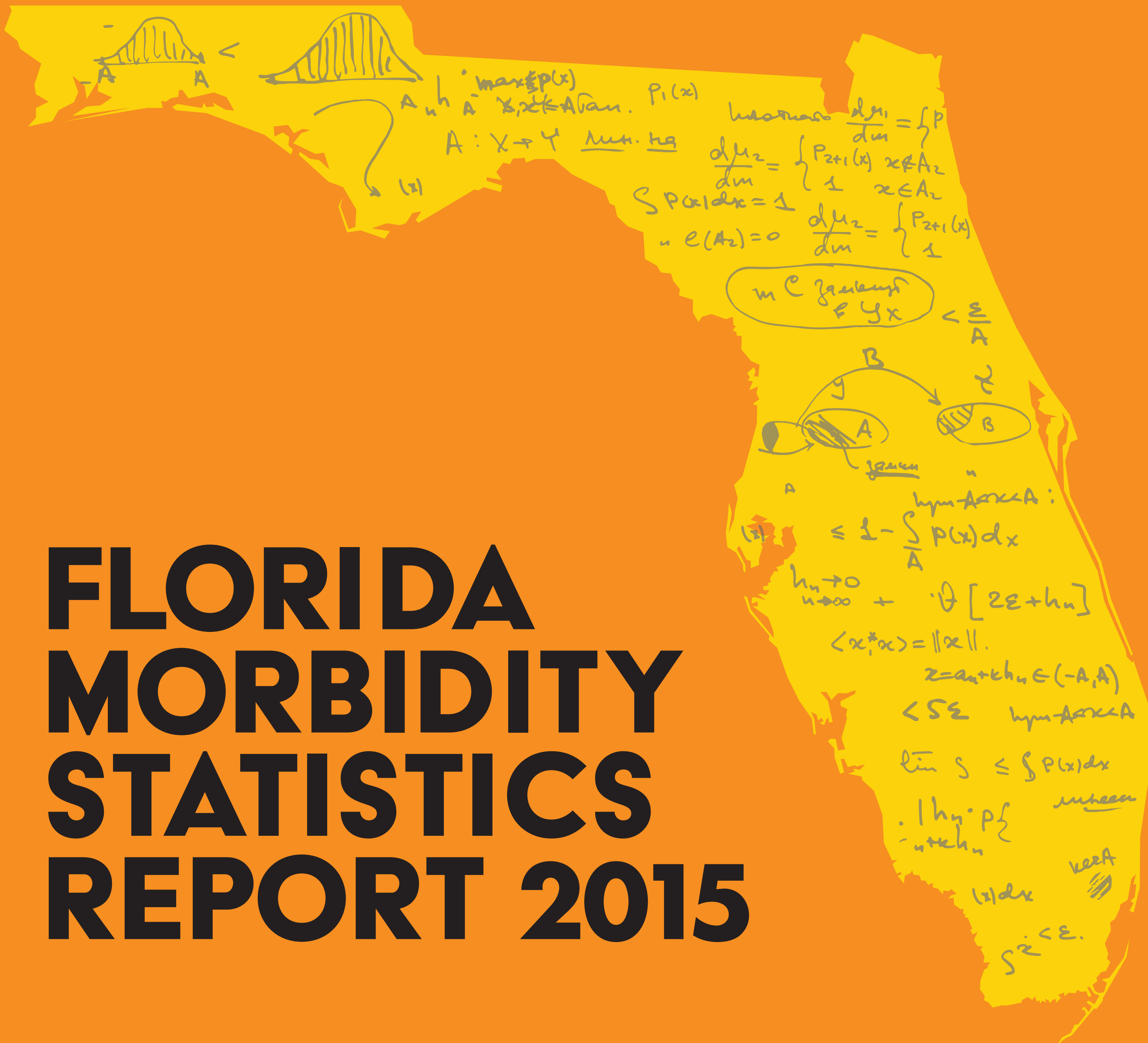

FLORIDA MORBIDITY STATISTICS REPORT 2015

Florida HEALTH

Bureau of Epidemiology

Florida Morbidity Statistics Report

2015

Florida Department of Health
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www.FloridaHealth.gov/MorbidityStatisticsReport

Published April 2017

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Background

The *Florida Morbidity Statistics Report* is the official record of the occurrence of reportable diseases in Florida and this edition marks the 60th publication since 1945. Numerous reports describing disease burden are produced throughout the year while investigations are ongoing; however, this report is noteworthy as the data contained here are final. The mission of the Florida Department of Health (DOH) is to protect, promote, and improve the health of all people in Florida through integrated state, county, and community efforts. Per section 381.003, Florida Statutes "The Florida Department of Health 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 are collected by multiple means:

- Passive surveillance relies on physicians, laboratories, and other health care providers to report diseases to the Florida Department of Health (DOH) 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 DOH as electronic records. This occurs automatically, without the involvement of a person once the electronic transmission process has been established between DOH and the reporting partner.
- Active surveillance entails DOH staff regularly contacting hospitals, laboratories, and physicians in an effort to identify all cases of a given disease or condition.

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.

Centers for Disease Control and Prevention. 2015. *Epidemiology and Prevention of Vaccine-Preventable Diseases*, 13th ed. Washington, D.C.: Public Health Foundation. Available at www.cdc.gov/vaccines/pubs/pinkbook/index.html.

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Centers for Disease Control and Prevention. 2016. *CDC Health Information for International Travel 2016*. New York: Oxford University Press.

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.

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 September 15, 2016, after 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 2015 may have actually had onset or been diagnosed in 2014; rarely, cases reported in 2015 may have onset or diagnosis dates prior to 2014. Additionally, cases with illness onset or diagnosis late in 2015 may not have been reported to public health by the end of the 2015 report year, and thus would not be included in this report for most diseases. Information by disease is listed below.

AIDS and HIV Infection

Year: Data are aggregated by calendar year.

Cases included: HIV infection cases are assigned to a report year based on the date of the first confirmed HIV test. AIDS cases are assigned to a report year based on the date of the first AIDS defined opportunistic infection and/or a CD4 count below 200 cells/mm^3 in a person with HIV infection. The 2015 AIDS and HIV infection dataset was frozen on June 30, 2016. Changes occurring after that point that affect the number of cases in 2015 or earlier will be updated in the following year’s dataset.

Please note that prior to 2014, HIV infection and AIDS cases were assigned to a report year based on the date the case was entered into the surveillance system.

Sexually Transmitted Diseases (STDs)

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 2015). 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 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 MMWR year (see STD report year above for explanation of 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").

All Other Diseases

Year: Data are aggregated by MMWR year (see STD report year above 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 Bureau of Epidemiology (BOE) for state-level review. In the surveillance application, Merlin, this is referred to as "date reported to BOE."

Data in this report are consistent with national surveillance data published weekly by CDC in the MMWR. Additionally, 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 (i.e., suspect cases are excluded) in this report unless otherwise specified.

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 2015 as a result of position statements approved by the Council of State and Territorial Epidemiologists (CSTE) in 2014.

Summary of case definition changes effective January 2015:

a. Arboviral disease: removed fever as a clinical requirement for neuroinvasive disease and added additional symptoms.

b. Campylobacteriosis: moved culture-independent testing in the presence of symptoms and absence of another organism from suspect to probable case classification.

c. Dengue fever: updated clinical description to include those with just fever, combined symptoms of dengue hemorrhagic fever and dengue shock syndrome into a severe dengue category, and added additional symptoms.

d. *Haemophilus influenzae*: expanded confirmatory laboratory criteria to include polymerase chain reaction (PCR), eliminated clinically compatible illness from the confirmed case classification, and specified that meningitis is required to meet the clinical criteria for probable case classification.

e. Hantavirus infection: expanded to include hantavirus infections that do not progress to hantavirus pulmonary syndrome (HPS).

f. Meningococcal disease: eliminated clinically compatible illness from case classifications when laboratory evidence is present and moved PCR from presumptive laboratory criteria to confirmatory laboratory criteria.

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. Cases 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 September 15, 2016. 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. California Serogroup Virus Disease
California Serogroup Virus Neuroinvasive Disease - 06250
California Serogroup Virus Non-Neuroinvasive Disease - 06251

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

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

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

e. *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)

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

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

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

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

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

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

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

m. 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)

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

o. Typhus Fever
Typhus Fever, Epidemic (*Rickettsia prowa*zekii) - 08000
Typhus Fever, Endemic (*Rickettsia typhi*) - 08100 (EXPIRED)
Typhus Fever - 08190 (EXPIRED)

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

q. 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

r. 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)

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

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

Summary of Key Disease Trends in 2015

Sexually transmitted diseases (STDs), HIV infection, 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 gonorrhea, HIV infection, and AIDS have been decreasing. However, in 2015, both gonorrhea and HIV infection increased, in addition to chlamydia and syphilis. Gonorrhea increased in 2013, decreased slightly in 2014, then increased more dramatically in 2015 (15.3% over the previous 5-year average rate). The largest proportional rate increase was for syphilis, which has been increasing since 2009; the 2015 incidence rate was 45.1% higher than the previous 5-year average rate. Chlamydia is the highest-volume reportable disease in Florida, with over 90,000 cases reported in Florida in 2015. HIV infection increased slightly in 2014 and increased slightly again in 2015 partially due to a statewide increase in infected men who have sex with men; the 2015 incidence rate was 2.5% higher than the previous 5-year average rate. AIDS continued to decrease in 2015 and the incidence rate was 25.1% lower than the previous 5-year average rate.

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 remained stable in 2015. The incidence rate in 2015 is 17.6% lower than the previous 5-year average rate. 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. In 2015, the proportion of all Florida TB cases in people born in a foreign country has grown to 59.1% of all TB cases in 2015.

Florida consistently has one of the highest rates of enteric disease 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 almost 6,000 cases reported in 2015. However, 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 difference in rates between this age group and other age groups is not as great. Unlike other enteric diseases, the distribution of campylobacteriosis cases is bimodal, with peaks in young children and increasing incidence with age 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. While salmonellosis incidence remained relatively stable in 2015, incidence of campylobacteriosis and STEC continued to increase. Incidence rates for both campylobacteriosis and STEC have increased over the past 10 years, though the rate of campylobacteriosis increased dramatically in 2015 (71.3% compared to the previous 5-year average rate). Culture-independent diagnostic testing for both diseases has been widely implemented over the past few years, improving case detection. 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. As expected, incidence decreased in 2015. Incidence of cryptosporidiosis decreased in 2015 following a very large peak in activity in 2014 concentrated in the central western part of the Florida peninsula. Activity in 2015 remained focused in the same part of the state.

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 B has been relatively stable since 2009 and decreased just slightly in 2015. The overall rate of reported chronic hepatitis C has increased very slightly each year for the past 10 years, and continued to increase in 2015. The increase in chronic hepatitis C in 2014 and 2015 is likely due to improved case ascertainment from electronic laboratory reporting and automated case classification and reporting logic added to the reportable disease surveillance system, Merlin. Collection of risk factor information has also been improved for chronic hepatitis C cases. Although the overall rate of chronic hepatitis C has gradually increased, the rate in young adults increased substantially. In response to the increased rate in young adults, an enhanced surveillance project focusing on chronic hepatitis in young adults was funded and implemented in 2012 in Florida. The additional follow-up has resulted in identifying acute cases that would otherwise have been misclassified as chronic. The incidence of both acute hepatitis B and acute hepatitis C increased in 2015. A large number of new hepatitis C infections in young adults in Florida are due to injection drug use (IDU). 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. Disease-specific chapters for chronic hepatitis B and C have been added to the *2015 Florida Morbidity Statistics Report* in Section 2: Summaries for Selected Reportable Diseases/ Conditions of Frequent Occurrence. Acute hepatitis A incidence has declined drastically over the past 15 years, largely due to increased vaccination coverage. Though there was a slight increase in hepatitis A in 2015 compared to 2014, the incidence rate was still 9.2% below the previous 5-year average. 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 (see references for full citation). Overall, VPD incidence in Florida decreased slightly in 2015 compared to 2014, though there was variation in that trend by disease. The number of reported meningococcal disease cases reached a historic low in 2015 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. 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. The increase was most noticeable in infants <1 year old, where the 2015 incidence rate was 46% higher in 2015 than the previous 5-year average rate. Factors contributing to the increase are not well understood. 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.

Tick-borne diseases continued to be a threat in Florida in 2015. Lyme disease is the most common illness transmitted by ticks and incidence continued to increase in 2015. Consistent with past years, most infections identified in 2015 were acquired in other states (primarily in the Northeast and upper Midwest U.S.). The same number of cases acquired in Florida were reported in 2014 and 2015; the increase in cases was due to infections acquired outside Florida. Mosquito-borne diseases also continued to occur in Florida in 2015. The most commonly reported mosquito-borne illness in Florida in 2015 was chikungunya fever. 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, 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. There was a large decrease in imported chikungunya fever cases reported in 2015 compared to 2014. Unlike dengue fever, infection with chikungunya virus leads to lifetime immunity, which is believed to be the biggest 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. Incidence of both dengue fever and malaria decreased in 2015. One dengue virus infection was acquired in Broward County in Florida; no additional transmission was identified related to that case. No locally acquired malaria cases were identified. Malaria cases were most commonly acquired in Africa (60.0%); in contrast, dengue fever cases were primarily acquired in Central America or the Caribbean (70.5%).

Neonatal abstinence syndrome (NAS) became reportable in Florida on June 4, 2014. NAS is a condition in which a neonate experiences withdrawal symptoms following exposure to certain substances during the prenatal period. Substances may include prescription medications (such as opioids or benzodiazepines) or certain illicit drugs. For more information about NAS, please visit www.floridahealth.gov/diseases-and-conditions/neonatal-abstinence-syndrome/index.html. A summary of NAS from 2011 to 2013 is available on the Florida Birth Defects Registry Publications website (www.fbdr.org/Data_Research/publications.html).

Cancer, excluding non-melanoma skin cancer and including benign and borderline intracranial and central nervous system tumors, is also reportable in Florida. For information about cancer surveillance, please see the Florida Cancer Registry website (www.floridahealth.gov/diseases-and-conditions/cancer/cancer-registry/index.html).

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 and Section 3: Narratives for Selected Reportable Diseases/Conditions of Infrequent Occurrence.

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Suryaprasad AG, White JZ, Xu F, Eichler BA, Hamilton J, Patel A, et al. 2014. Emerging Epidemic of Hepatitis C Virus Infections Among Young Non-Urban Persons who Inject Drugs in the United States, 2006–2012. *Clinical Infectious Diseases*, 59(10):1411-1419.

Zibbell JE, Iqbal K, Patel RC, Suryaprasad A, Sanders KJ, Moore-Moravian L, et al. 2015. Increases in Hepatitis C Virus Infection Related to Injection Drug Use Among Persons Aged ≤30 Years — Kentucky, Tennessee, Virginia, and West Virginia, 2006–2012. *Morbidity and Mortality Weekly Report*, 64(17):453-458. Available at www.cdc.gov/mmwr/preview/mmwrhtml/mm6417a2.htm.

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List of Reportable Diseases/Conditions in Florida, 2015

Section 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 list below reflects diseases and conditions that were reportable in 2015.

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

Florida County Boundaries

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

Year	Population
2006	18,237,596
2007	18,500,958
2008	18,636,837
2009	18,711,844
2010	18,820,280
2011	18,934,175
2012	19,042,458
2013	19,318,859
2014	19,548,031
2015	19,860,805

Gender	2014 Population	2015 Population	Percent Change
Female	9,992,462	10,142,821	+1.5%
Male	9,555,569	9,717,984	+1.7%
Race	**2014 Population**	**2015 Population**	**Percent Change**
White	15,286,521	15,480,568	+1.3%
Black	3,263,817	3,343,371	+2.4%
Other	997,693	1,036,866	+3.9%
Ethnicity	**2014 Population**	**2015 Population**	**Percent Change**
Non-Hispanic	14,861,999	15,006,422	+1.0%
Hispanic	4,686,032	4,854,383	+3.6%
Total	19,548,031	19,860,805	+1.6%

In 2015, the population increased 1.6% from 2014. Note that increases are not uniform across all demographic groups. Groups where the population change was substantially different from the overall 1.6% increase are highlighted in gray (i.e., groups that increased more than 3.2% or decreased more than 1.6%). There was a disproportionate increase in the elderly population, other races, and Hispanics. The only group that decreased was the 45- to 54-year-old population.

Age	2014 Population	2015 Population	Percent Change
<1	217,026	221,322	+2.0%
1-4	886,618	891,687	+0.6%
5-9	1,132,972	1,141,762	+0.8%
10-14	1,146,040	1,157,969	+1.0%
15-19	1,192,611	1,198,941	+0.5%
20-24	1,312,024	1,319,476	+0.6%
25-34	2,448,462	2,491,941	+1.8%
35-44	2,345,727	2,348,023	+0.1%
45-54	2,699,859	2,676,660	-0.9%
55-64	2,574,936	2,627,167	+2.0%
65-74	1,951,625	2,043,744	+4.7%
75-84	1,142,703	1,220,148	+6.8%
85+	497,428	521,965	+4.9%
Total	19,548,031	19,860,805	+1.6%

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 September 15, 2016, after 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.

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Section 1

Summary of Selected Reportable Diseases/Conditions

Table 1 (Part 1): Reported Confirmed and Probable Cases and Incidence Rates (Per 100,000 Population) of Reportable Diseases/Conditions of Frequent Occurrence, Florida, 2006-2015

Reportable disease/condition	2006		2007		2008		2009		2010		2011		2012		2013		2014		2015	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
AIDS[1]	4,225	23.2	4,031	21.8	4,157	22.3	3,863	20.6	3,156	16.8	3,023	16.0	2,849	15.0	2,929	15.2	2,291	11.7	2,218	11.2
Campylobacteriosis	941	5.2	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	16.9
Carbon Monoxide Poisoning	NR	NR	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
Chikungunya Fever	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	442	2.3	121	0.6
Chlamydia	48,929	268.3	57,732	312.0	70,732	379.5	72,932	389.8	74,777	397.3	76,076	401.8	77,890	409.0	80,799	418.2	83,140	425.3	90,650	456.4
Ciguatera Fish Poisoning	32	0.2	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
Creutzfeldt-Jakob Disease (CJD)	14	--	12	--	23	0.1	15	--	13	--	16	--	23	0.1	20	0.1	24	0.1	28	0.1
Cryptosporidiosis	717	3.9	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
Cyclosporiasis	31	0.2	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
Dengue Fever[2]	20	0.1	46	0.3	33	0.2	55	0.3	195	1.0	71	0.4	124	0.7	160	0.8	92	0.5	79	0.4
Giardiasis, Acute	1,165	6.4	1,268	6.9	1,391	7.5	1,981	10.6	2,139	11.4	1,255	6.6	1,095	5.8	1,114	5.8	1,165	6.0	1,038	5.2
Gonorrhea	23,961	131.4	23,366	126.3	23,233	124.7	20,880	111.6	20,171	107.2	19,704	104.1	19,554	102.7	21,009	108.7	20,599	105.4	24,188	121.8
HIV Infection (Including Perinatal)[1]	5,673	31.1	6,519	35.2	6,073	32.6	5,204	27.8	4,720	25.1	4,674	24.7	4,501	23.6	4,374	22.6	4,600	23.5	4,868	24.5
Haemophilus influenzae Invasive Disease in Children <5 Years Old[2,3]	19	--	28	2.8	25	2.4	29	3.0	32	3.5	23	2.6	24	2.7	22	2.5	32	3.4	37	3.8
Hansen's Disease (Leprosy)	7	--	10	--	10	--	7	--	12	--	11	--	10	--	10	--	10	--	29	0.1
Hepatitis A	233	1.3	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
Hepatitis B, Acute	446	2.4	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
Hepatitis B, Chronic[4]	517	2.8	569	3.1	1,617	8.7	4,268	22.8	4,265	22.7	4,279	22.6	4,180	22.0	4,271	22.1	4,914	25.1	4,827	24.3
Hepatitis B, Surface Antigen in Pregnant Women[3]	448	12.7	643	18.1	599	16.9	598	17.0	438	12.4	481	13.6	413	11.6	482	13.4	510	14.1	476	13.1
Hepatitis C, Acute	49	0.3	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
Hepatitis C, Chronic (Including Perinatal)[4]	11,602	63.6	15,238	82.4	18,690	100.3	15,111	80.8	15,488	82.3	18,363	97.0	19,018	99.9	19,757	102.3	22,412	114.7	22,981	115.7
Lead Poisoning in Adults ≥16 Years Old[3]	--	--	--	--	--	--	--	--	549	3.6	485	3.1	648	4.2	388	2.5	467	2.9	515	3.2
Lead Poisoning in Children <16 Years Old[3]	--	--	--	--	--	--	--	--	367	10.5	257	7.3	204	5.8	220	6.1	202	5.6	204	5.6
Legionellosis	167	0.9	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
Listeriosis[2]	46	0.3	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
Lyme Disease	34	0.2	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
Malaria	61	0.3	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
Meningitis, Bacterial or Mycotic	162	0.9	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
Meningococcal Disease	79	0.4	67	0.4	51	0.3	52	0.3	60	0.3	51	0.3	45	0.2	58	0.3	50	0.3	23	0.1
Mercury Poisoning	33	0.2	24	0.1	69	0.4	21	0.1	12	--	7	--	10	--	5	--	15	--	26	0.1

1 The number of cases reported in past years should not change for sexually transmitted diseases and most reportable diseases. However, different reconciliation processes are in place for AIDS, HIV infection, and tuberculosis. As a result, case numbers for prior years in the above tables may vary from previous reports.

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

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

4 Chronic hepatitis B and C are new to this report in 2015. Limitations associated with these diseases 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.

-- 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 1 (Part 2): Reported Confirmed and Probable Cases and Incidence Rates (Per 100,000 Population) of Reportable Diseases/Conditions of Frequent Occurrence, Florida, 2006-2015

Reportable Disease/Condition	2006		2007		2008		2009		2010		2011		2012		2013		2014		2015	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Pertussis	228	1.3	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
Pesticide-Related Illness and Injury, Acute[5]	460	2.5	449	2.4	455	2.4	405	2.2	392	2.1	451	2.4	71	0.4	68	0.4	75	0.4	59	0.3
Rabies, Animal	176	--	128	--	138	--	161	--	121	--	120	--	102	--	103	--	94	--	83	--
Rabies, Possible Exposure	1,244	6.8	1,474	8.0	1,618	8.7	1,853	9.9	2,114	11.2	2,410	12.7	2,371	12.5	2,721	14.1	2,995	15.3	3,364	16.9
Rocky Mountain Spotted Fever and Spotted Fever Rickettsiosis[2]	21	0.1	19	--	19	--	10	--	14	--	12	--	31	0.2	24	0.1	29	0.2	21	0.1
Salmonellosis	4,928	27.0	5,022	27.1	5,312	28.5	6,741	36.0	6,282	33.4	5,923	31.3	6,523	34.3	6,133	31.8	6,019	30.8	5,924	29.8
Shiga Toxin-Producing *Escherichia col* i (STEC) Infection[2]	38	0.2	47	0.3	65	0.3	94	0.5	85	0.5	103	0.6	93	0.5	121	0.6	117	0.6	135	0.7
Shigellosis	1,646	9.0	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	12.3	1,737	8.7
Streptococcus pneumoniae Invasive Disease, Drug-Resistant	774	4.2	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
Streptococcus pneumoniae Invasive Disease, Drug-Susceptible	620	3.4	622	3.4	704	3.8	701	3.7	693	3.7	679	3.6	531	2.8	552	2.9	401	2.1	264	1.3
Syphilis (Excluding Congenital)	3,006	16.5	3,906	21.1	4,558	24.5	3,844	20.5	4,053	21.5	4,110	21.7	4,472	23.5	5,015	26	5,974	30.6	7,118	35.8
Syphilis, Congenital[3]	21	8.79	20	8.3	24	10.3	19	8.52	25	11.6	33	15.4	39	18.2	35	16.2	48	21.7	38	16.8
Tuberculosis[1]	1,032	5.66	988	5.34	957	5.14	822	4.39	833	4.43	754	3.98	678	3.56	651	3.37	595	3.04	602	3.03
Varicella (Chickenpox)	NR	NR	1,321	7.14	1,735	9.31	1,125	6.01	977	5.19	861	4.55	815	4.28	659	3.41	570	2.92	740	3.73
Vibriosis (Excluding Cholera)[2]	99	0.54	97	0.53	94	0.5	112	0.6	130	0.7	155	0.82	147	0.77	191	0.99	166	0.85	196	0.99

1 The number of cases reported in past years should not change for sexually transmitted diseases and most reportable diseases. However, different reconciliation processes are in place for AIDS, HIV infection, and tuberculosis. As a result, case numbers for prior years in the above tables may vary from previous reports.

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Table 2: Reported Confirmed and Probable Cases of Reportable Diseases/Conditions of Infrequent Occurrence, Florida, 2006-2015

Reportable disease/condition	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Amebic Encephalitis	NR	NR	NR	3	0	1	0	1	1	1
Anaplasmosis	1	3	2	3	3	11	5	2	7	5
Anthrax	0	0	0	0	0	1	0	0	0	0
Arboviral Disease, Other	NR	NR	NR	NR	NR	NR	NR	NR	0	0
Arsenic Poisoning	NR	NR	NR	9	14	7	5	13	2	16
Botulism, Foodborne	1	0	0	0	0	0	0	0	0	0
Botulism, Infant	0	1	1	1	1	0	1	0	0	0
Botulism, Other	0	0	0	0	0	0	0	0	0	1
Botulism, Wound	0	0	0	0	0	0	0	0	0	0
Brucellosis	5	10	10	9	9	6	17	9	3	8
California Serogroup Virus Disease[1]	1	1	1	0	0	1	0	0	1	1
Cholera (*Vibrio cholerae* Type O1)	0	0	0	0	4	11	7	4	2	3
Diphtheria	0	0	0	0	0	0	0	0	0	0
Eastern Equine Encephalitis[1]	0	0	1	0	4	0	2	2	1	0
Ehrlichiosis[1]	5	18	10	11	10	15	23	21	29	18
Glanders (*Burkholderia mallei*)	0	0	0	0	0	0	0	0	0	0
Hantavirus Infection[1]	0	0	0	0	0	0	0	0	0	0
Hemolytic Uremic Syndrome (HUS)	5	6	5	5	8	4	1	14	7	5
Hepatitis B, Perinatal	6	2	3	0	1	0	1	2	1	0
Hepatitis D	NR	1	0	1	0	0	0	1	1	1
Hepatitis E	NR	1	0	2	1	7	1	0	3	6
Hepatitis G	NR	0	0	1	0	2	0	0	0	0
Leptospirosis	2	1	0	1	2	4	1	1	0	4
Measles (Rubeola)	4	5	1	5	1	8	0	7	0	5
Melioidosis (*Burkholderia pseudomallei*)	1	0	0	0	0	0	1	0	0	0
Middle East Respiratory Syndrome (MERS)	NR	NR	NR	NR	NR	NR	NR	NR	1	0
Mumps	15	21	16	18	10	11	5	1	1	10
Neurotoxic Shellfish Poisoning	16	1	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)	1	0	2	0	0	0	0	0	1	1
Q Fever (*Coxiella burnetii*)[1]	8	2	1	1	2	3	1	2	1	1
Rabies, Human	0	0	0	0	0	0	0	0	0	0
Ricin Toxin Poisoning	0	0	0	0	0	0	0	1	0	4
Rubella (Including Congenital)[1]	1	0	3	0	0	0	0	0	0	0
Saxitoxin Poisoning (Paralytic Shellfish Poisoning)	0	0	0	0	0	0	0	3	0	0
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	0	2	0
Staphylococcal Enterotoxin B Poisoning	0	0	2	0	0	0	0	0	0	0
Staphylococcus aureus Infection, Intermediate Resistance to Vancomycin (VISA)	0	1	3	6	1	3	7	5	4	4
Staphylococcus aureus Infection, Resistant to Vancomycin (VRSA)	0	0	0	0	0	0	0	0	0	0
Tetanus	2	5	2	0	5	3	4	5	2	4
Trichinellosis (Trichinosis)	1	0	1	0	0	0	0	0	0	0
Tularemia (*Francisella tularensis*)	0	0	0	1	0	0	0	1	1	0
Typhoid Fever (*Salmonella* Serotype Typhi)	16	15	18	19	22	8	11	11	13	6
Typhus Fever[1]	2	1	0	1	0	2	0	0	0	0
Vaccinia Disease	0	0	0	0	0	1	0	0	0	1
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	3	12	23	74	7	17	13
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 the paragraph on Florida Disease Codes in Merlin within Interpreting the Data in the Introduction (page ix).

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 Group1, Florida, 2015

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	--	1	--	25	2.1	118	8.9	531	21.3	515	21.9	578	21.6	332	12.6	97	4.7	18	--	1	--
Campylobacteriosis	135	61.0	351	39.4	210	18.4	108	9.3	122	10.2	162	12.3	268	10.8	267	11.4	378	14.1	473	18.0	434	21.2	289	23.7	154	29.5
Carbon Monoxide Poisoning	1	--	8	--	6	--	9	--	8	--	10	--	30	1.2	23	1.0	46	1.7	51	1.9	22	1.1	8	--	5	--
Chikungunya Fever	0	--	0	--	3	--	0	--	3	--	6	--	8	--	10	--	27	1.0	23	0.9	31	1.5	9	--	1	--
Chlamydia[1]	11	--	2	--	5	--	565	48.8	22,465	1,874.0	35,561	2,695.0	24,473	982.1	5,238	223.1	1,689	63.1	511	19.5	97	4.7	17	--	8	--
Ciguatera Fish Poisoning	0	--	0	--	3	--	1	--	1	--	3	--	9	--	13	--	8	--	9	--	5	--	4	--	0	--
Creutzfeldt-Jakob Disease (CJD)	0	--	0	--	0	--	0	--	0	--	0	--	0	--	1	--	1	--	8	--	9	--	8	--	1	--
Cryptosporidiosis	7	--	124	13.9	96	8.4	50	4.3	35	2.9	52	3.9	140	5.6	99	4.2	83	3.1	62	2.4	56	2.7	40	3.3	12	--
Cyclosporiasis	0	--	2	--	1	--	0	--	1	--	0	--	2	--	3	--	7	--	6	--	7	--	3	--	0	--
Dengue Fever[2]	0	--	1	--	2	--	1	--	4	--	4	--	12	--	10	--	13	--	22	0.8	9	--	1	--	0	--
Giardiasis, Acute	12	--	150	16.8	88	7.7	50	4.3	51	4.3	71	5.4	120	4.8	104	4.4	159	5.9	116	4.4	76	3.7	37	3.0	4	--
Gonorrhea	1	--	3	--	5	--	108	9.3	3,981	332.0	7,572	573.9	7,828	314.1	2,636	112.3	1,434	53.6	516	19.6	93	4.6	9	--	2	--
HIV Infection (Including Perinatal)	7	--	4	--	4	--	2	--	199	16.6	724	54.9	1,445	58.0	990	42.2	901	33.7	446	17.0	130	6.4	16	--	0	--
Haemophilus influenzae Invasive Disease in Children <5 Years Old[2,3]	20	9.0	17	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--
Hansen's Disease (Leprosy)	0	--	0	--	0	--	1	--	0	--	0	--	1	--	5	--	3	--	7	--	6	--	6	--	0	--
Hepatitis A	0	--	1	--	1	--	4	--	6	--	10	--	19	--	11	--	21	0.8	18	--	19	--	12	--	0	--
Hepatitis B, Acute	0	--	1	--	0	--	0	--	2	--	7	--	89	3.6	198	8.4	132	4.9	57	2.2	24	1.2	8	--	1	--
Hepatitis B, Chronic[1]	1	--	2	--	8	--	10	--	73	6.1	190	14.4	874	35.1	1,086	46.3	1,068	39.9	865	32.9	450	22.0	158	13.0	39	7.5
Hepatitis B, Surface Antigen in Pregnant Women[3]	0	--	0	--	0	--	0	--	6	--	45	7.0	290	23.6	134	11.3	1	--	0	--	0	--	0	--	0	--
Hepatitis C, Acute	1	--	0	--	1	--	0	--	6	--	28	2.1	93	3.7	39	1.7	27	1.0	13	--	1	--	1	--	0	--
Hepatitis C, Chronic (Including Perinatal)[1]	45	20.3	13	--	2	--	4	--	231	19.3	1,843	139.7	4,857	194.9	3,190	135.9	4,276	159.8	6,179	235.2	1,902	93.1	347	28.4	79	15.1
Lead Poisoning in Adults ≥16 Years Old[3]	0	--	0	--	0	--	0	--	10	--	65	4.9	148	5.9	100	4.3	113	4.2	51	1.9	21	1.0	4	--	3	--
Lead Poisoning in Children <16 Years Old[3]	5	--	133	14.9	34	3.0	28	2.4	4	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--
Legionellosis	0	--	0	--	0	--	0	--	2	--	4	--	16	--	10	--	51	1.9	71	2.7	63	3.1	55	4.5	34	6.5
Listeriosis[2]	3	--	0	--	0	--	0	--	1	--	2	--	1	--	1	--	5	--	5	--	9	--	9	--	6	--
Lyme Disease	0	--	0	--	14	--	20	1.7	4	--	7	--	22	0.9	18	--	18	--	24	0.9	27	1.3	11	--	1	--
Malaria	0	--	1	--	2	--	0	--	0	--	1	--	6	--	9	--	13	--	5	--	2	--	1	--	0	--
Meningitis, Bacterial or Mycotic	36	16.3	4	--	3	--	2	--	4	--	3	--	15	--	8	--	11	--	20	0.8	10	--	4	--	2	--
Meningococcal Disease	4	--	1	--	1	--	1	--	0	--	1	--	1	--	2	--	4	--	4	--	2	--	2	--	0	--
Mercury Poisoning	1	--	9	--	0	--	0	--	0	--	1	--	3	--	0	--	2	--	5	--	3	--	1	--	1	--
Pertussis	101	45.6	36	4.0	40	3.5	47	4.1	35	2.9	11	--	9	--	21	0.9	11	--	9	--	12	--	4	--	3	--
Pesticide-Related Illness and Injury, Acute[4]	0	--	1	--	4	--	2	--	5	--	2	--	4	--	5	--	14	--	16	--	3	--	3	--	0	--
Rabies, Possible Exposure[1]	88	39.8	140	15.7	182	15.9	214	18.5	243	20.3	262	19.9	557	22.4	413	17.6	493	18.4	419	16.0	218	10.7	114	9.3	20	3.8
Rocky Mountain Spotted Fever and Spotted Fever Rickettsiosis[2]	0	--	0	--	0	--	0	--	1	--	1	--	2	--	2	--	6	--	4	--	3	--	1	--	1	--
Salmonellosis	1,101	497.5	1,177	132.0	456	39.9	245	21.2	167	13.9	193	14.6	388	15.6	340	14.5	419	15.7	538	20.5	470	23.0	308	25.2	122	23.4
Shiga Toxin-Producing *Escherichia coli* (STEC) Infection[2]	7	--	50	5.6	11	--	9	--	10	--	7	--	7	--	9	--	3	--	5	--	9	--	7	--	1	--
Shigellosis	40	18.1	533	59.8	473	41.4	114	9.8	43	3.6	57	4.3	191	7.7	106	4.5	60	2.2	58	2.2	36	1.8	17	--	9	--
Streptococcus pneumoniae Invasive Disease, Drug-Resistant	12	--	21	2.4	7	--	1	--	1	--	0	--	5	--	15	--	24	0.9	22	0.8	24	1.2	17	--	18	--
Streptococcus pneumoniae Invasive Disease, Drug-Susceptible	16	--	19	--	8	--	3	--	3	--	2	--	12	--	20	0.9	37	1.4	52	2.0	45	2.2	30	2.5	17	--
Syphilis (Excluding Congenital)	0	--	0	--	1	--	3	--	250	20.9	1,076	81.6	2,285	91.7	1,463	62.3	1,387	51.8	478	18.2	142	6.9	27	2.2	6	--
Syphilis, Congenital[3]	38	16.83	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--
Tuberculosis	2	--	8	--	7	--	4	--	24	2.002	30	2.274	89	3.57	83	3.54	122	4.56	123	4.68	64	3.13	29	2.38	17	--
Varicella (Chickenpox)	93	42.02	159	17.8	157	13.8	86	7.43	31	2.586	47	3.562	50	2.01	54	2.3	37	1.38	15	--	4	--	4	--	3	--
Vibriosis (Excluding Cholera)[2]	0	--	4	--	3	--	12	--	13	--	7	--	15	--	21	0.89	27	1.01	38	1.45	27	1.32	26	2.13	3	--

1 Age is unknown for eight chlamydia cases, three chronic hepatitis B cases, 13 chronic hepatitis C cases, and one rabies, possible exposure case.

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

3 For *Haemophilus influenza*, the rate is per 100,000 children <5 years old. For hepatitis B surface antigen in pregnant women, the rate is per 100,000 women aged 15-44 years old. For lead poisoning in adults, the rate is per 100,000 adults ≥16 years old. For lead poisoning in children, the rate is per 100,000 children <16 years old. For congenital syphilis, the rate is per 100,000 live births.

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, 2015

	Age group (in years)											
Rank	<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: 1,101) (Rate: 497.5)	Salmonellosis (Count: 1,177) (Rate: 132.0)	Shigellosis (Count: 473) (Rate: 41.4)	Chlamydia (Count: 565) (Rate: 48.8)	Chlamydia (Count: 22,465) (Rate: 1,873.7)	Chlamydia (Count: 35,561) (Rate: 2,695.1)	Chlamydia (Count: 24,473) (Rate: 982.1)	Chlamydia (Count: 5,238) (Rate: 223.1)	Hepatitis C, Chronic (Count: 4,276) (Rate: 159.8)	Hepatitis C, Chronic (Count: 6,179) (Rate: 235.2)	Hepatitis C, Chronic (Count: 1,902) (Rate: 93.1)	Hepatitis C, Chronic (Count: 347) (Rate: 28.4)	Campylobacteriosis (Count: 154) (Rate: 29.5)
2	Campylobacteriosis (Count: 135) (Rate: 61.0)	Shigellosis (Count: 533) (Rate: 59.8)	Salmonellosis (Count: 456) (Rate: 39.9)	Salmonellosis (Count: 245) (Rate: 21.2)	Gonorrhea (Count: 3,981) (Rate: 332.0)	Gonorrhea (Count: 7,572) (Rate: 573.9)	Gonorrhea (Count: 7,828) (Rate: 314.1)	Hepatitis C, Chronic (Count: 3,190) (Rate: 135.9)	Chlamydia (Count: 1,689) (Rate: 63.1)	Hepatitis B, Chronic (Count: 865) (Rate: 32.9)	Salmonellosis (Count: 470) (Rate: 23.0)	Salmonellosis (Count: 308) (Rate: 25.2)	Salmonellosis (Count: 122) (Rate: 23.4)
3	Pertussis (Count: 101) (Rate: 45.6)	Campylobacteriosis (Count: 351) (Rate: 39.4)	Campylobacteriosis (Count: 210) (Rate: 18.4)	Rabies, Possible Exposure (Count: 214) (Rate: 18.5)	Syphilis (Count: 250) (Rate: 20.9)	Hepatitis C, Chronic (Count: 1,843) (Rate: 139.7)	Hepatitis C, Chronic (Count: 4,857) (Rate: 194.9)	Gonorrhea (Count: 2,636) (Rate: 112.3)	Gonorrhea (Count: 1,434) (Rate: 53.6)	Salmonellosis (Count: 538) (Rate: 20.5)	Hepatitis B, Chronic (Count: 450) (Rate: 22.0)	Campylobacteriosis (Count: 289) (Rate: 23.7)	Hepatitis C, Chronic (Count: 79) (Rate: 15.1)
4	Varicella (Chickenpox) (Count: 93) (Rate: 42.0)	Varicella (Chickenpox) (Count: 159) (Rate: 17.8)	Rabies, Possible Exposure (Count: 182) (Rate: 15.9)	Shigellosis (Count: 114) (Rate: 9.8)	Rabies, Possible Exposure (Count: 243) (Rate: 20.3)	Syphilis (Count: 1,076) (Rate: 81.5)	Syphilis (Count: 2,285) (Rate: 91.7)	Syphilis (Count: 1,463) (Rate: 62.3)	Syphilis (Count: 1,387) (Rate: 51.8)	Gonorrhea (Count: 516) (Rate: 19.6)	Campylobacteriosis (Count: 434) (Rate: 21.2)	Hepatitis B, Chronic (Count: 158) (Rate: 12.9)	Hepatitis B, Chronic (Count: 39) (Rate: 7.5)
5	Rabies, Possible Exposure (Count: 88) (Rate: 39.8)	Giardiasis, Acute (Count: 150) (Rate: 16.8)	Varicella (Chickenpox) (Count: 157) (Rate: 13.8)	Campylobacteriosis (Count: 108) (Rate: 9.3)	Hepatitis C, Chronic (Count: 231) (Rate: 19.3)	HIV Infection (Count: 724) (Rate: 54.9)	HIV Infection (Count: 1,445) (Rate: 58.0)	Hepatitis B, Chronic (Count: 1,086) (Rate: 46.3)	Hepatitis B, Chronic (Count: 1,068) (Rate: 39.9)	Chlamydia (Count: 511) (Rate: 19.5)	Rabies, Possible Exposure (Count: 218) (Rate: 10.7)	Rabies, Possible Exposure (Count: 114) (Rate: 9.3)	*S. pneumoniae* Invasive Disease (Count: 35) (Rate: 6.7)
6	Hepatitis C, Chronic (Including Perinatal) (Count: 45) (Rate: 20.3)	Rabies, Possible Exposure (Count: 140) (Rate: 15.7)	Cryptosporidiosis (Count: 96) (Rate: 8.4)	Gonorrhea (Count: 108) (Rate: 9.3)	HIV Infection (Count: 199) (Rate: 16.6)	Rabies, Possible Exposure (Count: 262) (Rate: 19.9)	Hepatitis B, Chronic (Count: 874) (Rate: 35.1)	HIV Infection (Count: 990) (Rate: 42.2)	HIV Infection (Count: 901) (Rate: 33.7)	Syphilis (Count: 478) (Rate: 18.2)	Syphilis (Count: 142) (Rate: 6.9)	Legionellosis (Count: 55) (Rate: 4.5)	Legionellosis (Count: 34) (Rate: 6.5)
7	Shigellosis (Count: 40) (Rate: 18.1)	Lead Poisoning (Count: 133) (Rate: 14.9)	Giardiasis, Acute (Count: 88) (Rate: 7.7)	Varicella (Chickenpox) (Count: 86) (Rate: 7.4)	Salmonellosis (Count: 167) (Rate: 13.9)	Salmonellosis (Count: 193) (Rate: 14.6)	Rabies, Possible Exposure (Count: 557) (Rate: 22.4)	AIDS (Count: 515) (Rate: 21.9)	AIDS (Count: 578) (Rate: 21.6)	Campylobacteriosis (Count: 473) (Rate: 18.0)	HIV Infection (Count: 130) (Rate: 6.4)	*S. pneumoniae* Invasive Disease (Count: 47) (Rate: 3.9)	Rabies, Possible Exposure (Count: 20) (Rate: 3.8)
8	Syphilis, Congenital (Count: 38) (Rate: 16.8)	Cryptosporidiosis (Count: 124) (Rate: 13.9)	Pertussis (Count: 40) (Rate: 3.5)	Cryptosporidiosis (Count: 50) (Rate: 4.3)	Campylobacteriosis (Count: 122) (Rate: 10.2)	Hepatitis B, Chronic (Count: 190) (Rate: 14.4)	AIDS (Count: 531) (Rate: 21.3)	Rabies, Possible Exposure (Count: 413) (Rate: 17.6)	Rabies, Possible Exposure (Count: 493) (Rate: 18.4)	HIV Infection (Count: 446) (Rate: 17.0)	AIDS (Count: 97) (Rate: 4.7)	Cryptosporidiosis (Count: 40) (Rate: 3.3)	Tuberculosis (Count: 17) --
9	Meningitis, Bacterial or Mycotic (Count: 36) (Rate: 16.3)	Shiga toxin-Producing *E. coli* (Count: 50) (Rate: 5.6)	Lead Poisoning (Count: 34) (Rate: 3.0)	Giardiasis, Acute (Count: 50) (Rate: 4.3)	Hepatitis B, Chronic (Count: 73) (Rate: 6.1)	Campylobacteriosis (Count: 162) (Rate: 12.3)	Salmonellosis (Count: 388) (Rate: 15.6)	Salmonellosis (Count: 340) (Rate: 14.5)	Salmonellosis (Count: 419) (Rate: 15.7)	Rabies, Possible Exposure (Count: 419) (Rate: 15.9)	Chlamydia (Count: 97) (Rate: 4.7)	Giardiasis, Acute (Count: 37) (Rate: 3.0)	Cryptosporidiosis (Count: 12) --
10	*S. pneumoniae* Invasive Disease (Count: 28) (Rate: 12.7)	*S. pneumoniae* Invasive Disease (Count: 40) (Rate: 4.5)	*S. pneumoniae* Invasive Disease (Count: 15) --	Pertussis (Count: 47) (Rate: 4.1)	Giardiasis, Acute (Count: 51) (Rate: 4.3)	AIDS (Count: 118) (Rate: 8.9)	Hepatitis B, Surface Antigen in Pregnant Women (Count: 290) (Rate: 23.6)	Campylobacteriosis (Count: 267) (Rate: 11.4)	Campylobacteriosis (Count: 378) (Rate: 14.1)	AIDS (Count: 332) (Rate: 12.6)	Gonorrhea (Count: 93) (Rate: 4.6)	Tuberculosis (Count: 29) (Rate: 2.4)	Shigellosis (Count: 9) --

— 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 Occurrence1, Florida, 2015

Selected reportable disease/condition	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Campylobacteriosis	262	214	266	276	339	358	348	282	258	219	273	256
Carbon Monoxide Poisoning	17	26	18	14	10	10	20	35	27	19	17	14
Chikungunya Fever	18	2	3	4	4	5	13	16	10	12	9	25
Ciguatera Fish Poisoning	4	1	4	1	3	4	2	11	22	1	0	3
Creutzfeldt-Jakob Disease (CJD)	2	3	2	5	0	3	5	3	1	3	0	1
Cryptosporidiosis	45	49	46	35	52	65	130	179	110	63	50	32
Cyclosporiasis	0	0	0	0	1	9	10	2	5	3	2	0
Dengue Fever[2]	4	2	3	2	3	7	7	6	8	17	13	7
Giardiasis, Acute	86	80	73	72	87	99	117	97	99	100	60	68
Haemophilus influenzae Invasive Disease in Children <5 Years Old[2]	4	4	5	1	1	6	4	3	4	3	1	1
Hansen's Disease (Leprosy)	7	3	3	2	1	3	2	3	0	2	2	1
Hepatitis A	5	6	11	10	12	11	17	11	9	7	12	11
Hepatitis B, Acute	35	45	38	39	42	48	65	39	41	43	43	41
Hepatitis B, Chronic	369	399	424	439	427	382	425	435	392	417	348	370
Hepatitis B, Surface Antigen in Pregnant Women	40	43	45	49	35	41	37	40	43	39	37	27
Hepatitis C, Acute	14	16	18	12	16	12	23	18	13	28	19	21
Hepatitis C, Chronic (Including Perinatal)	1,680	1,875	2,052	2,008	1,999	2,011	1,969	1,996	1,917	1,985	1,750	1,739
Lead Poisoning in Adults ≥16 Years Old	16	35	37	99	41	36	54	35	23	69	32	38
Lead Poisoning in Children <16 Years Old	14	13	16	19	14	16	19	25	20	15	22	11
Legionellosis	26	22	29	19	24	13	25	42	31	31	18	26
Listeriosis[2]	1	2	2	3	4	0	8	6	4	8	3	1
Lyme Disease	4	1	3	8	4	36	45	28	15	14	5	3
Malaria	7	1	1	1	4	4	5	3	4	4	3	3
Meningitis, Bacterial or Mycotic	13	7	10	10	13	11	13	11	9	13	2	10
Meningococcal Disease	3	5	4	1	0	1	3	0	3	1	1	1
Mercury Poisoning	2	1	0	3	1	2	1	0	1	2	7	6
Pertussis	33	29	31	32	16	28	42	26	28	21	21	32
Pesticide-Related Illness and Injury, Acute[3]	0	1	0	2	0	3	4	29	13	3	2	2
Rabies, Animal[4]	7	5	8	4	6	6	4	6	8	10	12	7
Rabies, Possible Exposure[5]	237	234	308	290	295	295	332	293	231	294	264	291
Rocky Mountain Spotted Fever and Spotted Fever Rickettsiosis[2]	1	0	1	0	3	5	1	3	2	1	3	1
Salmonellosis	290	192	260	390	474	606	657	701	747	630	592	385
Shiga Toxin-Producing *Escherichia coli* (STEC) Infection[2]	10	9	16	12	6	7	15	16	7	15	10	12
Shigellosis	107	192	145	136	282	199	166	132	99	125	91	63
Streptococcus pneumoniae Invasive Disease, Drug-Resistant	17	17	17	12	19	7	10	10	14	16	12	16
Streptococcus pneumoniae Invasive Disease, Drug-Susceptible	28	36	37	17	20	18	13	5	15	28	19	28
Varicella (Chickenpox)	65	82	79	74	59	49	38	53	80	60	54	47
Vibriosis (Excluding Cholera)[2]	8	6	9	21	24	22	25	16	23	11	16	15

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 local health office was notified.

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

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 infection, syphilis, congenital syphilis, and tuberculosis.

Section 2

Data Summaries for Selected Reportable Diseases/Conditions of Frequent Occurrence

Disease Facts

Cause: HIV

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

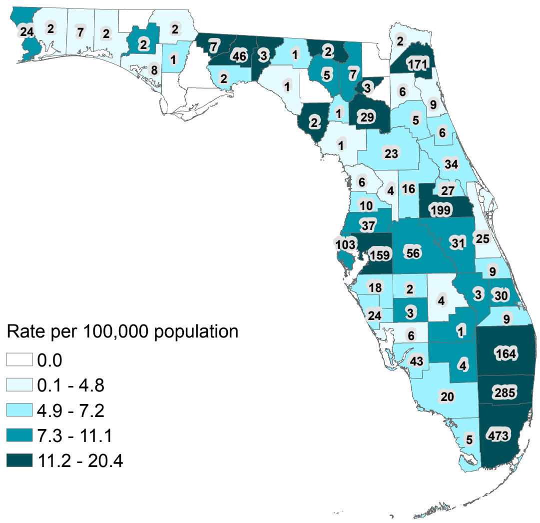
Reason for surveillance: Enhance efforts to prevent HIV transmission, improve allocation of resources for treatment services, and assist in evaluating the impact of public health interventions

Comments: Artificial incidence peaks in 2008 and 2013 were due to expansion of electronic laboratory reporting. Case count decreased 3.2% from 2014 to 2015 and the incidence rate decreased 25.1% from the previous 5-year average. Expanded efforts to link and retain people in care may have contributed to the decrease.

Summary of Case Demographics

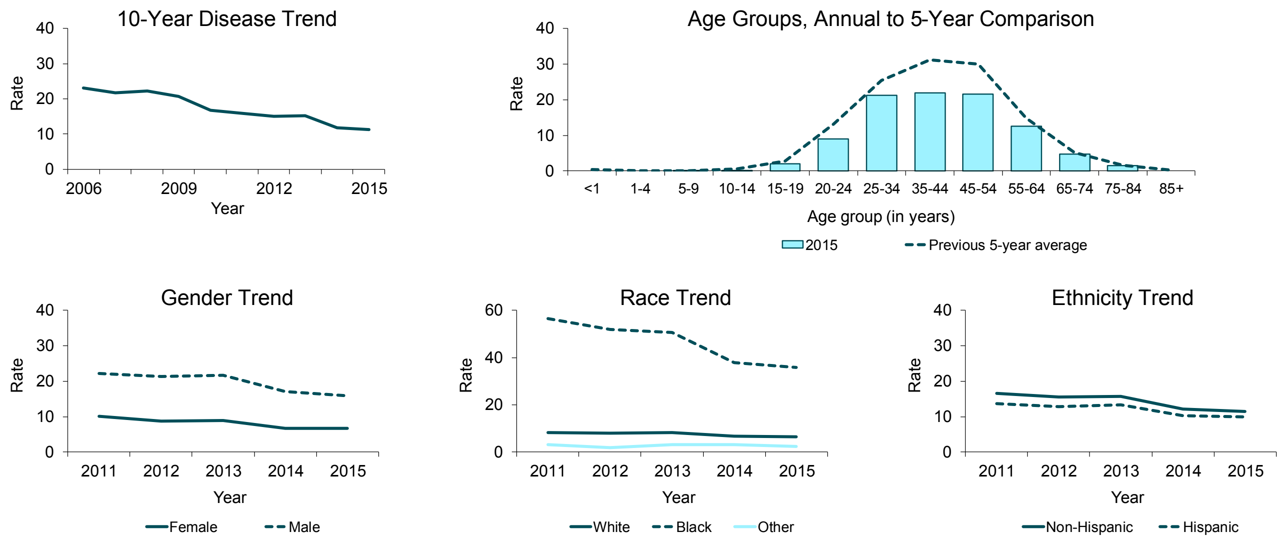
Summary			
Number of cases			2,218
Incidence rate (per 100,000 population)			11.2
Change from 5-year average incidence			-25.1%
Age (in Years)			
Mean			43
Median			44
Min-max			5 - 85
Gender	**Number**	**(Percent)**	**Rate**
Female	675	(30.4)	6.7
Male	1,543	(69.6)	15.9
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	990	(44.8)	6.4
Black	1,195	(54.1)	35.7
Other	25	(1.1)	2.4
Unknown race	8		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	1,717	(78.0)	11.4
Hispanic	483	(22.0)	9.9
Unknown ethnicity	18		

Reported AIDS Cases and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2015 (N=2,218)



County totals exclude Florida Department of Corrections cases (n=28).
Note that rates based on <20 cases are not reliable and should be interpreted with caution.

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



Additional Information

For AIDS cases, men are disproportionately impacted compared to women. In 2015 cases reported in adult men, male-to-male sexual contact was the most common risk factor (65.4%), followed by heterosexual contact (24.4%).

In 2015, blacks were over-represented among AIDS cases, accounting for 45.6% of adult cases among men and 65.2% of the adult cases among women.

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

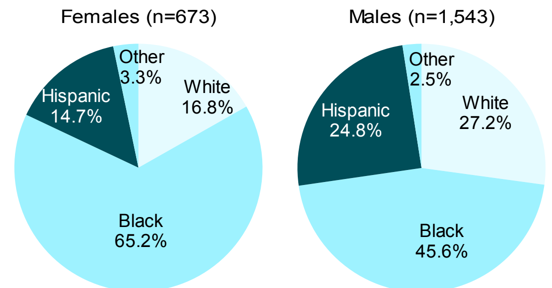
Please visit the AIDS Surveillance website to access additional information at www.FloridaHealth.gov/diseases-and-conditions/aids/surveillance/index.html.

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

Reported Adult (13 Years and Older) AIDS Cases by Gender and Mode of Exposure, Florida, 2015

Mode of Exposure	Females Cases (n=673)	Males Cases (n=1,543)
	Number (Percent)	Number (Percent)
Men who have sex with men (MSM)	NA	1,009 (65.4)
Heterosexual	595 (88.4)	377 (24.4)
Injection drug user (IDU)	73 (10.8)	89 (5.8)
MSM and IDU	NA	61 (4.0)
Other	5 (0.7)	7 (0.5)
Total	673	1,543

Reported Adult (13 Years and Older) AIDS Cases by Gender and Race/Ethnicity, Florida, 2015



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

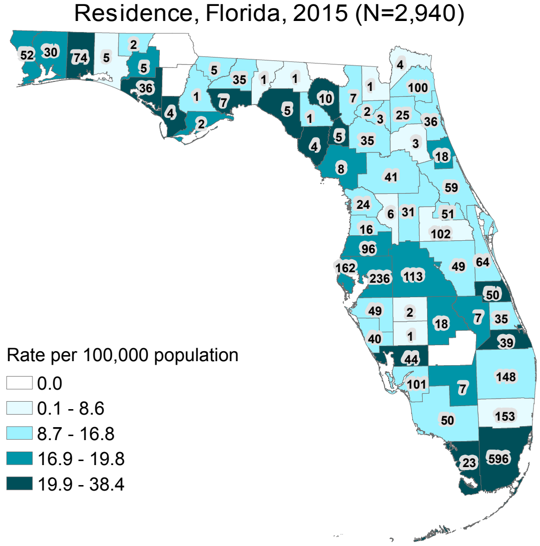
Reason for surveillance: Identify and control outbreaks, identify and mitigate common sources (e.g., contaminated food product, ill food handler), monitor incidence over time, estimate burden of illness

Comments: The use of culture-independent diagnostic testing for *Campylobacter* has increased sharply in recent years. Florida changed the campylobacteriosis surveillance case definition in January and July 2011, as well as in January 2015, increasing the number of reported cases in both years. Campylobacteriosis incidence in children <1 year old and adults ≥45 years old showed notable increases in 2015.

Summary of Case Demographics

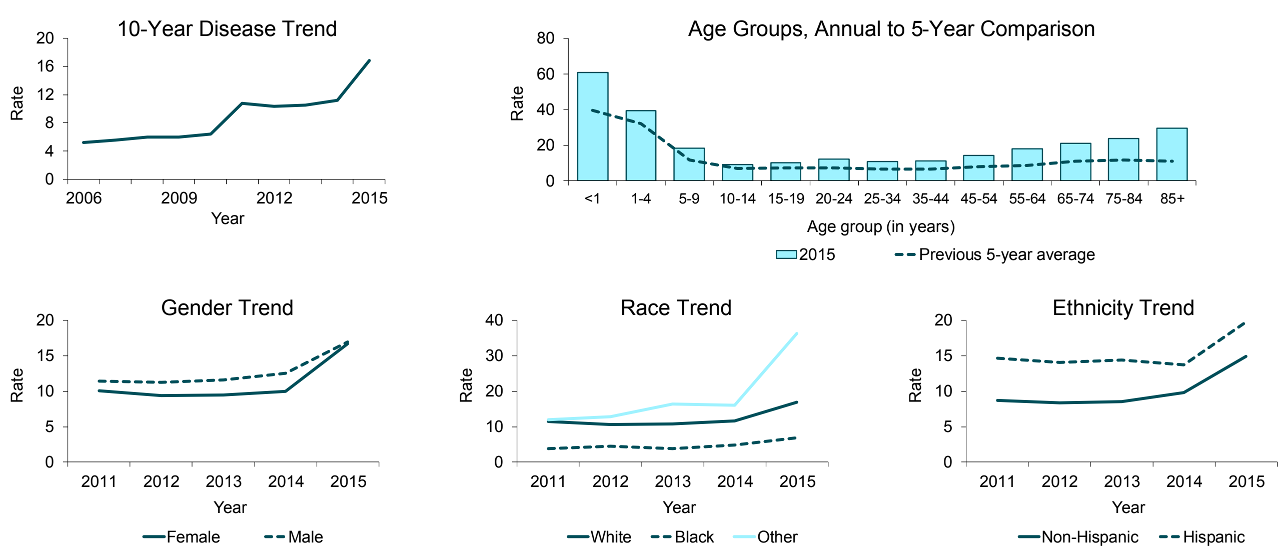
Summary			
Number of cases			3,351
Incidence rate (per 100,000 population)			16.9
Change from 5-year average incidence			+71.3%
Age (in Years)			
Mean			42
Median			46
Min-max			0 - 101
Gender	**Number**	**(Percent)**	**Rate**
Female	1,699	(50.7)	16.8
Male	1,652	(49.3)	17.0
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	2,628	(81.3)	17.0
Black	229	(7.1)	6.8
Other	376	(11.6)	36.3
Unknown race	118		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	2,240	(70.0)	14.9
Hispanic	959	(30.0)	19.8
Unknown ethnicity	152		

Reported Campylobacteriosis Cases and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2015 (N=2,940)



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



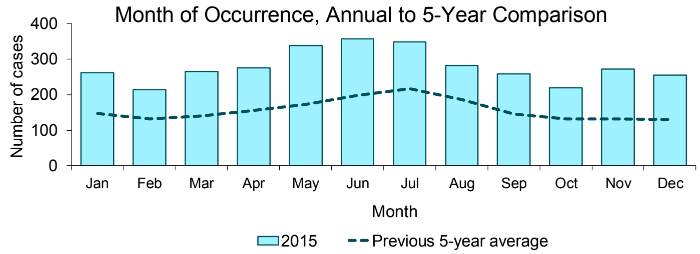
Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Campylobacteriosis cases were missing 6.2% of ethnicity data in 2011, 5.1% of race data in 2011, 6.2% of ethnicity data in 2012, 6.3% of race data in 2012, 5.2% of ethnicity data in 2013, and 5.0% of race data in 2013.

