table 1. Characteristics of Anaplasmosis Cases Reported in 2016, Florida

Summary	
Number of cases in 2016	6
5-year trend (2012 to 2016)	

Age (in Years)	
Mean	67
Median	66
Min-max	60 - 75

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

Race	Number	(Percent)
White	4	(66.7)
Black	0	(0.0)
Other	0	(0.0)
Unknown race	2	(33.3)

Ethnicity	Number	(Percent)
Non-Hispanic	4	(66.7)
Hispanic	0	(0.0)
Unknown ethnicity	2	(33.3)

Case Classification	Number	(Percent)
Confirmed	3	(50.0)
Probable	3	(50.0)

Outcome	Number	(Percent)
Interviewed	4	(67.0)
Hospitalized	1	(16.7)
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)
Maine	3	(50.0)
Florida	1	(16.7)
Massachusetts	1	(16.7)
New York	1	(16.7)

County of Residence	Number	(Percent)
Miami-Dade	2	(33.3)
Alachua	1	(16.7)
Duval	1	(16.7)
St. Johns	1	(16.7)
Sumter	1	(16.7)

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 2 for additional information on brucellosis cases reported in 2016.

There was one confirmed and one probable case of brucellosis in Florida residents in 2016. The confirmed case was caused by *B. suis*. Risk factors included working in a slaughterhouse and hunting. This case had a pre-existing health condition (diabetes mellitus) and was culture-positive three times over a 12-month period. Thirty-one potential laboratory exposures involving laboratorians working with *Brucella* cultures resulted from this case. The probable case was a homeless man who recalled no exposure risks. In addition, a Texas resident was confirmed to be infected with *B. melitensis* while in Florida (note that non-Florida residents are not included in Table 2). The Texas resident reported eating unpasteurized soft cheeses.

Table 2. Characteristics of Brucellosis Cases Reported in 2016, Florida

Summary	
Number of cases in 2016	2
5-year trend (2012 to 2016)	
Age (in Years)	
Mean	52
Median	52
Min-max	50 - 54

Gender	Number	(Percent)
Female	0	(0.0)
Male	2	(100.0)
Unknown gender	0	(0.0)

Race	Number	(Percent)
White	1	(50.0)
Black	1	(50.0)
Other	0	(0.0)
Unknown race	0	(0.0)

Ethnicity	Number	(Percent)
Non-Hispanic	2	(100.0)
Hispanic	0	(0.0)
Unknown ethnicity	0	(0.0)

Case Classification	Number	(Percent)
Confirmed	1	(50.0)
Probable	1	(50.0)

Outcome	Number	(Percent)
Interviewed	2	(100.0)
Hospitalized	2	(100.0)
Died	0	(0.0)

Outbreak Status	Number	(Percent)
Sporadic	2	(100.0)
Outbreak-associated	0	(0.0)
Outbreak status unknown	0	(0.0)

Location Where Exposed	Number	(Percent)
Florida	2	(100.0)

County of Residence	Number	(Percent)
Gadsden	1	(50.0)
Hillsborough	1	(50.0)

Chikungunya Fever

Chikungunya fever is a mosquito-borne illness caused by the chikungunya virus. The most common symptoms of chikungunya virus infection are fever and joint pain. Other symptoms may include headache, muscle pain, joint swelling, or rash. Relapse of joint pain can occur and may persist for months or years. Chikungunya virus is transmitted to people through the bites of infected mosquitoes. Mosquitoes become infected when they feed on a person already infected with the virus. Chikungunya virus is most often spread to people by *Aedes aegypti* and *Aedes albopictus* mosquitoes (the same mosquitoes that transmit dengue and Zika viruses). Rarely the virus can be transmitted through blood transfusion or organ transplants. The first autochthonous transmission of chikungunya virus in the Americas was reported on the island of St. Martin in December 2013. Since then, local transmission has been identified in countries throughout the Caribbean and the Americas. In 2014, 442 cases were identified in Florida residents and Florida was the only continental U.S. state to report local cases of chikungunya fever, with 12 cases reported. No locally acquired cases were identified in 2015 or 2016. Overall incidence in Florida decreased dramatically in 2015 (121 cases) and 2016 (10 cases). Infection with chikungunya virus is believed to lead to lifetime immunity, which is considered to be the primary reason for this decrease. Extensive spread in Central and South America and the Caribbean in 2014 resulted in immunity for many people in those areas. Surveillance for chikungunya fever is important to identify individual cases and implement control measures to prevent introduction and ongoing transmission, monitor incidence over time, and estimate the burden of illness. See Table 3 for additional information on chikungunya fever cases reported in 2016.

Case counts in this report are based on report year and may differ from other reports that use different criteria to assemble the data (such as onset date). Two cases included as 2016 cases in this report had symptom onset near the end of 2015 but were not reported until 2016.

Table 3. Characteristics of Chikungunya Fever Cases Reported in 2016, Florida

Summary	
Number of cases in 2016	10
5-year trend (2012 to 2016)	
Age (in Years)	
Mean	40
Median	40
Min-max	19 - 68

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

Race	Number	(Percent)
White	6	(60.0)
Black	1	(10.0)
Other	2	(20.0)
Unknown race	1	(10.0)

Ethnicity	Number	(Percent)
Non-Hispanic	3	(30.0)
Hispanic	6	(60.0)
Unknown ethnicity	1	(10.0)

Case Classification	Number	(Percent)
Confirmed	2	(20.0)
Probable	8	(80.0)

Outcome	Number	(Percent)
Interviewed	8	(80.0)
Hospitalized	2	(20.0)
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)
South America	4	(40.0)
Asia	2	(20.0)
Caribbean	2	(20.0)
Central America	1	(10.0)
Mexico or Caribbean	1	(10.0)

County of Residence	Number	(Percent)
Palm Beach	4	(40.0)
Broward	2	(20.0)
Duval	1	(10.0)
Hillsborough	1	(10.0)
Manatee	1	(10.0)
Pinellas	1	(10.0)

Hansen's Disease (Leprosy)

Hansen's disease (also known as leprosy) is an infection caused by the slow-growing bacteria *Mycobacterium leprae*. It can affect the nerves, skin, eyes, and lining of the nose (nasal mucosa). With early diagnosis and treatment, the disease can be cured. However, if left untreated, the nerve damage can result in crippling of hands and feet, paralysis, and blindness. Leprosy was once feared as a highly contagious and devastating disease. Transmission is still not clearly defined, but it is hard to spread. Once recognized, treatment is effective. Bacteria are thought to spread person-to-person via respiratory droplets following extended close contact with an infected person. Historically, the disease was not thought to be endemic in Florida. More recently in Florida and nationally, the role of infected armadillos and possibly contaminated soil as a source of exposure is being investigated further. Surveillance is important to facilitate early diagnosis and appropriate treatment by an expert to minimize permanent nerve damage and prevent further transmission. See Table 4 for additional information on Hansen's disease cases reported in 2016.

Due to the long incubation period for Hansen's disease and a mobile population, location of exposure is often difficult to identify. However, seven infected people spent most or all their lives in Florida and were reported as Florida-acquired. Only three people reported direct armadillo contact and for one of those people, contact was 50 years earlier. The median age of infected people was 67 years and all except one were ≥53 years old. This older age distribution differs from overall national cases reported to the National Hansen's Disease Program, which tend to have a younger median age. Case county of residence was primarily in counties in the central part of the state. It is unclear if this distribution is due to enhanced regional training and outreach efforts, population demographics, or other factors. Average time from onset to diagnosis was 1.1 years in 2016, which has improved from 1.75 years for cases reported from 2005 through 2014. Earlier diagnosis may in part be due to increased awareness in Florida health care providers.

Table 4. Characteristics of Hansen's Disease (Leprosy) Cases Reported in 2016, Florida

Summary	
Number of cases in 2016	18
5-year trend (2012 to 2016)	
Age (in Years)	
Mean	65
Median	67
Min-max	37 - 81

Gender	Number	(Percent)
Female	7	(38.9)
Male	11	(61.1)
Unknown gender	0	(0.0)

Race	Number	(Percent)
White	16	(88.9)
Black	2	(11.1)
Other	0	(0.0)
Unknown race	0	(0.0)

Ethnicity	Number	(Percent)
Non-Hispanic	18	(100.0)
Hispanic	0	(0.0)
Unknown ethnicity	0	(0.0)

Case Classification	Number	(Percent)
Confirmed	18	(100.0)
Probable	0	(0.0)

Outcome	Number	(Percent)
Interviewed	18	(100.0)
Hospitalized	1	(5.6)
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)
Unknown	11	(61.1)
Florida	7	(38.9)

County of Residence	Number	(Percent)
Brevard	11	(61.1)
Martin	2	(11.1)
Alachua	1	(5.6)
Hillsborough	1	(5.6)
Orange	1	(5.6)
Polk	1	(5.6)
Seminole	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; 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 2016.

Compared to 2015 when four of six reported infections were acquired in Florida, most infections were associated with exposures in other countries in 2016. Only one infection was acquired in Florida. One case was lost to follow-up and exposures were unknown. No commonalities were identified among cases.

Table 5. Characteristics of Hepatitis E Cases Reported in 2016, Florida

Summary	
Number of cases in 2016	5
5-year trend (2012 to 2016)	
Age (in Years)	
Mean	46
Median	50
Min-max	20 - 58

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

Race	Number	(Percent)
White	3	(60.0)
Black	0	(0.0)
Other	1	(20.0)
Unknown race	1	(20.0)

Ethnicity	Number	(Percent)
Non-Hispanic	3	(60.0)
Hispanic	1	(20.0)
Unknown ethnicity	1	(20.0)

Case Classification	Number	(Percent)
Confirmed	4	(80.0)
Probable	1	(20.0)

Outcome	Number	(Percent)
Interviewed	4	(80.0)
Hospitalized	1	(20.0)
Died	0	(0.0)

Outbreak Status	Number	(Percent)
Sporadic	4	(80.0)
Outbreak-associated	0	(0.0)
Outbreak status unknown	1	(20.0)

Location Where Exposed	Number	(Percent)
Florida	1	(20.0)
Bangladesh	1	(20.0)
Mauritius	1	(20.0)
Saudi Arabia	1	(20.0)
Unknown	1	(20.0)

County of Residence	Number	(Percent)
Manatee	1	(20.0)
Miami-Dade	1	(20.0)
Okaloosa	1	(20.0)
Orange	1	(20.0)
Palm Beach	1	(20.0)

Influenza-Associated Pediatric Mortality

Influenza, or flu, is a respiratory infection caused by a variety of influenza viruses. The Centers for Disease Control and Prevention estimate that influenza has resulted in between 9.2 million and 60.8 million illnesses, 140,000 to 710,000 hospitalizations, and 12,000 to 56,000 deaths annually since 2010.[1] Most experts believe that influenza viruses spread mainly by droplets made when infected people cough, sneeze, or talk. Less often, a person might become infected with influenza by touching a surface or object contaminated with influenza virus then touching their own mouth, eyes, or possibly nose. The best way to prevent influenza and prevent severe complications or outcomes from infection is to get vaccinated each year. Influenza surveillance is conducted to detect changes in the influenza virus, which helps determine the vaccine composition each year and prepare for epidemics and pandemics. Surveillance is also conducted to identify unusually severe presentations of influenza; detect outbreaks; and determine the onset, peak, and wane of influenza season to assist with influenza prevention, particularly in high-risk populations like the very young, the elderly, and pregnant women. Individual cases of novel influenza (a new subtype of influenza) and influenza-associated pediatric deaths are reportable in Florida. Additional surveillance of influenza and influenza-like illness activity is conducted using a variety of surveillance systems, including laboratory-based surveillance and syndromic surveillance. For additional information about influenza surveillance and the 2016-17 influenza season, see Section 6: Influenza and Influenza-Like Illness Surveillance. Note that influenza season starts in October each year and continues through May of the following year. During the 2016-17 influenza season, 10 deaths were reported. Data summarized here are based on report year rather than influenza season. See Table 6 for additional information on the six influenza-associated pediatric mortalities reported in the 2016 report year.

Table 6. Characteristics of Influenza-Associated Pediatric Mortality Cases Reported in 2016, Florida

Summary	
Number of cases in 2016	6
5-year trend (2012 to 2016)	

Age (in Years)	
Mean	11
Median	11
Min-max	5 - 16

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

Race	Number	(Percent)
White	4	(66.7)
Black	0	(0.0)
Other	2	(33.3)
Unknown race	0	(0.0)

Ethnicity	Number	(Percent)
Non-Hispanic	4	(66.7)
Hispanic	2	(33.3)
Unknown ethnicity	0	(0.0)

Case Classification	Number	(Percent)
Confirmed	6	(100.0)
Probable	0	(0.0)

Outcome	Number	(Percent)
Interviewed	3	(50.0)
Hospitalized	4	(66.7)
Died	6	(100.0)

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	5	(83.3)
New Hampshire	1	(16.7)

County of Residence	Number	(Percent)
Broward	1	(16.7)
Collier	1	(16.7)
Monroe	1	(16.7)
Orange	1	(16.7)
Palm Beach	1	(16.7)
Sarasota	1	(16.7)

1 Rolfes MA, Foppa IM, Garg S, Flannery B, Brammer L, Singleton JA, et al. 2016. Estimated Influenza Illnesses, Medical Visits, Hospitalizations, and Deaths Averted by Vaccination in the United States. Available at www.cdc.gov/flu/about/disease/2015-16.htm.

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. In recent years, measles has been imported into the U.S. from frequently visited countries, including the United Kingdom, France, Germany, India, and the Philippines, where large outbreaks have been reported. Most measles cases imported into the U.S. have come from unvaccinated U.S. residents who became infected while traveling abroad, became symptomatic after returning to the United U.S., and in some cases infected others in their communities, causing outbreaks. Additional information on global measles control efforts is available on the Measles & Rubella Initiative website at www.measlesrubellainitiative.org. 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 2016.

Out of the five confirmed cases in 2016, four were epidemiologically linked and three of those were from the same household. The cluster resulted from a vaccinated adult exposed in Illinois to an internationally acquired measles case. That adult infected an unvaccinated child in Florida, who in turn infected two family members. The Centers for Disease Control and Prevention conducted sequencing on specimens collected during the investigation and identified identical genotype D8 measles virus from the international case and the Florida cluster of cases.

Table 7. Characteristics of Measles (Rubeola) Cases Reported in 2016, Florida

Summary	
Number of cases in 2016	5
5-year trend (2012 to 2016)	
Age (in Years)	
Mean	24
Median	30
Min-max	3 - 48

Gender	Number	(Percent)
Female	2	(40.0)
Male	3	(60.0)
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	2	(40.0)
Hispanic	3	(60.0)
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	2	(40.0)
Died	0	(0.0)

Outbreak Status	Number	(Percent)
Sporadic	1	(20.0)
Outbreak-associated	4	(80.0)
Outbreak status unknown	0	(0.0)

Location Where Exposed	Number	(Percent)
Florida	4	(80.0)
Illinois	1	(20.0)

County of Residence	Number	(Percent)
Miami-Dade	4	(80.0)
Collier	1	(20.0)

Meningococcal Disease

Meningococcal disease is caused by *Neisseria meningitidis* bacteria. About 1 in 10 people have these bacteria in the back of their nose and throat with no signs or symptoms of disease (i.e., colonized). Sometimes the bacteria invade the body and cause certain illnesses, including infections of the lining of the brain and spinal cord (meningitis) and bloodstream infections (bacteremia or septicemia). These illnesses are often severe and can be deadly. Bacteria spread from person to person by direct contact or inhalation of respiratory droplets from the nose or throat of a colonized or infected person. Five *N. meningitidis* serogroups cause almost all invasive disease (A, B, C, Y and W). Vaccines provide protection against these serogroups. Serogroup W continued to be the most frequently identified serogroup causing infection in Florida, which differs significantly from national trends where serogroup B is the most frequently identified serogroup. Beginning in late 2008, a dominant clone of *N. meningitidis* serogroup W emerged in south Florida. This *N. meningitidis* clone has caused the majority of invasive meningococcal disease cases in south Florida over the past eight years and has also caused a multi-year increase in invasive meningococcal disease in the region, which has now diminished.[1] Surveillance for meningococcal disease is important because immediate public health actions are taken in response to every suspected meningococcal disease case to prevent secondary transmission. Surveillance is also conducted to monitor effectiveness of immunization programs and vaccines. See Table 8 for additional information on meningococcal disease cases reported in 2016.

Table 8. Characteristics of Meningococcal Disease Cases Reported in 2016, Florida

Summary	
Number of cases in 2016	18
5-year trend (2012 to 2016)	

Age (in Years)	
Mean	40
Median	34
Min-max	0 - 96

Gender	Number	(Percent)
Female	10	(55.6)
Male	8	(44.4)
Unknown gender	0	(0.0)

Race	Number	(Percent)
White	15	(83.3)
Black	1	(5.6)
Other	2	(11.1)
Unknown race	0	(0.0)

Ethnicity	Number	(Percent)
Non-Hispanic	16	(88.9)
Hispanic	2	(11.1)
Unknown ethnicity	0	(0.0)

Serogroup	Number	(Percent)
Group W	6	(33.3)
Group B	5	(27.8)
Group C	3	(16.7)
Group Y	1	(5.6)
Unknown	3	(16.7)

Case Classification	Number	(Percent)
Confirmed	18	(100.0)
Probable	0	(0.0)

Outcome	Number	(Percent)
Interviewed	17	(94.0)
Hospitalized	18	(100.0)
Died	1	(5.6)

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

Location Where Exposed	Number	(Percent)
Florida	15	(83.3)
Chile	1	(5.6)
North Carolina	1	(5.6)
Saint Martin	1	(5.6)

County of Residence	Number	(Percent)
Broward	3	(16.7)
Hillsborough	2	(11.1)
Palm Beach	2	(11.1)
Bay	1	(5.6)
Collier	1	(5.6)
Duval	1	(5.6)
Lee	1	(5.6)
Leon	1	(5.6)
Marion	1	(5.6)
Miami-Dade	1	(5.6)
Okaloosa	1	(5.6)
Pasco	1	(5.6)
Polk	1	(5.6)
St. Johns	1	(5.6)

1 Doyle TJ, Mejia-Echeverry A, Fiorella P, Leguen F, Livengood J, Kay R, et al. 2010. Cluster of Serogroup W135 Meningococci, Southeastern Florida, 2008–2009. *Emerging Infectious Diseases*, 16(1):113-115. Available at https://wwwnc.cdc.gov/eid/article/16/1/09-1026_article.

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 (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 (associated with fish consumption), 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. Eating fish is healthy and can reduce the risk of heart attack and strokes, but eating too much of certain fish can increase exposure to mercury. Developing fetuses and young children are more sensitive to the effects of mercury, which can impact brain development. Mercury cannot be cut away, cleaned, or cooked out of fish. 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 through remediation or elimination of sources when possible, and to inform the public about how to reduce the risk of exposure. See Table 9 for additional information on mercury poisoning cases reported in 2016.

All people with reported mercury poisoning in 2016 reported fish consumption as the source of poisoning. One of the affected people ate ≤17 ounces of fish per week; six people ate 18-35 ounces, six people ate 36-65 ounces, two people ate 66-95 ounces, and two people ate ≥126 ounces. Two people did not report the amount of fish consumed. The Florida Department of Health guidelines for fish consumption are available at www.doh.state.fl.us/FloridaFishAdvice. Women of childbearing age and young children should not eat more than one meal per week of fish with *very low* mercury or one meal per month of fish with *low* mercury, and they should avoid eating any fish with *moderate* mercury. Women not planning to be pregnant and men should not eat more than two meals a week of fish with *very low* mercury, one meal per week of fish with *low* mercury, or one meal per month of fish with *moderate* mercury.

Table 9. Characteristics of Mercury Poisoning Cases Reported in 2016, Florida

Summary	
Number of cases in 2016	19
5-year trend (2012 to 2016)	

Age (in Years)	
Mean	57
Median	60
Min-max	24 - 83

Gender	Number	(Percent)
Female	6	(31.6)
Male	13	(68.4)
Unknown gender	0	(0.0)

Race	Number	(Percent)
White	18	(94.7)
Black	1	(5.3)
Other	0	(0.0)
Unknown race	0	(0.0)

Ethnicity	Number	(Percent)
Non-Hispanic	18	(94.7)
Hispanic	1	(5.3)
Unknown ethnicity	0	(0.0)

Case Classification	Number	(Percent)
Confirmed	19	(100.0)
Probable	0	(0.0)

Outcome	Number	(Percent)
Interviewed	18	(95.0)
Hospitalized	0	(0.0)
Died	0	(0.0)

Outbreak Status	Number	(Percent)
Sporadic	19	(100.0)
Outbreak-associated	0	(0.0)
Outbreak status unknown	0	(0.0)

Location Where Exposed	Number	(Percent)
Florida	18	(94.7)
Unknown	1	(5.3)

County of Residence	Number	(Percent)
Lee	5	(26.3)
Palm Beach	5	(26.3)
Broward	3	(15.8)
Bay	1	(5.3)
Indian River	1	(5.3)
Pasco	1	(5.3)
Polk	1	(5.3)
Sarasota	1	(5.3)
St. Lucie	1	(5.3)

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. Despite routine vaccination, the number of cases in the U.S. has been increasing mainly due to outbreaks in young adults in settings with close contact, like college campuses. Waning immunity is thought to play a role in these outbreaks. 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 contacts. It is 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 also used to evaluate prevention programs and vaccine effectiveness. See Table 10 for additional information on mumps cases reported in 2016.

Of the 16 reported cases, six cases acquired mumps from international travel or had close contact to someone with symptoms who recently traveled. One case was identified as part of an out-of-state college campus outbreak. Two cases that were initially reported as acquired in Florida and acquired in an unknown location were later determined to have traveled outside the country before the onset of symptoms after the close of the 2016 morbidity dataset. These cases were acquired in Colombia and England. One case initially reported as sporadic was later found to be outbreak-associated after the close of the 2016 morbidity dataset.

Table 10. Characteristics of Mumps Cases Reported in 2016, Florida

Summary	
Number of cases in 2016	16
5-year trend (2012 to 2016)	
Age (in Years)	
Mean	38
Median	42
Min-max	14 - 62

Gender	Number	(Percent)
Female	7	(43.8)
Male	9	(56.3)
Unknown gender	0	(0.0)

Race	Number	(Percent)
White	7	(43.8)
Black	3	(18.8)
Other	2	(12.5)
Unknown race	4	(25.0)

Ethnicity	Number	(Percent)
Non-Hispanic	9	(56.3)
Hispanic	2	(12.5)
Unknown ethnicity	5	(31.3)

Case Classification	Number	(Percent)
Confirmed	6	(37.5)
Probable	10	(62.5)

Outcome	Number	(Percent)
Interviewed	15	(94.0)
Hospitalized	4	(25.0)
Died	0	(0.0)

Outbreak Status	Number	(Percent)
Sporadic	12	(75.0)
Outbreak-associated	3	(18.8)
Outbreak status unknown	1	(6.3)

Location Where Exposed	Number	(Percent)
Florida	9	(56.3)
Unknown	2	(12.5)
Bangladesh	1	(6.3)
Iowa	1	(6.3)
Indiana	1	(6.3)
India	1	(6.3)
Europe	1	(6.3)

County of Residence	Number	(Percent)
Miami-Dade	5	(31.3)
Broward	3	(18.8)
Hillsborough	2	(12.5)
Alachua	1	(6.3)
Citrus	1	(6.3)
Gadsden	1	(6.3)
Okaloosa	1	(6.3)
Orange	1	(6.3)
Palm Beach	1	(6.3)

Rocky Mountain Spotted Fever and Spotted Fever Rickettsiosis

Spotted fever rickettsioses (SFRs) are a group of tick-borne diseases caused by closely related *Rickettsia* bacteria. The most serious and commonly reported spotted fever group rickettsiosis in the U.S. is Rocky Mountain spotted fever (RMSF) caused by *R. rickettsii*. Examples of other causes of SFR include *R. parkeri*, *R. africae*, and *R. conorii*. RMSF symptoms include fever, headache, and rash and can be fatal if not treated early with the correct antibiotic. Other SFRs have similar signs and symptoms, including fever, headache, and rash, but are often less severe than RMSF. Unlike RMSF, an eschar often develops at the site of the tick bite following infection with other SFRs. Most infections reported in Florida are acquired in the northern and central regions of the state. Imported cases also occur regularly, particularly in people traveling to countries in southern Africa. Cases are reported year-round without distinct seasonality, though peak transmission typically occurs during the summer months. The principal tick vectors in Florida are the American dog tick (*Dermacentor variabilis*) and the Gulf Coast tick (*Amblyomma maculatum*). In 2010, the national reporting criteria were expanded to include both RMSF and other SFRs. Florida adopted this change in June 2014. Human antibodies to spotted fever rickettsial species such as *R. parkeri*, *R. amblyommii*, *R. africae*, and *R. conorii* cross-react with serologic tests for the RMSF organism *R. rickettsii*. Commercial antibody testing to differentiate other SFRs from RMSF is currently limited, though PCR testing of eschar swabs performed at reference laboratories can provide species. Surveillance for SFRs is important to monitor incidence over time, estimate burden of illness, monitor geographical and temporal occurrence, and target areas of high incidence for prevention education. See Table 11 for additional information on SFR cases reported in 2016.

All three confirmed cases were exposed during international travel to South Africa and were unrelated to each other. Eschar swabs from two of the confirmed cases tested PCR positive for SFR; one was positive for *R. conorii* and one for *R. africae*. The third case was confirmed using serologic assays so species could not be determined.

Table 11. Characteristics of Rocky Mountain Spotted Fever and Spotted Fever Rickettsiosis Cases Reported in 2016, Florida

Summary	
Number of cases in 2016	12
5-year trend (2012 to 2016)	
Age (in Years)	
Mean	53
Median	53
Min-max	14 - 83

Gender	Number	(Percent)
Female	4	(33.3)
Male	8	(66.7)
Unknown gender	0	(0.0)

Race	Number	(Percent)
White	9	(75.0)
Black	1	(8.3)
Other	0	(0.0)
Unknown race	2	(16.7)

Ethnicity	Number	(Percent)
Non-Hispanic	7	(58.3)
Hispanic	2	(16.7)
Unknown ethnicity	3	(25.0)

Case Classification	Number	(Percent)
Confirmed	3	(25.0)
Probable	9	(75.0)

Outcome	Number	(Percent)
Interviewed	10	(83.0)
Hospitalized	8	(66.7)
Died	0	(0.0)

Outbreak Status	Number	(Percent)
Sporadic	12	(100.0)
Outbreak-associated	0	(0.0)
Outbreak status unknown	0	(0.0)

Location Where Exposed	Number	(Percent)
Florida	7	(58.3)
South Africa	3	(25.0)
Pennsylvania	1	(8.3)
South Carolina	1	(8.3)

County of Residence	Number	(Percent)
Duval	2	(16.7)
Miami-Dade	2	(16.7)
Okaloosa	2	(16.7)
Broward	1	(8.3)
Clay	1	(8.3)
Manatee	1	(8.3)
Marion	1	(8.3)
Palm Beach	1	(8.3)
Suwannee	1	(8.3)

Staphylococcus aureus Infection, Vancomycin-Intermediate and Vancomycin-Resistant

Staphylococcus aureus is a bacterium 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*.

S. aureus with resistance to many antibiotics has become more common in the last decade. Consequently, physicians rely heavily on vancomycin as the primary antibiotic for treating patients infected with bacteria that are resistant to many antibiotics. When the bacteria become resistant to vancomycin as well, treatment options are limited. 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 *S. aureus* 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 12 for additional information on VISA cases reported in 2016.

Of the four reported cases in 2016, three were admitted from the community, each with significant past medical histories that increase the risk for infections. One person's risk factors were unknown.

Table 12. Characteristics of *Staphylococcus aureus* Infection, Intermediate Resistance to Vancomycin Cases Reported in 2016, Florida

Summary	
Number of cases in 2016	4
5-year trend (2012 to 2016)	
Age (in Years)	
Mean	56
Median	56
Min-max	40 - 74

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

Race	Number	(Percent)
White	3	(75.0)
Black	1	(25.0)
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	4	(100.0)

Outcome	Number	(Percent)
Interviewed	1	(25.0)
Hospitalized	4	(100.0)
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)
Lake	1	(25.0)
Pasco	1	(25.0)
Pinellas	1	(25.0)
Suwannee	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 13 for additional information on tetanus cases reported in 2016.

Of the five cases reported in 2016, the exposures leading to illness included a man who cut his finger while painting outdoors, a man who cut his hand while towing a car, and a woman who stepped on a nail while outdoors. One woman had no known acute injuries and information about one man's injury was limited. One woman died; the cause of death was unknown. Four people did not recall receiving a tetanus toxoid vaccination within the past 10 years, and one person had a previous dose of tetanus toxoid vaccine within the past year.

