

## Summary of Notifiable Infectious Diseases and Conditions — United States, 2015



**U.S. Department of Health and Human Services**  
Centers for Disease Control and Prevention

## CONTENTS

|   |     |
|---|-----|
| Preface.....  | 1   |
| Background .....  | 1   |
| Data Sources .....  | 2   |
| Interpreting Data.....  | 6   |
| Transitions in NNDSS Data Collection.....   | 7   |
| Method for Identifying Which Nationally Notifiable Infectious<br>Diseases and Conditions are Reportable ..... | 7   |
| International Health Regulations .....  | 7   |
| Future Plans for Publication of Data on Notifiable Infectious Diseases<br>and Conditions .....                | 8   |
| Highlights for 2015 .....   | 11  |
| PART 1  |     |
| Summary of Notifiable Diseases in the United States, 2015 .....   | 30  |
| PART 2  |     |
| Graphs and Maps for Selected Notifiable Diseases in the<br>United States, 2015 .....                          | 75  |
| Selected Reading for 2015 .....   | 132 |

The *MMWR* series of publications is published by the Center for Surveillance, Epidemiology, and Laboratory Services, Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services, Atlanta, GA 30329-4027.

**Suggested citation:** Centers for Disease Control and Prevention. [Summary of Notifiable Infectious Diseases and Conditions, 2015]. Published August 11, 2017 for MMWR Morb Mortal Wkly Rep 2015;64(No. 53):[inclusive page numbers].

### Centers for Disease Control and Prevention

Brenda Fitzgerald, M.D., *Director*  
 William R. Mac Kenzie, MD, *Acting Associate Director for Science*  
 Joanne Cono, MD, ScM, *Director, Office of Science Quality*  
 Chesley L. Richards, MD, MPH, *Deputy Director for Public Health Scientific Services*  
 Michael F. Iademarco, MD, MPH, *Director, Center for Surveillance, Epidemiology, and Laboratory Services*

### MMWR Editorial and Production Staff (Serials)

Sonja A. Rasmussen, MD, MS, *Editor-in-Chief*  
 Charlotte K. Kent, PhD, MPH, *Executive Editor*  
 Christine G. Casey, MD, *Editor*  
 Teresa F. Rutledge, *Managing Editor*  
 David C. Johnson, *Lead Technical Writer-Editor*  
 Jeffrey D. Sokolow, MA, *Project Editor*

Martha F. Boyd, *Lead Visual Information Specialist*  
 Maureen A. Leahy, Julia C. Martinroe,  
 Stephen R. Spriggs, Tong Yang,  
*Visual Information Specialists*  
 Quang M. Doan, MBA, Phyllis H. King,  
 Paul D. Maitland, Terraye M. Starr, Moua Yang,  
*Information Technology Specialists*

### MMWR Editorial Board

Timothy F. Jones, MD, *Chairman*  
 Matthew L. Boulton, MD, MPH  
 Virginia A. Caine, MD  
 Katherine Lyon Daniel, PhD  
 Jonathan E. Fielding, MD, MPH, MBA  
 David W. Fleming, MD

William E. Halperin, MD, DrPH, MPH  
 King K. Holmes, MD, PhD  
 Robin Ikeda, MD, MPH  
 Rima F. Khabbaz, MD  
 Phyllis Meadows, PhD, MSN, RN  
 Jewel Mullen, MD, MPH, MPA

Jeff Niederdeppe, PhD  
 Patricia Quinlisk, MD, MPH  
 Patrick L. Remington, MD, MPH  
 Carlos Roig, MS, MA  
 William L. Roper, MD, MPH  
 William Schaffner, MD

# Summary of Notifiable Infectious Diseases and Conditions — United States, 2015

Deborah A. Adams  
Kimberly R. Thomas, MPH  
Ruth Ann Jajosky, DMD  
Loretta Foster, MPH  
Gitangali Baroi, MPH  
Pearl Sharp  
Diana H. Onweh  
Alan W. Schley  
Willie J. Anderson

*for the Nationally Notifiable Infectious Conditions Group  
Division of Health Informatics and Surveillance, Office of Public Health Scientific Services, CDC*

## Preface

The *Summary of Notifiable Infectious Diseases and Conditions — United States, 2015* (hereafter referred to as the summary) contains the official statistics, in tabular and graphical form, for the reported occurrence of nationally notifiable infectious diseases and conditions in the United States for 2015. Unless otherwise noted, data are final totals for 2015 reported as of June 30, 2016. These statistics are collected and compiled from reports sent by U.S. state and territories, New York City, and District of Columbia health departments to the National Notifiable Diseases Surveillance System (NNDSS), which is operated by CDC in collaboration with the Council of State and Territorial Epidemiologists (CSTE). This summary is available at [https://www.cdc.gov/MMWR/MMWR\\_nd/index.html](https://www.cdc.gov/MMWR/MMWR_nd/index.html). This site also includes summary publications from previous years.

The Highlights section presents noteworthy epidemiologic and prevention information for 2015 for selected infectious diseases and conditions and additional information to aid in the interpretation of surveillance and infectious diseases and conditions-trend data. Part 1 contains tables showing incident (new) cases and incidence rates for the nationally notifiable infectious diseases and conditions reported during 2015; these tables do not include rows for conditions with zero cases reported in 2015 (Tables 1, 2, 3, 4, 5, 6, and 7).<sup>\*</sup> The tables provide the number of cases reported to CDC for 2015 and

the distribution of cases by geographic location, *MMWR* month (*MMWR* month is based upon *MMWR* year and week, which is described in the Interpreting Data section of this report), and demographic characteristics (e.g., age, sex, race, and ethnicity). Table 1 is new to the summary and displays the national incidence count and rate for each nationally notifiable disease and condition. Tables 2 and 3 reflect content format from previous summaries. Tables 4–7, which have been an integral component of the summary for decades, also include incidence rates. Part 2 contains graphs and maps that depict summary data for selected notifiable infectious diseases and conditions described in tabular form in Part 1. The following tables in previous releases are no longer included in the summary: a table with the historical reported incidence of notifiable diseases and conditions and a table enumerating deaths associated with specified notifiable infectious diseases and conditions reported to CDC's National Center for Health Statistics (NCHS), which were previously included in Part 3 of the summary. Historical notifiable disease data during 1944–2014 are available online in previous years' summaries ([https://www.cdc.gov/MMWR/MMWR\\_nd](https://www.cdc.gov/MMWR/MMWR_nd)). The Selected Reading section presents general and disease-specific references for notifiable infectious diseases and conditions. These references provide additional information on surveillance and epidemiologic concerns, diagnostic concerns, and infectious disease-control activities.

## Background

The infectious diseases and conditions designated by CSTE and CDC as nationally notifiable during 2015 are listed in this section. A notifiable infectious disease or condition is one for which regular, frequent, and timely information regarding individual cases is considered necessary for the prevention and control of the disease or condition. A brief history of the reporting of nationally notifiable infectious diseases and conditions in the United States is available at <https://wwwn.cdc.gov/nndss/history.aspx>.

<sup>\*</sup>No cases of anthrax; Crimean-Congo hemorrhagic fever; dengue hemorrhagic fever; diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; Ebola hemorrhagic fever; Guanarito hemorrhagic fever; Junin hemorrhagic fever; Luján virus; Machupo hemorrhagic fever; Marburg fever; poliomyelitis, paralytic; poliovirus infection, nonparalytic; Sabia-associated hemorrhagic fever; severe acute respiratory syndrome-associated coronavirus disease (SARS-CoV); smallpox; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; and yellow fever were reported in the United States during 2015.

**Corresponding author:** Kimberly Thomas, Division of Health Informatics and Surveillance, Center for Surveillance, Epidemiology and Laboratory Services, CDC. Telephone: 404-639-2290; E-mail: [kit9@cdc.gov](mailto:kit9@cdc.gov).

In 1961, CDC assumed responsibility for the collection of data on nationally notifiable diseases. Data are collected through NNDSS, which is neither a single surveillance system nor a method of reporting. Rather, it is a “system of systems,” which is coordinated by CDC at the national level across disease-specific programs to optimize data compilation, analysis, and dissemination of notifiable disease data. Monitoring surveillance data enables public health authorities to detect sudden changes in disease or condition occurrence and distribution, identify changes in agents and host factors, and detect changes in health care practices. National-level surveillance data are compiled from case notification reports of nationally notifiable infectious diseases and conditions submitted from the state, territory, and selected local health departments to CDC.

Cases are first identified through reports of infectious diseases and conditions from the local level to the state or territory. Legislation, regulation, or other rules in those jurisdictions require health care providers, hospitals, laboratories, and others to provide information on reportable conditions to public health authorities or their agents. Case reporting at the local level protects the public’s health by ensuring the proper identification and follow-up of cases. Public health workers ensure that persons who are already ill receive appropriate treatment; trace contacts who need vaccines, treatment, quarantine, or education; investigate and control outbreaks; eliminate environmental hazards; and close premises where disease transmission is believed to be ongoing.

Although infectious disease and condition reporting is mandated at the state, territory, and local levels by legislation or regulation, state and territory notification to CDC is voluntary. All U.S. state health departments, five territorial health departments, and two local health departments (New York City and District of Columbia) voluntarily notify CDC about nationally notifiable infectious diseases and conditions that are reportable in their jurisdictions; the data in the case notifications that CDC receives are collected by staff working on reportable disease and condition surveillance systems in local, state, and territorial health departments. Case notification of nationally notifiable infectious diseases and conditions helps public health authorities monitor the effect of these diseases and conditions, measure the disease and condition trends, assess the effectiveness of control and prevention measures, identify populations or geographic areas at high risk, allocate resources appropriately, formulate prevention strategies, and develop public health policies.

The list of nationally notifiable infectious diseases and conditions is revised periodically (Box 1). An infectious disease or condition might be added to the list as a new pathogen emerges, or a disease or condition might be removed as its incidence declines. Public health officials at state and territorial health

departments collaborate with CDC staff in determining which infectious diseases and conditions should be considered nationally notifiable. CSTE, with input from CDC, makes recommendations annually for additions and deletions to the list. The list of infectious diseases and conditions considered reportable in each jurisdiction varies over time and across jurisdictions. Current and historical national public health surveillance case definitions used for classifying and enumerating cases consistently at the national level across reporting jurisdictions are available at <https://wwwn.cdc.gov/nndss/conditions>.

## Data Sources

Provisional data on the reported occurrence of nationally notifiable infectious diseases and conditions are published weekly in *MMWR*. After each reporting year, staff in state and territorial health departments finalize reports of cases for that year with local or county health departments and reconcile the data with reports previously sent to CDC throughout the year.

These data are compiled in final form in this summary, which represents the official and archival counts of cases for each year. The data in these reports are approved by the appropriate chief epidemiologist from each submitting state or territory before being published in this summary. Data published in *MMWR Surveillance Summaries* or other surveillance reports produced by CDC programs might differ from data reported in this summary because of differences in the timing of reports, the source of the data, or surveillance methodology.

Data in this summary were derived primarily from reports transmitted to CDC from health departments in the 50 states, five territories, New York City, and the District of Columbia (reporting jurisdictions). Data were reported for *MMWR* weeks 1–52, which correspond to the period for the week ending January 10, 2015 through the week ending January 2, 2016. Information about how *MMWR* weeks are defined by jurisdictions is presented in the Interpreting Data section of this report. More information regarding notifiable infectious diseases and conditions, including national surveillance case definitions, is available at <https://wwwn.cdc.gov/nndss/conditions>. Policies for reporting notifiable infectious disease and condition cases can vary by disease, condition, or reporting jurisdiction. The case-status categories used to determine which cases reported to NNDSS are published in the tables are listed by infectious disease or condition in the publication criteria column of the 2015 NNDSS event code list (Box 2).