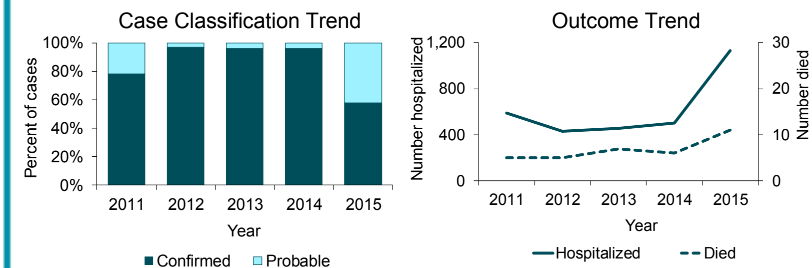
Campylobacteriosis

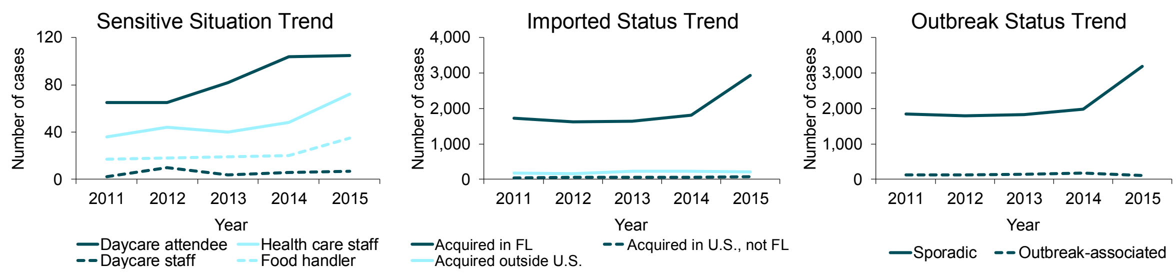
Summary of Case Factors

Summary	Number
Number of cases	3,351
Case Classification	**Number (Percent)**
Confirmed	1,946 (58.1)
Probable	1,405 (41.9)
Outcome	**Number (Percent)**
Hospitalized	1,128 (33.7)
Died	11 (0.3)
Sensitive Situation	**Number (Percent)**
Daycare attendee	105 (3.1)
Daycare staff	7 (0.2)
Health care staff	72 (2.1)
Food handler	35 (1.0)
Imported Status	**Number (Percent)**
Acquired in Florida	2,940 (87.7)
Acquired in the U.S., not Florida	76 (2.3)
Acquired outside the U.S.	213 (6.4)
Acquired location unknown	122 (3.6)
Outbreak Status	**Number (Percent)**
Sporadic	3,190 (95.2)
Outbreak-associated	106 (3.2)
Outbreak status unknown	55 (1.6)

Reported Campylobacteriosis Cases 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 due to campylobacteriosis increased dramatically in 2015; primarily driven by increased rates of hospitalization in children <1 and adults ≥80 years old. The number of campylobacteriosis cases reported in daycare attendees increased in 2013 and 2014, but plateaued in 2015. There have been no reported campylobacteriosis outbreaks in daycares between 2013 and 2015; 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)

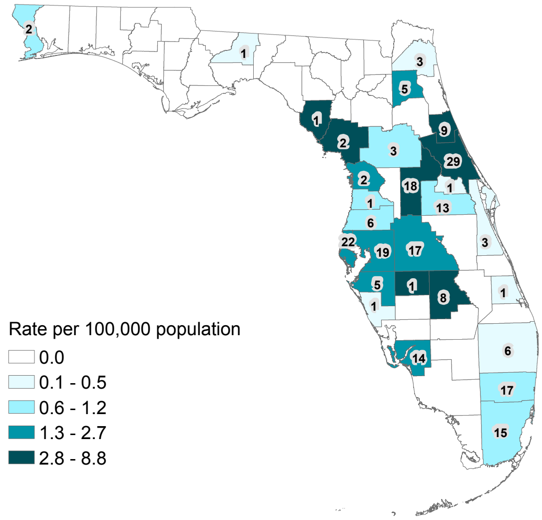
Reason for surveillance: Identify and mitigate persistent sources of exposure, identify populations at risk, evaluate trends in environmental conditions, measure impact of public health interventions

Comments: CO poisoning became a reportable condition in Florida in late 2008, so only cases from 2009 to 2015 are presented in this report. CO poisonings are more common in people ≥35 years old. CO poisonings tend to increase during cold winter months and during large power outages when generator use increases.

Summary of Case Demographics

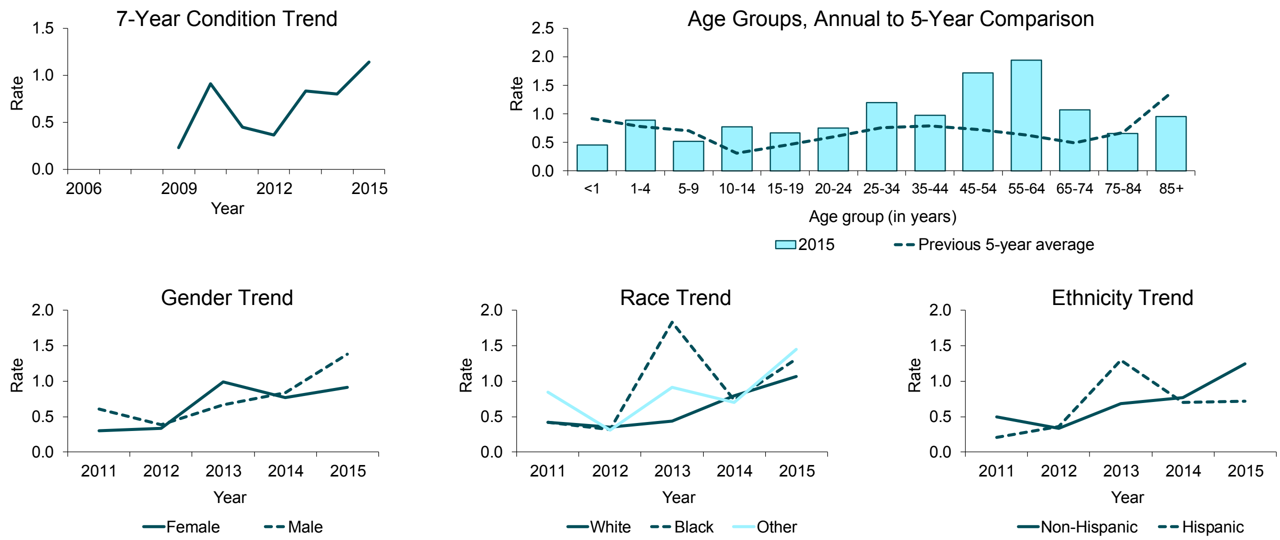
Summary			
Number of cases			227
Incidence rate (per 100,000 population)			1.1
Change from 5-year average incidence			+70.0%
Age (in Years)			
Mean			45
Median			48
Min-max			0 - 91
Gender	**Number**	**(Percent)**	**Rate**
Female	93	(41.0)	0.9
Male	134	(59.0)	1.4
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	165	(73.7)	1.1
Black	44	(19.6)	1.3
Other	15	(6.7)	NA
Unknown race	3		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	188	(84.3)	1.3
Hispanic	35	(15.7)	0.7
Unknown ethnicity	4		

Reported Carbon Monoxide Poisoning Cases and Incidence Rates Per 100,000 Population (Restricted to Exposures Occurring in Florida) by County of Residence, Florida, 2015 (N=225)



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



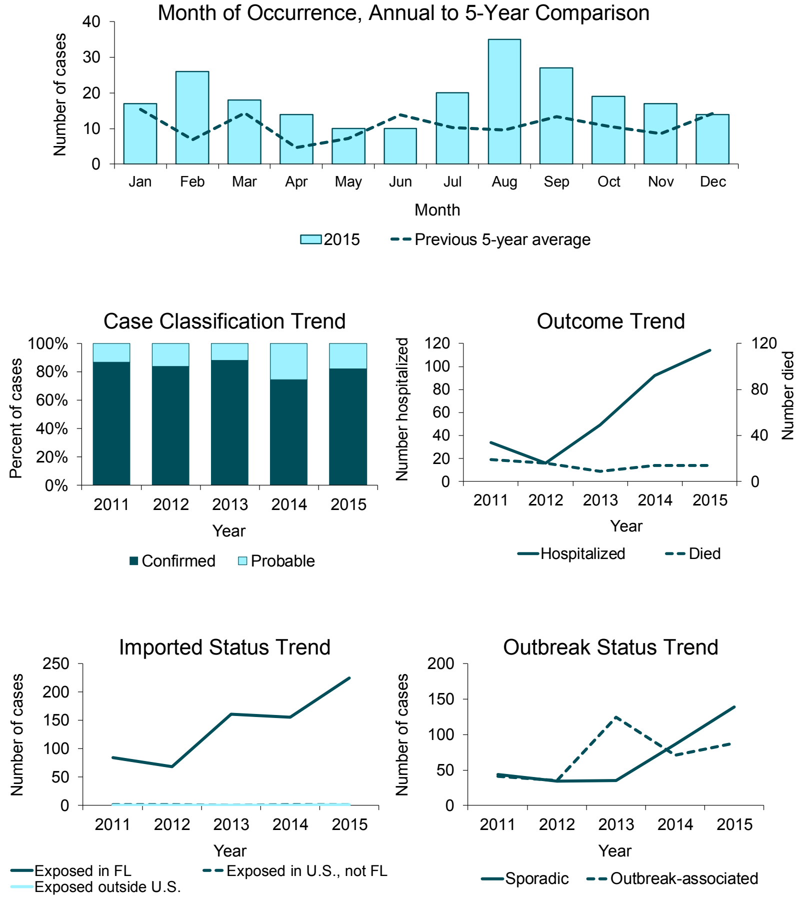
Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Carbon monoxide poisoning cases were missing 5.8% of ethnicity data in 2012, 16.8% of race data in 2013, and 6.4% of ethnicity data in 2014.

Carbon Monoxide Poisoning

Summary of Case Factors

Summary	Number
Number of cases	227
Case Classification	**Number (Percent)**
Confirmed	187 (82.4)
Probable	40 (17.6)
Outcome	**Number (Percent)**
Hospitalized	114 (50.2)
Died	14 (6.2)
Imported Status	**Number (Percent)**
Exposed in Florida	225 (99.1)
Exposed in the U.S., not Florida	1 (0.4)
Exposed outside the U.S.	1 (0.4)
Exposed location unknown	0 (0.0)
Outbreak Status	**Number (Percent)**
Sporadic	139 (61.2)
Outbreak-associated	88 (38.8)
Outbreak status unknown	0 (0.0)
Exposure Type	**Number (Percent)**
Smoking	54 (23.8)
Automobile/RV	34 (15.0)
Fuel-burning appliances	27 (11.9)
Generator	22 (9.7)
Power tools (including mower)	19 (8.4)
Fire	14 (6.2)
Portable fuel-burning grill/stove	7 (3.1)
Other	5 (2.2)
Boat	1 (0.4)
Unknown	44 (19.4)

Reported Carbon Monoxide Poisoning 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 exposure most likely occurred. Outbreak- associated indicates that two or more cases are epidemiologically linked.

Additional Information

CO poisoning cases have increased over the past 5 years due to improved outbreak detection and reporting. CO poisoning was more common in men, which is consistent with the U.S. trend. In 2015, cases in Florida peaked in February, August, and September, which is not consistent with U.S. trends. The most common exposures causing CO poisoning vary by season. In February, 16 (61.5%) of 26 cases were caused by exposure to fuel-burning appliances. In August, 12 (34.3%) of 35 cases were caused by exposure to power tools. In September, 12 (44.4%) of 27 cases were caused by generator use during power outages. These 12 cases were related to two clusters. One cluster of seven cases in Pinellas County was caused by a generator running in the garage of a house. In an unrelated incident in Clay County a week later, a family of five was exposed when a diesel generator ran overnight near an air conditioning unit.

Chikungunya Fever

Disease Facts

Cause: Chikungunya virus

Type of illness: Acute febrile illness with joint and muscle pain, headache, joint swelling, and rash; some symptoms can persist for months to years and relapse can occur

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

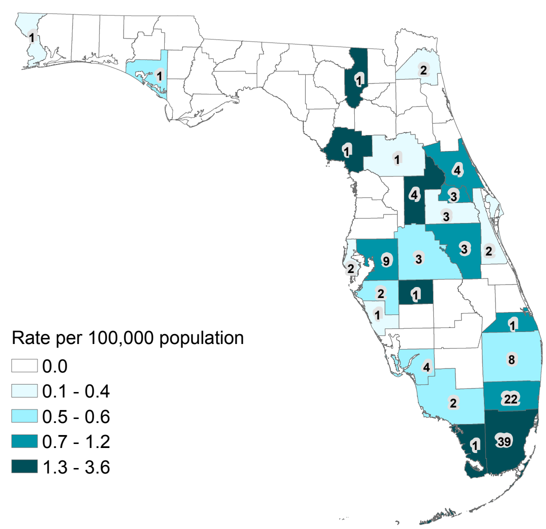
Reason for surveillance: Identify individual cases and implement control measures to prevent endemicity, monitor incidence over time, estimate burden of illness

Comments: 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, 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.

Summary of Case Demographics

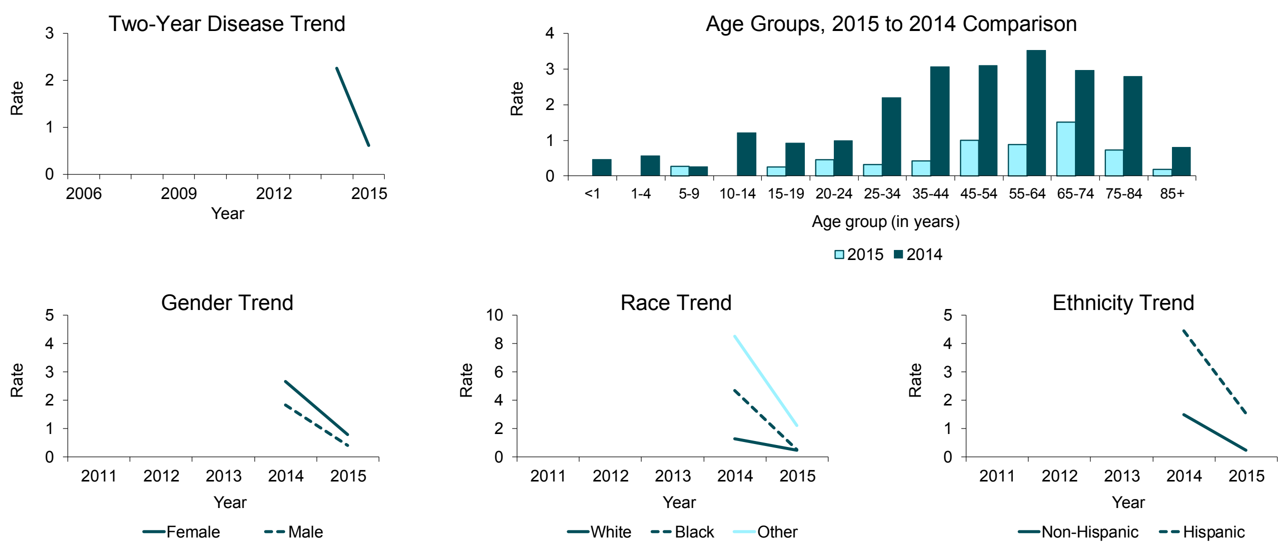
Summary			
Number of cases			121
Incidence rate (per 100,000 population)			0.6
Change from previous year incidence			-73.1%
Age (in Years)			
Mean			53
Median			57
Min-max			6 - 86
Gender	**Number**	**(Percent)**	**Rate**
Female	81	(66.9)	0.8
Male	40	(33.1)	0.4
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	74	(64.9)	0.5
Black	17	(14.9)	NA
Other	23	(20.2)	2.2
Unknown race	7		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	37	(33.0)	0.2
Hispanic	75	(67.0)	1.5
Unknown ethnicity	9		

Reported Chikungunya Fever Cases and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2015 (N=121)



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

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

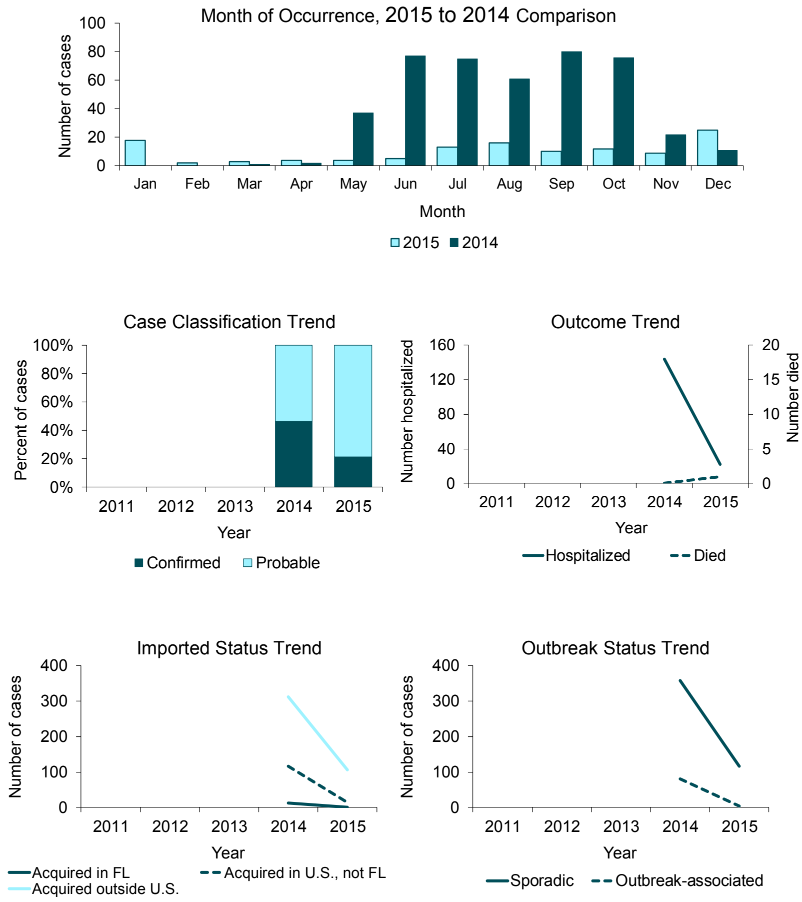


Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Chikungunya fever cases were missing 7.4% of ethnicity data in 2015 and 5.8% of race data in 2015.

Additional Information

Summary	Number
Number of cases	121
Case Classification	**Number (Percent)**
Confirmed	26 (21.5)
Probable	95 (78.5)
Outcome	**Number (Percent)**
Hospitalized	22 (18.2)
Died	1 (0.8)
Imported Status	**Number (Percent)**
Acquired in Florida	0 (0.0)
Acquired in the U.S., not Florida	14 (11.6)
Acquired outside the U.S.	107 (88.4)
Acquired location unknown	0 (0.0)
Outbreak Status	**Number (Percent)**
Sporadic	117 (96.7)
Outbreak-associated	4 (3.3)
Outbreak status unknown	0 (0.0)
Region Where Infection Acquired	**Number (Percent)**
Central America/Caribbean	80 (66.1)
South America	23 (19.0)
Puerto Rico (U.S.)	12 (9.9)
Asia	2 (1.7)
South Pacific	2 (1.7)
Virgin Islands (U.S.)	2 (1.7)
Reason for Travel	**Number (Percent)**
Visiting friends/relatives	106 (87.6)
Missionary or dependent	3 (2.5)
Business	2 (1.7)
Refugee/immigrant	1 (0.8)
Student/teacher	1 (0.8)
Tourism	1 (0.8)
Other	2 (1.7)
Unknown	5 (4.1)

Reported Chikungunya 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

There was a large decrease in imported chikungunya fever cases reported in 2015 (121 cases) compared to 2014 (428 cases). Unlike dengue fever, infection with chikungunya virus leads to lifetime immunity, which is believed to be the biggest 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. For the 14 cases acquired outside Florida in the U.S. in 2015, 12 infections were acquired in Puerto Rico and two in the U.S. Virgin Islands. Compared to other mosquito-borne diseases like dengue fever and malaria, the incidence rate of chikungunya fever is much higher in women than men. Chikungunya fever was also identified in one non-Florida resident while traveling in Florida (note that this report only includes Florida residents in case counts). It is important to note that both infected residents and non-residents who are infectious and bitten by mosquitoes while in Florida could pose a potential risk for introduction of chikungunya fever.

Chlamydia

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

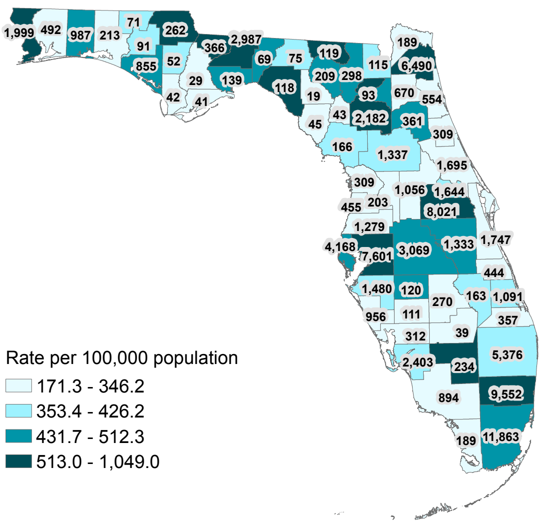
Reason for surveillance: Implement effective interventions immediately for every case, monitor incidence over time, estimate burden of illness, evaluate treatment and prevention programs

Comments: Chlamydia is the most commonly reported STD in Florida and the U.S; incidence rates have been slowly increasing 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

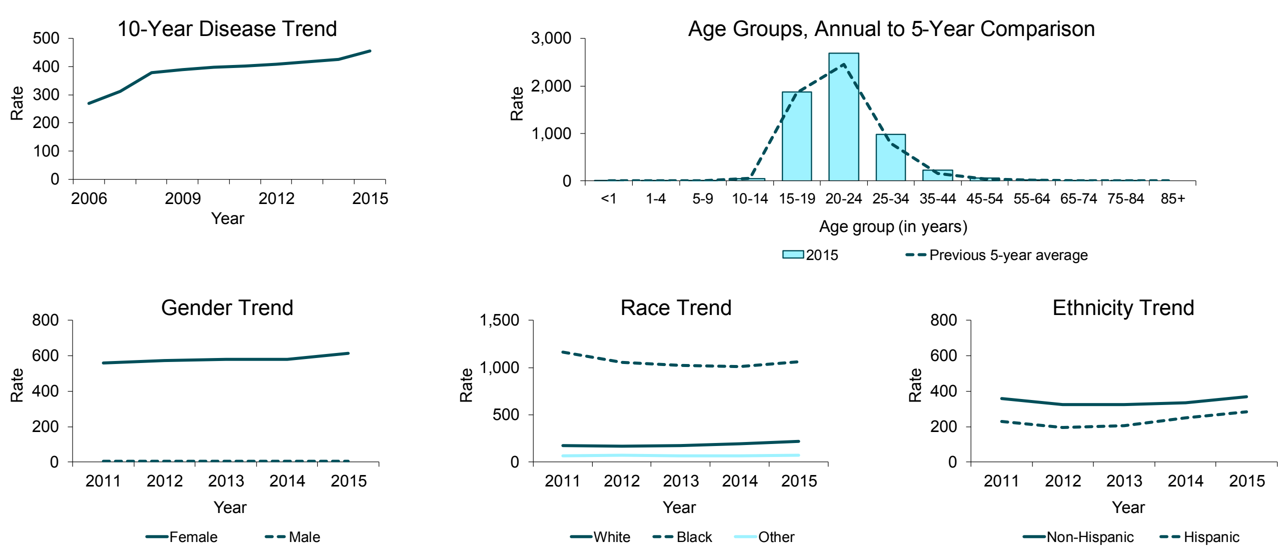
Summary			
Number of cases			90,650
Incidence rate (per 100,000 population)			456.4
Change from 5-year average incidence			+11.2%
Age (in Years)			
Mean			24
Median			22
Min-max			0 - 98
Gender	**Number**	**(Percent)**	**Rate**
Female	62,170	(68.6)	612.9
Male	28,393	(31.4)	292.2
Unknown gender	87		
Race	**Number**	**(Percent)**	**Rate**
White	34,210	(48.5)	221.0
Black	35,594	(50.4)	1,064.6
Other	766	(1.1)	73.9
Unknown race	20,080		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	55,590	(80.2)	370.4
Hispanic	13,767	(19.8)	283.6
Unknown ethnicity	21,293		

Reported Chlamydia Cases and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2015 (N=90,650)



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 were missing 18.1% of ethnicity data in 2011, 17.8% of race data in 2011, 28.3% of ethnicity data in 2012, 24.1% of race data in 2012, 29.2% of ethnicity data in 2013, 25.4% of race data in 2013, 26.1% of ethnicity data in 2014, 23.8% of race data in 2014, 23.5% of ethnicity data in 2015, and 22.2% of race data in 2015.

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

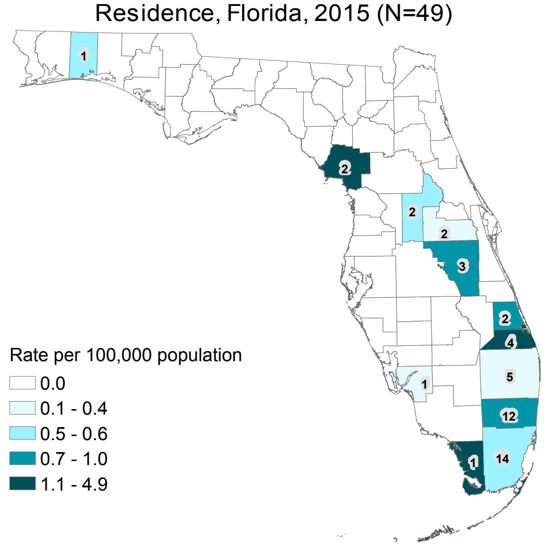
Reason for surveillance: Identify and control outbreaks, identify high-risk products (e.g., barracuda, grouper)

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

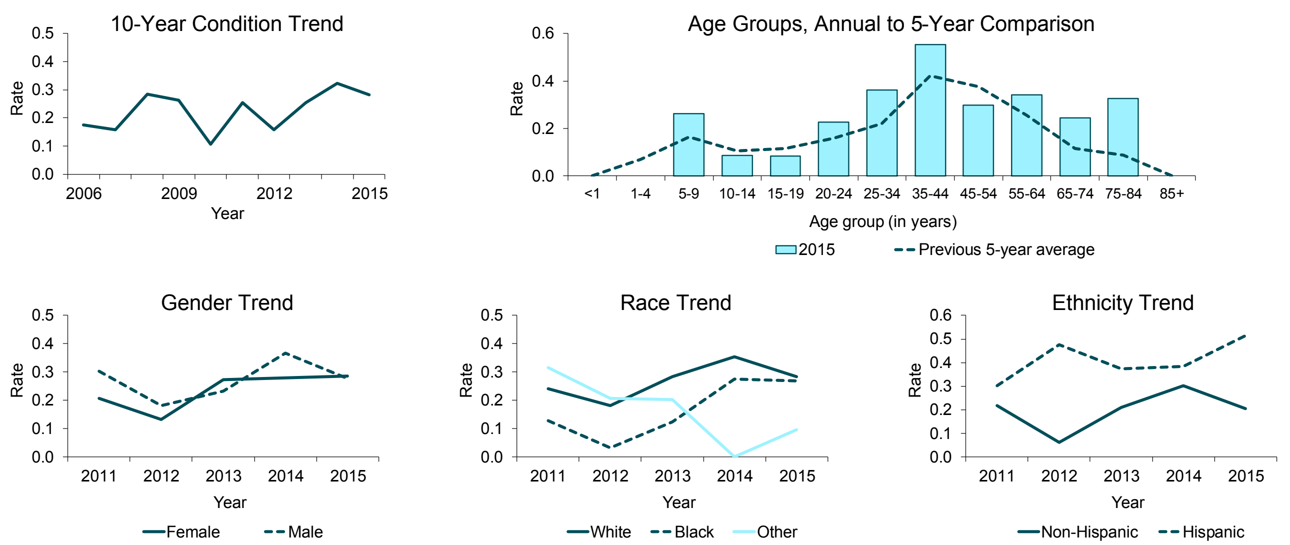
Summary			
Number of cases			56
Incidence rate (per 100,000 population)			0.3
Change from 5-year average incidence			+29.0%
Age (in Years)			
Mean			45
Median			44
Min-max			6 - 82
Gender	**Number**	**(Percent)**	**Rate**
Female	29	(51.8)	0.3
Male	27	(48.2)	0.3
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	44	(81.5)	0.3
Black	9	(16.7)	NA
Other	1	(1.9)	NA
Unknown race	2		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	31	(55.4)	0.2
Hispanic	25	(44.6)	0.5
Unknown ethnicity	0		

Reported Ciguatera Fish Poisoning Cases and Incidence Rates Per 100,000 Population (Restricted to Exposures Occurring in Florida) by County of Residence, Florida, 2015 (N=49)



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

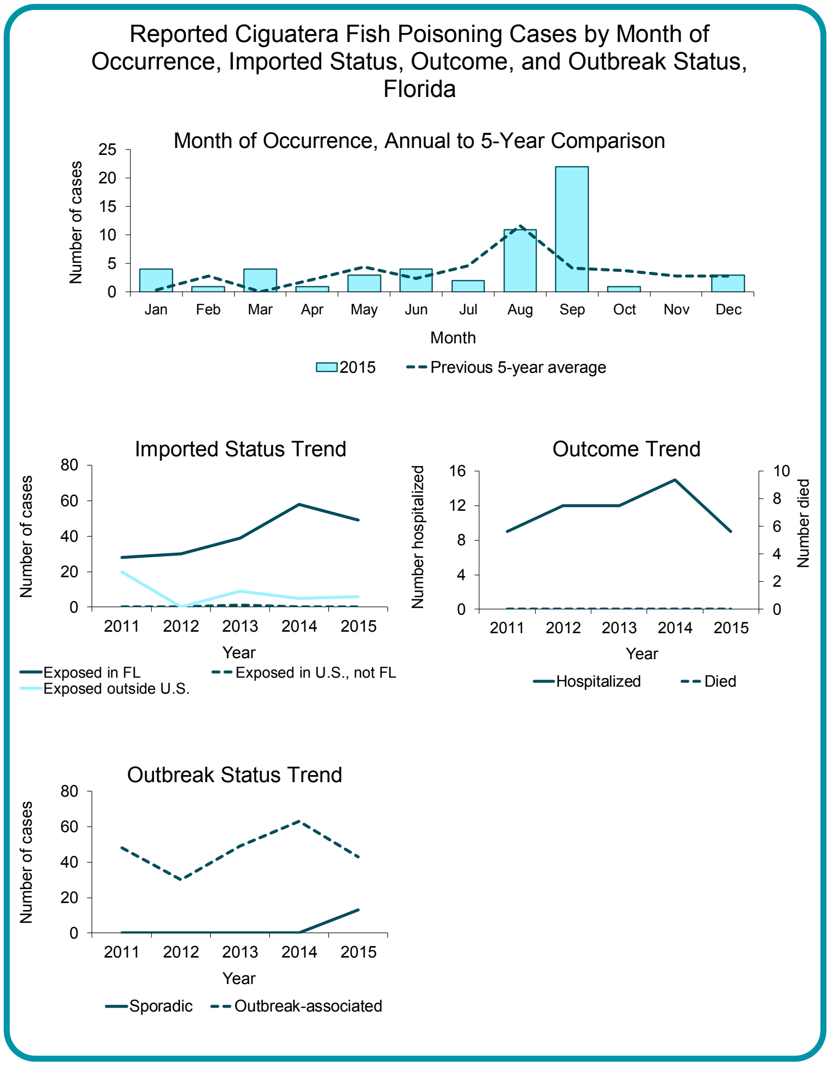


Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Ciguatera fish poisoning cases were missing 6.3% of ethnicity data in 2011 and 10.4% of race data in 2011.

Ciguatera Fish Poisoning

Summary of Case Factors

Summary	Number
Number of cases	56
Outcome	**Number (Percent)**
Hospitalized	9 (16.1)
Died	0 (0.0)
Imported Status	**Number (Percent)**
Exposed in Florida	49 (87.5)
Exposed in the U.S., not Florida	0 (0.0)
Exposed outside the U.S.	6 (10.7)
Exposed location unknown	1 (1.8)
Outbreak Status	**Number (Percent)**
Sporadic	13 (23.2)
Outbreak-associated	43 (76.8)
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

Sixteen outbreaks were identified in 2015 involving 43 cases. Outbreak size ranged from two cases per outbreak to six, with an average of three. Outbreaks were associated with eating barracuda (7), amberjack (4), snapper (1), grouper (1), sea urchin (1), and kingfish (1). One outbreak was associated with consumption of two fish known to carry ciguatoxin (amberjack and hogfish). Two large outbreaks were identified during the month of September, which accounts for the larger-than-normal peak in 2015. Outbreaks were more commonly associated with recreationally caught fish.

In Florida, one case of ciguatera fish poisoning is considered an outbreak for public health purposes and prior to 2015, all cases were reported as outbreak-associated. One case is still considered an outbreak in Florida, but in 2015, cases were classified as sporadic in the reportable disease surveillance system unless they were epidemiologically linked to another case. This change supports better characterization of epidemiologically-linked cases.

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

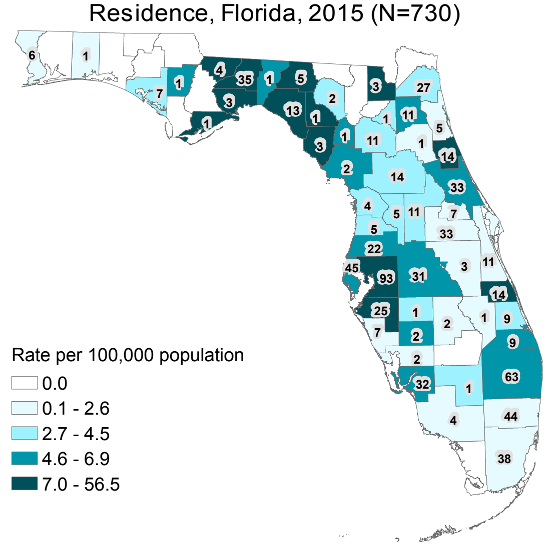
Reason for surveillance: Identify and control outbreaks, identify and mitigate common sources (e.g., contaminated food/water source, ill food handler), monitor incidence over time, estimate burden of illness

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, though remained well above the rates from 2010 to 2013. The largest concentration of cases was in and around Hillsborough County.

Summary of Case Demographics

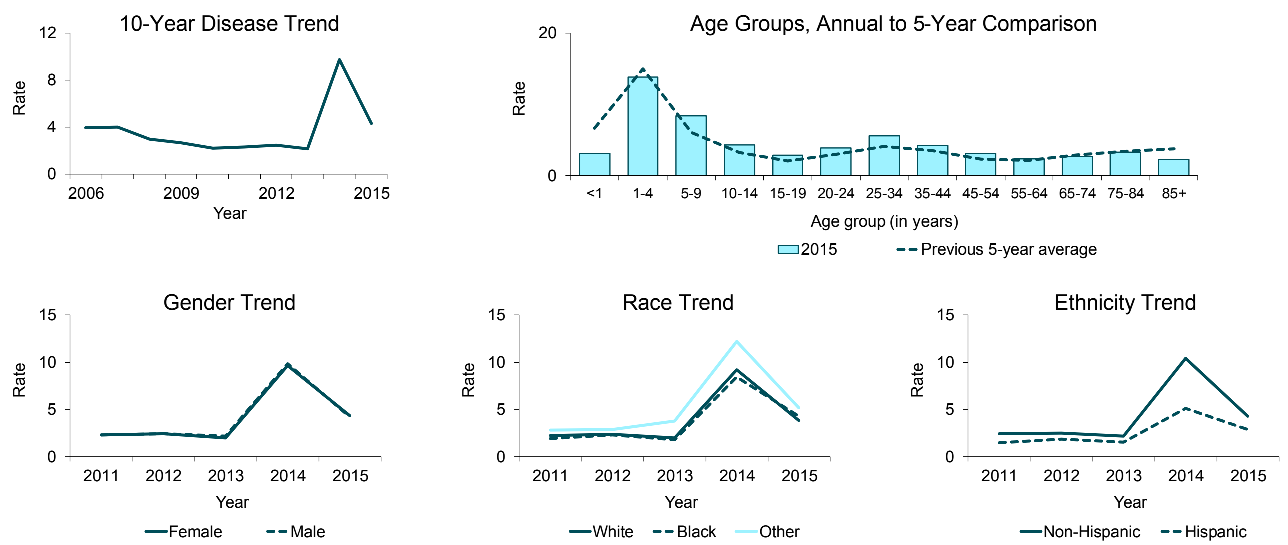
Summary			
Number of cases			856
Incidence rate (per 100,000 population)			4.3
Change from 5-year average incidence			+14.6%
Age (in Years)			
Mean			32
Median			29
Min-max			0 - 93
Gender	**Number**	**(Percent)**	**Rate**
Female	444	(51.9)	4.4
Male	412	(48.1)	4.2
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	601	(75.3)	3.9
Black	143	(17.9)	4.3
Other	54	(6.8)	5.2
Unknown race	58		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	645	(82.1)	4.3
Hispanic	141	(17.9)	2.9
Unknown ethnicity	70		

Reported Cryptosporidiosis Cases and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2015 (N=730)



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

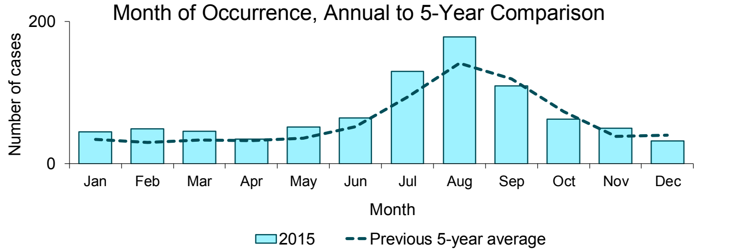


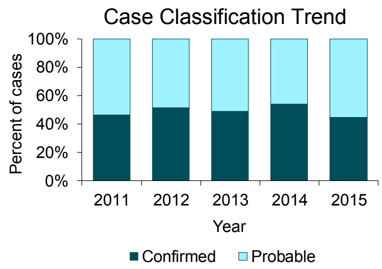
Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Cryptosporidiosis cases were missing 5.8% of ethnicity data in 2014, 5.2% of race data in 2014, 8.2% of ethnicity data in 2015, and 6.8% of race data in 2015.

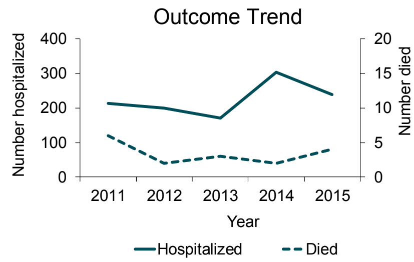
Summary of Case Factors

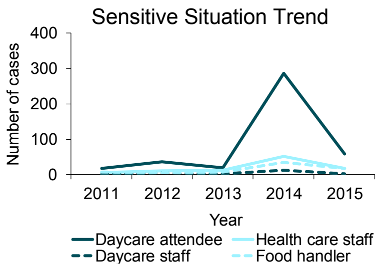
Summary	Number
Number of cases	856
Case Classification	**Number (Percent)**
Confirmed	384 (44.9)
Probable	472 (55.1)
Outcome	**Number (Percent)**
Hospitalized	239 (27.9)
Died	4 (0.5)
Sensitive Situation	**Number (Percent)**
Daycare attendee	59 (6.9)
Daycare staff	2 (0.2)
Health care staff	18 (2.1)
Food handler	17 (2.0)
Imported Status	**Number (Percent)**
Acquired in Florida	730 (85.3)
Acquired in the U.S., not Florida	24 (2.8)
Acquired outside the U.S.	52 (6.1)
Acquired location unknown	50 (5.8)
Outbreak Status	**Number (Percent)**
Sporadic	630 (73.6)
Outbreak-associated	201 (23.5)
Outbreak status unknown	25 (2.9)

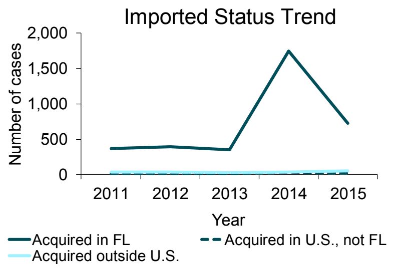
Reported Cryptosporidiosis Cases by Month of Occurrence, Case Classification, Outcome, Sensitive Situation, Imported Status, and Outbreak Status, Florida

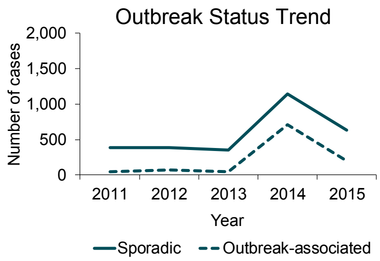












Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in 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 2015, five waterborne *Cryptosporidium* outbreaks were investigated. These outbreaks included 47 cases associated with swimming pools, recreational water parks, kiddie pools, and a temporary water slide. Identified contributing factors for these outbreaks included patrons still swimming when ill or within two weeks of being ill, diaper/toddler-aged children using these venues, lack of supplemental disinfection, and malfunctioning or inadequate filtration for recreational water systems. Additional community-wide outbreaks 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

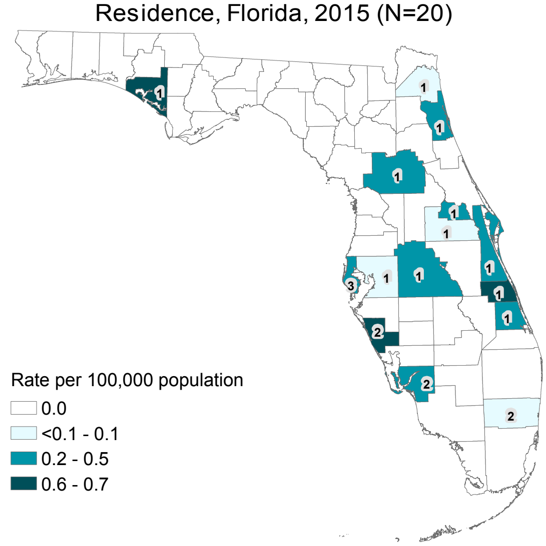
Reason for surveillance: Identify and control outbreaks, identify and mitigate common sources (e.g., contaminated food product), monitor incidence over time, estimate burden of illness

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, snow peas, and mesclun lettuce.

Summary of Case Demographics

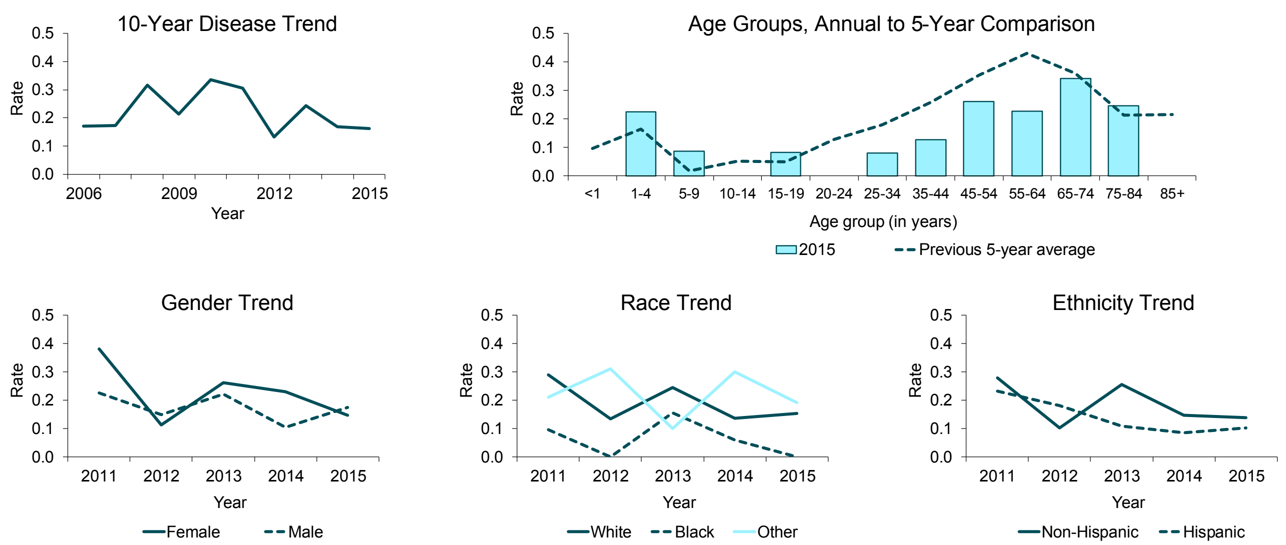
Summary			
Number of cases			32
Incidence rate (per 100,000 population)			0.2
Change from 5-year average incidence			-32.0%
Age (in Years)			
Mean			51
Median			57
Min-max			1 - 80
Gender	**Number**	**(Percent)**	**Rate**
Female	15	(46.9)	NA
Male	17	(53.1)	NA
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	24	(92.3)	0.2
Black	0	(0.0)	NA
Other	2	(7.7)	NA
Unknown race	6		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	21	(80.8)	0.1
Hispanic	5	(19.2)	NA
Unknown ethnicity	6		

Reported Cyclosporiasis Cases and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2015 (N=20)



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

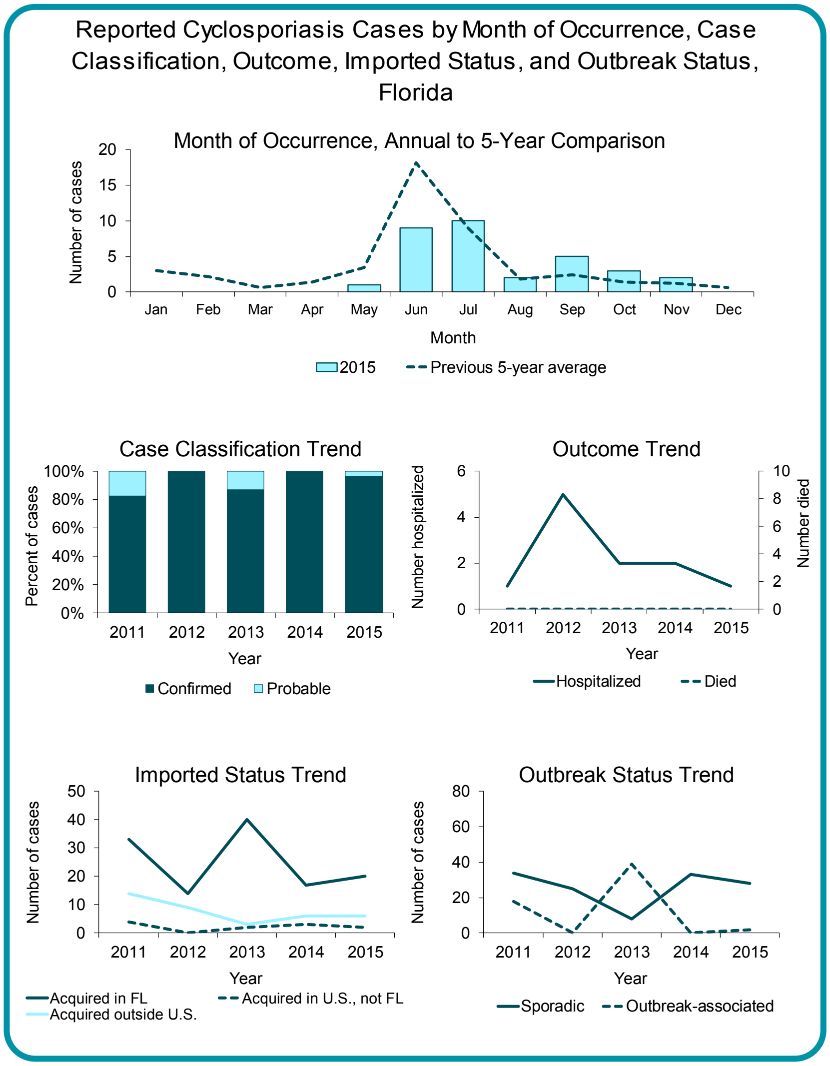
Incidence Rates Per 100,000 Population of Reported Cyclosporiasis Cases by Year, Age, Gender, Race, and Ethnicity, Florida



Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Cyclosporiasis cases were missing 12.1% of ethnicity data in 2011, 17.2% of race data in 2011, 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, and 18.8% of race data in 2015.

Summary of Case Factors

Summary	Number
Number of cases	32
Case Classification	**Number (Percent)**
Confirmed	31 (96.9)
Probable	1 (3.1)
Outcome	**Number (Percent)**
Hospitalized	1 (3.1)
Died	0 (0.0)
Imported Status	**Number (Percent)**
Acquired in Florida	20 (62.5)
Acquired in the U.S., not Florida	2 (6.3)
Acquired outside the U.S.	6 (18.8)
Acquired location unknown	4 (12.5)
Outbreak Status	**Number (Percent)**
Sporadic	28 (87.5)
Outbreak-associated	2 (6.3)
Outbreak status unknown	2 (6.3)



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

In 2015, 546 *Cyclospora* infections were reported to the CDC from 23 states. Most of these people experienced onset of illness on or after May 1, 2015 and reported no international travel (58% of cases). Florida identified 13 cases that fit these criteria. Clusters in Wisconsin and Texas identified cilantro as a suspected vehicle. No common vehicle was identified for the Florida cases. Two outbreak-associated cases were from a single household. Two cases initially reported with unknown outbreak status were determined to be sporadic after the close of the 2015 morbidity database. These cases are still listed as unknown outbreak status in the morbidity database and the figures above.

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

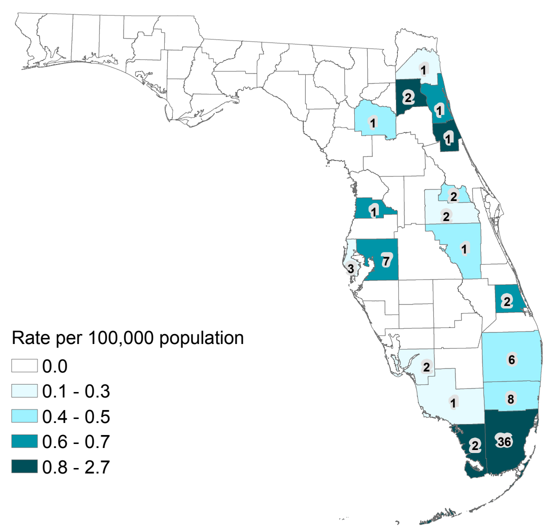
Reason for surveillance: Identify individual cases and implement control measures to prevent endemicity, monitor incidence over time, estimate burden of illness

Comments: An outbreak of locally acquired dengue fever occurred in Monroe County in 2009 and 2010 and in Martin County in 2013. In 2014, there were five unrelated local introductions in Miami-Dade County, resulting in seven locally acquired cases. In 2015, there was one local introduction in Broward County.

Summary of Case Demographics

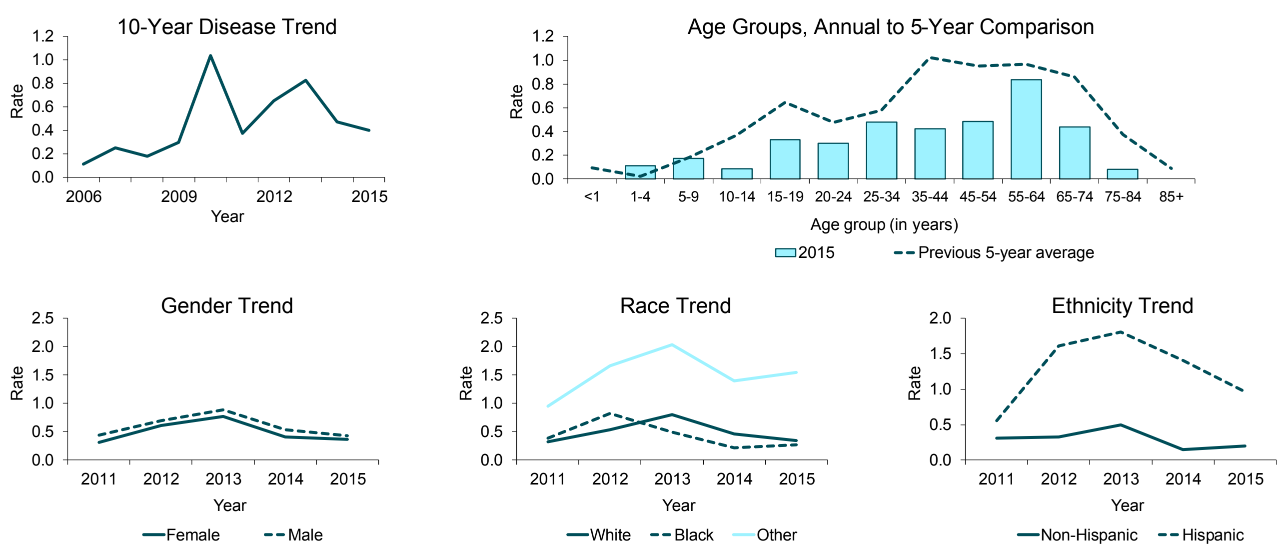
Summary			
Number of cases			79
Incidence rate (per 100,000 population)			0.4
Change from 5-year average incidence			-40.8%
Age (in Years)			
Mean			45
Median			48
Min-max			1 - 77
Gender	**Number**	**(Percent)**	**Rate**
Female	37	(46.8)	0.4
Male	42	(53.2)	0.4
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	53	(67.9)	0.3
Black	9	(11.5)	NA
Other	16	(20.5)	NA
Unknown race	1		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	30	(39.0)	0.2
Hispanic	47	(61.0)	1.0
Unknown ethnicity	2		

Reported Dengue Fever Cases and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2015 (N=79)



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

Dengue Fever

Summary of Case Factors

Summary	Number
Number of cases	79
Case Classification	**Number (Percent)**
Confirmed	45 (57.0)
Probable	34 (43.0)
Outcome	**Number (Percent)**
Hospitalized	46 (58.2)
Died	0 (0.0)
Imported Status	**Number (Percent)**
Acquired in Florida	1 (1.3)
Acquired in the U.S., not Florida	3 (3.8)
Acquired outside the U.S.	75 (94.9)
Acquired location unknown	0 (0.0)
Outbreak Status	**Number (Percent)**
Sporadic	76 (96.2)
Outbreak-associated	3 (3.8)
Outbreak status unknown	0 (0.0)
Region Where Infection Acquired	**Number (Percent)**
Central America/Caribbean	55 (70.5)
South America	11 (14.1)
Asia	9 (11.5)
Other U.S. state	3 (3.8)

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

One DENV-3 infection was acquired in Broward County. No additional transmission was identified related to that local introduction. Three infections were acquired in Hawaii. The remaining infections were primarily acquired in Central America or the Caribbean. In 2015, seven dengue fever cases were identified in non-Florida residents while traveling in Florida (note that this report only includes Florida residents in case counts). It is important to note that both 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.

Disease Facts

Cause: *Giardia* parasites

Type of illness: Gastroenteritis (diarrhea, vomiting)

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

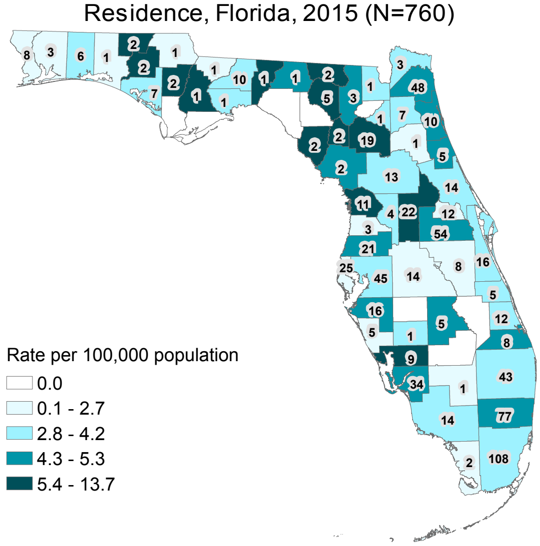
Reason for surveillance: Identify and control outbreaks, identify and mitigate common sources (e.g., contaminated food/water source, ill food handler), monitor incidence over time, estimate burden of illness

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. The percentage of cases reported in people in sensitive situations (i.e., food handlers, daycares, and health care settings) is typically ~10%, but it decreased in 2013 (7.9%) and returned to a more characteristic level in 2014 and 2015 (9.6% and 9.1% respectively).

Summary of Case Demographics

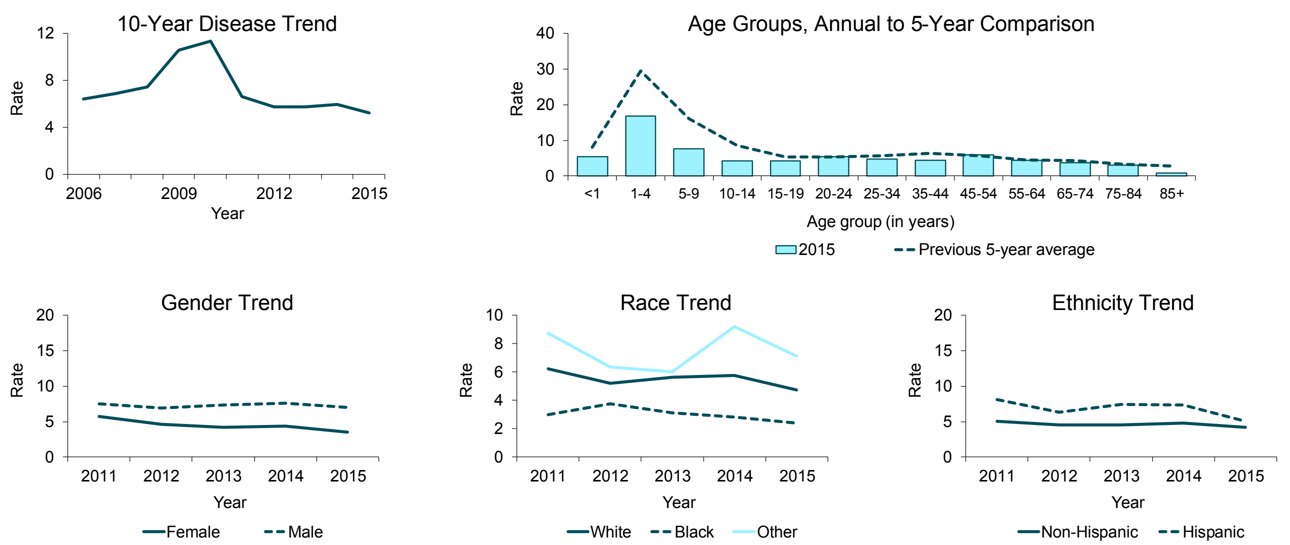
Summary			
Number of cases			1,038
Incidence rate (per 100,000 population)			5.2
Change from 5-year average incidence			-26.3%
Age (in Years)			
Mean			34
Median			32
Min-max			0 - 90
Gender	**Number**	**(Percent)**	**Rate**
Female	360	(34.7)	3.5
Male	678	(65.3)	7.0
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	734	(82.7)	4.7
Black	80	(9.0)	2.4
Other	74	(8.3)	7.1
Unknown race	150		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	628	(71.9)	4.2
Hispanic	245	(28.1)	5.0
Unknown ethnicity	165		

Reported Acute Giardiasis Cases and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2015 (N=760)



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

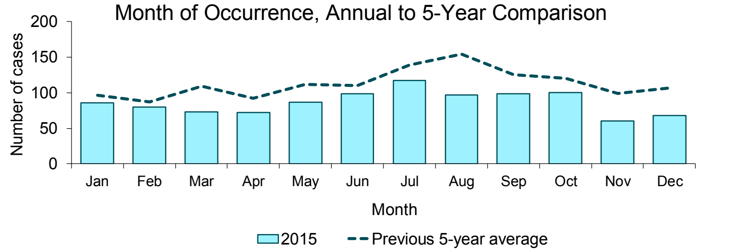


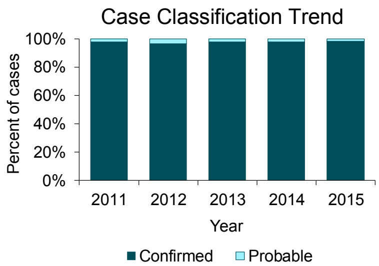
Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Acute giardiasis cases were missing 13.0% of ethnicity data in 2011, 12.3% of race data in 2011, 13.3% of ethnicity data in 2012, 12.5% of race data in 2012, 9.1% of ethnicity data in 2013, 9.5% of race data in 2013, 8.8% of ethnicity data in 2014, 8.8% of race data in 2014, 15.9% of ethnicity data in 2015, and 14.5% of race data in 2015.