Table 13. Characteristics of Tetanus Cases Reported in 2016, Florida

Summary	
Number of cases in 2016	5
5-year trend (2012 to 2016)	
Age (in Years)	
Mean	52
Median	43
Min-max	36 - 77

Gender	Number	(Percent)
Female	2	(40.0)
Male	3	(60.0)
Unknown gender	0	(0.0)

Race	Number	(Percent)
White	4	(80.0)
Black	1	(20.0)
Other	0	(0.0)
Unknown race	0	(0.0)

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

Case Classification	Number	(Percent)
Probable	5	(100.0)

Outcome	Number	(Percent)
Interviewed	3	(60.0)
Hospitalized	4	(80.0)
Died	1	(20.0)

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

Location Where Exposed	Number	(Percent)
Florida	5	(100.0)

County of Residence	Number	(Percent)
Pinellas	2	(40.0)
Broward	1	(20.0)
Miami-Dade	1	(20.0)
Okaloosa	1	(20.0)

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 14 for additional information on typhoid fever cases reported in 2016.

Typically, about 80% of infections are acquired in other countries; however, in 2016, all cases were acquired in other countries. One infection was acquired in Haiti before immigrating to the U.S., one case was acquired in Haiti or Mexico while traveling for business, and the other 10 cases were acquired in various countries while visiting family or friends. While nine of the cases were in U.S. citizens, three cases were in citizens of other countries who were currently living in Florida (two Haitian citizens, one Indian citizen).

Table 14. Characteristics of Typhoid Fever Cases Reported in 2016, Florida

Summary	
Number of cases in 2016	12
5-year trend (2012 to 2016)	

Age (in Years)	
Mean	21
Median	16
Min-max	4 - 38

Gender	Number	(Percent)
Female	4	(33.3)
Male	8	(66.7)
Unknown gender	0	(0.0)

Race	Number	(Percent)
White	0	(0.0)
Black	6	(50.0)
Other	6	(50.0)
Unknown race	0	(0.0)

Ethnicity	Number	(Percent)
Non-Hispanic	11	(91.7)
Hispanic	1	(8.3)
Unknown ethnicity	0	(0.0)

Case Classification	Number	(Percent)
Confirmed	12	(100.0)
Probable	0	(0.0)

Outcome	Number	(Percent)
Interviewed	12	(100.0)
Hospitalized	11	(91.7)
Died	0	(0.0)

Outbreak Status	Number	(Percent)
Sporadic	12	(100.0)
Outbreak-associated	0	(0.0)
Outbreak status unknown	0	(0.0)

Location Where Exposed	Number	(Percent)
Haiti	5	(41.7)
India	2	(16.7)
Pakistan	2	(16.7)
Bangladesh	1	(8.3)
El Salvador	1	(8.3)
Haiti or Mexico	1	(8.3)

County of Residence	Number	(Percent)
Broward	3	(25.0)
Miami-Dade	2	(16.7)
Palm Beach	2	(16.7)
Collier	1	(8.3)
Duval	1	(8.3)
Hillsborough	1	(8.3)
Orange	1	(8.3)
St. Johns	1	(8.3)

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. *Culex* species (mosquitoes) and wild birds are the natural hosts. Humans and horses can 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 infections 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 15 for additional information on WNV disease cases reported in 2016.

Six of the eight cases reported in 2016 had neuroinvasive symptoms. Two infected people were first identified by blood donor screening tests. One person developed symptoms after blood donation and the other had a febrile illness prior to blood donation and later developed neuroinvasive symptoms.

While asymptomatic WNV infections do occur, they do not meet the Florida surveillance case definition. In 2016, two asymptomatic infections in blood donors were identified in Florida residents of Gulf (October) and Pinellas (July) counties. The Pinellas blood donor was lost to follow-up and it is unknown if the WNV infection was acquired in Florida. A fatal neuroinvasive WNV infection was also identified in a non-Florida resident who was visiting Florida (note that this report only includes Florida residents in case counts). It is unknown whether or not the infection was acquired in Florida as the person was unavailable for interview. Information provided by family members indicated that the person spent part of their incubation period in their state of residence and part in Florida. This was the only fatal infection identified in Florida in 2016.

Table 15. Characteristics of West Nile Virus Disease Cases Reported in 2016, Florida

Summary	
Number of cases in 2016	8
5-year trend (2012 to 2016)	
Age (in Years)	
Mean	44
Median	41
Min-max	16 - 72

Gender	Number	(Percent)
Female	2	(25.0)
Male	6	(75.0)
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	1	(12.5)
Unknown ethnicity	0	(0.0)

Case Classification	Number	(Percent)
Confirmed	4	(50.0)
Probable	4	(50.0)

Outcome	Number	(Percent)
Interviewed	8	(100.0)
Hospitalized	6	(75.0)
Died	0	(0.0)

Outbreak Status	Number	(Percent)
Sporadic	8	(100.0)
Outbreak-associated	0	(0.0)
Outbreak status unknown	0	(0.0)

Location Where Exposed	Number	(Percent)
Florida	8	(100.0)

County of Residence	Number	(Percent)
Bay	3	(37.5)
Escambia	2	(25.0)
Duval	1	(12.5)
Okaloosa	1	(12.5)
Santa Rosa	1	(12.5)

Section 4

Notable Outbreaks and Case Investigations

Notable Outbreaks and Case Investigations

In Florida, any disease outbreak in a community, hospital, or institution, and any grouping or clustering of patients having similar disease, symptoms, syndromes or etiological agents that may indicate the presence of an outbreak are reportable as per Chapter 64D-3, Florida Administrative Code. Selected outbreaks and case investigations of public health importance that occurred in 2016 are briefly summarized in this section.

Table of Contents

Bacterial Diseases

Pertussis Investigation Involving a Faith-Based Community, Escambia County, December 2016

Authors
Patrick Lynch, MPH; Candy Luciano-Green, RN

Background
On December 14, 2016, the Epidemiology Program at the Florida Department of Health in Escambia County (DOH-Escambia) was notified by a local hospital laboratory of a positive pertussis polymerase chain reaction test result in an unvaccinated 5-year-old child. Upon interviewing the child's family, it was determined that the child had been suffering from a cough illness for over three weeks and the child had contact with multiple people who had been exhibiting similar symptoms. These contacts were all part of a private, faith-based community of approximately 50 members. Several members were either unvaccinated or significantly behind schedule. The community was somewhat passive about vaccinations, though not specifically opposed. DOH-Escambia initiated an investigation of the possible cluster of pertussis cases.

Methods
DOH-Escambia epidemiology staff obtained and reviewed medical records for the first reported case of pertussis residing in this faith-based community. The child's symptom onset was November 21. The family was interviewed via phone to assess whether other members of this family and community were exhibiting cough illnesses. The community was very cohesive and after speaking to four heads of household, contacts of the index case and symptomatic people were identified.

A confirmed case of pertussis was defined as a resident of the child's faith-based community who had a cough for at least 14 days and at least one of the following: posttussive vomiting, paroxysmal cough, or apnea with symptom onset between November 15 and December 1. A suspected case of pertussis was defined as a resident of the faith-based community with a clinically compatible cough illness of any length during the same time period.

On December 16, a site visit was conducted at the community's private school to distribute pertussis fact sheets to teachers and students, and then subsequently disseminated to parents and other community members. DOH-Escambia encouraged all members of the community to get up-to-date on their immunizations, including pertussis. For those experiencing symptoms, DOH-Escambia recommended they seek medical attention to possibly get tested and receive treatment.

Results
Two confirmed cases were identified, one through laboratory and clinical evidence and one who was clinically compatible and was epidemiologically linked to the index case. Nine other suspected cases were identified within the community. The 11 cases ranged in age from <1 year old to 48 years old. Nine of the cases were in children ≤5 years old. Ten of the 11 cases were in unvaccinated persons.

Conclusions and Recommendations
Excellent interviewing skills allowed DOH-Escambia to quickly gather information and work with the religious community to offer education to prevent further spread and the need for vaccination. While the community seemed to appreciate all the information that was provided to them, they did not use DOH-Escambia's immunization services.

Pertussis is a vaccine-preventable disease (VPD). Building connections and promoting community awareness among populations at high risk for VPDs due to low immunization rates prior to the occurrence of an outbreak facilitates rapid disease control and establishes trust. Public health should continue to educate parents regarding vaccination against VPDs such as pertussis.

Investigation of a Salmonellosis Outbreak Associated With a Restaurant, Nassau County, August 2016

Authors
Emily Cason, MPH; Jenny Crain, MS, MPH, CPH

Background
On August 16, 2016, the Florida Department of Health in Duval County (DOH-Duval) notified the Regional Environmental Epidemiologist (REE) of two unrelated salmonellosis cases in people who had eaten at a restaurant in Nassau County on the same day in July. One additional salmonellosis case in a Nassau County resident who had eaten at the same restaurant was subsequently identified. An investigation into a possible foodborne illness outbreak was initiated on August 17.

Methods
An outbreak-specific questionnaire was developed and administered to people who did and did not report illness after consuming food from the restaurant.

A primary confirmed case was defined as someone who ate a meal at the restaurant between July 29 and August 7 and had laboratory evidence of an infection with *Salmonella* I 4,5,12, i- with a pulsed-field gel electrophoresis (PFGE) pattern of JPXX01.1139. A primary probable case was defined as someone who ate a meal at the restaurant between July 29 and August 7 and had onset of diarrhea (two or more loose stools in a 24-hour period). A confirmed secondary case was defined as someone who had close contact with a primary case but did not eat a meal at the restaurant during the exposure period, developed diarrhea, and had laboratory evidence of an infection with *Salmonella* I 4,5,12, i- infection with a PFGE pattern of JPXX01.1139. A probable secondary case was defined as someone who had close contact with a primary case but did not eat a meal at the restaurant in the exposure period and developed diarrhea.

A joint environmental assessment of the restaurant was conducted with the Department of Business and Professional Regulation (DBPR) on August 19.

Stool specimens were sent to the Bureau of Public Health Laboratories (BPHL) for confirmation and PFGE analysis. Three isolates were sent to the Centers for Disease Control and Prevention (CDC) for antimicrobial resistance testing.

Results
DOH-Nassau, DOH-Duval, and the REE interviewed 37 people, of whom 16 met the outbreak case definition (seven primary confirmed, five primary probable, one secondary confirmed, and three secondary probable cases). Cases resided in Duval and Nassau counties in Florida, Missouri, and New Jersey. The median age of primary cases was 28 (range: 1 to 62 years old) and half were female. The most prevalent symptoms reported among primary cases included abdominal cramps (100%), diarrhea (100%), fever (67%), chills (50%), muscle aches (50%), and headache (50%). The median incubation period for primary cases was 59 hours (range: 18 to 117 hours). The median duration of symptoms for primary cases with available data was seven days (range: <1 to 21 days). Ten cases visited non-emergency medical providers, four sought medical care at emergency departments, and two cases were hospitalized overnight. Complete survey information was available for 24 people and odds ratios (ORs) were calculated using exposure information obtained from the interviews. Chicken was significantly associated with illness (OR = 8.000, 95% confidence interval = 1.699-37.674).

The joint assessment conducted with DBPR identified several critical food safety violations. A stop sale was issued on potentially hazardous food (PHF) due to temperature abuse. Specifically, chicken was measured at 93°F and queso was measured at 103°F. Though the chicken and queso were

reportedly in the process of being reheated, neither of the foods reached an internal temperature above 165°F within two hours. The DBPR inspector and DOH-Nassau staff conducted a food preparation review of the food flow cycle for the chicken that was used for both fajitas and tacos. Chicken and beef were prepared in large batches and any leftovers from each service day were cooled, stored overnight below 41°F, and then reheated the next day for use. No temperature measurements were taken throughout these food preparation processes. The joint assessment with DBPR noted several other discrepancies with food safety regulations, but none likely contributed to this outbreak.

Nine cases (eight primary and one secondary) were laboratory-confirmed by stool culture. Eight of the *Salmonella* isolates were serotyped as S. I 4, 5, 12 i- at BPHL with the same PFGE pattern JPXX01.1139.

Three isolates tested by CDC were resistant to ampicillin, streptomycin, sulfisoxazole, tetracycline, and nalidixic acid. One additional isolate was tested at a private laboratory and was resistant to ampicillin. All four stool specimens submitted by restaurant employees were negative for viral, bacterial, and parasitic pathogens.

Conclusions and Recommendations
This outbreak among patrons of a Nassau County restaurant was most likely associated with chicken prepared and consumed at the restaurant between July 29 and August 7. The causative agent was identified as *Salmonella* I 4, 5, 12 i-. Meals at the implicated restaurant were the only meals in common among all the individuals from these separate households. The CDC microbiological laboratory reported that the outbreak-specific *Salmonella* strains were multi-antibiotic resistant, which implies that the illnesses were more likely attributable to consuming meat versus produce. The epidemiologic evidence from this investigation suggests that eating chicken at the restaurant was significantly associated with illness. The odds of having eaten any chicken item were 8.0 times higher in ill patrons than well patrons. No other entrée items or ingredients were significantly associated with illness. At least four cases had contact with a primary case and became ill through person-to-person household transmission of *Salmonella*.

The joint environmental assessment with DBPR also found evidence to support foodborne salmonellosis. Food handlers at the facility were not carefully following food safety practices, specifically the Food and Drug Administration food code requirement to reheat PHF above 165°F within two hours. In addition, no food temperatures were being monitored during any of the cooking processes at the restaurant. Temperature abuse likely contributed to bacterial growth in chicken that was served at the restaurant. Raw chicken is an inherently contaminated animal product that is intended to be eaten only after a heat kill step. It is likely raw chicken was initially not fully cooked to the appropriate temperature or cross-contamination occurred between raw and fully cooked chicken.

Staphylococcal Food Poisoning Outbreaks at Multiple Daycares, Broward and Miami-Dade Counties, November 2016

Authors
Juan Suarez, Janet Wamnes

Background
On November 7, 2016, a news report was released regarding a gastrointestinal illness (GI) outbreak at a Broward County, Florida daycare. Per the report, approximately 29 children at the preschool experienced nausea, vomiting, diarrhea, and dehydration shortly after eating lunch. Paramedics were called to the scene to assist with treating ill children and rule out gas fume exposure. During the

afternoon, the Florida Department of Health in Miami-Dade County (DOH-Miami-Dade) Office of Epidemiology, Disease Control, and Immunization Services (EDC-IS) received an email regarding a GI outbreak occurring earlier in the day at a Miami-Dade County daycare. Later that evening, the Florida Poison Information Center Network notified EDC-IS of a GI outbreak at a second Miami-Dade County daycare. Several children from both daycares experienced nausea and vomiting within hours of eating the scheduled lunch. As a precaution, several children were taken to area emergency departments (EDs), urgent care centers, and private physician offices. However, no stool specimens were collected. Interviews with the directors of each daycare identified that both lunches were provided by a local catering company located in Miami-Dade County, which also serviced the Broward County daycare with the GI outbreak. The catering company provided lunches to several daycares in south Florida through the Florida Department of Health's Child Care Food Program, a nutrition program that reimburses child care centers for meals and snacks obtained from approved contractors. An outbreak investigation by the Florida Department of Health in Broward County (DOH-Broward) and EDC-IS began immediately on November 7.

On November 8, EDC-IS was notified by the Florida Department of Children and Families of additional GI outbreaks reported on November 7 at other local daycares, all of which were associated with the same catering company. A joint assessment and inspection at the catering facility was conducted on November 9 by EDC-IS, the DOH-Miami-Dade Office of Environmental Health (DOH-EH), and the Florida Department of Business and Professional Regulation (DBPR).

Methods

Epidemiologic Investigation

A case was defined as a person who experienced vomiting within three hours after consuming lunch at a daycare served by the catering company on November 7. EDC-IS was provided a list of 16 daycares within Miami-Dade County that participated in the Child Care Food Program and subcontracted meals from the catering company. Each daycare was contacted to obtain the total number of children and staff and a line list of any ill persons. Line lists included age, gender, symptoms, and whether the individual visited a medical provider. DOH-Broward visited the two daycares in Broward County and gathered information about the ill and their food exposures.

Laboratory Analysis

Samples of leftover food from November 7 were collected at selected daycare facilities serviced by the catering company in both Broward and Miami-Dade counties. Samples were sent to the Bureau of Public Health Laboratories (BPHL) to be analyzed for selected pathogens consistent with the case definition. No patient specimens were collected by health care facilities on associated people who sought medical care.

Environmental Assessment

On November 9, an environmental assessment of the caterer was conducted during the food preparation hours of 2:30 a.m. to 8:00 a.m. This joint assessment included three DBPR staff, one DOH-EH staff, and two EDC-IS staff. Environmental assessments of the two daycares in Broward County were conducted by DOH-Broward epidemiology and environmental health staff on November 7 and 8.

Results

Epidemiologic Investigation

A total of 117 of 403 children in eight daycares in Miami-Dade County and 32 of 53 children in two daycares in Broward County met the outbreak case definition (Table 1). Ages ranged from 1.1 to 10.5 years with a median of 3.3 years. Six Miami-Dade County facility staff who ate on November 7 were also reported ill. They were not included in the analysis as the number of staff consuming food was unknown, so attack rates could not be calculated. Vomiting (100%) and diarrhea (56%) were the most common symptoms reported by cases. Onset dates and exposure dates were both on November 7. The incubation period was <3 hours. Duration of illness was 24 to 48 hours. Sixty-eight (45.6%) of the

cases sought treatment at a health care facility. Of the cases in Miami-Dade County, 11.7% were hospitalized due to their illness, and 9.5% of the Broward cases were hospitalized. Statistical analysis of food items consumed could not be conducted as this level of data was not collected for daycare attendees.

Table 1. Summary of Gastrointestinal Outbreak in 10 Daycares in Miami-Dade and Broward Counties, November 7, 2016

Daycare	Number of Cases	Number of Attendees	Percent Attack Rate	Percent Male	Median Age (in Years)	Age Range (in Years)	Percent Hospitalized
Miami-Dade facility A	11	13	84.6	54.6	3.7	1.6 - 4.8	15.4
Miami-Dade facility B	24	61	39.3	50.0	3.6	1.6 - 10.5	14.8
Miami-Dade facility C	4	40	10.0	25.0	4.0	1.9 - 4.5	5.0
Miami-Dade facility D	13	63	20.6	23.1	2.3	1.7 - 4.4	7.9
Miami-Dade facility E	9	10	90.0	33.3	3.9	1.6 - 5.2	20.0
Miami-Dade facility F	13	86	15.1	30.8	3.2	2.2 - 5.4	5.8
Miami-Dade facility G	7	70	10.0	57.1	1.7	1.3 - 6.1	4.3
Miami-Dade facility H	36	60	60.0	47.2	3.2	1.1 - 5.18	31.7
Broward facility I	21	30	70.0	--	--	--	9.5
Broward facility J	11	23	47.8	--	--	--	0.0
Total	149	456	32.7	42.7	3.3	1.1-10.5	11.7

Laboratory Analysis

Samples including leftover ham, turkey, mixed vegetables, black-eyed peas, and dinner rolls were analyzed by BPHL. Testing identified *Staphylococcus aureus* at 10^8 colony forming units per gram (CFU/g) in the ham and turkey. Evidence of *S. aureus* was not found in the other foods. Samples were negative for *Bacillus cereus*. Samples of the food saved for quality control purposes by the caterer were sent to a private laboratory for analysis. Those results were negative for enteric pathogens.

Environmental Assessment

On November 9, a joint assessment of the catering company was conducted by DPBR, DOH-EH, and EDC-IS staff. Several violations were observed, particularly with food handling and time/temperature controls. Stop sales were placed on several food items that were held outside of safe temperatures, including congri (a rice and bean dish), pork, turkey sandwiches, and cooked vegetables. Additional stop sales were issued on dented/rusted cans of peaches and corned beef hash which were being prepared for meals later that day. Observations of the delivery vans storing of hot and cold foods for distribution to the daycares included hot foods kept in warmers and cold foods in ice. There was some concern about the temperature of milk cartons before being placed in the ice. Other issues included a cold room that was held at 60°F, condensation drops falling over a preparation table, a greasy substance coming from the trash and flowing to the storm sewers, and food disposed on the floor next to the trash receptacle.

Conclusions and Recommendations

Evidence indicates that this outbreak was caused by staphylococcal food poisoning (SFP). SFP is caused by ingesting foods contaminated with enterotoxins produced by the bacterium *S. aureus*. Although the bacteria can be inactivated by heating food prior to consumption, the enterotoxins are heat-resistant and can still cause illness. SFP is characterized by a rapid onset of nausea, numerous vomiting episodes, and abdominal cramping. Diarrhea may also occur and fever is usually absent. The incubation period is typically three hours and ranges from 30 minutes to 8 hours. Illness is usually self-limited with individuals recovering within 24 to 48 hours. Occasionally, SFP can be severe enough to warrant hospitalization. Results from this investigation suggest this outbreak likely resulted from consumption of ham and turkey contaminated with *S. aureus* delivered by the catering company. *S. aureus* levels in the ham exceeded those typically known to cause illness (10^6 CFU/g). In addition, violations found at the catering company during the environmental assessment (improperly preparing and monitoring time and temperature controls for the food) resulted in an environment conducive to *S. aureus* multiplication and toxin production. *S. aureus* contamination and subsequent intoxication can be prevented by appropriate hand washing prior to handling foods and ensuring clean food preparation, storage, and equipment surfaces. Additionally, potentially hazardous prepared foods

should immediately be stored at below 40°F or maintained in hot holding above 140°F to prevent growth of *S. aureus*. Findings emphasize the importance of adhering to food safety regulations. Caterers, especially those serving young children, should be aware of the risks associated with improper food handling and storage. Safe food preparation in lunch programs, particularly daycares, is essential.

Viral Diseases

Varicella Outbreak Among School-Aged Children, Pinellas County, January 2016

Authors
Ashley Joseph, MPH; JoAnne Lamb, MPH

Background
On January 21, 2016, the Florida Department of Health in Pinellas County (DOH-Pinellas) was contacted by the Pinellas County School Health Services Assistant Manager regarding a varicella outbreak occurring at a local elementary school. The school was notified of three students who were recently diagnosed by their physicians with varicella. Two of the cases were unvaccinated siblings that attended different grades and participated in the afterschool program. The school's student census at the time of reporting was 813, with 46 unvaccinated and under-vaccinated students due to religious and medical exemptions (vaccination rate of 94.3%). DOH-Pinellas began an immediate investigation into the report and began active case finding.

Varicella, also known as chickenpox, is a mild illness that includes a low-grade fever, malaise, and an itchy blister-like rash. After one to two days of illness, the rash typically appears on the head and trunk, then spreads to the extremities. Transmission occurs primarily through airborne exposure to the virus; however, the virus can also be transmitted by direct contact with infectious fluid from the vesicles of an infected person. The incubation period for varicella ranges from 10 to 21 days, with an average of 14 to 16 days. Vaccination with a standard, two-dose varicella vaccine series is the best preventative measure and is 70-100% effective at preventing varicella.

Methods
Epidemiologic Investigation
A list of ill students and parent contact information was collected. All parents were interviewed as information was received by the school or reported by health care providers. A letter was drafted by DOH-Pinellas and sent to all parents and staff on January 22. The letter recommended that parents follow up with their health care providers regarding vaccination status and post-exposure prophylaxis. By January 25, seven students were diagnosed with varicella by their health care providers. DOH-Pinellas advised the school's principal that exclusion of all susceptible students from school for the duration of the 21-day incubation period was necessary to mitigate the spread of the virus. Students were excluded if they did not have a previous history of varicella infection or documentation of one dose of the varicella vaccine. The school principal called parents of children to be excluded directly and provided an exclusion letter declaring a communicable disease emergency on January 25.

At the same time, a health care advisory letter was sent to pediatricians in Pinellas County to help increase their awareness and suspicion of varicella and request testing for any suspected cases. The DOH-Pinellas Public Information Officer (PIO) notified the DOH Press Secretary and the Pinellas County School PIO. On January 25, a notice was distributed via EpiCom, Florida's moderated web communication system, for further public health awareness.

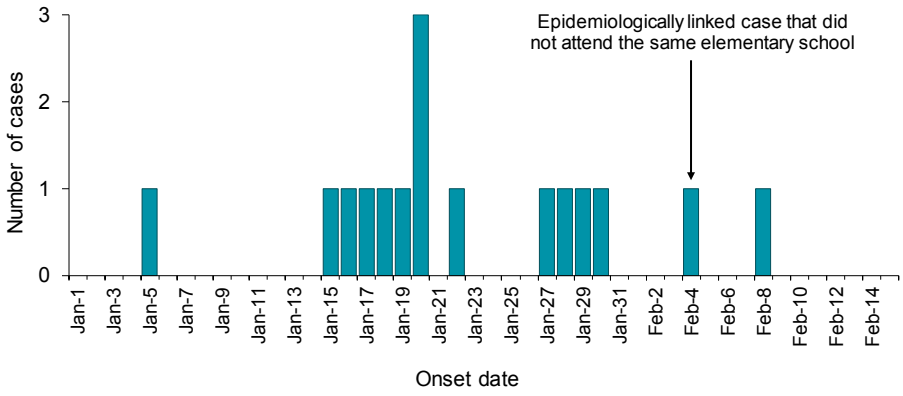
On February 3, DOH-Pinellas staff conducted a site visit at the elementary school and provided education to staff about active surveillance for varicella, proper hand hygiene etiquette, and discussed appropriate distancing in group activities.

Laboratory Analysis
Health care providers were encouraged to conduct polymerase chain reaction (PCR) testing to confirm the clinical diagnosis of any patients who were acutely ill. On January 27, a local pediatrician collected a skin scraping and swab of a vesicular lesion from an infected case. The specimen was sent to the Bureau of Public Health Laboratories for PCR testing.

Results

Epidemiologic Investigation
The index patient was a second grader who developed a rash on January 5 and continued to attend school through January 7. The infection spread to a sibling who attended third grade at the same elementary school. A total of 16 people met the confirmed surveillance case definition for varicella with onsets ranging from January 5 to 8 (Figure 1). Cases were in children aged 3 to 12 years old, affecting seven separate grades. One epidemiologically linked case was identified in a family member who attended a separate preschool.

Figure 1. Number of Varicella Cases Among School-Aged Children by Onset Date, Pinellas County, January to February, 2016



Eighteen students met the exclusion criteria. If any of the susceptible students received one dose of the varicella zoster virus (VZV) vaccine, they were allowed to return to school the same day. As a result of the exclusion criteria, six students received their first dose of VZV vaccine and were able to return to school. Twelve students remained excluded from school until February 25.

Laboratory Analysis
On January 28, the vesicular lesion swab was reported as PCR-positive for varicella.

Conclusions and Recommendations
As a result of the continued spread of varicella in the school, DOH-Pinellas pursued exclusion of susceptible students. The implementation of the exclusions likely prevented further spread of disease within the school and the community. Large groups of unvaccinated individuals are at high risk of vaccine-preventable disease outbreaks. Wide-scale administration of varicella vaccine is the most effective way to reduce the risk of community-wide outbreaks.

Non-Infectious Agents

Carbon Monoxide Poisoning at a Local Gun Range, Polk County, December 2016

Authors
Prakash Mulay, MBBS, MPH; Kelsey Rondini

Background
Carbon monoxide (CO) is an odorless, colorless, and poisonous gas that can cause sudden illness and death if present in sufficient concentration in ambient air. On December 26, 2016, the Florida Poison Information Center Network (FPICN) notified the Florida Department of Health in Polk County (DOH-Polk) of a cluster of CO poisoning cases. Further review of FPICN data identified eight people who presented to a local emergency department (ED).

Methods
DOH-Polk initiated an investigation that included reviewing medical records, interviewing exposed people, and coordinating with the Fire and Rescue Department (responsible for measuring CO levels). The Florida surveillance case definition was used to classify people as cases based on combinations of carboxyhemoglobin (COHb) levels ≥9%, clinically compatible symptoms, and environmental evidence.

Results
Case interviews indicated that the building's heating, ventilation, and air conditioning system (HVAC) malfunctioned, leading to an increase in CO in the enclosed gun range area. Eleven first responders were dispatched from the local Fire and Rescue Department; they measured indoor CO levels of 1,212 ppm. They closed the range and ventilated the building. Following closure, a hazmat unit was called, at which time CO levels had decreased to 935 ppm. Mechanical ventilation was used until levels dropped below 50 ppm across the facility. According to one of the first responders, approximately 41 individuals were exposed, although the majority did not seek medical attention.