For a report of a nationally notifiable disease or condition to be published in *MMWR* (formerly described as “print criteria” and currently described as “publication criteria”), the reporting state or territory must have designated the infectious disease

**BOX 1. Infectious diseases and conditions designated by CSTE and CDC as nationally notifiable during 2015\***

|   |  |
|---|--|
| Anthrax   | Lyme disease   |
| Arboviral diseases, neuroinvasive and nonneuroinvasive <sup>†</sup>                 | Malaria  |
| California serogroup virus diseases   | Measles  |
| Chikungunya virus disease   | Meningococcal disease ( <i>Neisseria meningitidis</i> ) <sup>†</sup>   |
| Eastern equine encephalitis virus disease   | Mumps  |
| Powassan virus disease  | Novel influenza A virus infections   |
| St. Louis encephalitis virus disease  | Pertussis  |
| West Nile virus disease   | Plague   |
| Western equine encephalitis virus disease   | Poliomyelitis, paralytic   |
| Babesiosis  | Poliovirus infection, nonparalytic   |
| Botulism  | Psittacosis  |
| Foodborne   | Q fever  |
| Infant  | Acute  |
| Wound   | Chronic  |
| Other   | Rabies   |
| Brucellosis   | Human  |
| Campylobacteriosis <sup>†</sup>   | Animal   |
| Chancroid   | Rubella  |
| <i>Chlamydia trachomatis</i> infection  | Rubella, congenital syndrome   |
| Cholera (toxigenic <i>Vibrio cholerae</i> O1 or O139)                               | Salmonellosis  |
| Coccidioidomycosis  | Severe acute respiratory syndrome-associated coronavirus disease (SARS-CoV)  |
| Cryptosporidiosis   | Shiga toxin-producing <i>Escherichia coli</i> (STEC)   |
| Cyclosporiasis  | Shigellosis  |
| Dengue virus infections <sup>†</sup>  | Smallpox   |
| Dengue  | Spotted fever rickettsiosis  |
| Dengue-like illness   | Streptococcal toxic shock syndrome   |
| Severe dengue   | Syphilis <sup>‡</sup>  |
| Diphtheria  | Syphilis, congenital <sup>†</sup>  |
| Ehrlichiosis and anaplasmosis   | Syphilitic stillbirth  |
| <i>Anaplasma phagocytophilum</i> infection  | Tetanus  |
| <i>Ehrlichia chaffeensis</i> infection  | Toxic shock syndrome (other than streptococcal)  |
| <i>Ehrlichia ewingii</i> infection  | Trichinellosis   |
| Undetermined human ehrlichiosis/anaplasmosis  | Tuberculosis   |
| Giardiasis  | Tularemia  |
| Gonorrhea   | Typhoid fever (caused by <i>Salmonella enterica</i> serotype <i>typhi</i> )  |
| <i>Haemophilus influenzae</i> , invasive disease <sup>†</sup>                       | Vancomycin-intermediate <i>Staphylococcus aureus</i> (VISA) infection  |
| Hansen's disease (Leprosy)  | Vancomycin-resistant <i>Staphylococcus aureus</i> (VRSA) infection   |
| Hantavirus infection, non-Hantavirus pulmonary syndrome <sup>†</sup>                | Varicella (morbidity)  |
| Hantavirus pulmonary syndrome <sup>†</sup>  | Varicella (mortality)  |
| Hemolytic uremic syndrome, postdiarrheal  | Vibriosis (any species of the family <i>Vibrionaceae</i> , other than toxigenic <i>Vibrio cholerae</i> O1 or O139) |
| Hepatitis viral infections  | Viral hemorrhagic fever**  |
| Hepatitis A, acute  | Crimean-Congo hemorrhagic fever virus  |
| Hepatitis B, acute  | Ebola virus  |
| Hepatitis B, chronic  | Lassa virus  |
| Hepatitis B, perinatal infection  | Lujo virus   |
| Hepatitis C, acute  | Marburg virus  |
| Hepatitis C, past or present  | New World arenavirus – Guanarito virus   |
| HIV diagnoses <sup>§</sup>  | New World arenavirus – Junin virus   |
| Influenza-associated pediatric mortality  | New World arenavirus – Machupo virus   |
| Invasive pneumococcal disease ( <i>Streptococcus pneumoniae</i> , invasive disease) | New World arenavirus – Sabia virus   |
| Legionellosis   | Yellow fever   |
| Leptospirosis   |  |
| Listeriosis   |  |

\* This list reflects position statements approved in 2014 by CSTE for national surveillance, which were implemented in January 2015. National surveillance case definitions for these infectious diseases and conditions are available at <https://wwwn.cdc.gov/nndss/conditions>.

<sup>†</sup> Campylobacteriosis, Chikungunya virus disease (neuroinvasive and nonneuroinvasive), and Hantavirus infection, non-Hantavirus pulmonary syndrome were added to the notifiable disease list in 2015. For the other specified conditions, the year 2015 reflects a modified surveillance case definition for the specified diseases, as per approved 2014 CSTE position statements.

<sup>§</sup> AIDS (Acquired Immunodeficiency Syndrome) has been reclassified as HIV stage III.

<sup>‡</sup> Includes the following categories: primary, secondary, latent (including early latent and late latent), and late syphilis with clinical manifestations (including late benign syphilis and cardiovascular syphilis).

\*\* As of January 1, 2015, the event code for Viral Hemorrhagic Fevers (VHF) was retired and new event codes were used to report disease-specific VHF cases.

**BOX 2. Publication criteria and CDC organization responsible for finalizing the data with reporting jurisdictions for notifiable conditions reported to the National Notifiable Diseases Surveillance System, 2015**

| Code  | Notifiable condition  | Publication criteria <sup>*,†,§</sup> | CDC organization responsible for finalizing the data |
|-------|---|---------------------------------------|--|
| 11090 | <i>Anaplasma phagocytophilum</i>                            | Confirmed and probable                | OPHSS  |
| 10350 | Anthrax   | Confirmed and probable                | OPHSS  |
| 12010 | Babesiosis  | Confirmed and probable                | OPHSS  |
| 10530 | Botulism, foodborne   | Confirmed                             | OPHSS  |
| 10540 | Botulism, infant  | Confirmed                             | OPHSS  |
| 10550 | Botulism, other (includes wound)                            | Confirmed                             | OPHSS  |
| 10548 | Botulism, other (unspecified)                               | Confirmed                             | OPHSS  |
| 10549 | Botulism, wound   | Confirmed                             | OPHSS  |
| 10020 | Brucellosis   | Confirmed and probable                | OPHSS  |
| 10054 | California serogroup virus diseases, neuroinvasive          | Confirmed and probable                | NCEZID; DVBD   |
| 10061 | California serogroup virus diseases, nonneuroinvasive       | Confirmed and probable                | NCEZID; DVBD   |
| 11020 | Campylobacteriosis  | Confirmed and probable                | OPHSS  |
| 10273 | Chancroid   | All reports                           | NCHHSTP; DSTDP                                       |
| 10073 | Chikungunya virus disease                                   | Confirmed and probable                | NCEZID; DVBD   |
| 10274 | <i>Chlamydia trachomatis</i> infection                      | All reports                           | NCHHSTP; DSTDP                                       |
| 10470 | Cholera (toxigenic <i>Vibrio cholerae</i> O1 or O139)       | Confirmed                             | OPHSS  |
| 11900 | Coccidioidomycosis  | Confirmed                             | OPHSS  |
| 11640 | Crimean-Congo hemorrhagic fever                             | Confirmed                             | OPHSS  |
| 11580 | Cryptosporidiosis   | Confirmed and probable                | OPHSS  |
| 11575 | Cyclosporiasis  | Confirmed and probable                | OPHSS  |
| 10680 | Dengue  | Confirmed and probable                | NCEZID; DVBD   |
| 11705 | Dengue, severe  | Confirmed and probable                | NCEZID; DVBD   |
| 11704 | Dengue-like illness   | Confirmed and probable                | NCEZID; DVBD   |
| 10040 | Diphtheria  | Confirmed, probable, and unknown      | OPHSS  |
| 10053 | Eastern equine encephalitis virus disease, neuroinvasive    | Confirmed and probable                | NCEZID; DVBD   |
| 10062 | Eastern equine encephalitis virus disease, nonneuroinvasive | Confirmed and probable                | NCEZID; DVBD   |
| 11630 | Ebola hemorrhagic fever                                     | Confirmed                             | OPHSS  |
| 11088 | <i>Ehrlichia chaffeensis</i>                                | Confirmed and probable                | OPHSS  |
| 11089 | <i>Ehrlichia ewingii</i>                                    | Confirmed and probable                | OPHSS  |
| 11091 | Ehrlichiosis/Anaplasmosis, undetermined                     | Confirmed and probable                | OPHSS  |
| 11570 | Giardiasis  | Confirmed and probable                | OPHSS  |
| 10280 | Gonorrhea   | All reports                           | NCHHSTP; DSTDP                                       |
| 11648 | Guanarito hemorrhagic fever                                 | Confirmed                             | OPHSS  |
| 10590 | <i>Haemophilus influenzae</i> , invasive disease            | Confirmed, probable, and unknown      | OPHSS  |
| 10380 | Hansen's disease (Leprosy)                                  | Confirmed                             | OPHSS  |
| 11610 | Hantavirus infection, non-Hantavirus pulmonary syndrome     | Confirmed                             | OPHSS  |
| 11590 | Hantavirus pulmonary syndrome (HPS)                         | Confirmed                             | OPHSS  |
| 11550 | Hemolytic uremic syndrome, postdiarrheal (HUS)              | Confirmed and probable                | OPHSS  |
| 10110 | Hepatitis A, acute  | Confirmed                             | NCHHSTP; DVH   |
| 10100 | Hepatitis B, acute  | Confirmed                             | NCHHSTP; DVH   |
| 10105 | Hepatitis B, chronic  | Confirmed                             | NCHHSTP; DVH   |
| 10104 | Hepatitis B perinatal infection                             | Confirmed                             | NCHHSTP; DVH   |
| 10101 | Hepatitis C, acute  | Confirmed                             | NCHHSTP; DVH   |
| 10106 | Hepatitis C, past or present                                | Confirmed                             | NCHHSTP; DVH   |
|       | HIV diagnoses   | Confirmed                             | NCHHSTP; DHAP  |
| 11061 | Influenza-associated pediatric mortality                    | Confirmed                             | NCIRD; ID  |
| 10078 | Jamestown Canyon virus, neuroinvasive disease               | Confirmed and probable                | NCEZID; DVBD   |
| 10079 | Jamestown Canyon virus, nonneuroinvasive disease            | Confirmed and probable                | NCEZID; DVBD   |
| 11638 | Junin hemorrhagic fever                                     | Confirmed                             | OPHSS  |
| 10081 | La Crosse virus neuroinvasive disease                       | Confirmed and probable                | NCEZID; DVBD   |
| 10082 | La Crosse virus nonneuroinvasive disease                    | Confirmed and probable                | NCEZID; DVBD   |
| 11632 | Lassa fever   | Confirmed                             | OPHSS  |
| 10490 | Legionellosis   | Confirmed                             | OPHSS  |
| 10390 | Leptospirosis   | Confirmed and probable                | OPHSS  |
| 10640 | Listeriosis   | Confirmed                             | OPHSS  |
| 11644 | Lujo virus  | Confirmed                             | OPHSS  |
| 11080 | Lyme disease  | Confirmed and probable                | OPHSS  |
| 11637 | Machupo hemorrhagic fever                                   | Confirmed                             | OPHSS  |
| 10130 | Malaria   | Confirmed                             | OPHSS  |
| 11631 | Marburg fever   | Confirmed                             | OPHSS  |
| 10140 | Measles (rubeola), total                                    | Confirmed and unknown                 | OPHSS  |
| 10150 | Meningococcal disease ( <i>Neisseria meningitidis</i> )     | Confirmed and probable                | OPHSS  |
| 10180 | Mumps   | Confirmed, probable, and unknown      | OPHSS  |
| 11062 | Novel influenza A virus infections, initial detections of   | Confirmed                             | NCIRD; ID  |
| 10190 | Pertussis (whooping cough)                                  | Confirmed, probable, and unknown      | OPHSS  |

See box footnotes on the next page.



**BOX 2. (Continued) Publication criteria and CDC organization responsible for finalizing the data with reporting jurisdictions for notifiable conditions reported to the National Notifiable Diseases Surveillance System, 2015**

| Code  | Notifiable condition   | Publication criteria <sup>*,†,§</sup> | CDC organization responsible for finalizing the data |
|-------|--|---------------------------------------|--|
| 10440 | Plague   | All reports                           | OPHSS  |
| 10410 | Poliomyelitis, paralytic   | Confirmed                             | OPHSS  |
| 10405 | Poliovirus infection, nonparalytic   | Confirmed                             | OPHSS  |
| 10057 | Powassan virus disease, neuroinvasive  | Confirmed and probable                | NCEZID; DVBD   |
| 10063 | Powassan virus disease, nonneuroinvasive   | Confirmed and probable                | NCEZID; DVBD   |
| 10450 | Psittacosis (Ornithosis)   | Confirmed and probable                | OPHSS  |
| 10257 | Q fever, acute   | Confirmed and probable                | OPHSS  |
| 10258 | Q fever, chronic   | Confirmed and probable                | OPHSS  |
| 10340 | Rabies, animal   | Confirmed                             | NCEZID; DHCPP  |
| 10460 | Rabies, human  | Confirmed                             | NCEZID; DHCPP  |
| 10200 | Rubella  | Confirmed and unknown                 | OPHSS  |
| 10370 | Rubella, congenital syndrome (CRS)   | Confirmed, probable, and unknown      | OPHSS  |
| 11639 | Sabia-associated hemorrhagic fever   | Confirmed                             | OPHSS  |
| 11000 | Salmonellosis  | Confirmed and probable                | OPHSS  |
| 10575 | Severe acute respiratory syndrome-associated coronavirus (SARS-CoV) disease  | Confirmed and probable                | OPHSS  |
| 11563 | Shiga toxin-producing <i>Escherichia coli</i> (STEC)   | Confirmed and probable                | OPHSS  |
| 11010 | Shigellosis  | Confirmed and probable                | OPHSS  |
| 11800 | Smallpox   | Confirmed and probable                | OPHSS  |
| 10250 | Spotted fever rickettsiosis  | Confirmed and probable                | OPHSS  |
| 10051 | St. Louis encephalitis virus disease, neuroinvasive  | Confirmed and probable                | NCEZID; DVBD   |
| 10064 | St. Louis encephalitis virus disease, nonneuroinvasive   | Confirmed and probable                | NCEZID; DVBD   |
| 11700 | Streptococcal toxic shock syndrome (STSS)  | Confirmed and probable                | OPHSS  |
| 11723 | Invasive pneumococcal disease ( <i>Streptococcus pneumoniae</i> , invasive disease) (all ages)                     | Confirmed                             | OPHSS  |
| 10316 | Syphilis, congenital   | All reports                           | NCHHSTP; DSTDP                                       |
| 10313 | Syphilis, early latent   | All reports                           | NCHHSTP; DSTDP                                       |
| 10314 | Syphilis, late latent  | All reports                           | NCHHSTP; DSTDP                                       |
| 10319 | Syphilis, late with clinical manifestations (including late benign syphilis and cardiovascular syphilis)           | All reports                           | NCHHSTP; DSTDP                                       |
| 10311 | Syphilis, primary  | All reports                           | NCHHSTP; DSTDP                                       |
| 10312 | Syphilis, secondary  | All reports                           | NCHHSTP; DSTDP                                       |
| 10310 | Syphilis, total primary and secondary  | All reports                           | NCHHSTP; DSTDP                                       |
| 10210 | Tetanus  | All reports                           | OPHSS  |
| 10520 | Toxic shock syndrome (other than streptococcal) (TSS)  | Confirmed and probable                | OPHSS  |
| 10270 | Trichinellosis   | Confirmed and probable                | OPHSS  |
| 10220 | Tuberculosis   | Confirmed                             | NCHHSTP; DTE   |
| 10230 | Tularemia  | Confirmed and probable                | OPHSS  |
| 10240 | Typhoid fever (caused by <i>Salmonella typhi</i> )   | Confirmed and probable                | OPHSS  |
| 11663 | Vancomycin-intermediate <i>Staphylococcus aureus</i> (VISA)  | Confirmed                             | OPHSS  |
| 11665 | Vancomycin-resistant <i>Staphylococcus aureus</i> (VRSA)   | Confirmed                             | OPHSS  |
| 10030 | Varicella morbidity (chickenpox)   | Confirmed and probable                | OPHSS  |
|       | Varicella mortality  | Confirmed and probable¶               | NCIRD; DVD   |
| 11545 | Vibriosis (any species of the family <i>Vibrionaceae</i> , other than toxigenic <i>Vibrio cholerae</i> O1 or O139) | Confirmed and probable                | OPHSS  |
| 10056 | West Nile virus disease, neuroinvasive   | Confirmed and probable                | NCEZID; DVBD   |
| 10049 | West Nile virus disease, nonneuroinvasive  | Confirmed and probable                | NCEZID; DVBD   |
| 10052 | Western equine encephalitis virus disease, neuroinvasive   | Confirmed and probable                | NCEZID; DVBD   |
| 10065 | Western equine encephalitis virus disease, nonneuroinvasive  | Confirmed and probable                | NCEZID; DVBD   |
| 10660 | Yellow fever   | Confirmed and probable                | NCEZID; DVBD   |