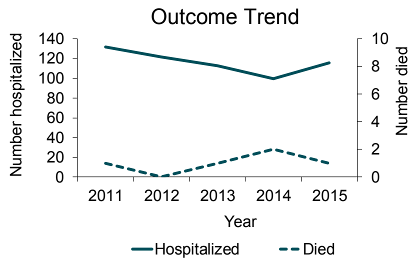
Summary of Case Factors

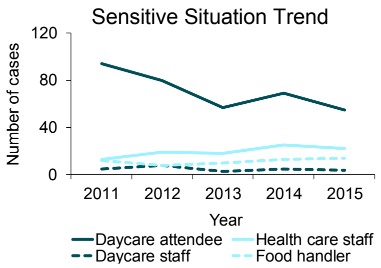
Summary	Number
Number of cases	1,038
Case Classification	**Number (Percent)**
Confirmed	1,023 (98.6)
Probable	15 (1.4)
Outcome	**Number (Percent)**
Hospitalized	116 (11.2)
Died	1 (0.1)
Sensitive Situation	**Number (Percent)**
Daycare attendee	55 (5.3)
Daycare staff	4 (0.4)
Health care staff	22 (2.1)
Food handler	14 (1.3)
Imported Status	**Number (Percent)**
Acquired in Florida	760 (73.2)
Acquired in the U.S., not Florida	27 (2.6)
Acquired outside the U.S.	170 (16.4)
Acquired location unknown	81 (7.8)
Outbreak Status	**Number (Percent)**
Sporadic	935 (90.1)
Outbreak-associated	63 (6.1)
Outbreak status unknown	40 (3.9)

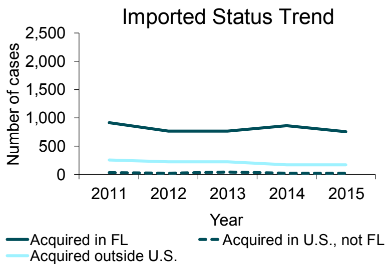
Reported Acute Giardiasis Cases by Month of Occurrence, Case Classification, Outcome, Sensitive Situation, Imported Status, and Outbreak Status, Florida

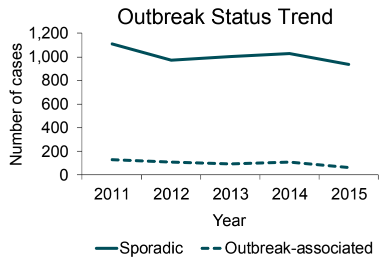












Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in 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

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

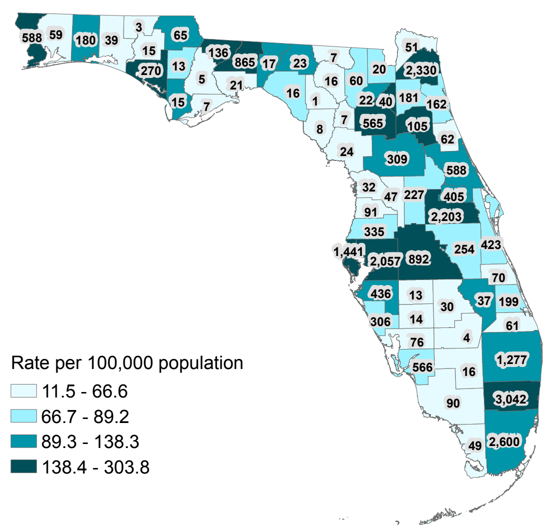
Reason for surveillance: Implement effective interventions immediately for every case, monitor incidence over time, estimate burden of illness, evaluate treatment and prevention programs

Comments: Incidence is highest among men, blacks, and 20- to 24-year-olds. Incidence decreased overall from 2006 to 2014, but increased 15.3% in 2015 compared to the previous 5-year average. The largest increase was in 20- to 24-year-old men.

Summary of Case Demographics

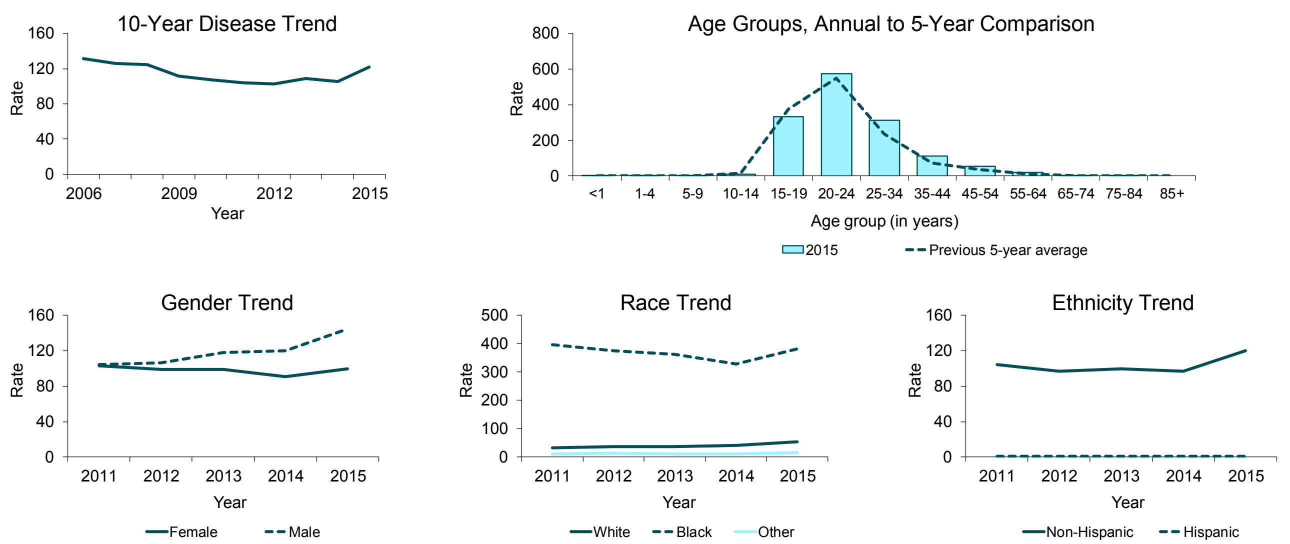
Summary			
Number of cases			24,188
Incidence rate (per 100,000 population)			121.8
Change from 5-year average incidence			+15.3%
Age (in Years)			
Mean			28
Median			25
Min-max			0 - 87
Gender	**Number**	**(Percent)**	**Rate**
Female	10,101	(41.8)	99.6
Male	14,079	(58.2)	144.9
Unknown gender	8		
Race	**Number**	**(Percent)**	**Rate**
White	8,342	(39.2)	53.9
Black	12,752	(60.0)	381.4
Other	165	(0.8)	15.9
Unknown race	2,929		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	18,033	(86.6)	120.2
Hispanic	2,784	(13.4)	57.4
Unknown ethnicity	3,371		

Reported Gonorrhea Cases and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2015 (N=24,188)



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 were missing 13.9% of ethnicity data in 2011, 11.7% of race data in 2011, 17.9% of ethnicity data in 2012, 10.3% of race data in 2012, 21.6% of ethnicity data in 2013, 17.4% of race data in 2013, 19.7% of ethnicity data in 2014, 17.3% of race data in 2014, 13.9% of ethnicity data in 2015, and 12.1% of race data in 2015.

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

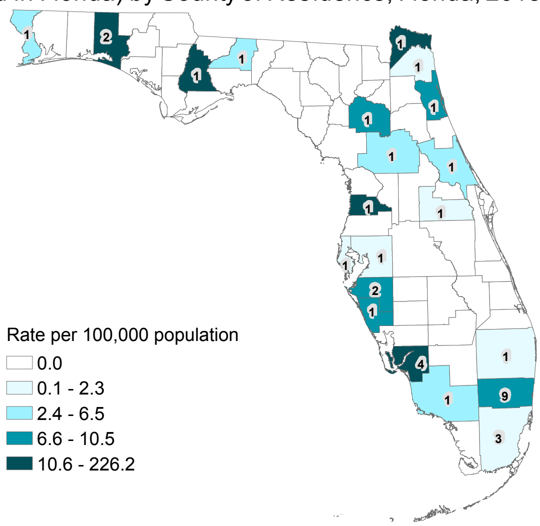
Reason for surveillance: Identify and control outbreaks, monitor incidence over time, monitor effectiveness of immunization programs and vaccines

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.

Summary of Case Demographics

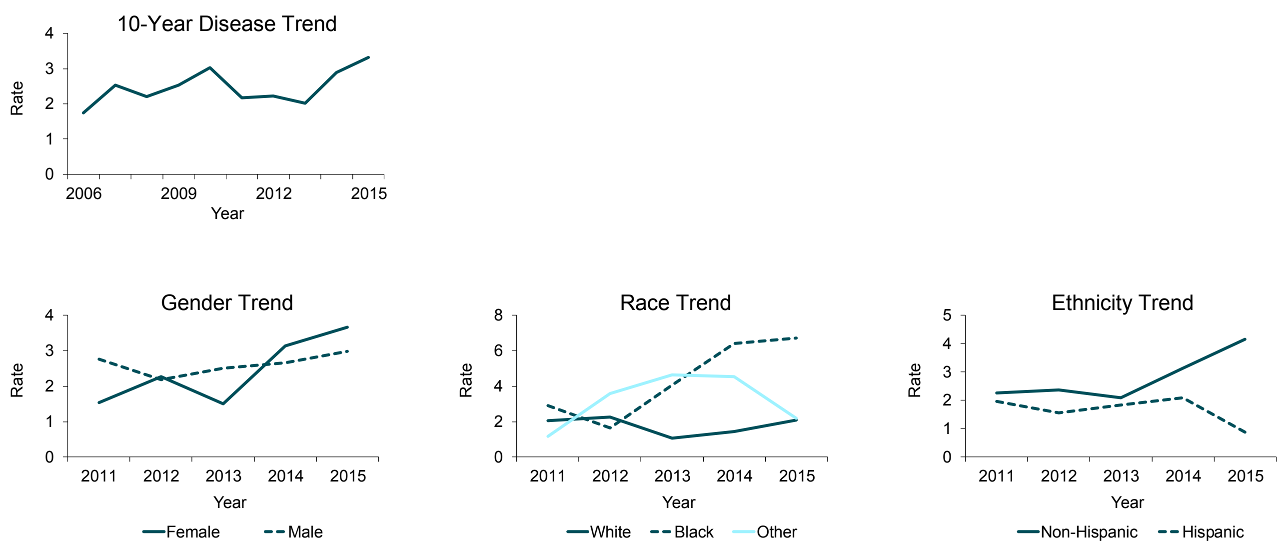
Summary			
Number of cases			37
Incidence rate (per 100,000 population)			3.3
Change from 5-year average incidence			+34.8%
Age (in Years)			
Mean			1
Median			0
Min-max			0 - 4
Gender	**Number**	**(Percent)**	**Rate**
Female	20	(54.1)	3.7
Male	17	(45.9)	NA
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	16	(45.7)	NA
Black	17	(48.6)	NA
Other	2	(5.7)	NA
Unknown race	2		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	32	(91.4)	4.2
Hispanic	3	(8.6)	NA
Unknown ethnicity	2		

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, 2015 (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 *H. influenzae* Invasive Disease Cases in Children <5 Years Old by Year, Age, Gender, Race, and Ethnicity, Florida



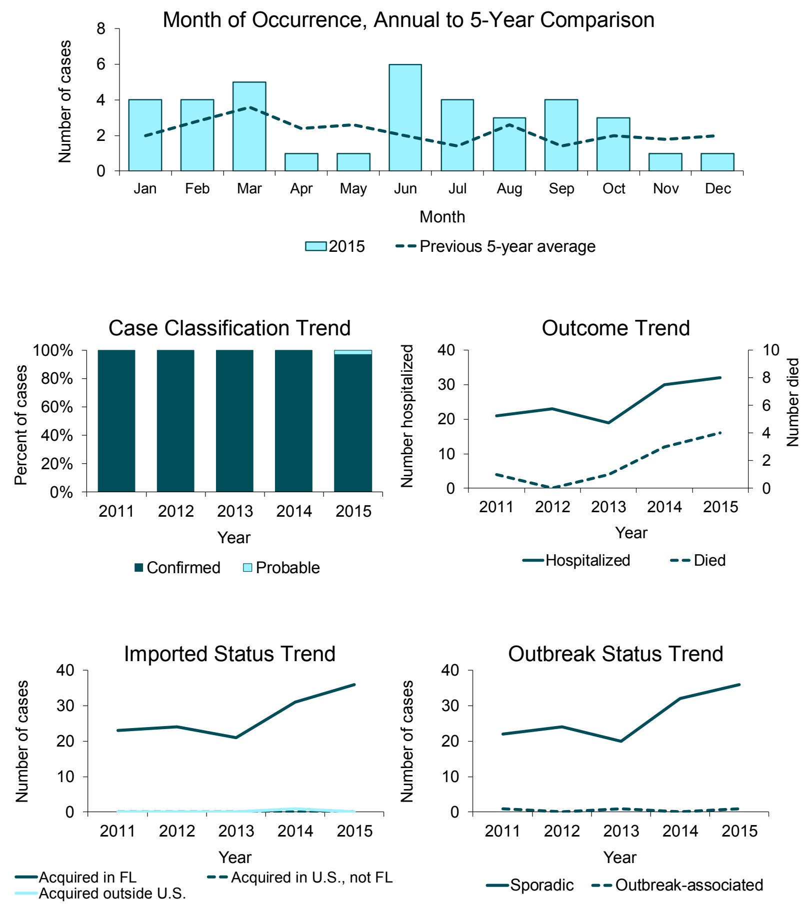
Note that trend graphs should be interpreted with caution when more than 5% of data are missing. *H. influenzae* invasive disease cases in children <5 years old were missing 5.4% of ethnicity data in 2015 and 5.4% of race data in 2015.

Haemophilus influenzae Invasive Disease in Children <5 Years Old

Summary of Case Factors

Summary	Number
Number of cases	37
Case Classification	**Number (Percent)**
Confirmed	36 (97.3)
Probable	1 (2.7)
Outcome	**Number (Percent)**
Hospitalized	32 (86.5)
Died	4 (10.8)
Imported Status	**Number (Percent)**
Acquired in Florida	36 (97.3)
Acquired in the U.S., not Florida	0 (0.0)
Acquired outside the U.S.	0 (0.0)
Acquired location unknown	1 (2.7)
Outbreak Status	**Number (Percent)**
Sporadic	36 (97.3)
Outbreak-associated	1 (2.7)
Outbreak status unknown	0 (0.0)
Serotype	**Number (Percent)**
Type A	3 (8.1)
Type B	0 (0.0)
Type C	0 (0.0)
Type D	0 (0.0)
Type E	1 (2.7)
Type F	2 (5.4)
Not Type B	1 (2.7)
Unknown	6 (16.2)
Nontypeable	24 (64.9)

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

No Hib case in children <5 years old were reported in 2015, compared to four in 2014 and one in 2013. In 2014, one case was up to date for Hib vaccine, the others had no or unknown Hib vaccine history. Two 2014 cases were likely imported. No deaths have been reported for Hib cases in children <5 years old from 2013-2015. One case was reported as outbreak-associated; this case represents vertical transmission from mother to infant.

Hansen's Disease (Leprosy)

Disease Facts

Cause: *Mycobacterium leprae* bacteria

Type of illness: Wide range of clinical manifestations related to skin, peripheral nerves, and nasal mucosa

Transmission: Not clearly defined; thought to be person-to-person in respiratory droplets following extended close contact with an infected person; the role of infected armadillos and possibly contaminated soil is not well characterized and is being investigated further

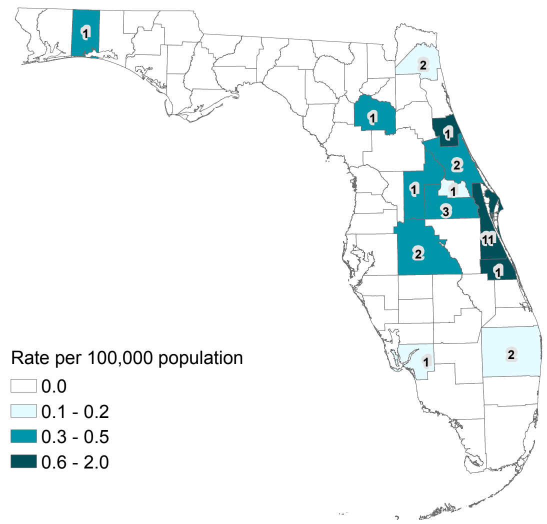
Reason for surveillance: Facilitate early diagnosis and appropriate treatment by an expert to minimize permanent nerve damage and prevent further transmission

Comments: The significant increase in cases in 2015 is at least partially attributed to increased clinician recognition, including increased awareness that the infection can occur in persons without international travel history, improved diagnostic tests to detect early infections, and delayed reporting.

Summary of Case Demographics

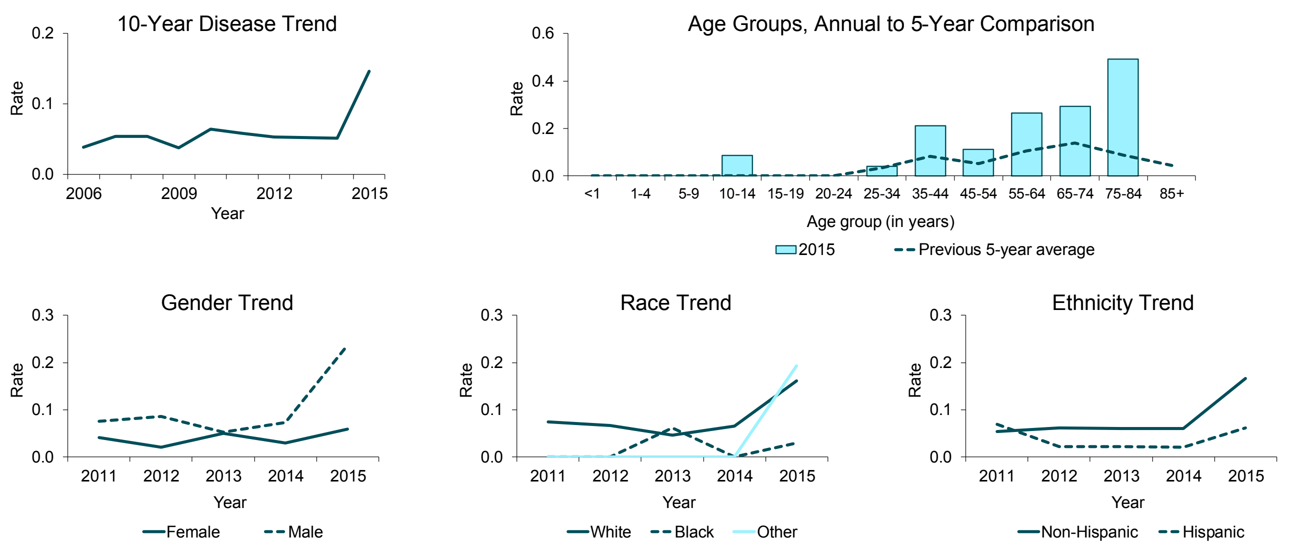
Summary			
Number of cases			29
Incidence rate (per 100,000 population)			0.1
Change from 5-year average incidence			+163.3%
Age (in Years)			
Mean			59
Median			61
Min-max			12 - 81
Gender	**Number**	**(Percent)**	**Rate**
Female	6	(20.7)	NA
Male	23	(79.3)	0.2
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	25	(89.3)	0.2
Black	1	(3.6)	NA
Other	2	(7.1)	NA
Unknown race	1		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	25	(89.3)	0.2
Hispanic	3	(10.7)	NA
Unknown ethnicity	1		

Reported Hansen's Disease (Leprosy) Cases and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2015 (N=29)



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

Incidence Rates Per 100,000 Population of Reported Hansen's Disease (Leprosy) Cases by Year, Age, Gender, Race, and Ethnicity, Florida



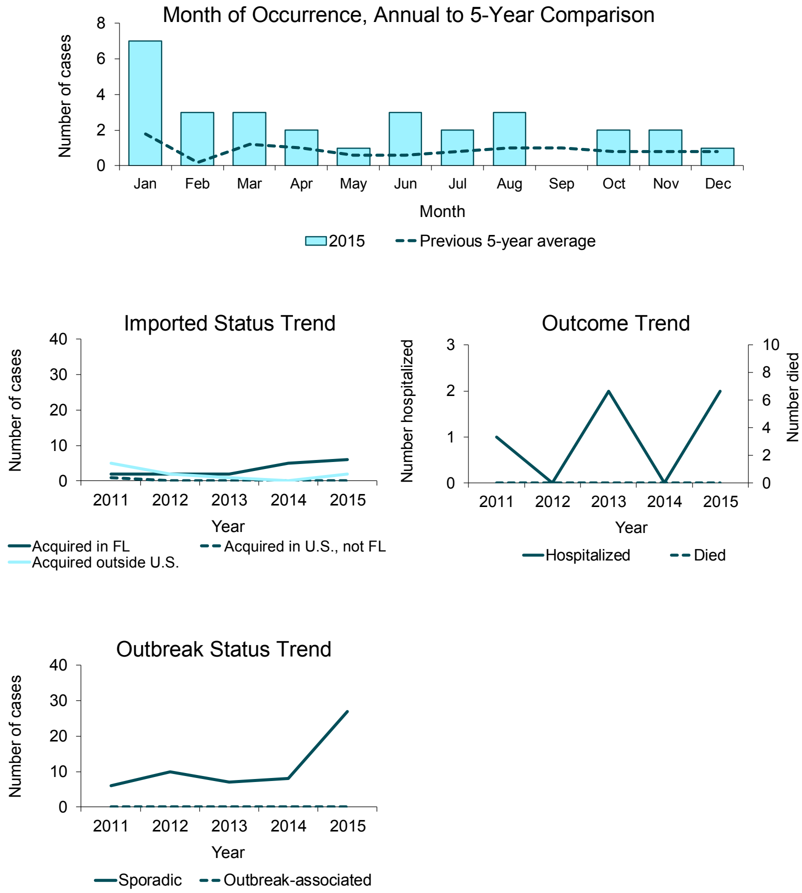
Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Hansen's disease (leprosy) cases were missing 10.0% of race data in 2013.

Hansen's Disease (Leprosy)

Summary of Case Factors

Summary	Number
Number of cases	29
Outcome	**Number (Percent)**
Hospitalized	2 (6.9)
Died	0 (0.0)
Imported Status	**Number (Percent)**
Acquired in Florida	6 (20.7)
Acquired in the U.S., not Florida	0 (0.0)
Acquired outside the U.S.	2 (6.9)
Acquired location unknown	21 (72.4)
Outbreak Status	**Number (Percent)**
Sporadic	27 (93.1)
Outbreak-associated	0 (0.0)
Outbreak status unknown	2 (6.9)

Reported Hansen's Disease (Leprosy) 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.

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

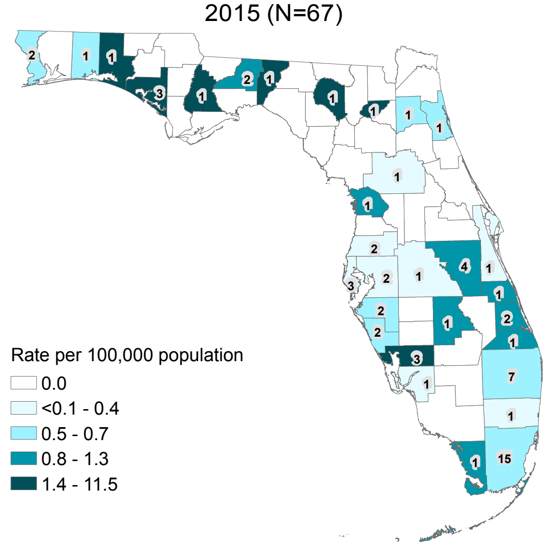
Reason for surveillance: Identify and control outbreaks, identify and mitigate common sources (e.g., contaminated food product, ill food handler), monitor effectiveness of immunization programs

Comments: Hepatitis A is a vaccine-preventable disease. Incidence has continued to decline in Florida and nationally, likely due to increased use of vaccine as part of the routine childhood immunization schedule. A large portion of infections are acquired among unvaccinated people traveling internationally to countries that lack routine immunization programs and as a result have a high incidence of hepatitis A (39.3% in 2015).

Summary of Case Demographics

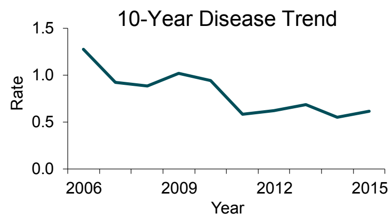
Summary			
Number of cases			122
Incidence rate (per 100,000 population)			0.6
Change from 5-year average incidence			-9.2%
Age (in Years)			
Mean			47
Median			50
Min-max			4 - 83
Gender	**Number**	**(Percent)**	**Rate**
Female	54	(44.3)	0.5
Male	68	(55.7)	0.7
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	90	(81.8)	0.6
Black	6	(5.5)	NA
Other	14	(12.7)	NA
Unknown race	12		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	70	(66.0)	0.5
Hispanic	36	(34.0)	0.7
Unknown ethnicity	16		

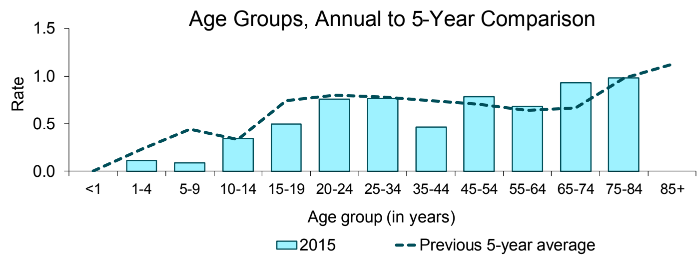
Reported Hepatitis A Cases and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2015 (N=67)

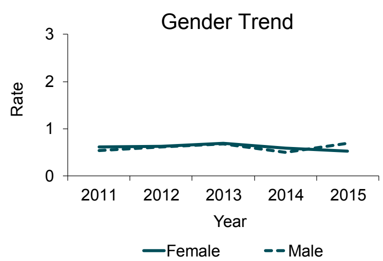


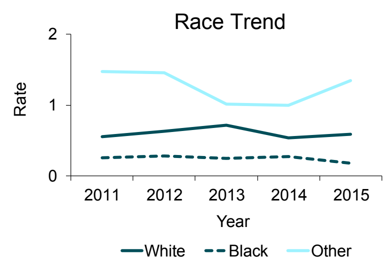
Note that rates based on <20 cases are not reliable and should be interpreted with caution.

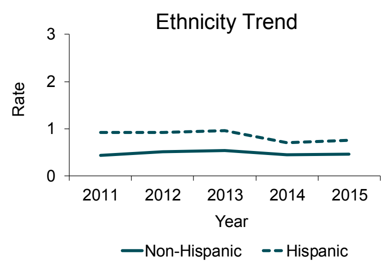
Incidence Rates Per 100,000 Population of Reported Hepatitis A Cases by Year, Age, Gender, Race, and Ethnicity, Florida











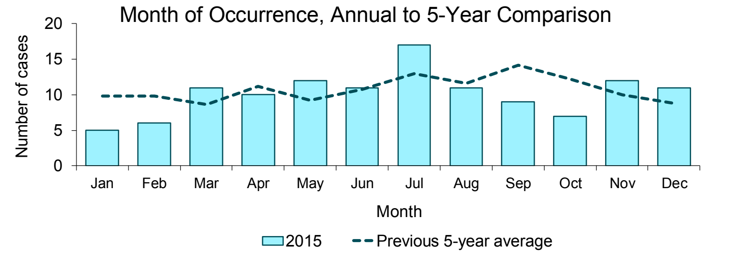
Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Hepatitis A cases were missing 6.8% of ethnicity data in 2013, 5.3% of race data in 2013, 5.6% of ethnicity data in 2014, 5.6% of race data in 2014, 13.1% of ethnicity data in 2015, and 9.8% of race data in 2015.

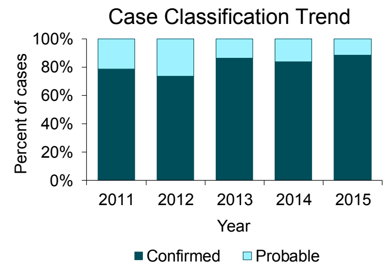
Hepatitis A

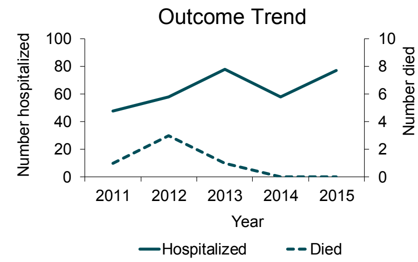
Summary of Case Factors

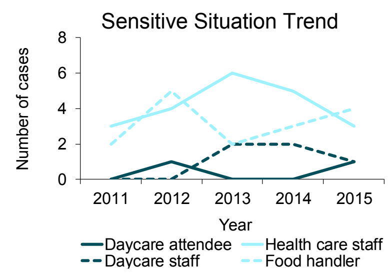
Summary	Number
Number of cases	122
Case Classification	**Number (Percent)**
Confirmed	108 (88.5)
Probable	14 (11.5)
Outcome	**Number (Percent)**
Hospitalized	77 (63.1)
Died	0 (0.0)
Sensitive Situation	**Number (Percent)**
Daycare attendee	1 (0.8)
Daycare staff	1 (0.8)
Health care staff	3 (2.5)
Food handler	4 (3.3)
Imported Status	**Number (Percent)**
Acquired in Florida	67 (54.9)
Acquired in the U.S., not Florida	7 (5.7)
Acquired outside the U.S.	48 (39.3)
Acquired location unknown	0 (0.0)
Outbreak Status	**Number (Percent)**
Sporadic	118 (96.7)
Outbreak-associated	4 (3.3)
Outbreak status unknown	0 (0.0)
Region Where Infection Acquired	**Number (Percent)**
Central America/Caribbean	19 (34.5)
South America	16 (29.1)
Asia	8 (14.5)
Other U.S. state	4 (7.3)
Multiple Regions	2 (3.6)
Unknown	6 (10.9)

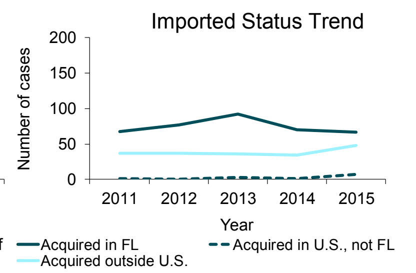
Reported Hepatitis A Cases by Month of Occurrence, Case Classification, Outcome, Sensitive Situation, Imported Status, and Outbreak Status, Florida

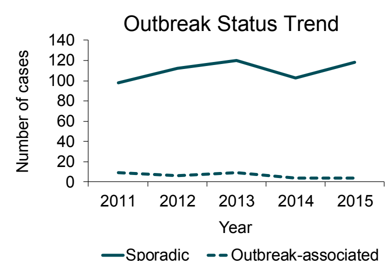












Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in 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

In 2015, there were no reported multistate outbreaks of hepatitis A. Three cases of hepatitis A were associated with a single outbreak. Two infections were acquired while traveling in Peru. A third infection was likely acquired via sexual contact once the travelers returned to Florida. One case initially reported as outbreak-associated was determined to be sporadic after the close of the 2015 morbidity database. This case is still listed as unknown outbreak status in the morbidity database and the figures above.

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

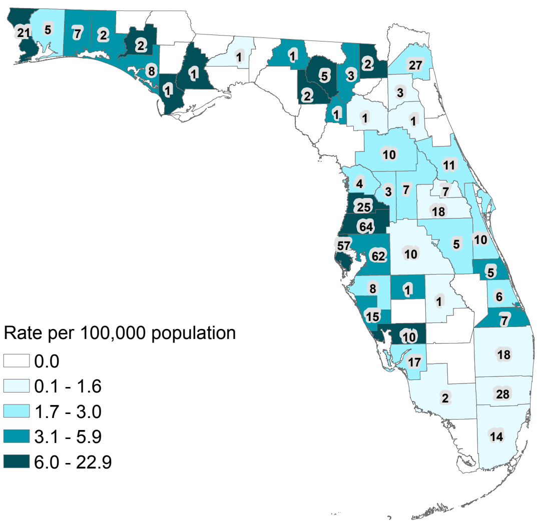
Reason for surveillance: Enhance efforts to prevent HBV transmission, identify and prevent outbreaks, improve allocation of resources for treatment services, assist in evaluating the impact of public health interventions, monitor effectiveness of immunization programs

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

Summary of Case Demographics

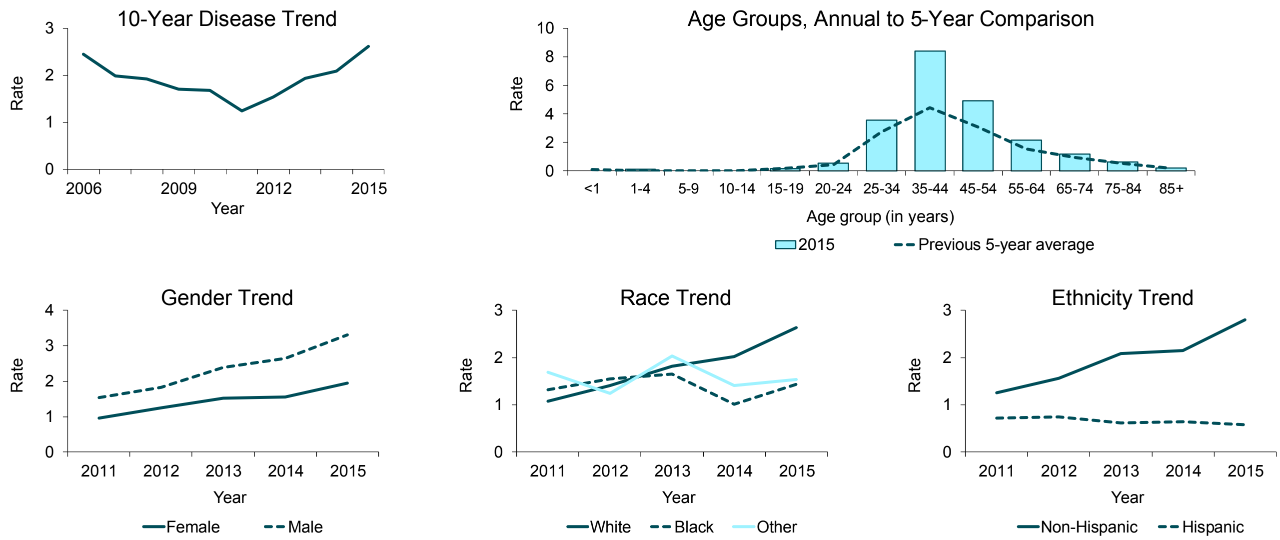
Summary			
Number of cases			519
Incidence rate (per 100,000 population)			2.6
Change from 5-year average incidence			+54.1%
Age (in Years)			
Mean			44
Median			43
Min-max			4 - 87
Gender	**Number**	**(Percent)**	**Rate**
Female	197	(38.0)	1.9
Male	322	(62.0)	3.3
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	409	(86.5)	2.6
Black	48	(10.1)	1.4
Other	16	(3.4)	NA
Unknown race	46		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	421	(93.8)	2.8
Hispanic	28	(6.2)	0.6
Unknown ethnicity	70		

Reported Acute Hepatitis B Cases and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2015 (N=519)



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 8.9% of ethnicity data in 2011, 7.2% of race data in 2011, 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, 12.3% of race data in 2014, 13.5% of ethnicity data in 2015, and 8.9% of race data in 2015.

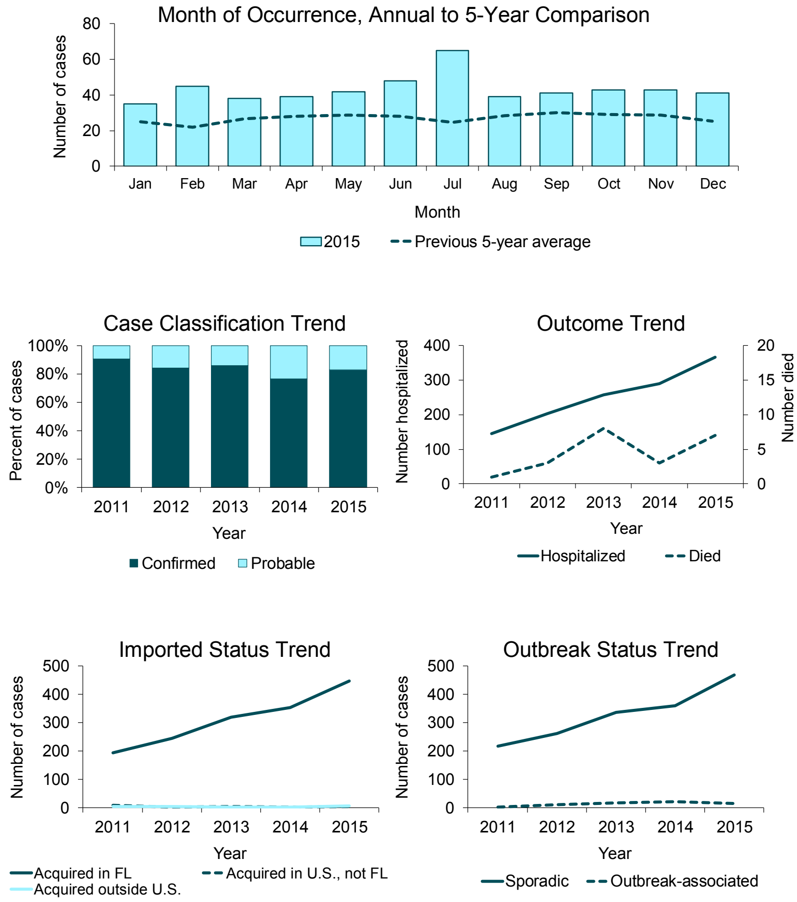
Summary of Case Factors

Summary	Number
Number of cases	519
Case Classification	**Number (Percent)**
Confirmed	432 (83.2)
Probable	87 (16.8)
Outcome	**Number (Percent)**
Hospitalized	367 (70.7)
Died	7 (1.3)
Imported Status	**Number (Percent)**
Acquired in Florida	447 (86.1)
Acquired in the U.S., not Florida	5 (1.0)
Acquired outside the U.S.	8 (1.5)
Acquired location unknown	59 (11.4)
Outbreak Status	**Number (Percent)**
Sporadic	468 (90.2)
Outbreak-associated	15 (2.9)
Outbreak status unknown	36 (6.9)

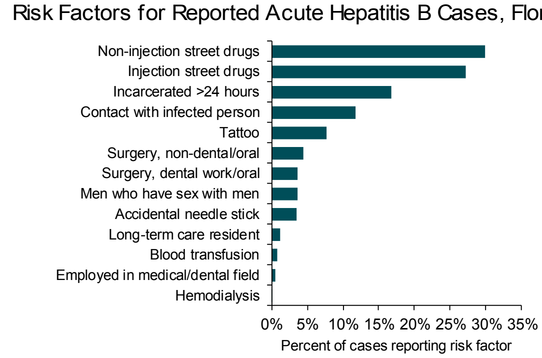
Acute clinical symptoms or prior negative laboratory results are required to differentiate acute hepatitis B from chronic, making surveillance challenging. Incidence declined over the last decade due to increased vaccination, but started increasing in 2011 and continued to increase in 2015. The identified increase is likely due to an enhanced surveillance project focusing on chronic 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 2015, 496 cases (95.6%) were investigated and 336 cases (64.7%) 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. The top three risk factors include both injection and non-injection drug use as well as incarceration, which is similar to past years. Of 15 outbreak-associated cases, 12 (80.0%) were sexual contacts, two (13.3%) were household contacts, and one (6.7%) shared needles with a known case.

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



Risk Factors for Reported Acute Hepatitis B Cases, Florida, 2015



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

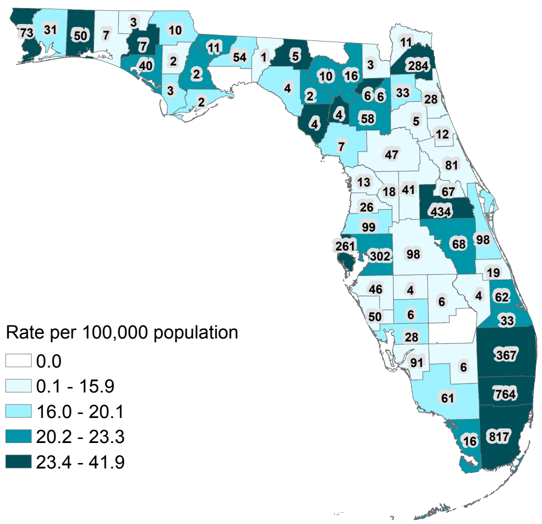
Reason for surveillance: Enhance efforts to prevent HBV transmission, identify acute infections and prevent outbreaks, improve allocation of resources for treatment services, assist in evaluating the impact of public health interventions, monitor effectiveness of immunization programs

Comments: Hepatitis B is a vaccine-preventable disease. Incidence is highest in adults 35 to 44 years old. Incidence remained relatively stable from 2009 to 2013, increased slightly in 2014, and remained high in 2015.

Summary of Case Demographics

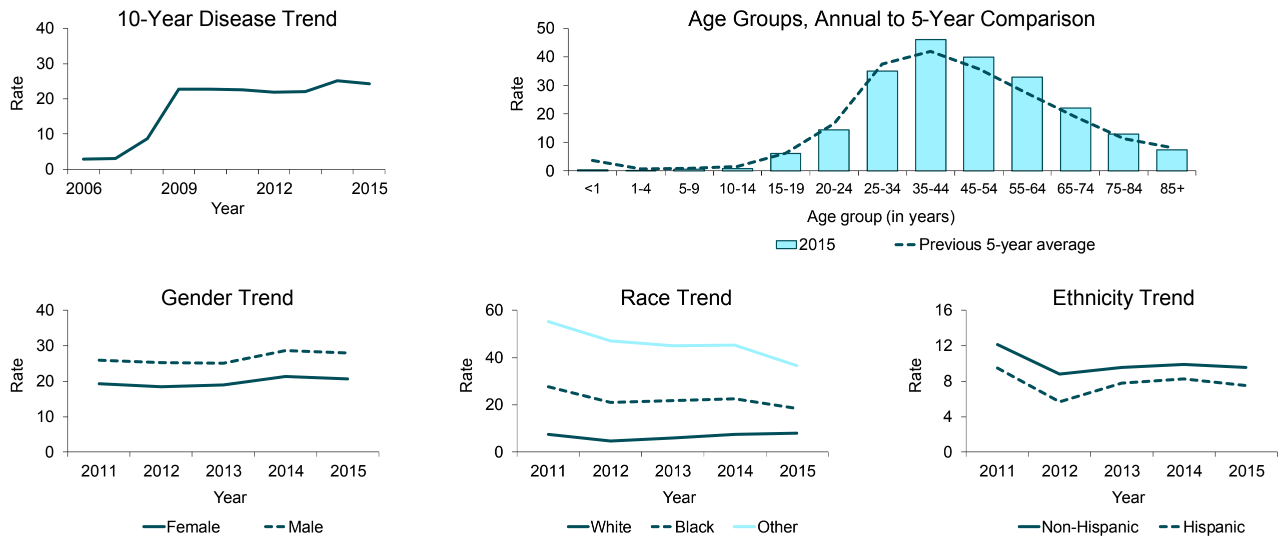
Summary			
Number of cases			4,827
Incidence rate (per 100,000 population)			24.3
Change from 5-year average incidence			+6.2%
Age (in Years)			
Mean			47
Median			46
Min-max			0 - 95
Gender	**Number**	**(Percent)**	**Rate**
Female	2,094	(43.5)	20.6
Male	2,718	(56.5)	28.0
Unknown gender	15		
Race	**Number**	**(Percent)**	**Rate**
White	1,239	(55.4)	8.0
Black	618	(27.6)	18.5
Other	381	(17.0)	36.7
Unknown race	2,589		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	1,442	(79.8)	9.6
Hispanic	365	(20.2)	7.5
Unknown ethnicity	3,020		

Reported Chronic Hepatitis B Cases and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2015 (N=4,827)



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



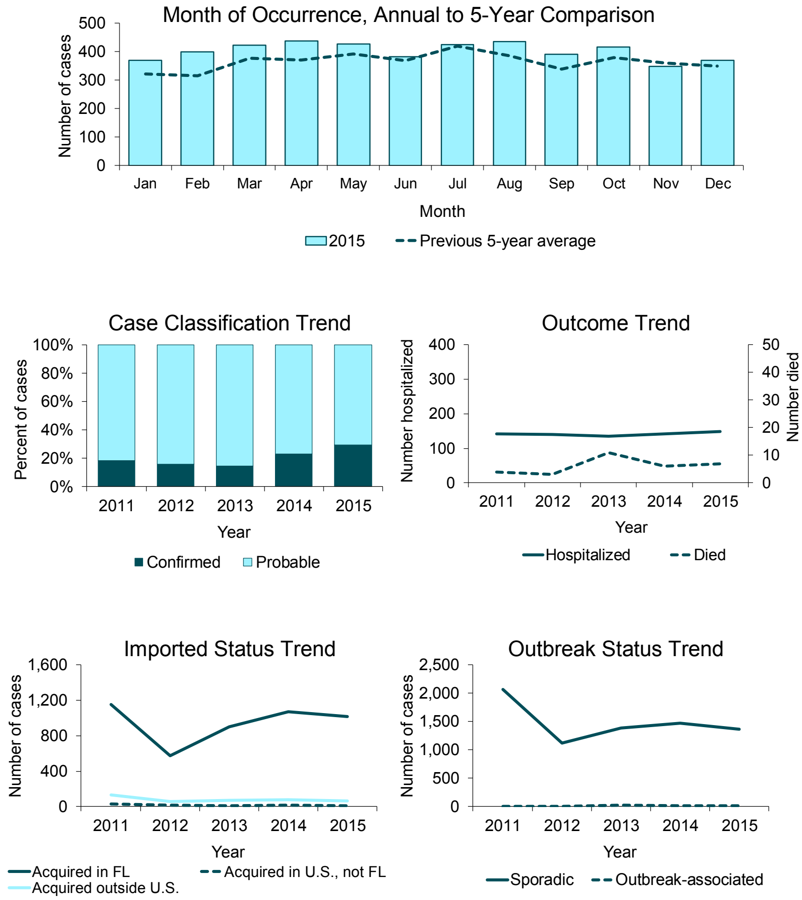
Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Chronic hepatitis B cases were missing 48.6% of ethnicity data in 2011, 41.4% of race data in 2011, 63.0% of ethnicity data in 2012, 55.8% of race data in 2012, 58.4% of ethnicity data in 2013, 51.6% of race data in 2013, 62.1% of ethnicity data in 2014, 52.3% of race data in 2014, 62.4% of ethnicity data in 2015, and 53.2% of race data in 2015.

Hepatitis B, Chronic

Summary of Case Factors

Summary	Number
Number of cases	4,827
Case Classification	**Number (Percent)**
Confirmed	1,423 (29.5)
Probable	3,404 (70.5)
Outcome	**Number (Percent)**
Hospitalized	149 (3.1)
Died	7 (0.1)
Imported Status	**Number (Percent)**
Acquired in Florida	1,020 (21.1)
Acquired in the U.S., not Florida	10 (0.2)
Acquired outside the U.S.	67 (1.4)
Acquired location unknown	3,730 (77.3)
Outbreak Status	**Number (Percent)**
Sporadic	1,365 (28.3)
Outbreak-associated	12 (0.2)
Outbreak status unknown	3,450 (71.5)

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

This is the first year that chronic hepatitis B has been described in this report. 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 2015, 97% of all chronic hepatitis B 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. An enhanced surveillance project focusing on chronic hepatitis infections in young adults was initiated in 2012 to help identify risk factors and acute infections.

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

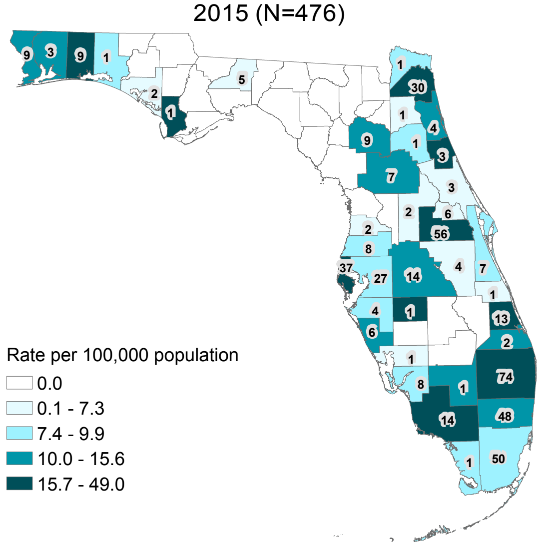
Reason for surveillance: Identify individual cases and implement control measures to prevent HBV transmission from mother to baby; evaluate effectiveness of screening programs

Comments: Hepatitis B is a vaccine-preventable disease. Identification of HBsAg in pregnant women allows for appropriate treatment of their infants, significantly reducing the infants' risk of contracting HBV. In the U.S., Asians have a high HBsAg carrier rate (7-16%) and account for most infections in the "other" race category.

Summary of Case Demographics

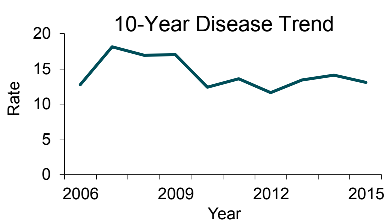
Summary			
Number of cases			476
Incidence rate (per 100,000 population)			13.1
Change from 5-year average incidence			+0.4%
Age (in Years)			
Mean			31
Median			32
Min-max			16 - 45
Gender	**Number**	**(Percent)**	**Rate**
Female	474	(99.6)	13.0
Male	NA	NA	NA
Unknown gender	NA		
Race	**Number**	**(Percent)**	**Rate**
White	87	(19.8)	3.3
Black	175	(39.9)	23.6
Other	177	(40.3)	76.8
Unknown race	37		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	396	(93.4)	15.2
Hispanic	28	(6.6)	2.7
Unknown ethnicity	52		

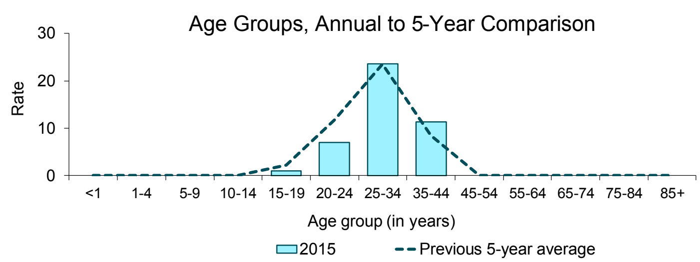
Reported Hepatitis B Surface Antigen in Pregnant Women Cases and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2015 (N=476)

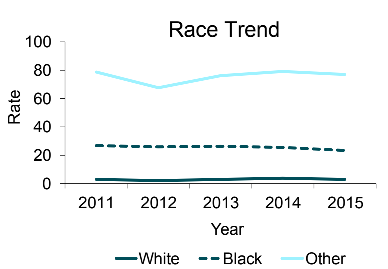


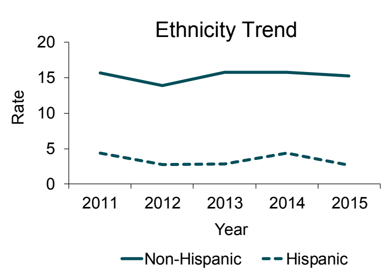
Note that rates based on <20 cases are not reliable and should be interpreted with caution.

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









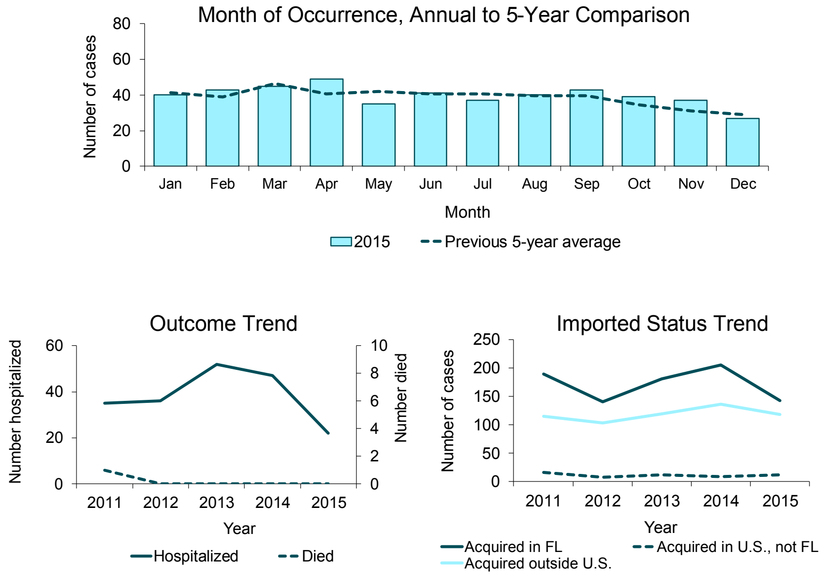
Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Hepatitis B surface antigen cases in pregnant women were missing 6.7% of ethnicity data in 2011, 5.6% of race data in 2011, 6.3% of ethnicity data in 2012, 9.1% of ethnicity data in 2013, 7.3% of race data in 2013, 10.4% of ethnicity data in 2014, 7.6% of race data in 2014, 10.5% of ethnicity data in 2015, and 7.4% of race data in 2015.

Hepatitis B, Surface Antigen in Pregnant Women

Summary of Case Factors

Summary	Number
Number of cases	476
Outcome	**Number (Percent)**
Hospitalized	22 (4.6)
Died	0 (0.0)
Imported Status	**Number (Percent)**
Acquired in Florida	143 (30.0)
Acquired in the U.S., not Florida	12 (2.5)
Acquired outside the U.S.	118 (24.8)
Acquired location unknown	203 (42.6)

Reported Hepatitis B Surface Antigen in Pregnant Women Cases 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

According to the 2013 National Immunization Survey, the estimated HBV vaccination coverage for birth dose administered from birth through 3 days of age was 72.4% ± 1.5% in the U.S. and 53.2% ± 9.2% in Florida. In Florida, birthing hospitals increasingly have a standing order to administer the birth dose of hepatitis B vaccine. However, pediatricians sometimes choose to wait to give the first dose in their private offices. Florida is working with the American Academy of Pediatrics to provide education reminding health care providers that the recommendation to provide the birth dose within three days of birth is important to help decrease hepatitis B infections.

Hepatitis C, Acute (Including Perinatal)

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.

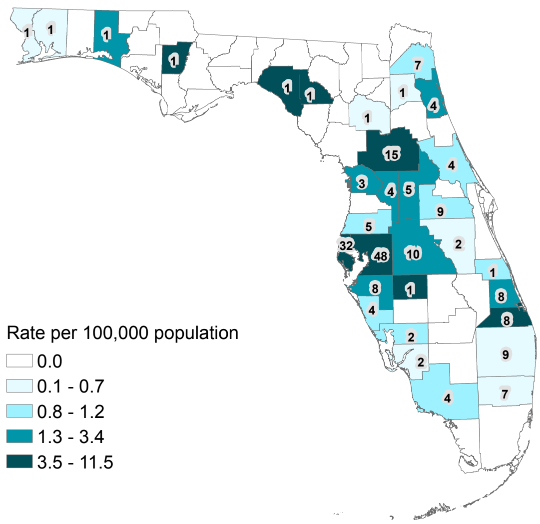
Reason for surveillance: Enhance efforts to prevent HCV transmission, identify and prevent outbreaks, improve allocation of resources for treatment services, assist in evaluating the impact of public health interventions and screening programs

Comments: Similar to past years, 2015 incidence was highest in the non-Hispanic white population and in the western part of central Florida. There was a noticeable increase in the rate among men in Florida in 2015.

Summary of Case Demographics

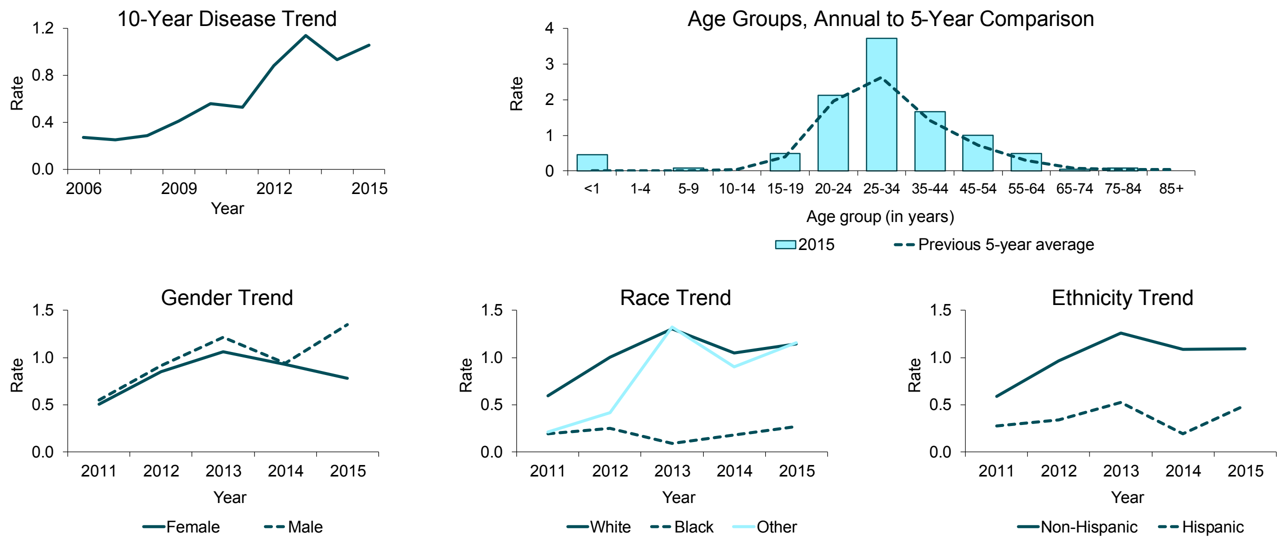
Summary			
Number of cases			210
Incidence rate (per 100,000 population)			1.1
Change from 5-year average incidence			+30.8%
Age (in Years)			
Mean			35
Median			32
Min-max			0 - 83
Gender	**Number**	**(Percent)**	**Rate**
Female	79	(37.6)	0.8
Male	131	(62.4)	1.3
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	176	(89.3)	1.1
Black	9	(4.6)	NA
Other	12	(6.1)	NA
Unknown race	13		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	162	(87.1)	1.1
Hispanic	24	(12.9)	0.5
Unknown ethnicity	24		

Reported Acute Hepatitis C Cases (Including Perinatal) and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2015 (N=210)



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 (Including Perinatal) 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 (including perinatal) were missing 6.5% of ethnicity data in 2012, 6.0% of ethnicity data in 2014, 11.4% of ethnicity data in 2015, and 6.2% of race data in 2015.