Eight people presented at a local ED with symptoms including dizziness (50.0%), syncope (25%), headache (25%), weakness (12.5%), and abdominal pain (12.5%) after exposure to CO at the gun range. All were men aged 21 to 76 years (mean age of 40.5 years). Three of the affected men were business patrons, one was a staff member, and four were first responders. Two additional first responders reported feeling ill but did not seek medical treatment. COHb levels measured at the ED for three patrons and the employee were above 9% (range: 11% to 19%). COHb levels for four first responders were below 2% (range: 0.3% to 1.6%). Seven of the men were treated with medical non-rebreather mask and one man was monitored without oxygen intervention. All men were released from the ED on the same day after COHb levels decreased and no complications were observed. All eight men were classified as confirmed cases based on the Florida surveillance case definition for CO poisoning.

Conclusion
This is the first CO poisoning incident in Florida reported at a gun range. The owner of the gun range voluntarily corrected the HVAC system and installed CO detectors to prevent future CO exposure incidents. To prevent this type of CO poisoning, the Department recommends installing battery-operated CO alarms or plug-in CO alarms with battery backup in businesses and homes and ensuring all appliances and equipment are properly installed and used according to the manufacturers' instructions.

Lead Poisoning Cluster in a Refugee Family, Duval County, August 2016

Authors
Sudha Rajagopalan, MPH; Ruth Voss, MPH, RN

Background
On August 24, 2016, the Florida Department of Health in Duval County (DOH-Duval) received elevated blood lead level laboratory results for four children, ranging from 18 to 45 µg/dL. Lead poisoning is defined in Florida as a blood lead level ≥10 µg/dL.

Elevated blood lead levels in children are associated with poor school performance, learning disabilities, hearing damage, poor muscle coordination, decreased muscle and bone growth, and nervous system damage. Prevention efforts such as phasing out leaded gasoline and lead-based paint have led to dramatic declines in rates of lead poisoning in U.S. children, but it is still a problem for high-risk pediatric populations. In addition, certain behaviors (e.g., thumb sucking) place children, especially those aged <6 years, at greater risk for exposure to lead as the typical hand-to-mouth activity of young children provides a pathway for lead to enter the body. Refugees are considered a population at higher risk for lead exposure because they may have been exposed to lead in their countries of origin from a variety of sources, such as continued use of leaded gasoline, limited regulation of emissions from larger industries, or exposure to herbal remedies, cosmetics, or spices that contain lead. Once these refugees are in the U.S., they frequently move into older, pre-1978 housing containing lead-based paint. They may also continue activities such as backyard car repair and use of lead-contaminated herbal remedies, cosmetics, or spices that contribute to elevated blood lead levels. Refugees may have anemia or poor nutritional status that contribute to greater absorption of any lead to which they are exposed.

Methods
DOH-Duval initiated an investigation that included reviewing laboratory results, interviewing family members, consulting the Florida Poison Control Network (FPICN), and conducting an enhanced environmental investigation with the help of a lead risk assessor to identify the source of exposure.

Results
Epidemiologic investigation by DOH-Duval identified that all four children, aged 3, 5, 8, and 10 years, belonged to the same family who were refugees from Amman, Jordan who had recently arrived in the U.S. The children received lead screening as a part of post-arrival evaluation recommended for newly emigrated refugee children. The youngest of the four had a blood lead level of 45 µg/dL. No symptoms of lead poisoning were reported for the four children. The two younger children aged 3 and 5 years exhibited occasional thumb-sucking behaviors prior to arrival in the U.S. DOH-Duval conducted an enhanced environmental investigation of the family's current residence with the help of a lead risk assessor. The apartment was assessed for the presence of lead using an X-ray fluorescence device. The apartment was built in 1970, but lead was not detected in the paint.

DOH-Duval hypothesized that all four children were exposed to lead in Jordan. Prior to relocating, the family resided in an old residence with peeling paint and mold. The father owned an automobile repair business where he worked as a mechanic. He also mentioned other small jobs, including construction, remodeling, welding, making batteries, and salvaging metal. He stated that he changed clothes before coming home from work when possible. However, work clothes were not always separated from other clothes when laundering them. The family lacked a general awareness of lead poisoning and its consequences. DOH-Duval and the children's pediatrician consulted with FPICN for clinical advice on chelating two of the four children. The 3- and 5-year-olds were chelated with succimer for one week. The 3-year-old's blood lead level declined to <3 µg/dL; however, the chelation drug was not effective for the 5-year-old. The other two children did not receive follow-up lead testing until July 2017, when all four children were retested with blood lead level results ranging from 11 to 34 µg/dL. As of July 2017, DOH-Duval was working with the refugee resettlement agency to use an Arabic interpreter to assist with follow-up interviewing and had made multiple attempts to contact the family for additional information.

Conclusions and Recommendations
This investigation highlights the importance of lead testing of the refugee population so children with elevated blood lead levels can be appropriately identified and managed. Continued follow-up testing and evaluation is necessary to ensure there are no other ongoing sources of exposure to lead within the children's environment post-arrival. Investigation by DOH-Duval identified several possible sources of lead exposure prior to the family's immigration, including living in an old home and lead hazards from the father's occupation. Risky behaviors, such as thumb-sucking, could increase the chance of ingesting lead, and the family had a general lack of awareness of the dangers of lead. DOH-Duval provided health education on dietary needs and measures to prevent further exposure to lead. To prevent post-immigration lead exposure in refugee children, refugee service providers should ensure prompt initial screening, provide follow-up testing regardless of initial screening results or age, provide safe housing placement, and provide families with information on reducing risks for lead exposure.

Utilization of Syndromic Surveillance to Identify Illnesses Related to Aerial Spraying for Mosquito Control, Florida, 2016

Authors
Prakash Mulay, MBBS, MPH; David Atrubin, MPH

Background
Pesticide-related illness and injury is a reportable condition in Florida. In August and September 2016, aerial spraying for mosquito control was conducted to reduce the population of *Aedes aegypti* mosquitoes in Miami-Dade County. Two areas, Wynwood (in August) and Miami Beach (in September), were sprayed with naled. Naled is an organophosphate insecticide registered with the U.S. Environmental Protection Agency which is applied via aerial ultra-low volume spraying. In addition to routine surveillance using exposure calls to the Florida Poison Information Center Network (FPICN) and reportable disease surveillance data to identify acute naled-related illness, the Florida Department of Health also monitored emergency department (ED) chief complaint data to identify any increase in ED visits associated with exposure to naled.

Methods
In 2016, the Department used three datasets to monitor illness related to naled exposure: FPICN exposure call data, reportable condition data, and ED chief complaints. ESSENCE-FL, Florida's syndromic surveillance system, was used to monitor FPICN exposure calls and chief complaints from ED visits and identify eye, skin, and respiratory illnesses that may have been associated with naled exposure. People meeting the Florida surveillance case definition for pesticide-related illness and injury were entered into the state's reportable disease surveillance system.

Results
Twenty-two naled exposure calls were identified through FPICN data in 2016. Seven calls were excluded after review determined that these people were not exposed to naled. Fifteen exposure calls were investigated and eight people met the Florida surveillance case definition for pesticide-related illness and injury. Among the eight cases, one person was exposed in August (12.5%) and seven in September (87.5%). Everyone had low-severity illness, five (62.5%) were female, and the mean age was 39.6 years (range: 27 to 46 years). Two cases (25.0%) were work-related. Review of the ESSENCE-FL ED data in Miami-Dade County did not detect any increase in eye, skin, or respiratory complaints that could be temporally linked with the aerial spraying of naled.

Conclusions and Recommendations
The impact observed in 2016 was minimal as all eight identified cases had low severity of illness, which was consistent with previous findings. FPICN data are useful in identifying cases of naled-related illness. Near-real-time access to FPICN exposure call and ED chief complaint data has enhanced the Department's surveillance capability and served to carefully monitor concerns of naled-related illness following aerial spraying in Miami-Dade County.

Investigation of a Palytoxin Outbreak After Exposure to Zoanthid Corals, Escambia County, May 2016

Authors
Laura P. Matthias, MPH; Patrick Lynch, MPH; Candy Luciano-Green, RN

Background
The Florida Department of Health in Escambia County (DOH-Escambia) was notified of a possible waterborne outbreak by the syndromic surveillance system (ESSENCE-FL) on May 4, 2016. The notification included an emergency department discharge diagnosis of palytoxin toxic exposure. DOH-Escambia initiated an investigation the same day.

Palytoxin is a known potentially life-threatening toxin produced by some zoanthid soft corals that can cause illness after dermal, inhalation, or oral exposure. Palytoxin acts as a potent vasoconstrictor that destroys the ion gradient across cell membranes and leads to cell destruction. The amount required to cause effects following contact largely depend on the type of exposure. In the literature, illness has been associated with prolonged handling, inhalation, or exposed skin. Symptoms of palytoxin exposure can vary widely and may include skin and eye irritation, gastrointestinal symptoms, muscle spasms, joint pain, kidney pain, and respiratory symptoms. There is no antidote for the toxin and treatment is supportive.[1]

Methods
DOH-Escambia requested a copy of the medical records from the hospital and contacted the patient. DOH-Escambia learned that the patient owned an aquarium business and others were possibly exposed to palytoxin. Information obtained from the patient indicated that he and his employees were installing a new aquarium tank in an office building and some of those office workers may also have experienced symptoms. Active case finding was conducted by DOH-Escambia, working with the Panhandle Regional Environmental Epidemiologist and the Vectorborne Epidemiologist, to create an outbreak-specific questionnaire. The questionnaire was designed to capture exposure information for the current investigation as well as information about past exposures and personal protective equipment use. DOH-Escambia attended a meeting at the aquarium business on May 19 and interviewed all eight employees, including the initial patient. DOH-Escambia was not able to obtain contact information for the office building employees and further follow-up could not be conducted at that facility. DOH-Escambia continued to monitor ESSENCE-FL for any other reports of illness that may have been associated with palytoxin exposure.

A case was defined as someone who worked with zoanthid soft corals on May 2 or 3, 2016 at the aquarium or office building and became ill with cough, scratchy throat, or other symptoms of palytoxin exposure on May 3, 2016.

Results
On May 2, one of the aquarium employees installed a new aquarium in an office building. The installation required moving numerous coral and fish from one tank into the new one. The following morning, staff of the office building where the aquarium was installed complained of a “dead” smell and contacted the aquarium shop for remediation. Aquarium staff returned to the office building and began to remediate. Due to the transfer, only three of the seven fish survived and approximately 30% of the corals in the tank died. The remaining coral was removed from the tank and discarded at the office building.
There were eight aquarium staff, of whom three met the case definition. Two cases reported working with the coral only on May 3 and one reported working with the coral on May 2 and 3. The three cases exhibited signs and symptoms consistent with palytoxin exposure and one was diagnosed with palytoxin exposure after visiting the hospital. Cases reported cough (2), scratchy throat (2), eye irritation (1), skin irritation (1), itchy hands (1), sneezing (1), bitter metallic taste (1), dry mouth/throat (1), difficulty swallowing (1), salty taste (1), shortness of breath (1), headache (1), fever (1), dizziness (1), nausea (1), kidney pain (1), unexpected loss of coordination of movement (1), muscle spasms (1), joint/muscle pain (1), tremors (1), weakness (1), and confusion/disorientation (1). The cases were 24,

37, and 44 years old, and two cases were men. One case sought medical attention for their symptoms and was diagnosed with suspected palytoxin exposure. That case also reported using a relative's inhaler as well as taking Benadryl before seeking medical care. None of the cases reported using any personal protective equipment during the remediation and exposures likely occurred via inhalation and direct contact.

When assessing past exposures of the aquarium employees, all eight reported working with zoanthid corals in the past. Three reported working with the corals every day, three reported every week, and one reported a few times a year (one did not submit a response on how often). Three employees reported experiencing symptoms after working with zoanthid corals in the past. One stated they had blisters on the skin about two years ago, one said they had itchy hands after touching the coral, and one experienced eye irritation due to not washing hands after exposure. Five employees reported that they have used personal protective equipment, but one did not answer how often (Table 1). Five employees reported that they had aquariums in their homes and four of those reported having soft corals in their home aquariums.

Table 1. Personal Protective Equipment (PPE) Use Among Employees Reporting Frequency (n=4)

Type of PPE	Frequency of Use	Number of People
Gloves	Sometimes	2
Gloves	Most of the time	2
Eye Protection	Always	1
Eye Protection	Most of the time	1
Mask	Most of the time	1

Conclusions and Recommendations

Zoanthid corals are common in home aquariums and often recommended to new aquarium owners as they are easy to keep alive and healthy. However, some zoanthid corals contain palytoxin. Maintenance activities that lead to direct skin contact or those that could potentially produce aerosols, such as scrubbing or using hot water to remove the zoanthid corals, may result in palytoxin exposure. There are currently no regulations regarding testing or labeling of coral that might contain toxins, and regulations under the U.S. Fish and Wildlife Service only pertain to endangered species and reflect ecological concerns. There are also no official recommendations for personal protective equipment use by those working in coral or aquarium shops.[1]

In this investigation, the exposure to palytoxin was due to disturbance of the coral from an aquarium transfer in an office building. None of the cases reported using any personal protective equipment during the remediation, and exposures likely occurred via inhalation and direct contact. Due to this occurrence, the aquarium business held a staff training on May 4 regarding palytoxin and related corals. They reinforced the importance of wearing gloves, goggles, and masks. The owner also indicated that he would put together a brochure to give his customers who request soft corals in their tanks.

The investigation included reports of symptoms among staff who worked in the office building where the new tank was installed. DOH-Escambia attempted to obtain contact information about the office building to conduct additional follow-up. However, they were not able to obtain the contact information. In the future, it would be ideal to follow up on all possible exposures to better assess the situation and possibly identify other cases.

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Investigation of Neurological Symptoms Associated With Eating Pufferfish, Seminole County, May 2016

Authors
Frances Vaughn, MPH; Tania Slade, MPH; Dean Bodager, RS, DAAS, MPA

Background
On June 21, 2016, a Florida Poison Information Center Network (FPICN) record was forwarded to the Florida Department of Health in Seminole County (DOH-Seminole) describing a Seminole County resident who experienced neurological symptoms consistent with paralytic shellfish poisoning or saxitoxin exposure on May 23. The record was identified through routine surveillance within Florida's syndromic surveillance system, ESSENCE-FL, and was not previously reported. A man reported consuming four pufferfish caught from the Indian River Lagoon. Three to four hours after the meal, the man experienced numbness in fingertips and mouth. He was transported to the emergency department where he was monitored overnight.

The ingestion of saxitoxins produces symptoms of tingling and burning of the mouth and tongue, numbness, drowsiness, speech difficulties, ataxia, muscle weakness, and respiratory paralysis. Death can occur if respiratory support is not provided. Onset of symptoms can occur within 30 minutes to 2 hours after toxin ingestion.[1]

Methods
DOH-Seminole investigated the foodborne illness case with assistance from the Florida Department of Health Bureau of Epidemiology. Additional surveillance included review of FPICN data, active surveillance of hospital emergency departments, and review of county health department foodborne illness logs. A case was defined as a person who experienced tingling or numbness in the face, arms, and legs, ataxia, respiratory distress, headache, dizziness, weakness, nausea, or vomiting within 15 minutes to 10 hours after consuming Florida pufferfish.

Despite multiple attempts, DOH-Seminole was not able to contact the patient for interview. All contact information on the medical records was used; a family member was contacted but reported that the patient was out of town. There were no known leftover pufferfish remnants or clinical specimens available for analysis.

Results
The case was a 73-year-old man residing in Seminole County. He reported catching seven pufferfish from the Indian River Lagoon on May 23 and consuming four pufferfish on the same day. Neurological symptoms began two hours after consumption. Predominant symptoms described by the man included mouth, tongue, and hand numbness. Medical records stated that the man was incorrectly diagnosed in the emergency department with ciguatera toxin poisoning. Per the medical records, the man was not placed on a respirator and was treated with intravenous Benadryl for numbness.

Conclusion and Recommendations
This case of neurological illness is compatible with the known symptoms associated with saxitoxin poisoning. The onset followed the consumption of pufferfish caught from the Indian River Lagoon. Pufferfish from the Indian River Lagoon have been associated with previous outbreaks of saxitoxin poisoning. Limitations of this investigation include incomplete meal details, an imprecise fishing location, absence of clinical specimen analysis, and lack of food sample analysis. The length of time between physician diagnosis and reporting to public health authorities also hindered the ability of investigators to obtain any available fish remnants and provide advice on obtaining appropriate clinical specimens. This highlights the importance of good public health reporting and the need for additional education of the clinical community to recognize saxitoxin poisoning.

In the waters of Volusia, Brevard, Indian River, St. Lucie, and Martin counties, taking fish in the *Sphoeroides* genus, commonly known as puffers, is prohibited.[2] Toxic dinoflagellates, such as *Pyrodinium bahamense,* produce saxitoxin and often grow on sediments, rocks, seagrass, and algae. These microorganisms are inadvertently ingested by puffer fish when they feed on benthic macrofauna. Toxins are then sequestered in the skin, muscles and viscera of the fish and cannot be destroyed by cooking, thus causing saxitoxin poisoning upon ingestion of contaminated tissue.[3]

Rapid identification of cases by the medical community and the coordination of sample collection are critical in determining the existence of a significant public health event or disease outbreak and the extent of illness. The prompt reporting of neurological manifestations of exposure to foodborne and marine toxins by attending physicians and poison information centers to the Department is essential for quick identification and implementation of appropriate control measures in addition to the rendering of prompt medical care with positive outcomes. Illnesses caused by marine toxins, specifically ciguatoxin, brevetoxins, and saxitoxin, are reportable in Florida. Successful risk communication is a crucial element in attempting to prevent additional illnesses of saxitoxin poisoning from consumption of pufferfish. Despite the many public warnings about the risks, this outbreak investigation and anecdotal evidence continues to demonstrate confusion among the public about the differences between saxitoxin, tetrodotoxin, and other marine toxins such as ciguatoxin. In contrast to tetrodotoxin, pufferfish with saxitoxin cannot be cleaned, cooked, or frozen in a manner that mitigates the effects of the toxin in the human body. Many consumers familiar with fugu poisoning and tetrodotoxin are confused on this critical point. The only way to prevent illness from saxitoxin is to refrain from eating pufferfish. Communicating this message to the public is vital and the use of local media outlets, posters, information cards, and other methods of effective public communication must continue.

References

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Foodborne Illness Outbreak Associated With Beverage Consumption at a Hotel Bar, Orange County, March 2016

Author
Benjamin G. Klekamp, MSPH, CPH; Dean Bodager, RS, DAAS, MPA

Introduction

On March 14, 2016, the Florida Department of Health in Orange County (DOH-Orange) was notified of a potential chemical exposure following beverage consumption by two persons at a hotel restaurant bar on March 11. The complaint from a resident of Clay County originated with the Florida Poison Information Center Network (FPICN) on March 12 and was referred to DOH-Orange via the Regional Environmental Epidemiologist. The complainant reported experiencing nausea and burning throat immediately after drinking a vodka cranberry drink with ice from the hotel bar. The FPICN report stated that the implicated drink had also been tasted by another customer, a resident of Martin County, who also experienced immediate onset of similar symptoms. Both ill persons sought medical care the same evening. DOH-Orange immediately began an outbreak investigation and referred the complaint to the Florida Department of Business and Professional Regulation (DBPR) to schedule a joint assessment of the facility.

Methods
Surveillance systems, including syndromic surveillance and foodborne illness complaints, were reviewed throughout the outbreak investigation to identify other potentially associated cases. A case was defined as someone having immediate symptom onset of throat burning following consumption of a beverage from a hotel bar on March 11. Case medical records were requested and reviewed and cases were interviewed. A joint environmental health assessment of the implicated facility was conducted on March 16 by DOH-Orange and DBPR. Samples of the implicated beverage or concentrate were requested from the facility and cases and were sent to the Bureau of Public Health Laboratories (BPHL) for analysis.

Results
No additional cases of suspected chemical burns associated with the implicated facility were identified. The two cases initially identified in this outbreak included a man and woman who were guests of the hotel, aged 45 and 55 years. Both cases reported immediate symptom onset following consumption of a single vodka cranberry juice beverage on March 11, including mouth and throat burning that did not improve with flushing, as well as nausea and vomiting. Both cases sought medical care within two hours after symptom onset. The cases did not know each other before meeting at the hotel bar and did not travel to seek medical care together. Both cases were seen at the same medical facility, but the commonality was either not identified by medical staff or not reported to public health authorities. The cases were only seen in the emergency department and were not admitted. No mouth or throat blistering was noted in medical records of either case. Both cases had admitting diagnoses of allergic reaction but had different discharge diagnoses. During a follow-up public health interview, one case reported that symptoms of vomiting and nausea subsided within hours of onset, but that mouth and throat irritation continued for at least 10 days.

One case reported that the soda dispenser system used to make mixed drinks was either malfunctioning at the time of service or empty of the concentrated cranberry juice used to make the implicated vodka and cranberry juice drink. As a result, the bartender prepared the implicated vodka and cranberry juice drink with concentrated juice directly from a new bag. The soda dispenser is designed to mix the concentrated cranberry juice product with water and soda for mixing with beverages. The vodka bottle being used was reported to have be less than half full and had been used to serve other customers who did not report or appear to have immediate onset of similar symptoms. Following the cases' onset of symptoms, the hotel quarantined the implicated bag of cranberry juice concentrate. Several days after the on-site investigation, a sign to remind staffers not to pour drinks directly from the concentrated juice bags was observed by the reporting case.

During the March 16 joint environmental health assessment, observations of conditions that may have contributed to the outbreak included accumulation of black mold-like substance and lime in the interior of the ice machine, hand wash sink used for purposes other than hand washing (employee rinsed ice scoop bucket in hand sink), toxic substance/chemical stored by or with food (spray bleach bottle stored on rim of bottled beverage bin at bar), pesticide/insecticide labeled for household use only present in establishment, and no certified food manager for the establishment was present. The bulk juice concentrate used to prepare the implicated drink was reported to have been discarded prior to the joint environmental health assessment. The invoice of the implicated products was requested and collected from the facility. No recalls for the implicated product were identified. Photographs of the cranberry juice concentrate label and container taken by the reporting case prior to the joint assessment were provided to DOH-Orange.

Samples of both the served implicated beverage and the juice concentrate were independently collected by the reporting case in clean bottles obtained from a local pharmacy. DOH-Orange shipped these samples to BPHL for analysis. The samples were analyzed for primary metals (by inductively coupled plasma and inductively coupled plasma mass spectrometry), poisons, and toxins. Results indicate that the samples contained various metals and phenol (Table 1).

Conclusions and Recommendations

These two reported illnesses appear to be the result of exposure to excessive sodium and phenol in a vodka cranberry juice beverage prepared and served at a hotel bar on March 11. Both persons experienced similar symptoms immediately following consumption of a single drink made at the hotel bar, strongly indicating a point-source chemical exposure. Direct use of the cranberry juice concentrate to prepare the implicated drink would explain the presence of the elevated chemicals. Laboratory analysis of the remaining implicated drink indicated elevated levels of sodium and the presence of residual phenol, which likely explains the symptoms experienced by the cases. Elevated levels of sodium are known to irritate the mucus membranes, the stomach, and the upper respiratory tract. Phenol is corrosive and can cause chemical burns at the contact site. Ingested chemicals (type and dose dependent) can cause immediate vomiting, nausea, and mucous membrane burns. No additional cases beyond the initial reported two cases were reported or identified. This may be explained by the point-source exposure and the immediate actions of the hotel employees to quarantine the implicated bag of cranberry juice concentrate. Concentrated beverages are designed to be used within dispensing systems that dilute liquid to concentrations intended for human consumption.

Table 1. Florida Bureau of Public Health Laboratories (BPHL) Analysis of Concentrated Juice and Drink (Concentrated Juice, Vodka, Ice) Samples Served to Cases, Hotel Bar, Orange County, March 2016

Chemical	Chemical Concentration (mg/L)	
	Concentrated Juice	Drink
Sodium	210,000	22,000
Copper	6.50	<0.5
Calcium	5.60	13.00
Iron	1.10	<0.5
Magnesium	0.64	0.54
Antimony	0.73	<0.5
Aluminum	0.92	<0.5
Barium	<0.5	<0.5
Chromium	<0.5	<0.5
Selenium	<0.5	<0.5
Manganese	<0.5	<0.5
Nickel	<0.5	<0.5
Cadmium	<0.5	<0.5
Arsenic	<0.5	<0.5
Zinc	<0.5	<0.5
Lead	<0.5	<0.5
Phenol*	Detected	Residual detected

* A quantitative result cannot be provided as BPHL does not routinely analyze samples for phenol; however, based on mass spectral analysis, there is a 99% match.

Dispensing systems not properly maintained or manual dilution of concentrated beverages may result in illness or injury of the person consuming the beverage. Food and beverage establishments should ensure employees are trained and competent in the use and maintenance of food service equipment. Failure to properly use equipment can lead to employee and customer illness and injury. These procedures and techniques can be learned through food safety education courses, on-site job-specific trainings, and regulatory inspections.

Section 5

Antimicrobial Resistance Surveillance

Antimicrobial Resistance Surveillance

Background

Antibiotics are one of the most impressive medical achievements of the twentieth century. However, the continuing emergence and spread of antimicrobial resistance jeopardizes the utility of antibiotics and threatens health globally. Resistant pathogens are often associated with prolonged hospital stays, increased intensity and duration of treatment, and increased mortality.

As of January 2016, the Florida Department of Health conducts the following surveillance to identify antibiotic resistance:

- Case-based surveillance
  - ◊ Health care providers and laboratories must report antibiotic susceptibility testing results for isolates of *Streptococcus pneumoniae* from normally sterile sites, such as blood or cerebrospinal fluid. Starting in June 2014, only laboratories participating in electronic laboratory reporting (ELR) are required to submit such results for people ≥6 years old. All laboratories are required to submit test results for children <6 years old.
  - ◊ Health care providers and laboratories must report antibiotic susceptibility testing results for isolates of *Staphylococcus aureus* that are not susceptible to vancomycin.
  - ◊ Health care providers and laboratories must report tuberculosis and associated laboratory results to the Department. Samples for all suspected or confirmed tuberculosis cases are forwarded to the Florida Department of Health Bureau of Public Health Laboratories for *Mycobacterium tuberculosis* testing; any sample positive for *M. tuberculosis* undergoes a rapid test for isoniazid and rifampin resistance.
- Electronic laboratory reporting (ELR) surveillance
  - ◊ Laboratories participating in ELR must report antibiotic susceptibility testing results for all *Acinetobacter baumannii*, *Citrobacter* species, *Enterococcus* species, *Enterobacter* species, *Escherichia coli*, *Klebsiella* species, *Pseudomonas aeruginosa*, *Serratia* species, and *S. aureus* isolates from normally sterile sites.
- The Department has been partnering with one of the largest commercial laboratories in the state to receive susceptibility testing results for all *S. aureus* isolates tested there since 2006.

Case-Based Surveillance

Streptococcus pneumoniae

S. pneumoniae causes many clinical syndromes depending on the site of infection (e.g., otitis media, pneumonia, bacteremia, meningitis, sinusitis, peritonitis, and arthritis). Invasive disease, for reporting purposes, includes cultures obtained from a normally sterile site, such as blood or cerebrospinal fluid.

A total of 619 *S. pneumoniae* invasive disease cases were reported to the Department in 2015 by health care providers and laboratories. Of those reported cases, 207 (33%) were classified as drug resistant because they had an isolate with at least intermediate resistance to at least one antibiotic.

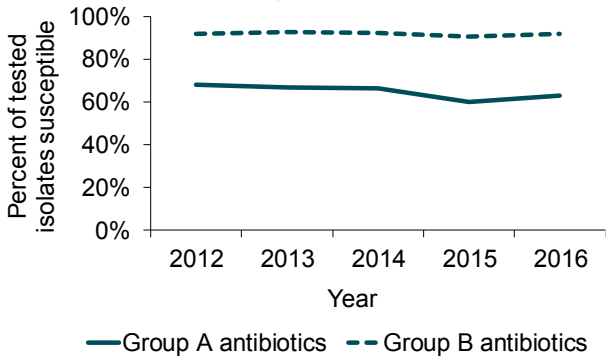
Antimicrobial susceptibility data are presented by Clinical and Laboratory Standards Institute (CLSI) Groups A-C, age group, and geography. CLSI Group A includes antibiotics that are considered appropriate for inclusion in a routine primary testing panel and for routine reporting of results for the specific organism groups. Group B includes antibiotics that may warrant primary testing but facilities can decide whether to report results based on specific conditions. Group C includes antibiotics considered to be alternative or supplemental. Susceptibility to Group A antibiotics is generally lower than susceptibility to Group B antibiotics, but susceptibility to both groups has only varied slightly since 2010 and has remained comparable from year to year.