**Abbreviations:** OPHSS = Office of Public Health Scientific Services; NCEZID = National Center for Emerging and Zoonotic Infectious Diseases; DVBD = Division of Vector-Borne Diseases; NCHHSTP = National Center for HIV/AIDS, Viral Hepatitis, STD and TB Prevention; DSTDP = Division of STD Prevention; DHCPP = Division of High Consequence Pathogens and Pathology; DVH = Division of Viral Hepatitis; DHAP = Division of HIV/AIDS Prevention; NCIRD = National Center for Infectious and Respiratory Diseases; ID = Influenza Division; DTE = Division of Tuberculosis Elimination; DVD = Division of Viral Diseases.

\* An unknown case classification status is used when a reporting jurisdiction sends aggregate counts of cases or when the surveillance information system of a reporting jurisdiction does not capture case classification data. In both situations, cases are verified to meet the case classification (e.g., confirmed, probable, and suspected) specified in the publication criteria.

† Publication criteria for the National Notifiable Diseases Surveillance System (NNDSS): for a case report of a nationally notifiable disease to be published in MMWR, the reporting state or territory must have designated the disease reportable in their state or territory for the year corresponding to the year of report to CDC. After this criterion is met, the disease-specific criteria listed in Box 2 are applied. When the above-listed table indicates that all reports will be earmarked for publication, this means that cases designated with unknown or suspect case confirmation status will be published just as probable and confirmed cases will be published. Because CSTE position statements customarily are not finalized until July of each year, NNDSS data for the newly added conditions usually are not available from all reporting jurisdictions until January of the year following the approval of the CSTE position statement.

§ Based on case classification status.

¶ Publication criteria determined by reporting jurisdictions.

or condition reportable in their state or territory for the year corresponding to the year of report to CDC. After this criterion is met, the infectious disease- or condition-specific criteria listed in Box 2 are applied. When “all reports” is listed for the publication criteria, this means that cases designated with unknown or suspect case confirmation status will be included in the counts along with probable and confirmed cases. Data for new nationally notifiable infectious diseases or conditions are not usually available from reporting jurisdictions until January of the year following the approval of the CSTE position statement. In addition, CDC must have Office of Management and Budget Paperwork Reduction Act approval to request data from reporting jurisdictions (1). As a result, there is usually a delay between the time that CSTE recommends a condition be made nationally notifiable and the time CDC can aggregate the data submitted by reporting jurisdictions.

Final data for certain infectious diseases and conditions are derived from the surveillance records of the CDC program. Requests for further information regarding these data should be directed to the appropriate program. The CDC programs responsible for finalizing the data used for the final *MMWR* tables for each condition are listed (Box 2).

Population estimates were obtained from the NCHS post-censal estimates of the resident population of the United States during July 1, 2015–July 1, 2016, by year, county, single year of age (range: 0 to ≥85 years), bridged-race (white, black or African American, American Indian or Alaska Native, Asian, or Pacific Islander), Hispanic ethnicity (not Hispanic or Latino, Hispanic or Latino), and sex (Vintage 2015), prepared under a collaborative arrangement with the U.S. Census Bureau. Population estimates for states as of June 28, 2016 are available at [https://www.cdc.gov/nchs/nvss/bridged\\_race/data\\_documentation.htm](https://www.cdc.gov/nchs/nvss/bridged_race/data_documentation.htm). Population estimates for territories are from the 2015 U.S. Census Bureau International Data Base and are available at <https://www.census.gov/population/international/data/idb/informationGateway.php>. The choice of population denominators for incidence reported in *MMWR* is based on the availability of census population data at the time of publication preparation and the desire for consistent use of the same population data to compute incidence reported by different CDC programs.

Incidence in this summary was calculated as the number of reported cases for each infectious disease or condition divided by either the U.S. resident population for the specified demographic population or the total U.S. resident population, multiplied by 100,000. For territories, incidence in this summary was calculated as the number of reported cases for each infectious disease or condition divided by either the territorial resident population for the specified demographic population or the total territorial resident population, multiplied by 100,000. When a nationally notifiable infectious disease or

condition was associated with a specific restriction (e.g., age, sex, race, or ethnicity), the same restriction was applied to the population in the denominator of the incidence calculation. In addition, population data from states in which the disease or condition was not reportable or was not available are excluded from incidence calculations. Unless otherwise stated, disease totals for the United States do not include data for American Samoa, Guam, Puerto Rico, the Commonwealth of the Northern Mariana Islands, or the U.S. Virgin Islands.

## Interpreting Data

The completeness of information on notifiable infectious diseases and conditions was highly variable and related to the disease or condition being reported (2–9). Incidence data in this summary are presented by the *MMWR* week and year ([https://wwwn.cdc.gov/nndss/document/MMWR\\_Week\\_overview.pdf](https://wwwn.cdc.gov/nndss/document/MMWR_Week_overview.pdf)) assigned by the state or territorial health department, with some exceptions, including human immunodeficiency virus (HIV) (presented by date of diagnosis), tuberculosis (presented by date that the reporting jurisdiction verified that the case met the criteria in the national surveillance case definition), domestic arboviral diseases (presented by date of illness onset), and varicella deaths (presented by date of death). The calendar days corresponding to *MMWR* weeks for *MMWR* year 2015 are available at <https://wwwn.cdc.gov/nndss/document/w2014-15.pdf>. *MMWR* month is derived from *MMWR* weeks. Data were reported by the jurisdiction of the person’s “usual residence” at the time of disease or condition onset (<https://wwwn.cdc.gov/nndss/document/11-SI-04.pdf>). For certain nationally notifiable infectious diseases and conditions, surveillance data are reported independently to various CDC programs. For this reason, surveillance data reported by other CDC programs might vary from data reported in this summary because of differences in 1) the date used to aggregate data (e.g., date of report or date of disease or condition occurrence), 2) the timing of reports, 3) the source of the data, 4) surveillance case definitions, and 5) policies regarding case jurisdiction (i.e., which jurisdiction should submit the case notification to CDC). In addition, the “date of disease occurrence” of conditions might vary. For infectious diseases, the meaning of the “date of disease occurrence” varies across jurisdictions and by disease and might be a date of symptom or disease onset, diagnosis, laboratory result, reporting of a case to a jurisdiction, or notification of a case to CDC.

Data reported in this summary are useful for analyzing infectious disease or condition trends and determining relative infectious disease or condition numbers. However, reporting practices affect how these data should be interpreted. Infectious



disease and condition reporting is likely incomplete, and completeness might vary depending on the infectious disease or condition and reporting state. The degree of completeness of data reporting also might be influenced by the diagnostic facilities available, control measures in effect, public awareness of a specific infectious disease or condition, and the resources and priorities of state and local officials responsible for public health surveillance and for controlling infectious diseases and conditions. Finally, factors such as changes in methods for public health surveillance, introduction of new diagnostic tests, or discovery of new infectious disease or condition entities can cause changes in reporting that are independent of the actual incidence of infectious disease or condition.

Public health surveillance data are published for selected racial and ethnic populations because these characteristics can be risk markers for certain notifiable infectious diseases or conditions. Race and ethnicity data also can be used to highlight populations for focused prevention programs. However, caution must be used when drawing conclusions from reported race and ethnicity. Different racial and ethnic populations might have different patterns of access to health care, potentially resulting in data that are not representative of actual infectious disease or condition incidence among specific population groups. In addition, not all race and ethnicity data are collected or reported uniformly for all infectious diseases and conditions; for example, the recommended standard for classifying a person's race or ethnicity is based on self-report. However, this procedure might not always be followed.

Surveillance data reported to NNDSS are in either individual case-specific form or summary form (i.e., aggregated data for a group of cases). Summary data often lack demographic information (e.g., race); therefore, the demographic-specific rates presented in this summary might be underestimated.

## Transitions in NNDSS Data Collection

Data collection in NNDSS has undergone various transitions over time. Before 1990, data were reported to CDC as cumulative counts rather than as individual case reports. In 1990, using the National Electronic Telecommunications System for Surveillance (or NETSS), states began electronically capturing and reporting individual cases to CDC without personal identifiers. In 2001, CDC launched the National Electronic Disease Surveillance System (NEDSS) to promote the use of data and information system standards that advance the development of efficient, integrated, and interoperable surveillance information systems at the local, state, territorial, and national levels. Reporting jurisdictions now use integrated surveillance information systems based on NEDSS architectural standards

to submit NNDSS data to CDC. Additional information concerning NEDSS is available at <https://wwwn.cdc.gov/nndss/nedss.aspx>.

In 2013, CDC began to conceptualize improvements to strengthen and modernize the technical infrastructure supporting NNDSS. In 2014, CDC and selected states began work on the NNDSS Modernization Initiative (NMI), a multiyear commitment to enhance NNDSS surveillance capabilities. An important benefit for public health decision making will be the ability to acquire higher quality data that are more comprehensive and timely. Through NMI, CDC and its state partners will increase the robustness of the NNDSS technological infrastructure so that it is based on interoperable, standardized data and data exchange mechanisms. Additional information is available at <https://www.cdc.gov/nmi>.

## Method for Identifying Which Nationally Notifiable Infectious Diseases and Conditions are Reportable

Reportable conditions are determined by the laws and regulations of each state, territory, or local jurisdiction. Some infectious diseases and conditions deemed nationally notifiable by CSTE might not be designated as reportable in certain states or jurisdictions. Only data from reporting states, territories, and jurisdictions that designated the infectious disease or condition as reportable are included in the summary tables. This ensures that the data displayed in this summary are from population-based surveillance efforts and are generally comparable across states, territories, and other jurisdictions. When a CSTE- and CDC-recommended nationally notifiable disease or condition is not reportable by state, territory, or other jurisdiction, an “N” indicator for “not reportable” is inserted in the table or map for the specified reporting state, territory, or jurisdiction and applicable year. Each year, the NNDSS Data Processing Team solicits information from each NNDSS reporting state, territory, and jurisdiction (all 50 U.S. states, the District of Columbia, New York City, and five U.S. territories) about whether reporting is mandated by law or regulation for each nationally notifiable condition.

## International Health Regulations

At its annual meeting in June 2007, CSTE approved a position statement that supports implementation of International Health Regulations (IHR) in the United States (10). CSTE approval followed the adoption of revised IHR in May 2005

by the World Health Assembly (11) that went into effect in the United States on July 18, 2007. This international legal instrument governs the role of the World Health Organization (WHO) and its member countries, including the United States, in identifying, responding to, and sharing information about events that might constitute a Public Health Emergency of International Concern (PHEIC). A PHEIC is an extraordinary event that constitutes a public health risk to other countries through international spread of disease and potentially requires a coordinated international response. All WHO member countries are required to notify WHO of a potential PHEIC. WHO makes the final determination about the existence of a PHEIC.

Health care providers in the United States are required to report diseases, conditions, and outbreaks determined to be reportable by local, state, or territorial law or regulation. In addition, all health care providers should work with their local, state, or territorial health agencies to identify and report events occurring in their location that might constitute a PHEIC. U.S. state and territorial departments of health report information about a potential PHEIC to the most relevant federal agency responsible for monitoring such an event. In the case of human diseases, the U.S. state or territorial departments of health notifies CDC through existing formal and informal reporting mechanisms (10). CDC further analyzes the event by use of the decision algorithm in Annex 2 of the IHR and notifies the U.S. Department of Health and Human Services (DHHS) Secretary's Operations Center (SOC), as appropriate. The DHHS SOC is responsible for reporting a potential PHEIC to WHO.

In the United States, DHHS has the lead role in carrying out IHR, in cooperation with multiple federal departments and agencies. When a potential PHEIC is identified, the United States has 48 hours to assess the risk for the reported event. If authorities determine that a potential PHEIC exists, the United States, as with all WHO member countries, has 24 hours to report the event to WHO.