Hepatitis C, Acute

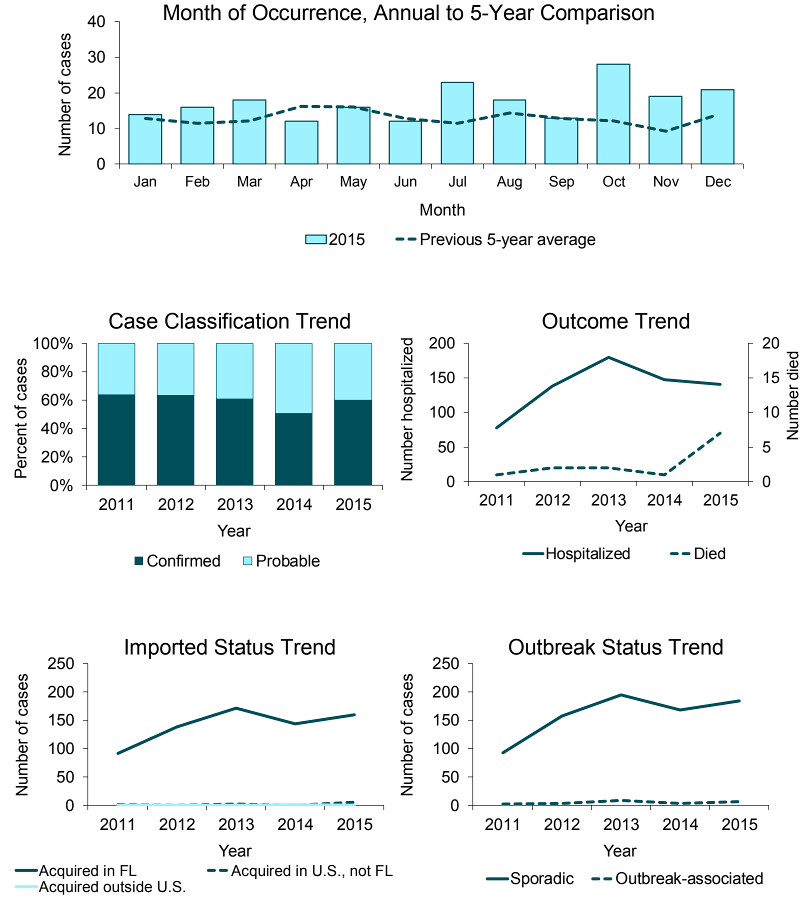
Summary of Case Factors

Summary	Number
Number of cases	210
Case Classification	**Number (Percent)**
Confirmed	126 (60.0)
Probable	84 (40.0)
Outcome	**Number (Percent)**
Hospitalized	141 (67.1)
Died	7 (3.3)
Imported Status	**Number (Percent)**
Acquired in Florida	160 (76.2)
Acquired in the U.S., not Florida	6 (2.9)
Acquired outside the U.S.	0 (0.0)
Acquired location unknown	44 (21.0)
Outbreak Status	**Number (Percent)**
Sporadic	185 (88.1)
Outbreak-associated	7 (3.3)
Outbreak status unknown	18 (8.6)

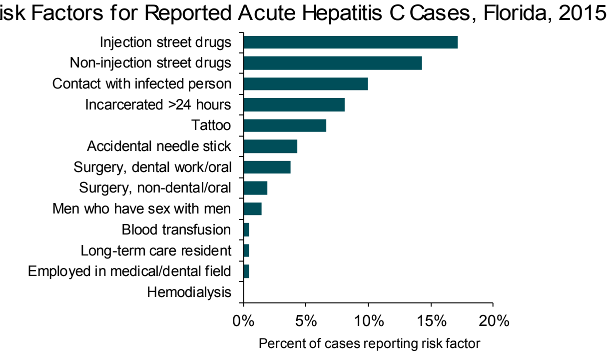
Acute clinical symptoms or prior negative laboratory results are required to differentiate acute hepatitis C from chronic, making surveillance challenging. Incidence has increased since 2007, likely due to a change in case definition in 2008, an enhanced surveillance project focusing on chronic infections 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 2015, 201 cases (95.7%) were investigated and 105 (50.0%) were interviewed to determine possible risk factors. Risk factors reported are shown to the right. Note that a person can report multiple risk factors. Injection drug use and non-injection drug use still remain the most commonly reported risk factors. Infections of viral hepatitis are frequently associated with drug use and sharing of injection equipment. Of the seven outbreak-associated cases, four (57.1%) were sexual contacts, one (14.3%) was a household contact of a known chronic hepatitis C case, one (14.3%) was a perinatally infected infant (the mother was a known chronic hepatitis C case), and one (14.3%) case had multiple risk factors (sexual contact and shared home tattoo ink with a known chronic hepatitis C case).

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



Risk Factors for Reported Acute Hepatitis C Cases, Florida, 2015



Interpretation:
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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.

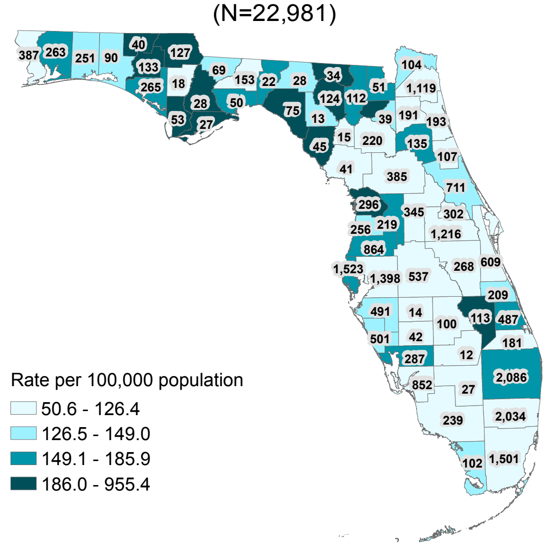
Reason for surveillance: Enhance efforts to prevent HCV transmission, identify acute infections and prevent outbreaks, improve allocation of resources for treatment services, assist in evaluating the impact of public health interventions and screening programs

Comments: Chronic hepatitis C is one of the most common reportable diseases in Florida. Incidence has been increasing in Florida over the past 10 years, partially due to better reporting and surveillance practices.

Summary of Case Demographics

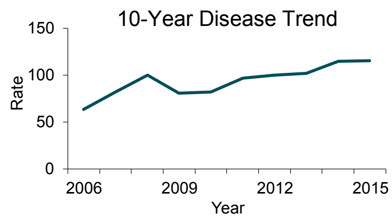
Summary			
Number of cases			22,981
Incidence rate (per 100,000 population)			115.7
Change from 5-year average incidence			+16.6%
Age (in Years)			
Mean			46
Median			49
Min-max			0 - 114
Gender	**Number**	**(Percent)**	**Rate**
Female	9,236	(40.3)	91.1
Male	13,686	(59.7)	140.8
Unknown gender	59		
Race	**Number**	**(Percent)**	**Rate**
White	8,475	(85.3)	54.7
Black	948	(9.5)	28.4
Other	510	(5.1)	49.2
Unknown race	13,048		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	5,586	(85.0)	37.2
Hispanic	986	(15.0)	20.3
Unknown ethnicity	16,409		

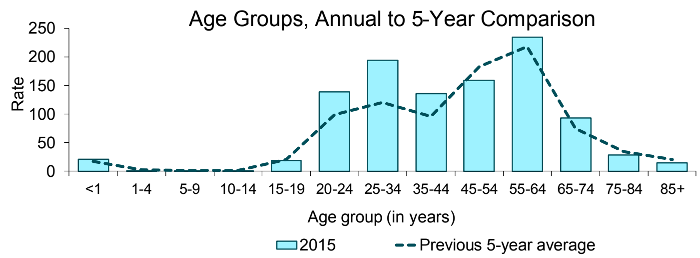
Reported Chronic Hepatitis C Cases (Including Perinatal) and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2015 (N=22,981)

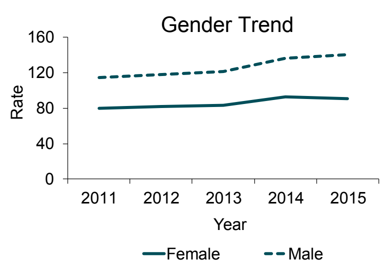


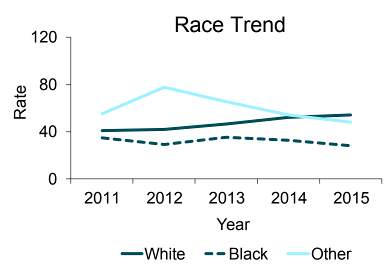
Note that rates based on <20 cases are not reliable and should be interpreted with caution.

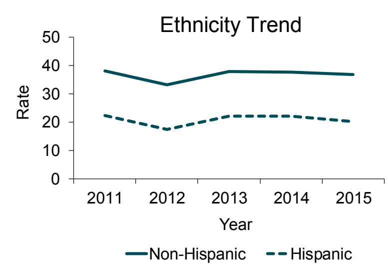
Incidence Rates Per 100,000 Population of Reported Chronic Hepatitis C Cases (Including Perinatal) by Year, Age, Gender, Race, and Ethnicity, Florida









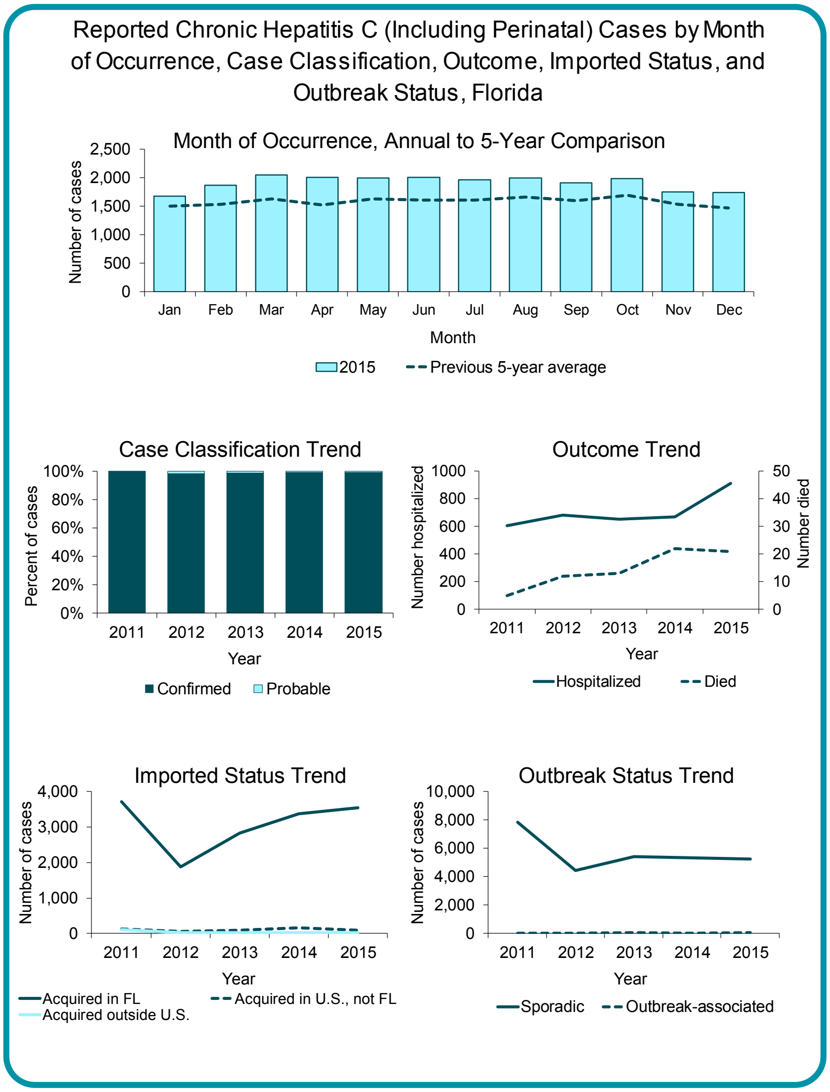


Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Chronic hepatitis C cases (including perinatal) were missing 64.2% of ethnicity data in 2011, 57.6% of race data in 2011, 70.0% of ethnicity data in 2012, 57.8% of race data in 2012, 66.3% of ethnicity data in 2013, 54.5% of race data in 2013, 70.0% of ethnicity data in 2014, 56.5% of race data in 2014, 71.1% of ethnicity data in 2015, and 56.2% of race data in 2015.

Hepatitis C, Chronic (Including Perinatal)

Summary of Case Factors

Summary	Number
Number of cases	22,981
Case Classification	**Number (Percent)**
Confirmed	22,793 (99.2)
Probable	188 (0.8)
Outcome	**Number (Percent)**
Hospitalized	914 (4.0)
Died	21 (0.1)
Imported Status	**Number (Percent)**
Acquired in Florida	3,542 (15.4)
Acquired in the U.S., not Florida	95 (0.4)
Acquired outside the U.S.	29 (0.1)
Acquired location unknown	19,315 (84.0)
Outbreak Status	**Number (Percent)**
Sporadic	5,267 (22.9)
Outbreak-associated	69 (0.3)
Outbreak status unknown	17,645 (76.8)



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Additional Information

This is the first year that chronic hepatitis C has been described in this report. 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 2015, 95% of all chronic hepatitis C 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.

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 to contribute to higher rates in adults. Incidence of hepatitis C is highest in the “baby boomers”, adults born between 1946 and 1965 who would be between 50 and 70 years old in 2015. 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. In future reports, perinatal hepatitis C will be characterized separately from other chronic hepatitis C.

HIV Infection (Including Perinatal)

Disease Facts

Cause: 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

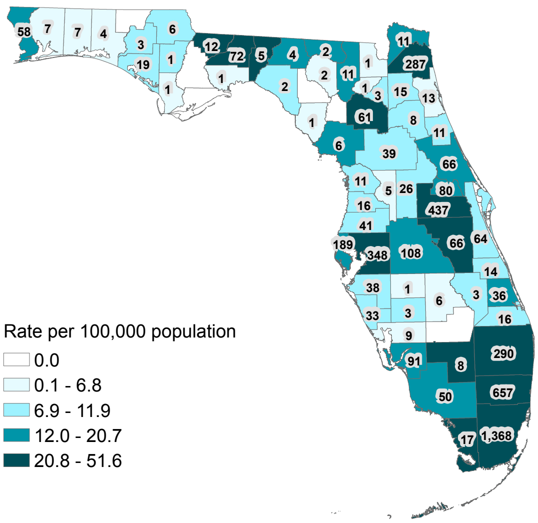
Reason for surveillance: Enhance efforts to prevent HIV transmission, improve allocation of resources for treatment services, and assist in evaluating the impact of public health interventions

Comments: The expansion of electronic laboratory reporting in 2007 and 2012 led to artificial peaks in newly reported cases in 2008 and 2013. HIV infection cases in 2014 increased 6% from the previous year. Incidence rates are >3.5 times higher in men than women, and >3 times higher in blacks than whites. Increases in infected men who have sex with men contributed to the statewide increase in 2015.

Summary of Case Demographics

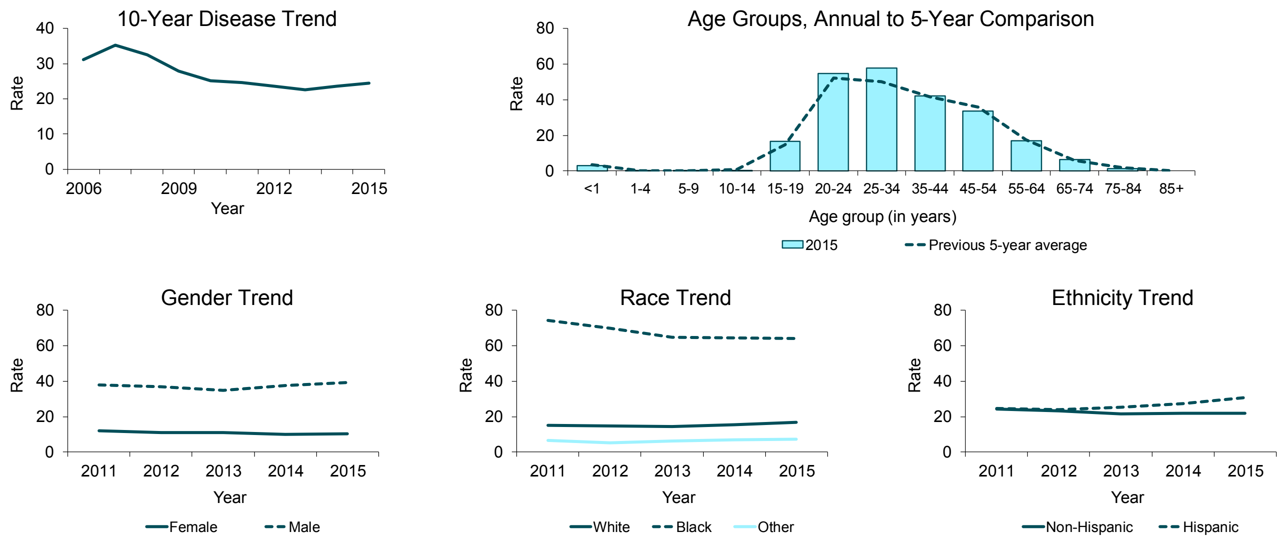
Summary			
Number of cases			4,868
Incidence rate (per 100,000 population)			24.5
Change from 5-year average incidence			+2.5%
Age (in Years)			
Mean			38
Median			35
Min-max			0 - 83
Gender	**Number**	**(Percent)**	**Rate**
Female	1,036	(21.3)	10.2
Male	3,832	(78.7)	39.4
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	2,604	(54.0)	16.8
Black	2,141	(44.4)	64.0
Other	76	(1.6)	7.3
Unknown race	47		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	3,304	(68.9)	22.0
Hispanic	1,494	(31.1)	30.8
Unknown ethnicity	70		

Reported HIV Infection Cases (Including Perinatal) and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2015 (N=4,868)



County totals exclude Florida Department of Corrections cases (n=97).
Note that rates based on <20 cases are not reliable and should be interpreted with caution.

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



Additional Information

HIV infection cases tend to represent a more current picture of the AIDS epidemic as they are indicative of recent exposure. For HIV infection cases in men reported in 2015, male-to-male sexual contact was the most common risk factor (78.3%), followed by heterosexual contact (16.6%).

In 2015, 59.0% of infected adult women were black compared to only 38.0% of infected adult men.

From 1979 to 2015, 1,230 perinatally infected newborns were born in Florida. The number of HIV-infected babies rose from 1979 through 1993. In April 1994, the U.S. Public Health Service released guidelines for use of zidovudine (ZDV), also known as azidothymidine (AZT), to reduce perinatal HIV transmission. Beginning in October 1996, Florida law required the offering of HIV testing to pregnant women, resulting in more HIV-positive women being offered ZDV during their pregnancies. Enhanced perinatal surveillance systems have documented increased use of ZDV among exposed infants and HIV-infected mothers at the prenatal, intrapartum, delivery and neonatal stages.

In the past few years, the use of other medical therapies, including protease inhibitors, has supplemented the use of ZDV for both infected mothers and their babies. The use of these medical therapies has resulted in a dramatic decline in perinatally acquired HIV/AIDS since 1994. Other initiatives in Florida have also contributed to the reduction in perinatal cases, including Targeted Outreach to Pregnant Women Act programs, the assignment of perinatal nurses to the most heavily impacted counties, social marketing and provider education. Combined, these successful initiatives have resulted in a 91.7% decline in perinatally infected newborns in Florida from 109 cases in 1993 to nine cases in 2015.

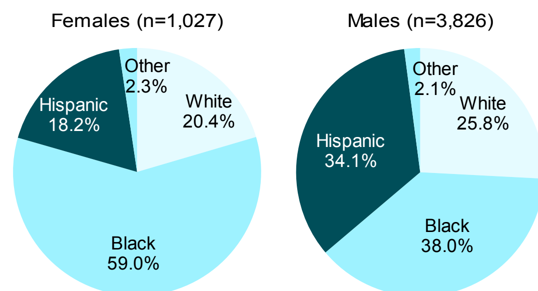
For information on AIDS, please see the AIDS chapter within this section (page 11).

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

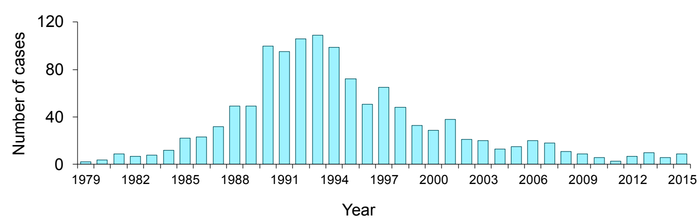
Reported Adult (13 Years and Older) HIV Infection Cases by Gender and Mode of Exposure, Florida, 2015

Mode of Exposure	Females Cases (n=1,027) Number (Percent)	Males Cases (n=3,826) Number (Percent)
Men who have sex with men (MSM)	NA	2,997 (78.3)
Heterosexual	920 (89.6)	634 (16.6)
Injection drug user (IDU)	105 (10.2)	104 (2.7)
MSM and IDU	NA	90 (2.4)
Other	2 (0.2)	1 (0.0)
Total	1,027	3,826

Reported Adult (13 Years and Older) HIV Infection Cases by Gender and Race/Ethnicity, Florida, 2015



Reported Perinatal HIV Infection Cases by Year of Birth, Florida, 1979-2015



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

Lead Poisoning in Adults ≥16 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 dust or fumes

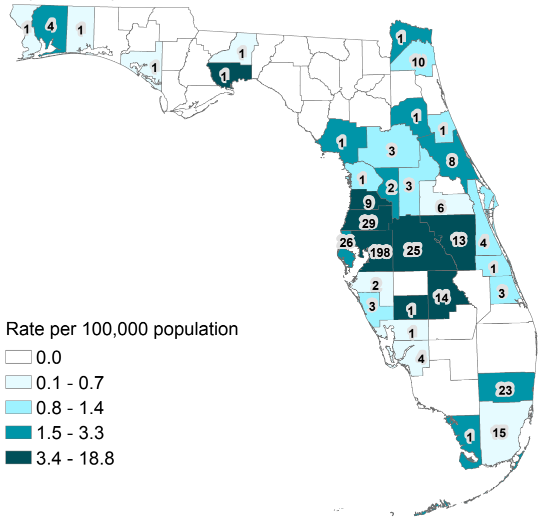
Reason for surveillance: Identify cases among adults in high-risk occupations, prevent new cases and exacerbation of illness, help target future public health interventions for high-risk populations

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 2015 are presented in this report. The rate of lead poisoning in adults is much higher in men than women because men are more likely to have occupations and hobbies that expose them to lead.

Summary of Case Demographics

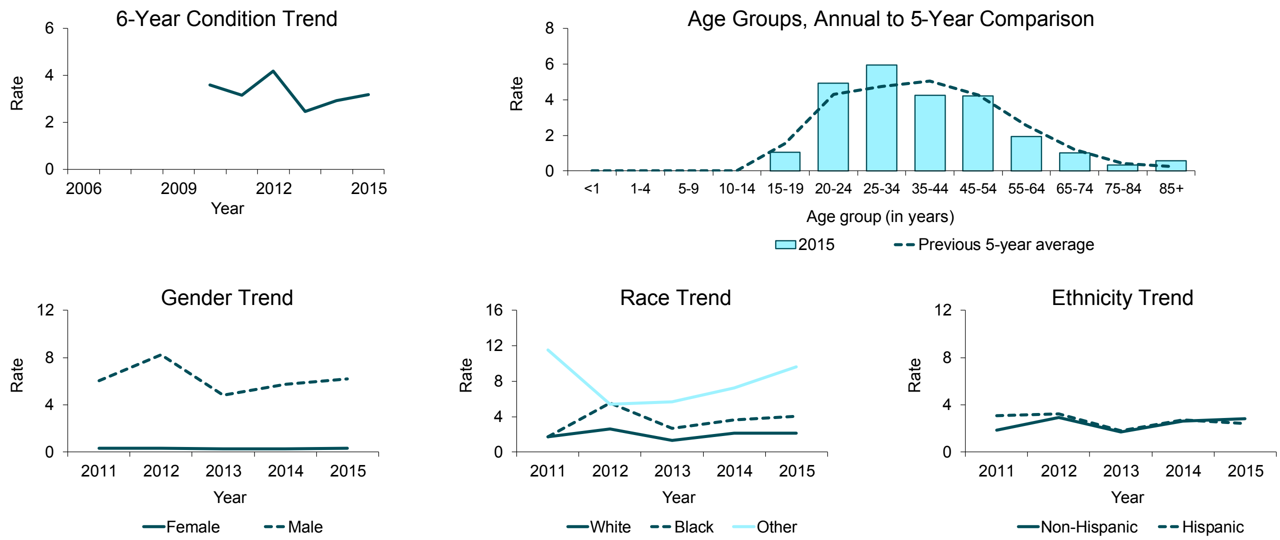
Summary			
Number of cases			515
Incidence rate (per 100,000 population)			3.2
Change from 5-year average incidence			-2.6%
Age (in Years)			
Mean			40
Median			38
Min-max			16 - 99
Gender	**Number**	**(Percent)**	**Rate**
Female	29	(5.6)	0.3
Male	486	(94.4)	6.2
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	272	(60.7)	2.1
Black	103	(23.0)	4.1
Other	73	(16.3)	9.6
Unknown race	67		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	350	(79.5)	2.8
Hispanic	90	(20.5)	2.4
Unknown ethnicity	75		

Reported Lead Poisoning Cases in Adults ≥16 Years Old and Incidence Rates Per 100,000 Population (Restricted to Exposures Occurring in Florida) by County of Residence, Florida, 2015 (N=418)



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 Adults ≥16 Years Old by Year, Age, Gender, Race, and Ethnicity, Florida



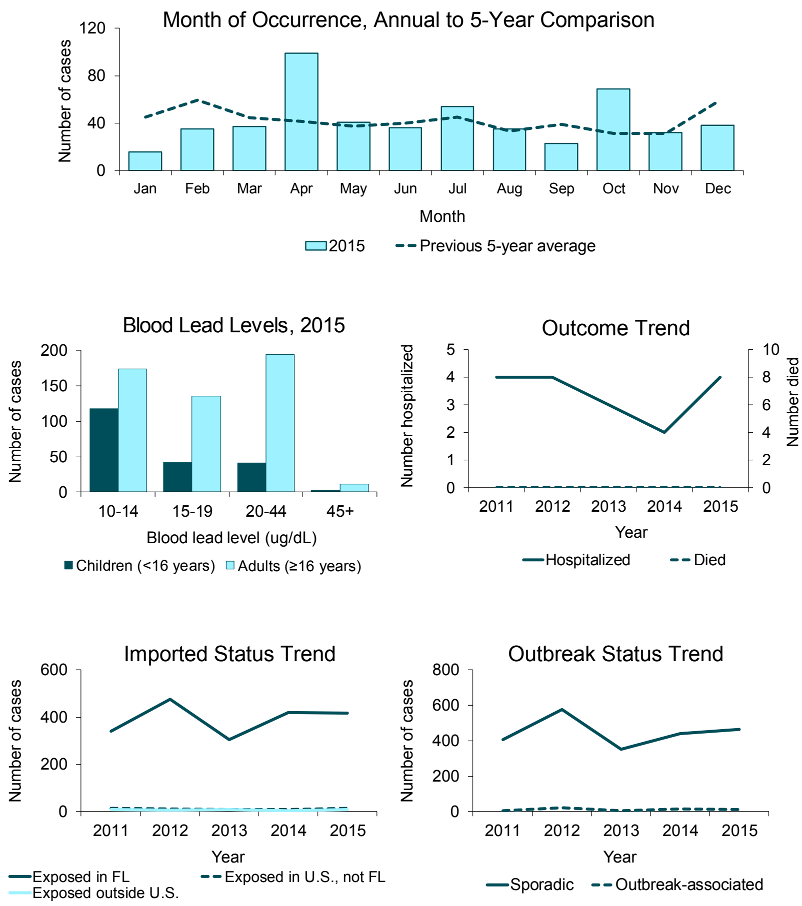
Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Lead poisoning cases in adults ≥16 years old were missing 32.2% of ethnicity data in 2011, 31.3% of race data in 2011, 28.2% of ethnicity data in 2012, 23.3% of race data in 2012, 30.4% of ethnicity data in 2013, 30.4% of race data in 2013, 9.2% of ethnicity data in 2014, 12.0% of race data in 2014, 14.6% of ethnicity data in 2015, and 13.0% of race data in 2015.

Lead Poisoning in Adults ≥16 Years Old

Summary of Case Factors

Summary	Number
Number of cases	515
Outcome	**Number (Percent)**
Hospitalized	4 (0.8)
Died	0 (0.0)
Imported Status	**Number (Percent)**
Exposed in Florida	418 (81.2)
Exposed in the U.S., not Florida	13 (2.5)
Exposed outside the U.S.	9 (1.7)
Exposed location unknown	75 (14.6)
Outbreak Status	**Number (Percent)**
Sporadic	463 (89.9)
Outbreak-associated	10 (1.9)
Outbreak status unknown	42 (8.2)

Reported Lead Poisoning Cases in Adults ≥16 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. More lead poisoning cases were reported during April and October due to an increase in employment in occupations at high-risk for lead exposure.

In Florida, a blood lead level (BLL) ≥10 µg/dL meets the surveillance case definition for lead poisoning. Compared to children, adults have much higher BLLs, peaking in the 20-44 µg/dL range. Hillsborough, Pinellas, Pasco, and Polk counties have high rates of lead poisoning cases due to the number of battery recycling plants and metal recycling plants located in those counties.

Lead Poisoning in Children <16 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: For children, most commonly ingestion of paint dust in houses built prior to elimination of lead in paints in 1978

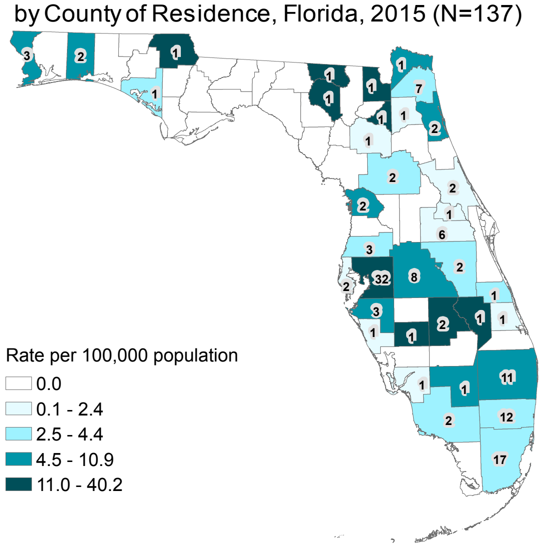
Reason for surveillance: Estimate burden among children, ensure follow-up care for identified cases, prevent new cases and exacerbation of illness, help target future public health interventions

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 2015 are presented in this report. Lead poisoning is most often identified in children as part of routine screening.

Summary of Case Demographics

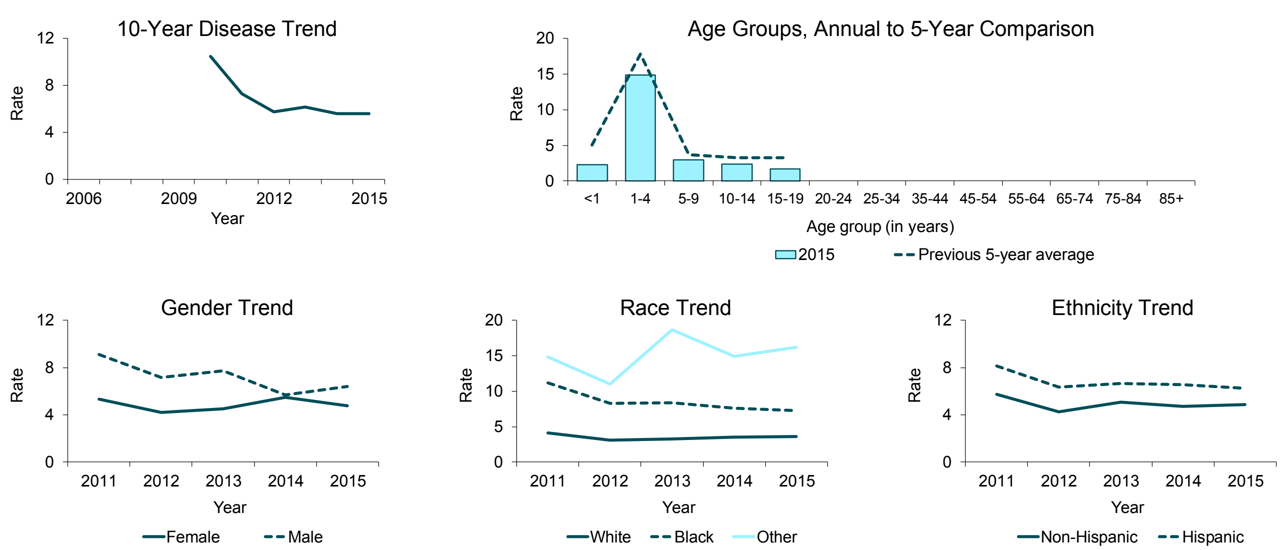
Summary			
Number of cases			204
Incidence rate (per 100,000 population)			5.6
Change from 5-year average incidence			-20.8%
Age (in Years)			
Mean			4
Median			3
Min-max			0 - 15
Gender	**Number**	**(Percent)**	**Rate**
Female	85	(41.7)	4.7
Male	119	(58.3)	6.4
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	92	(46.9)	3.6
Black	59	(30.1)	7.2
Other	45	(23.0)	16.2
Unknown race	8		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	123	(63.7)	4.9
Hispanic	70	(36.3)	6.3
Unknown ethnicity	11		

Reported Lead Poisoning Cases in Children <16 Years Old and Incidence Rates Per 100,000 Population (Restricted to Exposures Occurring in Florida) by County of Residence, Florida, 2015 (N=137)



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 <16 Years Old by Year, Age, Gender, Race, and Ethnicity, Florida

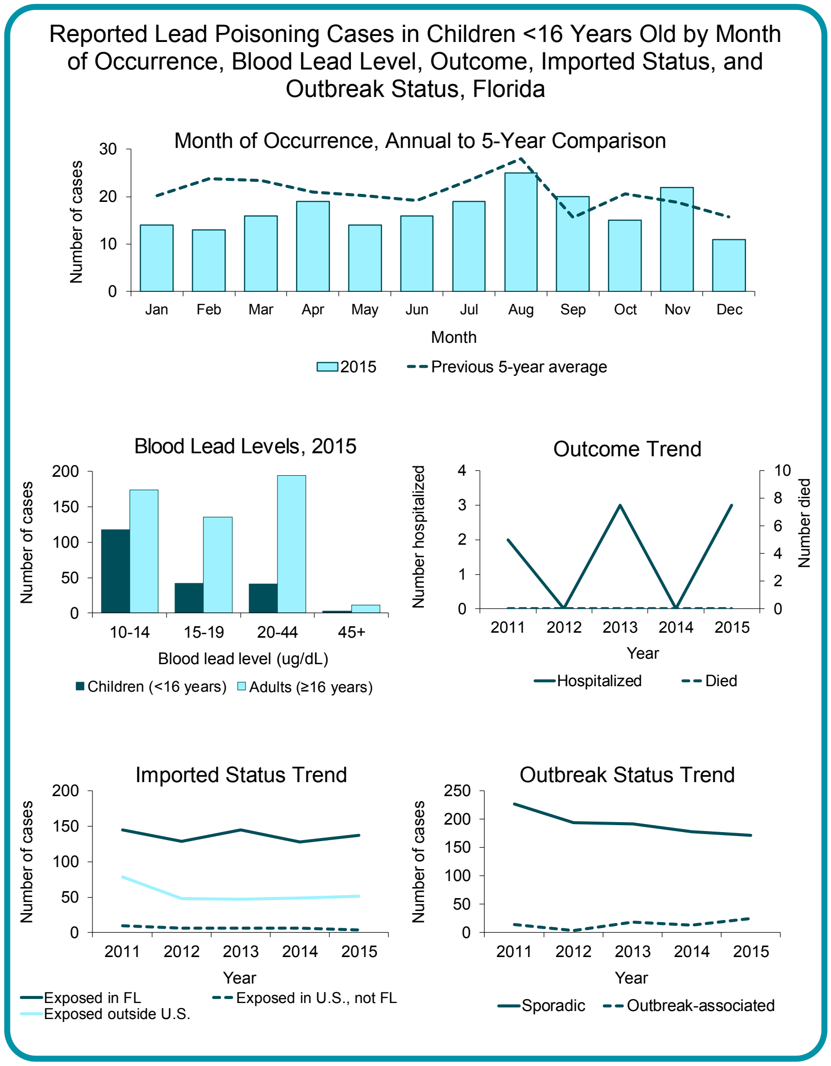


Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Lead poisoning cases in children <16 years old were missing 12.5% of ethnicity data in 2011, 11.7% of race data in 2011, 15.7% of ethnicity data in 2012, 16.2% of race data in 2012, 10.0% of ethnicity data in 2013, 10.0% of race data in 2013, 5.9% of ethnicity data in 2014, 5.4% of race data in 2014, and 5.4% of ethnicity data in 2015.

Lead Poisoning in Children <16 Years Old

Summary of Case Factors

Summary	Number
Number of cases	204
Outcome	**Number (Percent)**
Hospitalized	3 (1.5)
Died	0 (0.0)
Imported Status	**Number (Percent)**
Exposed in Florida	137 (67.2)
Exposed in the U.S., not Florida	4 (2.0)
Exposed outside the U.S.	51 (25.0)
Exposed location unknown	12 (5.9)
Outbreak Status	**Number (Percent)**
Sporadic	172 (84.3)
Outbreak-associated	25 (12.3)
Outbreak status unknown	7 (3.4)



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 source 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. Most children with lead poisoning have BLLs in the 10-14 µg/dL range, which is much lower than BLLs in adults, which peak in the 24-44 µg/dL range. For children ≥6 years old, screening is only recommended for those who are foreign-born or otherwise identified as high-risk. Since less screening is done, fewer lead poisoning cases are identified in older children. Compared to younger children, children ≥6 years old are more likely to be clinically ill (22.4% of cases versus 11.0% of cases), foreign-born (56.9% of cases versus 13.0% of cases), and a refugee (50.0% of cases versus 6.8% of cases).

Legionellosis

Disease Facts

Cause: *Legionella* bacteria

Type of illness: Common symptoms include fever, muscle pain, cough, and pneumonia

Transmission: Airborne; inhalation of aerosolized water containing the bacteria

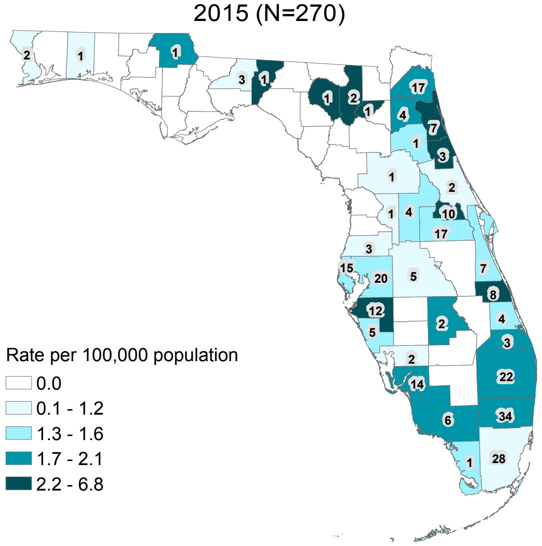
Reason for surveillance: Identify and control outbreaks, identify and mitigate common reservoirs, monitor incidence over time, estimate burden of illness

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

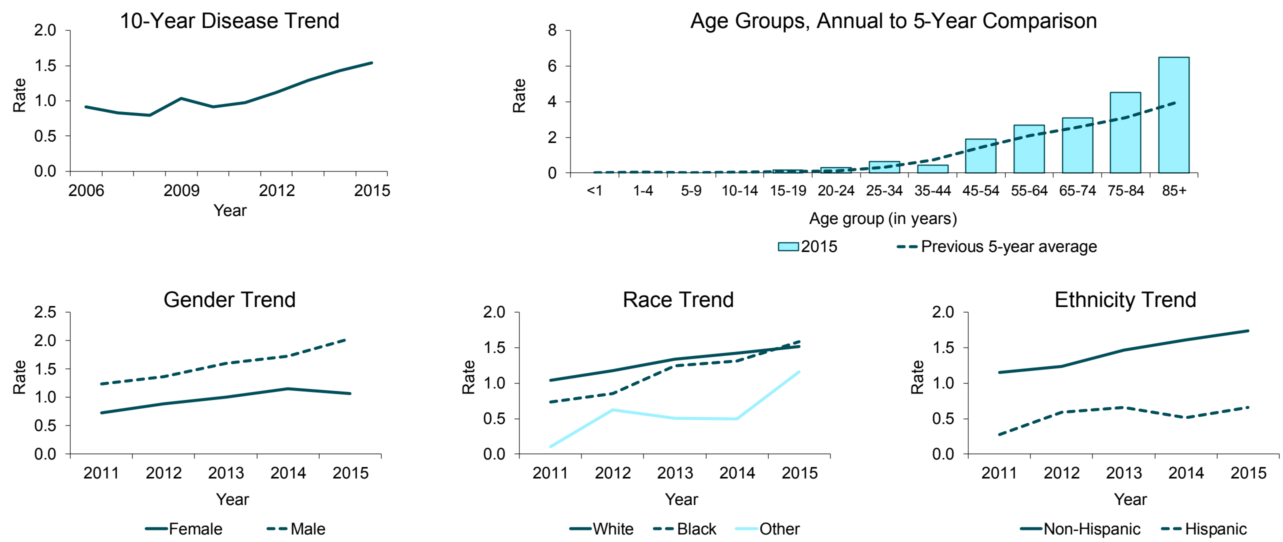
Summary			
Number of cases			306
Incidence rate (per 100,000 population)			1.5
Change from 5-year average incidence			+34.3%
Age (in Years)			
Mean			64
Median			64
Min-max			16 - 98
Gender	**Number**	**(Percent)**	**Rate**
Female	109	(35.6)	1.1
Male	197	(64.4)	2.0
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	235	(78.3)	1.5
Black	53	(17.7)	1.6
Other	12	(4.0)	NA
Unknown race	6		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	261	(89.1)	1.7
Hispanic	32	(10.9)	0.7
Unknown ethnicity	13		

Reported Legionellosis Cases and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2015 (N=270)



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

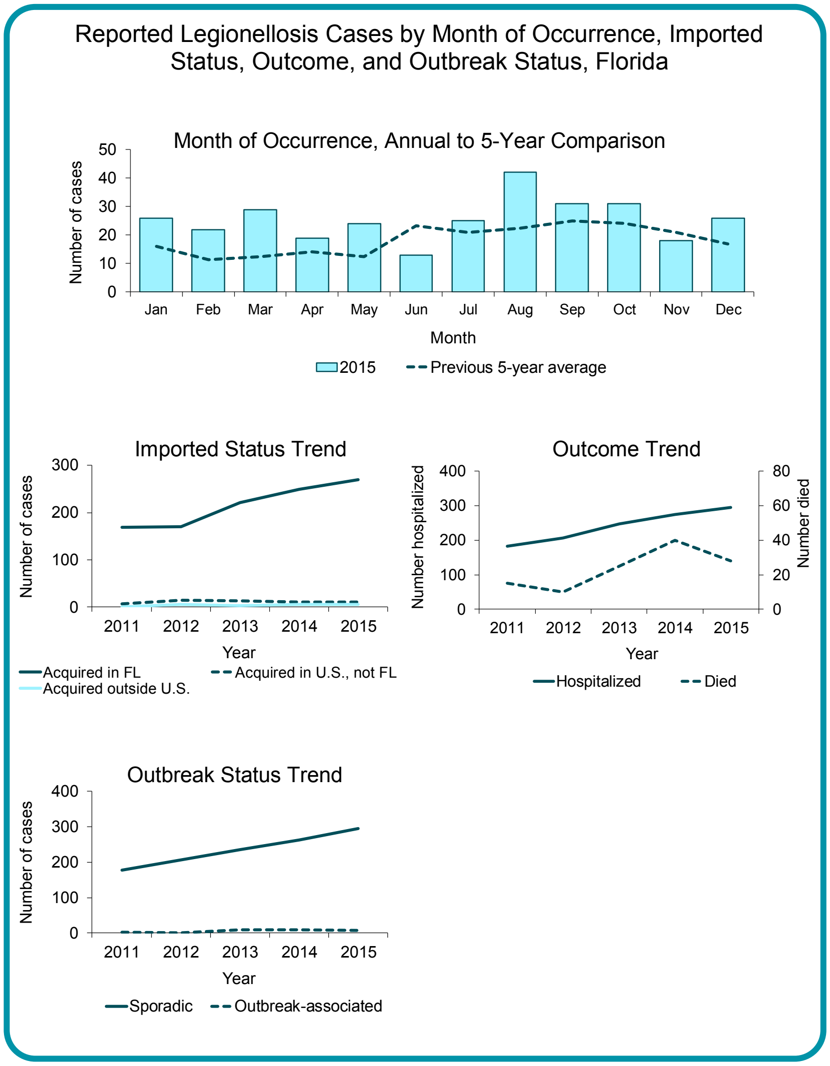
Incidence Rates Per 100,000 Population of Reported Legionellosis Cases by Year, Age, Gender, Race, and Ethnicity, Florida



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.

Summary of Case Factors

Summary	Number
Number of cases	306
Outcome	**Number (Percent)**
Hospitalized	296 (96.7)
Died	28 (9.2)
Imported Status	**Number (Percent)**
Acquired in Florida	270 (88.2)
Acquired in the U.S., not Florida	11 (3.6)
Acquired outside the U.S.	6 (2.0)
Acquired location unknown	19 (6.2)
Outbreak Status	**Number (Percent)**
Sporadic	295 (96.4)
Outbreak-associated	7 (2.3)
Outbreak status unknown	4 (1.3)



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

In Florida, sporadic cases of both Legionnaires' disease and Pontiac fever (two distinct presentations of legionellosis) are monitored. Thirteen outbreaks involving 32 cases were identified in Florida in 2015 associated with hospitals, nursing homes, correctional facilities, and hotels. Most of the cases identified in these outbreaks were residents of other states and therefore are not included in Florida case counts. Of note, one facility associated with a 2014 outbreak also had an outbreak in 2015. This facility had not fully implemented the premise plumbing water management plan recommended during the 2014 investigation and subsequently had a second outbreak in 2015 causing seven illnesses with two deaths.

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

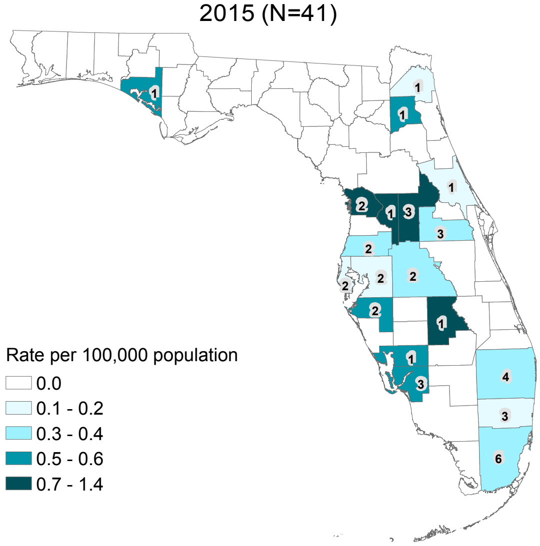
Reason for surveillance: Identify and control outbreaks, identify and mitigate common sources (e.g., contaminated food product), monitor incidence over time, estimate burden of illness, reduce stillbirths

Comments: Listeriosis primarily affects pregnant women, infants born to infected mothers, older adults, and people with weakened immune systems. Infection during pregnancy can cause fetal loss, preterm labor, stillbirths, and illness or death in newborn infants. Incidence is highest in infants and people ≥85 years old.

Summary of Case Demographics

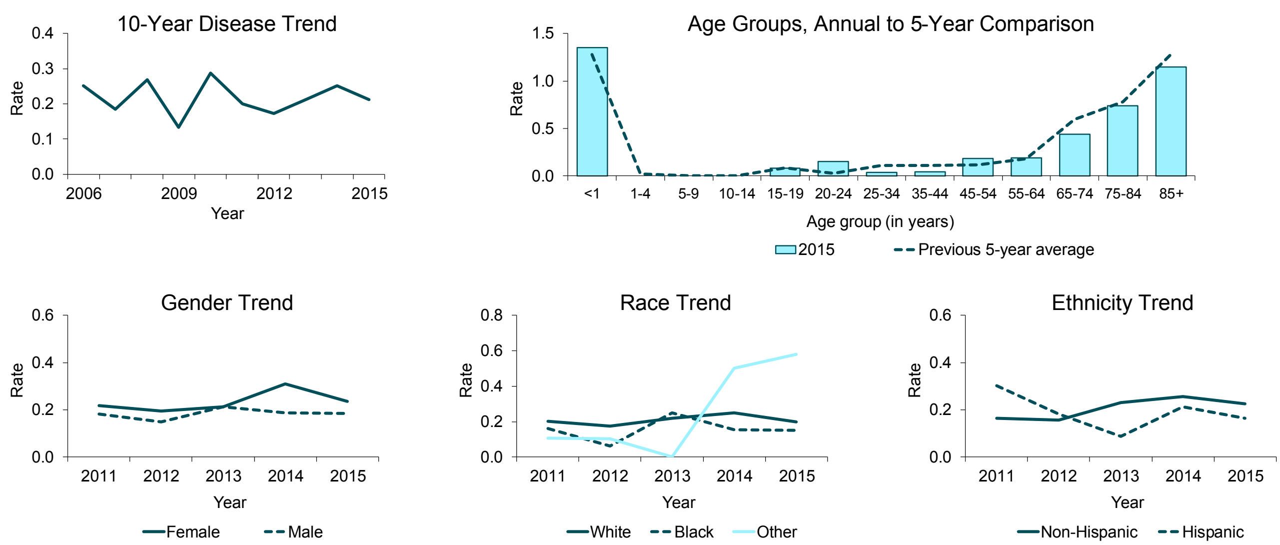
Summary			
Number of cases			42
Incidence rate (per 100,000 population)			0.2
Change from 5-year average incidence			-5.9%
Age (in Years)			
Mean			60
Median			68
Min-max			0 - 92
Gender	**Number**	**(Percent)**	**Rate**
Female	24	(57.1)	0.2
Male	18	(42.9)	NA
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	31	(73.8)	0.2
Black	5	(11.9)	NA
Other	6	(14.3)	NA
Unknown race	0		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	34	(81.0)	0.2
Hispanic	8	(19.0)	NA
Unknown ethnicity	0		

Reported Listeriosis Cases and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2015 (N=41)



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

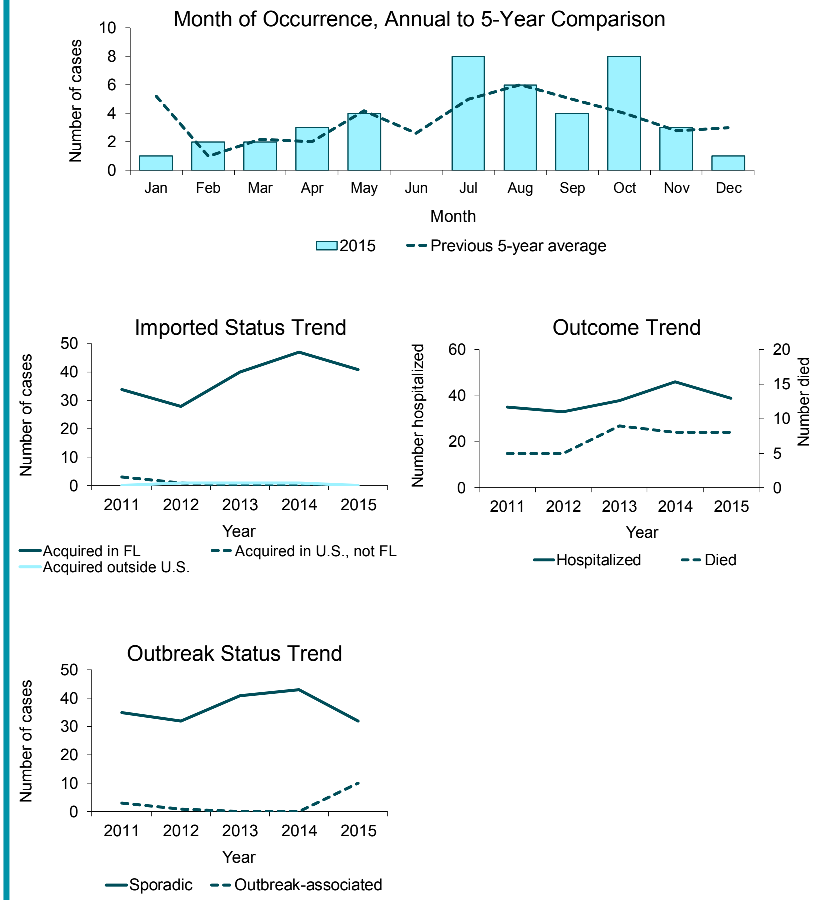


Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Listeriosis cases were missing 5.3% of race data in 2011, 6.1% of ethnicity data in 2012, 12.1% of race data in 2012, and 7.3% of ethnicity data in 2013.

Summary of Case Factors

Summary	Number
Number of cases	42
Outcome	**Number (Percent)**
Hospitalized	39 (92.9)
Died	8 (19.0)
Imported Status	**Number (Percent)**
Acquired in Florida	41 (97.6)
Acquired in the U.S., not Florida	0 (0.0)
Acquired outside the U.S.	0 (0.0)
Acquired location unknown	1 (2.4)
Outbreak Status	**Number (Percent)**
Sporadic	32 (76.2)
Outbreak-associated	10 (23.8)
Outbreak status unknown	0 (0.0)

Reported Listeriosis 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

Florida had 10 outbreak-associated cases reported in 2015. Four of those cases were associated with two separate instances of perinatal transmission. Eight cases in 2015 were associated with two multistate clusters and one in-state cluster. Additionally, six cases reported in 2014 and one reported in 2013 were later linked to clusters in 2015 due to improved laboratory diagnostics. Whole genome sequencing conducted on the isolates from the one in-state cluster determined that cases were highly related. In-depth interviews identified a common retail grocery establishment. The Florida Department of Agriculture and Consumer Services conducted an environmental assessment and found *Listeria monocytogenes* in the environment of the retail grocery store. A total of nine cases were associated with this outbreak with onset dates ranging from September 28, 2013 to August 18, 2015. For additional information on this outbreak, see Section 4: Notable Outbreaks and Case Investigations.

Lyme Disease

Disease Facts

Cause: *Borrelia burgdorferi* bacteria

Type of illness: Acute illness or late manifestation; common acute symptoms include fever, headache, fatigue, and erythema migrans (characteristic bull's-eye rash); late manifestation symptoms can include Bell's palsy, severe joint pain and swelling, and shooting pain

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

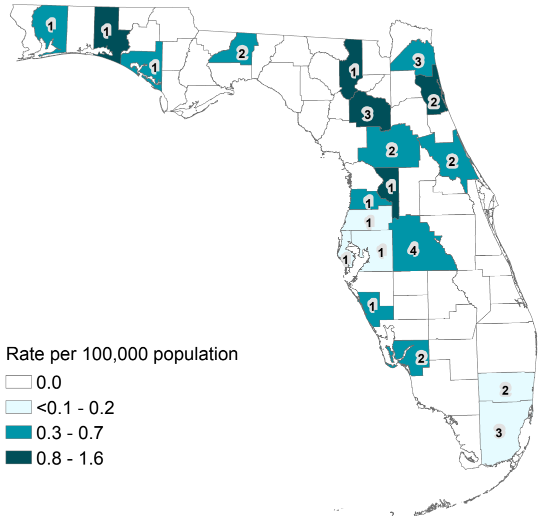
Reason for surveillance: Monitor incidence over time, estimate burden of illness and degree of endemicity, target areas of high incidence for prevention education

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 the increase in cases starting in 2008. Other contributing factors include increased incidence, recognition, and geographic distribution of ticks.

Summary of Case Demographics

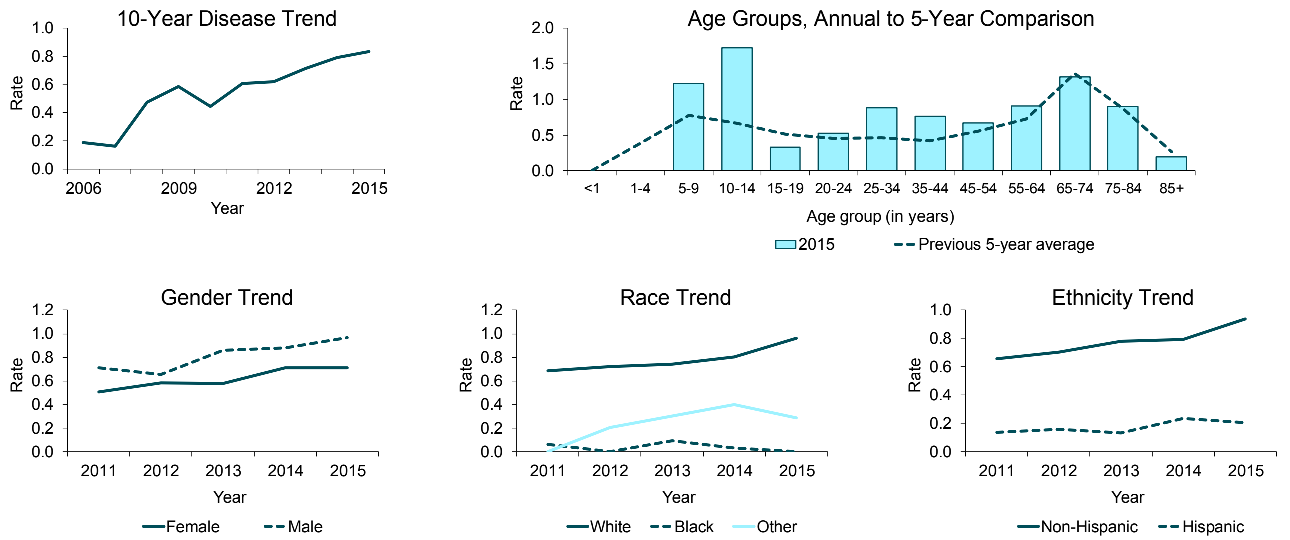
Summary			
Number of cases			166
Incidence rate (per 100,000 population)			0.8
Change from 5-year average incidence			+31.4%
Age (in Years)			
Mean			43
Median			44
Min-max			5 - 91
Gender	**Number**	**(Percent)**	**Rate**
Female	72	(43.4)	0.7
Male	94	(56.6)	1.0
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	146	(98.0)	0.9
Black	0	(0.0)	NA
Other	3	(2.0)	NA
Unknown race	17		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	139	(93.3)	0.9
Hispanic	10	(6.7)	NA
Unknown ethnicity	17		

Reported Lyme Disease Cases and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2015 (N=35)



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 11.3% of ethnicity data in 2011, 9.6% of race data in 2011, 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, 10.8% of ethnicity data in 2015, and 10.8% of race data in 2015.