For cases with more than one isolate tested, results for the most recent isolate were included in the analysis. Please note that due to inconsistencies in laboratory reporting formats, meningitis and non-meningitis breakpoints for penicillin and ceftriaxone results cannot be separated. When both a susceptible and resistant result were reported for one of these antibiotics on the same laboratory result, the resistant result was used for analysis.

Key points for isolates from reported *S. pneumoniae* invasive disease cases with antimicrobial resistance testing:

- Susceptibility by CLSI groups (Table 1, Figures 1 and 2):
  - ◊ From 2012 to 2016, the number of isolates tested decreased dramatically, but the percent of isolates susceptible to individual antibiotics remained relatively stable.
  - ◊ Group A (appropriate for primary testing and routine reporting): the percent of tested isolates susceptible to Group A antibiotics decreased from 68% in 2011 to 63% in 2016.
  - ◊ Group B (may warrant primary testing, but reported selectively): the percent of tested isolates susceptible to Group B antibiotics remained relatively stable, varying between 91% in 2015 to 93% in 2013.
  - ◊ Group C (alternative antibiotics): susceptibility remained high in 2016 with 88% to 100% of tested isolates susceptible to Group C antibiotics.
  - ◊ Susceptibility results for Group B and C antibiotics may underestimate the actual susceptibility rates in the community if only those isolates resistant to Group A antimicrobials are tested against Group B or C antibiotics.
- Most *S. pneumoniae* invasive disease cases were identified in adults ≥25 years old, so susceptibility data in children were sparse. Susceptibility to individual antibiotics was slightly lower in adults ≥65 years old than adults 25-64 years old for all antibiotics except levofloxacin (Table 2).

Figure 1. Percent of Tested Isolates From Reported *S. pneumoniae* Invasive Disease Cases That Were Susceptible to Clinical and Laboratory Standards Institute (CLSI) Antibiotic Groups A and B,[1] Florida, 2012-2016



Note that this figure includes data from cases that were reported to the Department by health care providers and laboratories as part of mandatory case-based disease reporting. If multiple isolates were tested for one case, the most recent results were included in the analysis.

1 Group A includes antibiotics that CLSI considers appropriate for primary testing and routine reporting and Group B includes antibiotics that may warrant primary testing but should be reported selectively.

- The small number of isolates tested makes it difficult to draw conclusions about susceptibility patterns by region (Table 3). Susceptibility to erythromycin ranged from 36% in the east central region to 49% in the southeast region. Susceptibility to penicillin ranged from 47% in the southeast region to 80% in the west central region.

Table 1. Percent of Tested Isolates From Reported *S. pneumoniae* Invasive Disease Cases That Were Susceptible to Selected Antibiotics by Clinical and Laboratory Standards Institute (CLSI) Antibiotic Groups A and B,[1] Florida, 2012-2016

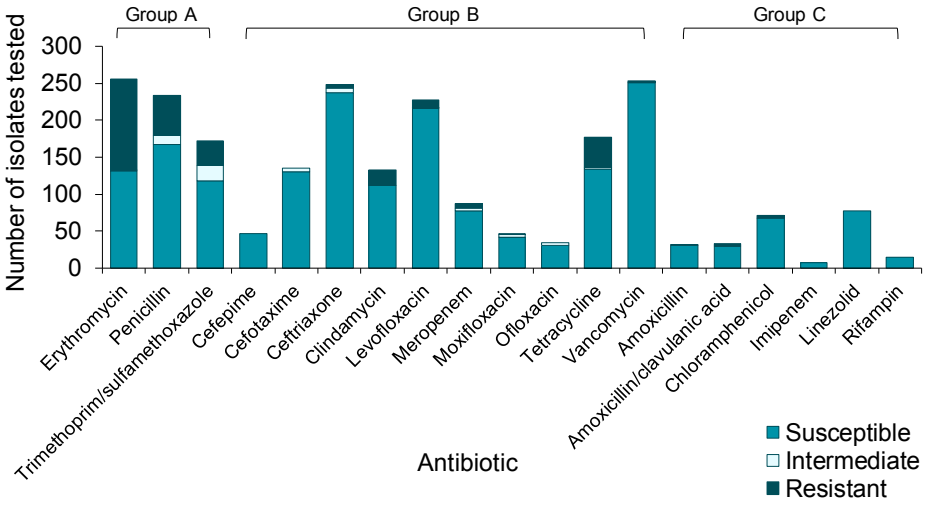
CLSI group[1]	Antibiotic name	2012		2013		2014		2015		2016	
		Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible
Group A	Erythromycin	759	61%	840	58%	581	56%	187	49%	256	52%
	Penicillin	854	72%	967	72%	618	72%	158	69%	234	71%
	Trimethoprim/sulfamethoxazole	577	72%	680	70%	462	73%	114	68%	172	69%
Group B	Cefepime	117	89%	157	96%	113	91%	24	--	46	100%
	Cefotaxime	432	88%	525	92%	329	93%	93	94%	135	96%
	Ceftriaxone	831	91%	900	93%	599	93%	177	92%	249	96%
	Clindamycin	309	83%	396	82%	306	81%	79	73%	133	84%
	Levofloxacin	689	99%	774	99%	567	99%	138	98%	227	95%
	Meropenem	234	85%	338	87%	229	89%	49	84%	87	89%
	Moxifloxacin	193	100%	194	99%	159	99%	37	97%	47	89%
	Ofloxacin	60	95%	55	96%	65	94%	19	--	34	91%
	Tetracycline	472	79%	566	81%	406	78%	98	73%	177	76%
	Vancomycin	881	100%	962	100%	654	100%	174	100%	253	99%

Note that this table includes data from cases that were reported to the Department by health care providers and laboratories as part of mandatory case-based disease reporting. If multiple isolates were tested for one case, the most recent results were included in the analysis.

1 Group A includes antibiotics that CLSI considers appropriate for primary testing and routine reporting and Group B includes antibiotics that may warrant primary testing but should be reported selectively.

-- Percent susceptible was suppressed if <30 isolates were tested for susceptibility to a particular antibiotic.

Figure 2. Antibiotic Susceptibility Patterns for Tested Isolates From Reported *S. pneumoniae* Invasive Disease Cases by Clinical and Laboratory Standards Institute (CLSI) Antibiotic Groups,[1] Florida, 2016



Note that this table includes data from cases that were reported to the Department by health care providers and laboratories as part of mandatory case-based disease reporting. If multiple isolates were tested for one case, the most recent results were included in the analysis.

1 Group A includes antibiotics that CLSI considers appropriate for primary testing and routine reporting, Group B includes antibiotics that may warrant primary testing but should be reported selectively, and Group C includes antibiotics considered to be alternative or supplemental.

Table 2. Percent of Tested Isolates From Reported *S. pneumoniae* Invasive Disease Cases That Were Susceptible to Selected Antibiotics by Clinical and Laboratory Standards Institute (CLSI) Antibiotic Groups[1] and Age Group, Florida, 2016

CLSI group[1]	Antibiotic name	<1-year-olds		1-4-year-olds		5-14-year-olds		15-24-year-olds		25-64-year-olds		>64-year-olds	
		Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible
Group A	Erythromycin	10	--	31	58%	8	--	7	--	118	51%	82	51%
	Penicillin	13	--	33	79%	10	--	6	--	106	73%	66	68%
	Trimethoprim/sulfamethoxazole	7	--	21	--	5	--	5	--	82	74%	52	67%
Group B	Cefepime	1	--	2	--	0	--	2	--	26	--	15	--
	Cefotaxime	5	--	22	--	4	--	4	--	61	97%	39	97%
	Ceftriaxone	10	--	33	97%	11	--	7	--	114	97%	74	96%
	Clindamycin	6	--	15	--	6	--	5	--	62	85%	39	85%
	Levofloxacin	9	--	24	--	9	--	6	--	104	96%	75	93%
	Meropenem	3	--	13	--	0	--	3	--	42	88%	26	--
	Moxifloxacin	0	--	6	--	0	--	2	--	26	--	13	--
	Ofloxacin	1	--	6	--	0	--	1	--	17	--	9	--
	Tetracycline	5	--	20	--	5	--	5	--	83	75%	59	78%
	Vancomycin	11	--	36	97%	9	--	6	--	111	100%	80	99%

Note that this table includes data from cases that were reported to the Department by health care providers and laboratories as part of mandatory case-based disease reporting. If multiple isolates were tested for one case, the most recent results were included in the analysis.

1 Group A includes antibiotics that CLSI considers appropriate for primary testing and routine reporting and Group B includes antibiotics that may warrant primary testing but should be reported selectively.

-- Percent susceptible was suppressed if <30 isolates were tested for susceptibility to a particular antibiotic.

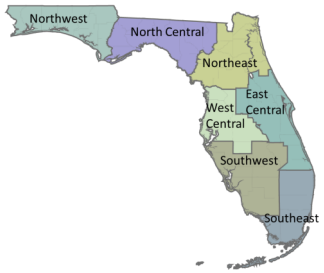
Table 3. Percent of Tested Isolates From Reported *S. pneumoniae* Invasive Disease Cases That Were Susceptible to Selected Antibiotics by Clinical and Laboratory Standards Institute (CLSI) Antibiotic Groups[1] and Region, Florida, 2016

CLSI group[1]	Antibiotic name	Northwest		North central		Northeast		West central		East central		Southwest		Southeast	
		Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible
Group A	Erythromycin	36	36%	5	--	35	46%	56	66%	64	48%	11	--	49	53%
	Penicillin	21	--	2	--	30	77%	54	72%	58	71%	11	--	58	57%
	Trimethoprim/sulfamethoxazole	15	--	4	--	33	79%	24	--	47	62%	8	--	41	61%
Group B	Cefepime	20	--	0	--	19	--	4	--	2	--	0	--	1	--
	Cefotaxime	31	97%	2	--	26	--	15	--	41	98%	10	--	10	--
	Ceftriaxone	38	95%	4	--	34	94%	47	98%	58	98%	10	--	58	95%
	Clindamycin	27	--	2	--	22	--	28	--	17	--	3	--	34	76%
	Levofloxacin	33	85%	5	--	31	100%	49	92%	48	96%	14	--	47	100%
	Meropenem	25	--	1	--	20	--	3	--	27	--	7	--	4	--
	Moxifloxacin	9	--	0	--	0	--	10	--	24	--	2	--	2	--
	Ofloxacin	8	--	0	--	0	--	0	--	24	--	0	--	2	--
	Tetracycline	33	82%	4	--	23	--	38	82%	45	56%	7	--	27	--
	Vancomycin	36	100%	5	--	38	100%	54	98%	58	98%	13	--	49	100%

Note that this table includes data from cases that were reported to the Department by health care providers and laboratories as part of mandatory case-based disease reporting. If multiple isolates were tested for one case, the most recent results were included in the analysis.

1 Group A includes antibiotics that CLSI considers appropriate for primary testing and routine reporting and Group B includes antibiotics that may warrant primary testing but should be reported selectively.
-- Percent susceptible was suppressed if <30 isolates were tested for susceptibility to a particular antibiotic.

Map of regions:



Staphylococcus aureus - Non-Susceptible to Vancomycin

S. aureus bacteria are 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 of 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 the bacteria to others, and to prevent such transmission. Additionally, it is important to track the emergence of a relatively new and rare clinically important organism. Few VISA cases are reported in Florida. For additional information about cases reported in Florida in 2016, please see Section 3: Narratives for Selected Reportable Diseases/Conditions of Infrequent Occurrence.

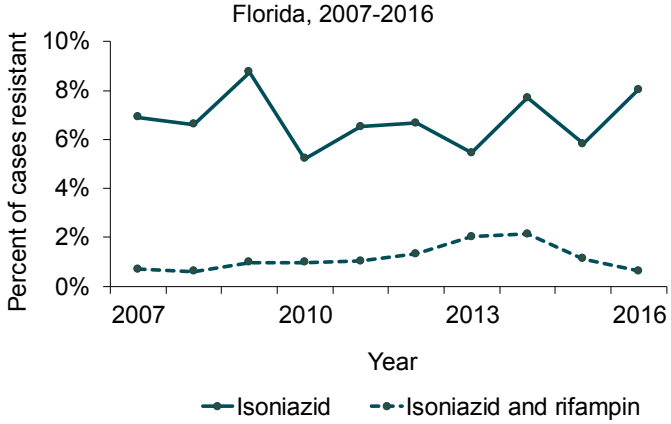
Mycobacterium tuberculosis

Mycobacterium tuberculosis bacteria cause tuberculosis (TB). The bacteria are spread through the air from one person to another and if not treated properly, infections can be fatal. *M. tuberculosis* usually attack the lungs, causing a severe cough and pain in the chest, but can attack any part of the body such as the kidney, spine, and brain. TB drug resistance is a major public health problem that threatens the progress made in TB care and control worldwide. Drug resistance arises due to improper use of antibiotics in the chemotherapy of drug-susceptible TB patients. Multidrug-resistant TB is caused by *M. tuberculosis* bacteria that are resistant to at least isoniazid and rifampin, the two most potent TB drugs. In 2016, 485 TB cases were tested in Florida for resistance to isoniazid and rifampin.

Key points for *M. tuberculosis* (Figure 3):

- Resistance to isoniazid alone ranged from 5% to 9% over the past 10 years and was 8% (39 cases) in 2016.
- Multidrug-resistant TB remains uncommon in Florida and resistance to both isoniazid and rifampin decreased in 2016 to 0.6% (3 cases).

Figure 3. Percent of Counted Tuberculosis Cases With Isolates Resistant to Isoniazid Alone and Isoniazid and Rifampin, Florida, 2007-2016



Note that this table includes data for all suspected and confirmed tuberculosis cases identified in Florida with specimens forwarded to the Bureau of Public Health Laboratories for additional testing.

Electronic Laboratory Reporting (ELR) Surveillance

A cumulative or community antibiogram provides useful information for the selection of empiric therapy for a presumptive diagnosis, helps track antibiotic resistance patterns of clinically important bacteria, and detects trends toward antimicrobial resistance. Laboratories participating in ELR are required to submit antimicrobial susceptibility testing for a variety of bacteria. ELR continues to expand, the Department enrolls more laboratories every year, and laboratories continue to improve their ability to send antimicrobial resistance data, resulting in more results received via ELR. The Department received results for 138,155 isolates in 2016, compared to 25,085 isolates in 2015. Note that due to the high volume of susceptibility results received electronically, the Department does not review results individually. Susceptibility results are processed electronically in the state's reportable disease surveillance system. Any results that do not meet technical standards for reporting or contain errors are excluded from processing and from this report. The Department identifies such errors or technical deficiencies and works with each laboratory to correct the data. Note that only the first isolate per person organism per 365 days was included in the analysis per CLSI guidelines.

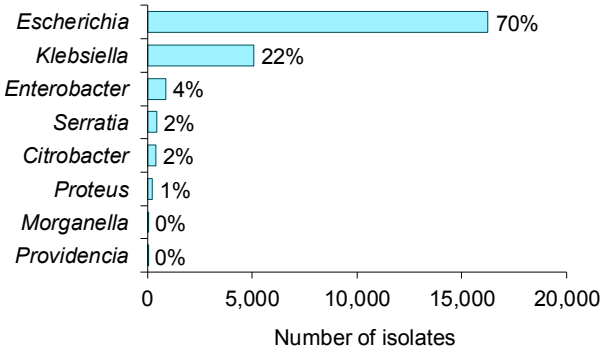
Enterobacteriaceae

Enterobacteriaceae are a family of bacteria that includes many different organisms. Some of the more familiar organisms found in this family include *Escherichia coli*, *Klebsiella pneumoniae*, *Salmonella* species, and *Shigella* species. These species can cause a wide range of illnesses and cause some of the most common health care-associated infections and foodborne illnesses. The family includes some of the most highly resistant organisms identified in outbreaks across the U.S. and the world.

Carbapenem-resistant Enterobacteriaceae (CRE) are bacteria that are resistant to carbapenems, powerful antibiotics that are often used as a last line of defense. Healthy people usually do not get

CRE infections. They usually happen to patients in hospitals, nursing homes, and other health care settings. Patients whose care requires devices like ventilators, urinary catheters, or intravenous catheters and patients who are taking long courses of certain antibiotics are most at risk for CRE infections. Some CRE bacteria have become resistant to most available antibiotics. Infections with these bacteria are very difficult to treat, and can be deadly.

Figure 4. Number and Percent of Isolates Received by Electronic Laboratory Reporting by Genus, Florida, 2016 (N=23,353)



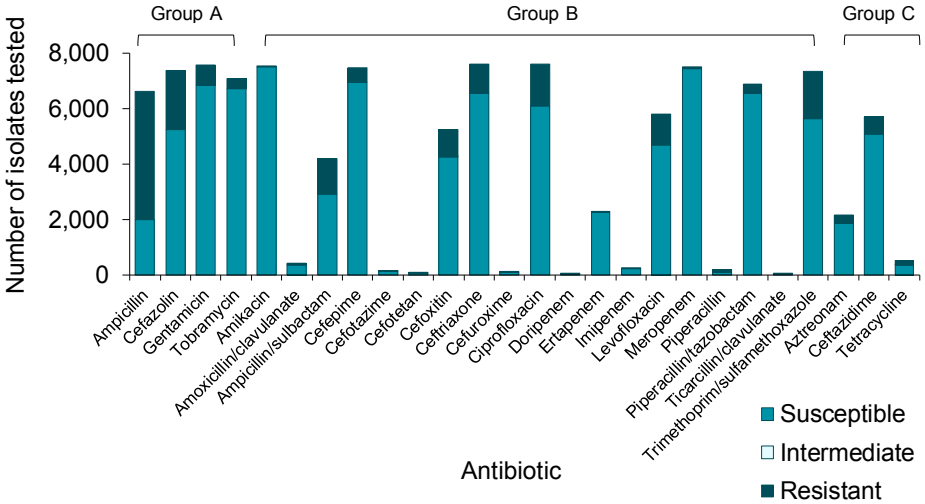
Key points for Enterobacteriaceae (Figures 4 and 5):

- The Department received results for 23,353 Enterobacteriaceae isolates in 2016 (Figure 4). The most common organisms received via ELR were *E. coli* (70%) and *Klebsiella* (22%).
- In 2016, 152 isolates met the definition of CRE (similar proportion to 2015).
- Susceptibility patterns are difficult to interpret when few isolates are tested for an individual antibiotic.
- Group A (appropriate for primary testing and routine reporting): the percent of tested isolates susceptible to Group A antibiotics ranged from 30% for ampicillin to 90% for gentamycin.
- Group B (may warrant primary testing, but reported selectively): the percent of tested isolates susceptible to Group B antibiotics ranged from 50% for piperacillin to 100% for ertapenem.
- Group C (alternative antibiotics): the percent of tested isolates susceptible to Group C antibiotics ranged from 71% for tetracycline to 89% for ceftazidime.

Key points for *E. coli* (Figure 6):

- A total of 16,242 *E. coli* isolates were tested for at least one antibiotic.
- Susceptibility was higher in *E. coli* than Enterobacteriaceae overall for cefazolin (80% versus 69%), cefoxitin (87% versus 76%), and ampicillin (44% versus 30%). More than 3,300 isolates were tested for each of these antibiotics.

Figure 5. Antibiotic Susceptibility Patterns for Enterobacteriaceae Isolates Received by Clinical and Laboratory Standards Institute (CLSI) Antibiotic Groups,[1] Florida, 2016 (N=23,353)



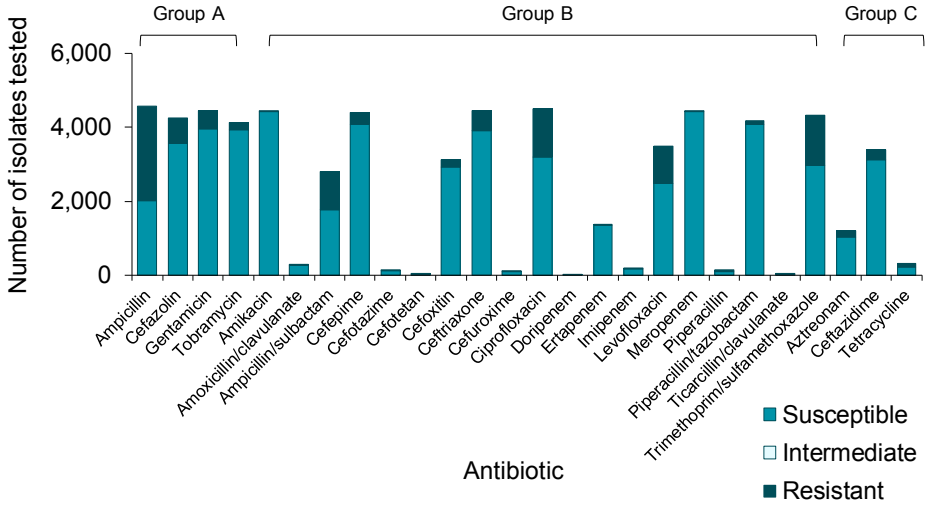
Note that this table includes data reported to the Department via electronic laboratory reporting.

1 Group A includes antibiotics that CLSI considers appropriate for primary testing and routine reporting, Group B includes antibiotics that may warrant primary testing but should be reported selectively, and Group C includes antibiotics considered to be alternative or supplemental. Note that <30 isolates were tested for chloramphenicol and therefore it is excluded from this figure.

Key points for *Klebsiella* species (Figure 7):

- A total of 5,065 *Klebsiella* isolates were tested for at least one antibiotic.
- Susceptibility was higher in *Klebsiella* than Enterobacteriaceae overall for trimethoprim/sulfamethoxazole (86% versus 77%), ciprofloxacin (91% versus 79%), levofloxacin (91% versus 79%), cefazolin (83% versus 69%), ampicillin/sulbactam (76% versus 59%), and cefoxitin (93% versus 76%). Susceptibility was lower in *Klebsiella* than Enterobacteriaceae overall for ampicillin (0% versus 30%) and sulfamethoxazole (87% versus 78%); >900 isolates were tested for each of these antibiotics.

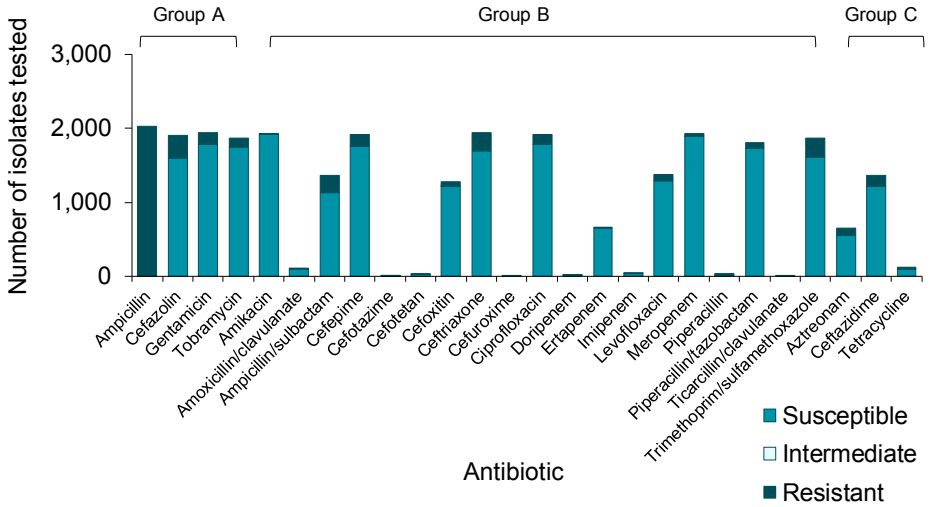
Figure 6. Antibiotic Susceptibility Patterns for *Escherichia coli* Isolates Received by Clinical and Laboratory Standards Institute (CLSI) Antibiotic Groups,[1] Florida, 2016 (N=16,242)



Note that this table includes data reported to the Department via electronic laboratory reporting.

1 Group A includes antibiotics that CLSI considers appropriate for primary testing and routine reporting, Group B includes antibiotics that may warrant primary testing but should be reported selectively, and Group C includes antibiotics considered to be alternative or supplemental. Note that <30 isolates were tested for chloramphenicol and therefore it is excluded from this figure.

Figure 7. Antibiotic Susceptibility Patterns for *Klebsiella* Isolates Received by Clinical and Laboratory Standards Institute (CLSI) Antibiotic Groups,[1] Florida, 2016 (N=5,065)



Note that this table includes data reported to the Department via electronic laboratory reporting.

1 Group A includes antibiotics that CLSI considers appropriate for primary testing and routine reporting, Group B includes antibiotics that may warrant primary testing but should be reported selectively, and Group C includes antibiotics considered to be alternative or supplemental. Note that <30 isolates were tested for chloramphenicol and therefore it is excluded from this figure.

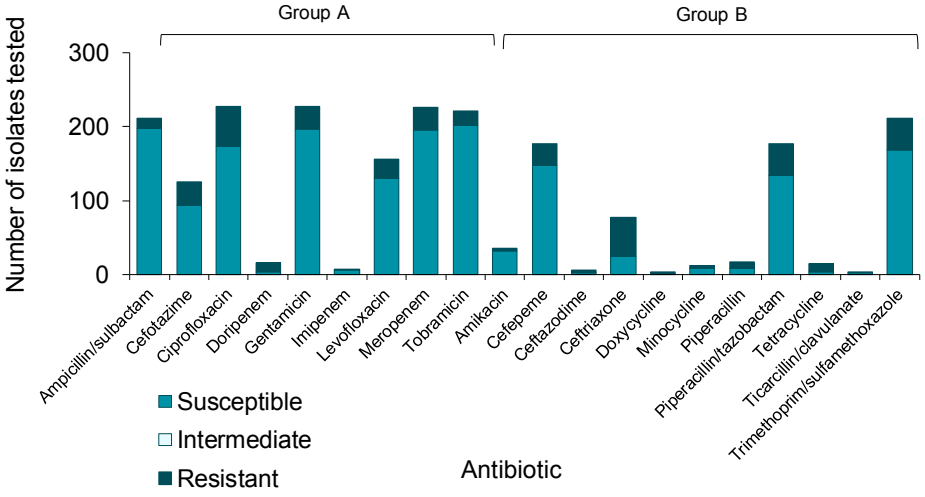
Acinetobacter Species

Acinetobacter species are frequently found in soil and water in the environment. The most common species that causes disease in humans is *Acinetobacter baumannii*. Outbreaks are most common in intensive care units and other health care settings with high acuity patients. *Acinetobacter* is not common outside of the health care system and usually does not pose a risk to healthy people. Although not as commonly found as for Enterobacteriaceae, antimicrobial resistance is increasing for *Acinetobacter baumannii* and more infections are being identified within health care facilities.

Key points for *A. baumannii* (Figure 8):

- A total of 525 *A. baumannii* isolates were tested for at least one antibiotic.
- Susceptibility of *A. baumannii* to CLSI Group A and B antibiotics ranged from 10% for ceftriaxone to 90% for ampicillin/sulbactam.
- Of all *A. baumannii* isolates, 19% were multidrug resistant (resistant to at least three classes of antibiotics). This in an increase from 16% in 2015.

Figure 8. Antibiotic Susceptibility Patterns for *A. baumannii* Isolates Received by Clinical and Laboratory Standards Institute (CLSI) Antibiotic Groups,[1] Florida, 2016 (N=525)



Note that this table includes data reported to the Department via electronic laboratory reporting.

1 Group A includes antibiotics that CLSI considers appropriate for primary testing and routine reporting and Group B includes antibiotics that may warrant primary testing but should be reported selectively. Note that <30 isolates were tested for cefotaxime, doripenem, doxycycline, imipenem, minocycline, piperacillin, tetracycline, and ticarcillin/clavulanate and therefore those antibiotics are excluded from this figure.

ELR Antibiogram

An antibiogram is a report used frequently by clinicians to see patterns of resistance in a given location across organisms and antibiotics. A summary report (called a cumulative antibiogram) usually provides the name of the organism, the name of the antibiotic, and the percentage of isolates that were either susceptible or resistant to the antibiotic. The antibiogram helps providers select the most effective therapy for patients until test results return from the lab to confirm the exact organism and resistance for that patient.

Antibiograms can also be used to see the general resistance patterns in regions or states. Florida has created a statewide antibiogram using data from ELR for 2016 (Table 4). Because of the number of individual species received, the antibiogram in this report includes those organisms which are of most concern and most commonly found in reports on antimicrobial resistance.