An IHR decision algorithm (Annex 2 of the IHR) was developed to help countries determine whether an event should be reported. If any two of the following four questions are answered in the affirmative, then a potential PHEIC exists and WHO should be notified:

- Is the public health impact of the event serious?
- Is the event unusual or unexpected?
- Is there a significant risk for international spread?
- Is there a significant risk for international travel or trade restrictions?

The revised IHR reflects a conceptual shift from the use of a predefined disease list to a framework of reporting and responding to events on the basis of an assessment of public health criteria, including seriousness, unexpectedness, and international travel and trade implications. A PHEIC is an event that falls

within those criteria (further defined in a decision algorithm in Annex 2 of the revised IHR); however, any one of the following four conditions always constitutes a PHEIC and do not require the use of the IHR decision instrument in Annex 2:

- severe acute respiratory syndrome (SARS),
- smallpox,
- poliomyelitis caused by wild-type poliovirus, and
- human influenza caused by a new subtype.

Examples of events that require the use of the decision instrument include, but are not limited, to cholera, pneumonic plague, yellow fever, West Nile fever, viral hemorrhagic fevers, and meningococcal disease. Other biologic, chemical, or radiologic events that fit the decision algorithm also must be reported to WHO.

Additional information about IHR is available at <https://www.who.int/ihr/publications/9789241580496/en>, <https://www.cdc.gov/globalhealth/ihregulations.htm>, and <https://www.cdc.gov/globalhealth/healthprotection/ghs/ihr/index.html>. CSTE also approved a position statement that added initial detections of novel influenza A virus infections to the list of nationally notifiable infectious diseases, beginning in January 2007 to, in part, support the implementation of the revised IHR in the United States to identify human influenza caused by a new subtype (12).

## Future Plans for Publication of Data on Notifiable Infectious Diseases and Conditions

To improve the usability, availability, quality, and timeliness of surveillance data (13), as part of the CDC Surveillance Strategy, CDC will provide users a convenient way to access notifiable infectious disease data through the National NNDSS website beginning in November 2017.

CDC has redesigned the data and statistics section of the NNDSS website to be a one-stop-shop for users to find both detailed information about the notifiable infectious disease data and the data tables themselves. Although these data will no longer be published in their current format as the *MMWR Summary of Notifiable Infectious Diseases and Conditions*, users may easily access the information on the NNDSS website. To ease the transition, *MMWR* also will link users from its website to the new location on the NNDSS website.

Beginning with 2016 data, expected to be published in November 2017, the introductory information in the front of the *MMWR* Summary report (from the Preface to the Revised International Health Regulations) will be available on the NNDSS Data and Statistics page at <https://wwwn.cdc.gov/nndss/data-and-statistics.html>. In addition, the redesigned page will provide links to Tables 1–7 available in HTML, text, and

PDF formats and hosted on the CDC Wide-ranging Online Data for Epidemiologic Research (WONDER) platform.

Consolidating the notifiable infectious disease data on the NNDSS website is part of the NNDSS Modernization Initiative (NMI) strategy to streamline NNDSS and access to data for users; NMI is a component of the CDC Surveillance Strategy. This consolidation of information also is in response to the recommendations of a CDC-wide workgroup comprising representatives from the CDC Excellence in Science Committee, the Surveillance Science Advisory Group, and *MMWR* for CDC to make more data available online and to allow *MMWR* to focus on publishing scientific and actionable surveillance reports and not routine data tables.

### Acknowledgments

We acknowledge all the local, state, and territorial health departments in the United States for collecting the data included in this report from a range of case ascertainment sources (e.g., health care providers, hospitals, and laboratories) and for reporting these data to CDC.

### References

1. US Department of Health and Human Services. Information Collection and Paperwork Reduction Act (PRA) overview. Washington, DC: US Department of Health and Human Services; 2015. <https://www.usability.gov/how-to-and-tools/guidance/pr-a-overview.html>
2. Doyle TJ, Glynn MK, Groseclose SL. Completeness of notifiable infectious disease reporting in the United States: an analytical literature review. *Am J Epidemiol* 2002;155:866–74. <https://doi.org/10.1093/aje/155.9.866>
3. CDC. Assessing completeness of perinatal hepatitis B virus infection reporting through comparison of immunization program and surveillance data—United States. *MMWR Morb Mortal Wkly Rep* 2011;60:410–3.
4. CDC. Evaluation of acute hepatitis C infection surveillance—United States, 2008. *MMWR Morb Mortal Wkly Rep* 2010;59:1407–10.
5. Hwang J, McClintock S, Kachur SP, Slutsker L, Arguin P. Comparison of national malaria surveillance system with the national notifiable diseases surveillance system in the United States. *J Public Health Manag Pract* 2009;15:345–51. <https://doi.org/10.1097/PHH.0b013e31819d816a>
6. Painter JE, Hlavsa MC, Collier SA, Xiao L, Yoder JS. Cryptosporidiosis surveillance—United States, 2011–2012. *MMWR Suppl* 2015;64(No. SS-3):1–14.
7. Painter JE, Gargano JW, Collier SA, Yoder JS. Giardiasis surveillance—United States, 2011–2012. *MMWR Suppl* 2015;64(No. SS-3):15–25.
8. Wilson NO, Hall RL, Montgomery SP, Jones JL. Trichinellosis surveillance—United States, 2008–2012. *MMWR Surveill Summ* 2015;64(No. SS-1):1–8.
9. CDC. Babesiosis surveillance—18 states, 2011. *MMWR Morb Mortal Wkly Rep* 2012;61:505–9.
10. Council of State and Territorial Epidemiologists. Events that may constitute a public health emergency of international concern. Position statement 07-ID-06. Atlanta, GA: Council of State and Territorial Epidemiologists; 2006. <http://c.ymcdn.com/sites/www.cste.org/resource/resmgr/PS/07-ID-06.pdf>
11. World Health Organization. International Health Regulations, 2nd ed. Geneva, Switzerland: World Health Organization; 2005. [http://apps.who.int/iris/bitstream/10665/43883/1/9789241580410\\_eng.pdf](http://apps.who.int/iris/bitstream/10665/43883/1/9789241580410_eng.pdf)
12. Council of State and Territorial Epidemiologists. CSTE position statement. National reporting for initial detections of novel influenza A viruses. Atlanta, GA: Council of State and Territorial Epidemiologists; 2007. <http://c.ymcdn.com/sites/www.cste.org/resource/resmgr/PS/07-ID-01.pdf>
13. Richards CL, Iademarco MF, Anderson TC. A new strategy for public health surveillance at CDC: improving national surveillance activities and outcomes. *Public Health Rep* 2014;129:472–6.

**Nationally Notifiable Infectious Conditions Group**

Elizabeth Adam, MPH; Aileen Artus, MPH; Kelly Barrett, MPH; Albert E. Barskey, MPH; Kaitlin Benedict, MPH; David D. Blaney, MD; Jesse Blanton, MPH; William A. Bower, MD; Jim Braxton; Elizabeth C. Briere, MD; Erin K. Burdette, MPH; Shannon Casillas, MPH; Kevin Chatham-Stephens, MD; Cara Cherry, DVM; Tom M. Chiller, MD; Nakia Clemmons, MPH; Amanda Conrad, MPH; Kasey E. Diebold, MS; Naomi Drexler, MPH; Seth Edmunds, MPH; Amanda E. Faulkner, MPH; Marc Fisher, MD; Kathleen E. Fullerton, MPH; Paul Gastañaduy, MD; Elizabeth B. Gray, MPH; Rebecca Hall, MPH; Alesia Harvey; Katherine A. Hendricks, MD; Barbara L. Herwaldt, MD; Alex R. Hoffmaster, PhD; Michael J. Hughes, MPH; Jennifer C. Hunter, DrPH; Jacqueline Hurd, MPH; Michele Hvlasa, MPH; Shareen A. Iqbal, PhD; Brendan R. Jackson, MD; Jeffrey Jones, MD; Michael C. Judd, MPH; Matt Karwowski, MD; Grishma Kharod, MPH; Kristen Kreisel, PhD; Kiersten J. Kugeler, PhD; Adam J. Langer, DVM; Adia Lee, MSPH; Jennifer Lehman; Nicole Lindsey, MS; Lindy Liu, MPH; Adriana S. Lopez, MHS; Jessica R. MacNeil, MPH; Lilia P. Manangan, MPH; Mona Marin, MD; Orion McCotter, MPH; Daeshonna McNealy, MPH; Paul S. Mead, MD; Maria Negron, DVM; Kristen Nichols Heitman, MPH; Manisha Patel, MD; Emily G. Pieracci, DVM; Robert H. Pratt; Rodney Presley, PhD; Susan Redd; Janell Routh, MD; Anna Satcher Johnson, MPH; Ilana J. Schafer, DVM; Amy M. Schwartz, MPH; Tyler M. Sharp, PhD; Tami H. Skoff, MS; Erin Staples, MD; Tejpratap S. P. Tiwari, MD; Elizabeth Torrone, PhD; Rita M. Traxler, MHS; Antonio R. Vieira, DVM; Ryan M. Wallace, DVM; Karen K. Wong, MD; Jonathan S. Yoder, MPH, CDC.



## Highlights for 2015

### Anthrax

The CDC Select Agent Program has designated *Bacillus cereus* biovar *anthracis* as a Tier 1 select agent (1). This organism has been isolated from nonhuman primates and livestock that died of an infection clinically compatible with anthrax in Central and West Africa, but has not yet been found to infect humans (2,3). The *B. cereus* biovar *anthracis* strains are similar to *Bacillus anthracis* in that they harbor *B. anthracis* virulence plasmids and are nonhemolytic. Unlike *B. anthracis*, however, most of the *B. cereus* biovar *anthracis* strains are motile and all are gamma-phage-resistant. The CDC Zoonoses and Select Agent Laboratory will accept specimens for molecular testing when *B. cereus* biovar *anthracis* is suspected.

1. Centers for Disease Control and Prevention (CDC), Department of Health and Human Services (HHS). Possession, use, and transfer of select agents and toxins—addition of *Bacillus cereus* Biovar *anthracis* to the HHS list of select agents and toxins: interim final rule and request for comments. Fed Regist 2016;81:63138–43.
2. Antonation KS, Grützmacher K, Dupke S, et al. *Bacillus cereus* Biovar *anthracis* causing anthrax in sub-Saharan Africa—chromosomal monophyly and broad geographic distribution. PLoS Negl Trop Dis 2016;10:e0004923. <https://doi.org/10.1371/journal.pntd.0004923>
3. Klee SR, Brzuszkiewicz EB, Nattermann H, et al. The genome of a *Bacillus* isolate causing anthrax in chimpanzees combines chromosomal properties of *B. cereus* with *B. anthracis* virulence plasmids. PLoS One 2010;5:e10986. <https://doi.org/10.1371/journal.pone.0010986>

New Jersey, Ohio, and Wyoming) following the implementation of routine Jamestown Canyon virus antibody testing at CDC in 2013 (3). Although rare, Eastern equine encephalitis virus disease remained the most severe arboviral disease, with four deaths among six patients.

A total of 896 chikungunya virus disease cases were reported from U.S. states, including one locally transmitted case from Texas (4). All other cases occurred in travelers returning from affected areas. A total of 237 chikungunya virus disease cases were reported from U.S. territories. Of these, 227 were locally transmitted cases reported from Puerto Rico and the U.S. Virgin Islands. The remaining 10 cases occurred in travelers returning from other affected areas.

1. Krow-Lucal E, Lindsey NP, Lehman J, Fischer M, Staples JE. West Nile virus and other nationally notifiable arboviral diseases—United States, 2015. MMWR Morb Mortal Wkly Rep 2017;66:51–5. <https://doi.org/10.15585/mmwr.mm6602a3>
2. Venkat H, Krow-Lucal E, Hennessey M, et al. Notes from the field: concurrent outbreaks of St. Louis encephalitis virus and West Nile virus disease—Arizona, 2015. MMWR Morb Mortal Wkly Rep 2015;64:1349–50.
3. Pastula DM, Hoang Johnson DK, White JL, Dupuis AP 2nd, Fischer M, Staples JE. Jamestown Canyon virus disease in the United States—2000–2013. Am J Trop Med Hyg 2015;93:384–9. <https://doi.org/10.4269/ajtmh.15-0196>
4. CDC. Chikungunya virus: 2015 final data for the United States. Atlanta, GA: US Department of Health and Human Services, CDC; 2016. <https://www.cdc.gov/chikungunya/geo/united-states-2015.html>

### Arboviral Disease, Neuroinvasive and Nonneuroinvasive

In 2015, a total of 2,175 West Nile virus (WNV) disease cases were reported, including 1,455 cases of neuroinvasive disease (e.g., meningitis, encephalitis, and acute flaccid paralysis) and 146 deaths (1). WNV disease cases were reported from 43 states and the District of Columbia. Over half (61%) of all WNV neuroinvasive disease cases were reported from California (N = 585) and Texas (N = 196). The incidence of WNV neuroinvasive disease was 0.45 cases per 100,000 population and was similar to the median incidence during 2002–2014 (median: 0.41; range: 0.13–1.02).

After WNV, the next most commonly reported causes of domestically acquired arboviral diseases were La Crosse virus, followed by St. Louis encephalitis virus, Jamestown Canyon virus, Powassan virus, and Eastern equine encephalitis virus. All cases of St. Louis encephalitis (N = 23) were reported from Arizona, which experienced a concurrent outbreak of WNV and St. Louis encephalitis virus disease (2). Jamestown Canyon virus disease cases continue to be reported from new locations (e.g., Iowa,

### Babesiosis

Babesiosis is caused by protozoan parasites of the genus *Babesia*, which infect red blood cells. *Babesia* infection can range from asymptomatic to life threatening. Clinical manifestations might include fever, chills, other nonspecific influenza-like symptoms, and hemolytic anemia. *Babesia* parasites usually are tickborne but also can be transmitted via blood transfusion or congenitally (1).