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

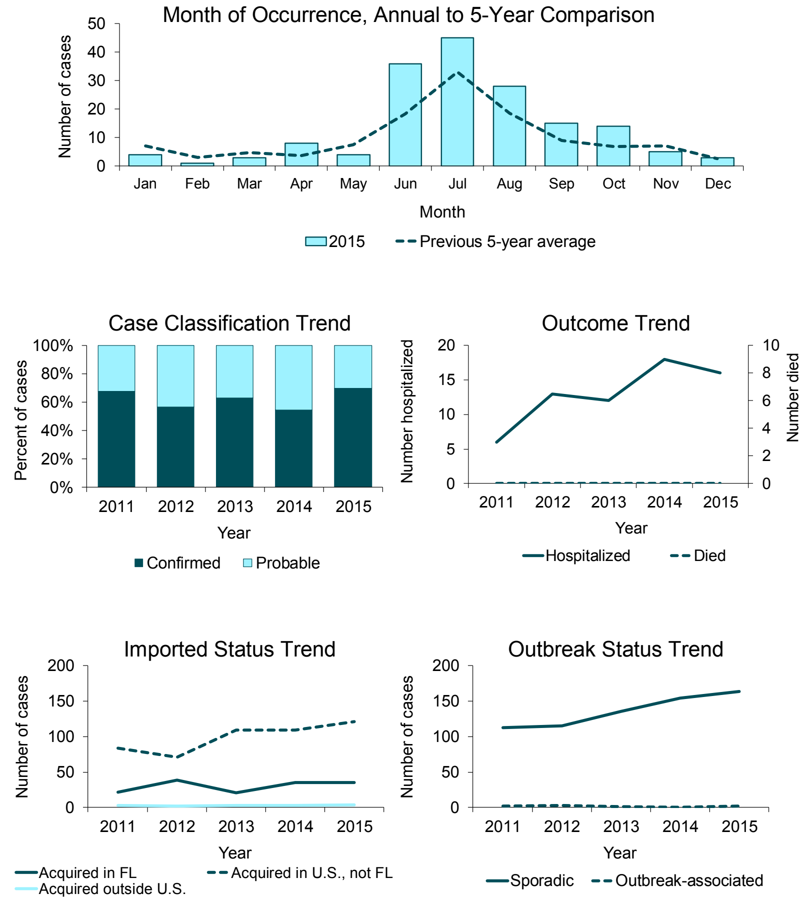
Lyme Disease

Summary of Case Factors

Summary	Number
Number of cases	166
Case Classification	**Number (Percent)**
Confirmed	116 (69.9)
Probable	50 (30.1)
Outcome	**Number (Percent)**
Hospitalized	16 (9.6)
Died	0 (0.0)
Imported Status	**Number (Percent)**
Acquired in Florida	35 (21.1)
Acquired in the U.S., not Florida	121 (72.9)
Acquired outside the U.S.	4 (2.4)
Acquired location unknown	6 (3.6)
Outbreak Status	**Number (Percent)**
Sporadic	164 (98.8)
Outbreak-associated	2 (1.2)
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.

Reported Lyme Disease 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

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. Similar to past years, most cases (72.9%) were imported from other states, primarily the Northeast and upper Midwest U.S. The increase in cases over the past decade may be due to the slowly expanding geographic range of the disease due to ecological factors.

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

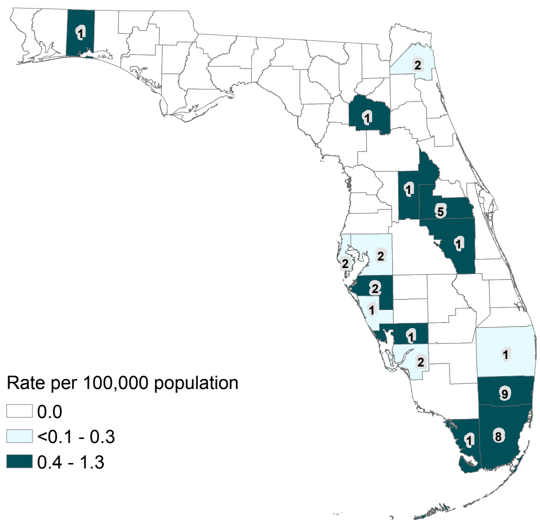
Reason for surveillance: Identify individual cases and implement control measures to prevent endemicity, monitor incidence over time, estimate burden of illness

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, but decreased from 2011 to 2015. The last malaria case possibly acquired in Florida was in 2010 in a Duval County resident.

Summary of Case Demographics

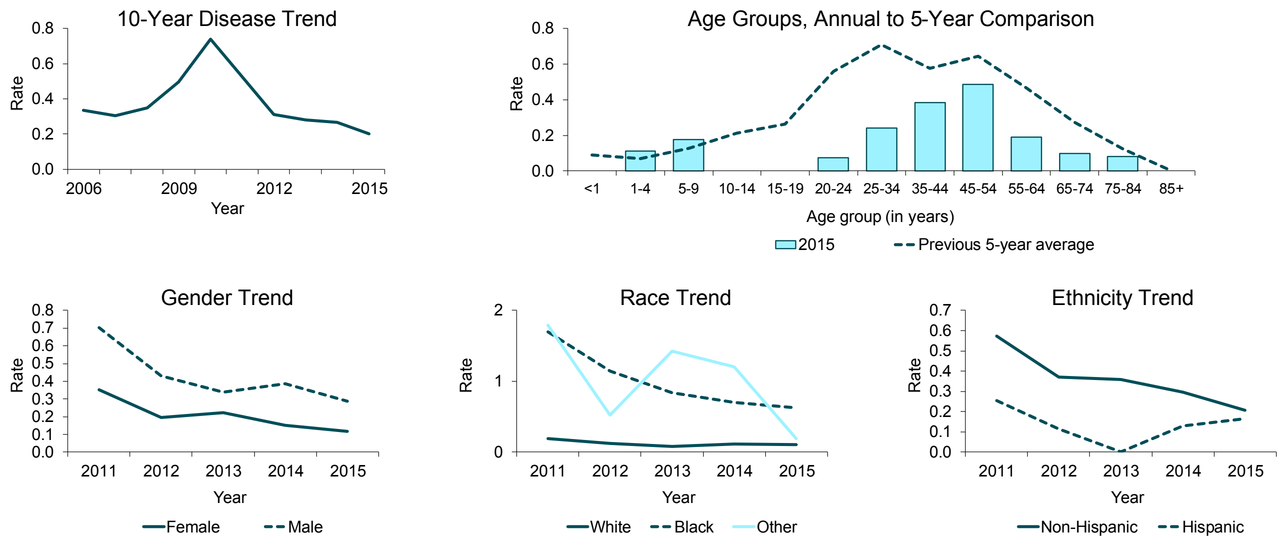
Summary			
Number of cases			40
Incidence rate (per 100,000 population)			0.2
Change from 5-year average incidence			-52.4%
Age (in Years)			
Mean			43
Median			45
Min-max			3 - 81
Gender	**Number**	**(Percent)**	**Rate**
Female	12	(30.0)	NA
Male	28	(70.0)	0.3
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	17	(42.5)	NA
Black	21	(52.5)	0.6
Other	2	(5.0)	NA
Unknown race	0		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	31	(79.5)	0.2
Hispanic	8	(20.5)	NA
Unknown ethnicity	1		

Reported Malaria Cases and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2015 (N=40)



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



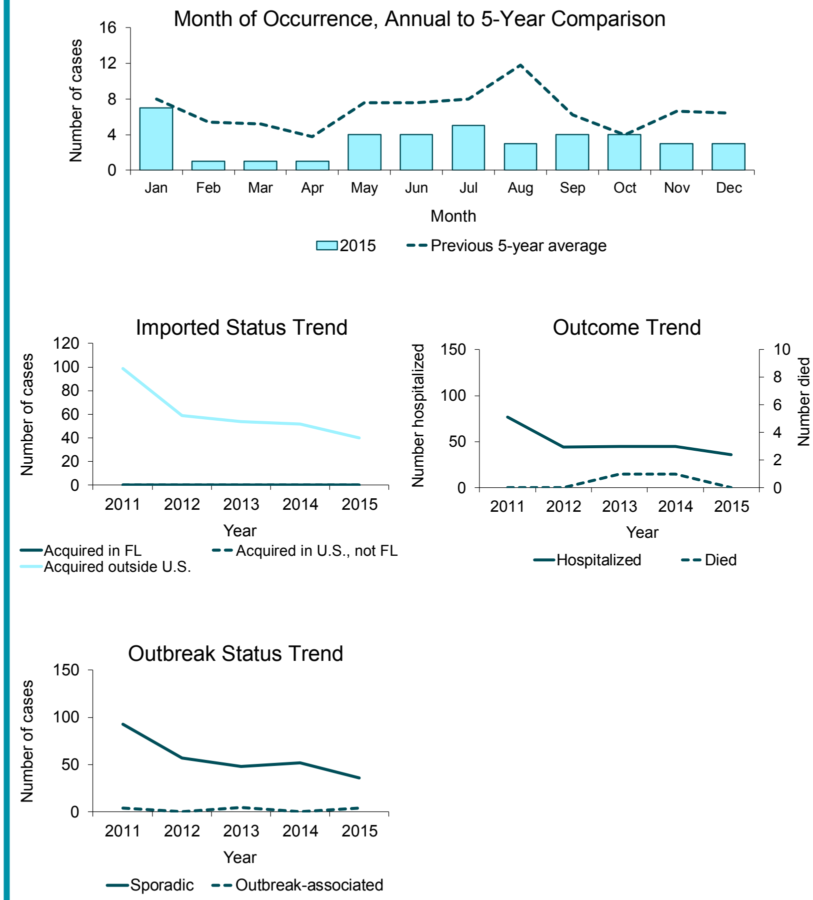
Note that the majority of malaria cases are acquired outside of Florida.

Malaria

Summary of Case Factors

Summary	Number
Number of cases	40
Outcome	**Number (Percent)**
Hospitalized	36 (90.0)
Died	0 (0.0)
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.	40 (100.0)
Acquired location unknown	0 (0.0)
Outbreak Status	**Number (Percent)**
Sporadic	36 (90.0)
Outbreak-associated	4 (10.0)
Outbreak status unknown	0 (0.0)
Region Where Infection Acquired	**Number (Percent)**
Africa	24 (60.0)
Central America/Caribbean	9 (22.5)
Asia	2 (5.0)
Multiple Regions	2 (5.0)
Middle East	1 (2.5)
South America	1 (2.5)
South Pacific	1 (2.5)
Reason for Travel	**Number (Percent)**
Visiting friends/relatives	16 (40.0)
Tourism	7 (17.5)
Business	5 (12.5)
Refugee/immigrant	4 (10.0)
Missionary or dependent	2 (5.0)
Airline/ship crew	1 (2.5)
Military	1 (2.5)
Other	4 (10.0)

Reported Malaria Cases by Month of Occurrence, Imported Status, Outcome, 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

In 2015, there was one death from cerebral malaria associated with *Plasmodium falciparum* infection. This person was a non-Florida resident who was visiting Florida on vacation, and therefore is not included in this report. It is important to note that both infected residents and non-residents pose a potential malaria introduction risk since the malaria vector *Anopheles quadrimaculatus* is common. In 2015, 14 non-Florida residents were diagnosed with malaria while traveling in Florida. Four outbreak-associated cases were reported in 2015. Two cases were in men traveling together to Ghana for business, and two were in a father and son visiting the Dominican Republic on vacation.

Meningococcal Disease

Disease Facts

Cause: *Neisseria meningitidis* bacteria

Type of illness: Neurological (meningitis) or bloodstream infections (septicemia) most common

Transmission: Person-to-person; direct contact or inhalation of respiratory droplets from nose or throat of colonized or infected person

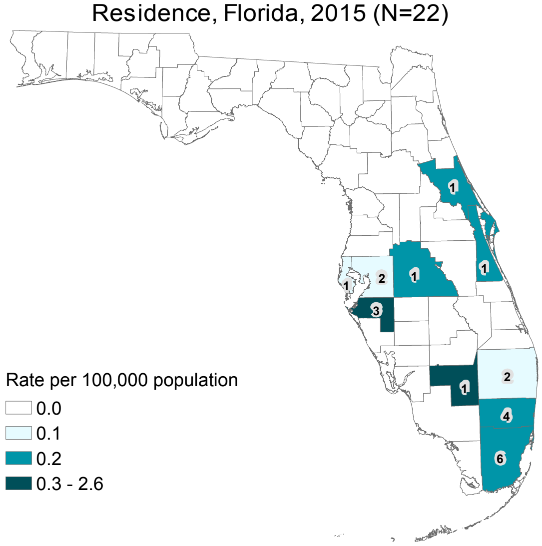
Reason for surveillance: Immediate public health actions are taken in response to every suspected meningococcal disease case to prevent secondary transmission; monitor effectiveness of immunization programs and vaccines

Comments: Five *N. meningitidis* serogroups cause almost all invasive disease (A, B, C, Y and W). Vaccines provide protection against serogroups A, B, C, Y, and W. In 2015, the reported incidence rate of meningococcal disease reached a historic low.

Summary of Case Demographics

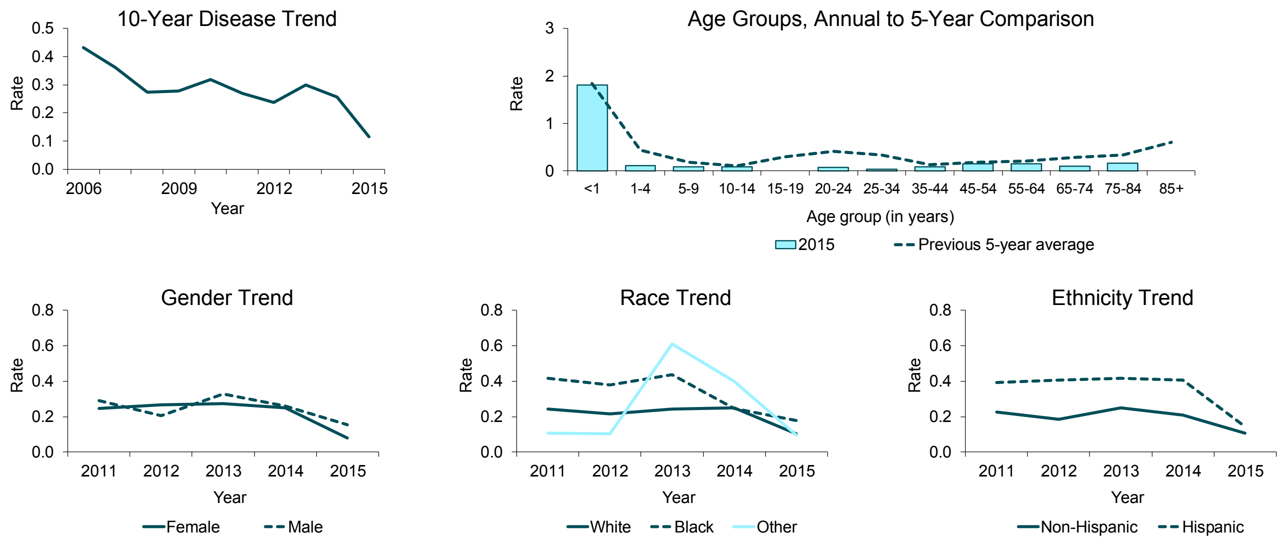
Summary			
Number of cases			23
Incidence rate (per 100,000 population)			0.1
Change from 5-year average incidence			-58.1%
Age (in Years)			
Mean			39
Median			50
Min-max			0 - 81
Gender	**Number**	**(Percent)**	**Rate**
Female	8	(34.8)	NA
Male	15	(65.2)	NA
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	16	(69.6)	NA
Black	6	(26.1)	NA
Other	1	(4.3)	NA
Unknown race	0		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	16	(69.6)	NA
Hispanic	7	(30.4)	NA
Unknown ethnicity	0		

Reported Meningococcal Disease Cases and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2015 (N=22)



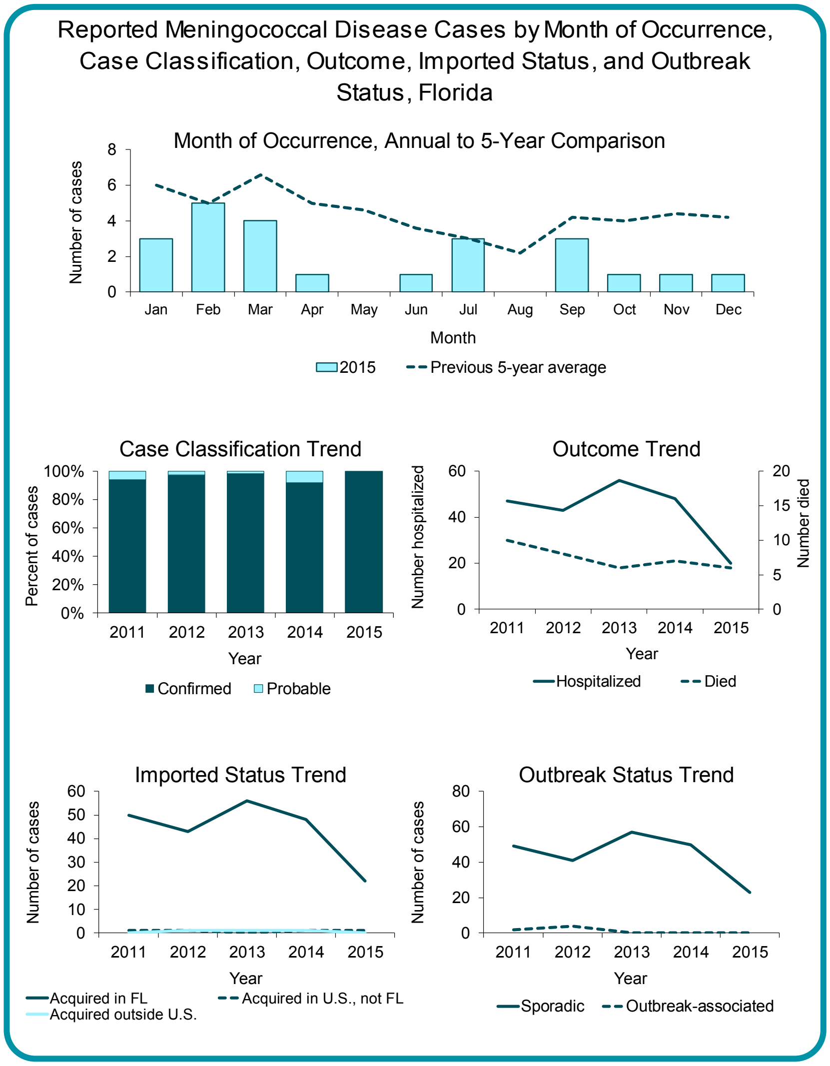
Note that rates based on <20 cases are not reliable and should be interpreted with caution.

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



Summary of Case Factors

Summary	Number
Number of cases	23
Case Classification	**Number (Percent)**
Confirmed	23 (100.0)
Probable	0 (0.0)
Outcome	**Number (Percent)**
Hospitalized	20 (87.0)
Died	6 (26.1)
Imported Status	**Number (Percent)**
Acquired in Florida	22 (95.7)
Acquired in the U.S., not Florida	1 (4.3)
Acquired outside the U.S.	0 (0.0)
Acquired location unknown	0 (0.0)
Outbreak Status	**Number (Percent)**
Sporadic	23 (100.0)
Outbreak-associated	0 (0.0)
Outbreak status unknown	0 (0.0)
Serogroup	**Number (Percent)**
Group W	11 (47.8)
Group B	6 (26.1)
Group Y	4 (17.4)
Non-groupable	1 (4.3)
Unknown	1 (4.3)



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

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 an increase in invasive meningococcal disease in the region. In 2015, the reported incidence of serogroup W infections decreased and the geographic distribution of detected cases did not expand.

For additional information on the initial cluster, please see the article below.

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 wwwnc.cdc.gov/eid/article/16/1/09-1026_article.

Disease Facts

Cause: Mercury (elemental or metallic mercury, organic mercury compounds, inorganic mercury compounds)

Type of illness: 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; muscle weakness

Transmission: Ingestion of mercury or inhalation of mercury vapors

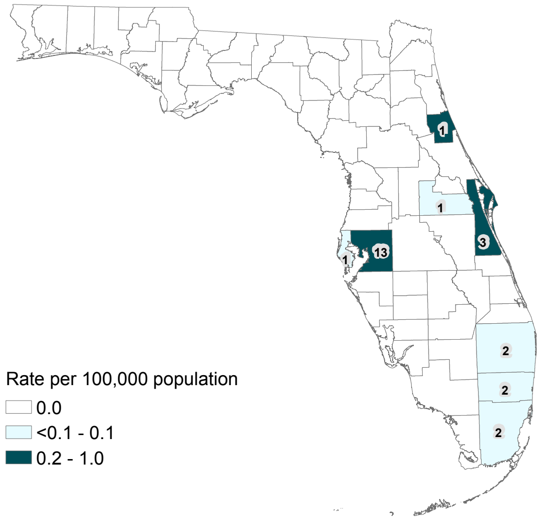
Reason for surveillance: Identify and mitigate persistent sources of exposure, prevent further or continued exposure through remediation or elimination of sources when possible, identify populations at risk

Comments: Incidence of mercury poisoning peaked in 2008. In August 2008, the case definition was updated to require clinically compatible illness, leading to a decrease in cases in subsequent years. The number of cases increased in 2014 and 2015. The increase in 2015 was due to one large outbreak in Hillsborough County.

Summary of Case Demographics

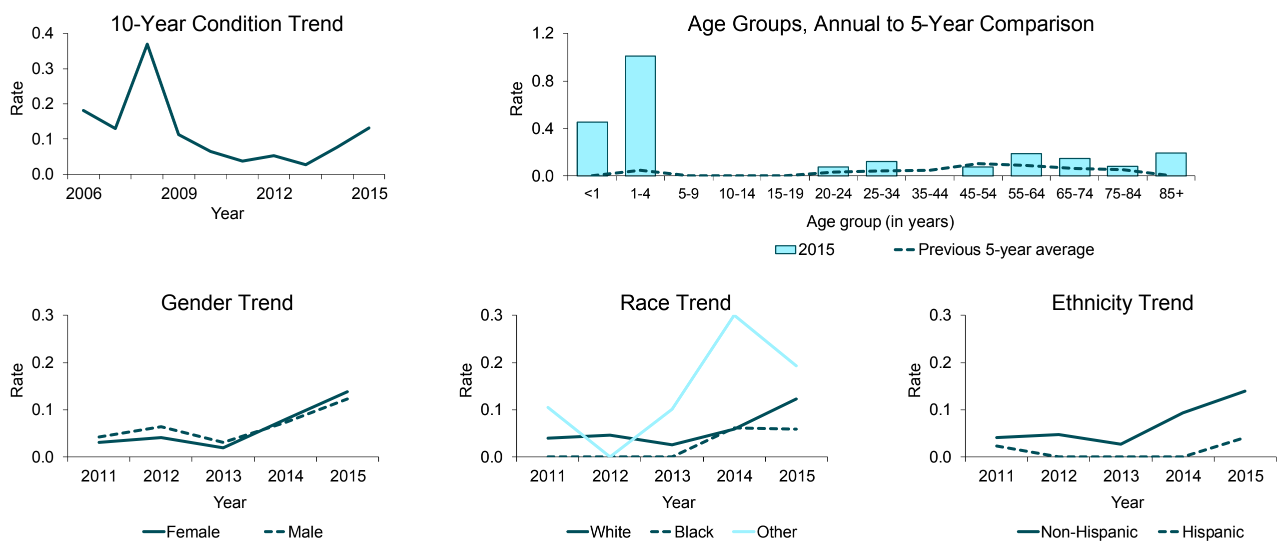
Summary			
Number of cases			26
Incidence rate (per 100,000 population)			0.1
Change from 5-year average incidence			+155.8%
Age (in Years)			
Mean			36
Median			34
Min-max			0 - 86
Gender	**Number**	**(Percent)**	**Rate**
Female	14	(53.8)	NA
Male	12	(46.2)	NA
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	19	(82.6)	NA
Black	2	(8.7)	NA
Other	2	(8.7)	NA
Unknown race	3		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	21	(91.3)	0.1
Hispanic	2	(8.7)	NA
Unknown ethnicity	3		

Reported Mercury Poisoning Cases and Incidence Rates Per 100,000 Population (Restricted to Exposures Occurring in Florida) by County of Residence, Florida, 2015 (N=25)



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

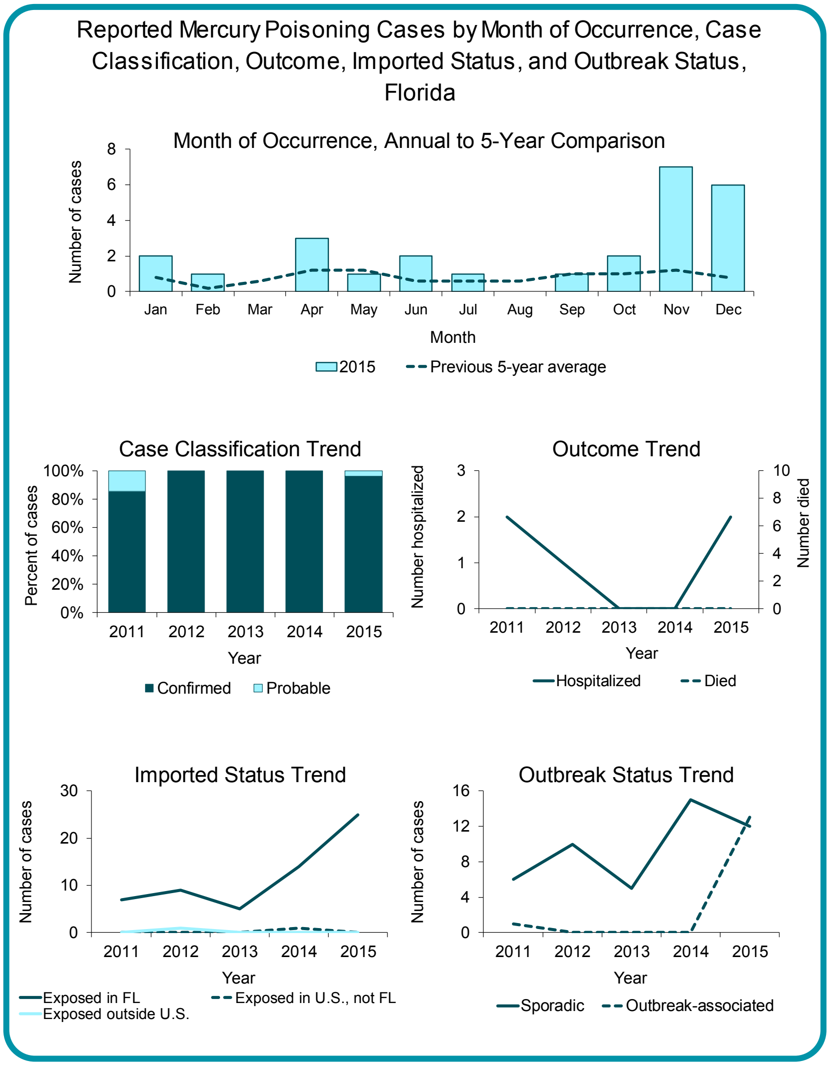
Incidence Rates Per 100,000 Population of Reported Mercury Poisoning Cases by Year, Age, Gender, Race, and Ethnicity, Florida



Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Mercury poisoning cases were missing 30.0% of ethnicity data in 2012, 30.0% of race data in 2012, 20.0% of ethnicity data in 2013, 6.7% of ethnicity data in 2014, 6.7% of race data in 2014, 11.5% of ethnicity data in 2015, and 11.5% of race data in 2015.

Summary of Case Factors

Summary	Number
Number of cases	26
Case Classification	**Number (Percent)**
Confirmed	25 (96.2)
Probable	1 (3.8)
Outcome	**Number (Percent)**
Hospitalized	2 (7.7)
Died	0 (0.0)
Imported Status	**Number (Percent)**
Exposed in Florida	25 (96.2)
Exposed in the U.S., not Florida	0 (0.0)
Exposed outside the U.S.	0 (0.0)
Exposed location unknown	1 (3.8)
Outbreak Status	**Number (Percent)**
Sporadic	12 (46.2)
Outbreak-associated	13 (50.0)
Outbreak status unknown	1 (3.8)



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

Half of the cases reported in 2015 were outbreak-associated and related to elemental mercury exposure in a daycare in Hillsborough County in late November/early December (see Section 4: Notable Outbreaks and Case Investigations for additional information on this outbreak). The outbreak accounted for the large increase in overall rate and rate in children <5 years old compared to the previous 5-year average. Among the remaining 13 non-outbreak-associated cases, eleven were in people reporting fish consumption within the month prior to illness onset, and two cases did not report any high-risk exposures.

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

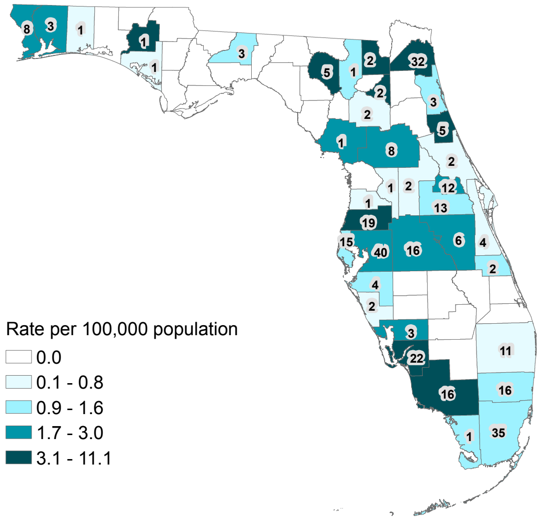
Reason for surveillance: Identify cases for treatment to prevent death, identify and prevent outbreaks, limit transmission in settings with infants or others who may transmit to infants, monitor effectiveness of immunization programs and vaccines

Comments: Pertussis incidence has increased nationwide since the 1980s. There was sharp increase in incidence in Florida in 2012 and 2013. Cases decreased slightly in 2014 and dramatically in 2015; factors contributing to the decrease are not well understood. Incidence remained highest in infants <1 year old.

Summary of Case Demographics

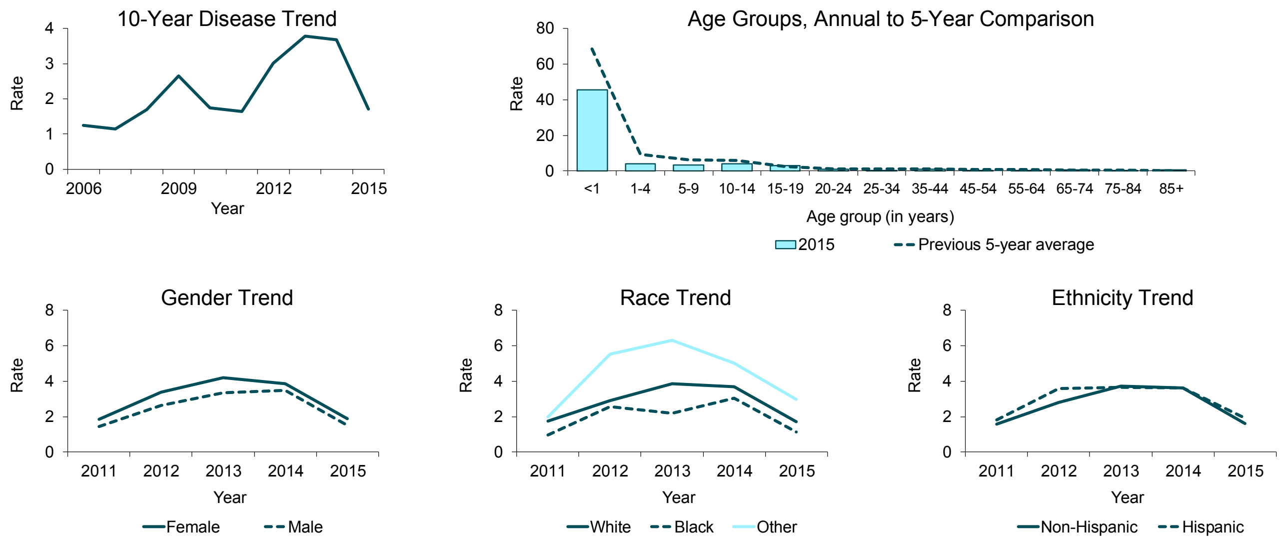
Summary			
Number of cases			339
Incidence rate (per 100,000 population)			1.7
Change from 5-year average incidence			-38.5%
Age (in Years)			
Mean			16
Median			9
Min-max			0 - 89
Gender	**Number**	**(Percent)**	**Rate**
Female	191	(56.3)	1.9
Male	148	(43.7)	1.5
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	267	(79.5)	1.7
Black	38	(11.3)	1.1
Other	31	(9.2)	3.0
Unknown race	3		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	241	(71.9)	1.6
Hispanic	94	(28.1)	1.9
Unknown ethnicity	4		

Reported Pertussis Cases and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2015 (N=321)



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

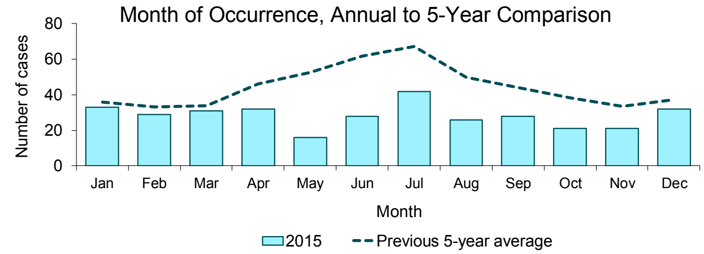


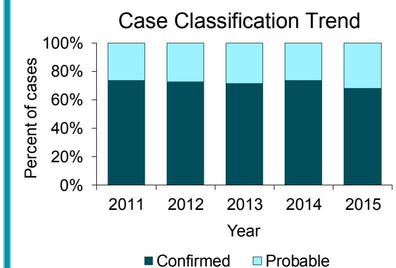
Pertussis

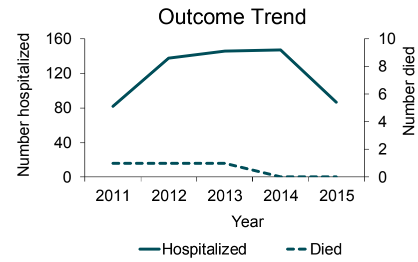
Summary of Case Factors

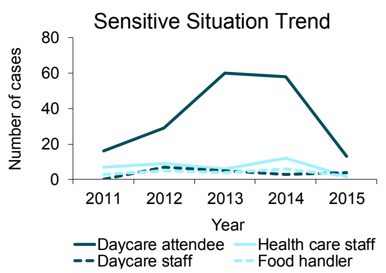
Summary	Number
Number of cases	339
Case Classification	**Number (Percent)**
Confirmed	232 (68.4)
Probable	107 (31.6)
Outcome	**Number (Percent)**
Hospitalized	87 (25.7)
Died	0 (0.0)
Sensitive Situation	**Number (Percent)**
Daycare attendee	13 (3.8)
Daycare staff	4 (1.2)
Health care staff	2 (0.6)
Food handler	2 (0.6)
Imported Status	**Number (Percent)**
Acquired in Florida	321 (94.7)
Acquired in the U.S., not Florida	12 (3.5)
Acquired outside the U.S.	3 (0.9)
Acquired location unknown	3 (0.9)
Outbreak Status	**Number (Percent)**
Sporadic	187 (55.2)
Outbreak-associated	150 (44.2)
Outbreak status unknown	2 (0.6)

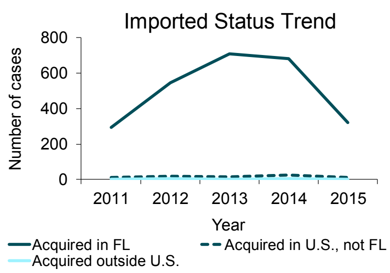
Reported Pertussis Cases by Month of Occurrence, Case Classification, Outcome, Sensitive Situation, Imported Status, and Outbreak Status, Florida

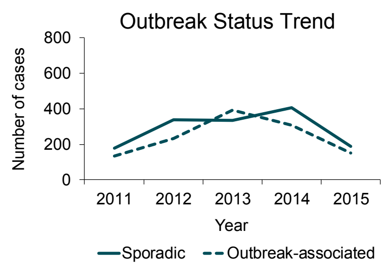












Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in 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

Older adults often have milder infections and serve as the reservoirs and sources of infection for infants and young children. The highest rate of pertussis is in infants <1 year old who are too young to be vaccinated, underscoring the importance of pregnant women and family members of infants getting vaccinated to protect infants from exposure. One dose of Tdap (tetanus, diphtheria, pertussis) vaccine became a requirement for children entering, attending, or transferring to the seventh grade during the 2009-2010 school year.

The number of pertussis cases that were outbreak-associated decreased from 307 (42.7%) in 2014 to 150 (44.2%) in 2015. The decrease in outbreak-associated cases follows the overall decrease in pertussis cases in 2015. Note that the proportion of cases that were outbreak-associated actually increased slightly from 2014 to 2015. There were 24 pertussis outbreaks with ≥3 cases in 2015 with the majority (19) occurring in households, one occurring in a daycare, and four with mixed transmission settings.

Pertussis mortality is rare in Florida and though there were no deaths in 2015, 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

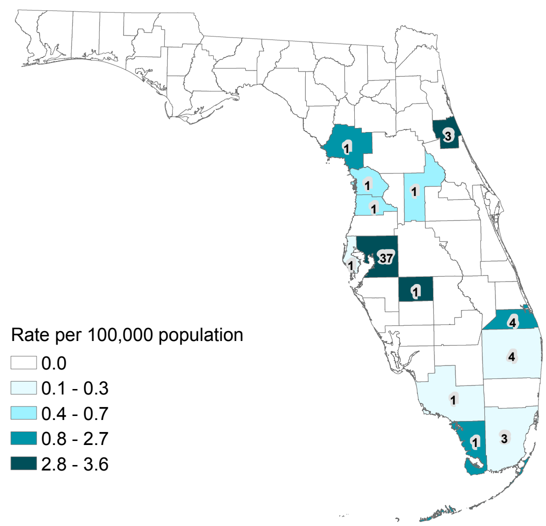
Reason for surveillance: Identify and mitigate persistent sources of exposure, identify populations at risk, evaluate trends in environmental conditions and occupational exposure, improve administration and proper use of pesticides to reduce exposure

Comments: Starting in January 2012, suspect sporadic cases (i.e., not part of a cluster) and suspect cases associated with non-occupational exposures (typically limited household exposures) were no longer counted in totals of reportable cases, resulting in a substantially decreased number of cases reported in 2012. Note that suspect cases are included in acute pesticide-related illness and injury case counts and rates in this report.

Summary of Case Demographics

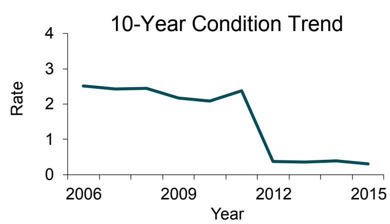
Summary			
Number of cases			59
Incidence rate (per 100,000 population)			0.3
Change from 5-year average incidence			-73.3%
Age (in Years)			
Mean			44
Median			49
Min-max			3 - 76
Gender	**Number**	**(Percent)**	**Rate**
Female	38	(64.4)	0.4
Male	21	(35.6)	0.2
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	53	(93.0)	0.3
Black	3	(5.3)	NA
Other	1	(1.8)	NA
Unknown race	2		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	53	(93.0)	0.4
Hispanic	4	(7.0)	NA
Unknown ethnicity	2		

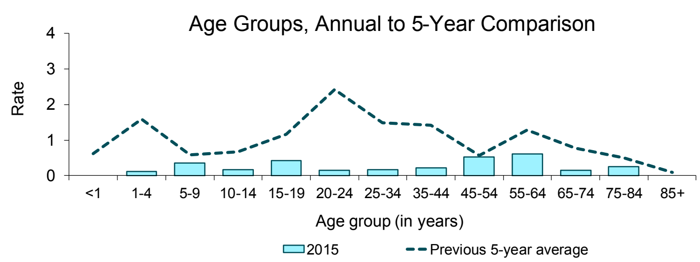
Reported Acute Pesticide-Related Illness and Injury Cases and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2015 (N=59)

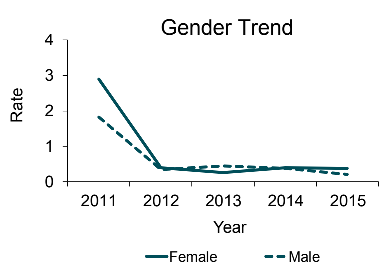


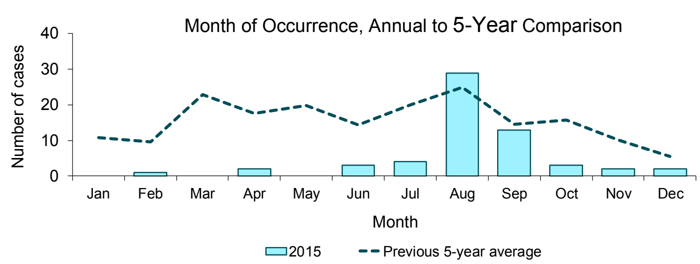
Note that rates based on <20 cases are not reliable and should be interpreted with caution.

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







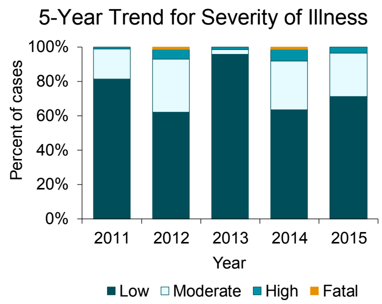


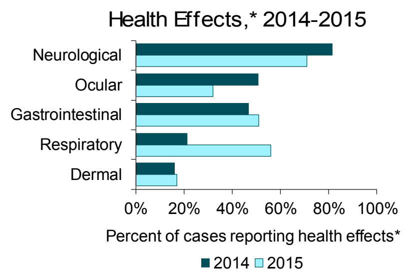
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the local health office was notified of the case.

Pesticide-Related Illness and Injury, Acute

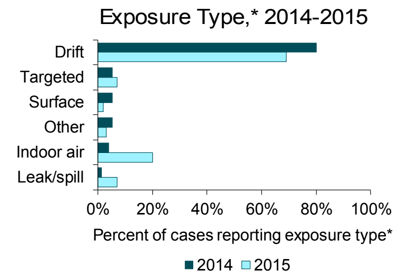
Additional Information

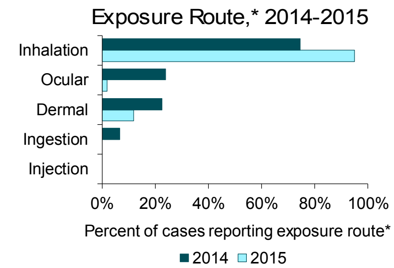
Reported Acute Pesticide-Related Illness and Injury Cases by Severity of Illness and Health Effects,* Florida

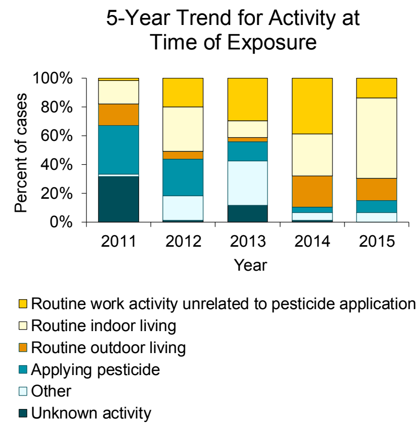




Reported Acute Pesticide-Related Illness and Injury Cases by Exposure Type,* Exposure Route,* Occupational Exposure, and Type of Activity at Time of Exposure, Florida







*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 2015, most cases experienced neurological symptoms (e.g., headache, weakness, dizziness) and had low severity of illness following pesticide exposure. No deaths were reported related to pesticide exposure.

In 2015, 38 (64.4%) of 59 cases were related to Paladin odor, a soil fumigant with dimethyl disulfide (DMDS) as the active ingredient. Paladin was applied in Hillsborough County in August and September, accounting for the clustering of cases in that count and the increased case count during those months.

All people with Paladin exposure had inhalational exposure following pesticide drift, accounting for the increased proportion of cases via inhalation in 2015 compared to 2014. A larger proportion of cases in 2015 were exposure during routine indoor living activities compared to past years. Of the 38 Paladin-related cases, 28 (73.7%) reported that they were doing routine indoor living activities when they were exposed, nine (23.7%) reported routine outdoor living activities, and one (2.6%) reported routine work activity not related to pesticide application. For additional information on Paladin and pesticide-related illness and injury, please see Section 4: Notable Outbreaks and Case Investigations in the *2015 Florida Morbidity Statistics Report*.

Rabies, Animal and Possible Human Exposure

Disease Facts

Cause: Rabies virus

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

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

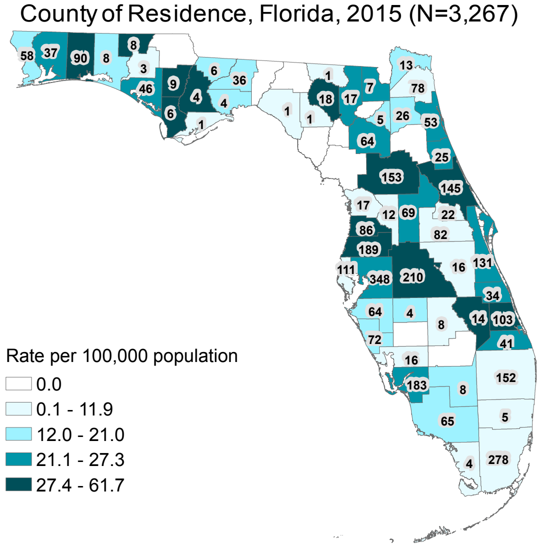
Reason for surveillance: Identify and mediate sources of exposure, evaluate adherence to guidance on rabies post-exposure prophylaxis (PEP)

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. Reasons for the increase could include more animal bites, lack of rabies PEP training, and decreased local resources to find and confine or test biting animals.

Summary of Case Demographics

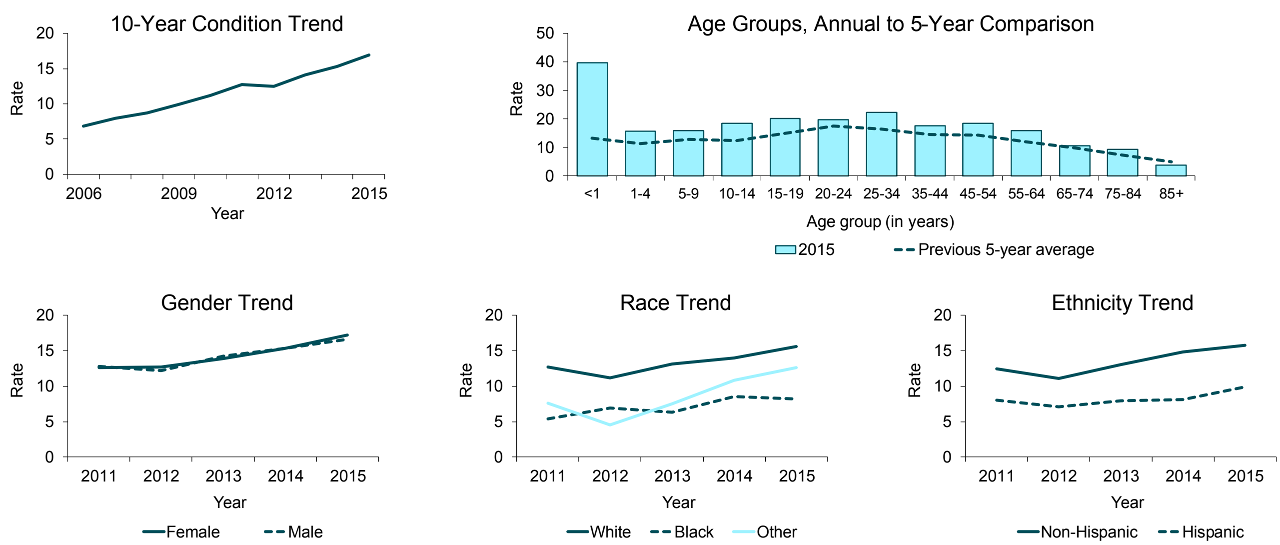
Possible human exposure to rabies			
Number of cases with PEP recommended			3,364
Incidence rate (per 100,000 population)			16.9
Change from 5-year average incidence			+28.7%
Age (in Years)			
Mean			36
Median			34
Min-max			0 - 102
Gender	**Number**	**(Percent)**	**Rate**
Female	1,748	(52.0)	17.2
Male	1,616	(48.0)	16.6
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	2,420	(85.7)	15.6
Black	274	(9.7)	8.2
Other	131	(4.6)	12.6
Unknown race	539		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	2,367	(83.1)	15.8
Hispanic	482	(16.9)	9.9
Unknown ethnicity	515		

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, 2015 (N=3,267)



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 9.8% of ethnicity data in 2011, 11.8% of race data in 2011, 18.3% of ethnicity data in 2012, 18.2% of race data in 2012, 15.7% of ethnicity data in 2013, 16.7% of race data in 2013, 13.4% of ethnicity data in 2014, 15.6% of race data in 2014, 15.3% of ethnicity data in 2015, and 16.0% of race data in 2015.

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.

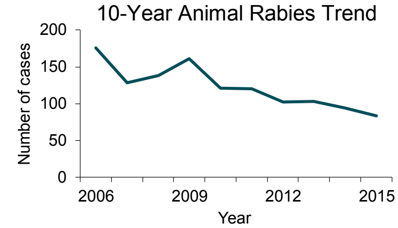
Laboratory testing for animal rabies is only done when animals potentially expose (e.g., bite) humans or domestic animals; thus, these data do not necessarily correlate with the true prevalence of rabies by animal species in Florida. A total of 83 laboratory-confirmed rabid animals were reported in 2015, which was a 23.1% decrease from the previous 5-year average.

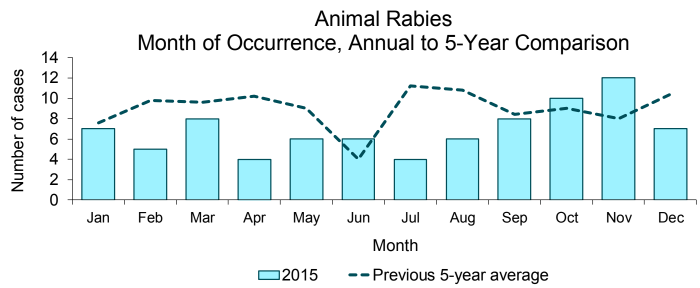
Case counts in this report may differ from those found in other rabies reports as different criteria are used to assemble the data. Other reports use the calendar year, while this report uses report year. For additional information on calendar year versus report year, please see the paragraph on Determining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

In 2015, Sarasota County reported the first ever rabid goats 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 2015, 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

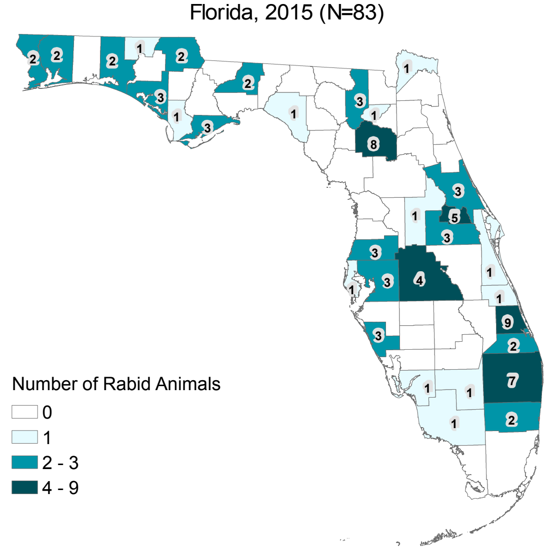




Laboratory-Confirmed Rabid Animals by Type of Animal, Florida, 2014 and 2015

Type of animal	2014 Number (Percent)	2015 Number (Percent)
Raccoon	51 (54.3)	45 (54.2)
Bat	19 (20.2)	15 (18.1)
Fox	5 (5.3)	10 (12.0)
Cat	16 (17.0)	8 (9.6)
Goat	0 (0.0)	2 (2.4)
Dog	2 (2.1)	2 (2.4)
Skunk	0 (0.0)	1 (1.2)
Horse	1 (1.1)	0 (0.0)
Total	94	83

Laboratory-Confirmed Rabid Animals by County, Florida, 2015 (N=83)



Rocky Mountain Spotted Fever and Spotted Fever Rickettsiosis

Disease Facts

Cause: Certain *Rickettsia* bacteria, most commonly *Rickettsia rickettsii*, *R. parkeri*, *R. africae*, *R. conorii*

Type of illness: Fever, headache, abdominal pain, vomiting, and muscle pain; rash develops in 80% of cases

Transmission: Tick-borne; bite of infective tick

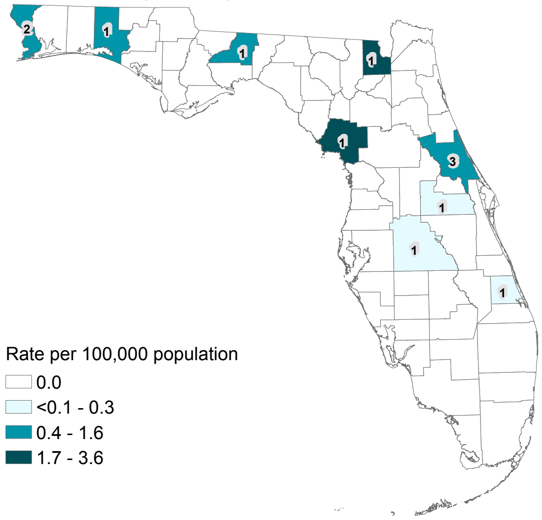
Reason for surveillance: Monitor incidence over time, estimate burden of illness, monitor geographical and temporal occurrence, target areas of high incidence for prevention education

Comments: Most infections are acquired within Florida, primarily in the northern and central regions of the state. 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*).

Summary of Case Demographics

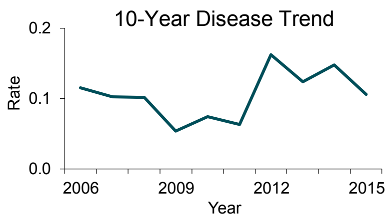
Summary			
Number of cases			21
Incidence rate (per 100,000 population)			0.1
Change from 5-year average incidence			-7.8%
Age (in Years)			
Mean			52
Median			54
Min-max			15 - 87
Gender	**Number**	**(Percent)**	**Rate**
Female	3	(14.3)	NA
Male	18	(85.7)	NA
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	15	(88.2)	NA
Black	1	(5.9)	NA
Other	1	(5.9)	NA
Unknown race	4		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	17	(100.0)	NA
Hispanic	0	(0.0)	NA
Unknown ethnicity	4		

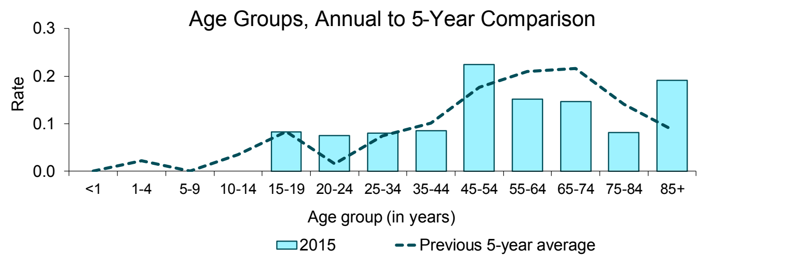
Reported Rocky Mountain Spotted Fever and Spotted Fever Rickettsiosis Cases and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2015 (N=12)

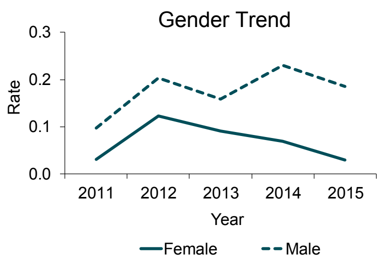


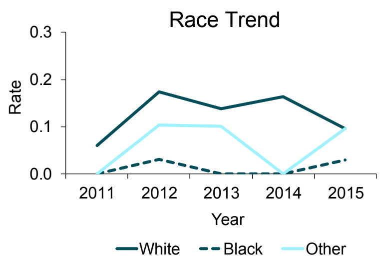
Note that rates based on <20 cases are not reliable and should be interpreted with caution.

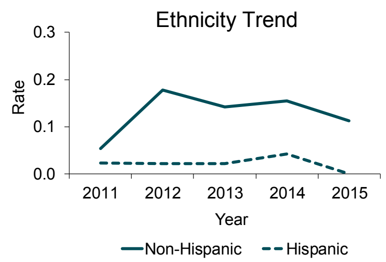
Incidence Rates Per 100,000 Population of Reported Rocky Mountain Spotted Fever Cases by Year, Age, Gender, Race, and Ethnicity, Florida











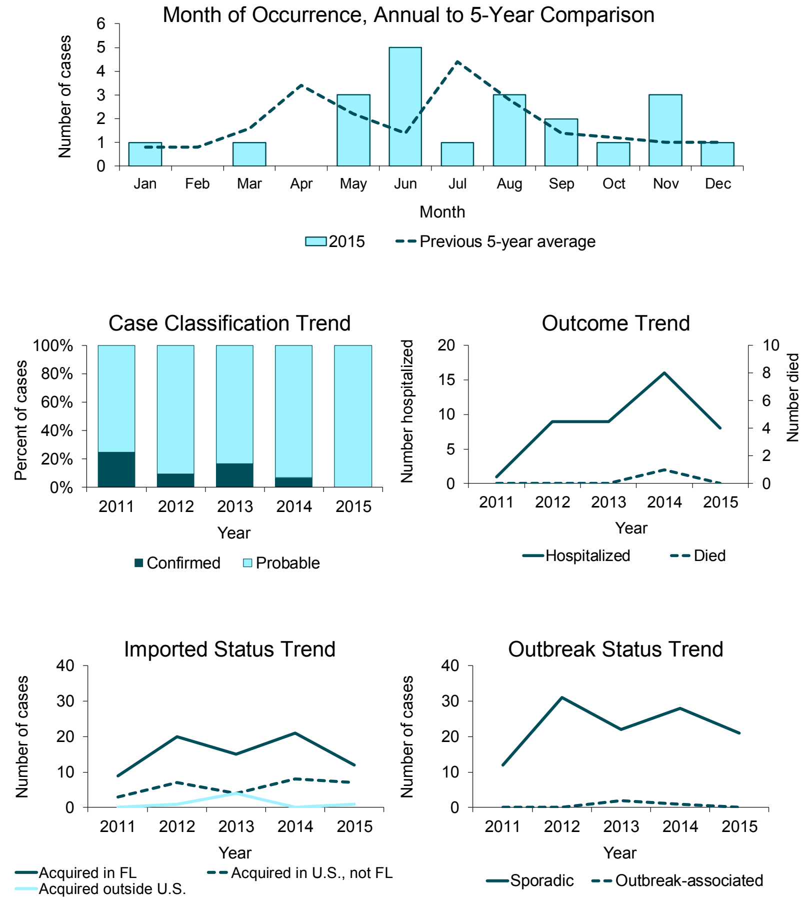
Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Rocky Mountain spotted fever and spotted fever rickettsiosis cases were missing 25.0% of ethnicity data in 2011, 25.0% of race data in 2011, 12.9% of ethnicity data in 2012, 9.7% of race data in 2012, 8.3% of ethnicity data in 2013, 8.3% of race data in 2013, 13.8% of ethnicity data in 2014, 13.8% of race data in 2014, 19.0% of ethnicity data in 2015, and 19.0% of race data in 2015.