Figure 4 (Part 1). Antibiogram for Susceptibility Data Received Via Electronic Laboratory Reporting for Organisms of Concern, Florida, 2016

Class	Antimicrobial Agent	*Acinetobacter baumannii*		*Citrobacter freundii*		*Citrobacter koseri*		*Enterobacter aerogenes*		*Enterobacter cloacae*		*Enterococcus avium*		*Enterococcus faecalis*		*Enterococcus faecium*	
		Total Tested	Percent Susceptible	Total Tested	Percent Susceptible	Total Tested	Percent Susceptible	Total Tested	Percent Susceptible	Total Tested	Percent Susceptible	Total Tested	Percent Susceptible	Total Tested	Percent Susceptible	Total Tested	Percent Susceptible
β-Lactam	Amoxicillin/clavulanate	--	--	--	--	--	--	--	--	32	0%	--	--	--	--	--	--
	Ampicillin	--	--	--	--	--	--	--	--	--	--	53	72%	1,577	98%	418	19%
	Ampicillin/Sulbactam	342	87%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Aztreonam	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Cefazolin	--	--	214	0%	138	90%	170	1%	607	0%	--	--	--	--	--	--
	Cefepime	321	68%	209	100%	138	97%	162	96%	604	91%	--	--	--	--	--	--
	Cefotazime	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Cefotetan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Cefoxitin	--	--	151	0%	105	89%	165	0%	593	0%	--	--	--	--	--	--
	Ceftazidime	241	56%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Ceftriaxone	358	10%	212	82%	140	91%	164	69%	606	71%	--	--	--	--	--	--
	Cefuroxime	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Doripenem	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Ertapenem	--	--	62	100%	37	100%	--	--	39	97%	--	--	--	--	--	--
	Imipenem	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Meropenem	357	81%	207	98%	138	100%	161	96%	598	97%	--	--	--	--	--	--
	Oxacillin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Penicillin	--	--	--	--	--	--	--	--	--	--	46	70%	1,416	98%	346	15%
	Piperacillin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Piperacillin/tazobactam	305	65%	190	85%	104	100%	164	71%	603	74%	--	--	--	--	--	--
Non β-Lactam	Amikacin	51	84%	208	100%	139	100%	161	100%	603	100%	--	--	--	--	--	--
	Chloramphenicol	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Ciprofloxacin	361	71%	210	91%	141	90%	161	96%	605	94%	43	84%	1,252	67%	100	27%
	Clindamycin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Daptomycin	--	--	--	--	--	--	--	--	--	--	--	--	897	100%	68	99%
	Doxycycline	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Erythromycin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Fosfomycin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Gentamicin	362	78%	211	94%	139	99%	162	94%	605	92%	--	--	--	--	--	--
	Levofloxacin	248	77%	151	90%	107	90%	161	95%	599	93%	43	88%	1,258	68%	252	15%
	Linezolid	--	--	--	--	--	--	--	--	--	--	--	--	1,435	100%	379	100%
	Minocycline	31	42%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Moxifloxacin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Nitrofurantoin	--	--	76	92%	48	92%	71	17%	110	37%	--	--	--	--	--	--
	Norfloxacin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Ofloxacin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Rifampin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Tetracycline	--	--	--	--	--	--	--	--	--	--	--	--	81	14%	--	--
	Tobramycin	354	86%	211	95%	139	99%	161	94%	605	92%	--	--	--	--	--	--
	Trimethoprim	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Trimethoprim/sulfamethoxazole	334	76%	209	89%	136	91%	158	97%	575	87%	--	--	--	--	--	--
	Vancomycin	--	--	--	--	--	--	--	--	--	--	53	96%	1,586	96%	424	41%

Note that this table includes data reported to the Department via electronic laboratory reporting.

-- Total tested and percent susceptible were suppressed if <30 isolates were tested for susceptibility to a particular antibiotic.

Figure 4 (Part 2). Antibiogram for Susceptibility Data Received Via Electronic Laboratory Reporting for Organisms of Concern, Florida, 2016

Class	Antimicrobial Agent	*Escherichia coli*		*Haemophilus influenzae*		*Klebsiella pneumoniae*		*Klebsiella oxytoca*		*Pseudomonas aeruginosa*		*Serratia marcescens*		*Staphylococcus epidermidis*	
		Total Tested	Percent Susceptible	Total Tested	Percent Susceptible	Total Tested	Percent Susceptible	Total Tested	Percent Susceptible	Total Tested	Percent Susceptible	Total Tested	Percent Susceptible	Total Tested	Percent Susceptible
β-Lactam	Amoxicillin/clavulanate	398	82%	--	--	131	91%	--	--	--	--	--	--	--	--
	Ampicillin	5,491	43%	817	66%	2,419	0%	272	0%	--	--	--	--	--	--
	Ampicillin/Sulbactam	4,094	51%	--	--	1,790	77%	205	53%	--	--	--	--	--	--
	Aztreonam	--	--	--	--	--	--	--	--	321	66%	--	--	--	--
	Cefazolin	5,329	79%	--	--	2,320	83%	267	63%	--	--	518	0%	--	--
	Cefepime	5,340	91%	--	--	2,335	89%	264	93%	2,498	86%	502	98%	--	--
	Cefotazime	130	98%	726	99%	--	--	--	--	--	--	--	--	--	--
	Cefotetan	34	94%	--	--	41	78%	--	--	--	--	--	--	--	--
	Cefoxitin	3,961	87%	--	--	1,572	93%	168	99%	--	--	293	17%	--	--
	Ceftazidime	--	--	--	--	--	--	--	--	1,792	87%	--	--	--	--
	Ceftriaxone	5,372	86%	50	92%	2,356	85%	265	88%	--	--	503	96%	--	--
	Cefuroxime	123	89%	48	85%	--	--	--	--	--	--	--	--	--	--
	Doripenem	--	--	--	--	--	--	--	--	111	80%	--	--	--	--
	Ertapenem	1,708	100%	--	--	769	100%	107	100%	--	--	235	100%	--	--
	Imipenem	196	99%	--	--	49	96%	--	--	94	90%	--	--	--	--
	Meropenem	5,311	100%	--	--	2,327	97%	264	99%	2,457	86%	501	100%	--	--
	Oxacillin	--	--	--	--	--	--	--	--	--	--	--	--	159	34%
	Penicillin	--	--	--	--	--	--	--	--	--	--	--	--	139	9%
	Piperacillin	155	61%	--	--	44	25%	--	--	105	72%	--	--	--	--
	Piperacillin/tazobactam	5,137	94%	--	--	2,221	92%	254	95%	2,283	88%	119	92%	--	--
Non β-Lactam	Amikacin	5,329	99%	--	--	2,332	98%	264	100%	2,462	95%	502	100%	--	--
	Chloramphenicol	--	--	735	98%	--	--	--	--	--	--	--	--	--	--
	Ciprofloxacin	5,412	69%	--	--	2,355	88%	265	100%	2,517	82%	507	97%	--	--
	Clindamycin	--	--	--	--	--	--	--	--	--	--	--	--	139	50%
	Daptomycin	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Doxycycline	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Erythromycin	--	--	--	--	--	--	--	--	--	--	--	--	149	26%
	Fosfomycin	--	--	--	--	32	59%	--	--	--	--	--	--	--	--
	Gentamicin	5,369	88%	--	--	2,350	89%	265	96%	2,518	87%	503	97%	--	--
	Levofloxacin	4,143	70%	--	--	1,710	89%	170	99%	2,001	77%	291	96%	--	--
	Linezolid	--	--	--	--	--	--	--	--	--	--	--	--	141	100%
	Minocycline	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Moxifloxacin	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Nitrofurantoin	2,648	95%	--	--	871	39%	53	85%	--	--	40	5%	--	--
	Norfloxacin	--	--	--	--	--	--	--	--	34	47%	--	--	--	--
	Ofloxacin	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Rifampin	--	--	--	--	--	--	--	--	--	--	--	--	146	93%
	Tetracycline	--	--	--	--	--	--	--	--	--	--	--	--	151	86%
	Tobramycin	5,360	87%	--	--	2,338	88%	265	95%	2,485	95%	507	81%	--	--
	Trimethoprim	263	72%	--	--	108	85%	--	--	--	--	--	--	--	--
	Trimethoprim/sulfamethoxazole	5,154	68%	742	58%	2,237	85%	251	95%	--	--	483	98%	128	47%
	Vancomycin	--	--	--	--	--	--	--	--	--	--	--	--	161	100%

Note that this table includes data reported to the Department via electronic laboratory reporting.

-- Total tested and percent susceptible were suppressed if <30 isolates were tested for susceptibility to a particular antibiotic.

Staphylococcus aureus

In 2008, antibiotic susceptibility testing results for all *S. aureus* isolates became reportable for laboratories participating in ELR. This electronic laboratory data stream continues to be improved. The Department has also partnered with one of the largest commercial laboratories in the state to receive antibiotic susceptibility testing results for all *S. aureus* isolates tested there since 2006, until their data can be submitted via ELR. This is the source of data included in this report. Note that only the first isolate per person per 365 days was included in the analysis per CLSI guidelines. Data collected from this laboratory may or may not be representative of statewide trends.

Key points for *S. aureus*:

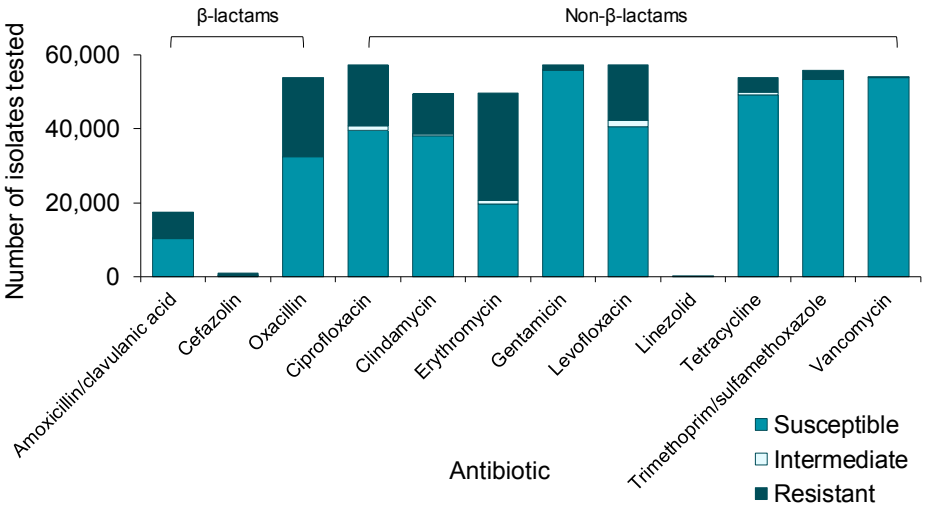
- Overall resistance patterns (Table 5, Figure 9):
  - ◊ Penicillin is not recommended for treating *S. aureus* infections due to known resistance (excluded here).
  - ◊ Susceptibility to cefazolin decreased dramatically from 51% in 2014 to 26% in 2015 and continued to decrease to 17% in 2016. Susceptibility to other β-lactam antibiotics has increased slightly over the past five years, but is still low (59% for amoxicillin/clavulanic acid and 60% for oxacillin).
  - ◊ Empiric treatment of skin and soft tissue infections with β-lactam antibiotics is not recommended.
  - ◊ Susceptibility remained greater than 90% for non-β-lactam antibiotics, including linezolid (100%), vancomycin (100%), gentamicin (97%), trimethoprim/sulfamethoxazole (95%), and tetracycline (91%).
- Susceptibility to most antibiotics varied slightly by age group. Isolates from people aged 65 years and older had reduced susceptibility to ciprofloxacin and levofloxacin (Table 6).
- North Florida had a higher proportion of MRSA isolates while central and south Florida had a lower proportion (Map 1). This trend has been consistently observed since surveillance started in 2006 (Table 7).

Table 5. Number Tested and Percent of *S. aureus* Isolates Susceptible to Selected Antibiotics, Commercial Outpatient Laboratory, Florida, 2012-2016

Antibiotic type	Antibiotic name	2012		2013		2014		2015		2016	
		Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible
β-lactams	Amoxicillin/clavulanic acid	51,665	51%	50,178	53%	53,455	54%	29,442	56%	17,424	59%
	Cefazolin	37,199	51%	16,740	52%	717	51%	723	26%	909	17%
	Oxacillin	52,949	52%	51,579	53%	55,990	54%	55,303	58%	53,902	60%
Non-β-lactams	Ciprofloxacin	51,182	66%	55,714	66%	57,633	63%	57,895	67%	57,371	69%
	Clindamycin	49,440	78%	47,831	78%	52,191	76%	51,506	77%	49,553	77%
	Erythromycin	49,446	34%	47,843	35%	52,192	35%	51,519	38%	49,596	40%
	Gentamicin	57,298	97%	56,032	97%	57,629	96%	57,921	97%	57,378	97%
	Levofloxacin	54,356	71%	56,151	70%	57,690	68%	57,958	70%	57,422	71%
	Linezolid	8,279	100%	189	100%	262	100%	203	100%	178	100%
	Tetracycline	53,008	93%	51,678	93%	56,103	92%	55,353	92%	53,933	91%
	Trimethoprim/sulfamethoxazole	55,770	98%	54,468	97%	56,951	97%	56,821	96%	55,925	95%
	Vancomycin	52,996	100%	51,686	100%	56,097	100%	55,394	100%	53,967	100%

Note that this table includes data from a single commercial outpatient laboratory that receives isolates from health care providers across the state.

Figure 9. Antibiotic Susceptibility Patterns of *S. aureus* Isolates for Selected Antibiotics, Commercial Outpatient Laboratory, Florida, 2016



Note that this table includes data from a single commercial outpatient laboratory that receives isolates from health care providers across the state.

Cefazolin and linezolid are excluded from this figure due to the small number of isolates tested.

Table 6. Percent of *S. aureus* Isolates Susceptible to Selected Antibiotics by Age Group, Commercial Outpatient Laboratory, Florida, 2016

Antibiotic type	Antibiotic name	<1-year-olds		1-4-year-olds		5-14-year-olds		15-24-year-olds		25-64-year-olds		>64-year-olds	
		Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible
β-lactams	Amoxicillin/clavulanic acid	312	65%	1,116	53%	1,995	66%	1,682	65%	7,664	59%	4,625	57%
	Cefazolin	24	--	42	21%	59	15%	55	22%	368	20%	360	13%
	Oxacillin	894	61%	3,382	51%	5,856	67%	5,248	68%	23,244	60%	15,210	58%
Non-β-lactams	Ciprofloxacin	957	80%	3,563	71%	6,109	79%	5,483	79%	24,558	70%	16,629	59%
	Clindamycin	884	79%	3,324	82%	5,752	76%	4,842	79%	21,526	79%	13,160	72%
	Erythromycin	889	38%	3,330	30%	5,762	39%	4,841	43%	21,547	41%	13,162	40%
	Gentamicin	954	98%	3,560	98%	6,111	98%	5,484	98%	24,569	98%	16,625	96%
	Levofloxacin	959	81%	3,568	72%	6,118	81%	5,482	81%	24,586	72%	16,637	61%
	Linezolid	3	--	1	--	3	--	7	--	52	100%	110	100%
	Tetracycline	895	92%	3,387	93%	5,860	89%	5,252	91%	23,253	92%	15,221	92%
	Trimethoprim/sulfamethoxazole	956	99%	3,498	98%	6,014	98%	5,402	97%	24,020	96%	15,968	92%
	Vancomycin	894	100%	3,385	100%	5,859	100%	5,250	100%	23,261	100%	15,250	100%

Note that this table includes data from a single commercial outpatient laboratory that receives isolates from health care providers across the state.

-- Percent susceptible was suppressed if <30 isolates were tested for susceptibility to a particular antibiotic.

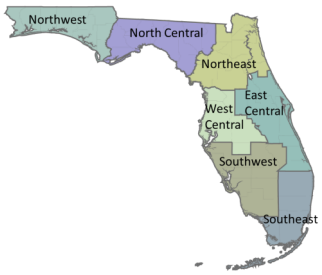
Table 7. Percent of *S. aureus* Isolates Susceptible to Selected Antibiotics by Region, Commercial Outpatient Laboratory, Florida, 2016

Antibiotic type	Antibiotic name	Northwest		North central		Northeast		West central		East central		Southwest		Southeast	
		Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible
β-lactams	Amoxicillin/clavulanic acid	43	51%	52	60%	183	50%	301	60%	1,005	63%	1,344	64%	12,523	59%
	Cefazolin	26	--	25	--	101	2%	136	3%	147	3%	117	9%	267	44%
	Oxacillin	1,523	56%	1,294	58%	6,752	58%	9,790	59%	9,536	63%	6,956	64%	12,976	59%
Non-β-lactams	Ciprofloxacin	1,608	67%	1,392	74%	7,247	70%	10,543	68%	10,215	72%	7,449	71%	13,541	65%
	Clindamycin	1,419	83%	1,176	85%	6,127	79%	8,767	79%	8,686	79%	6,368	80%	12,197	71%
	Erythromycin	1,419	37%	1,176	38%	6,133	38%	8,768	40%	8,689	42%	6,368	44%	12,204	37%
	Gentamicin	1,615	99%	1,394	99%	7,255	99%	10,535	98%	10,206	98%	7,453	98%	13,535	93%
	Levofloxacin	1,613	69%	1,396	75%	7,249	72%	10,541	69%	10,230	73%	7,458	73%	13,553	69%
	Linezolid	2	--	1	--	8	--	16	--	26	--	12	--	94	100%
	Tetracycline	1,525	94%	1,295	93%	6,758	92%	9,793	92%	9,548	92%	6,961	93%	12,985	88%
	Trimethoprim/sulfamethoxazole	1,584	96%	1,363	95%	7,027	97%	10,179	93%	9,926	96%	7,261	93%	13,340	97%
	Vancomycin	1,522	100%	1,292	100%	6,753	100%	9,801	100%	9,546	100%	6,963	100%	13,008	100%

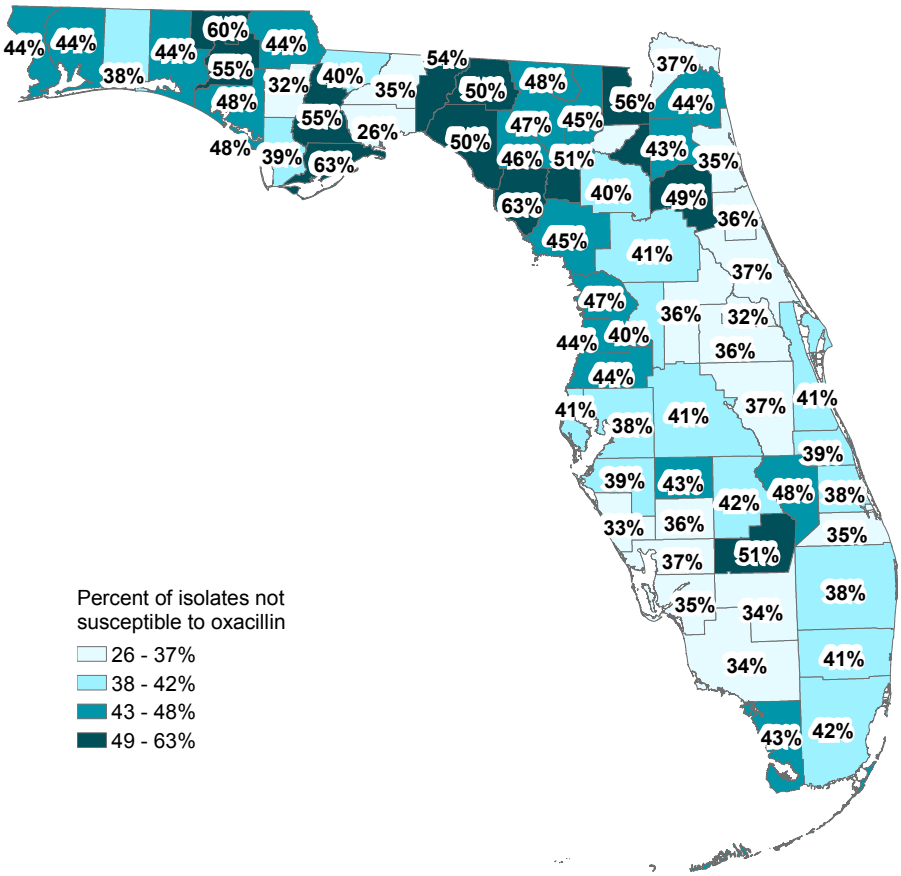
Note that this table includes data from a single commercial outpatient laboratory that receives isolates from health care providers across the state.

-- Percent susceptible was suppressed if <30 isolates were tested for susceptibility to a particular antibiotic.

Map of regions:



Map 1. Percent of *S. aureus* Isolates Not Susceptible to Oxacillin (MRSA) by County of Residence, Commercial Outpatient Laboratory, Florida, 2016



Note that this table includes data from a single commercial outpatient laboratory that receives isolates from health care providers across the state. Some counties had <30 isolates tested, so the proportion that were resistant to oxacillin is unreliable and should be interpreted with caution: Calhoun (25 isolates tested), Hamilton (23 isolates tested), Jefferson (26 isolates tested), and Liberty (20 isolates tested).

Section 6

Influenza and Influenza-Like Illness Surveillance

Influenza and Influenza-Like Illness Surveillance

Background

Influenza, or flu, is a respiratory infection caused by a variety of influenza viruses. The Centers for Disease Control and Prevention (CDC) estimates that influenza has resulted in between 9.2 million and 60.8 million illnesses, 140,000 to 710,000 hospitalizations, and 12,000 to 56,000 deaths annually since 2010 (see References). Most experts believe that influenza viruses spread mainly by droplets made when infected people cough, sneeze, or talk. Less often, a person might become infected with influenza by touching a surface or object contaminated with influenza virus then touching their own mouth, eyes, or possibly nose. The best way to prevent influenza and prevent severe complications or outcomes from infection is to get vaccinated each year.

Influenza A and B viruses routinely spread through the human population and are responsible for seasonal influenza epidemics each year. Influenza A viruses are more commonly associated with the ability to cause epidemics or pandemics than influenza B viruses. Over the course of an influenza season, different subtypes of influenza A and B may circulate and cause illness.

Influenza surveillance is conducted to detect changes in the influenza virus, which helps determine the vaccine composition each year and prepare for epidemics and pandemics. Surveillance is also conducted to identify unusually severe presentations of influenza, detect outbreaks, and determine the onset, peak, and wane of influenza season to assist with influenza prevention, particularly in high-risk populations like the very young, the elderly, and pregnant women.

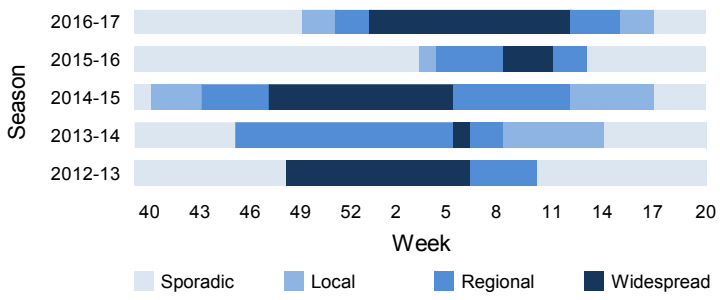
Individual cases of influenza are not reportable in Florida, with the exception of novel influenza (a new subtype of influenza) and influenza-associated pediatric deaths. All outbreaks, including those due to influenza or influenza-like illness (ILI), are reportable in Florida. The Florida Department of Health conducts regular surveillance of influenza and ILI using a variety of surveillance systems, including laboratory-based surveillance and syndromic surveillance. Florida's syndromic surveillance system, ESSENCE-FL, collects chief complaint data from emergency departments and urgent care centers. During the 2016-17 influenza season, 305 facilities submitted data into ESSENCE-FL, capturing 98% of all emergency department visits in Florida.

The influenza reporting year is defined by standard reporting weeks as outlined by CDC, where every year has a minimum of 52 reporting weeks and some years have 53. There were 52 weeks in 2016. In Florida, increased surveillance for influenza begins in week 40 (October 2, 2016) of one year and ends in week 20 of the following year (May 20, 2017). Florida produces a weekly report during influenza season (October through May) and a biweekly report during the summer months that summarizes influenza and ILI surveillance data. These reports are available at www.FloridaHealth.gov/FloridaFlu.

General Trends

Influenza activity in Florida can vary widely from season to season, underscoring the importance of robust influenza surveillance. In Florida, increased influenza activity associated with the 2016-17 influenza season statewide spanned from late December to mid-April (Figure 1). Regional differences were observed in the timing of peak influenza activity, resulting in dual peaks. In south Florida (Palm Beach, Broward, Miami-Dade, and Monroe counties), influenza activity peaked in late December, nearly two months ahead of the rest of the state, which peaked in February. Although Florida often differs from the national influenza trends, in 2016-17, national trends generally mirrored what was observed in Florida, with peak influenza activity also occurring in February 2017.

Figure 1. State Influenza Activity Level by Week for Seasons 2012-13 to 2016-17, Florida

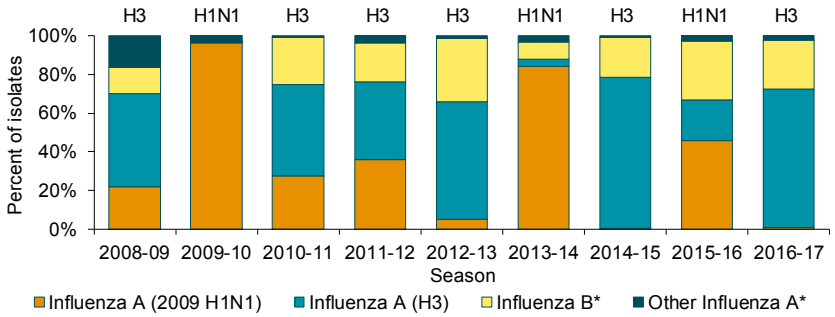


Influenza seasons typically have a predominately circulating strain, which can vary by season. Influenza A (H3) was the predominantly circulating strain in Florida and nationwide during the 2016-17 season. The previous predominantly influenza A (H3) seasons were 2010-11, 2011-12, 2012-13, and 2014-15 (Figures 2 and 3). While influenza A (H3) viruses predominated during the 2016-17 season overall, influenza B viruses were most commonly reported from late April through May (Figure 4). The late season circulation of influenza B viruses in Florida is typical.

Figure 2. Predominately Circulating Influenza Strain by Season, 2008-09 to 2016-17, Florida

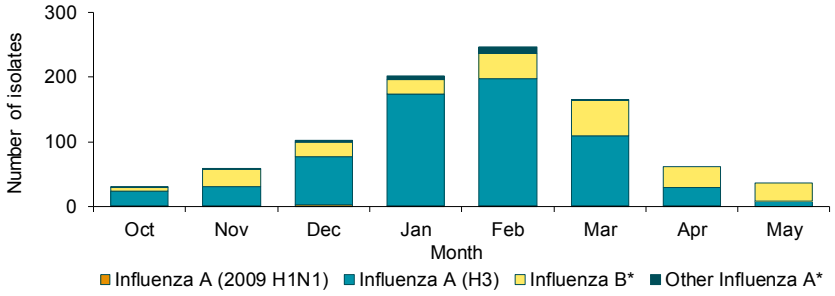
2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Influenza A (2009 H1N1)	Influenza A (2009 H1N1)	Influenza A (H3)	Influenza A (H3)	Influenza A (H3)	Influenza A (2009 H1N1)	Influenza A (H3)	Influenza A 2009 (H1N1)	Influenza A (H3)

Figure 3: Influenza Subtype by Influenza Season, 2008-09 to 2016-17, Florida



* Note that influenza B lineages include Victoria, Yamagata, and unspecified lineages. Other influenza A strains include (H1) seasonal, (2009 H1N1) equivocal, and unspecified strains. An equivocal test result indicates questionable presence of virus detected.