In 2015, a total of 2,074\* cases of babesiosis were reported to CDC by 24 of the 33 states in which babesiosis was a reportable condition; 93% (1,925) of the 2,074 reported cases occurred in residents of seven states (Connecticut, Massachusetts, Minnesota, New Jersey, New York, Rhode Island, and Wisconsin). The median age of patients was 63 years (range: <1–99 years); 67% were male, 33% were female, and the sex

\*This number differs slightly from the denominator of 2,100 presented in the tables. At the request of the pertinent health departments, 28 erroneous reports not retracted before the deadline for finalizing the data for the tables were removed and two additional cases reported after the deadline were included.



was unknown for less than 1%. Among the 1,596 case-patients for whom data were available, 84% (1,342) had symptom onset dates during June–August.

1. Herwaldt BL, Linden JV, Bosserman E, Young C, Olkowska D, Wilson M. Transfusion-associated babesiosis in the United States: a description of cases. *Ann Intern Med* 2011;155:509–19. <https://doi.org/10.7326/0003-4819-155-8-201110180-00362>

## Botulism

Botulism is a severe paralytic illness caused by toxins produced by *Clostridium botulinum*. Exposure to the toxin can occur by ingestion (foodborne botulism), *in situ* production from *C. botulinum* colonization of either a wound (wound botulism) or the gastrointestinal tract (infant botulism and adult intestinal colonization botulism), or overdose of botulinum toxin used for cosmetic or therapeutic purposes (1). In 2015, a total of 195 confirmed cases of botulism were reported, including 138 cases of infant botulism, 37 foodborne cases, and 20 cases classified as other, including wound botulism. During 2015, a total of five outbreaks (events with two or more cases) of foodborne botulism were reported. One outbreak was associated with home-canned potatoes in a potato salad (23 cases), one with fermented seal flipper (four cases), and one with beets roasted in aluminum foil and kept at room temperature (two cases). In addition, there were two outbreaks of two cases (each affected person living in the same household or facility in which the foodborne source was unknown).

All U.S. state and territorial governments maintain 24-hour telephone services for reporting of botulism and other public health emergencies. Health care providers should report suspected botulism cases immediately to their local or state health departments to obtain botulism antitoxin, which is more effective the earlier it is given, and to initiate the public health investigation into the source of botulinum toxin and prevent additional cases. In the United States, CDC maintains intensive surveillance for cases of botulism and provides consultation and antitoxin for suspected cases in children, adolescents, and adults. The California Department of Public Health provides consultation and antitoxin for suspected cases in infants. State health departments can reach the CDC botulism duty officer on call 24 hours a day, 7 days a week via the CDC Emergency Operations Center at 770-488-7100 and the California Department of Public Health botulism duty officer at 510-231-7600.

1. Sobel J. Botulism. *Clin Infect Dis* 2005;41:1167–73. <https://doi.org/10.1086/444507>

## Brucellosis

During 2015, NNDSS received reports of 126 brucellosis cases in the United States. The South Atlantic, West South Central, and Pacific regions accounted for 83 of these cases, with 21, 27, and 35 cases reported, respectively. Brucellosis can be transmitted through consumption of unpasteurized dairy products or undercooked meat, inhalation, or direct contact (1). To prevent brucellosis infection, avoid consumption of unpasteurized dairy products and undercooked meat, and use proper personal protective equipment when working with *Brucella* in occupational settings, or when exposed to potentially infected animals. Common signs and symptoms of brucellosis include fever, sweats, malaise, anorexia, headache, fatigue, and pain in joints and muscles (2). If physicians suspect brucellosis, it is advised that they inform laboratories of this suspicion so as to minimize the risk for exposure from patient specimens and testing procedures.

1. CDC. Brucellosis—transmission. Atlanta, GA: US Department of Health and Human Services, CDC; 2012. <https://www.cdc.gov/brucellosis/transmission/index.html>
2. CDC. Brucellosis—signs and symptoms. Atlanta, GA: US Department of Health and Human Services, CDC; 2012. <https://www.cdc.gov/brucellosis/symptoms/index.html>

## Campylobacteriosis

Campylobacteriosis became a nationally notifiable condition in 2015. The probable case definition was updated in 2015 to include cases detected by culture-independent diagnostic tests (CIDT) in addition to cases epidemiologically linked to a probable or confirmed case of campylobacteriosis. In its first year of national surveillance, the incidence of confirmed and probable campylobacteriosis was 17.7 cases per 100,000 population. Preliminary 2015 data from the Foodborne Diseases Active Surveillance Network (FoodNet), which conducts active surveillance for campylobacteriosis in 10 U.S. sites, showed an annual incidence of 17.1 culture-confirmed and CIDT-positive infections of *Campylobacter* per 100,000 population (1). Children aged <5 years had the highest reported national incidence rates of campylobacteriosis in 2015. Seasonality of transmission was evident, with the largest number of infections reported during June–August (2).

*Campylobacter* causes an estimated 1.3 million illnesses and 120 deaths annually in the United States; of these, an estimated 1 million are transmitted by food consumed in the United States (3). *Campylobacter* infection is commonly associated with the consumption of undercooked chicken and raw milk and usually occurs as single, sporadic cases (4), but outbreaks

can occur. In 2015, a total of 35 outbreaks caused at least 280 illnesses and were linked to various sources including contaminated chicken liver pâté, grilled chicken, raw milk, and irrigation water (5).

1. Huang JY, Henao OL, Griffin PM, et al. Infection with pathogens transmitted commonly through food and the effect of increasing use of culture-independent diagnostic tests on surveillance—Foodborne Diseases Active Surveillance Network, 10 U.S. sites, 2012–2015. *MMWR Morb Mortal Wkly Rep* 2016;65:368–71. <https://doi.org/10.15585/mmwr.mm6514a2>
2. CDC. Foodborne Diseases Active Surveillance Network. Atlanta, GA: US Department of Health and Human Services, CDC; 2016. <https://www.cdc.gov/foodnet/reports/data/infections.html>
3. Scallan E, Hoekstra RM, Angulo FJ, et al. Foodborne illness acquired in the United States—major pathogens. *Emerg Infect Dis* 2011;17:7–15. <https://doi.org/10.3201/eid1701.P11101>
4. Friedman CR, Hoekstra RM, Samuel M, et al.; Emerging Infections Program FoodNet Working Group. Risk factors for sporadic *Campylobacter* infection in the United States: a case-control study in FoodNet sites. *Clin Infect Dis* 2004;38(Suppl 3):S285–96. <https://doi.org/10.1086/381598>
5. CDC. National Outbreak Reporting System FOOD Tool. Atlanta, GA: US Department of Health and Human Services, CDC; 2016. <https://wwwn.cdc.gov/foodborneoutbreaks>

## Chlamydia trachomatis Infection

Chlamydia is the most frequently reported nationally notifiable disease in the United States, with 1,526,658 cases reported to the CDC in 2015. Rates of reported cases increased during 2014–2015, with states in the South reporting the largest rates of cases. Rates were highest among females aged 20–24 years (3,764.3 cases per 100,000 females) followed by females aged 15–19 years (2,986.4 per 100,000). In 2015, the rate of reported cases of chlamydia in women aged 15–19 and 20–24 was 3.9 and 2.5 times the rate in men of the same age groups (766.5 and 1,476.8 per 100,000 males, respectively), possibly reflecting higher screening rates among women compared with men.

## Cholera

Cholera continues to be rare in the United States and is most often acquired during travel in countries where toxigenic *Vibrio cholerae* O1 or O139 is circulating (1–3). Of the five cholera infections reported in 2015, four were travel-associated (two with travel to Haiti, one to Cuba, and one to the Philippines). The fifth case was associated with the consumption of raw shrimp imported from the Philippines.

1. Steinberg EB, Greene KD, Bopp CA, Cameron DN, Wells JG, Mintz ED. Cholera in the United States, 1995–2000: trends at the end of the Twentieth Century. *J Infect Dis* 2001;184:799–802. <https://doi.org/10.1086/322989>

2. Newton AE, Heiman KE, Schmitz A, et al. Cholera in United States associated with epidemic in Hispaniola. *Emerg Infect Dis* 2011;17:2166–8. <https://doi.org/10.3201/eid1711.110808>
3. Loharikar A, Newton AE, Stroika S, et al. Cholera in the United States, 2001–2011: a reflection of patterns of global epidemiology and travel. *Epidemiol Infect* 2015;143:695–703. <https://doi.org/10.1017/S0950268814001186>

## Coccidioidomycosis

Coccidioidomycosis (also called Valley fever) is a fungal infection caused by inhalation of *Coccidioides spp.* spores present in soil. In the United States, the disease is most commonly acquired in the desert southwest and southern California. However, local acquisition has been documented as far north as south-central Washington, suggesting that exposure could occur elsewhere in arid and semi-arid portions of the western United States. Cases are routinely reported in eastern states, likely reflecting travel to areas in which disease is endemic. The disease is also endemic to parts of Central and South America.

A substantial increase in reported coccidioidomycosis occurred during 1998–2011 (1), followed by a decrease each year during 2012–2014. In 2015, reported coccidioidomycosis cases (11,072) increased by 35% compared with 2014 (8,232 cases). In Arizona (7,622 cases) and California (3,053 cases), the two states that consistently report the most cases, the percentage increase from 2014 to 2015 (36% each) was larger than the percentage increase in all other states combined (9%).

No known changes in coccidioidomycosis testing or reporting practices occurred in Arizona or California during 2015. Therefore, the increase is likely related to year-to-year changes in the environment, including rainfall and temperature. Physicians should continue to maintain a high suspicion for coccidioidomycosis in patients who live in or have traveled to areas in which the disease is endemic, and should be aware of the possibility for coccidioidomycosis outside of its previously recognized geographic range.

1. CDC. Increase in reported coccidioidomycosis—United States, 1998–2011. *MMWR Morb Mortal Wkly Rep* 2013;62:217–21.

## Cryptosporidiosis

Approximately 90% of human cryptosporidiosis is caused by the numerous *Cryptosporidium parvum* and *Cryptosporidium hominis* subtypes. Although cryptosporidiosis affects persons of all age groups, the incidence rate of nationally notified cases is highest in children aged 1–4 years (1). A substantial increase in transmission of *Cryptosporidium* occurs during the summer as indicated by data on disease onset date. This seasonality coincides with increased warm-weather use of recreational

water, the exposure to which is a well-established risk factor for cryptosporidiosis. *Cryptosporidium* has emerged as the leading cause of nationally notified recreational water–associated outbreaks and waterborne disease outbreaks overall (2003–2012) (2). Transmission through recreational water is facilitated by the substantial number (up to  $10^8$ – $10^9$ ) of immediately infectious *Cryptosporidium* oocysts that can be shed in a single bowel movement (3), the extended time (days to weeks) that oocysts can be shed (4), the low ( $\leq 10$  oocysts) infectious dose (5), and the extreme tolerance of *Cryptosporidium* oocysts to chlorine (6). In 2015, the post-2004 increase in national annual incidence continued; before 2005, the annual incidence was  $<1.5$  cases/100,000 population and the annual case count was  $<4,000$  cases/year. Additionally, the proportion of probable cases remained at slightly greater than one third (37%) of all cases. This likely reflects changes in the diagnostic landscape and laboratory-focused changes in the 2011 and 2012 national case definitions.

In 2015, to further elucidate *Cryptosporidium* transmission and thus the epidemiology of cryptosporidiosis, CDC formally launched CryptoNet, a surveillance system that integrates molecular characterization (which is needed to discriminate among species and their subtypes because conventional diagnostic tests cannot) and epidemiologic data. CryptoNet has successfully differentiated clusters of illness caused by different *Cryptosporidium* species and detected outbreaks caused by rare subtypes. Additional information about CryptoNet is available at <https://www.cdc.gov/parasites/crypto/cryptonet.html>.

In the United States, public health codes for public aquatic venues (e.g., pools, hot tubs/spas, and interactive water play areas [water playgrounds]) are written, enacted, implemented, and enforced by state or local officials. No federal agency regulates the design, construction, operation, and maintenance of these venues. To support state and local jurisdictions, CDC led the development and revision of the Model Aquatic Health Code (MAHC) (<https://www.cdc.gov/mahc/editions/current.html>). This guidance document integrates the recent research and best practices with specific code language and explanatory materials to minimize risk for illness and injury in public aquatic venues. MAHC recommendations particularly aim to minimize *Cryptosporidium* transmission. For example, MAHC recommends that public aquatic venues intended for young swimmers aged  $<5$  years (those more likely to contaminate the water because they are more likely to have inadequate toileting and hygiene skills) should include secondary disinfection systems (e.g., ultraviolet light) to inactivate at least 99.9% of *Cryptosporidium* oocysts. To ensure its continued relevance, MAHC recommendations

are updated every 2 years through an all-stakeholder–driven process via the Council for the Model Aquatic Health Code, taking into account the latest scientific data and aquatics sector innovations (<https://www.cmahc.org/index.php>).