Summary of Case Factors

Summary	Number
Number of cases	21
Case Classification	**Number (Percent)**
Confirmed	0 (0.0)
Probable	21 (100.0)
Outcome	**Number (Percent)**
Hospitalized	8 (38.1)
Died	0 (0.0)
Imported Status	**Number (Percent)**
Acquired in Florida	12 (57.1)
Acquired in the U.S., not Florida	7 (33.3)
Acquired outside the U.S.	1 (4.8)
Acquired location unknown	1 (4.8)
Outbreak Status	**Number (Percent)**
Sporadic	21 (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.

Reported Rocky Mountain Spotted Fever and Spotted Fever Rickettsiosis 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

In addition to Rocky Mountain spotted fever (RMSF), several other tick-borne species of *Rickettsia* are known to cause human infections. These species are grouped under spotted fever rickettsiosis (SFR). In 2010, the national reporting criteria were expanded to include both RMSF and other SFR. 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*. In addition, commercial antibody testing to differentiate other SFRs from RMSF is currently limited. The probable case definition lacks specificity and most cases are never confirmed; no cases in 2015 were confirmed.

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

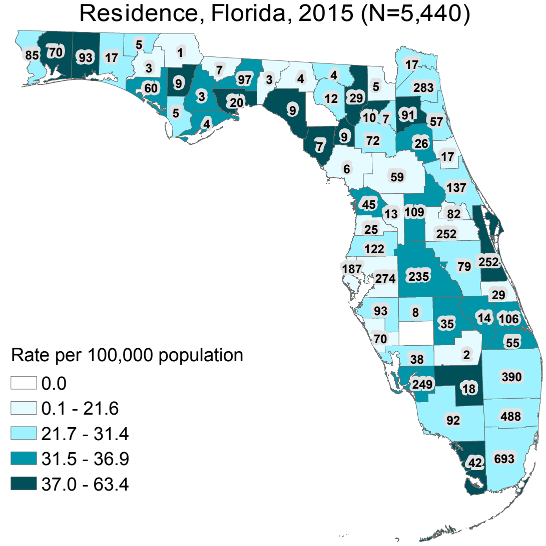
Reason for surveillance: Identify and control outbreaks, identify and mitigate common sources (e.g., contaminated food product, ill food handler), monitor incidence over time, estimate burden of illness

Comments: In recent years, Florida has had the highest number and one of the highest rates of salmonellosis cases of any state in the U.S. Salmonellosis 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 of cases is relatively consistent across years, though not well understood. Rates are frequently highest in lower population counties.

Summary of Case Demographics

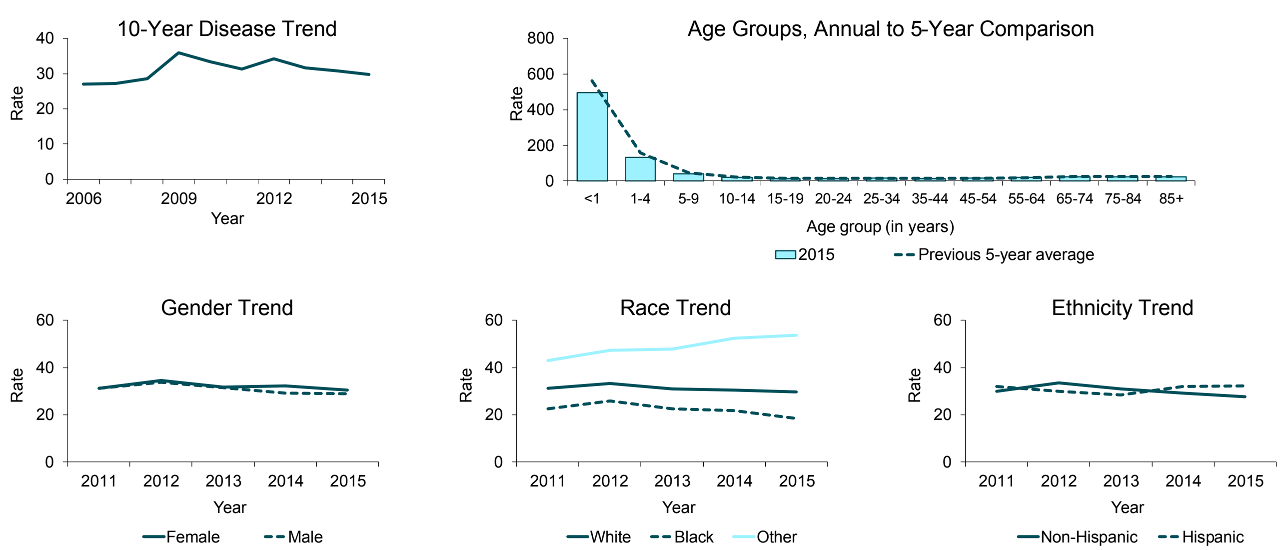
Summary			
Number of cases			5,924
Incidence rate (per 100,000 population)			29.8
Change from 5-year average incidence			-7.6%
Age (in Years)			
Mean			27
Median			14
Min-max			0 - 104
Gender	**Number**	**(Percent)**	**Rate**
Female	3,099	(52.3)	30.6
Male	2,825	(47.7)	29.1
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	4,582	(79.6)	29.6
Black	618	(10.7)	18.5
Other	558	(9.7)	53.8
Unknown race	166		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	4,140	(72.5)	27.6
Hispanic	1,569	(27.5)	32.3
Unknown ethnicity	215		

Reported Salmonellosis Cases and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2015 (N=5,440)



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

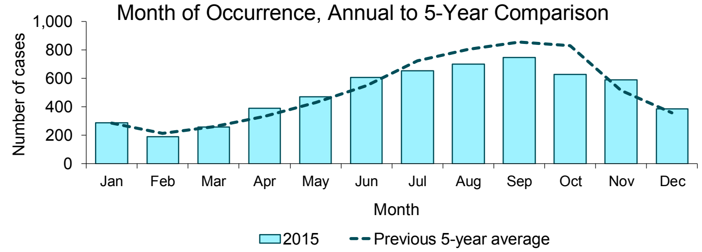


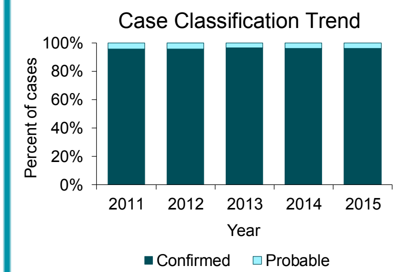
Salmonellosis

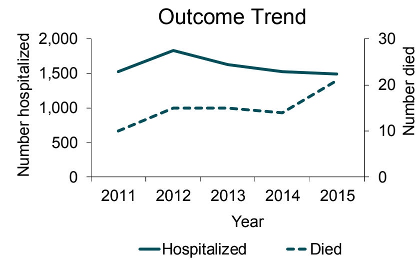
Summary of Case Factors

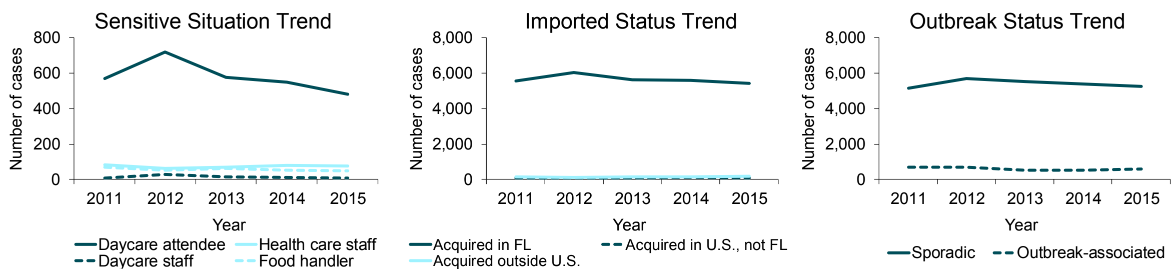
Summary	Number
Number of cases	5,924
Case Classification	**Number (Percent)**
Confirmed	5,702 (96.3)
Probable	222 (3.7)
Outcome	**Number (Percent)**
Hospitalized	1,490 (25.2)
Died	21 (0.4)
Sensitive Situation	**Number (Percent)**
Daycare attendee	481 (8.1)
Daycare staff	8 (0.1)
Health care staff	78 (1.3)
Food handler	48 (0.8)
Imported Status	**Number (Percent)**
Acquired in Florida	5,440 (91.8)
Acquired in the U.S., not Florida	99 (1.7)
Acquired outside the U.S.	182 (3.1)
Acquired location unknown	203 (3.4)
Outbreak Status	**Number (Percent)**
Sporadic	5,271 (89.0)
Outbreak-associated	576 (9.7)
Outbreak status unknown	77 (1.3)

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

Most outbreak-associated cases are due to household clusters; however, some outbreak-associated cases are part of national or multistate outbreaks linked to a particular source. In 2015, Florida had 59 outbreak-associated cases that were part of 29 different multistate outbreaks. Analysis of pulsed-field gel electrophoresis data identified an additional 15 outbreak-associated cases that were part of three different in-state clusters. No common vehicle was 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

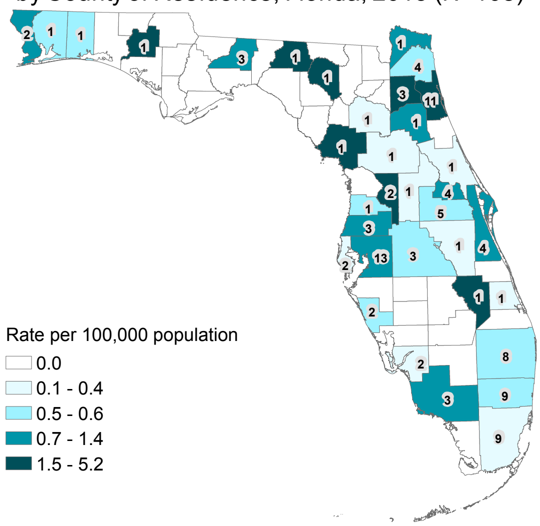
Reason for surveillance: Identify and control outbreaks, identify and mitigate common sources (e.g., contaminated food product, ill food handler), monitor incidence over time, estimate burden of illness

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

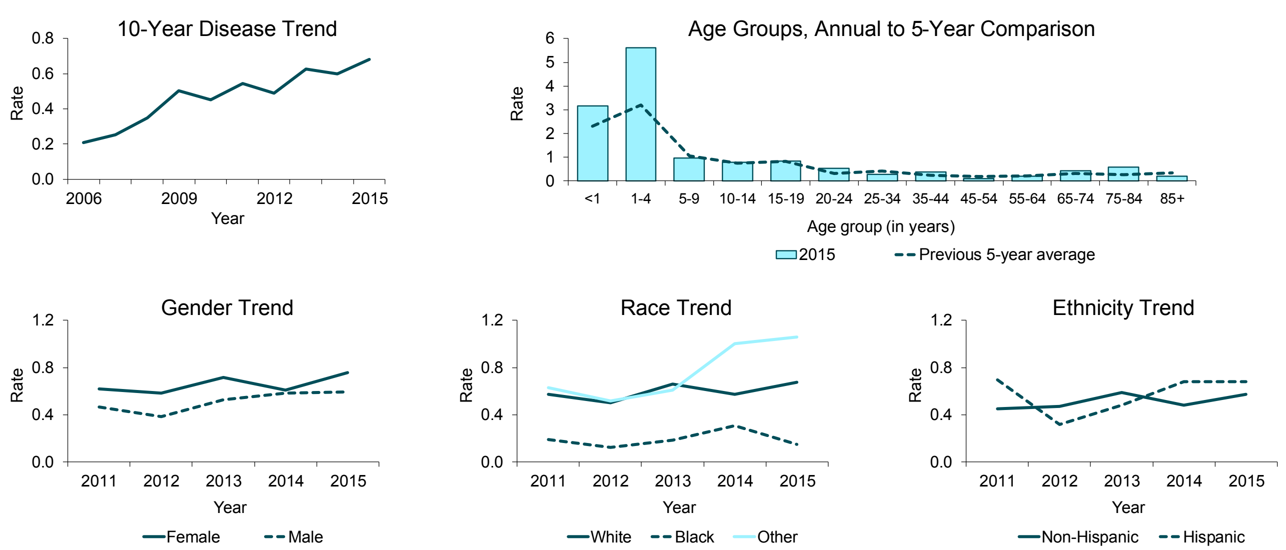
Summary			
Number of cases			135
Incidence rate (per 100,000 population)			0.7
Change from 5-year average incidence			+25.5%
Age (in Years)			
Mean			21
Median			9
Min-max			0 - 85
Gender	**Number**	**(Percent)**	**Rate**
Female	77	(57.0)	0.8
Male	58	(43.0)	0.6
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	105	(86.8)	0.7
Black	5	(4.1)	NA
Other	11	(9.1)	NA
Unknown race	14		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	86	(72.3)	0.6
Hispanic	33	(27.7)	0.7
Unknown ethnicity	16		

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, 2015 (N=108)



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



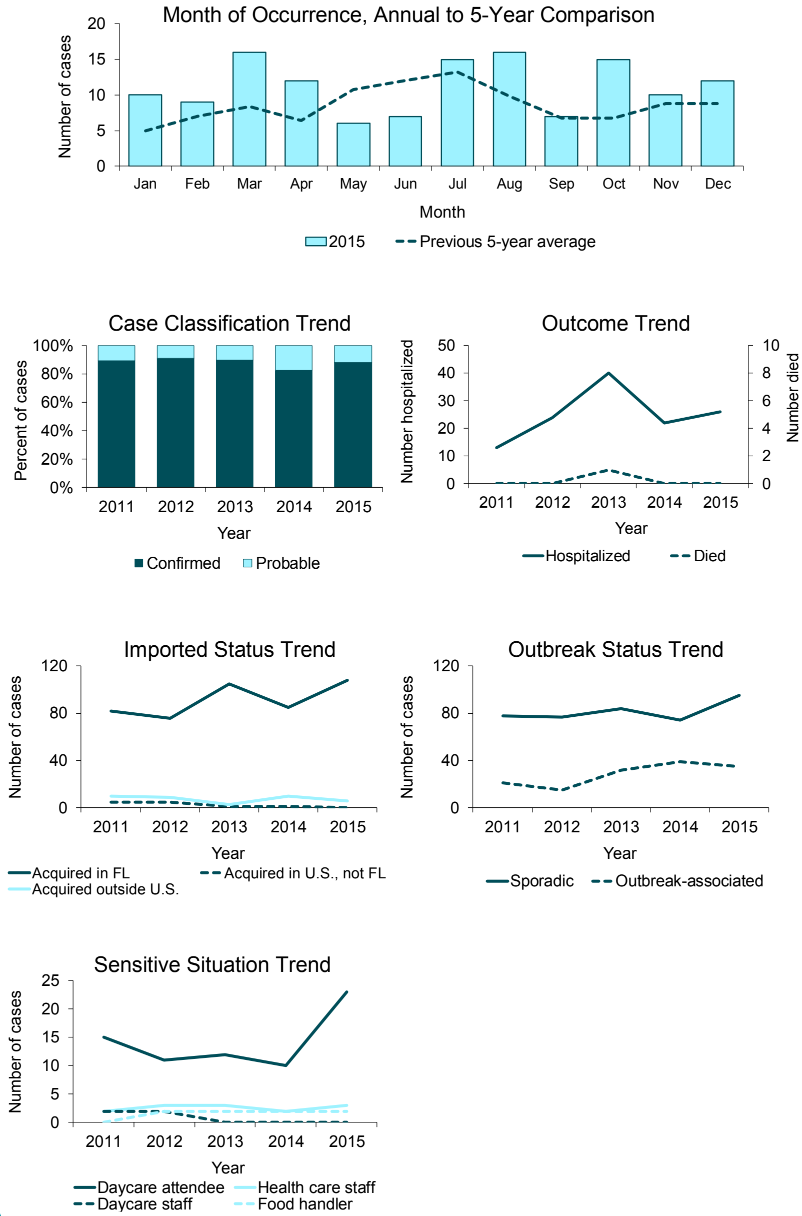
Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Shiga toxin-producing *E. coli* infection cases were missing 6.8% of ethnicity data in 2011, 5.8% of race data in 2011, 10.8% of ethnicity data in 2012, 9.7% of race data in 2012, 9.9% of ethnicity data in 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, and 10.4% of race data in 2015.

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

Summary of Case Factors

Summary	Number
Number of cases	135
Case Classification	**Number (Percent)**
Confirmed	119 (88.1)
Probable	16 (11.9)
Outcome	**Number (Percent)**
Hospitalized	26 (19.3)
Died	0 (0.0)
Sensitive Situation	**Number (Percent)**
Daycare attendee	23 (17.0)
Daycare staff	0 (0.0)
Health care staff	3 (2.2)
Food handler	2 (1.5)
Imported Status	**Number (Percent)**
Acquired in Florida	108 (80.0)
Acquired in the U.S., not Florida	0 (0.0)
Acquired outside the U.S.	6 (4.4)
Acquired location unknown	21 (15.6)
Outbreak Status	**Number (Percent)**
Sporadic	95 (70.4)
Outbreak-associated	35 (25.9)
Outbreak status unknown	5 (3.7)
Serogroup	**Number (Percent)**
O157	41 (34.5)
O26	21 (17.6)
O103	17 (14.3)
O111	12 (10.1)
O145	7 (5.9)
O45	3 (2.5)
O121	1 (0.8)
Other	17 (14.3)

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 *E. coli* serogroup O26 in a single daycare. This outbreak is the cause of the notable increase in cases in daycare attendees and children 1-4 years old in 2015 compared to previous years. Outbreak-associated cases can also be associated with national or multistate outbreaks linked to particular food items. In 2015, Florida identified two cases associated with a multistate outbreak of *E. coli* serogroup O157 where the likely vehicle was pre-packaged mixed greens.

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

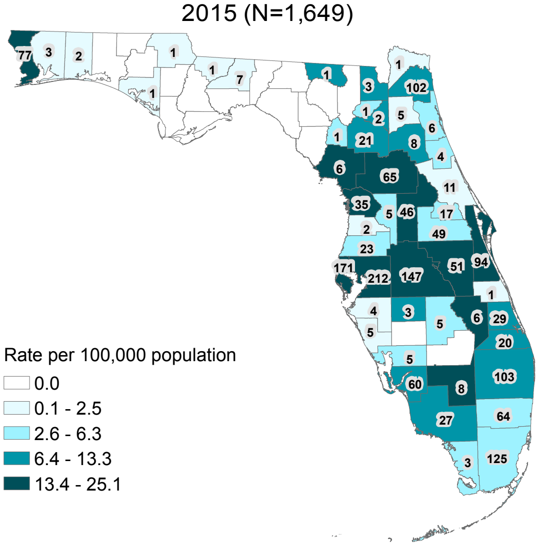
Reason for surveillance: Identify and control outbreaks, identify and mitigate common sources (e.g., ill daycare attendee), monitor incidence over time, estimate burden of illness

Comments: Shigellosis has a cyclic temporal pattern with large, community-wide outbreaks, frequently involving daycare centers, occurring every 3-5 years. Shigellosis incidence is highest in children aged 1 to 9 years and black people. A large portion of cases are outbreak-associated, primarily due to outbreaks in daycare centers. Consistent with Florida's cyclical pattern, shigellosis incidence increased substantially in 2014, with a rate similar to the last large peak in 2011, followed by a decrease in 2015.

Summary of Case Demographics

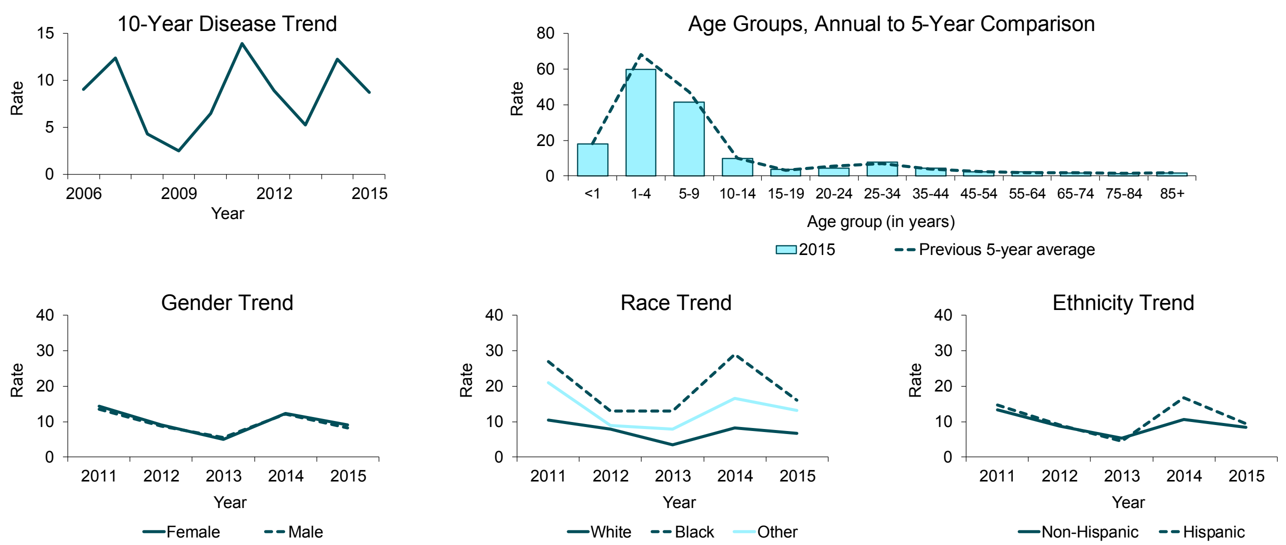
Summary			
Number of cases			1,737
Incidence rate (per 100,000 population)			8.7
Change from 5-year average incidence			-6.6%
Age (in Years)			
Mean			16
Median			7
Min-max			0 - 96
Gender	**Number**	**(Percent)**	**Rate**
Female	930	(53.5)	9.2
Male	807	(46.5)	8.3
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	1,050	(60.9)	6.8
Black	536	(31.1)	16.0
Other	137	(8.0)	13.2
Unknown race	14		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	1,260	(73.3)	8.4
Hispanic	458	(26.7)	9.4
Unknown ethnicity	19		

Reported Shigellosis Cases and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2015 (N=1,649)



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

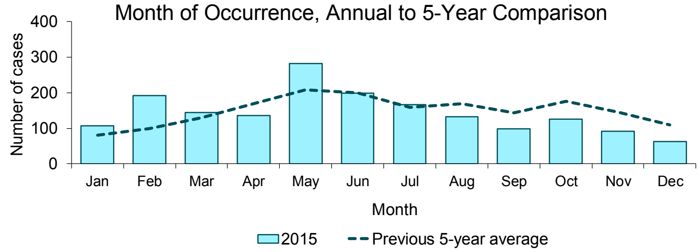
Incidence Rates Per 100,000 Population of Reported Shigellosis Cases by Year, Age, Gender, Race, and Ethnicity, Florida

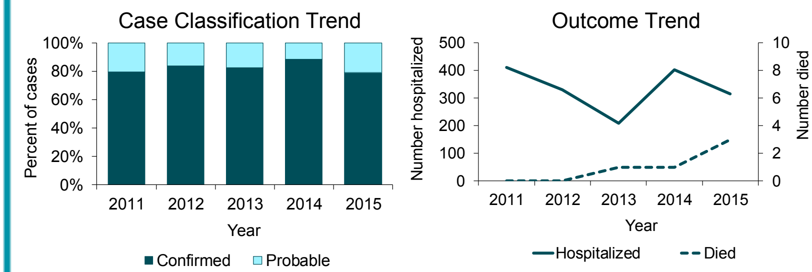


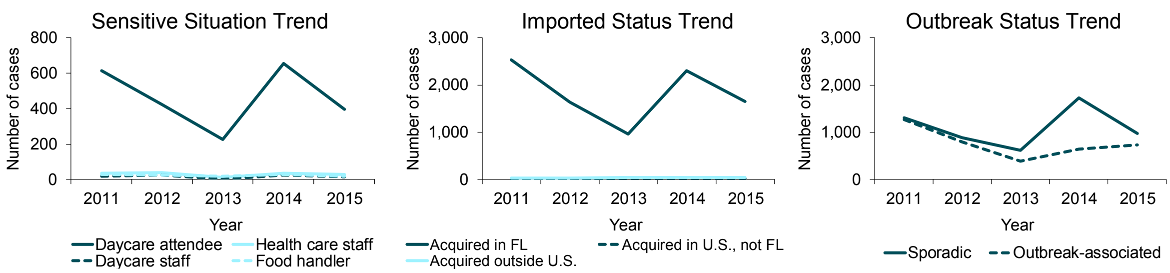
Summary of Case Factors

Summary	Number
Number of cases	1,737
Case Classification	**Number (Percent)**
Confirmed	1,376 (79.2)
Probable	361 (20.8)
Outcome	**Number (Percent)**
Hospitalized	315 (18.1)
Died	3 (0.2)
Sensitive Situation	**Number (Percent)**
Daycare attendee	396 (22.8)
Daycare staff	15 (0.9)
Health care staff	28 (1.6)
Food handler	20 (1.2)
Imported Status	**Number (Percent)**
Acquired in Florida	1,649 (94.9)
Acquired in the U.S., not Florida	15 (0.9)
Acquired outside the U.S.	44 (2.5)
Acquired location unknown	29 (1.7)
Outbreak Status	**Number (Percent)**
Sporadic	970 (55.8)
Outbreak-associated	739 (42.5)
Outbreak status unknown	28 (1.6)

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 2015, the highest incidence rates were in central Florida, including both high- and low-population counties (compared to south Florida counties in 2014). In 2015, 239 (32.3%) outbreak-associated shigellosis cases were in daycare attendees, highlighting the important role of transmission in daycare settings which tends to drive community transmission. Counties with the largest number of daycare-associated cases tend to be the counties with the highest incidence rates.

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. Antimicrobial susceptibility testing (AST) results were available for 429 cases (24.7%) reported in 2015. While AST is regularly conducted on clinical specimens, treatment of shigellosis with antibiotics is not routinely recommended.

Resistance to Antibiotics for 429 Shigellosis Cases, Florida

Antibiotic	Resistant Number (Percent)
Trimethoprim/sulfamethoxazole	156 (36.4)
Ampicillin	57 (13.3)
Trimethoprim/sulfamethoxazole and ampicillin	31 (7.2)
Ciprofloxacin	3 (0.7)
Azithromycin	0 (0.0)

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

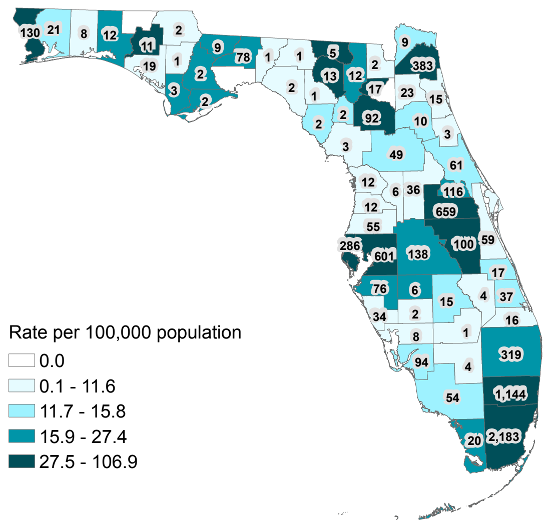
Reason for surveillance: Implement effective interventions immediately for every case, monitor incidence over time, estimate burden of illness, evaluate treatment and prevention programs

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

Summary of Case Demographics

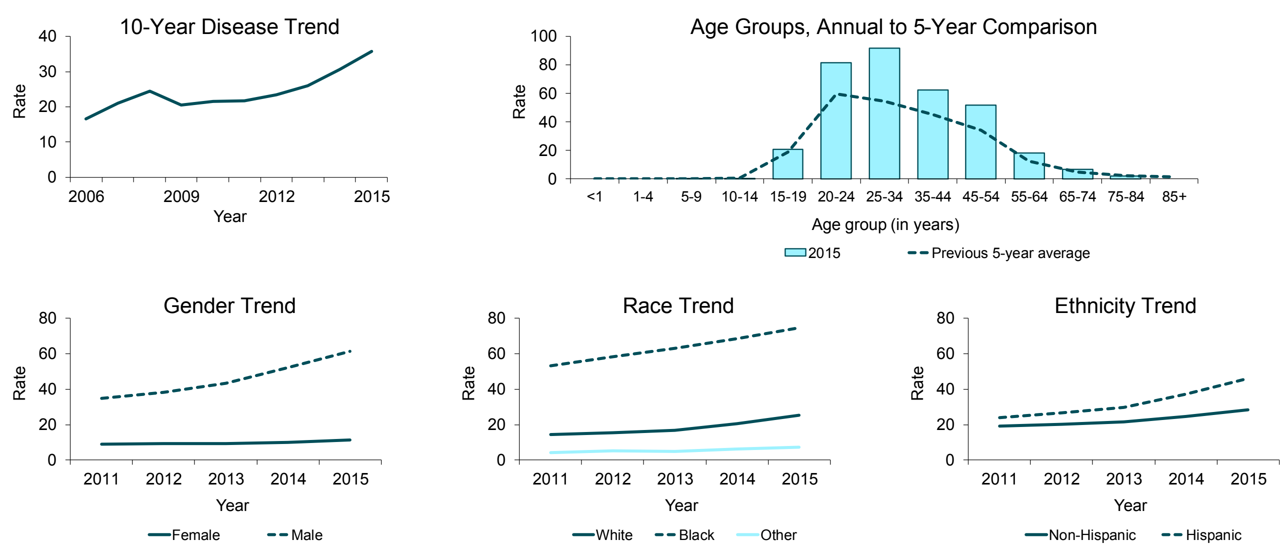
Summary			
Number of cases			7,118
Incidence rate (per 100,000 population)			35.8
Change from 5-year average incidence			+45.4%
Age (in Years)			
Mean			36
Median			34
Min-max			6 - 95
Gender	**Number**	**(Percent)**	**Rate**
Female	1,140	(16.0)	11.2
Male	5,978	(84.0)	61.5
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	3,936	(60.5)	25.4
Black	2,492	(38.3)	74.5
Other	76	(1.2)	7.3
Unknown race	614		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	4,249	(65.5)	28.3
Hispanic	2,237	(34.5)	46.1
Unknown ethnicity	632		

Reported Syphilis Cases (Excluding Congenital) and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2015 (N=7,118)



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 6.4% of ethnicity data in 2011, 6.0% of race data in 2011, 6.9% of ethnicity data in 2012, 6.1% of race data in 2012, 9.1% of ethnicity data in 2013, 7.9% of race data in 2013, 9.6% of ethnicity data in 2014, 8.4% of race data in 2014, 8.9% of ethnicity data in 2015, and 8.6% of race data in 2015.

Tuberculosis

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: Person-to-person; inhalation of aerosolized droplets from people with active tuberculosis (TB)

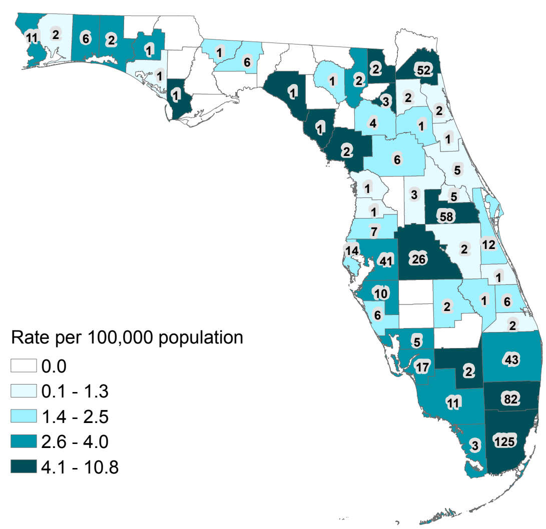
Reason for surveillance: Implement effective interventions immediately for every case to prevent further transmission, monitor directly observed therapy prevention programs, evaluate trends

Comments: TB continues to be a public health threat in Florida though incidence has declined over the past decade and remained stable in 2015. 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 rate of TB and accounted for >40% of reported cases in 2015.

Summary of Case Demographics

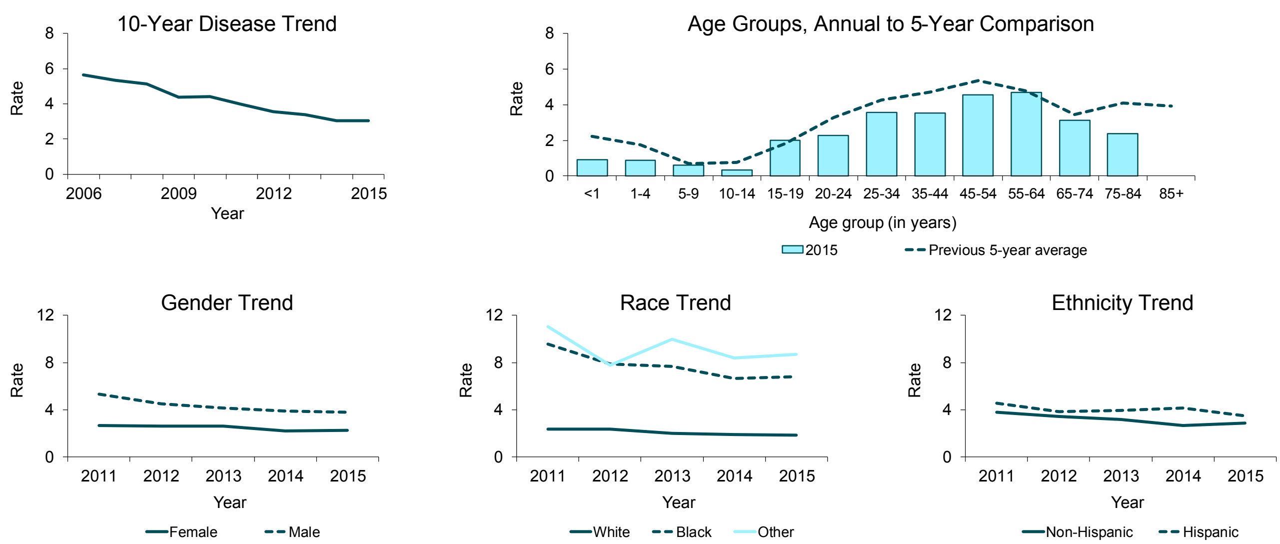
Summary			
Number of cases			602
Incidence rate (per 100,000 population)			3.0
Change from 5-year average incidence			-17.6%
Age (in Years)			
Mean			48
Median			49
Min-max			0 - 97
Gender	**Number**	**(Percent)**	**Rate**
Female	231	(38.4)	2.3
Male	371	(61.6)	3.8
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	285	(47.3)	1.8
Black	227	(37.7)	6.8
Other	90	(15.0)	8.7
Unknown race	0		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	433	(71.9)	2.9
Hispanic	169	(28.1)	3.5
Unknown ethnicity	0		

Reported Tuberculosis Cases and Incidence Rates Per 100,000 Population by County of Residence, Florida, 2015 (N=602)



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

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



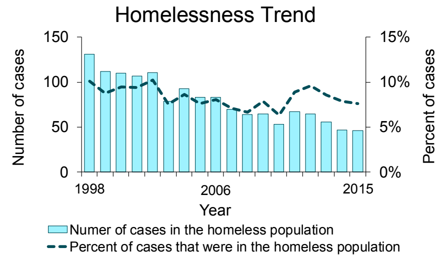
Additional Information

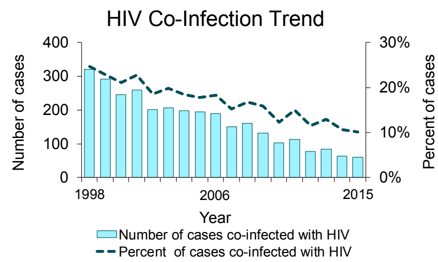
People experiencing homelessness are at increased risk for disease and are a focus for TB prevention and control efforts in Florida. Since 1998, the total number of TB cases among the homeless population in Florida has decreased by over 50%; however, in the same time period the percent of people with TB who are homeless has remained relatively stable. In 2015, 7.6% of TB cases were in the homeless population.

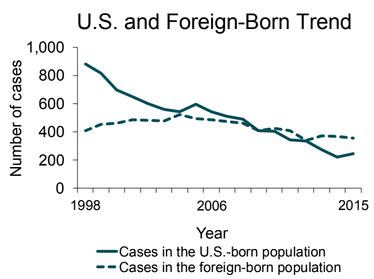
TB and HIV co-infection has been declining modestly but steadily over time in Florida. In 2015, 10.1% of TB cases were co-infected with HIV. Untreated HIV infection remains the biggest risk factor for developing active TB disease following infection with TB and is a focus for TB prevention and control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

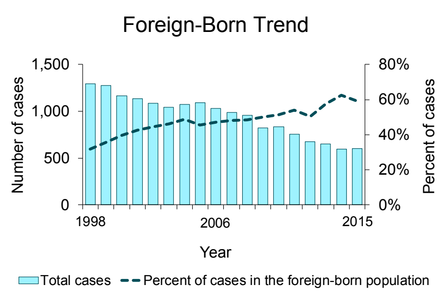
The rate of TB in the U.S.-born population in Florida has been decreasing faster than the rate among the foreign-born population. Being born in a country where TB is prevalent is one of the most significant risk factors for developing TB and is a focus for TB prevention and control efforts in Florida. In 2015, 59.1% of the total cases counted in Florida were in the foreign-born population. The most common countries of origin in 2015 included Haiti, the Philippines, Mexico, Cuba, and Guatemala, accounting for 211 (59.3%) of 356 cases identified in the-foreign born population.

Reported Tuberculosis 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

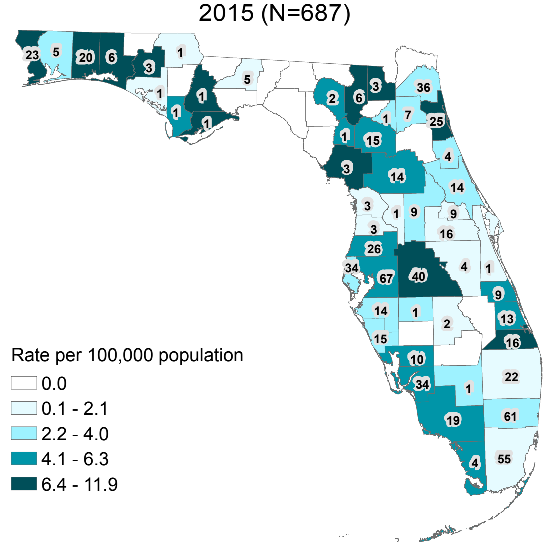
Reason for surveillance: Identify and control outbreaks, monitor effectiveness of immunization programs and vaccines, monitor trends and severe outcomes

Comments: Varicella (chicken pox) 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

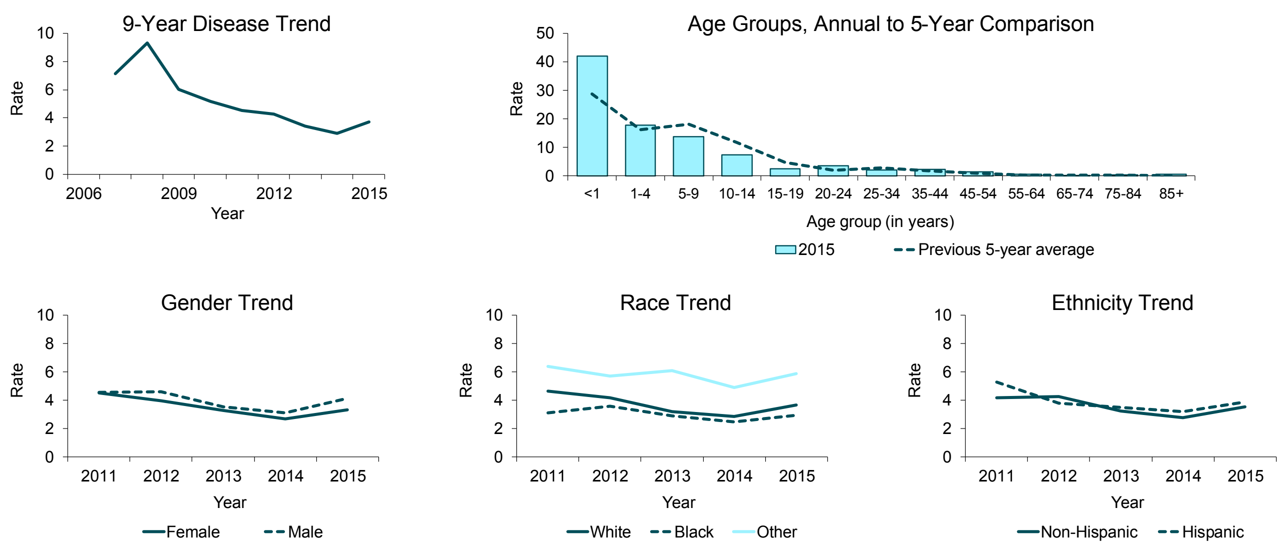
Summary			
Number of cases			740
Incidence rate (per 100,000 population)			3.7
Change from 5-year average incidence			-8.4%
Age (in Years)			
Mean			15
Median			8
Min-max			0 - 89
Gender	**Number**	**(Percent)**	**Rate**
Female	339	(45.8)	3.3
Male	401	(54.2)	4.1
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	568	(78.0)	3.7
Black	99	(13.6)	3.0
Other	61	(8.4)	5.9
Unknown race	12		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	533	(73.8)	3.6
Hispanic	189	(26.2)	3.9
Unknown ethnicity	18		

Reported Varicella Cases and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2015 (N=687)



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

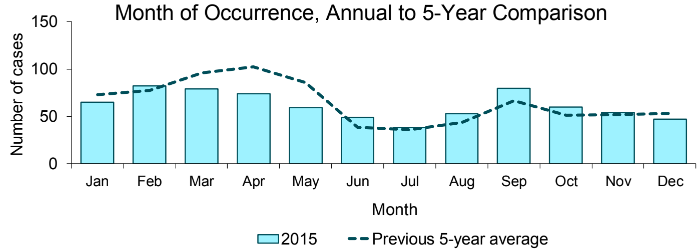


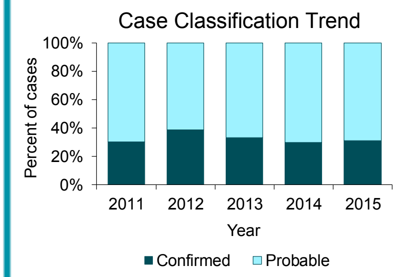
Varicella (Chickenpox)

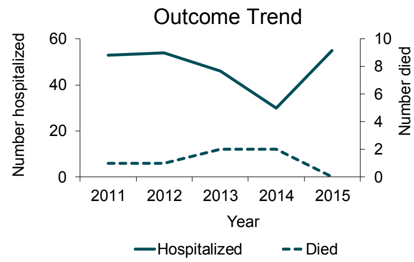
Summary of Case Factors

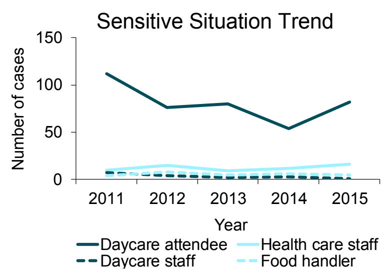
Summary	Number
Number of cases	740
Case Classification	**Number (Percent)**
Confirmed	230 (31.1)
Probable	510 (68.9)
Outcome	**Number (Percent)**
Hospitalized	55 (7.4)
Died	0 (0.0)
Sensitive Situation	**Number (Percent)**
Daycare attendee	82 (11.1)
Daycare staff	1 (0.1)
Health care staff	16 (2.2)
Food handler	5 (0.7)
Imported Status	**Number (Percent)**
Acquired in Florida	687 (92.8)
Acquired in the U.S., not Florida	13 (1.8)
Acquired outside the U.S.	19 (2.6)
Acquired location unknown	21 (2.8)
Outbreak Status	**Number (Percent)**
Sporadic	555 (75.0)
Outbreak-associated	174 (23.5)
Outbreak status unknown	11 (1.5)

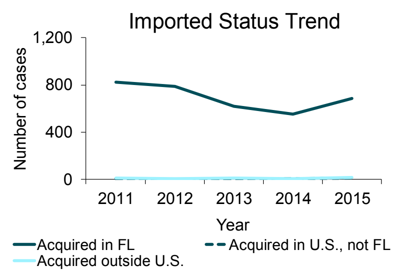
Reported Varicella Cases by Month of Occurrence, Case Classification, Outcome, Sensitive Situation, Imported Status, and Outbreak Status, Florida

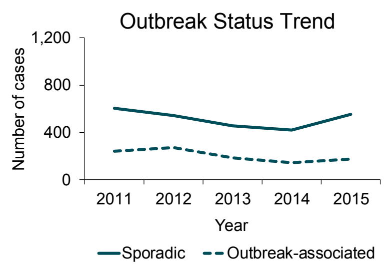












Interpretation:
Occurrence is determined by the earliest date associated with the case, which is most frequently the date of onset, but can also be the diagnosis date, the laboratory report date, or the date the county health department was notified of the case. For outcome, a case can be included in 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 increased in 2015 for the first time since 2008; factors contributing to the increase are not well understood. Incidence among infants <1 year old increased noticeably compared to the 5-year average. The number of varicella cases in daycare attendees also increased, suggesting that the increase in 2015 might be at least partially due to increased transmission among infants in daycares. Most cases of varicella occur in winter and spring with the highest incidence in school-aged children. Although the number of varicella deaths decreased in 2015, the number of hospitalizations increased compared to 2014. The number of outbreak-associated cases increased from 143 (25.1%) in 2014 to 174 (23.5%) in 2015. The increase in outbreak-associated cases follows the overall increase in varicella cases in 2015. Note that the proportion of cases that were outbreak-associated actually decreased slightly from 2014 to 2015. Of the 174 outbreak-associated cases identified, most were small household clusters. Four outbreaks (defined as >5 cases linked in a single setting) were identified in schools, one of which involved multiple schools, and three outbreaks were identified in daycares. Counties with ≥10 outbreak-associated cases were concentrated in the central western part of the peninsula: Hillsborough (22), Pinellas (15), Polk (13), Pasco (11), and Sarasota (10). Other counties with ≥10 outbreak-associated cases included St. Johns (19) and Escambia (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

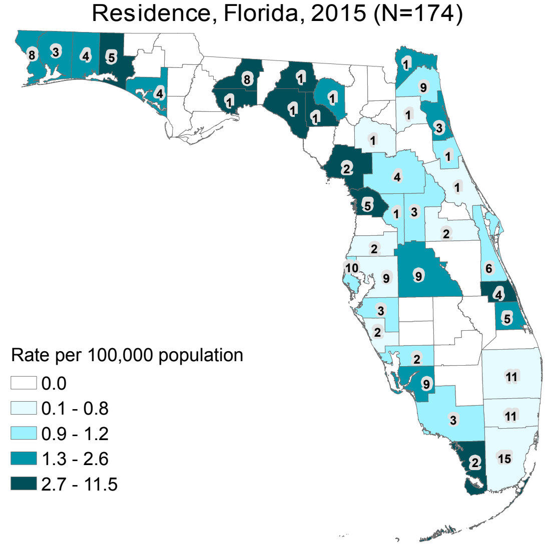
Reason for surveillance: Identify sources of transmission (e.g., shellfish collection area) and mitigate source, monitor incidence over time, estimate burden of illness

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 increased slightly in 2015 compared to 2014. Incidence is consistently much higher in men than women.

Summary of Case Demographics

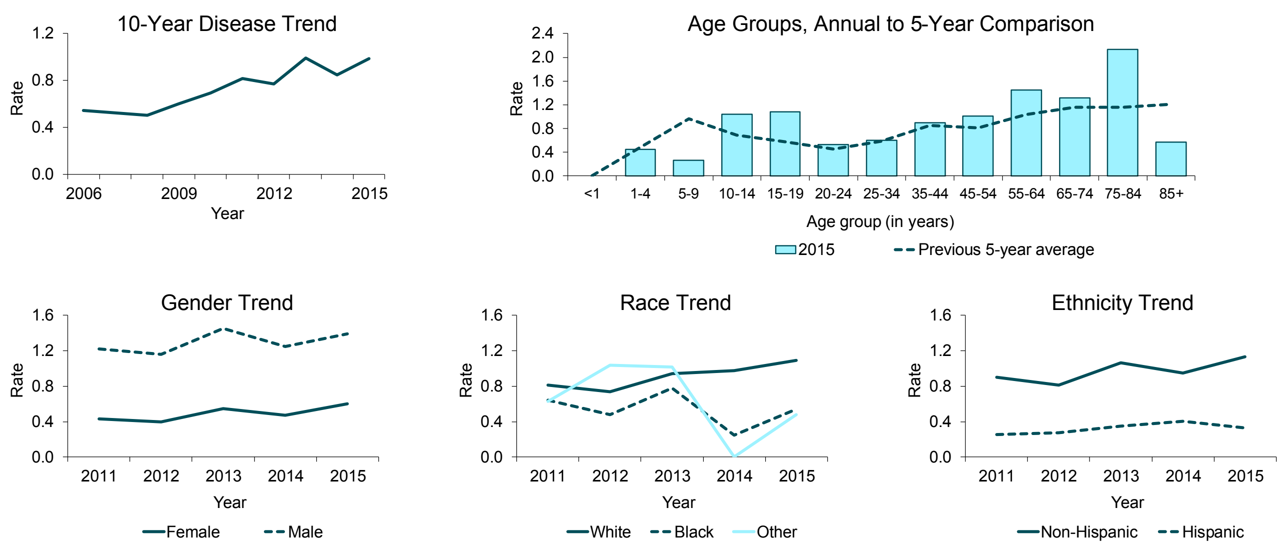
Summary			
Number of cases			196
Incidence rate (per 100,000 population)			1.0
Change from 5-year average incidence			+19.8%
Age (in Years)			
Mean			49
Median			53
Min-max			2 - 98
Gender	**Number**	**(Percent)**	**Rate**
Female	61	(31.1)	0.6
Male	135	(68.9)	1.4
Unknown gender	0		
Race	**Number**	**(Percent)**	**Rate**
White	169	(88.0)	1.1
Black	18	(9.4)	NA
Other	5	(2.6)	NA
Unknown race	4		
Ethnicity	**Number**	**(Percent)**	**Rate**
Non-Hispanic	170	(91.4)	1.1
Hispanic	16	(8.6)	NA
Unknown ethnicity	10		

Reported Vibriosis Cases (Excluding Cholera) and Incidence Rates Per 100,000 Population (Restricted to Infections Acquired in Florida) by County of Residence, Florida, 2015 (N=174)



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



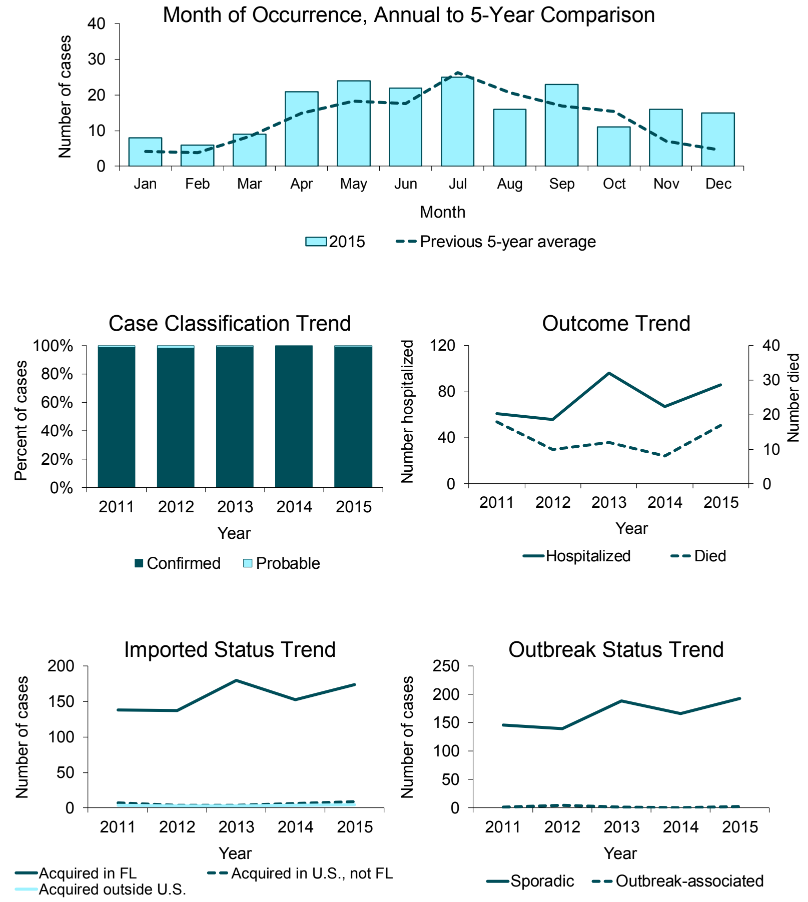
Note that trend graphs should be interpreted with caution when more than 5% of data are missing. Vibriosis cases (excluding cholera) were missing 7.7% of ethnicity data in 2011, 5.2% of race data in 2011, 10.9% of ethnicity data in 2012, 8.2% of race data in 2012, 9.4% of ethnicity data in 2013, 6.8% of race data in 2013, 5.4% of race data in 2014, and 5.1% of ethnicity data in 2015.

Vibriosis (Excluding Cholera)

Summary of Case Factors

Summary	Number
Number of cases	196
Case Classification	**Number (Percent)**
Confirmed	195 (99.5)
Probable	1 (0.5)
Outcome	**Number (Percent)**
Hospitalized	86 (43.9)
Died	17 (8.7)
Imported Status	**Number (Percent)**
Acquired in Florida	174 (88.8)
Acquired in the U.S., not Florida	9 (4.6)
Acquired outside the U.S.	5 (2.6)
Acquired location unknown	8 (4.1)
Outbreak Status	**Number (Percent)**
Sporadic	193 (98.5)
Outbreak-associated	3 (1.5)
Outbreak status unknown	0 (0.0)
Species	**Number (Percent)**
Vibrio alginolyticus	58 (29.6)
Vibrio parahaemolyticus	46 (23.5)
Vibrio vulnificus	45 (23.0)
Vibrio fluvialis	14 (7.1)
Vibrio mimicus	11 (5.6)
Vibrio cholerae Type Non-O1	7 (3.6)
Grimontia hollisae	1 (0.5)
Other *Vibrio* species	14 (7.1)

Reported Vibriosis (Excluding Cholera) 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

In 2015, the most commonly reported *Vibrio* infection was *V. alginolyticus*, accounting for 29.6% of cases. This was a decrease from 2014, in which 39.8% of infections were caused by that species. The number of *V. vulnificus* and *V. parahaemolyticus* infections increased in 2015 compared to 2014. *V. vulnificus* can cause particularly severe disease, with about 50% of bloodstream infections being fatal. Of the 45 cases due to *V. vulnificus* in 2015, 40 (88.9%) were hospitalized and 14 (31.1%) died, accounting for 14 of the 17 total deaths reported for vibriosis in 2015. Of the remaining three deaths, two were due to *V. parahaemolyticus* and one was attributed to *V. alginolyticus*. Of the 17 people who died from vibriosis, seven had a wound with seawater exposure or exposure to marine life and two reported consuming seafood. Two people had multiple exposures and six people had other or unknown exposures. *V. vulnificus* infections typically occur in people who have chronic liver disease, a history of alcoholism, or are immunocompromised. Of the 45 cases of *V. vulnificus*, 35 (77.8%) had underlying medical conditions.