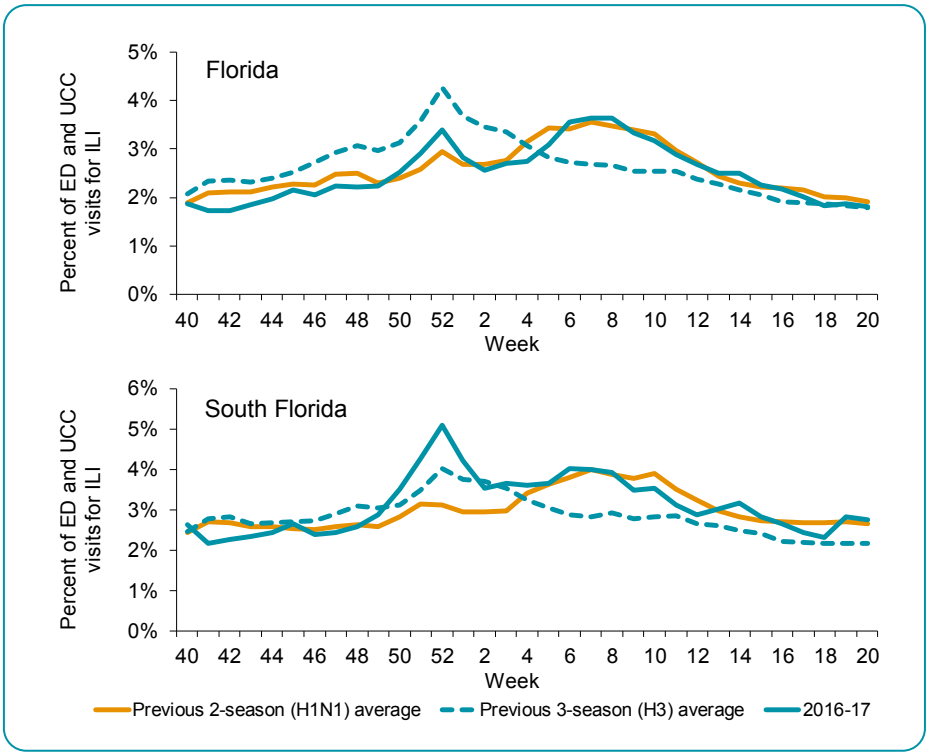
Figure 4: Influenza Subtype by Month of Influenza Season, October 1, 2016 to May 31, 2017, Florida



* Note that influenza B lineages include Victoria, Yamagata, and unspecified lineages. Other influenza A strains include (H1) seasonal, (2009 H1N1) equivocal, and unspecified strains. An equivocal test result indicates questionable presence of virus detected.

Seasons where influenza A (H3) predominates are typically associated with increased morbidity and mortality, particularly in adults aged ≥65 years old and children aged ≤4 years old. The defining characteristics of the 2016-17 season were its dual peaks (with the earlier peak being heavily influenced by the south Florida trend) and its dramatic increase in the number of outbreaks reported (see Outbreaks subsection on following page). Statewide, influenza activity during the 2016-17 influenza season peaked later than the previous three-season (H3) average (Figure 5). Peak influenza activity statewide during the 2016-17 influenza season was considerably lower than the previous three -season (H3) average; however, regional differences were observed in the severity of the season. In south Florida, peak influenza activity during the 2016-17 influenza season was 27% higher than the region's previous three-season (H3) average (Figure 6), suggesting increased severity in that region. Timing of peak activity in south Florida was consistent with the previous three-season (H3) statewide average.

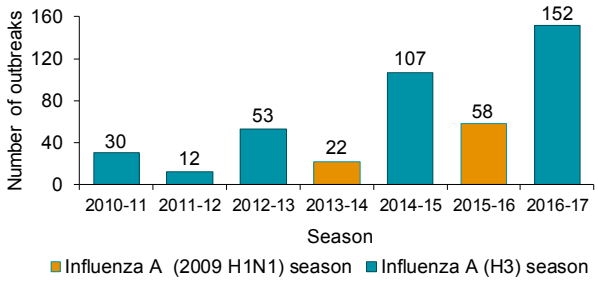
Figure 5: Percent of Weekly Emergency Department (ED) and Urgent Care Center (UCC) Visits for Influenza-Like Illness (ILI) From ESSENCE-FL (305 Facilities), 2-Season (H1N1) Average (2013-14, 2015-16), 3-Season (H3) Average (2011-12, 2012-13, 2014-15), and 2016-17 Season, Florida and South Florida



Outbreaks

The number of outbreaks reported and the types of outbreak settings vary each season and are indicators of disease severity and population affected (Figure 7). More than three times as many outbreaks were reported in the 2016-17 season (152 outbreaks) than the average of the past 6 seasons (average of 47 outbreaks). Of note, the mechanism by which county health department (CHD) staff documented influenza and ILI outbreaks was updated for the 2016-17 influenza season in an effort to have more timely, structured, and complete data available to state-level staff. To support this process change, additional trainings for CHD staff were conducted, which may have improved documentation of outbreaks for the 2016-17 season. Other efforts to improve reporting, such as sending letters to long-term care facilities, may have also contributed to the increase. Other states also reported increased number of outbreaks, so it is likely that a true increase in disease also contributed to the larger number of outbreaks documented.

Figure 7: Outbreaks by Influenza Season and Predominately Circulating Strain, 2010-11 to 2016-17, Florida



Consistent with the statewide peak in influenza activity, the largest number of outbreaks (53) were reported in February (Figure 8). While H3 seasons are typically harder on the elderly, in the 2016-17 season, a larger proportion of outbreaks were reported in facilities serving adults aged ≥65 years old compared to the previous three-season (H3) average, suggesting adults in this age group were hit harder during the 2016-17 season than in past influenza A (H3)-dominant seasons (Figure 9).

Figure 8: Outbreaks by Setting Type* and Month, 2016-17 Season, Florida

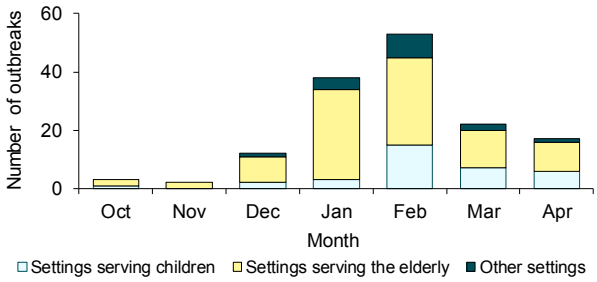
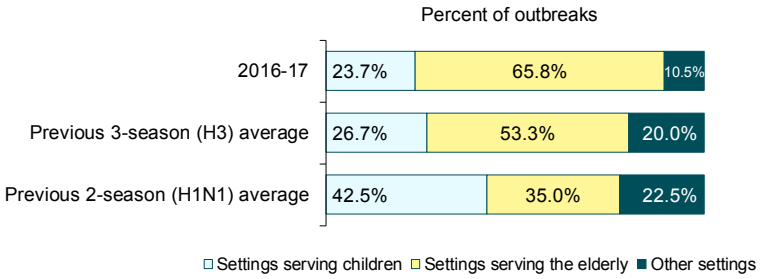


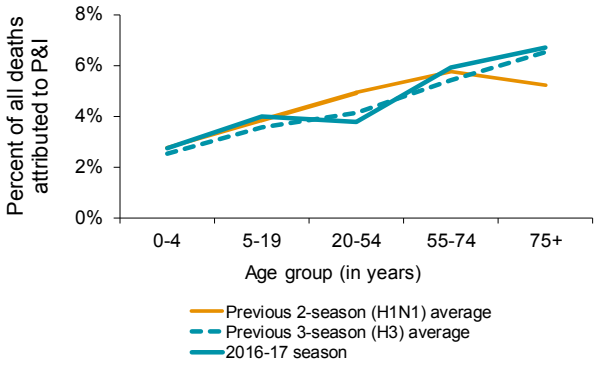
Figure 9: Outbreaks by Setting Type* and Season, 2016-17 Season, 3-Season (H3) Average (2011-12, 2012-13, 2014-15), and 2-Season (H1N1) Average (2013-14, 2015-16), Florida



* Note that settings serving children include daycare facilities, child care facilities, child development centers, schools, head start facilities, and pre-kindergarten facilities. Settings serving the elderly include assisted living facilities, senior care facilities, nursing homes, and long-term care facilities.

Deaths

Figure 10: Percentage of All Deaths Attributed to Pneumonia and Influenza (P&I) by Age Group, 2-Season (H1N1) Average (2013-14, 2015-16), 3-Season (H3) Average (2011-12, 2012-13, 2014-15), and 2016-17 Season, Florida



Although not individually reportable, pneumonia and influenza deaths in people of all ages are monitored through review of death certificate data. Estimating the total number of deaths due to seasonal influenza is challenging, as influenza may lead to death from other causes, such as pneumonia, congestive heart failure, or chronic obstructive pulmonary disease. It has been recognized for many years that influenza is underreported on death certificates and patients are not always tested for seasonal influenza infection, particularly the elderly who are at greatest risk of seasonal influenza complications and death. Some deaths, particularly among the elderly, are associated with secondary complications of seasonal influenza (including bacterial pneumonias). While death certificate data will likely undercount the true number of deaths attributed to influenza, utilization of the data can provide insight into the overall trends and information about the severity of different strains of influenza circulating each season. The 2016-17 influenza season was consistent with previous H3 seasons, which are associated with higher mortality in the elderly (Figure 10).

Influenza-associated pediatric deaths are reportable in Florida; typically, two to eight deaths are reported each year. Ten deaths were reported in children in the 2016-17 season; two additional deaths were reported in June and September. Of the ten children who died, none had received the seasonal influenza vaccination and five had underlying health conditions. Specimens from children who die frequently go untyped, and given the small number of deaths each year, it is difficult to interpret how pediatric mortality is affected by strain. For additional information about influenza-associated pediatric mortality reported in 2016, please see Section 3: Narratives for Selected Reportable Diseases/Conditions of Infrequent Occurrence.

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Section 7

Respiratory Syncytial Virus Surveillance

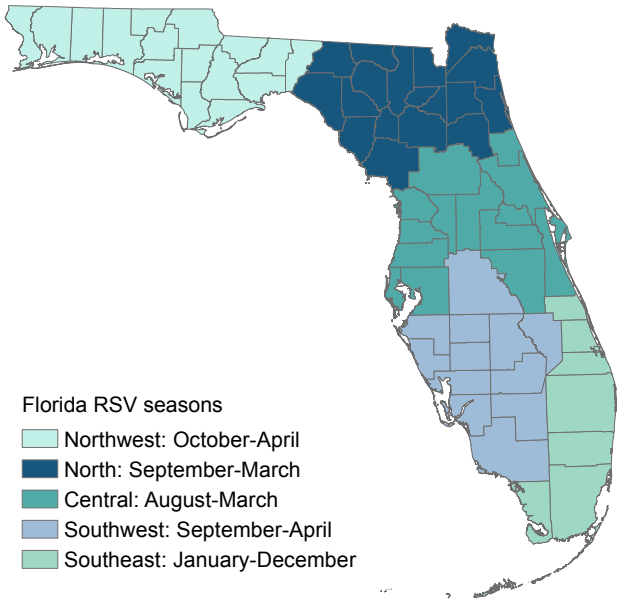
Respiratory Syncytial Virus Surveillance

Background

Respiratory syncytial virus (RSV) is a common respiratory virus that primarily infects young children. RSV causes cold-like symptoms such as fever, cough, and runny nose. RSV can also cause more severe symptoms like wheezing or difficulty breathing, particularly in young children with underlying health conditions. Children <5 years old and older adults are at increased risk of hospitalization for complications due to RSV infection. The Centers for Disease Control and Prevention (CDC) estimates that 1-3% of all children in the U.S. will be hospitalized within their first 12 months of life due to RSV infection. RSV infection is the most common cause of bronchiolitis (inflammation of small airways in the lungs) and pneumonia in infants <1 year old.

In the U.S., RSV activity is most common during the fall, winter, and spring months, though activity varies in timing and duration regionally. In Florida, RSV season is longer than the rest of the nation and in some areas of the state is year-round. CDC marks the start of RSV season as the first two consecutive weeks during which the average percent of specimens that test positive for RSV at hospital laboratories is ≥10%. The Florida Department of Health has established regular RSV seasons based on these thresholds for Florida (Map 1). RSV activity in Florida typically peaks in November through January, with an overall decrease in activity during the summer months. Although summer months typically have less RSV activity overall, laboratory data for southeast Florida consistently show ≥10% of specimens testing positive for RSV in most summer months. For that reason, RSV season in southeast Florida is considered year-round.

Map 1: Florida RSV Seasons



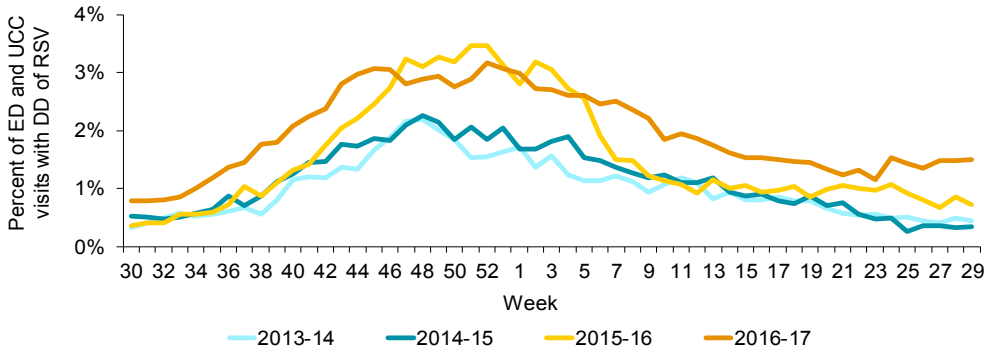
For the purpose of this report, the RSV reporting year is defined by standard reporting weeks as outlined by CDC, where every year has a minimum of 52 reporting weeks and some years have 53; there were 52 weeks in 2016. In Florida, increased surveillance for RSV begins in week 30 (July 24, 2016) and ends in week 29 of the following year (July 22, 2017). Florida produces a weekly RSV report as part of a larger respiratory disease report during the influenza season (October through May) and a biweekly report during the summer months that summarizes RSV surveillance data. These reports are available at www.FloridaHealth.gov/FloridaFlu.

The determination of unique seasonal and geographic trends of RSV activity has important implications for prescribing patterns for initiating prophylaxis in children considered at high risk for complications due to RSV infection. The American Academy of Pediatrics Red Book[1] currently recommends that preapproval for prophylactic treatment for these children be made based on state surveillance data. This recommendation, in conjunction with Florida's unique RSV seasons, led to the implementation of statewide surveillance for RSV. These surveillance data are designed to be used to support clinical decision-making for prophylaxis of at-risk children. Palivizumab is an antibody that reduces the risk of RSV infection when given to at-risk children. Palivizumab is prophylaxis to prevent illness, not a treatment for current RSV infection, that is administered in five monthly doses and provides protection for six months, beginning at the time of the first administered dose. The timing of RSV season in Florida influences the timing of palivizumab administration, underscoring the importance of RSV surveillance in Florida.

Surveillance in Florida

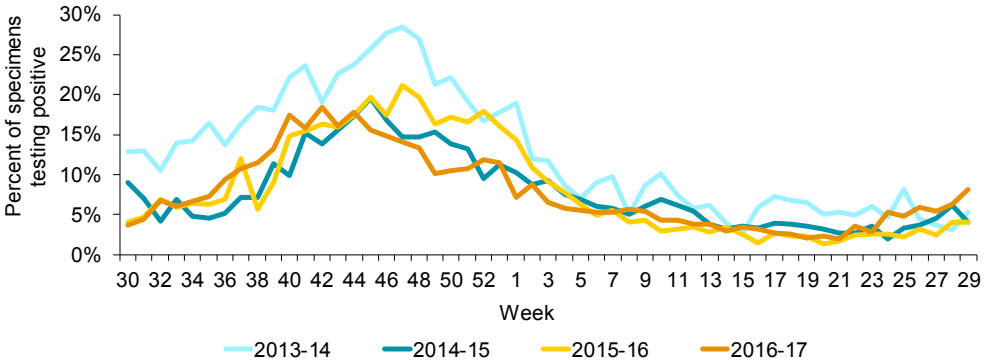
Florida's syndromic surveillance system, ESSENCE-FL, collects chief complaint and discharge diagnosis data from 305 emergency departments (EDs) and urgent care centers (UCCs). These data are used to monitor trends in RSV visits to EDs and UCCs when RSV or RSV-associated illness is included in the discharge diagnosis. In Florida, increased RSV activity statewide in children <5 years old associated with the 2016-17 RSV season spanned from September to April and peaked in late December (Figure 1). While peak activity was not as high during the 2016-17 RSV season, the percent of children <5 years old diagnosed with RSV at participating EDs and UCCs was overall greater than that observed during the 2013-14 and 2014-15 seasons.

Figure 1: Percent of Weekly Emergency Department (ED) and Urgent Care Center (UCC) Visits for Children <5 Years Old With Discharge Diagnosis (DD) of Respiratory Syncytial Virus (RSV) From ESSENCE-FL (305 Facilities), 2013-14, 2014-15, 2015-16, and 2016-17 Seasons, Florida



The Department also monitors RSV activity using data reported into the National Respiratory and Enteric Virus Surveillance System (NREVSS). NREVSS is a voluntary, laboratory-based surveillance system through which participating laboratories report RSV test results. The Department uses data from NREVSS in combination with validated electronic laboratory reporting data to monitor temporal patterns of RSV (Figure 2). Peak activity level for the 2016-17 season, as defined as the highest percent of specimens testing positive for RSV, was observed in October 2016. Of note, these data are for people of all ages, whereas the data in Figure 1 are limited to children <5 years old. This may account for the difference in patterns observed in Figures 1 and 2.

Figure 2: Percent of Specimens Testing Positive for Respiratory Syncytial Virus (RSV) as Reported by the National Respiratory and Enteric Virus Surveillance System and Electronic Laboratory Reporting Results, 2013-14, 2014-15, 2015-16 and 2016-17 Seasons, Florida



References

1 Kimberlin DW; Jackson M (ed.). 2015. *Red Book: 2015 Report of the Committee on Infectious Diseases*. 30th ed. Elk Grove Village, IL: American Academy of Pediatrics.

Section 8

Cancer Surveillance

Background

Section 385.202, Florida Statutes requires that all hospitals and outpatient facilities licensed in Florida report to the Department of Health each patient admitted for treatment of cancer. Information to be reported on each patient includes routine personal and demographic data, diagnosis, stage of disease at diagnosis, medical history, laboratory data, tissue diagnosis, and initial course of treatment. Cancer incidence data are collected, verified, and maintained by the Florida Cancer Data System (FCDS), Florida's statewide cancer registry. The FCDS is administered by the Florida Department of Health, Public Health Research Section and operated by the Sylvester Comprehensive Cancer Center at the University of Miami Leonard M. Miller School of Medicine. The FCDS is used by the state and its partners to monitor the occurrence of cancer incidence and mortality, aid in research studies to reduce cancer morbidity and mortality, focus cancer control activities, and address public questions and concerns regarding cancer.

The FCDS began operations with a pilot project for cancer registration in 1980 and commenced statewide collection of cancer incidence data (i.e., new cancer cases) from all Florida hospitals in 1981. The FCDS now collects incidence data from hospitals, freestanding ambulatory surgical centers, radiation therapy facilities, pathology laboratories, and private physician offices. Each facility, laboratory, and practitioner is required to report to the FCDS within six months of each diagnosis and within six months of the date of each treatment. Consequently, there is an inherent time lag of one to two years in the release of cancer registry data for surveillance activities and publications. At the time this report was published, the most recent FCDS data available were from 2014.

General Trends for 2014

During 2014, physicians diagnosed 110,602 primary cancers among Floridians, an average of 303 new cases per day. Cancer occurs predominantly among older people as age is the top risk factor. Approximately 59% of the newly diagnosed cancers in 2014 occurred in people ≥65 years old; this age group accounted for 19% of Florida's 2014 population. The four most common cancers in Floridians were lung and bronchus (16,302 cases, 15%), female breast (15,570 cases, 14%), prostate (11,214 cases, 10%), and colorectal (9,638 cases, 9%), which accounted for 53% of all new cases in blacks and 47% of all new cases in whites (Table 1). Fifty-one percent of new cancers were diagnosed in males. The number of new cancer cases in Florida's five most populous counties (Broward, Miami-Dade, Hillsborough, Palm Beach, and Pinellas) accounted for 38% of the new cancer cases in Florida in 2014 (Table 4).

More information about the burden of cancer in Florida is provided in the Florida Annual Cancer Report, an epidemiological series, available on the FCDS web site at https://fcds.med.miami.edu/inc/publications.shtml.

Table 1. Number of New Cancer Cases by Sex and Race, Florida, 2014

Characteristic	All Cancers	Lung and Bronchus	Breast	Prostate	Colorectal	Melanoma	Bladder	Head and Neck	Non-Hodgkin's Lymphoma	Ovary	Cervix
Florida	110,602	16,302	15,570	11,214	9,638	5,781	5,197	4,748	4,409	1,461	918
Sex											
Female	54,138	7,636	15,570	NA	4,523	2,096	1,260	1,190	1,938	1,461	918
Male	56,415	8,661	NA	11,214	5,110	3,683	3,935	3,557	2,469	NA	NA
Race											
Black	11,514	1,258	1,763	1,913	1,223	--	214	389	391	129	146
White	94,971	14,653	13,150	8,847	8,045	5,781	4,805	4,218	3,826	1,270	732
Sex and race											
Black female	5,788	534	1,763	NA	602	--	67	98	187	129	146
White female	46,241	6,949	13,150	NA	3,729	2,096	1,142	1,063	1,665	1,270	732
Black male	5,723	724	NA	1,913	621	--	147	291	203	NA	NA
White male	48,687	7,700	NA	8,847	4,311	3,683	3,662	3,154	2,160	NA	NA

-- Counts for counties with <10 cases are suppressed.
NA Not applicable for gender-specific cancer types.

Table 2. Number of Cancer Deaths by Sex and Race, Florida, 2014

Characteristic	All Cancers	Lung and Bronchus	Breast	Prostate	Colorectal	Melanoma	Bladder	Head and Neck	Non-Hodgkin's Lymphoma	Ovary	Cervix
Florida	42,551	11,447	2,845	2,096	3,620	712	1,230	1,086	1,451	1,011	331
Sex											
Female	19,571	5,111	2,845	NA	1,693	229	337	258	610	1,011	331
Male	22,980	6,336	NA	2,096	1,927	483	893	828	841	NA	NA
Race											
Black	4,245	855	404	330	415	--	66	119	123	98	73
White	37,418	10,414	2,372	1,725	3,114	712	1,152	946	1,274	887	254
Sex and race											
Black female	2,101	344	404	NA	197	--	30	24	63	98	73
White female	17,033	4,682	2,372	NA	1,457	229	300	229	523	887	254
Black male	2,144	511	NA	330	218	--	36	95	60	NA	NA
White male	20,385	5,732	NA	1,725	1,657	483	852	717	751	NA	NA

-- Counts for counties with <10 cases are suppressed.
NA Not applicable for gender-specific cancer types.

Table 3. Age-Adjusted Incidence and Mortality Rates[1] and Confidence Intervals (CIs), Florida, 2014

Cancer	Age-Adjusted[1] Incidence Rate (CI)	Age-Adjusted[1] Mortality Rate (CI)
Breast	118.8 (116.9, 120.8)	19.9 (19.1, 20.7)
Prostate	87.1 (85.5, 88.8)	17.1 (16.3, 17.8)
Lung and bronchus	59.5 (58.6, 60.4)	41.3 (40.5, 42.1)
Colorectal	36.7 (35.9, 37.4)	13.2 (12.8, 13.7)
Melanoma	26.7 (26.0, 27.4)	3.1 (2.8, 3.3)
Bladder	18.8 (18.3, 19.4)	4.3 (4.1, 4.6)
Head and neck	18.1 (17.6, 18.6)	4.0 (3.8, 4.2)
Non-Hodgkin's lymphoma	17.3 (16.8, 17.9)	5.4 (5.1, 5.6)
Ovary	10.9 (10.3, 11.5)	6.9 (6.5, 7.4)
Cervix	8.5 (7.9, 9.1)	2.8 (2.5, 3.2)
All Cancers	426.0 (423.4, 428.6)	155.7 (154.2, 157.2)

1 Rates are calculated as number of cases per 100,000 population per year based on 2014 population estimates provided by the Florida Department of Health, Division of Public Health Statistics and Performance Management. Rates are age-adjusted to the 2000 U.S. standard population.

Table 4. Number of New Cancer Cases by County, Florida, 2014

County	All Cancers	Lung and Bronchus	Breast	Prostate	Colorectal	Melanoma	Bladder	Head and Neck	Non-Hodgkin's Lymphoma	Ovary	Cervix
Florida	110,602	16,302	15,570	11,214	9,638	5,781	5,197	4,748	4,409	1,461	918
Alachua	1,097	163	188	101	107	80	41	42	40	--	--
Baker	104	27	14	--	--	--	--	--	--	--	--
Bay	988	192	127	97	102	33	47	36	38	11	--
Bradford	135	26	19	14	10	--	--	--	--	--	--
Brevard	3,844	638	484	379	282	302	178	165	122	42	22
Broward	9,399	1,112	1,410	1,001	829	410	424	446	350	119	87
Calhoun	72	14	--	--	--	--	--	--	--	--	--
Charlotte	1,473	248	179	149	125	124	81	73	55	20	--
Citrus	1,264	245	145	109	109	51	63	69	35	20	--
Clay	1,007	168	137	87	78	57	48	41	42	--	15
Collier	1,989	243	273	333	160	188	82	75	73	25	16
Columbia	387	87	49	37	36	15	17	21	13	--	--
Desoto	137	25	17	19	15	--	--	--	--	--	--
Dixie	102	22	16	--	10	--	--	--	--	--	--
Duval	4,653	716	687	413	431	190	191	223	164	60	38
Escambia	1,611	278	216	147	144	83	89	81	57	23	12
Flagler	770	116	104	67	80	62	36	37	25	--	--
Franklin	52	--	--	--	--	--	--	--	--	--	--
Gadsden	223	37	26	22	23	--	--	16	--	--	--
Gilchrist	84	22	13	--	--	--	--	--	--	--	--
Glades	44	--	--	--	--	--	--	--	--	--	--
Gulf	91	12	--	--	13	--	--	--	--	--	--
Hamilton	78	14	16	--	--	--	--	--	--	--	--
Hardee	134	27	13	11	11	--	--	--	--	--	--

-- Counts for counties with <10 cases are suppressed.

Table 4 (Continued). Number of New Cancer Cases by County, Florida, 2014

County	All Cancers	Lung and Bronchus	Breast	Prostate	Colorectal	Melanoma	Bladder	Head and Neck	Non-Hodgkin's Lymphoma	Ovary	Cervix
Hendry	148	24	20	13	13	--	--	10	--	--	--
Hernando	1,316	240	154	114	117	87	81	56	38	16	--
Highlands	765	126	80	52	81	53	44	43	41	14	--
Hillsborough	6,304	823	936	596	539	344	235	265	260	109	65
Holmes	94	16	--	--	--	--	--	--	--	--	--
Indian River	1,158	201	143	81	78	111	60	55	43	17	--
Jackson	211	53	23	12	30	--	--	--	--	--	--
Jefferson	64	--	--	--	--	--	--	--	--	--	--
Lafayette	26	--	--	--	--	--	--	--	--	--	--
Lake	2,391	393	301	247	213	159	115	85	97	37	14
Lee	4,215	643	638	457	343	208	200	204	185	39	25
Leon	861	137	128	98	70	28	18	29	40	15	--
Levy	260	61	30	27	19	12	--	--	--	--	--
Liberty	21	--	--	--	--	--	--	--	--	--	--
Madison	86	25	--	--	--	--	--	--	--	--	--
Manatee	2,202	329	289	227	171	154	107	89	77	30	18
Marion	2,582	496	277	245	202	174	147	99	90	37	22
Martin	1,201	154	178	124	88	106	75	42	43	20	--
Miami-Dade	11,827	1,242	1,783	1,450	1,270	227	427	448	492	173	142
Monroe	476	70	64	43	38	34	30	33	17	--	--
Nassau	490	84	67	60	42	24	17	33	19	--	--
Okaloosa	912	146	142	82	87	67	46	46	26	12	--
Okeechobee	257	52	29	21	25	--	17	--	10	--	--
Orange	4,867	572	752	548	425	223	198	197	222	53	40
Osceola	1,369	165	201	154	127	47	60	50	68	17	16
Palm Beach	8,727	1,192	1,271	937	650	449	495	271	448	107	61
Pasco	3,164	568	401	263	261	181	170	142	128	39	26
Pinellas	6,210	1,048	915	502	539	330	340	290	224	87	51
Polk	3,990	593	464	440	378	239	181	175	162	54	36
Putnam	496	93	62	45	58	24	23	23	20	--	--
Santa Rosa	803	125	122	81	58	57	37	44	33	17	--
Sarasota	3,283	494	480	347	251	246	207	117	134	49	11
Seminole	1,800	243	280	184	143	99	83	81	82	17	13
St. Johns	1,228	178	197	113	93	82	67	65	56	18	--
St. Lucie	1,509	237	240	150	125	57	54	60	61	21	13
Sumter	1,134	169	157	128	80	43	77	45	40	14	--
Suwannee	250	47	26	21	22	20	10	12	--	--	--
Taylor	118	30	11	11	--	--	--	--	--	--	--
Union	197	46	--	18	19	--	--	19	14	--	--
Volusia	3,303	602	446	239	298	179	173	165	118	38	45
Wakulla	129	28	15	--	12	12	--	--	--	--	--
Walton	324	66	43	23	38	17	12	24	--	--	--
Washington	96	21	12	--	--	--	--	--	--	--	--

-- Counts for counties with <10 cases are suppressed.