1. Painter JE, Hlavsa MC, Collier SA, Xiao L, Yoder JS. Cryptosporidiosis surveillance—United States, 2011–2012. *MMWR Suppl* 2015;64(No. SS-3):1–14.
2. Hlavsa MC, Roberts VA, Kahler AM, et al. Outbreaks of illness associated with recreational water—United States, 2011–2012. *MMWR Morb Mortal Wkly Rep* 2015;64:668–72.
3. Goodgame RW, Genta RM, White AC, Chappell CL. Intensity of infection in AIDS-associated cryptosporidiosis. *J Infect Dis* 1993;167:704–9. <https://doi.org/10.1093/infdis/167.3.704>
4. Chappell CL, Okhuysen PC, Sterling CR, DuPont HL. *Cryptosporidium parvum*: intensity of infection and oocyst excretion patterns in healthy volunteers. *J Infect Dis* 1996;173:232–6. <https://doi.org/10.1093/infdis/173.1.232>
5. Chappell CL, Okhuysen PC, Langer-Curry R, et al. *Cryptosporidium hominis*: experimental challenge of healthy adults. *Am J Trop Med Hyg* 2006;75:851–7.
6. Murphy JL, Arrowood MJ, Lu X, Hlavsa MC, Beach MJ, Hill VR. Effect of cyanuric acid on the inactivation of *Cryptosporidium parvum* under hyperchlorination conditions. *Environ Sci Technol* 2015;49:7348–55. <https://doi.org/10.1021/acs.est.5b00962>

## Cyclosporiasis

Of the 644\* cyclosporiasis cases reported in 2015, a total of 394 (61%) were domestically acquired (i.e., they occurred in persons with no history of travel outside the United States and Canada during the 14-day incubation period), 199 (31%) were associated with international travel, and 51 (8%) occurred in persons for whom travel history was unknown or missing. Among the domestically acquired cases, at least 357 (91%) occurred in persons with illness onset during May–August. A vehicle of infection (fresh cilantro from Mexico) was identified in a multistate outbreak of 61† restaurant-associated cases in Georgia (18 cases), Texas (35 cases), and Wisconsin (8 cases) (1). A vehicle of infection was not identified for the remaining 296 (83% of 357) domestically acquired cases in persons with illness onset during May–August. Molecular typing methods, which could facilitate linkage of cyclosporiasis cases, are not yet available for *C. cayetanensis*.

\*This number differs slightly from the denominator of 645 cases reported in the tables. One erroneous report was not retracted before the deadline for finalizing the data.

† An additional 29 probable cases were associated with this multicluster outbreak but were not reported to NNDSS or included here.

1. CDC. Cyclosporiasis outbreak investigations—United States, 2015. Atlanta, GA: US Department of Health and Human Services, CDC; 2015.



## Dengue

Dengue is a mosquito-borne, acute febrile illness characterized by myalgia, headache, leukopenia, and minor bleeding manifestations (1). Patients with severe dengue experience plasma leakage resulting in fluid accumulation, hemorrhage, and/or major organ impairment (e.g., liver failure, myocarditis, and impaired consciousness). Dengue is endemic throughout much of the tropics and subtropics, where an estimated 50–100 million cases and 9,200 deaths occur annually (2). With proper clinical management, the case-fatality rate of hospitalized dengue patients can be <0.5% (3). Efforts to improve outcomes among persons with dengue include an online clinical education course developed by CDC (<https://www.cdc.gov/dengue/training/cme.html>).

In 2014, CSTE approved a modification of the case definitions for reported dengue cases effective January 1, 2015. Newly approved reporting categories were based on the World Health Organization dengue case definitions that have been in use since 2009 (1). “Dengue” is now used for patients that met the clinical case definition for dengue (i.e., fever and one of: nausea/vomiting, rash, aches and pains, positive tourniquet test, leukopenia, or any warning sign for severe dengue). “Dengue-like illness” indicates patients with fever and either clinical suspicion or diagnostic evidence of dengue, but not meeting the clinical case definition for dengue. “Severe dengue,” which includes the prior categorizations of dengue hemorrhagic fever and dengue shock syndrome, is used for patients that meet the clinical case definition for severe dengue: severe plasma leakage, severe bleeding, or severe organ involvement. Laboratory definitions are also modified in that detection of antidengue virus IgM antibody by ELISA is considered confirmatory if the patient lives in or recently traveled to an area without evidence of circulation of any other flavivirus.

In 2015, a total 951 laboratory-positive cases were reported from 48 of the 50 states, two of the five territories, and the District of Columbia. Most (72%) cases were travel-associated, and case-patients most frequently had a history of travel to the Caribbean or Americas, where chikungunya and Zika viruses had recently emerged. Because dengue, chikungunya, and Zika virus disease often have a similar clinical presentation, the moderate number of reported dengue cases compared with previous years, despite low levels of dengue cases detected in areas of the Caribbean and the Americas where the disease is endemic, might be attributable to increased diagnostic testing to differentiate between these diseases. The states or jurisdictions with the most travel-associated dengue cases reported were California (138), Florida (81), New York City (74), New Jersey (57), and Texas (30). Hawaii reported a large outbreak of dengue, in which 200 locally acquired dengue cases

were detected in Hawaii residents that live on or had traveled to Oahu. Florida reported one locally acquired dengue case, and was the only other state to report a locally acquired dengue case in 2015. Reports of laboratory-positive dengue cases were at historic lows in the dengue-endemic Caribbean territories of Puerto Rico and the U.S. Virgin Islands (58 and 3 cases, respectively). Sixteen cases of dengue-like illness and six cases of severe dengue were reported in 2015, all in travelers and none in residents of U.S. territories.

1. World Health Organization. Dengue: guidelines for diagnosis, treatment, prevention and control. Geneva, Switzerland: World Health Organization; 2009.
2. Stanaway JD, Shepard DS, Undurraga EA, et al. The global burden of dengue: an analysis from the Global Burden of Disease Study 2013. *Lancet Infect Dis* 2016;16:712–23. [https://doi.org/10.1016/S1473-3099\(16\)00026-8](https://doi.org/10.1016/S1473-3099(16)00026-8)
3. Lam PK, Tam DT, Diet TV, et al. Clinical characteristics of Dengue shock syndrome in Vietnamese children: a 10-year prospective study in a single hospital. *Clin Infect Dis* 2013;57:1577–86. <https://doi.org/10.1093/cid/cit594>

## Diphtheria

Respiratory diphtheria, a vaccine-preventable disease, is rare in the United States, and no cases were reported during 2015. Since 2003, two cases have been reported to CDC: a probable case in 2012, and a confirmed case caused by nontoxigenic *C. diphtheriae* in 2014. Children and adults should be vaccinated according to the schedule recommended by the Advisory Committee on Immunization Practices (1). Ensuring and sustaining high childhood vaccination coverage rates above 90% and high coverage with decennial booster doses in adolescents and adults are required for herd protection in the population.

1. CDC. General recommendations on immunization—recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR Recomm Rep* 2011;60(No. RR-2):1–64.

## Ehrlichiosis and Anaplasmosis

Ehrlichiosis and anaplasmosis are rickettsial tickborne diseases that have been notifiable since 1998 (1). The principal vectors of *Anaplasma phagocytophilum* include the blacklegged tick (*Ixodes scapularis*) and the Western blacklegged tick (*Ixodes pacificus*) (2). The number of reported cases of anaplasmosis increased by approximately 31%, from 2,800 cases in 2014 to 3,656 cases in 2015. This change represents the largest increase in reported cases of anaplasmosis since the disease became notifiable in 1998. Most notably, the number of cases in the New England and the Mid-Atlantic regions increased by 22% and 70%, respectively. The lone star tick (*Amblyomma americanum*) transmits both *Ehrlichia chaffeensis* and *Ehrlichia ewingii*

to humans (2). The number of reported cases of *Ehrlichia chaffeensis* (1,288) and *Ehrlichia ewingii* (14) were similar to the previous year (1,475 and 17, respectively). Changes in reported cases might indicate a dynamic change in reporting practices, an increase in awareness, and an increase in the use of diagnostic assays.

1. Council of State and Territorial Epidemiologists. Adding ehrlichiosis as a condition reportable to the National Public Health Surveillance System. Atlanta, GA: Council of State and Territorial Epidemiologists; 1998. <http://cymcdn.com/sites/www.cste.org/resource/resmgr/PS/1998-ID-6.pdf>
2. CDC. Diagnosis and management of tickborne rickettsial diseases: Rocky Mountain spotted fever and other spotted fever group rickettsioses, ehrlichioses, and anaplasmosis—United States: a practical guide for health care and public health professionals. MMWR Recomm Rep 2016;65(No. RR-2).

## Giardiasis

Giardiasis is the most common enteric parasitic infection in the United States, infecting an estimated 1.2 million persons annually (1). Symptomatology is variable, but giardiasis is normally characterized by diarrhea, abdominal cramps, bloating, weight loss, and malabsorption; extraintestinal symptoms are possible (2). Infected persons can shed *Giardia* for several weeks, and recent studies indicate potential for chronic sequelae from giardiasis (3). *Giardia* is endemic worldwide, including in the United States, and is the most commonly diagnosed pathogen among travelers returning to the United States from other countries (4). *Giardia* is commonly detected in internationally adopted children screened in the United States; often, these children do not have gastrointestinal symptoms (5). In 2015, the reported incidence of giardiasis appears to have stabilized compared with 2014. *Giardia* is transmitted through the fecal-oral route with the ingestion of environmentally stable *Giardia* cysts. Most information on giardiasis transmission is from outbreak investigations; 242 giardiasis outbreaks reported to CDC for 1971–2011 resulted from waterborne (74.8%), foodborne (15.7%), person-to-person (2.5%), and animal contact (1.2%) transmission (6). On the basis of outbreak trends, investigators identified groundwater and distribution system vulnerabilities in drinking water systems, inadequate pool disinfection, fruit and vegetable contamination, and poor food handler hygiene as possible targets for giardiasis prevention measures. However, most reported giardiasis cases are not linked to known outbreaks. Among reported cases, <2% are documented as outbreak-associated (7). An ecological study of sporadic giardiasis in the United States indicated that high county-level reliance on private wells was associated with higher giardiasis rates (8). Prospective epidemiologic studies and continued outbreak and case surveillance are needed to

understand transmission pathways and to identify effective public health prevention measures.

Population studies of *Giardia* seroprevalence would contribute substantially to understanding the prevalence of giardiasis in the United States (9). Enhanced genotyping methods would increase knowledge of the molecular epidemiology of *Giardia*, including elucidating species-specific subassemblages (10). Application of these tools to epidemiologic studies and surveillance has the potential to improve understanding of giardiasis risk factors, enable researchers to identify outbreaks by linking cases currently classified as sporadic infections, and provide risk factor information needed to inform prevention strategies.

1. Scallan E, Hoekstra RM, Angulo FJ, et al. Foodborne illness acquired in the United States—major pathogens. Emerg Infect Dis 2011;17:7–15. <https://doi.org/10.3201/eid1701.P11101>
2. Cantey PT, Roy S, Lee B, et al. Study of nonoutbreak giardiasis: novel findings and implications for research. Am J Med 2011;124:1175.e1–8. <https://doi.org/10.1016/j.amjmed.2011.06.012>
3. Hanevik K, Wensaas KA, Rortveit G, Eide GE, Mørch K, Langeland N. Irritable bowel syndrome and chronic fatigue 6 years after giardia infection: a controlled prospective cohort study. Clin Infect Dis 2014;59:1394–400. <https://doi.org/10.1093/cid/ciu629>
4. Harvey K, Esposito DH, Han P, et al. Surveillance for travel-related disease—GeoSentinel Surveillance System, United States, 1997–2011. MMWR Surveill Summ 2013;62(No. SS-3):1–23.
5. Staat MA, Rice M, Donauer S, et al. Intestinal parasite screening in internationally adopted children: importance of multiple stool specimens. Pediatrics 2011;128:e613–22.
6. Adam EA, Yoder JS, Gould H, Hlavsa MC. Giardiasis outbreaks in the United States, 1971–2011. Epidemiol Infect 2016. <https://www.ncbi.nlm.nih.gov/pubmed/26750152>
7. Schnell K, Collier S, Derado G, Yoder J, Gargano JW. Giardiasis in the United States—an epidemiologic and geospatial analysis of county-level drinking water and sanitation data, 1993–2010. J Water Health 2016;14:267–79.
8. Yoder JS, Gargano JW, Wallace RM, Beach MJ. Giardiasis surveillance—United States, 2009–2010. MMWR Surveill Summ 2012;61(No. SS-5):13–23.
9. Priest JW, Moss DM, Visvesvara GS, Jones CC, Li A, Isaac-Renton JL. Multiplex assay detection of immunoglobulin G antibodies that recognize *Giardia intestinalis* and *Cryptosporidium parvum* antigens. Clin Vaccine Immunol 2010;17:1695–707. <https://doi.org/10.1128/CVI.00160-10>
10. Feng Y, Xiao L. Zoonotic potential and molecular epidemiology of *Giardia* species and giardiasis. Clin Microbiol Rev 2011;24:110–40. <https://doi.org/10.1128/CMR.00033-10>

## Haemophilus influenzae Disease

The epidemiology of invasive *Haemophilus influenzae* disease has changed in the United States in the post-*Haemophilus influenzae* type b (Hib) vaccine era. Since the introduction of conjugate Hib vaccines in 1987, the incidence of invasive Hib disease among children aged <5 years decreased by 99% (1); in 2015, incidence was 0.15 cases per 100,000 children. However, rates of Hib disease among American Indian/Alaskan Native



(AI/AN) children remain much higher than among non-AI/AN children. During 2015, nontypeable *Haemophilus influenzae* caused the majority of invasive disease in all age groups.

To ensure appropriate chemoprophylaxis measures for contacts of invasive Hib disease and to detect emergence of invasive non-Hib disease, serotyping of all *Haemophilus influenzae* isolates in children aged <5 years, and thorough and timely investigation of all cases of Hib disease, are essential (2,3).