Section 3

Narratives for Selected Reportable Diseases/Conditions of Infrequent Occurrence

Anaplasmosis

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

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

Summary		
Number of cases in 2015	5	
5-year trend (2011 to 2015)		
Age (in years)		
Mean	59	
Median	66	
Min-max	16 - 83	
Gender	**Number**	**(Percent)**
Female	1	(20.0)
Male	4	(80.0)
Unknown gender	0	(0.0)
Race	**Number**	**(Percent)**
White	5	(100.0)
Black	0	(0.0)
Other	0	(0.0)
Unknown race	0	(0.0)
Ethnicity	**Number**	**(Percent)**
Non-Hispanic	4	(80.0)
Hispanic	0	(0.0)
Unknown ethnicity	1	(20.0)

Case classification	Number	(Percent)
Confirmed	3	(60.0)
Probable	2	(40.0)
Outcome	**Number**	**(Percent)**
Interviewed	4	(80.0)
Hospitalized	2	(40.0)
Died	0	(0.0)
Outbreak status	**Number**	**(Percent)**
Sporadic	5	(100.0)
Outbreak-associated	0	(0.0)
Outbreak status unknown	0	(0.0)
Location where exposed	**Number**	**(Percent)**
Massachusetts	2	(40.0)
North Carolina	1	(20.0)
Rhode Island	1	(20.0)
Vermont	1	(20.0)
County of residence	**Number**	**(Percent)**
Collier	2	(40.0)
Broward	1	(20.0)
Indian River	1	(20.0)
Pasco	1	(20.0)

Arsenic Poisoning

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

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

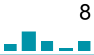
Summary		
Number of cases in 2015	16	
5-year trend (2011 to 2015)		
Age (in years)		
Mean	55	
Median	57	
Min-max	24 - 78	
Gender	**Number**	**(Percent)**
Female	4	(25.0)
Male	12	(75.0)
Unknown gender	0	(0.0)
Race	**Number**	**(Percent)**
White	12	(75.0)
Black	2	(12.5)
Other	0	(0.0)
Unknown race	2	(12.5)
Ethnicity	**Number**	**(Percent)**
Non-Hispanic	12	(75.0)
Hispanic	2	(12.5)
Unknown ethnicity	2	(12.5)

Case classification	Number	(Percent)
Confirmed	14	(87.5)
Probable	2	(12.5)
Outcome	**Number**	**(Percent)**
Interviewed	16	(100.0)
Hospitalized	2	(12.5)
Died	0	(0.0)
Outbreak status	**Number**	**(Percent)**
Sporadic	16	(100.0)
Outbreak-associated	0	(0.0)
Outbreak status unknown	0	(0.0)
Location where exposed	**Number**	**(Percent)**
Florida	15	(93.8)
Unknown	1	(6.3)
County of residence	**Number**	**(Percent)**
Brevard	3	(18.8)
Miami-Dade	2	(12.5)
Orange	2	(12.5)
Bay	1	(6.3)
Broward	1	(6.3)
Gadsden	1	(6.3)
Okaloosa	1	(6.3)
Osceola	1	(6.3)
Pinellas	1	(6.3)
Polk	1	(6.3)
Sarasota	1	(6.3)
Walton	1	(6.3)

Brucellosis

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

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

Summary		
Number of cases in 2015	8	
5-year trend (2011 to 2015)		
Age (in years)		
Mean	41	
Median	42	
Min-max	23 - 56	
Gender	**Number**	**(Percent)**
Female	3	(37.5)
Male	5	(62.5)
Unknown gender	0	(0.0)
Race	**Number**	**(Percent)**
White	8	(100.0)
Black	0	(0.0)
Other	0	(0.0)
Unknown race	0	(0.0)
Ethnicity	**Number**	**(Percent)**
Non-Hispanic	7	(87.5)
Hispanic	0	(0.0)
Unknown ethnicity	1	(12.5)

Case classification	Number	(Percent)
Confirmed	5	(62.5)
Probable	3	(37.5)
Outcome	**Number**	**(Percent)**
Interviewed	6	(75.0)
Hospitalized	6	(75.0)
Died	0	(0.0)
Outbreak status	**Number**	**(Percent)**
Sporadic	5	(62.5)
Outbreak-associated	3	(37.5)
Outbreak status unknown	0	(0.0)
Location where exposed	**Number**	**(Percent)**
Florida	8	(100.0)
County of residence	**Number**	**(Percent)**
Marion	2	(25.0)
Gadsden	1	(12.5)
Gulf	1	(12.5)
Lee	1	(12.5)
Pinellas	1	(12.5)
St. Lucie	1	(12.5)
Volusia	1	(12.5)

Ehrlichiosis

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

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

Summary		
Number of cases in 2015	18	
5-year trend (2011 to 2015)		
Age (in years)		
Mean	64	
Median	64	
Min-max	39 - 81	
Gender	**Number**	**(Percent)**
Female	5	(27.8)
Male	13	(72.2)
Unknown gender	0	(0.0)
Race	**Number**	**(Percent)**
White	14	(77.8)
Black	1	(5.6)
Other	0	(0.0)
Unknown race	3	(16.7)
Ethnicity	**Number**	**(Percent)**
Non-Hispanic	15	(83.3)
Hispanic	0	(0.0)
Unknown ethnicity	3	(16.7)

Case classification	Number	(Percent)
Confirmed	9	(50.0)
Probable	9	(50.0)
Outcome	**Number**	**(Percent)**
Interviewed	17	(94.4)
Hospitalized	16	(88.9)
Died	0	(0.0)
Outbreak status	**Number**	**(Percent)**
Sporadic	17	(94.4)
Outbreak-associated	0	(0.0)
Outbreak status unknown	1	(5.6)
Location where exposed	**Number**	**(Percent)**
Florida	16	(88.9)
Missouri	1	(5.6)
Unknown	1	(5.6)
County of residence	**Number**	**(Percent)**
Flagler	3	(16.7)
Pinellas	3	(16.7)
Volusia	3	(16.7)
Alachua	2	(11.1)
Leon	2	(11.1)
Hernando	1	(5.6)
Lee	1	(5.6)
Nassau	1	(5.6)
St. Johns	1	(5.6)
Suwannee	1	(5.6)

Hepatitis E

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

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

Summary		
Number of cases in 2015	6	
5-year trend (2011 to 2015)		
Age (in years)		
Mean	34	
Median	30	
Min-max	20 - 50	
Gender	**Number**	**(Percent)**
Female	2	(33.3)
Male	4	(66.7)
Unknown gender	0	(0.0)
Race	**Number**	**(Percent)**
White	3	(50.0)
Black	0	(0.0)
Other	1	(16.7)
Unknown race	2	(33.3)
Ethnicity	**Number**	**(Percent)**
Non-Hispanic	3	(50.0)
Hispanic	1	(16.7)
Unknown ethnicity	2	(33.3)

Case classification	Number	(Percent)
Confirmed	6	(100.0)
Probable	0	(0.0)
Outcome	**Number**	**(Percent)**
Interviewed	6	(100.0)
Hospitalized	5	(83.3)
Died	0	(0.0)
Outbreak status	**Number**	**(Percent)**
Sporadic	6	(100.0)
Outbreak-associated	0	(0.0)
Outbreak status unknown	0	(0.0)
Location where exposed	**Number**	**(Percent)**
Florida	4	(66.7)
India	1	(16.7)
South Africa	1	(16.7)
County of residence	**Number**	**(Percent)**
Collier	2	(33.3)
Duval	1	(16.7)
Hillsborough	1	(16.7)
Orange	1	(16.7)
Pasco	1	(16.7)

Leptospirosis

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

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

Summary		
Number of cases in 2015	4	
5-year trend (2011 to 2015)		
Age (in years)		
Mean	39	
Median	39	
Min-max	23 - 54	
Gender	**Number**	**(Percent)**
Female	0	(0.0)
Male	4	(100.0)
Unknown gender	0	(0.0)
Race	**Number**	**(Percent)**
White	4	(100.0)
Black	0	(0.0)
Other	0	(0.0)
Unknown race	0	(0.0)
Ethnicity	**Number**	**(Percent)**
Non-Hispanic	3	(75.0)
Hispanic	1	(25.0)
Unknown ethnicity	0	(0.0)

Case classification	Number	(Percent)
Confirmed	3	(75.0)
Probable	1	(25.0)
Outcome	**Number**	**(Percent)**
Interviewed	4	(100.0)
Hospitalized	4	(100.0)
Died	0	(0.0)
Outbreak status	**Number**	**(Percent)**
Sporadic	3	(75.0)
Outbreak-associated	1	(25.0)
Outbreak status unknown	0	(0.0)
Location where exposed	**Number**	**(Percent)**
Florida	1	(25.0)
Costa Rica	1	(25.0)
India	1	(25.0)
Unknown	1	(25.0)
County of residence	**Number**	**(Percent)**
Hillsborough	1	(25.0)
Miami-Dade	1	(25.0)
Pinellas	1	(25.0)
Polk	1	(25.0)

Measles (Rubeola)

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

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

Summary		
Number of cases in 2015	5	
5-year trend (2011 to 2015)		
Age (in years)		
Mean	14	
Median	17	
Min-max	6 - 23	
Gender	**Number**	**(Percent)**
Female	4	(80.0)
Male	1	(20.0)
Unknown gender	0	(0.0)
Race	**Number**	**(Percent)**
White	5	(100.0)
Black	0	(0.0)
Other	0	(0.0)
Unknown race	0	(0.0)
Ethnicity	**Number**	**(Percent)**
Non-Hispanic	5	(100.0)
Hispanic	0	(0.0)
Unknown ethnicity	0	(0.0)

Case classification	Number	(Percent)
Confirmed	5	(100.0)
Probable	0	(0.0)
Outcome	**Number**	**(Percent)**
Interviewed	5	(100.0)
Hospitalized	0	(0.0)
Died	0	(0.0)
Outbreak status	**Number**	**(Percent)**
Sporadic	0	(0.0)
Outbreak-associated	5	(100.0)
Outbreak status unknown	0	(0.0)
Location where exposed	**Number**	**(Percent)**
Florida	3	(60.0)
India	2	(40.0)
County of residence	**Number**	**(Percent)**
Indian River	3	(60.0)
St. Lucie	2	(40.0)

Mumps

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

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

Summary		
Number of cases in 2015	10	
5-year trend (2011 to 2015)		
Age (in years)		
Mean	32	
Median	27	
Min-max	18 - 68	
Gender	**Number**	**(Percent)**
Female	3	(30.0)
Male	7	(70.0)
Unknown gender	0	(0.0)
Race	**Number**	**(Percent)**
White	7	(70.0)
Black	0	(0.0)
Other	2	(20.0)
Unknown race	1	(10.0)
Ethnicity	**Number**	**(Percent)**
Non-Hispanic	7	(70.0)
Hispanic	2	(20.0)
Unknown ethnicity	1	(10.0)

Case classification	Number	(Percent)
Confirmed	3	(30.0)
Probable	7	(70.0)
Outcome	**Number**	**(Percent)**
Interviewed	9	(90.0)
Hospitalized	3	(30.0)
Died	0	(0.0)
Outbreak status	**Number**	**(Percent)**
Sporadic	10	(100.0)
Outbreak-associated	0	(0.0)
Outbreak status unknown	0	(0.0)
Location where exposed	**Number**	**(Percent)**
Florida	5	(50.0)
New York	2	(20.0)
Argentina	1	(10.0)
Brazil	1	(10.0)
India	1	(10.0)
County of residence	**Number**	**(Percent)**
Miami-Dade	3	(30.0)
Broward	2	(20.0)
Collier	1	(10.0)
Hillsborough	1	(10.0)
Palm Beach	1	(10.0)
Pasco	1	(10.0)
Polk	1	(10.0)

Ricin Toxin Poisoning

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

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

Summary		
Number of cases in 2015	4	
5-year trend (2011 to 2015)		
Age (in years)		
Mean	32	
Median	34	
Min-max	11 - 49	
Gender	**Number**	**(Percent)**
Female	3	(75.0)
Male	1	(25.0)
Unknown gender	0	(0.0)
Race	**Number**	**(Percent)**
White	1	(25.0)
Black	3	(75.0)
Other	0	(0.0)
Unknown race	0	(0.0)
Ethnicity	**Number**	**(Percent)**
Non-Hispanic	4	(100.0)
Hispanic	0	(0.0)
Unknown ethnicity	0	(0.0)

Case classification	Number	(Percent)
Confirmed	2	(50.0)
Probable	2	(50.0)
Outcome	**Number**	**(Percent)**
Interviewed	3	(75.0)
Hospitalized	2	(50.0)
Died	0	(0.0)
Outbreak status	**Number**	**(Percent)**
Sporadic	2	(50.0)
Outbreak-associated	2	(50.0)
Outbreak status unknown	0	(0.0)
Location where exposed	**Number**	**(Percent)**
Florida	4	(100.0)
County of residence	**Number**	**(Percent)**
Collier	2	(50.0)
Lake	1	(25.0)
Orange	1	(25.0)

Staphylococcus aureus Infection, Intermediate Resistance to Vancomycin

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

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

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

Summary		
Number of cases in 2015	4	
5-year trend (2011 to 2015)		
Age (in years)		
Mean	71	
Median	77	
Min-max	46 - 86	
Gender	**Number**	**(Percent)**
Female	0	(0.0)
Male	4	(100.0)
Unknown gender	0	(0.0)
Race	**Number**	**(Percent)**
White	4	(100.0)
Black	0	(0.0)
Other	0	(0.0)
Unknown race	0	(0.0)
Ethnicity	**Number**	**(Percent)**
Non-Hispanic	3	(75.0)
Hispanic	1	(25.0)
Unknown ethnicity	0	(0.0)

Case classification	Number	(Percent)
Confirmed	4	(100.0)
Outcome	**Number**	**(Percent)**
Interviewed	1	(25.0)
Hospitalized	3	(75.0)
Died	0	(0.0)
Outbreak status	**Number**	**(Percent)**
Sporadic	4	(100.0)
Outbreak-associated	0	(0.0)
Outbreak status unknown	0	(0.0)
Location where exposed	**Number**	**(Percent)**
Florida	4	(100.0)
County of residence	**Number**	**(Percent)**
Duval	1	(25.0)
Leon	1	(25.0)
Miami-Dade	1	(25.0)
Santa Rosa	1	(25.0)

Tetanus

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

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

Summary		
Number of cases in 2015	4	
5-year trend (2011 to 2015)		
Age (in years)		
Mean	57	
Median	58	
Min-max	26 - 87	
Gender	**Number**	**(Percent)**
Female	0	(0.0)
Male	4	(100.0)
Unknown gender	0	(0.0)
Race	**Number**	**(Percent)**
White	2	(50.0)
Black	2	(50.0)
Other	0	(0.0)
Unknown race	0	(0.0)
Ethnicity	**Number**	**(Percent)**
Non-Hispanic	3	(75.0)
Hispanic	1	(25.0)
Unknown ethnicity	0	(0.0)

Case classification	Number	(Percent)
Probable	4	(100.0)
Outcome	**Number**	**(Percent)**
Interviewed	3	(75.0)
Hospitalized	4	(100.0)
Died	2	(50.0)
Outbreak status	**Number**	**(Percent)**
Sporadic	4	(100.0)
Outbreak-associated	0	(0.0)
Outbreak status unknown	0	(0.0)
Location where exposed	**Number**	**(Percent)**
Florida	4	(100.0)
County of residence	**Number**	**(Percent)**
Palm Beach	2	(50.0)
Collier	1	(25.0)
Pinellas	1	(25.0)

Typhoid Fever

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

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

Summary		
Number of cases in 2015	6	
5-year trend (2011 to 2015)		
Age (in years)		
Mean	35	
Median	22	
Min-max	3 - 73	
Gender	**Number**	**(Percent)**
Female	1	(16.7)
Male	5	(83.3)
Unknown gender	0	(0.0)
Race	**Number**	**(Percent)**
White	0	(0.0)
Black	3	(50.0)
Other	3	(50.0)
Unknown race	0	(0.0)
Ethnicity	**Number**	**(Percent)**
Non-Hispanic	5	(83.3)
Hispanic	1	(16.7)
Unknown ethnicity	0	(0.0)

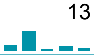
Case classification	Number	(Percent)
Confirmed	6	(100.0)
Probable	0	(0.0)
Outcome	**Number**	**(Percent)**
Interviewed	6	(100.0)
Hospitalized	6	(100.0)
Died	0	(0.0)
Outbreak status	**Number**	**(Percent)**
Sporadic	6	(100.0)
Outbreak-associated	0	(0.0)
Outbreak status unknown	0	(0.0)
Location where exposed	**Number**	**(Percent)**
Florida	3	(50.0)
Bangladesh	1	(16.7)
Haiti	1	(16.7)
India	1	(16.7)
County of residence	**Number**	**(Percent)**
Miami-Dade	2	(33.3)
Collier	1	(16.7)
Escambia	1	(16.7)
Lee	1	(16.7)
Palm Beach	1	(16.7)

West Nile Virus Disease

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

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

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

Summary		
Number of cases in 2015	13	
5-year trend (2011 to 2015)		
Age (in years)		
Mean	47	
Median	54	
Min-max	9 - 80	
Gender	**Number**	**(Percent)**
Female	2	(15.4)
Male	11	(84.6)
Unknown gender	0	(0.0)
Race	**Number**	**(Percent)**
White	13	(100.0)
Black	0	(0.0)
Other	0	(0.0)
Unknown race	0	(0.0)
Ethnicity	**Number**	**(Percent)**
Non-Hispanic	13	(100.0)
Hispanic	0	(0.0)
Unknown ethnicity	0	(0.0)

Case classification	Number	(Percent)
Confirmed	12	(92.3)
Probable	1	(7.7)
Outcome	**Number**	**(Percent)**
Interviewed	10	(76.9)
Hospitalized	12	(92.3)
Died	2	(15.4)
Outbreak status	**Number**	**(Percent)**
Sporadic	13	(100.0)
Outbreak-associated	0	(0.0)
Outbreak status unknown	0	(0.0)
Location where exposed	**Number**	**(Percent)**
Florida	13	(100.0)
County of residence	**Number**	**(Percent)**
Escambia	4	(30.8)
Hillsborough	2	(15.4)
Walton	2	(15.4)
Duval	1	(7.7)
Marion	1	(7.7)
Pinellas	1	(7.7)
Sarasota	1	(7.7)
Volusia	1	(7.7)

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 Florida Administrative Code Chapter 64D-3. Selected outbreaks and case investigations of public health importance that occurred in 2015 are briefly summarized in this section.

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Bacterial Diseases

Legionellosis Investigation Involving a Combined Assisted and Independent Living Retirement Facility, Duval County, June to September 2015

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Background
On July 6, 2015, the Epidemiology Program at the Florida Department of Health in Duval County (DOH-Duval) was notified by a local hospital infection control nurse of a positive *Legionella* antibody result on acute serum of an 87-year-old man. The man's address matched a combined assisted and independent living retirement facility where a legionellosis outbreak occurred in March 2014. Initially, it was reported that the man had not yet moved into the facility before his symptom onset of cough, fever, malaise, and shortness of breath on June 27.

On July 21, DOH-Duval Epidemiology received a report from a different hospital of an additional legionellosis case based on positive urine antigen testing in a 96-year-old man. This man had symptom onset on July 16 and lived in the same residential retirement facility during the entire exposure period.

In accordance with the DOH *Guidelines for the Surveillance, Investigation, and Control of Legionnaire's Disease in Florida*, a full epidemiological and environmental investigation was initiated by DOH-Duval and the regional environmental epidemiologist (REE). The Agency for Health Care Administration (AHCA), the Department of Business and Professional Regulation (DBPR), and the Department of Environmental Protection (DEP) were notified of the outbreak.

Methods
DOH-Duval Epidemiology staff obtained and reviewed medical records for the first two legionellosis patients and interviewed family members in lieu of the actual patients. Epidemiology staff conducted a retrospective medical record review with the facility health and wellness nurse for the previous year (June 2014 to July 2015). Epidemiology staff recommended urine antigen testing of all residents who developed fever, cough, shortness of breath, or pneumonia symptoms, and coordinated with local hospital infection control practitioners and laboratory directors to reinforce this recommendation for all cases identified during the investigation.

A confirmed case of Legionnaire's disease was defined as a person residing in the retirement community facility in the 14 days prior to onset of clinically compatible symptoms (i.e., fever, cough, shortness of breath, clinical or radiographic pneumonia, or myalgia) with confirmatory laboratory evidence of infection (i.e., positive culture or urine antigen test) between June 1 and September 30, 2015. A suspect case was defined as a person residing in the retirement community facility in the 14 days prior to onset of clinically compatible symptoms without confirmatory laboratory evidence of infection between June 1 and September 30, 2015.

A joint environmental assessment was conducted on July 23, 2015 with DBPR, DOH-Duval Environmental Health (EH) and Epidemiology staff, and the REE. EH staff reviewed facility engineering blueprint diagrams and visually inspected the facility plumbing on site for circulatory dead legs in design (i.e., areas of piping where water does not circulate or can become stagnant without routine flushing). Free chlorine levels, pH, and water temperature were also measured and recorded at each sample collection location. Investigators collected eight environmental samples (four bulk water and four swabs) from the facility maintenance/engineering room water piping and plumbing fixtures within residential rooms which were tested by the Bureau of Public Health Laboratories (BPHL). An industrial hygienist collected 75 environmental samples on July 30; 73 additional samples were collected on August 18 by the industrial hygienist after a hyperchlorination treatment of the premise plumbing system.

Results
Seven cases (three confirmed, four suspect) were associated with this 2015 residential retirement facility legionellosis outbreak. Ages ranged from 80 to 96 years old. Four cases were in women, and four cases were in assisted living (including one memory care) residents. The most common symptoms were fever, cough, and pneumonia. Onset times and symptom duration were difficult to assess among all cases; hospitalizations ranged from three to eight days. Of the seven infected people, two returned to the facility, two were transferred to different assisted living facilities, one moved into a family member's home, and two died. No other additional cases have been associated with this facility. One clinical sputum specimen analyzed by BPHL was culture positive for *Legionella pneumophila*.

Of the eight environmental samples tested by BPHL, all were negative for *Legionella* bacteria. Of the 75 environmental samples collected by the industrial hygienist on July 30, 20 (26.7%) tested positive for detectable levels of *Legionella* bacteria by a private laboratory. Of the 73 environmental samples collected by the industrial hygienist on August 18 after the hyperchlorination treatment of the premise plumbing system, two (2.7%) tested positive for detectable levels of *Legionella* bacteria. After consultation with the water safety company, plumbing modifications to the facility were completed on September 22 by a private plumbing contractor to incorporate a second chlorine dioxide injection point in the hot water recirculation loop.

Conclusions and Recommendations
A full epidemiological and environmental health assessment identified a total of seven legionellosis cases associated with a residential combined assisted and independent living facility. Water samples independently collected and tested by a private laboratory confirmed the presence of *Legionella* bacteria in the building premise plumbing. Post-disinfection water sampling results indicated nearly complete eradication of the bacteria (or reduction to undetectable levels) from the facility's premise plumbing system; however, the facility will continue to monitor for *Legionella* via monthly water testing through a private contractor.

Tattoo-Associated Nontuberculous Mycobacterial Skin Infections, Miami-Dade County, January to April 2015

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Background
On April 29, 2015, a local dermatologist reported three patients with skin infections to the Florida Department of Health in Miami-Dade County (DOH-Miami-Dade) Epidemiology, Disease Control, and Immunization Services (EDC-IS). All three patients reported receiving tattoos at Studio A from Artist A between February and March. Nontuberculous mycobacterial (NTM) infections were suspected based on clinical presentation and history. NTM bacteria are endemic in the environment, and found in high numbers in water, soil, and biofilms in drinking water systems. Cutaneous exposure to NTM produces a rash-like illness which often requires treatment with a combination of antibiotics for several months. In recent years, a number of NTM outbreaks associated with tattoo studios have been reported in the literature. These outbreaks have been associated with both poor infection control practices at tattoo studios and contamination of tattoo ink at the point of manufacture. DOH-Miami-Dade EDC-IS immediately initiated an epidemiological investigation and notified DOH-Miami-Dade Environmental Health (EH), the regulatory body for tattoo studios. EH informed EDC-IS that they had received a previous complaint of illness associated with the studio on April 7. The U.S. Food and Drug Administration (FDA) was subsequently notified.

Methods

Epidemiologic Investigation

Epidemiology case definitions were based on characteristics of the first reported cases. A suspect case was defined as a person who received a tattoo at Studio A between December 1, 2014 and April 30, 2015 and developed a rash localized within the tattoo area or along its borders which lasted longer than two weeks. A probable case met the suspect case definition and also had histopathological or stain evidence of acid-fast organisms. A confirmed case met the suspect case definition and also had a positive NTM culture, immunohistochemical (IHC) stain, or polymerase chain reaction (PCR).

Clinical Laboratory Investigation

Clinical isolates and biopsy specimens from 13 clients were forwarded to the Bureau of Public Health Laboratories (BPHL) and the Infectious Diseases Pathology Branch (IDPB) at the Centers for Disease Control and Prevention (CDC) for further evaluation. Laboratory analyses included culture and PCR of fresh tissues. PCR tests were completed by CDC and included *Mycobacterium* genus 16S rRNA, *Mycobacterium abscessus-chelonae* complex, and *Mycobacterium* genus groEL assays. Fixed tissues underwent histopathologic review at CDC using hematoxylin and eosin (HE) stain, Ziehl–Neelsen acid -fast stain (ZN AF stain), and *Mycobacterium* species immunohistochemical stain (IHC).

Environmental Investigation

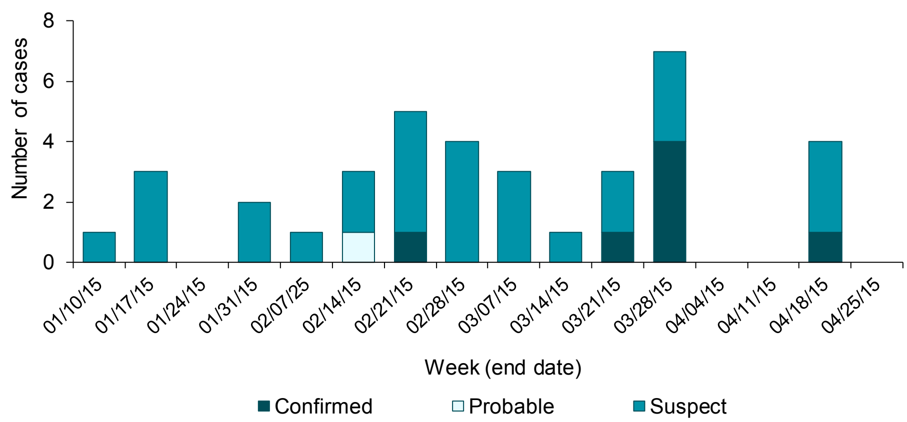
EH conducted an inspection of Studio A on April 8. Environmental samples collected from Studio A included an opened bottle of greywash ink (Ink A) used on clients, 10 samples of 100 milliliters (mL) of tap water, and two faucet swabs. No unopened bottles of Ink A were available for testing. Distilled water used for dilution was not available for testing. Environmental samples were submitted to FDA laboratories for microbiological testing and genome analysis. On April 30, EDC-IS interviewed the owner of Studio A. EH conducted a survey of 85 of 106 licensed tattoo studios in Miami-Dade County to identify studios using Ink A. Five unopened bottles of Ink A with the same lot number as the ink used at Studio A were obtained for testing.

Results

Epidemiologic Investigation

EDC-IS interviewed 246 clients (a response rate of 68.9%); 20 (8.1%) of 246 refused interview. Thirty-eight met the case definition (seven confirmed, one probable, and 30 suspect cases); 27 (71.0%) cases were in men and the median age was 28 years (range: 19 to 54 years). Implicated tattoo sessions occurred between early January and mid-April; symptom onsets fell between January 13 and April 23 (see Figure 1). All 38 cases reported nodules, 29 (76.3%) redness, 22 (57.9%) itching, 10 (26.3%) swelling, 10 (26.3%) pain, and 3 (7.9%) fever. On initial interview on May, 17 (44.7%) reported seeking medical attention; nine (52.9%) of those were prescribed antibiotics for NTM according to medical records and four (44.4%) of the nine reported taking the medication. Incubation periods ranged from 1 to 59 days. Duration of rash ranged from 15 days to 5 months. During follow-up interviews in September, 13 (61.9%) of 21 cases reported clinical resolution and 17 (44.7%) were lost to follow-up. Nine (64.3%) of 14 reported scarring and 3 (23.1%)

Figure 1. Number of Confirmed, Probable, and Suspect Cases of Tattoo-Associated Nontuberculous Mycobacterial Infections by Date of Tattoo Session at Studio A, Miami-Dade County, January to April 2015 (n=37)*



* One case did not have a known tattoo date and is excluded here.

of 13 reported return of rash (one person was not asked about reoccurrence of rash). Of the 38 cases, 31 (81.6%) had tattoos done by Artist A (attack rate: 28.1%), 5 (13.2%) by Artist B (attack rate: 5.6%), and 2 (5.3%) by Artist C (attack rate: 8%). When controlling for individual tattoo artist and ink colors, logistic regression showed that being tattooed by a specific artist was not statistically significant; however, clients who reported grey ink were 8.24 times as likely to have a rash than those who did not report grey ink (odds ratio: 8.24, 95% confidence interval: 3.069-22.127).

Clinical Laboratory Investigation
Of the 13 clients with isolates and biopsy specimens submitted for testing, BPHL culture results were only available for nine cases. One probable case was positive for acid-fast bacteria by ZN AF only. Of seven confirmed NTM cases, six were positive for *M. abscessus* or *M. abscessus-chelonae* complex by culture (four cases) or PCR (three cases). The seventh case was culture- and PCR-positive for *M. fortuitum.*

Environmental Investigation
During the April 8 EH inspection of Studio A, the inspector noted that Artist A habitually diluted the greywash ink (Ink A) with distilled water and advised the studio to stop use of the greywash ink. On April 30, following an interview with the owner of Studio A, EDC-IS learned that Artist A purchased stolen items in January 2015, including opened and unopened heat-sealed bottles of greywash ink and tattoo machines that were reportedly used on symptomatic clients. The owner reported having three tattoo artists employed at the time the rashes occurred. Interviews with all three artists identified that Artist B used the greywash ink a “few times in the past six months,” and Artist C reported “never (having) used the greywash ink,” but both artists diluted ink using distilled water. The studio owner reported that the artists regularly used both distilled and tap water for dilution, and they “never had an issue in the past.” The studio reportedly stopped using Ink A following this site visit.

Environmental samples tested by the FDA grew multiple species of *Mycobacterium*. Tap water from Studio A grew *M. abscessus*, *M. phocaicom*, and *M. mucogenicum*. The open bottle of Ink A from Studio A grew *M. abscessus* and *M. fortuitum*. Five unopened Ink A bottles from Studios B and C of varying dilution levels grew *M. chelonae* and various mold species.

Conclusions and Recommendations
Cases of NTM skin infections following recent tattoos were only reported at Studio A despite a survey of more than 100 studios in the area with several reporting use of Ink A from the same lot. This observation prompted a closer look at artist practices at this studio and initially supported the idea that ink contaminated at the point of manufacture was a less likely source of this outbreak. Furthermore, when laboratory results were available, clinical specimens, tap water, and the opened bottle of Ink A from Studio A grew *M. abscessus*, suggesting that contamination of the opened bottle of Ink A with tap water at Studio A could be a source of the outbreak. This route of contamination is further supported by earlier reports from the owner that the artists regularly used both distilled and tap water to dilute greywash ink. Additionally, it is important to note that four additional cases were identified after the tattoo studio reportedly stopped the use of Ink A on April 7 (see Figure 1). Cases were identified among clients of all three artists; one case, a client of Artist A, was PCR-positive for *M. abscessus-chelonae* complex. These additional cases could be explained if periodic, subsequent contamination of ink or equipment by contact with tap water occurred through common practices at this tattoo studio. Despite negative results for faucet swabs and absence of biofilm samples, the NTM-positive tap water results may indicate the potential presence of a biofilm upstream. Characteristic properties of biofilms include a process of attachment, growth, and breaking off, a cycle which may increase levels of NTM typically found in tap water sources. The epidemic curve shows a pattern of peaks in cases which may reflect this cycle (see Figure 1).

A much greater concern was that contamination of Ink A at the point of manufacture was a possible source of the outbreak as many more tattoo clients could have been exposed at other area tattoo parlors where Ink A was distributed. Because NTM identified in clinical specimens did not match NTM present in unopened bottles of ink, a definitive link between outbreak cases and contamination at the point of manufacture could not be made. Ink A as a possible source of the outbreak remained a concern because clinical specimens were only available for a fraction of cases and unopened bottles of Ink A tested positive for *M. chelonae* and other contaminants. *M. chelonae* has been linked to tattoo -associated outbreaks in the literature. Due to these concerns, FDA and the manufacturer of Ink A issued a national recall of the implicated lot number on July 22.

Investigation of current standards of practice for tattoo artists in Florida is currently being performed by DOH. It is imperative that clear recommendations be provided in order to prevent future outbreaks. Although CDC recommends that manufacturers ensure that ink is sterile and advises against dilution with non-sterile water, no FDA regulation exists requiring sterile tattoo inks. Instead, FDA delegates this responsibility to local government jurisdictions; regulations in Florida currently recommend following manufacturer guidelines for the dilution of tattoo inks, guidelines which did not exist for this particular greywash ink. Tattoo patrons should be made aware of the infection risks associated with tattooing, not only those that result from bloodborne pathogens, but also bacteria in contaminated inks and non-sterile water. The community would benefit from regulation of tattoo ink manufacturing, guidance on the dilution of tattoo ink, consumer-accessible documentation of sterile FDA-approved ink, and education on reporting adverse reactions and tattoo-related outbreaks to FDA and DOH, respectively.

Investigation of a Gastrointestinal Outbreak Associated With a Lifeguard Camp, Okaloosa County, June 2015

Authors

Laura P. Matthias MPH; Kat Beedie, CEHP; Ashley Rendon

Background

The Panhandle regional environmental epidemiologist (REE) was notified of a possible foodborne outbreak via a complaint that was submitted through the online foodborne complaint system on June 27, 2015. The complaint reported that 24 out of 25 children were ill with nausea and vomiting after consuming barbeque (BBQ) pork from a restaurant. Because of the potentially large number of children involved, the REE forwarded the complaint to the Florida Department of Health in Okaloosa County (DOH-Okaloosa) via the county's after-hours phone number and investigation was initiated on June 27.

Methods

DOH-Okaloosa staff attempted to interview the complainant and identify others in the group who were ill. Early in the investigation, it was noted that the children were attending a beach lifeguard camp; DOH-Okaloosa acquired the camp director's contact information and requested a line list of attendees. Initial interviews were conducted using the Tri-Agency Foodborne Illness Survey/ Complaint Form, but as more information was gathered, an outbreak-specific questionnaire was used. Data were collected and analyzed using Epi Info 7.

DOH-Okaloosa and the Department of Business and Professional Regulation (DBPR) conducted a joint assessment of the restaurant facility where food was prepared on June 29. DOH-Okaloosa spoke with camp staff to ascertain how food items were handled between picking them up from the restaurant and consumption at a local park. DOH-Okaloosa attempted to collect clinical specimens and leftover food items for pathogen analysis.

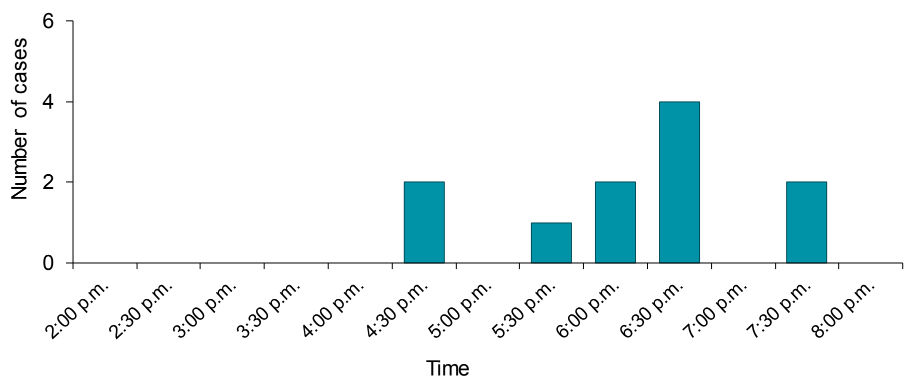
A case was defined as someone who attended the beach lifeguard camp meeting on June 26 and subsequently became ill with nausea and vomiting within six hours.

Results

The camp that this group attended was a 2-week beach lifeguard training camp. There were no pool exposures. June 26 was the last day of the camp and the group met at a local park. The pork and the BBQ sauce were picked up by camp staff on June 25 and taken to the camp office (about a 10- to 15-minute drive from the restaurant). Nine pounds of pork pulled pork was stored in a disposable aluminum pan covered in aluminum foil. The pork and the sauce were put directly into the refrigerator. The next day, June 26, the pork was taken out of the refrigerator around 12:45 p.m. and was placed in the oven at 1 p.m. at 250°F for approximately one hour. The pork was removed from the oven around 2 p.m. and driven to the park (about a 5- to 10-minute drive). The temperature of the pork was not taken while reheating. The BBQ sauce was not heated. Food was served around 2:30 p.m.

DOH-Okaloosa was not able to get a line list of attendees from the camp director. All interview names were supplied by the original complainant or from other parents giving contact information. The total number of lunch attendees is unknown. DOH-Okaloosa interviewed 18 people, including both camp attendees and employees. Eleven people met the case definition. Eight of the 11 cases were in males. Ages ranged from 9 to 28 years old. The incubation period ranged from two to five hours with a median of four hours (see Figure 1). The duration of illness ranged from 30 minutes to 12.5 hours. All cases reported nausea and vomiting; other reported symptoms included abdominal cramps (seven cases), diarrhea (five cases), weakness (three cases), fatigue (three cases), chills (two cases), headache (one case), and dehydration (one case). No cases sought medical attention for their symptoms. No clinical specimens or leftover food items were available for pathogen analysis. Food items that were served at the lunch included pork, BBQ sauce, buns, chips, and lemonade. Statistical analysis of risk by food item was not meaningful for this outbreak due to the small sample size and all members of the group consuming the same food items.

Figure 1. Number of Gastrointestinal Outbreak Cases Associated With a Lifeguard Camp by Time of Onset, Okaloosa County, June 2015 (n=11)



DOH-Okaloosa and DBPR conducted a joint assessment of the restaurant facility on June 29. During the assessment, no employees were noted to be ill in the two weeks prior; the DBPR investigator noted two high-priority violations, three intermediate violations, and eight basic violations. One of the high-priority violations was potentially hazardous food (PHF) being cold-held at >41°F (chili at 48°F and coconut cream pie at 46°F) and a stop sale was issued on the chili for temperature abuse. One intermediate violation was ready-to-eat (RTE) PHF prepared onsite held >24 hours that was not properly date marked. The restaurant received a follow-up inspection on June 30 and three basic violation were noted. The restaurant met inspection standards upon the callback. Of note, this restaurant had an alternate operating procedure allowing staff to have bare hand contact with RTE foods.

Conclusions and Recommendations

In this investigation, no stool specimens or food samples were collected and analyzed to determine the pathogen. Given the short incubation times, symptoms, duration, and information gathered during the investigation, one possible cause of the outbreak is *Staphylococcus aureus. S. aureus* is a gram-positive bacterium that produces a highly heat-stable protein toxin. Staphylococcal food poisoning is caused by the enterotoxins produced by the bacterium. Onset of illness is generally rapid and ranges from 30 minutes up to eight hours. The most common symptoms are nausea, abdominal cramps, vomiting, and diarrhea. Illness typically lasts one or two days, but can last longer in severe cases. Foods that are frequently associated with staphylococcal food poisoning are meat and meat products, poultry and egg products, and foods that require considerable handling during preparation and are kept at elevated temperatures after preparation. Staphylococci can be found in the nasal passages, throats, and on the hair and skin of 50% or more of healthy individuals.

Overall, it is likely that the pork may have been contaminated during food preparation given that employees can have bare hand contact with RTE foods. The restaurant supplied the pork hot to camp staff. If the food had been consumed the same day, there may not have been opportunity for the bacteria to grow. However, since the food was supplied within the appropriate temperature range, put into a refrigerator to cool overnight, and reheated the next day, temperature abuse of the meat likely occurred and contributed to this outbreak. Future recommendations included distributing meat into smaller containers to allow the meat to cool faster and keeping it uncovered while cooling.

Vibrio vulnificus **Outbreak Associated With Consuming Raw Oysters From a Restaurant/ Market, Lee County, December 2015**

Authors

Jennifer Roth, MSPH; Robin Terzagian

Background

On December 9, 2015, the Florida Department of Health in Lee County (DOH-Lee) received a report from a local hospital of a positive *Vibrio vulnificus* laboratory result for a 76-year-old man who was admitted to the hospital on December 7 with an initial diagnosis of septic shock. DOH-Lee initiated an investigation upon notification of the laboratory report and conducted phone interviews with the man's daughter to gather information about potential exposures.

Methods

Interviews were conduced using the standard *V. vulnificus* data collection form. A confirmed case was defined as a person who consumed raw oysters purchased from the restaurant/market on December 6 and had a confirmed *V. vulnificus* laboratory result from a clinical specimen. A probable case was defined as a person with clinically compatible illness characterized by diarrhea, vomiting, or primary septicemia who was epidemiologically linked to a confirmed case. The index case's isolate was forwarded to the Bureau of Public Health Laboratories (BPHL) for confirmation.

On December 10, DOH-Lee notified the Florida Department of Business and Professional Regulation of the incident. DOH-Lee contacted the restaurant/market to obtain oyster tags.

Results

Two cases were identified; one met the confirmed case definition (76-year-old father) and the second was a probable case (36-year-old daughter). Both cases had an onset date of December 6 approximately five hours after consuming raw oysters. The daughter reported nausea, vomiting, and abdominal cramps lasting 30 hours and the father had fever and septic shock. The father had pre-existing health conditions and was undergoing chemotherapy for liver disease; he died on December 8. BPHL confirmed the isolate as *V. vulnificus* on December 22.

The oysters supplied to the restaurant/market were harvested in Florida from two different locations on November 29 and December 3. The restaurant/market did have the appropriate consumer warning of risks associated with consumption of raw and undercooked foods posted.

Conclusions and Recommendations

This was a confirmed outbreak of *V. vulnificus* associated with the consumption of raw oysters. The symptoms and type of shellfish consumed are commonly associated with *V. vulnificus* infection. *V. vulnificus* can cause particularly severe disease, with about 50% of bloodstream infections being fatal. *V. vulnificus* is a bacterium that lives in brackish saltwater and seawater. It is present in higher concentrations in warmer waters. In people who are immunocompromised, particularly those with chronic liver disease, *V. vulnificus* can cause disease with potentially fatal complications after eating contaminated seafood or exposing an open wound to contaminated seawater. In healthy people, ingestion of this organism can cause gastroenteritis that generally remains localized and is self-limiting. Among susceptible people, the organism may cause primary septicemia (septic shock). Susceptible people include those with a predisposing condition; for example, those who are immunocompromised or have high serum iron levels (usually due to liver disease). More than 90% of *V. vulnificus* illnesses in the U.S. are associated with consumption of raw Gulf Coast oysters. Ingestion of clams and shrimp has also been associated with disease. Thorough cooking or freezing kills the organism, so illnesses usually occur from consumption of raw seafood or cooked seafood that has been contaminated with raw product.

The strengths of this investigation included the strong relationship between epidemiology and environmental health and the interagency partnership allowing for timely retrieval of oyster tags. The hospital laboratory reported illness as required and forwarded the specimen to BPHL for confirmation. Limitations included the inability to complete statistical analysis due to the limited number of cases, inability to interview other exposed family members and the man who died, limited food history recall from ill individuals, and lack of implicated foods available for analysis.

Local Listeriosis Cluster Linked to Retail Facility, Palm Beach, September 2013 to August 2015

Authors
Jamie DeMent, MNS

Background
In 2015, the Florida Department of Health (DOH) Food and Waterborne Disease Program (FWDP), the Florida Department of Agriculture and Consumer Services (FDACS), and the Centers for Disease Control and Prevention (CDC) investigated a local cluster of listeriosis cases in Palm Beach County occurring from September 2013 through August 2015. DOH routinely interviews all listeriosis cases with the National *Listeria* Initiative Questionnaire and forwards all information to CDC. *Listeria* isolates are required to be submitted to the Bureau of Public Health Laboratories (BPHL) for confirmatory testing and BPHL forwarded all *Listeria* isolates to CDC for whole genome sequencing (WGS).

Methods
DOH conducted multiple interviews with infected people or their proxies to determine common exposures. An outbreak-specific questionnaire was administered by DOH. Geospatial analysis was conducted to determine the proximity of the implicated facility to cases. FDACS conducted an environmental assessment and environmental sampling of the facility. FDACS analyzed the environmental samples. Additional samples were collected by a private contractor and positive samples were forwarded to BPHL and CDC for confirmation.

Results
Nine cases were associated with this outbreak; all required hospitalization and four deaths were attributed to listeriosis. Ages of the infected people ranged from 0 to 92 years old with a median of 80 years; and six were men. A single retail facility was identified by five of the nine cases/proxies as a location where items were purchased. Six infected people resided within a one-mile radius of the retail facility. Specimens from eight cases had WGS analysis and were highly related. The environmental assessment by FDACS found environments conducive to the growth and harborage of *Listeria* and environmental samples were positive for *Listeria*. WGS determined the environmental and clinical isolates were not closely related. FDACS recommended remediation and worked closely with the retail facility to ensure the environment was free of *Listeria*.

Conclusions and Recommendations

Despite not identifying the same closely related *Listeria* strain from clinical and environmental samples, available evidence suggests this retail facility was the likely source of the on-going listeriosis cluster in Palm Beach County. The facility had a fire in early August 2015 and some equipment was discarded and no longer available for analysis. No additional cases have been identified in this county since remediation of the facility. Environmental assessment and sampling were imperative for source identification. Consulting with subject matter experts was imperative to the successful identification and halting of transmission of *Listeria* in the community.

Parasitic Diseases

Cryptosporidium Recreational Waterborne Outbreak at a Large Water Park, Hillsborough County, July to August 2015

Authors

Mike Friedman, MPH; Maria Deluca; MacKenzie Tewell, MA, MPH, CPH; Jim Phillips; Eliot Gregos, MPH, RS

Background

During the past two decades, *Cryptosporidium* has become recognized as one of the leading causes of waterborne illness in the U.S. The parasite is found in every part of the U.S. and the world. *Cryptosporidium* is one of the leading causes of waterborne disease in the U.S.

In early August 2015, the Florida Department of Health in Hillsborough County (DOH-Hillsborough) began receiving case reports of residents testing positive for *Cryptosporidium*. Surveillance conducted on reported cryptosporidiosis cases by the Hillsborough Epidemiology office identified that many of the cases had visited a local water park in Tampa. This was the same large water park where a cryptosporidiosis outbreak was identified in the summer of 2014. A notice was posted on EpiCom, Florida's moderated web-based communication forum, and epidemiologists in several surrounding county health departments notified DOH-Hillsborough that some of their reported cryptosporidiosis cases had also visited the same water park. An investigation was initiated, including an environmental assessment of the identified water park, contact with park management, and active case finding.

Methods

DOH-Hillsborough conducted case investigations on reported cryptosporidiosis cases from physicians, health care clinics, and private citizens in Hillsborough County and received additional reports from surrounding county health departments. Active case finding was implemented, including posting to EpiCom and review of syndromic surveillance data. A confirmed case was defined as any person visiting the identified water park in Tampa in July or August 2015 with positive *Cryptosporidium* laboratory result. A probable case was defined as any person visiting the identified water park in Tampa in July or August 2015 who became symptomatic with diarrhea but lacked laboratory evidence of the illness.

On August 6, an environmental assessment of the water park was conducted by DOH-Hillsborough Environmental Health staff. Park management staff were notified of the reported cryptosporidiosis cases with possible exposure to the water park.

Results

Analysis of surveillance data identified nine confirmed and 13 probable cryptosporidiosis cases in water park attendees. In addition, three secondary cases with exposure to confirmed cases were also identified. Ages ranged from 1 to 68 years old. Onset dates of cases ranged from July 10 to August

29. These cases represented approximately 35% of all reported cryptosporidiosis cases in the state during this period. The investigation identified that all reported cases had visited the park during the months of July and August. Cases visiting the park used various water slides, pools, and play areas throughout the water park. Cases were reported in residents of Hillsborough, Miami-Dade, Pinellas, and Pasco counties.

Results from the environmental assessment at the waterpark did not identify any significant violations of current Florida pool code. Water chemistry records were reviewed and all four fecal accidents reported during July were treated according to Centers for Disease Control and Prevention (CDC) recommendations for eliminating *Cryptosporidium*.

Conclusions and Recommendations

A recreational waterborne outbreak associated with attendance at a local water park in Hillsborough County occurred in July and August. Although no significant violations of current codes were identified during environmental assessments of the park, a secondary disinfection system was not used, potentially allowing *Cryptosporidium* oocysts to survive and circulate for extended periods of time. The investigation indicated that several confirmed cases attended the park while infectious and were likely the source of at least some of the reported cases. The facility was following CDC guidelines for pool disinfection after detection of fecal accidents. Unfortunately, the specific dates of the fecal accidents were not collected. Recommendations made to the management included educating park staff and visitors on established bathing rules, especially involving exclusion of symptomatic bathers, and to strongly consider use of more effective disinfection methods to reduce likelihood of transmission of *Cryptosporidium* at their facility.

Viral Diseases

Measles Outbreak, St. Lucie and Indian River Counties, April to May 2015

Authors

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Background

On April 13, 2015, a local provider notified the Florida Department of Health in St. Lucie County (DOH-St. Lucie) of a suspected case of measles in an unvaccinated 6-year-old girl with no known history of travel or exposure to persons with rash illness. Three days later, DOH in Indian River County (DOH-Indian River) received a call from a concerned mother stating that two of her adult children and a family friend had been clinically diagnosed with measles; none had a previous history of vaccination for measles. Measles is transmitted through inhalation of respiratory droplets generated when an infected person coughs, sneezes, or talks. Measles is a highly infectious disease, with >90% attack rate among susceptible contacts. The incubation period, prior to onset of prodrome, ranges from 7 to 21 days. No longer endemic in the U.S., measles cases in Florida residents are almost always reported in unvaccinated individuals who have traveled to an area experiencing an outbreak or contacts of unvaccinated ill travelers from areas with measles activity. DOH-St. Lucie and DOH-Indian River launched coordinated investigations due to concerns that these cases may be part of the same outbreak as they were clustered in space and time.

Methods

Epidemiological Investigation

In both counties, health care providers and other public health partners were alerted to be aware of measles, isolate and report suspected cases, and ensure persons were up-to-date on vaccines. All suspected cases were tested by serology or polymerase chain reaction (RT-PCR) at the Bureau of

Public Health Laboratories (BPHL) within days of the initial reports. Specimens requested for all suspect measles cases included serum, urine, and nasopharyngeal/oropharyngeal swabs. Genotyping was completed at the Centers for Disease Control and Prevention (CDC) for two of the suspected cases.

Enhanced surveillance at area hospitals was conducted using daily queries of syndromic surveillance data for measles starting on April 17. A retrospective review of syndromic surveillance data back to March 1 was completed.

Contact Investigation
Movement histories were obtained for all cases during their contagious periods. For the purposes of these contact investigations, the contagious period was defined as four days prior to rash onset through four days after rash onset. Two serial incubation periods were used to establish the period of enhanced surveillance. Household settings and contacts were evaluated.

Results
Epidemiological Investigation
Upon investigation, all four initial suspected cases met the current suspect surveillance case definition for measles with fever and clinically compatible rash illness. Patients ranged in age from 6 to 23 years (see Table 1). The earliest reported onset dates were for the two Indian River women who recently returned from India with their church group on March 25; rash onsets for both were April 1. The 20-year-old brother of one of these travelers developed rash onset one week later on April 8; he had no history of recent travel and worked in the food court of the local mall and attended the area community college. The 6-year-old St. Lucie girl developed a rash around the same time with onset on April 7, 2015; her twin sister developed rash illness 11 days later. All five measles cases were confirmed by serology or PCR at BPHL within days of the initial reports. Genotyping completed at CDC for the initial patient in St. Lucie and the 20-year-old Indian River man demonstrated identical measles virus D8 sequences.

Table 1. Characteristics of Confirmed Measles Cases in Indian River and St. Lucie Counties, April to May 2015

County	Gender	Age	Onset date	Rash onset	Laboratory confirmation	One incubation period	Two incubation periods
St. Lucie	F	6	04/07/15	04/12/16	04/15/15	05/07/15	05/28/15
Indian River	F	23	04/01/15	04/02/16	04/18/15	04/27/15	05/18/15
Indian River	M	20	04/08/15	04/12/16	04/18/15	05/07/15	05/28/15
Indian River	F	17	04/01/15	04/04/16	04/21/15	04/29/15	05/20/15
St. Lucie	F	6	04/18/15	04/21/16	04/24/15	05/16/15	06/06/15

Retrospective review of syndromic surveillance data identified 30 emergency room visits that matched the measles query used. Additional information for these visits was requested from local hospital infection preventionists. Chart notes were reviewed and none met the case definition for persons under investigation (PUIs). Prospective daily review of syndromic surveillance data for suspicious rash illnesses or possible measles cases identified an additional 16 visits that were reviewed; no PUIs were identified.

Contact Investigation – Indian River County
Additional household members of the Indian River family included parents who reported a history of measles vaccination and an unvaccinated, homeschooled 16-year-old sister who received her first measles vaccine on April 3.

In Indian River, 434 potentially exposed contacts were identified in 10 settings, including family homes, a mobile clinic, an urgent care, church, school, and a community college (see Table 2). One case attended a church musical that was open to the public during their infectious period. There were approximately 300 attendees, and none of these contacts could be individually identified for follow up; most were likely church attendees. The pastor notified all church members of the potential exposure by email, and asked them to notify DOH-Indian River if they developed symptoms. Of the 134 contacts for whom contact information was available, 122 (91.0%) were interviewed. No additional cases were identified by the completion of two incubation periods ending on May 28. Several symptomatic contacts were identified during the investigation and were isolated until ruled out or no longer considered infectious. All asymptomatic contacts were asked to monitor for symptoms of measles for 21 days following exposure and provided with guidelines on what to do should they develop symptoms during this time period.

Table 2. Measles Contact Investigation Summary by County, Indian River and St. Lucie Counties, April to May 2015

County	Potentially exposed identified	Exposed reached	Exposed not reached	Exposed with evidence of immunity	Exposed without immunity	Exposed with unknown immunity	Exposed with suspected measles
St. Lucie	1,126	1,052	74	1,032	58	36	1
Indian River	434	122	312	68	6	360	3
Total	1,560	1,174	386	1,100	64	396	4

Contact Investigation – St. Lucie County

Additional household members of the St. Lucie family included parents with a history of measles vaccination and an unvaccinated twin sister who did not receive chemoprophylaxis within the recommended window. All remaining household members were asymptomatic at the time of initial interview and were asked to monitor for symptoms for a period of 21 days from their last exposure. Quarantine at home was recommended for the twin sibling as the risk for measles was considered to be extremely high. She subsequently developed symptoms of measles, though her illness did not extend the period of enhanced surveillance because she was quarantined at the time of onset.

Additional high-priority settings for the rapid identification of susceptible contacts in St. Lucie included the twins' elementary school and their pediatrician's office (see Table 2). Vaccination records were reviewed for 694 students at the elementary school; only five students were recorded as not immune and required further individual follow-up by investigators. A school letter was sent out to notify parents that a child attending the school had been diagnosed with measles. One hundred eighty-five (90.7%) of 204 contacts at the pediatrician's office were contacted; 33 had no documented immunity to measles, many of whom were infants. Infants exposed within the last six days were offered post-exposure prophylaxis with immune globulin (IG) at the DOH clinic; eight infants received IG (one dose provided by a hospital). Other settings included a gym, restaurants, a civic center, and relatives' homes. A total of 11 settings and 1,126 contacts were identified as part of the contact investigation in St. Lucie County; 93.4% of contacts were reached as part of the investigation. Those who could not be reached by phone after three attempts on three different days and times were sent a letter. Sometimes vaccination records were available through review of medical records or Florida's voluntary statewide immunizations registry even if contacts could not be reached, allowing ascertainment of immune status. Home visits were conducted if there were concerns regarding no or unknown immunity to measles. For example, home visits were completed for households with unvaccinated infants when not reachable by phone. Only 93 (8.3%) contacts remained categorized with no or unknown immune status at the completion of the investigation.

Conclusions and Recommendations

Available epidemiological data suggest the outbreak originated with two imported measles cases in Indian River residents returning from an overseas mission to India. As a result of this investigation, DOH-Indian River identified faith-based and international aid organizations in the county and provided immunization recommendations for persons planning international travel.

Local transmission to the sibling in Indian River was likely a result of exposure to his sister in the household setting. Lack of travel history for the St. Lucie cases suggests measles was locally acquired from an unknown source case. It is possible that there was another generation of local transmission involving the twin since her onset of symptoms was 11 days after her sister, but it is also possible she was exposed at the same time and had a longer incubation period. Although definitive exposure of the St. Lucie cases to the Indian River cases was not identified, genotyping results suggest that all five cases share a common origin.

Despite extensive contact investigations in both counties involving more than 1,500 potentially exposed contacts in 20 settings, only one additional confirmed measles infection in the 6-year-old twin sister was identified by the end of the enhanced surveillance period on May 28. Given the time and resources involved in these types of contact investigations, further prioritization and investigation into more creative and efficient means for follow-up are needed.

Non-Infectious Agents

Foodborne Illness Outbreak Associated With a Convenience Store, Hernando County, September 2015

Authors

Bonnie Mull, MPH; Grace Gifford, RN; Albert Grey

Background

On September 24, 2015 the Florida Department of Health (DOH) Food and Waterborne Disease Program (FDWP) received a complaint from the Florida Department of Agriculture and Consumer Services (FDACS) regarding seven people from two different households experiencing vomiting 30 minutes after consuming beverages purchased at a local convenience store. In response to this complaint, an investigation was initiated by FDWP, FDACS, and DOH in Hernando County (DOH-Hernando).

Methods

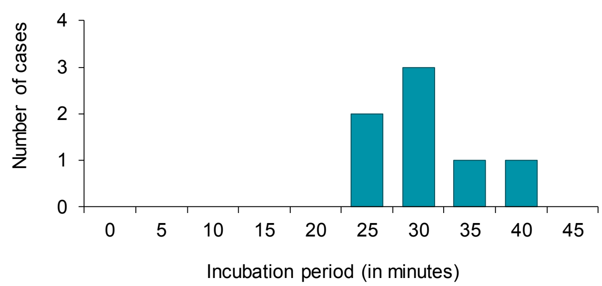
The Tri-Agency Foodborne Illness Survey/Complaint Form was used to elicit detailed information on clinical presentation and possible exposures. Florida's Environmental Health Surveillance (FLEHS) database was reviewed to identify any additional illness complaints related to the implicated product. A case was defined as a person who experienced vomiting following consumption of Rico Splash flavored drink purchased from convenience store A on September 23.

A joint environmental health assessment was conducted by the DOH-Hernando Environmental Health manager, the regional environmental epidemiologist and an FDACS inspector on September 29. Four 1-gallon Rico Splash samples were collected and submitted for analysis to the FDACS Bureau of Food Laboratories.

Results

Seven people from three households met the case definition. The only common exposure in the week prior to illness was consuming the Rico Splash flavored drink on September 23. Four cases were in women and ages ranged from 8 to 46 years old. The incubation period ranged from 25 to 40 minutes with a median of 30 minutes (see Figure 1). Duration of illness was two days. All seven people had nausea and vomiting; none sought medical attention for their illness. No stool specimens were collected for testing because all the cases symptoms had resolved. No other complaints were received and no other potential cases with similar symptoms or exposures were identified through surveillance efforts.

Figure 1. Number of Outbreak Cases Associated with Rico Splash Flavored Drink By Incubation Period, Hernando County, September 2015 (n=7)



During the environmental health assessment, inspectors observed that gallon bottles at the store had different volumes and varying color shades. Orange-flavored drink bottles also had a cloudy residue floating on top. FDACS stopped sales on all of the Rico Splash bottles at the store citing "unknown source" because the label did not have a manufacturer's address or phone number listed. Out of the four Rico Splash samples collected during the environmental health assessment, the orange-flavored drink sample contained 14.6 parts per billion (ppb) of benzene.

Further investigation by FDACS identified that the product was produced by Spring Lake Water of Brooksville. On November 2, an FDACS inspector visited Spring Lake Water and collected two samples of Rico Splash orange-flavored drink. On November 10, the FDACS Bureau of Food Laboratories reported that one sample contained 9.8 ppb of benzene and the other sample contained 14.4 ppb, resulting in FDACS inspectors immediately stopping sales of the 459 gallons remaining at Spring Lake Water. The food entity issued a recall notice and provided FDACS with a list of all customers who received the implicated product for effectiveness checks. The food entity provided FDACS with traceback information on the beverage bases and ingredients used to produce the implicated product.

Conclusions and Recommendations

These illnesses appeared to be associated with the consumption of Rico Splash orange-flavored drink on September 23. The flavored drink was confirmed to be adulterated with benzene. Symptoms described by the cases were consistent with other documented benzene poisonings. Because of the rapid coordinated investigation by FDACS and DOH, the food entity issued a recall notice and the adulterated product was removed from the market preventing any further illnesses from occurring. At the time of this report, the source of the benzene has not been identified, Spring Lake Water has stopped production of the flavored drink products, and the investigation is on-going.

Occupational Lead Poisoning Cluster at a Gun Range, Volusia County, December 2015

Authors

Sudha Rajagopalan, MPH; David Parfitt, MPH

Background

There is increasing evidence of the toxicity of lead for adults at low doses and its association with hypertension, adverse effects on renal function, cognitive dysfunction, and adverse female reproductive outcomes. In Florida, a blood lead level (BLL) ≥10 micrograms per deciliter (µg/dL) meets the surveillance case definition for lead poisoning. Adult lead poisoning is primarily caused by exposure to lead in the workplace or during certain hobbies where lead is used. Around 95% of BLLs ≥25 µg/dL are from occupational exposure. Indoor firing ranges are a source of lead exposure, and elevated BLLs among employees, their families, and customers occurs despite public health outreach efforts and comprehensive guidelines for controlling occupational lead exposure. On December 23, 2015, the Florida Department of Health in Volusia County (DOH-Volusia) received laboratory results for six residents with BLLs ranging from 12 to 31 µg/dL.

Methods

DOH-Volusia initiated an investigation that included reviewing laboratory results, interviewing employees of the gun range, and assessing the work environment.

Results

Investigation by DOH-Volusia identified that the six men with elevated BLLs were aged 28 to 40 years and worked as gun testers at an indoor firing range and firearms retailer in Daytona Beach in Volusia County. All six employees had undergone medical surveillance as required by the Occupational Safety and Health Administration. The six men did not report any symptoms of lead poisoning. Follow-up testing indicated that BLLs for five of the six the employees steadily declined after the initial test. Additional attempts to contact the employee whose BLLs did not decrease were unsuccessful. All employees reportedly wore appropriate respirators and operated in a properly ventilated indoor firing range; however, it was unclear whether the range had proper functioning ventilation shafts at the time the workers were exposed. Gathering additional information about renovation dates, written range maintenance protocol, gun range cleaning methods, and other possible sources of lead exposure among the gun range employees was challenging and incomplete.