Section 9

Congenital and Perinatal Conditions

Birth Defects

Every 4½ minutes, a baby is born with a birth defect in the U.S. Major birth defects are conditions present at birth that cause structural changes in one or more parts of the body. They can have a serious adverse effect on health, development, or functional ability. Birth defects are one of the leading causes of infant mortality, causing one in five infant deaths. In Florida, there are approximately 220,000 live births annually and 1 out of every 28 babies is born with a major birth defect.
Despite their substantial impact, only 35% of birth defects have a known cause and research suggests a complex interaction between genetic and environmental factors. In 1997, the Florida Legislature provided funding to the Florida Department of Health to operate and manage a statewide population-based birth defects registry. Per subsection 381.0031(4), Florida Statutes and further specified in Florida Administrative Code Rules 64D-3.029 and 64D-3.035, birth defects are reportable to the Florida Birth Defects Registry (FBDR).

FBDR surveillance data are used for:

- Tracking and detecting trends in birth defects.
- Identifying when and where birth defects can possibly be prevented.
- Providing the basis for studies on the genetic and environmental causes of birth defects.
- Planning and evaluating the impact of efforts to prevent birth defects.
- Helping Florida's families whose infants and children need appropriate medical, educational and social services.

The FBDR is a statewide, population-based passive surveillance program with information on more than 100,000 infants born with serious birth defects. Data are collected on live infants born to mothers residing in Florida who are diagnosed with one or more structural, genetic, or other specified birth outcomes in the first year of life. The FBDR's passive case ascertainment methodology involves the linkage of multiple secondary source datasets including the Florida Division of Public Health Statistics and Performance Management birth records, the Agency for Health Care Administration hospital inpatient and ambulatory discharge databases, Regional Perinatal Intensive Care Centers data, Children's Medical Services (CMS) case management records, and CMS Early Steps data. There is an inherent delay in FBDR data since they include all outcomes through the first year of life. At the time this report was published, the most recent FBDR data available were from 2014 (Table 1).

Table 1. Average Annual Number of Birth Defects and Prevalence Rates (Per 10,000 Live Births) of Selected Birth Defects, Florida, 2010-2014

Central Nervous System Defects	Number of Birth Defects	Prevalence Rate
Anencephalus	17	0.8
Spina bifida without anencephalus	59	2.8
Cardiovascular Defects		
Transposition of the great arteries	51	2.4
Tetralogy of Fallot	105	4.9
Atrioventricular septal defect	88	4.1
Hypoplastic left heart syndrome	69	3.2
Orofacial Defects		
Cleft lip with cleft palate	106	5.0
Cleft palate without cleft lip	110	5.1
Musculoskeletal Defects		
All limb deficiencies (reduction deformities)	81	3.8
Gastroschisis	100	4.7
Chromosmal Defects		
Trisomy 21 (Down syndrome)	289	13.5

For more information, please visit www.fbdr.org.

Neonatal Abstinence Syndrome

Neonatal abstinence syndrome (NAS) occurs in a newborn who was exposed to addictive opiate drugs while in the mother's womb. The most common opiate drugs that are associated with NAS are heroin, codeine, oxycodone (oxycontin), methadone, and buprenorphine. Symptoms of withdrawal depend on the drug involved. Symptoms can begin within one to three days after birth, or may take up to 10 days to appear. Symptoms may include blotchy skin coloring (mottling), diarrhea, excessive or high-pitched crying, excessive sucking, fever, hyperactive reflexes, increased muscle tone, irritability, jitteriness, poor feeding, rapid breathing, seizures, sleep problems, slow weight gain, stuffy nose, sneezing, sweating, trembling (tremors), or vomiting.

In June 2014, NAS became a reportable condition per Florida Administrative Code Rule 64D-3.029. The FBDR is currently conducting enhanced surveillance for NAS. This surveillance incorporates multi-source passive case finding efforts and trained abstractor review of maternal and infant hospital medical records in order to capture all relevant clinical information to classify potential NAS cases, determine specific agents to which the mother and infant were exposed, and to obtain a more complete understanding of this public health issue.

Based on data collected by the FBDR, the rate of NAS in Florida increased dramatically from 1998 to 2010, followed by a slower rate of increase from 2011 (66.7 cases per 10,000 live births) to 2013 (69.2 cases per 10,000 live births). However, in 2014, the rate of NAS increased to 76.6 per 10,000 live births, an 11% increase from 2013. In 2014, NAS rates per 10,000 live births were substantially higher among non-Hispanic white infants (156.2) compared to non-Hispanic black infants (26.6) and Hispanic infants (20.2).

Currently, there is substantial variation in the diagnosis and reporting of NAS across institutions, providers, and surveillance systems. These inconsistencies result in concern about the reliability of NAS data. However, it also represents an opportunity for further establishment of a standardized set of recommendations and guidelines for clinical diagnosis, data collection, surveillance, and reporting. A limitation of using a passive surveillance methodology (without medical record confirmation) to identify NAS cases is the likelihood for misclassification. Misclassification can result in false negatives (the failure to capture an infant born with NAS) or false positives (identifying an infant as a NAS case who does not meet the clinical definition of NAS). Another limitation is the timeliness of the data. There is an inherent delay in FBDR data since they include all outcomes through the first year of life. At the time this report was published, the most recent FBDR data available were from 2014.

Despite limitations, use of FBDR and other existing surveillance systems provides insight into the epidemic of prescription drug abuse and its effects on babies and allows community leaders to obtain a more complete understanding of this important public health issue to support response to local concerns.

For current NAS surveillance data, please visit www.fbdr.org.

Perinatal HIV

Perinatal HIV transmission, also known as mother-to-child HIV transmission, can happen at any time during pregnancy, labor, delivery, and ingestion of breast milk. The Centers for Disease Control and Prevention (CDC) recommends that all women who are pregnant or planning to become pregnant be tested for HIV before pregnancy and as early as possible during every pregnancy. Without treatment, 25-30% of babies born to HIV-positive mothers will become infected with HIV. However, if mothers are aware of their HIV status and treated along with their infants, the chances of the infant acquiring HIV is only 1-2%. Children living with HIV frequently are slow to reach important developmental milestones such as crawling, walking, and speaking. Many do not gain weight or grow normally. Like adults living with HIV, children with HIV also develop life-threatening opportunistic infections. The types of infections are different for children than adults, with serious bacterial infections occurring more often among children. Florida law requires that women residing in Florida be tested for HIV at their initial prenatal care visit, again at 28-32 weeks of pregnancy, and at labor and delivery. This testing requirement allows Florida providers to address any potential missed opportunities to treat during the prenatal period.

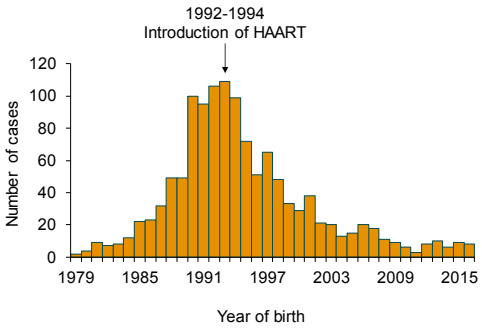
Perinatally acquired HIV prevention in Florida is focused on:

- Prevention services for women of child bearing age.
- Ensuring services for pregnant women living with HIV and their newborns.
- Education and technical assistance for clinicians who treat pregnant women.

Perinatally acquired HIV births in Florida have decreased by 93% from 1993 to 2016. Initiation of highly active antiretroviral therapy (HAART) between 1992-1994 played a significant role in this decrease (Figure 1).

There were 483 infants perinatally exposed to HIV in 2016, but only eight perinatal HIV cases, seven pediatric HIV cases, and one pediatric AIDS case were identified (Map 1). There were several possible missed opportunities where interventions could have taken place to prevent transmission among the 87 infants perinatally infected with HIV from 2007 to 2016 (Figure 2).

Figure 1. Perinatally Acquired HIV Cases Born in Florida by Year of Birth, 1979-2016



Map 1. Infants Perinatally Exposed to HIV by County, Florida, 2016 (N=483)

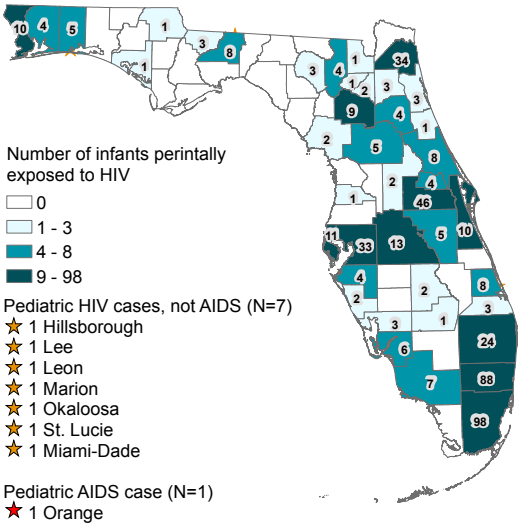
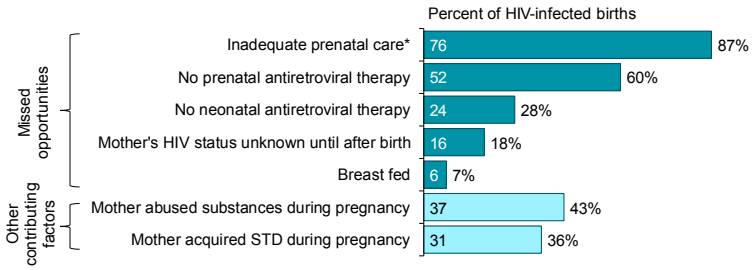


Figure 2. Possible Missed Opportunities for HIV Prevention Among 87 Infants Perinatally Infected With HIV, Florida, 2007-2016



Note that an infant can be included in multiple categories.
* Inadequate prenatal care means prenatal care after fourth month and less than five visits.

For more information about perinatal prevention services, please visit www.floridahealth.gov/diseases-and-conditions/aids/prevention/topwa1.html.

Perinatal Hepatitis B

Hepatitis B virus (HBV) infection in a pregnant woman poses a serious risk to her infant at birth. Without post-exposure prophylaxis (PEP), approximately 40% of infants born to HBV-infected mothers in the U.S. will develop chronic HBV infection, approximately one-fourth of whom will eventually die from chronic liver disease. Perinatal HBV transmission can be prevented by identifying HBV-infected pregnant women and providing hepatitis B immune globulin and hepatitis B vaccine to their infants within 12 hours of birth. Preventing perinatal HBV transmission is an integral part of the national strategy to eliminate hepatitis B in the U.S.

National guidelines call for the following:

- Universal screening of pregnant women for HBV surface antigen during each pregnancy.
- Case management of HBV-positive mothers and their infants.
- Provision of immunoprophylaxis for infants born to infected mothers, including hepatitis B vaccine and hepatitis B immune globulin.
- Routine hepatitis B vaccination for all infants, with the first dose administered at birth.

Please see Hepatitis B, Surface Antigen in Pregnant Women in Section 2: Data Summaries for Selected Reportable Diseases/Conditions of Frequent Occurrence for additional information on HBV surveillance in pregnant women. The 2015 National Immunization Survey estimates that HBV vaccination coverage for birth dose administered from birth through 3 days of age was 72.4% in the U.S. and 53.2% in Florida.[1] Birthing hospitals have a standing order to administer the birth dose; however, pediatricians sometimes choose to wait to give the first dose in their private offices. With lower-than-expected vaccination rates, Florida is currently working with the American Academy of Pediatrics to provide education reminding health care providers that the recommendation is now to provide the birth dose within 24 hours to help decrease HBV infections in newborns. Despite low compliance with administering the birth dose of HBV vaccine, only 10 perinatal hepatitis B cases have been reported over the past 10 years, with the last case occurring in 2014.

1 Hill HA, Elam-Evans LD, Yankey D, Singleton JA, Dietz V. 2016. Vaccination Coverage Among Children Aged 19–35 Months — United States, 2015. Morbidity and Mortality Weekly Report, 65 (39):1065-1071. Available at www.cdc.gov/mmwr/volumes/65/wr/mm6539a4.htm.

Perinatal Hepatitis C

Hepatitis C virus (HCV) infection is a leading cause of liver-related morbidity and mortality. Transmission of HCV is primarily via parenteral blood exposure, and HCV can be transmitted vertically from mother to child. Compared to vertical transmission for infants born to HBV-infected mothers, the rate of vertical transmission for HCV is much lower. Vertical transmission occurs in only ~6% of infants born to HCV-infected mothers, though that rate can double for women who are also infected with HIV or who have high HCV viral loads.[1] According to the Centers for Disease Control and Prevention (CDC), the rate of women of childbearing age testing positive for HCV increased by 22% across the U.S. between 2011 and 2014.[2] CDC recommends that health care providers assess all pregnant women for risk factors associated with hepatitis C and test those who may be at risk.[2] CDC also recommends testing for all infants born to HCV-infected mothers.[2] Having a pediatric specialist can assist in monitoring disease progression in babies and, when needed, aid in intervention. These children should be targeted for vaccination against hepatitis A and B and specialists should monitor any medication that could potentially harm the already fragile liver. More research is needed to better understand whether or not treatment for hepatitis C is safe for pregnant women and children. Florida enhanced efforts to identify these mothers and infants and started performing outreach to those who are at highest risk of transmission. Infants born to HCV-infected mothers should be tested for HCV at the first well-baby visit and at two months, and followed up for any adverse health outcomes.

The incidence of chronic hepatitis C in women of childbearing age has increased dramatically over the past 10 years in Florida (Figure 3). Changes in treatment options for HCV have led to an increased focus on identifying HCV infections. Given the large number of chronic hepatitis C cases reported and limited county health department resources, there have been concerns regarding data completeness and case ascertainment in the past. Earlier data are less reliable. Over the past few years,

improvements in electronic laboratory reporting (ELR) and increased focus on surveillance are believed to have improved case ascertainment. Automated case classification and reporting logic in the surveillance application have improved data quality and sensitivity. In 2014, reporting requirements were updated to include mandatory reporting of all positive and negative hepatitis results, as well as all liver function tests, to support the identification of acute hepatitis C cases. ELR has continued to expand and in 2016, 96.1% of all chronic HCV laboratory results were received by the Department electronically. In 2016, incidence increased even more, primarily due to a change in case definition that expanded the case classification criteria. The number of chronic hepatitis C cases identified in women of childbearing age increased 80% from 2012 to 2016. Despite this very large increase, the incidence of babies infected with HCV has not increased (Figure 4). In an effort to improve case ascertainment in this age group, Florida developed and implemented a surveillance case definition for perinatal hepatitis C in 2016. Previously these cases would have been captured within the chronic hepatitis C case definition. See Table 2 for additional information on perinatal hepatitis C cases reported in 2016.

Figure 3. Number of Reported Chronic Hepatitis C Cases Among Women of Childbearing Age (15-44 Years Old), Florida

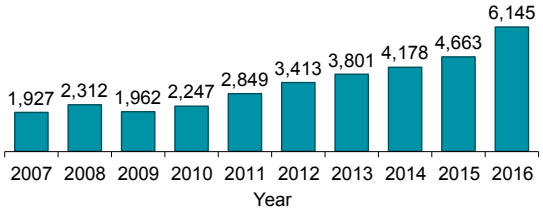


Figure 4. Number of Reported Chronic Hepatitis C Cases Among Children ≤2 Years Old (2007-2015) and Perinatal Hepatitis C Cases (2016), Florida

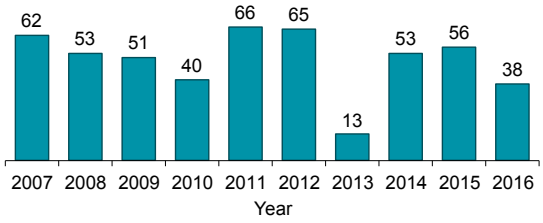


Table 2. Characteristics of Perinatal Hepatitis C Cases Reported in 2016, Florida

Summary	
Number of cases in 2016	38

Gender	Number	(Percent)
Female	20	(52.6)
Male	18	(47.4)
Unknown gender	0	(0.0)

Race	Number	(Percent)
White	25	(65.8)
Black	0	(0.0)
Other	4	(10.5)
Unknown race	9	(23.7)

Ethnicity	Number	(Percent)
Non-Hispanic	24	(63.2)
Hispanic	3	(7.9)
Unknown ethnicity	11	(28.9)

Case Classification	Number	(Percent)
Confirmed	38	(100.0)
Probable	0	(0.0)

Outcome	Number	(Percent)
Interviewed	6	(16.0)
Hospitalized	0	(0.0)
Died	0	(0.0)

Location Where Exposed	Number	(Percent)
Florida	28	(73.7)
Unknown	10	(26.3)

County of Residence	Number	(Percent)
Duval	5	(13.2)
Pinellas	5	(13.2)
Palm Beach	4	(10.5)
Brevard	3	(7.9)
Broward	2	(5.3)
Hillsborough	2	(5.3)
Sarasota	2	(5.3)
Collier	1	(2.6)
Escambia	1	(2.6)
Highlands	1	(2.6)
Indian River	1	(2.6)
Lee	1	(2.6)
Leon	1	(2.6)
Martin	1	(2.6)
Okaloosa	1	(2.6)
Orange	1	(2.6)
Osceola	1	(2.6)
Seminole	1	(2.6)
St. Johns	1	(2.6)
St. Lucie	1	(2.6)
Sumter	1	(2.6)
Volusia	1	(2.6)

1 Koneru A, Nelson N, Hariri S, Canary L, Sanders KJ, Maxwell JF, et al. 2016. Increased Hepatitis C Virus (HCV) Detection in Women of Childbearing Age and Potential Risk for Vertical Transmission — United States and Kentucky, 2011–2014. *Morbidity and Mortality Weekly Report*, 65(28):705-710. Available at www.cdc.gov/mmwr/volumes/65/wr/mm6528a2.htm.

2 Centers for Disease Control and Prevention. Increases in Hepatitis C Threaten Young Women and Babies. Available at www.cdc.gov/nchhstp/newsroom/2016/hcv-perinatal-press-release.html.

Congenital Zika Syndrome

Zika virus emerged in 2016 as a serious public health threat in Florida resulting in a large-scale response by the Florida Department of Health. Over 1,000 imported cases and 285 locally acquired cases were identified in Florida in 2016. Zika is primarily spread through the bite of the *Aedes aegypti* mosquito. Although mosquito transmission is most common, Zika virus has the potential to spread through perinatal or sexual transmission, and rarely through blood transfusions and organ or tissue donations. Illness is characterized by rash, fever, arthralgia, and conjunctivitis. Only about one in five people are symptomatic. Severe disease requiring hospitalization is uncommon. Zika virus infection during pregnancy, including asymptomatic infections, has been linked to fetal abnormalities, including microcephaly. The full spectrum of fetal outcomes resulting from Zika virus infection is yet to be determined and is being studied. Congenital Zika infections can occur in infants, with or without symptoms. An infant with at least one of the following characteristics is considered a case of congenital Zika syndrome: severe microcephaly, decreased brain tissue (including intracranial calcifications), damage to the back of the eye, congenital contractures, or hypertonia.

Surveillance for congenital Zika infections and associated birth defects primarily occurs through identifying pregnant women possibly exposed to Zika virus during pregnancy. On August 3, 2016, the Governor directed the Department to provide free Zika virus infection risk assessment and testing to pregnant women in all Florida counties. All pregnant women with laboratory evidence of Zika infection were followed throughout pregnancy. In 2016, 12 pregnant women were found to have detectable viral ribonucleic acid (RNA) in their serum for two weeks or longer (prolonged viremia). Three gave birth in 2016 and nine gave birth in 2017. One woman with prolonged viremia gave birth to an infant who tested positive for Zika virus, but appeared healthy at birth. No women with prolonged viremia delivered infants with congenital Zika syndrome. Other testing methods during pregnancy, such as amniocentesis, have not been fully evaluated and test specificity and sensitivity is undetermined. It is also unknown what proportion of infected fetuses will have abnormalities. There was only one positive amniotic fluid result in 2016 and that pregnancy resulted in a Zika-related fetal death in 2017.

Zika testing was authorized for all infants born to mothers with laboratory evidence of Zika infection during pregnancy, for infants with abnormal clinical findings potentially related to congenital Zika virus infection, and for infants born to mothers with a history of residence or travel to areas with active Zika virus transmission during pregnancy. Testing was performed at the Department's Bureau of Public Health Laboratories. Placenta samples were collected from women not previously tested or who did not have conclusive test results during pregnancy. Placenta samples testing positive for Zika RNA are indicative of infection in the mother, but not necessarily the infant. Forty-two placenta samples were tested in 2016; three were Zika RNA-positive. The first congenital Zika syndrome case in Florida was born to a mother whose Zika infection was confirmed through placenta testing. For pregnancies that resulted in fetal or infant death, attempts were made to collect samples for Zika virus testing. Tissues from one fetal death tested positive for Zika RNA in 2016. Tissues from one fetal death and cerebrospinal fluid from another fetal death tested positive for Zika virus in 2017.

All infants born to Zika-positive mothers were followed until 12 months of age. Regional Zika Pregnancy Registry Coordinators and other county-level epidemiology staff worked with health care providers to collect medical records at birth and at pediatric visits that occurred at 2, 6, and 12 months. All medical records were reviewed by abstractors from the Florida Birth Defects Registry (FBDR) program. Any infant born with laboratory evidence of Zika infection or with abnormalities associated with Zika virus were referred to Early Steps, an early intervention program in Florida. Early Steps serves these infants from birth until 36 months of age. Infants exposed to Zika virus who did not exhibit abnormalities at birth may later exhibit physical abnormalities or developmental delay. The Department's Bureau of Epidemiology, FBDR, and Early Steps worked together to identify any Zika-related abnormality that developed after birth, and ensured affected infants had access to appropriate programs. The Department is funding additional research on the long-term effects of Zika on infants.

Pregnant women and infants with evidence of Zika infection who moved out of Florida were followed by their new state or territory of residence so that follow-up could continue. Likewise, any pregnant women or infants who moved to Florida were followed during pregnancy and received full infant follow-up.

In 2016, 299 Zika infections were identified in pregnant women. Of those pregnant women, 182 had pregnancy outcomes in 2016 and 103 in 2017 (14 pregnant women were lost to follow-up). Five congenital Zika infections were identified, and four of those infants were classified as congenital Zika syndrome cases (one infant was asymptomatic). Of the four congenital Zika syndrome cases, three had microcephaly and two had intracranial calcifications.

Due to the complexities of Zika testing, tracking of pregnant women, and delay in identifying abnormalities that may develop over time, these numbers may not reflect the true incidence of disease. As we continue to learn more about Zika virus, additional infants may be identified as congenital Zika syndrome cases that were not identified at birth. Any infants born in 2017 or identified as congenital Zika cases in 2017 will be included in the *2017 Florida Morbidity Statistics Report*. See Table 3 for additional information on Zika infections in pregnant women and infants.

For more information on Zika virus disease and infection, please see 2016 Focus: Zika Virus in Florida in the Introduction and Section 2: Data Summaries for Selected Reportable Diseases/ Conditions of Frequent Occurrence.

Table 3. Characteristics of Zika Infections in Pregnant Women and Infants, Florida

Summary		Number
Number of Zika infections in pregnant women		299
Confirmed		52
Probable		247
Congenital Zika syndrome		4
Confirmed		2
Probable		2
Congenital Zika infection (asymptomatic)		1
Probable		1
Pregnancy Outcomes	**2016**	**2017**
Live births	176	103
Infants tested	140	95
Infants with laboratory evidence of Zika	4	1
Non-live births	6	4
Fetuses tested	1	2
Fetuses with laboratory evidence of Zika	1	2
Lost to follow-up	6	8
Transfers		**Number**
Pregnant women with Zika infections transferred to Florida		1
Pregnant women with Zika infections transferred out of Florida		5

Section 10

Travel-Related Illnesses

Travel-Related Illnesses

Background

With the ease of international travel and the large number of tourists that visit Florida each year, there is significant potential for the importation of diseases into the state. Travelers are an epidemiologically important population because of their mobility, their potential for exposure to diseases outside their home state or country, and the possibility that they may carry non-endemic diseases between states or countries. Travelers represent a unique subset of people. Their exposures, behaviors, and disease susceptibility may differ dramatically from those of the local population. Travelers themselves are a heterogeneous group, and different subgroups of travelers may have different risks due to types of activities, behaviors, and other factors.

The risk of travel-related illness varies depending on destination and traveler characteristics. It can be difficult to obtain good travel-related illness data. Many travelers who become infected have returned to their home countries by the time symptoms develop, so they will not be included in the visited country's surveillance data. Similarly, diseases with short incubation periods or brief durations may have resolved by the time a traveler returns home and thus may not be counted in surveillance data of the traveler's country of origin. If the illness is mild, the traveler may never seek health care, or diagnostic tests may not be performed to accurately diagnose the cause. Additionally, travelers often visit multiple locations and it may be difficult to determine the location where the exposure occurred. Travel-specific factors to consider include trip length, destinations, specific travel itineraries, use of preventive measures, and purpose of travel.

The Florida Department of Health collects travel information on people with reportable diseases to determine where their likely exposure occurred. Travel-related data collection is integrated into surveillance activities to identify patterns that will inform targeted prevention measures and estimate the burden of travel-related diseases and conditions. For example, Zika virus emerged as a public health threat in Central and South America and the Caribbean, and 1,122 travel-related Zika virus cases were reported in Florida in 2016. As a result of some of these introductions, ongoing local transmission of Zika virus occurred in four different parts of Miami-Dade County in 2016. Identification of populations that were more likely to both introduce and support increased risk of further transmission of Zika virus was an integral part of surveillance and prevention strategies.

Methods

In Florida, data for over 80 reportable diseases and conditions are entered, managed, and analyzed within the reportable diseases surveillance system, Merlin. Data for HIV, sexually transmitted disease, tuberculosis, cancer, and congenital anomalies are not maintained in Merlin and were not included in this analysis. Exposure information was used to classify all cases in as exposed in Florida, exposed in another U.S. state or territory, or exposed outside the U.S. Confirmed and probable cases of diseases and conditions reported in Merlin from 2007 to 2016 were reviewed and summarized according to their exposure categories and locations where acquired. Specific exposure locations were reviewed for 2016 cases with travel-related illnesses. Chronic hepatitis and hepatitis B in pregnant women were excluded from all analysis, since it is difficult to determine when and where a person was exposed with these chronic diseases. Only cases reported in Florida residents were included, with the exception of Zika virus cases, which included non-Florida residents as well.

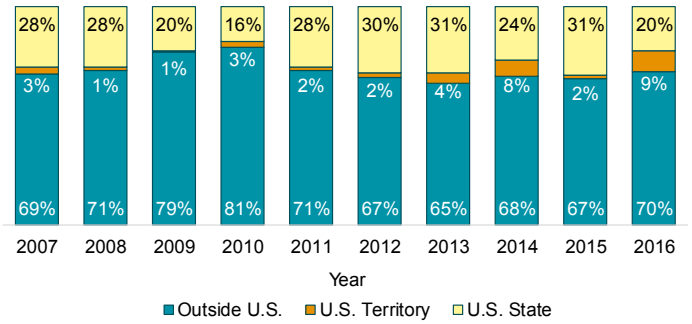
General Trends

The number of reportable diseases captured in Merlin each year increased ~20% from 2007 to 2016 with over 21,000 cases reported in 2016 (excluding chronic hepatitis). Generally, 6-8% of cases each year were associated with travel-related illnesses. Peaks occurred in 2010 and 2016, when 10% and 13% of cases were associated with travel-related illnesses, respectively. In 2016, 2,756 cases associated with travel-related illness were reported. The increase relative to previous years was due to 1,122 travel-related Zika virus cases identified in Florida. Factors contributing to the increase in illnesses acquired outside Florida in 2010 include a large earthquake in Haiti that occurred on January 12, 2010, creating enormous devastation. Florida's proximity to Haiti resulted in more than 22,000 people entering Florida from Haiti as part of federal repatriation and humanitarian parolee efforts. The

number of reportable disease and condition cases identified in people with exposures in Haiti more than doubled from the previous year (114 cases identified in 2009, 253 cases in 2010, 111 cases in 2011). Another contributing factor was a change in the giardiasis case definition in 2010, which allowed for asymptomatic infections to be counted as confirmed cases. Asymptomatic infections are commonly identified as part of refugee health screening. In 2011, the case definition reverted back to requiring symptoms to meet the surveillance case definition. As a result, there was a large spike in giardiasis cases reported in 2010 relative to other years.