1. MacNeil JR, Cohn AC, Farley M, et al. Current epidemiology and trends in invasive *Haemophilus influenzae* disease—United States, 1989–2008. *Clin Infect Dis* 2011;53:1230–6. <https://doi.org/10.1093/cid/cir735>
2. Briere EC, Rubin L, Moro PL, Cohn A, Clark T, Messonnier N. Prevention and control of *haemophilus influenzae* type b disease: recommendations of the advisory committee on immunization practices (ACIP). *MMWR Recomm Rep* 2014;63(No. RR-1):1–14.
3. CDC. Best practices for use of PCR for diagnosing *Haemophilus influenzae* and *Neisseria meningitidis* and importance of identifying serotype/serogroup. Atlanta, GA: US Department of Health and Human Services, CDC; 2016. <https://www.cdc.gov/meningococcal/laboratory/pcr-guidance-mening-hflu.html>

## Hansen's Disease (Leprosy)

In 2015, a total of 89 cases of Hansen's Disease (HD) were reported to NNDSS from 21 states. HD is not reportable in all states; therefore, the number of cases reported annually to NNDSS will likely be lower than those reported to the National Hansen's Disease Program, which is responsible for providing patient treatment for all patients in the United States (1). Approximately 67% of the 82 cases with known sex reported were male. Of the 81 cases with reported age, 55 (68%) were aged ≥40 years. Of the states that reported HD cases, the majority of the 89 new cases reported were from Florida (29 [33%]), Texas (20 [22%]), California (7 [8%]), and Hawaii (7 [8%]). The number of cases reported by Florida, Texas, and California all increased from the previous year while the number of cases reported by Hawaii decreased by 50%. In addition, the number of cases reported from Guam increased by nine cases from 2014 to 22 cases.

1. US Department of Health and Human Services. Hansen's disease data and statistics. Rockville, MD: US Department of Health and Human Services, Health Resources and Services Administration; 2016. <https://www.hrsa.gov/hansensdisease/dataandstatistics.html>

## Hantavirus Pulmonary Syndrome

Hantavirus pulmonary syndrome (HPS) is an acute, severe pulmonary disease characterized by pulmonary edema following a nonspecific prodrome (1). National surveillance for hantavirus infections in the United States began in 1993 during an outbreak of severe respiratory illness in the Four

Corners region, and HPS became nationally notifiable in 1995. The presence of fever and pulmonary symptoms in a patient with laboratory-confirmed evidence of hantavirus infection is required for a HPS case to be reported through NNDSS (2).

Laboratory-confirmed cases of hantavirus infection that had nonspecific viral symptoms (e.g. fever, chills, myalgia, headache, gastrointestinal symptoms) and did not develop into HPS ("non-pulmonary hantavirus infection") have been described (3–5). It is believed that HPS is the more frequently observed clinical presentation, although the rarity of the disease and the potential for missed diagnoses of nonpulmonary hantavirus infection with nonspecific clinical symptoms makes it difficult to estimate accurately the number of hantavirus infections. In 2014, CSTE resolved to expand the national reporting of laboratory confirmed hantavirus infections to include HPS and nonpulmonary hantavirus infection (6). The first year of reporting of nonpulmonary hantavirus cases was 2015, and three nonpulmonary cases were reported in addition to 21 HPS cases.

1. MacNeil A, Nichol ST, Spiropoulou CE. Hantavirus pulmonary syndrome. *Virus Res* 2011;162:138–47. <https://doi.org/10.1016/j.virusres.2011.09.017>
2. Knust B, Rollin PE. Twenty-year summary of surveillance for human hantavirus infections, United States. *Emerg Infect Dis* 2013;19:1934–7. <https://doi.org/10.3201/eid1912.131217>
3. Núñez JJ, Fritz CL, Knust B, et al.; Yosemite Hantavirus Outbreak Investigation Team. Hantavirus infections among overnight visitors to Yosemite National Park, California, USA, 2012. *Emerg Infect Dis* 2014;20:386–93. <https://doi.org/10.3201/eid2003.131581>
4. Kitsutani PT, Denton RW, Fritz CL, et al. Acute Sin Nombre hantavirus infection without pulmonary syndrome, United States. *Emerg Infect Dis* 1999;5:701–5. <https://doi.org/10.3201/eid0505.990512>
5. Armstrong LR, Bryan RT, Sarisky J, et al. Mild hantaviral disease caused by Sin Nombre virus in a four-year-old child. *Pediatr Infect Dis J* 1995;14:1108–09. <https://doi.org/10.1097/00006454-199512000-00019>
6. CDC. Nationally Notifiable Diseases Surveillance System, hantavirus infection, non-hantavirus pulmonary syndrome 2015 case definition. Atlanta, GA: US Department of Health and Human Services, CDC; 2016. <http://wwwn.cdc.gov/nndss/conditions/hantavirus-infection-non-hantavirus-pulmonary-syndrome/case-definition/2015>

## Hemolytic Uremic Syndrome

Hemolytic uremic syndrome (HUS) is characterized by the triad of hemolytic anemia, thrombocytopenia, and renal insufficiency. The most common etiology of postdiarrheal HUS in the United States is infection with Shiga toxin-producing *Escherichia coli* (STEC), principally STEC O157:H7 (1,2). Children aged <5 years progress to HUS more often than all other persons infected with STEC O157:H7 (15.3% vs. 6.3%) (3). In 2015, as in previous years, the age group with the most reported cases to NNDSS was children aged 1–4 years (122 of 274 cases).

1. Banatvala N, Griffin PM, Greene KD, et al.; Hemolytic Uremic Syndrome Study Collaborators. The United States National Prospective Hemolytic Uremic Syndrome Study: microbiologic, serologic, clinical, and epidemiologic findings. *J Infect Dis* 2001;183:1063–70. <https://doi.org/10.1086/319269>
2. Mody RK, Luna-Gierke RE, Jones TF, et al. Infections in pediatric postdiarrheal hemolytic uremic syndrome: factors associated with identifying shiga toxin-producing *Escherichia coli*. *Arch Pediatr Adolesc Med* 2012;166:902–9. <https://doi.org/10.1001/archpediatrics.2012.471>
3. Gould LH, Demma L, Jones TF, et al. Hemolytic uremic syndrome and death in persons with *Escherichia coli* O157:H7 infection, foodborne diseases active surveillance network sites, 2000–2006. *Clin Infect Dis* 2009;49:1480–5. <https://doi.org/10.1086/644621>

## Human Immunodeficiency Virus Diagnoses

CDC requires states to transmit HIV case data via the enhanced HIV/AIDS Reporting System (eHARS), which is a browser-based system deployed at 54 state/local and territorial public health departments in the United States. HIV surveillance data are not reported through NNDSS. De-identified data are transmitted monthly from health departments, through the secure access management services (SAMS), directly to CDC's Division of HIV/AIDS Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, and are incorporated into the National HIV Surveillance System database.

By April 2008, all 50 states, the District of Columbia, and six U.S. dependent areas had laws or regulations requiring confidential name-based reporting for human immunodeficiency virus (HIV) infection, in addition to reporting persons whose disease has been classified as stage 3 (acquired immunodeficiency syndrome [AIDS]). In 2008, CDC published a revised surveillance case definition for HIV infection that includes AIDS and incorporates the HIV infection classification (1). Laboratory-confirmed evidence of HIV infection is required to meet the surveillance case definition for HIV infection, including stage 3 (AIDS). In 2014, the HIV surveillance case definition was revised again to adapt to changes in diagnostic criteria used by laboratories and clinicians (2). The laboratory criteria for defining a confirmed case of HIV infection were changed to accommodate multitest algorithms that do not include previously required tests (e.g., Western blot). New to the case definition was the inclusion of criteria for differentiating HIV-1 and HIV-2 infections and for recognizing early HIV infection (stage 0), during which viral loads might be high enough and CD4 T-lymphocyte counts low enough to be mistaken for stage 3 (AIDS). In addition, the revised definition consolidated the staging systems for adults/adolescents and children, simplified surveillance criteria for opportunistic illnesses indicative of stage 3, and incorporated revisions of

clinical criteria (i.e., medical record documentation) for reporting diagnoses without laboratory evidence.

Because retroactive implementation of some features (e.g., the new staging system) of the 2014 case definition was impractical, the following criteria were used to classify cases in this report (1): cases diagnosed before 2014 were classified according to the 2008 HIV case definition and (2) cases diagnosed in 2014 and 2015 were classified according to the 2014 HIV case definition.

A total of 33,817 cases of HIV infection were diagnosed in the United States during 2015 and reported to CDC as of December 2015. Blacks/African Americans had the highest rate of diagnoses of HIV infection of all racial/ethnic groups (37.7 per 100,000) and accounted for 44.5% of diagnoses in 2015; whites and Hispanics/Latinos followed, accounting for 27.8% and 22.8% of diagnoses, respectively. Although HIV affects persons in all age groups, cases were most frequently diagnosed in adults aged 25–39 years. Areas with the highest rates ( $\geq 15.0$  per 100,000) of diagnoses during 2015 were the District of Columbia, Florida, Louisiana, Maryland, Mississippi, New York, and South Carolina.

1. Schneider E, Whitmore S, Glynn KM, Dominguez K, Mitsch A, McKenna MT. Revised surveillance case definitions for HIV infection among adults, adolescents, and children aged <18 months and for HIV infection and AIDS among children aged 18 months to <13 years—United States, 2008. *MMWR Recomm Rep* 2008;57(No. RR-10):1–12.
2. CDC. Revised surveillance case definition for HIV infection—United States, 2014. *MMWR Recomm Rep* 2014;63(No. RR-3):1–10.

## Influenza-Associated Pediatric Mortality

In 2004, CSTE added influenza-associated pediatric mortality to the list of conditions reportable to NNDSS (1). A pediatric influenza-associated death is defined for surveillance purposes as a death resulting from a clinically compatible illness that was confirmed to be influenza by an appropriate laboratory or rapid diagnostic test in a person aged <18 years. From January 4, 2015 to January 2, 2016,\* a total of 130 influenza-associated pediatric deaths were reported to CDC from 39 states and New York City.

Of the 130 influenza-associated pediatric deaths reported to CDC during 2015, two deaths occurred during the 2013–14 influenza season, 122 deaths occurred during the 2014–15 influenza season, and six occurred during the 2015–16 influenza season. An influenza season spans the time period between *MMWR* week 40 of a calendar year to *MMWR* week 39 of

\*For 2015, *MMWR* only included influenza-associated pediatric deaths that were reported from *MMWR* week 1 through *MMWR* week 52 (January 4, 2015–January 2, 2016).

the following year. Ninety-three (72%) were associated with influenza A viruses, 35 (27%) with influenza B viruses, one (1%) with an influenza virus for which the type was not determined, and one (1%) death was associated with influenza A virus and influenza B virus co-infection. Of 93 influenza A viruses, subtype was determined for 54 (58%); three were influenza A (H1N1) pdm09 viruses and 51 were influenza A (H3N2) viruses.

Among the 130 deaths reported in 2015, a total of 16 children (12%) were aged <6 months, 46 (35%) were aged 6–59 months, 39 (30%) were aged 5–11 years, and 29 (22%) were aged 12–17 years; the median age at the time of death was 5.4 years (range: 27 days–17 years). The median age in 2015 is similar to previous influenza seasons during nonpandemic periods, but is lower than the median age of deaths observed during the 2009 pandemic.

Information on the location of death was available for 128 (98.5%) of the 130 children: 80 (63%) children died after being admitted to the hospital (73 were admitted to the intensive care unit), 22 (17%) died in the emergency department, and 26 (20%) died outside the hospital. Information on pre-existing medical conditions was reported for 127 (98%) children: 55 (43%) children had one or more underlying medical condition known to confer increased risk for complications from influenza (2). The most common group of underlying conditions was neurologic disorders (e.g., moderate to severe developmental delay, seizure disorders, cerebral palsy, mitochondrial disorders, neuromuscular disorders, and neurologic conditions), which was reported for 23 (18%) of 127 children. Eighteen (14%) children had chromosomal abnormalities and/or genetic syndromes, 17 (13%) had a chronic pulmonary condition (e.g., asthma, cystic fibrosis, or other chronic pulmonary disease), and 13 (10%) had cardiac disease or congenital heart disease.

Among the 130 deaths in children, 73 children had specimens collected for bacterial culture from normally sterile sites (e.g., blood, pleural fluid, cerebrospinal fluid, and lung tissue). Of these, 35 (48%) had positive cultures, and six (17%) of the 35 were positive for more than one pathogen. *Staphylococcus aureus* was detected in 15 (43%) of 35 positive cultures; nine were methicillin-resistant, one was methicillin-sensitive, and for five specimens methicillin-sensitivity testing was not done. Three cultures (9%) were positive for *Streptococcus pneumoniae*, three (9%) were positive for Group A *Streptococcus*, two cultures (6%) were positive for *Pseudomonas aeruginosa*, and two cultures (6%) were positive for *Streptococcus* species. Other bacterial pathogens identified included one each with *Enterobacter cloacae*, *Enterococcus avium*, *Klebsiella pneumoniae*, and *Stenotrophomonas maltophilia*.

Of 89 children aged ≥6 months at the time of illness onset for whom seasonal vaccination status was known, 27 (30%) had been fully vaccinated against influenza as recommended by the Advisory Committee on Immunization Practices (2,3). Twenty-one children were aged <6 months at the time of their illness onset and therefore considered ineligible for vaccination.

Influenza seasons typically span portions of 2 calendar years and can vary widely in terms of severity and timing of peak activity, thus affecting the number of deaths reported in a calendar year. The 2014–15 influenza season was moderately severe and peaked in late December 2014, with predominant circulation of antigenically and genetically drifted influenza A (H3N2) viruses (4). Continued surveillance for influenza-associated mortality is important to monitor the effects of seasonal and novel influenza, factors contributing to severe influenza-associated disease, and the influence of interventions among children.