Conclusions and Recommendations
This investigation highlighted the risk for lead exposure at indoor firing ranges despite federal regulations and specific guidelines pertaining to range design and operation. Recommendations were made to minimize employee exposure to lead, and the point of contact from the facility was educated on risks to employees and customers from airborne and surface lead exposure. Employees were advised to send family members for blood lead testing because of the potential for take-home lead exposures. DOH-Volusia additionally recommended the use of jacketed or lead-free bullets, use of a separate ventilation system for firing lanes, proper hygiene, a written protocol for range maintenance, and cleaning practices such as the use of wet mopping or high-efficiency particulate air (HEPA) vacuuming instead of dry sweeping to remove dust.

Elemental Mercury Poisoning Cluster in a Daycare, Hillsborough County, November 2015

Authors
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Background
On October 9, a 3-year-old boy (case 1) presented to an emergency department with a history of three weeks of anorexia, weight loss (about 2.7 kilograms), decreased activity, and abdominal and leg pain. During his hospital stay, he developed a maculopapular rash, tachycardia, hypertension, altered mental status, weakness, sweating, hand skin pilling, and swelling of the hands and feet. Several routine blood and urine laboratory tests were conducted including brain imaging studies with no significant findings. After excluding an initial diagnosis of rabies, heavy metal toxicity was suspected and laboratory tests were ordered after about four weeks. On November 11, urine mercury levels for case 1 were reported as 29.5 micrograms per liter (µg/L). On November 12, 2015, the Florida Department of Health in Hillsborough County (DOH-Hillsborough) was notified of the case by the Florida Poison Information Center Network. Children are at higher risk of mercury poisoning; therefore, it is important to investigate reports of mercury poisoning and identify sources of exposure.

Methods
The Florida Department of Environmental Protection (DEP) tested the home of case 1 on November 13 and the home daycare of case 1 on November 18. To identify additional cases, DOH-Hillsborough reviewed medical records; assessed the daycare in collaboration with other agencies; and conducted phone interviews with the daycare workers, visitors, and parents of the children. Additional children and adults were tested for mercury poisoning as part of the investigation.

Results
Subsequent investigation determined that the daycare owner had purchased an antique blood pressure cuff in early July 2015 as a toy for the children. Approximately three weeks later it was removed from the play area after the children pulled the device apart. The daycare owner was not aware of dangers of mercury used in a blood pressure cuff. Environmental assessment of the daycare identified high mercury vapor levels ranging from 50 to 87 micrograms per cubic meter ($\mu g/m^3$) in different areas of the daycare.

Remediation was completed on November 20 by the U.S. Environmental Protection Agency (EPA) by removing visible mercury, carpet, carpet pads, and other household items contaminated with mercury. Very little mercury was left in the broken blood pressure cuff. It was obtained during cleanup and sealed in a plastic bag to avoid further contamination. The floor was cleaned with an Epsom salt wash, and the daycare was ventilated after heating to remove any vapors of mercury. The daycare was opened after mercury levels dropped to recommended levels for residential cleanup (1 µg/m^3).

DOH-Hillsborough contacted parents of the children who attended or visited the daycare since July 2015, provided information about the mercury spill, and recommended mercury testing through their own health care provider. As children may have carried mercury out of the daycare on their shoes or clothes, parents were asked to bring their cars for mercury testing. No mercury was detected in any of these cars so no further testing of their homes was conducted.

Including case 1, 23 individuals were tested for mercury. Sixteen people (10 children, 3 visitors, and 3 workers) had elevated blood or urine mercury levels (≥10 µg/L). Thirteen met the DOH surveillance case definition (12 confirmed and 1 probable) based on elevated mercury levels and illness consistent with mercury poisoning. Ages of cases ranged from <1 to 71 years with a mean of 14.4 years. The majority were male (n=7, 53.8%), non-Hispanic white (n=13, 100%), and residents of Hillsborough County (n=11, 84.6%). Two cases (15.4%) were in residents of Pasco County. Nine people (69.2%) received chelation therapy with only one dose of oral succimer to increase removal of mercury from the body. Following treatment, five people’s urine mercury levels remained above the reference range. No one was chelated more than once.

Conclusion and Recommendations

Based on laboratory criteria (blood or urine level ≥10 µg/L) and clinical compatibility, 13 people met the DOH surveillance case definition for mercury poisoning. Blood pressure cuffs contain about 80 to 100 grams of elemental mercury per unit which volatilizes slowly at room temperature and exposure can occur by inhalation. Children are at higher risk of such exposure and health effects from mercury poisoning depending on magnitude, dose, and duration of exposure. DOH investigation of the index case’s daycare identified mercury levels above the Agency for Toxic Substances and Disease Registry suggested action level for mercury vapors in residential settings (1 µg/m^3). This finding was crucial to identifying and eliminating the source of exposure. As identified in case 1, a diagnosis of mercury poisoning should be considered by health care providers in cases of non-specific symptoms involving behavioral changes and several organ systems (e.g., gastrointestinal, neurological, dermal). It is also important to identify and eliminate the source of mercury exposure, which helps identify additional people with exposure and informs remediation efforts. Prevention is the key to reducing mercury poisoning. DOH has developed a fact sheet to educate daycare owners and others about the dangers of mercury in daycares (available at www.floridahealth.gov/environmental-health/mercury-spills/_documents/liquid-mercury-daycares.pdf).

Acute Sulfuryl Fluoride Poisoning in a Family, Martin County, August 2015

Authors

Prakash R. Mulay, MBBS, MPH; Grethel Clark, MPH; William L. Jackson, MD; Geoffrey M. Calvert, MD

Background

On August 19, 2015, the Florida Department of Health in Martin County (DOH-Martin) was notified by the Florida Poison Information Center Network and a local hospital of possible sulfuryl fluoride poisonings affecting a family in Martin County. Sulfuryl fluoride is a highly toxic gas fumigant used for termite control in homes and buildings. The U.S. Environmental Protection Agency (EPA) has classified sulfuryl fluoride as a restricted-use pesticide that can only be used by certified pest control operators. The structure to be fumigated is usually covered with a tarp or tent and sealed completely before releasing the gas. Chloropicrin, a colorless liquid lacrimating agent with a strong odor, is added to the gas fumigant as a warning agent to deter people from entering or remaining in an area that has been fumigated. Applicators post warning signs around the building. After fumigating for 2–72 hours, the tarp is removed and the structure is aerated using fans.

Methods

DOH-Martin initiated an investigation into exposure to sulfuryl fluoride associated with a house fumigation. The Florida Department of Agriculture and Consumer Services (FDACS) and the EPA Criminal Investigation Division also conducted an investigation after being notified of the incident by DOH. Medical records were reviewed and the father of the household was interviewed by DOH.

Results

On August 14, the house of a family of five (a grandmother, mother, father, son, and daughter) was fumigated with sulfuryl fluoride to eradicate a dry-wood termite infestation. At 4:00 p.m. on August 16, approximately 48 hours after the fumigation began, the family was permitted to reenter the house. That evening, the mother and son developed nausea and vomiting. By 6:00 a.m. the next morning, all family members had similar symptoms, prompting all family members except the father to visit a hospital emergency department. The grandmother, mother, and daughter were released the same day with diagnoses of chemical inhalation. The son, a previously healthy 9-year-old boy, had altered mental status, dysarthria, dystonia, rigidity, and hyperreflexia, but was alert and answering questions. He was treated with calcium gluconate to correct hypocalcemia; other laboratory tests were normal, and a urinary toxicology profile was negative. He was admitted to the pediatric intensive care unit and was intubated for the first two days of hospitalization for airway protection from aspiration. Computerized tomography scan of the brain showed no cerebral edema or evidence of bleeding. On August 18, he developed choreoathetosis that progressed to involve both arms, legs, and both sides of his face; a brain magnetic resonance imaging study was consistent with basal ganglia injury. He underwent two rounds of hemodialysis to assist with fluoride ion removal, although documentation of his serum fluoride concentration was not found in the medical record. After excluding carbon monoxide and heavy metal poisoning, anoxic brain injury, and metabolic disorders, the treating physicians attributed his neurologic findings to sulfuryl fluoride poisoning, manifested by basal ganglia necrosis. Because there is no specific antidote for sulfuryl fluoride poisoning, his management was supportive. Symptoms improved slightly during hospitalization, although dysarthria and choreoathetosis continued. On September 4, he was transferred to a rehabilitation facility where he experienced some additional improvement, but continued to have expressive aphasia and choreoathetoid movements of the face, trunk, and extremities. He was released on September 25.

On August 20, 2015, FDACS initiated an investigation and identified multiple violations related to the fumigation of the family's home, including failure to have functioning devices to measure sulfuryl fluoride concentrations and failure of the pest control operator to participate in the sulfuryl fluoride manufacturer's training and stewardship plan. Pest control operators are required to measure the level of sulfuryl fluoride remaining in each room of the fumigated space until all measurements are below the EPA-approved concentration of ≤1 parts per million before buildings are cleared for reentry. On September 29, FDACS revoked both the business license of the pest control company and certification of the pest control operator who conducted the fumigation. On March 10, 2016, the pest control company and two of its pest control operators pled guilty in federal court to the above-mentioned violations and others.

DOH determined that sulfuryl fluoride exposure was the most likely cause of illness among these five family members. According to the Florida surveillance case definition, four family members (grandmother, mother, daughter, and son) were classified as confirmed cases of pesticide-related illness, and the father was classified as a probable case.

Conclusions and Recommendations

Although sulfuryl fluoride is highly toxic and can cause severe injury if recommended safety measures are not followed, severe poisoning and death caused by sulfuryl fluoride are uncommon. Since 2010, only one other such case has been reported in Florida. Signs and symptoms of sulfuryl fluoride poisoning include irritation of the nose, eyes, and respiratory tract; dyspnea; numbness; weakness; nausea; vomiting; abdominal pain; slowed speech or motor movements; cough; restlessness; muscle twitching; seizures; and pulmonary edema.

The findings in this report are subject to limitations. Concentrations of sulfuryl fluoride were not measured at the house at the time of the incident and no laboratory tests were available to confirm exposure to sulfuryl fluoride. It is not known why only the son developed high-severity illness. It is possible he spent more time in less-ventilated parts of the house with higher sulfuryl fluoride concentrations or had higher susceptibility.

Although sulfuryl fluoride has been observed to cause basal ganglia injury in animals, this is the first report of basal ganglia injury in humans resulting from systemic sulfuryl fluoride poisoning. This exposure underscores the importance of strict compliance with pesticide label requirements. The EPA subsequently proposed revised rules for enhanced training and certification of pesticide applicators.

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 2015, the Florida Department of Health (DOH) 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) were required to submit such results for people ≥6 years old. All laboratories were still 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.
    - ◊ Samples for all suspected or confirmed tuberculosis cases are forwarded to the DOH 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
    - ◊ In addition to case-based 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.
- DOH partnered with one of the largest commercial laboratories in the state to receive susceptibility testing results for all *S. aureus* isolates tested there since 2004.

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.

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 431 *S. pneumoniae* invasive disease cases were reported to DOH in 2015 by health care providers and laboratories. Of those reported cases, 167 (39%) were classified as drug resistant because they had an isolate with at least intermediate resistance to at least one antibiotic.

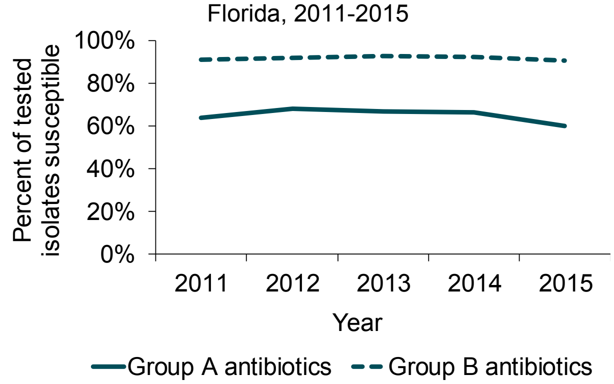
Antimicrobial susceptibility data are presented by Clinical and Laboratory Standards Institute (CLSI) groups A-C, age group, and geography. CLSI Group A includes antibiotics that are considered appropriate for inclusion in a routine, primary testing panel, as well as for routine reporting of results 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.

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 2011 to 2015, 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 64% in 2011 to 60% in 2015.
  - ◊ 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 2011 and 2015 to 93% in 2013 and 2014.
  - ◊ Group C (alternative antibiotics): susceptibility remained high in 2015 with 86% 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.

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, 2011-2015



Note that this figure includes data from cases that were reported to DOH by health care providers and laboratories as part of mandatory case-based disease 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.

- Most *S. pneumoniae* invasive disease cases are identified in adults ≥25 years old, so susceptibility data in children is sparse. Susceptibility to individual antibiotics is slightly lower in adults ≥65 years old than adults 25-64 years old for all antibiotics except levofloxacin (Table 2).

- The small number of isolates tested makes it difficult to draw conclusions about susceptibility patterns by region (Table 3). Susceptibility to erythromycin ranges from 36% in the east central region to 49% in the southeast region. Susceptibility to penicillin ranges from 47% in the southeast region to 80% in the west central region.

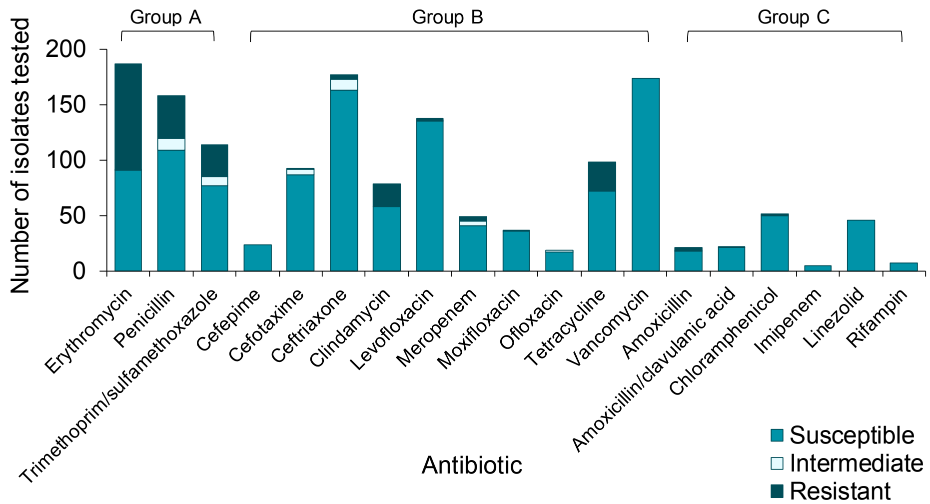
Table 1. Percent of Tested Isolates From Reported *S. pneumoniae* Invasive Disease Cases That Were Susceptible to Selected Antibiotics by Clinical and Laboratory Standards Institute (CLSI) Antibiotic Groups A and B,[1] Florida, 2011-2015

CLSI group[1]	Antibiotic name	2011		2012		2013		2014		2015	
		Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible
Group A	Erythromycin	1,017	57%	760	61%	841	58%	582	56%	187	49%
	Penicillin	1,164	69%	854	72%	967	72%	619	72%	158	69%
	Trimethoprim/sulfamethoxazole	841	67%	578	72%	681	70%	463	73%	114	68%
Group B	Cefepime	156	94%	117	89%	157	96%	114	91%	24	--
	Cefotaxime	607	86%	432	88%	526	92%	330	93%	93	94%
	Ceftriaxone	1,103	91%	832	91%	901	93%	600	93%	177	92%
	Clindamycin	437	80%	309	83%	396	82%	307	81%	79	73%
	Levofloxacin	900	99%	690	99%	774	99%	568	99%	138	98%
	Meropenem	316	82%	235	85%	338	87%	230	89%	49	84%
	Moxifloxacin	297	100%	194	100%	194	99%	159	99%	37	97%
	Ofloxacin	87	97%	61	95%	55	96%	65	94%	19	--
	Tetracycline	701	77%	473	79%	566	81%	407	78%	98	73%
	Vancomycin	1,179	100%	882	100%	963	100%	655	100%	174	100%

Note that this table includes data from cases that were reported to DOH by health care providers and laboratories as part of mandatory case-based disease 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.
-- 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, 2015



Note that this table includes data from cases that were reported to DOH by health care providers and laboratories as part of mandatory case-based disease 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.

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, 2015

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	21	--	28	--	10	--	1	--	71	49%	56	41%
	Penicillin	20	--	22	--	13	--	1	--	61	67%	41	63%
	Trimethoprim/sulfamethoxazole	12	--	21	--	6	--	0	--	46	70%	29	--
Group B	Cefepime	5	--	1	--	1	--	0	--	11	--	6	--
	Cefotaxime	13	--	17	--	5	--	0	--	39	97%	19	--
	Ceftriaxone	21	--	31	90%	12	--	1	--	66	97%	46	85%
	Clindamycin	14	--	13	--	3	--	0	--	27	--	22	--
	Levofloxacin	13	--	19	--	8	--	1	--	56	96%	41	98%
	Meropenem	9	--	3	--	3	--	0	--	21	--	13	--
	Moxifloxacin	4	--	3	--	3	--	0	--	19	--	8	--
	Ofloxacin	1	--	1	--	1	--	0	--	12	--	4	--
	Tetracycline	14	--	15	--	3	--	0	--	44	59%	22	--
	Vancomycin	22	--	30	100%	10	--	1	--	64	100%	47	100%

Note that this table includes data from cases that were reported to DOH by health care providers and laboratories as part of mandatory case-based disease 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.
-- 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, 2015

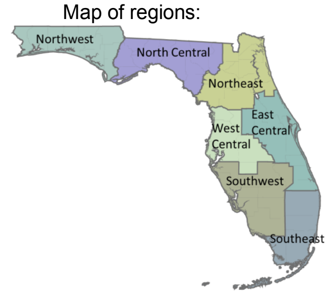
CLSI group[1]	Antibiotic name	Northwest		North central		Northeast		West central		East central		Southwest		Southeast	
		Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible	Number tested	Percent susceptible
Group A	Erythromycin	15	--	7	--	33	48%	42	67%	47	36%	4	--	39	49%
	Penicillin	7	--	5	--	28	--	40	80%	39	69%	3	--	36	47%
	Trimethoprim/sulfamethoxazole	10	--	6	--	27	--	21	--	18	--	5	--	27	--
Group B	Cefepime	6	--	0	--	16	--	0	--	1	--	0	--	1	--
	Cefotaxime	14	--	5	--	30	90%	19	--	18	--	0	--	7	--
	Ceftriaxone	15	--	7	--	32	91%	40	93%	43	95%	5	--	35	94%
	Clindamycin	7	--	6	--	18	--	11	--	10	--	3	--	24	--
	Levofloxacin	13	--	7	--	19	--	28	--	35	100%	2	--	34	97%
	Meropenem	13	--	1	--	16	--	2	--	12	--	0	--	5	--
	Moxifloxacin	9	--	1	--	0	--	12	--	11	--	0	--	4	--
	Ofloxacin	5	--	1	--	0	--	2	--	10	--	0	--	1	--
	Tetracycline	13	--	7	--	19	--	21	--	21	--	4	--	13	--
	Vancomycin	14	--	7	--	32	100%	41	100%	40	100%	3	--	37	100%

Note that this table includes data from cases that were reported to DOH by health care providers and laboratories as part of mandatory case-based disease 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.

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

Methicillin-resistant *S. aureus* (MRSA) is typically resistant to many antibiotics and has become more common in the last decade. Consequently, physicians rely heavily on vancomycin as the primary antibiotic for treating patients with serious MRSA infections, and resistance to vancomycin limits the available treatment options for MRSA. Vancomycin-intermediate *S. aureus* (VISA) and vancomycin-resistant *S. aureus* (VRSA) have acquired intermediate or complete resistance to vancomycin. VISA emerges when a patient with preexisting MRSA infection or colonization is exposed to repeated vancomycin use and the *S. aureus* strain develops a thicker cell wall. This resistance mechanism is not transferrable to susceptible strains. In contrast, VRSA emerges when a strain of *S. aureus* acquires the *vanA* gene from a vancomycin-resistant *Enterococcus* (VRE) organism. Recent exposure to vancomycin is not necessary. This type of gene-mediated resistance is theoretically transferable to susceptible strains or organisms, so there is potential for person-to-person transmission. No VRSA infection has ever been detected in Florida. Surveillance for VISA and VRSA is intended to identify infected people, evaluate their risk factors for infection, assess the risk of a patient transmitting infection to others, and to prevent such transmission. Additionally, it is important to track the emergence of a relatively new and rare clinically important organism. Few VISA cases are reported in Florida. For additional information about cases reported in Florida in 2015, please see Section 3: Narratives for Selected Reportable Diseases/Conditions of Infrequent Occurrence.

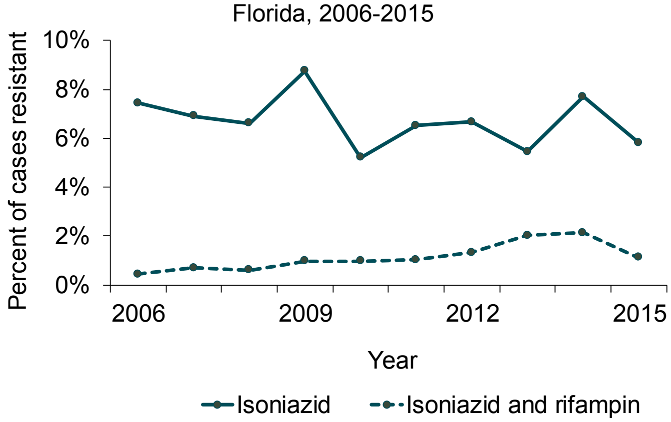
Mycobacterium tuberculosis

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 chemotherapy of drug-susceptible TB patients. Multidrug-resistant TB is caused by *M. tuberculosis* that is resistant to at least isoniazid and rifampin, the two most potent TB drugs. In 2015, 447 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 6% (26 cases) in 2015.
- Multidrug-resistant TB remains uncommon in Florida and resistance to both isoniazid and rifampin decreased in 2015 to 1.1% (5 cases).

Figure 3. Percent of Counted Tuberculosis Cases With Isolates Resistant to Isoniazid Alone and Isoniazid and Rifampin, Florida, 2006-2015



Note that this table includes data for all suspected or confirmed tuberculosis cases identified in Florida with specimens forwarded to the Bureau of Public Health Laboratories for additional testing.

Electronic Laboratory Reporting Surveillance

Laboratories participating in ELR are required to submit antimicrobial susceptibility testing for a variety of bacteria. DOH received results for 25,058 isolates from 72 clinical laboratories in 2015. Note that due to the high volume of susceptibility results received electronically, DOH 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. DOH identifies such errors or technical deficiencies and works with each laboratory to correct the data. Note that only the first isolate per person per 365 days was included in the analysis per CLSI guidelines.

Enterobacteriaceae

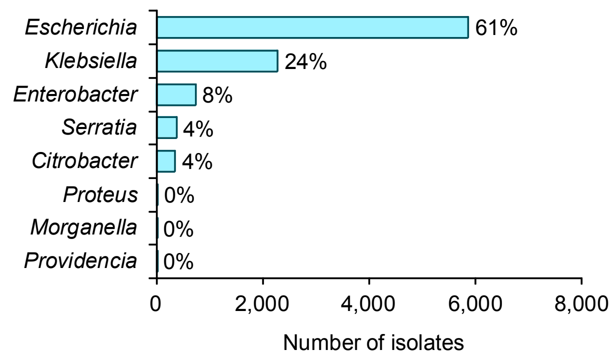
Enterobacteriaceae are a family of bacteria that includes many different organisms. Some of the more familiar organisms found in this family include *Escherichia coli*, *Klebsiella pneumoniae*, *Salmonella* species, and *Shigella* species. These species can cause a wide range of illness and cause some of the most common health care-associated 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; one report cites they can contribute to death in up to 50% of patients who become infected.

Key points for Enterobacteriaceae (Figures 4 and 5):

- DOH received results for 9,666 Enterobacteriaceae isolates in 2015 (Figure 4). The most common organisms received via ELR were *E. coli* (61%) and *Klebsiella* (24%).
- In 2015, 65 isolates met the definition of CRE.
- 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 33% for ampicillin to 91% for gentamycin and tobramycin.
- Group B (may warrant primary testing, but reported selectively): the percent of tested isolates susceptible to Group B antibiotics ranged from 41% for piperacillin to 100% for amikacin, ertapenem, and imipenem.
- Group C (alternative antibiotics): the percent of tested isolates susceptible to Group C antibiotics ranged from 72% for tetracycline to 91% for ceftazidime.

Figure 4. Number and Percent of Isolates Received by Electronic Laboratory Reporting by Genus, Florida, 2015 (N=9,666)



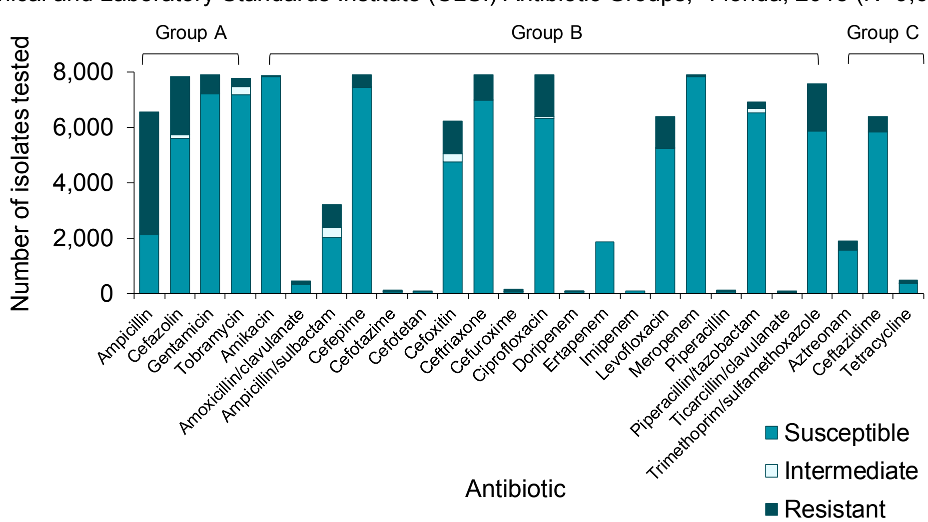
Key points for *E. coli* (Figure 6):

- A total of 5,859 *E. coli* isolates were tested for ≥1 antibiotic.
- Susceptibility was higher in *E. coli* than Enterobacteriaceae overall for ampicillin (47% versus 33%), cefoxitin (88% versus 75%), and cefazolin (84% versus 71%); >3,500 *E. coli* isolates were tested for each of these antibiotics.
- Susceptibility was lower in *E. coli* than Enterobacteriaceae overall for ciprofloxacin (70% versus 80%); >4,500 *E. coli* isolates were tested for ciprofloxacin .

Key points for *Klebsiella* species (Figure 7):

- A total of 2,283 *Klebsiella* isolates were tested for ≥1 antibiotic.
- Susceptibility was higher in *Klebsiella* than Enterobacteriaceae overall for ampicillin/sulbactam (78% versus 62%), cefazolin (85% versus 71%), cefoxitin (91% versus 75%), ciprofloxacin (92% versus 80%), levofloxacin (93% versus 82%), and trimethoprim/sulfamethoxazole (87% versus 78%); >900 isolates were tested for each of these antibiotics.

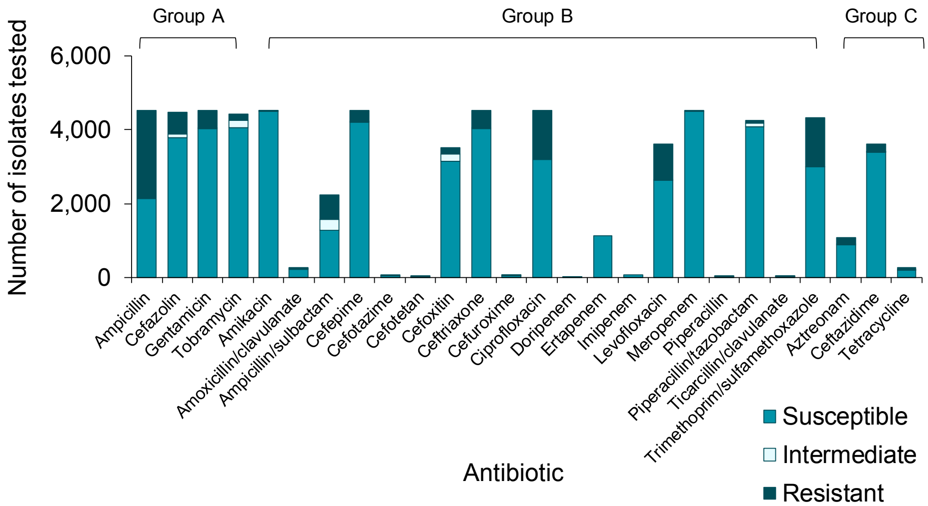
Figure 5. Antibiotic Susceptibility Patterns for Enterobacteriaceae Isolates Received by Clinical and Laboratory Standards Institute (CLSI) Antibiotic Groups,[1] Florida, 2015 (N=9,666)



Note that this table includes data reported to DOH via ELR.

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.

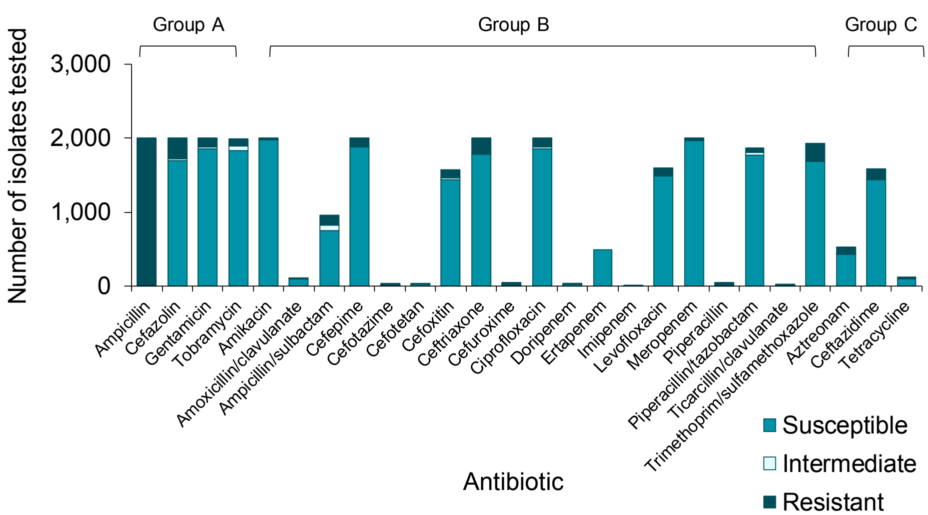
Figure 6. Antibiotic Susceptibility Patterns for *Escherichia coli* Isolates Received by Clinical and Laboratory Standards Institute (CLSI) Antibiotic Groups,[1] Florida, 2015 (N=5,859)



Note that this table includes data reported to DOH via ELR.

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, 2015 (N=2,283)



Note that this table includes data reported to DOH via ELR.

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.

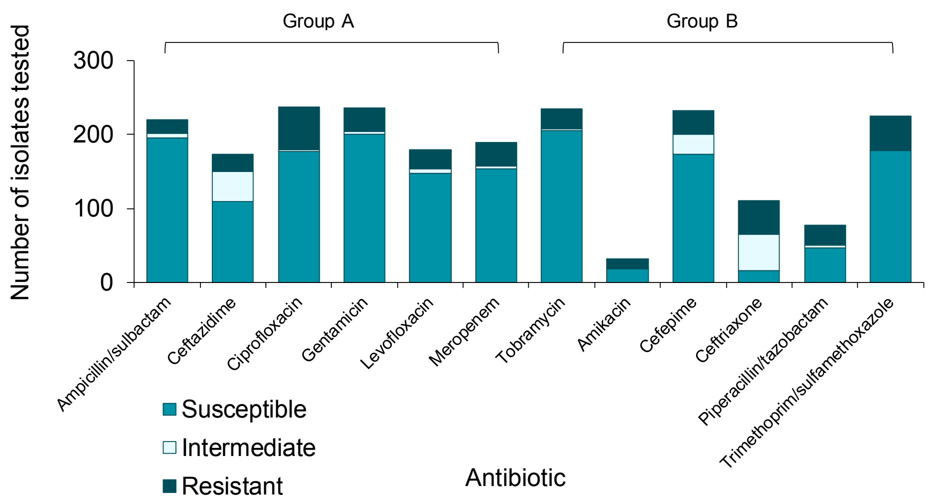
Acinetobacter Species

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 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 285 *A. baumannii* isolates were tested for ≥1 antibiotic.
- Susceptibility of *A. baumannii* to CLSI Group A and B antibiotics ranged from 10% for ceftriaxone to 88% for ampicillin/sulbactam.
- Of all *A. baumannii* isolates, 16% were multi-drug resistant (resistant to ≥3 classes of antibiotics).

Figure 8. Antibiotic Susceptibility Patterns for *A. baumannii* Isolates Received by Clinical and Laboratory Standards Institute (CLSI) Antibiotic Groups,[1] Florida, 2015 (N=285)



Note that this table includes data reported to DOH via ELR.

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. The 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 2015 (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, 2015

Class	Antibiotic	*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	--	--	--	--	--	--	--	--	33	0%	--	--	--	--	--	--
	Ampicillin	--	--	--	--	--	--	--	--	--	--	39	82%	1,358	97%	323	15%
	Ampicillin/sulbactam	223	88%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Aztreonam	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Cefazolin	--	--	170	0%	107	96%	172	1%	470	0%	--	--	--	--	--	--
	Cefepime	240	73%	170	99%	107	100%	173	95%	470	95%	--	--	--	--	--	--
	Cefotazime	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Cefotetan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Cefoxitin	--	--	129	0%	85	96%	170	0%	464	0%	--	--	--	--	--	--
	Ceftazidime	184	59%	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Ceftriaxone	153	10%	170	79%	107	98%	173	75%	469	79%	--	--	--	--	--	--
	Cefuroxime	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Doripenem	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Ertapenem	--	--	43	100%	--	--	--	--	--	--	--	--	--	--	--	--
	Imipenem	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Meropenem	189	81%	170	96%	105	100%	168	98%	470	98%	--	--	--	--	--	--
	Oxacillin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Penicillin	--	--	--	--	--	--	--	--	--	--	34	79%	1,223	97%	284	13%
	Piperacillin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Piperacillin/tazobactam	78	59%	49	82%	--	--	169	76%	465	83%	--	--	--	--	--	--
	Ticarcillin/clavulanate	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Non β-lactam	Amikacin	33	55%	168	98%	107	100%	171	100%	467	100%	--	--	--	--	--	--
	Chloramphenicol	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Ciprofloxacin	238	74%	170	88%	107	97%	172	94%	471	93%	--	--	--	--	--	--
	Clindamycin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Daptomycin	--	--	--	--	--	--	--	--	--	--	--	--	377	100%	37	97%
	Doxycycline	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Erythromycin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Gentamicin	238	84%	170	88%	107	100%	172	95%	470	93%	--	--	--	--	--	--
	Levofloxacin	183	81%	131	86%	86	99%	172	96%	471	94%	--	--	--	--	--	--
	Linezolid	--	--	--	--	--	--	--	--	--	--	--	--	1,175	100%	300	100%
	Minocycline	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Moxifloxacin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Ofloxacin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Rifampin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Tetracycline	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Tobramycin	237	87%	170	89%	107	99%	171	95%	470	93%	--	--	--	--	--	--
	Trimethoprim/sulfamethoxazole	225	79%	164	79%	105	100%	166	95%	448	87%	--	--	--	--	--	--
	Vancomycin	--	--	--	--	--	--	--	--	--	--	39	97%	1,368	95%	323	32%

Note that this table includes data reported to DOH via ELR.

-- 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, 2015

Class	Antibiotic	*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
	Amoxicillin/clavulanate	271	78%	--	--	85	95%	--	--	--	--	--	--	--	--
	Ampicillin	4,525	47%	271	66%	1,732	0%	259	0%	--	--	--	--	--	--
	Ampicillin/sulbactam	2,300	55%	--	--	815	80%	141	65%	--	--	--	--	--	--
	Aztreonam	--	--	--	--	--	--	--	--	282	69%	--	--	--	--
	Cefazolin	4,524	84%	--	--	1,732	87%	259	70%	--	--	336	0%	--	--
	Cefepime	4,528	93%	--	--	1,731	93%	259	98%	1,766	86%	338	99%	--	--
	Cefotazime	45	84%	241	97%	36	17%	--	--	--	--	--	--	--	--
	Cefotetan	--	--	--	--	36	50%	--	--	--	--	--	--	--	--
	Cefoxitin	3,585	88%	--	--	1,374	91%	191	92%	--	--	237	22%	--	--
	Ceftazidime	--	--	--	--	--	--	--	--	1,359	89%	--	--	--	--
β-lactam	Ceftriaxone	4,521	89%	58	98%	1,730	88%	259	89%	--	--	336	95%	--	--
	Cefuroxime	64	70%	107	98%	39	21%	--	--	--	--	--	--	--	--
	Doripenem	--	--	--	--	--	--	--	--	38	58%	--	--	--	--
	Ertapenem	1,140	100%	--	--	411	100%	79	100%	--	--	108	100%	--	--
	Imipenem	63	100%	--	--	--	--	--	--	65	74%	--	--	--	--
	Meropenem	4,516	100%	--	--	1,732	98%	259	98%	1,753	89%	338	99%	--	--
	Oxacillin	--	--	--	--	--	--	--	--	--	--	--	--	88	27%
	Penicillin	--	--	--	--	--	--	--	--	--	--	--	--	88	7%
	Piperacillin	48	56%	--	--	39	8%	--	--	101	79%	--	--	--	--
	Piperacillin/tazobactam	4,303	95%	--	--	1,614	94%	255	94%	1,604	89%	--	--	--	--
	Ticarcillin/clavulanate	34	59%	--	--	--	--	--	--	--	--	--	--	--	--
	Amikacin	4,504	100%	--	--	1,727	99%	259	100%	1,760	96%	335	99%	--	--
	Chloramphenicol	--	--	256	98%	--	--	--	--	--	--	--	--	--	--
	Ciprofloxacin	4,528	70%	--	--	1,734	91%	259	99%	1,777	80%	338	96%	--	--
	Clindamycin	--	--	--	--	--	--	--	--	--	--	--	--	80	61%
	Daptomycin	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Doxycycline	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Erythromycin	--	--	--	--	--	--	--	--	--	--	--	--	81	28%
	Gentamicin	4,523	89%	--	--	1,735	92%	259	93%	1,776	88%	338	96%	--	--
Non β-lactam	Levofloxacin	3,622	72%	--	--	1,394	92%	191	99%	1,472	75%	242	96%	--	--
	Linezolid	--	--	--	--	--	--	--	--	--	--	--	--	81	100%
	Minocycline	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Moxifloxacin	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Ofloxacin	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Rifampin	--	--	--	--	--	--	--	--	--	--	--	--	81	94%
	Tetracycline	--	--	--	--	--	--	--	--	--	--	--	--	81	81%
	Tobramycin	4,524	90%	--	--	1,730	91%	259	93%	1,765	94%	337	88%	--	--
	Trimethoprim/sulfamethoxazole	4,317	69%	273	69%	1,659	86%	247	96%	--	--	321	99%	--	--
	Vancomycin	--	--	--	--	--	--	--	--	--	--	--	--	88	100%

Note that this table includes data reported to DOH via ELR.

-- 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 is still being improved and as of the time of this report, 2015 data were not sufficient for analysis. In the interim, DOH 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 2004, which 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* due to known resistance (excluded here).
    - ◊ Susceptibility to cefazolin decreased dramatically from 51% in 2014 to 26% in 2015.
    - ◊ Susceptibility to other β-lactam antibiotics has increased over the past five years, but is still low (56% for amoxicillin/clavulanic acid and 58% for oxacillin).
    - ◊ Empiric treatment of skin and soft tissue infections with β-lactam antibiotics is not recommended.
    - ◊ Susceptibility remained high to gentamicin (97%), linezolid (100%), tetracycline (92%), trimethoprim/sulfamethoxazole (96%), and vancomycin (100%).

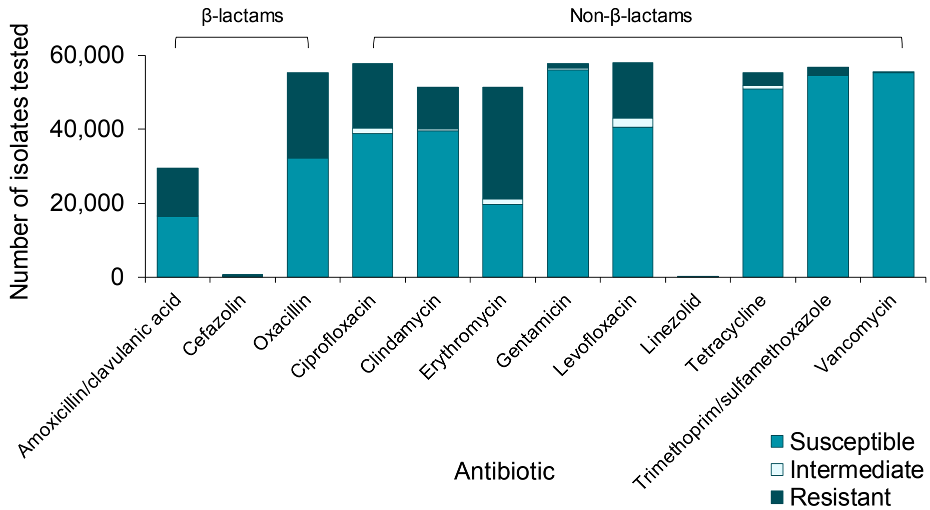
- Susceptibility to most antibiotics varied slightly by age group. Isolates from people aged 65 years and older have slightly reduced susceptibility to gentamicin, ciprofloxacin, levofloxacin, trimethoprim/sulfamethoxazole, and clindamycin (Table 6).
- North Florida had a higher proportion of MRSA isolates while central and south Florida had a lower proportion. This trend has been consistently observed since surveillance started in 2006 (Table 7, Map 1).

Table 5. Number Tested and Percent of *S. aureus* Isolates Susceptible to Selected Antibiotics, Commercial Outpatient Laboratory, Florida, 2011-2015

Antibiotic type	Antibiotic name	2011		2012		2013		2014		2015	
		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	54,998	51%	51,665	51%	50,178	53%	53,455	54%	29,442	56%
	Cefazolin	39,156	49%	37,199	51%	16,740	52%	717	51%	723	26%
	Oxacillin	54,817	51%	52,949	52%	51,579	53%	55,990	54%	55,303	58%
Non-β-lactams	Ciprofloxacin	44,629	68%	51,182	66%	55,714	66%	57,633	63%	57,895	67%
	Clindamycin	51,634	79%	49,440	78%	47,831	78%	52,191	76%	51,506	77%
	Erythromycin	51,639	34%	49,446	34%	47,843	35%	52,192	35%	51,519	38%
	Gentamicin	59,084	97%	57,298	97%	56,032	97%	57,629	96%	57,921	97%
	Levofloxacin	56,949	72%	54,356	71%	56,151	70%	57,690	68%	57,958	70%
	Linezolid	34,210	100%	8,279	100%	189	100%	262	100%	203	100%
	Tetracycline	54,872	93%	53,008	93%	51,678	93%	56,103	92%	55,353	92%
	Trimethoprim/sulfamethoxazole	57,573	98%	55,770	98%	54,468	97%	56,951	97%	56,821	96%
	Vancomycin	54,876	100%	52,996	100%	51,686	100%	56,097	100%	55,394	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, 2015



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, 2015

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	596	60%	1,965	46%	3,303	62%	2,913	60%	12,730	56%	7,869	55%
	Cefazolin	22	--	39	28%	36	25%	47	26%	293	26%	282	26%
	Oxacillin	1,000	63%	3,593	49%	6,237	65%	5,638	65%	23,601	58%	15,142	56%
Non-β-lactams	Ciprofloxacin	1,070	77%	3,729	69%	6,430	78%	5,792	78%	24,610	68%	16,174	57%
	Clindamycin	987	76%	3,553	82%	6,141	77%	5,278	79%	22,140	80%	13,317	70%
	Erythromycin	990	36%	3,558	29%	6,144	40%	5,280	43%	22,143	39%	13,314	37%
	Gentamicin	1,065	98%	3,726	98%	6,435	98%	5,792	98%	24,620	97%	16,184	95%
	Levofloxacin	1,073	80%	3,738	72%	6,434	81%	5,796	80%	24,638	71%	16,189	59%
	Linezolid	1	--	2	--	7	--	4	--	74	100%	113	100%
	Tetracycline	1,003	93%	3,600	92%	6,241	91%	5,636	93%	23,617	92%	15,164	92%
	Trimethoprim/sulfamethoxazole	1,058	99%	3,696	98%	6,351	99%	5,750	98%	24,177	97%	15,693	93%
	Vancomycin	1,005	100%	3,601	100%	6,240	100%	5,641	100%	23,634	100%	15,181	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.

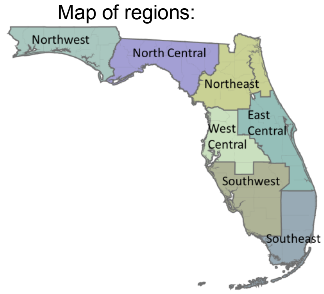
Table 7. Percent of *S. aureus* Isolates Susceptible to Selected Antibiotics by Region, Commercial Outpatient Laboratory, Florida, 2015

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	426	48%	420	45%	2,213	52%	3,044	53%	3,626	57%	3,582	58%	12,634	57%
	Cefazolin	12	--	16	--	59	5%	101	5%	116	16%	103	20%	241	46%
	Oxacillin	1,486	55%	1,380	53%	7,201	57%	9,602	57%	9,652	61%	7,116	61%	13,019	58%
Non-β-lactams	Ciprofloxacin	1,546	66%	1,452	71%	7,566	69%	10,108	66%	10,138	70%	7,459	67%	13,516	65%
	Clindamycin	1,395	82%	1,288	81%	6,705	79%	8,745	79%	8,927	78%	6,622	79%	12,228	72%
	Erythromycin	1,396	37%	1,287	34%	6,707	37%	8,750	39%	8,927	40%	6,624	42%	12,233	36%
	Gentamicin	1,543	99%	1,450	99%	7,567	99%	10,107	98%	10,144	98%	7,459	98%	13,522	94%
	Levofloxacin	1,549	69%	1,451	73%	7,572	72%	10,114	68%	10,157	72%	7,464	70%	13,533	69%
	Linezolid	1	--	1	--	16	--	31	100%	31	100%	10	--	97	100%
	Tetracycline	1,487	94%	1,380	92%	7,208	94%	9,611	93%	9,662	92%	7,119	93%	13,035	89%
	Trimethoprim/sulfamethoxazole	1,525	97%	1,418	97%	7,392	98%	9,860	94%	9,937	97%	7,334	95%	13,344	97%
	Vancomycin	1,488	100%	1,382	100%	7,206	100%	9,607	100%	9,664	100%	7,125	100%	13,064	100%

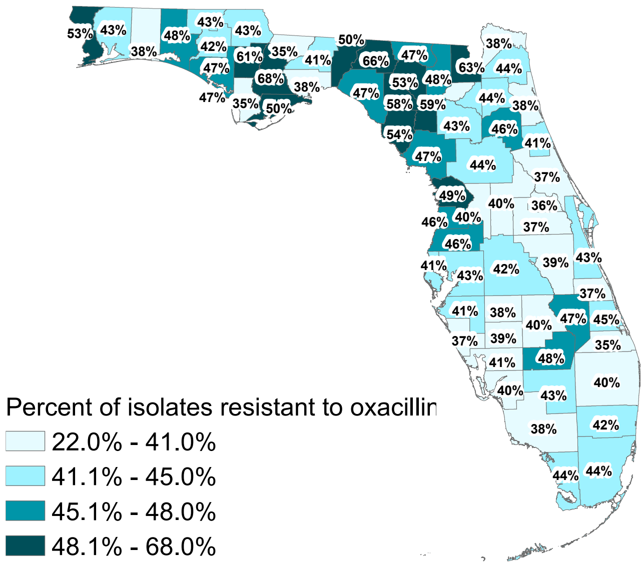
Note that this table includes data from a single commercial outpatient laboratory that receives isolates from health care providers across the state.

-- 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 Resistant to Oxacillin (MRSA) by County of Residence, Commercial Outpatient Laboratory, Florida, 2015



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 (28 isolates tested), Jefferson (22 isolates tested), and Liberty (25 isolates tested).

Section 6

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 each year, 5-20% of the U.S. population develop illness from influenza, 200,000 are hospitalized, and 3,000-49,000 die. 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 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 data and syndromic surveillance. Florida's syndromic surveillance system, ESSENCE-FL, collects chief complaint data from emergency departments and urgent care centers. During the 2015-16 influenza season, 265 facilities submitted data into ESSENCE-FL, capturing 96% 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 2015. In Florida, increased surveillance for influenza begins in week 40 (October 4, 2015) of one year and ends in week 20 of the following year (May 21, 2016). 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

Nationally, increased activity associated with the 2015-16 influenza season in the U.S. spanned from late December to late April, peaking in early March. Influenza activity in Florida mirrored these trends. In Florida, the 2015-16 influenza season peaked between December and February, later than it had in the past six seasons.

Influenza seasons typically have a predominately circulating strain, which can vary by season (Figure 1). Influenza A 2009 (H1N1) was the predominately circulating strain in Florida and nationwide in the 2015-16 season (Figure 2).

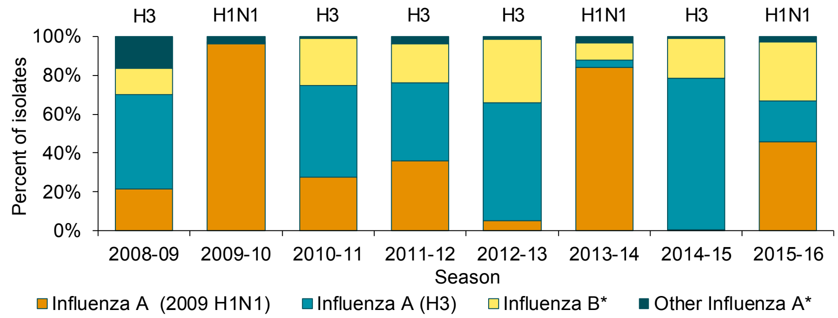
Figure 1. Predominately Circulating Influenza Strain by Season, 2008-09 to 2015-16, Florida

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)
2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16

In the U.S. and in Florida, influenza A (H3) viruses were the most commonly identified between October and December (Figure 3). By the end of the season, a larger proportion of influenza A (H3) viruses had been detected in Florida compared to the rest of the nation, suggesting that influenza A (H3) viruses may have circulated more widely in Florida than in the rest of the nation (Figure 4). Both in the U.S. and Florida, influenza B viruses circulated throughout the season and made up similar proportions of the total influenza-positive specimens detected (29.2% and 30.2% respectively). In Florida, influenza B Victoria viruses made up a larger proportion of the influenza B viruses for which lineage was determined compared to the rest of the nation, suggesting that influenza B Victoria lineage viruses may have circulated more widely in Florida than in the rest of the nation (Figure 5).

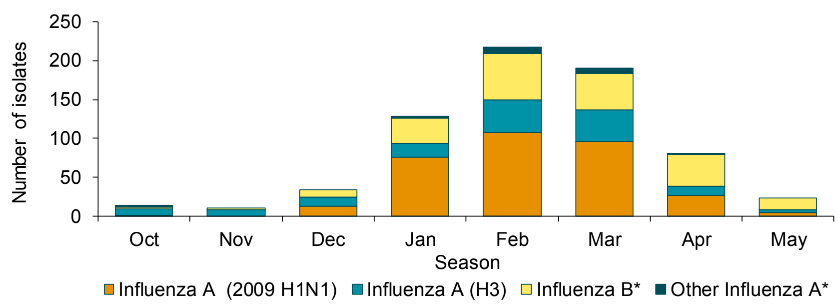
The 2015-16 influenza season marked the second post-pandemic season where influenza A 2009 (H1N1) was the predominantly circulating strain (the first was the 2013-14 season). Influenza activity in the 2015-16 season had a considerably higher and later peak in the percentage of people seeking medical care at emergency departments and urgent care centers for influenza and ILI than in the most recent influenza A 2009 (H1N1) season (Figure 6).

Figure 2: Influenza Subtype by Influenza Season, 2008-09 to 2015-16, 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 3: Influenza Subtype by Month of Influenza Season, 2015-16, 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 A Subtypes, 2015-16, Florida and U.S.

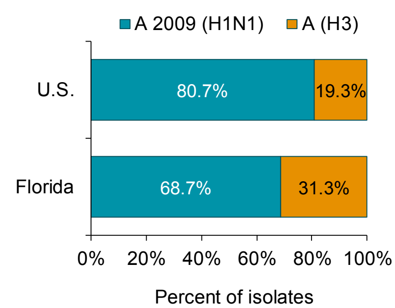


Figure 5: Influenza B Subtypes, 2015-16, Florida and U.S.

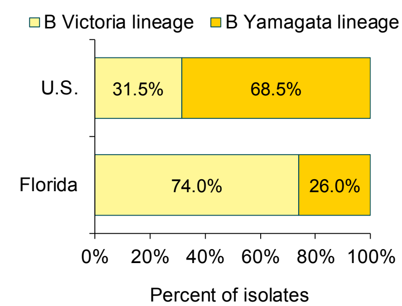
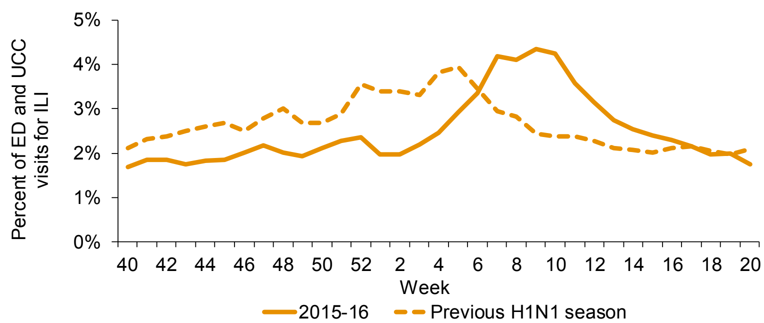
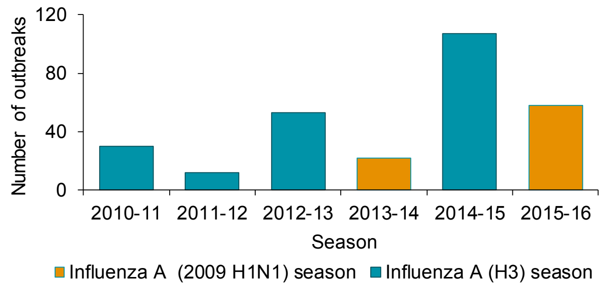


Figure 6: Percent of Weekly Emergency Department (ED) and Urgent Care Center (UCC) Visits for Influenza-Like Illness (ILI) from ESSENCE-FL (265 Facilities), Previous Influenza A 2009 (H1N1) Season (2013-14) and 2015-16, Florida



Outbreaks

Figure 7: Outbreaks by Influenza Season and Predominately Circulating Strain, 2010-11 to 2015-16, Florida



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, Figure 8). More than twice as many outbreaks were reported in the 2015-16 season (58 outbreaks) compared to the most recent influenza A 2009 (H1N1) season in 2013-14 (22 outbreaks). In the 2015-16 season, a larger proportion of outbreaks were reported in facilities serving children and the elderly compared to the 2013-14 season. Likewise, a larger proportion of outbreaks in facilities serving the elderly were reported in the 2015-16 season compared to the last season where influenza A 2009 (H1N1) circulated predominantly. In the 2015-16 season, half of all outbreaks were reported in March when peak influenza activity occurred (Figure 9). In the 2014-15 season, early season outbreaks were observed in facilities serving children before progressing into facilities serving other age groups. This pattern was not observed in the 2015-16 season. This could be partially due to the delay in influenza activity until much later in the season.

Figure 8: Outbreaks by Setting Type* and Season, Previous Influenza A 2009 (H1N1) Season (2013-14) and 2015-16, Florida

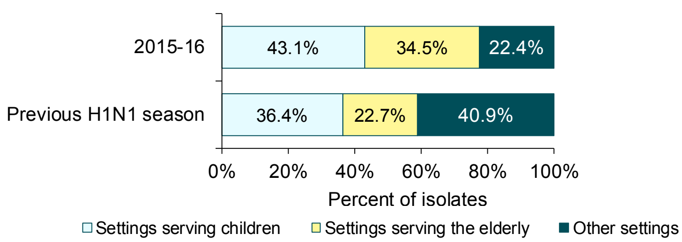
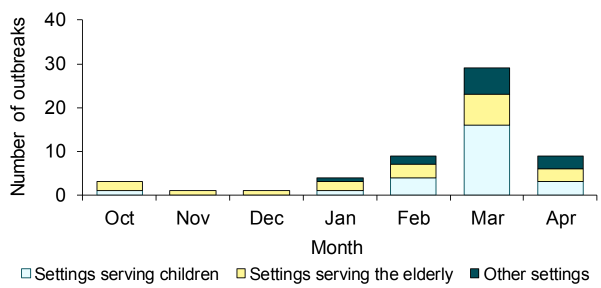


Figure 9: Outbreaks by Setting Type* and Month, 2015-16 Season, Florida

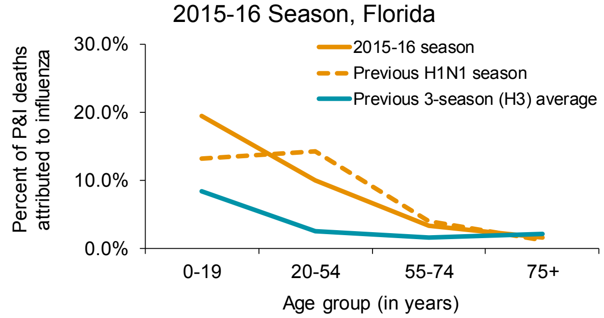


* Note that settings serving children include daycare facilities, child care facilities, child development centers, schools, head start facilities, and pre-kindergarten facilities. Settings serving the elderly include assisted living facilities, senior care facilities, nursing homes, and long-term care facilities.

Deaths

Influenza-associated pediatric deaths are reportable in Florida; typically two to eight deaths are reported each year. Seven deaths were reported in children in the 2015-16 season and one additional death was reported in early June. Of the eight children who died, five had not received their seasonal influenza vaccination and five had underlying health conditions. Specimens from children who die are frequently not typed, and given the small number of deaths each year, it is difficult to interpret how pediatric mortality is affected by strain.

Figure 10: Percentage of Pneumonia and Influenza (P&I) Deaths Attributed to Influenza by Age Group, Previous Influenza A 2009 (H1N1) Season (2013-14), Previous 3-Season A (H3) Average (2011-12, 2012-13, 2014-15), 2015-16 Season, Florida



Although not individually reportable, pneumonia and influenza deaths are monitored through death certificate data. Seasons in which influenza A 2009 (H1N1) viruses predominate have been associated with elevated morbidity and mortality in previously healthy young adults compared to seasons where influenza A (H3) predominates. Consistent with trends observed during the most recent influenza A 2009 (H1N1) season, the 2015-16 season was also characterized by elevated influenza mortality in people 20-54 years old. However, the highest proportion of pneumonia and influenza deaths attributed to influenza was observed in the 19 years and under age group (Figure 10). In both influenza A 2009 (H1N1) seasons, a notably higher proportion of pneumonia and influenza deaths were attributed to influenza in the 0-19- and 20-54-year age groups compared to the previous three-season influenza A (H3) average.

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Section 7

2015 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 2015. Note that DOH authors appear in bold font.

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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/

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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