Over the past 10 years, 71% of cases with travel-related illnesses were exposed outside the U.S., though this varies annually from a low of 65% in 2007 to a high of 81% in 2010 (Figure 1). Generally, 1-2% of cases with travel-related illnesses were exposed in U.S. territories each year. The number and percentage of cases exposed in U.S. territories increased in 2013, 2014, and 2016 due to widespread transmission in Puerto Rico of dengue fever, chikungunya fever, and Zika fever, respectively.

Figure 1: Percent of Travel-Related Illnesses by Exposure Location Category, Florida, 2007-2016

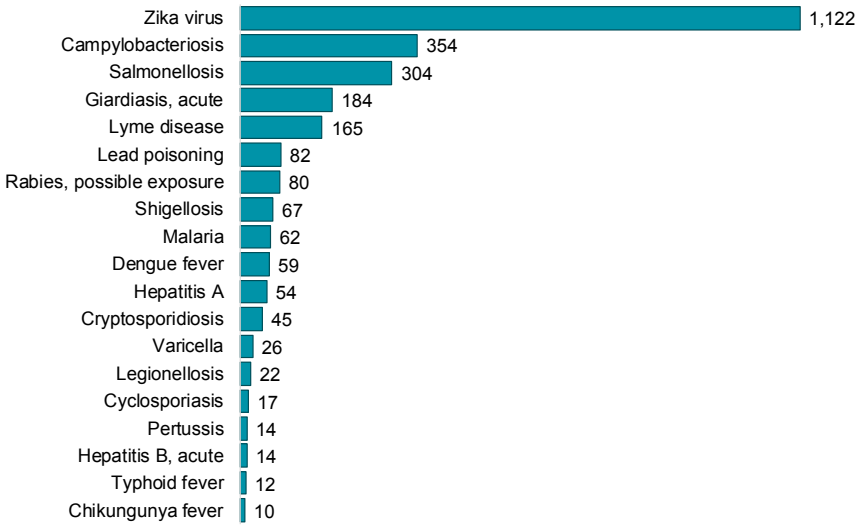


Note that 19 cases were excluded from Figure 1 because they fell into more than one exposure category (e.g., exposure may have occurred in another U.S. territory or outside the U.S.)

Summary of 2016 Data

Nineteen diseases accounted for 98% of the 2,756 cases with travel-related illnesses reported in 2016 (Figure 2). There were <10 cases with travel-related illnesses reported for each of 22 diseases which were excluded in the subsequent summaries here based on the low number of cases that were travel-associated.

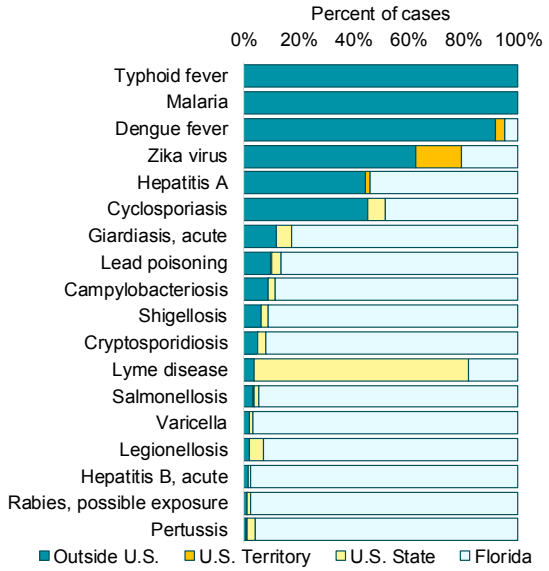
Figure 2: Number of Travel-Related Illnesses by Disease for Diseases With ≥10 Travel-Related Cases (N=2,693), Florida, 2016



Areas of endemicity contribute to travel-related infection patterns and vary by disease; some diseases are endemic in other parts of the U.S., and others are more commonly seen in other U.S. territories or countries. However, travel-related infection patterns can also reflect travel patterns among people. Illnesses acquired in other southern U.S. states are likely to be identified in Florida residents due to proximity and frequency of travel. Florida has a large Hispanic population, and travel between Florida and Central and South America, Mexico, and the Caribbean is very common. The large numbers of travelers to and from these areas contribute to the number of cases associated with travel-related illnesses reported in Florida.

Disease cases reported in Florida in 2016 that were primarily acquired outside the U.S. included typhoid fever (100%), malaria (100%), chikungunya fever (100%), dengue fever (92%), and Zika virus (60%) (Figure 3). For many diseases and conditions of frequent occurrence, the majority of the cases are acquired in Florida. Due to the high volume of these diseases, the number of cases that were exposed outside Florida, while only a small percentage of total cases reported, contributes substantially to the volume of cases with travel-related illnesses. These diseases tend to be common in other parts of the U.S. and the world, so the distribution of exposure locations for some of these diseases is less likely to represent patterns of disease endemicity and more likely to reflect travel patterns among people. Examples of these diseases and conditions include acute hepatitis B, campylobacteriosis, cryptosporidiosis, salmonellosis, shigellosis, pertussis, varicella, legionellosis, and possible exposure to rabies. Zika virus transmission was widespread in Puerto Rico in 2016, with over 34,000 symptomatic cases reported to the Centers for Disease Control and Prevention. Travelers exposed in Puerto Rico accounted for 20% of the 1,122 travel-related Zika disease and infection cases identified in Florida in 2016 and 91% of all cases with travel-related illnesses exposed in a U.S. territory in 2016. Lyme disease is the most common tick-borne disease in the U.S. and is highly endemic in states in the northeast and upper midwestern U.S. In 2016, 73% of Lyme disease cases were exposed in U.S. states.

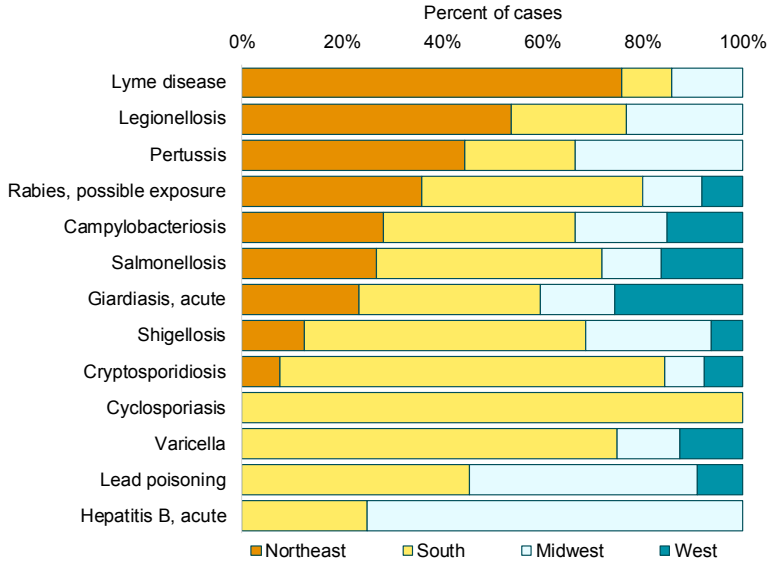
Figure 3: Percent of Travel-Related Illnesses by Exposure Location Category for Diseases With ≥10 Travel-Related Cases (N=2,693), Florida, 2016



Note that the exposure category was known for 2,677 cases of travel-related illnesses in 2016. In addition to these cases, an additional 16 cases were known to be exposed outside of Florida, but the location was unknown (i.e., another U.S. state, U.S. territory, or outside the U.S.). An additional 772 cases of these diseases did not have any exposure information. These cases are excluded from this figure.

More than 40% of cases with travel-related illnesses exposed in known U.S. states outside of Florida were exposed in the northeast, though this percentage varies dramatically by disease (Figure 4). The percent of cases exposed in the northeast is over 40% for Lyme disease (76%), legionellosis (54%), and pertussis (44%). Other diseases and conditions have more cases exposed in the south, including cyclosporiasis (100%), cryptosporidiosis (77%), varicella (75%), shigellosis (56%), lead poisoning (45%), salmonellosis (45%), and possible exposure to rabies (44%).

Figure 4: Percent of Cases Exposed in U.S. States Outside Florida for Diseases With ≥10 Travel-Related Cases (N=526) by Region, Florida, 2016

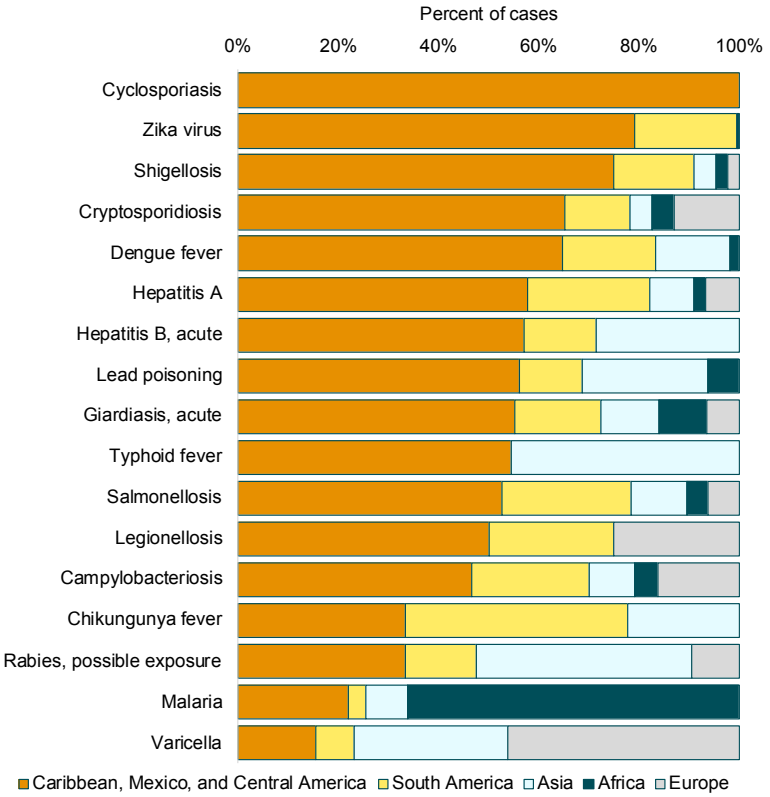


Note that 526 travel-related cases were exposed in U.S. states outside Florida. This includes 64 cases where the exact state was unknown and 11 cases with exposures in multiple regions. These 75 cases are excluded from this figure.

U.S. Census Bureau regions were used for this figure (map available at www.census.gov/geo/reference/webatlas/regions.html).

Over 60% of cases with travel-related illnesses exposed in known countries outside the U.S. were exposed in the Caribbean, Mexico, and Central America (Figure 5). Exposures in Asia were common for typhoid fever (45%), possible exposure to rabies (43%), varicella (31%), acute hepatitis B (29%), and lead poisoning (25%). Exposures in Africa were common for malaria (66%).

Figure 5: Percent of Cases Exposed Outside the U.S. for Diseases With ≥10 Travel-Related Cases (N=1,894) by Region, Florida, 2016



Note that 1,894 travel-related cases were exposed outside the U.S. This includes 144 cases where the exact country was unknown, 223 cases with exposures in multiple regions, and 35 cases exposed in other regions not captured in this figure. These 402 cases are excluded from this figure.

Section 11

2016 Publications and Reports

Publications With Florida Department of Health Authors

Below is a list of articles with Florida Department of Health (DOH) authors that were published in peer-reviewed journals in 2016. Note that DOH authors appear in bold font.

Bingham AM; **Cone M**; **Mock V**; **Heberlein-Larson L**; **Stanek D**; **Blackmore C**; **Likos A**. 2016. Comparison of Test Results for Zika Virus RNA in Urine, Serum, and Saliva Specimens from Persons with Travel-Associated Zika Virus Disease — Florida, 2016. *Morbidity and Mortality Weekly Report*, 65(18): 475-478. Available at www.cdc.gov/mmwr/volumes/65/wr/mm6518e2.htm.

Brosco JH, **Brosco JP**. 2016. Zika as a Catalyst for Social Change. *Pediatrics*, 138(6): e20162095.

Brosco JP. 2016. Child Rights and Clinical Bioethics: Historical Reflections on Modern Medicine and Ethics. *Perspectives in Biology and Medicine*, 58(3):356-364.

Brosco JP, Bona A. 2016. Changes in Academic Demands and Attention-Deficit/Hyperactivity Disorder in Young Children. *JAMA Pediatrics*, 170(4):396-397.

Cathey EF, Matthias J, Beedie KA, Chapman KA. 2016. Notes from the Field: Large Tuberculosis Contact Investigation Involving Two Hospitals — Okaloosa County, Florida, 2014. *Morbidity and Mortality Weekly Report*, 65(47):1349-1350. Available at www.cdc.gov/mmwr/volumes/65/wr/mm6547a3.htm?s_cid=mm6547a3_w.

Dharan NJ; Blakemore R; Sloutsky A; Kaur D; Alexander RC; Ghajar M; Musser KA; Escuyer VE; **Rowlinson M-C**; **Crowe S**; Laniado-Laborin R; Valli E; Nabeta P; Johnson P; Alland D. 2016. Performance of the G4 Xpert® MTB/RIF Assay for the Detection of *Mycobacterium tuberculosis* and Rifampin Resistance: A Retrospective Case-Control Study of Analytical and Clinical Samples From High- and Low-Tuberculosis Prevalence Settings. *BMC Infectious Diseases*, 16(1):764. Available at https://bmcinfectdis.biomedcentral.com/articles/10.1186/s12879-016-2039-4.

Fennie KP; Trepka MJ; **Maddox LM**; Lutfi K; Lieb S. 2016. Comparison of Individual and Area Level Factors Between HIV-Infected Cisgender and Transgender Individuals in Florida (2006-2014). *AIDS and Behavior*, 20(10):2186-91

Kendrick K, **Brown V**, **Lords C**, **Matthias J**, **Henning I**, **Blackmore C**, **Likos A**. 2016. Full House: A Retrospective Analysis of High Sexually Transmitted Infection Prevalence among Adult Film Actors at a Singular Residence. *Sexually Transmitted Diseases*, 43(9):556-559. Available at http://journals.lww.com/stdjournal/Fulltext/2016/09000/Full_House___A_Retrospective_Analysis_of_High.5.aspx.

Likos A, Griffin I, Bingham AM, Stanek D, Fischer M, **White S, Hamilton J, Eisenstein L, Atrubin D, Mulay P, Scott B, Jenkins P, Fernandez D, Rico E, Gillis L, Jean R, Cone M, Blackmore C,** McAllister J, Vasquez C, **Rivera L, Philip C.** 2016. Local Mosquito-Borne Transmission of Zika Virus — Miami-Dade and Broward Counties, Florida, June–August 2016. *Morbidity and Mortality Weekly Report*, 65(38):1032-1038. Available at www.cdc.gov/mmwr/volumes/65/wr/mm6538e1.htm?s_cid=mm6538e1_w.

Marston CK, Ibrahim H, **Lee P**, **Churchwell G**, **Gumke M**, **Stanek D**, et al. 2016. Anthrax Toxin-Expressing *Bacillus cereus* Isolated from an Anthrax-Like Eschar. *PLoS ONE*, 11(6):e0156987. Available at http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0156987#sec001.

Matthias J, Dwiggins P, Totten Y, Blackmore C, Wilson C, Peterman TA. 2016. Notes from the Field: Evaluation of the Sensitivity and Specificity of a Commercially Available Rapid Syphilis Test – Escambia County, Florida, 2016. *Morbidity and Mortality Weekly Report*, 65(42):1174-1175. Available at www.cdc.gov/mmwr/volumes/65/wr/mm6542a5.htm.

Publications With Florida Department of Health Authors (Continued)

Matthias J, Pritchard PS, Martin SW, **Dusek C, Cathey E, D'Alessio R,** Kirsch M. 2016. Sustained Transmission of Pertussis in Vaccinated, 1–5-Year-Old Children in a Preschool, Florida, USA. *Emerging Infectious Diseases*, 22(2):242-246. Available at https://wwwnc.cdc.gov/eid/article/22/2/15-0325-f1.

Meaney-Delman D, Oduyebo T, Polen KN, White JL, **Bingham AM**, Slavinski SA, **Heberlein-Larson L**, St George K, Rakeman JL, Hills S, Olson CK, Adamski A, Culver Barlow L, Lee EH, **Likos AM**, et al. 2016. Prolonged Detection of Zika Virus RNA in Pregnant Women. *Obstetrics & Gynecology*, 128(4):724-730

Mulay PR, **Clark G**, **Jackson WL**, Calvert GM. 2016. Notes from the Field: Acute Sulfuryl Fluoride Poisoning in a Family — Florida, August 2015. *Morbidity and Mortality Weekly Report*, 65 (27):698–699. Available at www.cdc.gov/mmwr/volumes/65/wr/mm6527a4.htm.

Nasrullah M; Wesolowski LG; Ethridge SF; Cranston K; Pentella M; Myers RA; Rudrik JT; Hutchinson AB; **Bennett SB**; et al. 2016. Acute Infections, Cost and Time to Reporting of HIV Test Results in Three U.S. State Public Health Laboratories. *Journal of Infection*, 73(2):164-172.

Oliver SE, Aubin M, **Atwell L, Matthias J,** Cope A, Mobley V, et al. 2016. Ocular Syphilis — Eight Jurisdictions, United States, 2014–2015. *Morbidity and Mortality Weekly Report*, 65(43):1185-1188. Available at www.cdc.gov/mmwr/volumes/65/wr/mm6543a2.htm.

Palcic JD; Donovan SF; **Jones JS**; **Flagg EL**; **Salonga RA**; **Mock WE**; **Asirvatham VS**. 2016. Lewisite Metabolites in Urine by Solid Phase Extraction-Dual Column Reversed-Phase Liquid Chromatography-Isotope Dilution Tandem Mass Spectrometry. Journal of Analytical Toxicology;40 (6):419-426.

Schnabel D; Esposito DH; Gaines J; Ridpath A; Barry MA; Feldman KA; Mullins J; Burns R; Ahmad N; Nyangoma EN; Nguyen DB; Perz JF; Moulton-Meissner H; Jensen BJ; Lin Y; Posivak-Khouly L; Jani N; Morgan O; Brunette GW; **Pritchard PS**; et al. 2016. Multistate US Outbreak of Rapidly Growing Mycobacterial Infections Associated with Medical Tourism to the Dominican Republic, 2013–2014. *Emerging Infectious Diseases*, 22(8):1340-1347. Available at https://wwwnc.cdc.gov/eid/article/22/8/15-1938_article.

Sheehan DM, Trepka MJ, Fennie KP, Dillon FR, Madhivanan P, **Maddox LM**. 2016. Neighborhood Latino Ethnic Density and Mortality Among HIV-Positive Latinos by Birth Country/Region, Florida, 2005-2008. *Ethnicity & Health*, 21(3):268-283.

Tanner JP, Salemi JL, Stuart AL, Yu H, **Jordan MM**, **DuClos C**, **Cavicchia P**, **Correia JA**, **Watkins SA**, Kirby RS. 2016. Uncertainty in Maternal Exposures to Ambient PM2.5 and Benzene During Pregnancy: Sensitivity to Exposure Estimation Decisions. *Spatial and Spatio-temporal Epidemiology*, 17:119-129.

Trepka MJ; Fennie KP; Sheehan DM; Niyonsenga T; Lieb S; **Maddox LM**. 2016. Racial-Ethnic Differences in All-Cause and HIV Mortality, Florida, 2000-2011. *Annals of Epidemiology*, 26(3):176-182.

Trepka MJ, Sheehan DM, Fennie KP, Niyonsenga T, Lieb S, **Maddox LM**. 2016. Completeness of HIV Reporting on Death Certificates for Floridians Reported with HIV Infection, 2000-2011. *AIDS Care*, 28(1):98-103.

Articles Published in Florida *Epi Update* Issues

The Florida Department of Health (DOH) Bureau of Epidemiology (BOE) publishes a quarterly report called *Epi Update* to showcase epidemiological work from around the state. Both state- and local-level staff submit articles for publication. Below is a list of articles published in 2016 issues.

2016 Issue 1

Cryptosporidium Outbreak Among Two Households With Shared Zoonotic Exposures, Flagler County, February 2015

Authors:

Jenny Crain, MS, MPH, CPH	(DOH-Bureau of Epidemiology)
Suzette Reese, RN	(DOH-Flagler)
Danielle Stanek, DVM	(DOH-Bureau of Epidemiology)

Investigation of Pesticide Poisoning Among Farmworkers, Palm Beach County

Authors:

Prakash Mulay, MBBS, MPH	(DOH-Bureau of Epidemiology)
Antonio Tovar-Aguilar, PhD	(DOH-Bureau of Epidemiology
Diana Connor, MPH	(DOH-Palm Beach)

Viral Meningitis Outbreak in a Junior-Senior High School, Gulf County, August 2015

Authors:

Tiffany Winston, MPH	(DOH-Bureau of Epidemiology)
Brittany Beauchamp, RN	(DOH-Gulf)

Florida Year-to-Date Mosquito-Borne Disease Summary, 2016

Authors:

Andrea Bingham, PhD, MSPH	(DOH-Bureau of Epidemiology)
Shaiasia Itwaru-Womack, MPH	(DOH-Bureau of Epidemiology)
Danielle Stanek, DVM	(DOH-Bureau of Epidemiology)
Lea Heberlein-Larson, BS, MPH, SM(ASCP)^{CM}	(DOH-Bureau of Public Health Laboratories)
Valerie Mock	(DOH-Bureau of Public Health Laboratories)
Lylah Seaton, MPH, MT(ASCP)	(DOH-Bureau of Epidemiology)

Reportable Diseases in Florida, October–December, 2015

Authors:

Nicole Kikuchi, MPH	(DOH-Bureau of Epidemiology)

2016 Issue 2

A Salmonella Outbreak Associated With a Quinceañera, Orange County, May 2015

Authors:

Jennifer T. Jackson, MPH	(DOH-Orange)
Benjamin G. Klekamp, MSPH, CPH	(DOH-Orange)
Tania Slade, MPH	(DOH-Seminole)
Dean Bodager, RS, DAAS, MPA	(DOH-Bureau of Epidemiology)

Locally Acquired Chikungunya Fever Case and Field Survey Response, St. Lucie County

Authors:

Kim Kossler, MPH, RN, CPH	(DOH-St. Lucie)
Ruth Kim, MD, MPH	(DOH-St. Lucie)

Articles Published in Florida *Epi Update* Issues (Continued)

Florida Year-to-Date Mosquito-Borne Disease Summary, 2016

Authors:

Andrea Bingham, PhD, MSPH	(DOH-Bureau of Epidemiology)
Shaiasia Itwaru-Womack, MPH	(DOH-Bureau of Epidemiology)
Danielle Stanek, DVM	(DOH-Bureau of Epidemiology)
Lea Heberlein-Larson, BS, MPH, SM(ASCP)^{CM}	(DOH-Bureau of Public Health Laboratories)
Valerie Mock	(DOH-Bureau of Public Health Laboratories)
Lylah Seaton, MPH, MT(ASCP)	(DOH-Bureau of Epidemiology)

Reportable Diseases in Florida, January—June, 2016

Authors:

Nicole Kikuchi, MPH	(DOH-Bureau of Epidemiology)

2016 Issue 3

Legionnaires' Disease Outbreak Associated with Hotel, Seminole County, August 2014–April 2015

Authors:

Tania Slade, MPH	(DOH-Seminole)
Dean Bodager, RS, DAAS, MPA	(DOH-Bureau of Epidemiology)

The Whole Gemisch: Public Health Aspects of the Lake Okeechobee, Indian River Lagoon, and St. Lucie River Harmful Algal Blooms (HABs)

Authors:

Andrew Reich, MS, MSPH, RRT	(DOH-Bureau of Epidemiology)

Locally Acquired Dengue Fever Response in Monroe County, June 2016

Authors:

Melani Dickenson, MPH, CPH	(DOH-Santa Rosa)
M. Rachael Straver, DVM, MPH	(DOH-Seminole)

Florida Year-to-Date Mosquito-Borne Disease Summary, 2016

Authors:

Andrea Bingham, PhD, MSPH	(DOH-Bureau of Epidemiology)
Shaiasia Itwaru-Womack, MPH	(DOH-Bureau of Epidemiology)
Danielle Stanek, DVM	(DOH-Bureau of Epidemiology)
Lea Heberlein-Larson, BS, MPH, SM(ASCP)^{CM}	(DOH-Bureau of Public Health Laboratories)
Valerie Mock	(DOH-Bureau of Public Health Laboratories)
Lylah Seaton, MPH, MT(ASCP)	(DOH-Bureau of Epidemiology)

Reportable Diseases in Florida, July–September, 2016

Authors:

Nicole Kikuchi, MPH	(DOH-Bureau of Epidemiology)

Articles Published in Florida *Epi Update* Issues (Continued)

2016 Issue 4

Infant *Cronobacter* Illness Investigation, Polk County, November 2014

Authors:

Gregory Danyluk, PhD, MPH, MS	(DOH-Polk)
Dean Bodager RS, MPA	(DOH-Bureau of Epidemiology)
Leslie McKay, MPH, CPH	(DOH-Polk)

Increase in Animal Bites in Volusia County During a Natural Disaster

Authors:

Paul Rehme, DVM, MPH	(DOH-Volusia)
Jenna Erickson	(DOH-Volusia)

Community Assessment for Public Health Emergency Response (CASPER) for Mosquito-Borne Illness and Influenza Season Preparedness, Pinellas County, October 2016

Authors:

Ashley Joseph, MPH	(DOH-Pinellas)
Andrea Leapley, MPH	(DOH-Pinellas)
JoAnne Lamb, MPH	(DOH-Pinellas)

Florida Year-to-Date Mosquito-Borne Disease Summary, 2016

Authors:

Andrea Bingham, PhD, MSPH	(DOH-Bureau of Epidemiology)
Shaiasia Itwaru-Womack, MPH	(DOH-Bureau of Epidemiology)
Danielle Stanek, DVM	(DOH-Bureau of Epidemiology)
Lea Heberlein-Larson, BS, MPH, SM(ASCP)^{CM}	(DOH-Bureau of Public Health Laboratories)
Valerie Mock	(DOH-Bureau of Public Health Laboratories)
Lylah Seaton, MPH, MT(ASCP)	(DOH-Bureau of Epidemiology)

Reportable Diseases in Florida, October-December, 2016

Authors:

Nicole Kikuchi, MPH	(DOH-Bureau of Epidemiology)

Additional Reports Available Online

Florida Arboviral Disease Reports
www.FloridaHealth.gov/diseases-and-conditions/mosquito-borne-diseases/surveillance.html

Florida Birth Defects Registry Reports
www.FloridaHealth.gov/AlternateSites/FBDR/Data_Research/publications.html

Florida Bureau of Public Health Laboratories Reports
www.FloridaHealth.gov/programs-and-services/public-health-laboratories/forms-publications/index.html

Florida Cancer Reports
www.FloridaHealth.gov/diseases-and-conditions/cancer/cancer-registry/reports/index.html

Florida Community Health Assessment Resource Tool Set
www.FLHealthCHARTS.com

Florida Environmental Public Health Tracking
www.FloridaTracking.com

Florida Food and Waterborne Disease Reports
www.FloridaHealth.gov/diseases-and-conditions/food-and-waterborne-disease/fwdp-annual-reports.html

Florida HIV/AIDS Reports
www.FloridaHealth.gov/diseases-and-conditions/aids/surveillance/epi-slide-sets.html

Florida Influenza Reports
www.FloridaHealth.gov/FloridaFlu

Florida Integrated Food Safety Center of Excellence Resources
www.CoEFoodSafetyTools.org

Florida Sexually Transmitted Disease Reports
www.FloridaHealth.gov/diseases-and-conditions/sexually-transmitted-diseases/std-statistics/

Florida Tick-Borne Disease Reports
www.FloridaHealth.gov/diseases-and-conditions/tick-and-insect-borne-diseases/tick-surveillance.html

Florida Tuberculosis Reports
www.FloridaHealth.gov/diseases-and-conditions/tuberculosis/tb-statistics/

Division of Disease Control
and Health Protection
Bureau of Epidemiology
4052 Bald Cypress Way,
Bin #A-12
www.FloridaHealth.gov/
MorbidityStatisticsReport