1. Council of State and Territorial Epidemiologists. Influenza-associated pediatric mortality. Position statement 04-ID-04. Atlanta, GA: Council of State and Territorial Epidemiologists. <http://c.ymcdn.com/sites/www.cste.org/resource/resmgr/PS/04-ID-04-FINAL.pdf>
2. Grohskopf LA, Olsen SJ, Sokolow LZ, et al. Prevention and control of seasonal influenza with vaccines: recommendations of the Advisory Committee on Immunization Practices (ACIP) — United States, 2014–15 influenza season. MMWR Morb Mortal Wkly Rep 2014;63:691–7.
3. Grohskopf LA, Sokolow LZ, Olsen SJ, Bresee JS, Broder KR, Karron RA. Prevention and control of seasonal influenza with vaccines: recommendations of the Advisory Committee on Immunization Practices—United States, 2015–16 influenza season. MMWR Morb Mortal Wkly Rep 2015;64:818–25. <https://doi.org/10.15585/mmwr.mm6430a3>
4. Appiah GD, Blanton L, D'Mello T, et al. Influenza activity—United States, 2014–15 season and composition of the 2015–16 influenza vaccine. MMWR Morb Mortal Wkly Rep 2015;64:583–90.

## Legionellosis

In 2015, a total of 6,079 cases of Legionellosis were reported in the United States (1.89 cases per 100,000 persons of all ages). The rate of reported cases continues to rise. Several high-profile outbreaks of Legionnaires' disease occurred in 2015, including an outbreak of 138 cases in the South Bronx, New York City, which was the largest community-associated outbreak since the 1976 Philadelphia outbreak that led to the discovery of *Legionella*.

Because *Legionella* transmission occurs from human-made environmental settings, the most effective strategy for the prevention of Legionnaires' disease is through control of *Legionella* in building water systems. In 2015, ASHRAE (formerly known as the American Society of Heating, Refrigerating, and Air-Conditioning Engineers) published a consensus industry standard for reducing the risk for Legionnaires' disease called



ASHRAE 188 (1). This document calls for the development and implementation of water management programs in large or complex building water systems. It is based on best practices and focuses on identifying hazardous conditions and applying control measures to interrupt *Legionella* amplification and transmission. The CDC and its partners developed a toolkit to facilitate implementation of this industry standard (2).

1. ASHRAE. Legionellosis: risk management for building water systems. ANSI/ASHRAE Standard 188. Atlanta, GA: ASHRAE; 2015. <https://www.ashrae.org>
2. CDC. Developing a water management program to reduce *Legionella* growth and spread in buildings: a practical guide to implementing industry standards. Atlanta, GA: US Department of Health and Human Services, CDC; 2016. <https://www.cdc.gov/legionella/WMPtoolkit>

## Leptospirosis

In 2015, a total of 10 states, jurisdictions, and territories reported 96 leptospirosis cases. Puerto Rico reported the highest number of leptospirosis cases (45), followed by Hawaii (22) and Guam (11). Among the 40 cases reported from U.S. states and jurisdictions (territories excluded), 95% (38/40) were male, and a temporal peak of 10 cases was seen in August, with cases reported by five states and jurisdictions that month.

NNDSS began receiving case notifications for leptospirosis in 2014. In the first two years of notifications combined (2014–2015), the total case count for leptospirosis was 203 cases reported from 17 states, jurisdictions, and territories, with 114 total cases reported from Puerto Rico, 45 from Hawaii, and 11 from Guam. Comparatively, individual states and jurisdictions in the continental United States reported six or fewer cases over the 2-year period. Leptospirosis is not reportable in 14 states.

Leptospirosis, one of the most widespread zoonotic diseases, is caused by pathogenic species of the *Leptospira* genus. There are 22 *Leptospira* species, 10 of which are pathogenic, including more than 250 serovars known to cause disease (1,2). Most commercially available tests include polymerase chain reaction (PCR) and serology using qualitative Immunoglobulin M (IgM)-based assays. While PCR is a confirmatory test, IgM-based assays are considered screening tests and should ideally be confirmed with the microscopic agglutination test (MAT). MAT is the gold standard for leptospirosis serology, with acute infection confirmed by either a four-fold increase in titers between acute and convalescent sera or a single titer greater than or equal to 1:800. MAT can be performed at select reference laboratories around the country, including CDC. Culture is also confirmatory, however, this method is less commonly used because the bacteria is fastidious, requires specialized media, and might take several months to grow. The benefit of

culture is the ability to perform various serovar identification techniques using the grown isolate. Although MAT is useful for confirming leptospirosis cases, it is not recommended for identifying the infecting serovar because of frequent cross-reaction between serovars (3). In 2014 and 2015, only 37% (40/107) and 49% (47/96) of leptospirosis cases, respectively, were reported as confirmed. Laboratory confirmation of probable leptospirosis cases is encouraged.

Disease presentation can vary from a mild, influenza-like illness to a severe and fatal disease with multiorgan failure. The nonspecific acute, febrile illness presentation of leptospirosis cases mimics that of many other infectious diseases, which can make initial recognition difficult. Continued efforts to increase awareness of leptospirosis in health care providers is needed to improve detection and reporting of the disease. If leptospirosis is suspected, treatment should be initiated early in the course of illness and not delayed while awaiting laboratory confirmation, as this might reduce the severity of the disease.

1. Bourhy P, Collet L, Brisse S, Picardeau M. *Leptospira mayottensis* sp. nov., a pathogenic species of the genus *Leptospira* isolated from humans. *Int J Syst Evol Microbiol* 2014;64:4061–7. <https://doi.org/10.1099/ijs.0.066597-0>
2. Haake D, Levett P. *Leptospira* species (Leptospirosis). In: Bennett J, Dolin R, Blaser M, eds. *Mandell, Douglas, and Bennett's principles and practice of infectious diseases*, 8th ed. Philadelphia, PA: Elsevier Inc.; 2015: 2714–20.
3. Levett PN. Usefulness of serologic analysis as a predictor of the infecting serovar in patients with severe leptospirosis. *Clin Infect Dis* 2003;36:447–52. <https://doi.org/10.1086/346208>

## Listeriosis

*Listeria monocytogenes* infection (listeriosis) is rare but can cause severe invasive disease (e.g., bacteremia and meningitis). Listeriosis is predominately acquired through contaminated food and occurs most frequently among older adults, persons with certain immunocompromising conditions, and pregnant women and their newborns. Pregnancy-associated listeriosis can manifest as a relatively mild illness for the woman, but can result in fetal loss or severe neonatal disease.

Listeriosis has been nationally notifiable since 2000. In 2015, the incidence of listeriosis reported to NNDSS was 0.24 infections per 100,000 population. Progress toward the 2020 national target of 0.20 infections per 100,000 population (1) is measured through the Foodborne Diseases Active Surveillance Network (FoodNet), which conducts active, population-based surveillance for listeriosis in 10 U.S. states. FoodNet reported a preliminary annual incidence of *Listeria monocytogenes* in 2015 of 0.24 infections per 100,000 population, the same rate nationally reported through NNDSS (2).

The *Listeria* Initiative is an enhanced surveillance system designed to aid in the rapid investigation of listeriosis outbreaks

by combining *L. monocytogenes* isolate molecular subtyping and whole-genome sequencing (WGS) results with epidemiologic data collected by state and local health departments (3). As part of the *Listeria* Initiative, CDC recommends that all clinical isolates of *L. monocytogenes* be forwarded routinely to a public health laboratory for pulsed-field gel electrophoresis (PFGE) subtyping and WGS, and that these results be submitted to PulseNet, the National Molecular Subtyping Network for Foodborne Disease Surveillance (4). In addition, communicable disease programs are asked to interview all patients with listeriosis promptly using the standard *Listeria* Initiative questionnaire, which is available in English and Spanish (<https://www.cdc.gov/listeria/surveillance.html>).

Beginning in September 2013, whole genome sequencing has been performed on all clinical isolates as part of a project conducted by CDC, state and local health departments, the Food and Drug Administration, the U.S. Department of Agriculture's Food Safety and Inspection Service, the National Institutes of Health, and international partners (5,6). All isolate sequences are deposited in publicly available databases at the National Center for Biotechnology Information of the National Institutes of Health. The *Listeria* Initiative has aided in the timely identification and removal of contaminated food during several listeriosis investigations, including the first multistate outbreak linked to commercially produced ice cream in the U.S., causing 10 illnesses (7).

1. US Department of Health and Human Services. Healthy people 2020 objectives. Washington, DC: US Department of Health and Human Services; 2017. <https://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicId=14>
2. Huang JY, Henao OL, Griffin PM, et al. Infection with pathogens transmitted commonly through food and the effect of increasing use of culture-independent diagnostic tests on surveillance—Foodborne Diseases Active Surveillance Network, 10 U.S. Sites, 2012–2015. *MMWR Morb Mortal Wkly Rep* 2016;65:368–71. <https://doi.org/10.15585/mmwr.mm6514a2>
3. CDC. National Enteric Disease Surveillance: the *Listeria* Initiative. Atlanta, Georgia: US Department of Health and Human Services, CDC; 2014. [https://www.cdc.gov/listeria/pdf/ListeriaInitiativeOverview\\_508.pdf](https://www.cdc.gov/listeria/pdf/ListeriaInitiativeOverview_508.pdf)
4. CDC. PulseNet. Atlanta, GA: US Department of Health and Human Services, CDC; 2016. <https://www.cdc.gov/pulsenet>
5. Jackson BR, Tarr C, Strain E, et al. Implementation of nationwide real-time whole-genome sequencing to enhance listeriosis outbreak detection and investigation. *Clin Infect Dis* 2016;63:380–6. <https://doi.org/10.1093/cid/ciw242>
6. Carleton HA, Gerner-Smidt P. Whole-genome sequencing is taking over foodborne disease surveillance. *Microbe* 2016;11:311–7.
7. CDC. Multistate outbreak of listeriosis linked to Blue Bell Creameries products (final update). Atlanta, GA: US Department of Health and Human Services, CDC; 2015. <https://www.cdc.gov/listeria/outbreaks/ice-cream-03-15/index.html>

## Lyme Disease

In 2015, a total of 38,069 confirmed and probable cases of Lyme disease were reported to CDC, an increased number compared with the number reported annually between 2010 and 2014; however, cases did not surpass the number reported in 2009, the year with the highest case counts. The geographic distribution of high incidence areas with Lyme disease appears to be expanding based on data reported to NNDSS. The number of counties with an incidence of  $\geq 10$  confirmed cases per 100,000 persons increased from 324 in 2008 to 424 in 2015.

## Measles

Measles was declared eliminated from the United States in 2000. Since then, elimination has been maintained through high population immunity along with adequate disease surveillance and public health response capacity (1,2). Nonetheless, because measles remains endemic in much of the world, importations continue to result in sporadic cases and outbreaks in the United States, which can be costly to control (3). As in recent years, the majority of measles cases (97%) were import-associated (i.e., cases that are internationally imported, epidemiologically linked to an imported case, or for which viral genetic evidence indicates an imported genotype) in 2015 (4).

A measles outbreak is defined as a chain of transmission involving three or more cases. Six outbreaks occurred in 2015, accounting for 80% of the total ( $n = 150$ ) cases. The largest outbreak originated in California in late December 2014, and was linked to two Disney theme parks (5,6). Cases were reported through early March 2015, including 113 cases reported in 2015. The outbreak spread to seven other U.S. states (Arizona, Colorado, Nebraska, Oregon, Texas, Utah, and Washington), and two bordering countries (Mexico and Canada) (6). The majority of measles cases associated with outbreaks in 2015 occurred in persons who were unvaccinated or whose vaccination status was unknown (5).

In the spring of 2015, an adult with a suppressed immune system died from pneumonia related to an undetected measles infection. One or two out of 1,000 persons with measles in the United States will die, even with the best supportive care. This measles case underscores the fact that the disease can cause serious complications and that immunocompromised persons are at higher risk for these complications.

1. Papania MJ, Wallace GS, Rota PA, et al. Elimination of endemic measles, rubella, and congenital rubella syndrome from the Western hemisphere: the US experience. *JAMA Pediatr* 2014;168:148–55. <https://doi.org/10.1001/jamapediatrics.2013.4342>



2. Fiebelkorn AP, Redd SB, Gastañaduy PA, et al. A comparison of postelimination measles epidemiology in the United States, 2009–2014 versus 2001–2008. *J Pediatric Infect Dis Soc* 2017;6:40–8.
3. Ortega-Sanchez IR, Vijayaraghavan M, Barskey AE, Wallace GS. The economic burden of sixteen measles outbreaks on United States public health departments in 2011. *Vaccine* 2014;32:1311–7. <https://doi.org/10.1016/j.vaccine.2013.10.012>
4. Council of State and Territorial Epidemiologists. Revision of measles, rubella, and congenital syndrome case classification as part of elimination goals in the United States. Position statement 2006-ID-16. Atlanta, GA: Council of State and Territorial Epidemiologists; 2006.
5. Clemmons NS, Gastañaduy PA, Fiebelkorn AP, Redd SB, Wallace GS. Measles—United States, January 4–April 2, 2015. *MMWR Morb Mortal Wkly Rep* 2015;64:373–6.
6. Zipprich J, Winter K, Hacker J, Xia D, Watt J, Harriman K. Measles outbreak—California, December 2014–February 2015. *MMWR Morb Mortal Wkly Rep* 2015;64:153–4.

## Meningococcal Disease

Meningococcal disease is a serious and life-threatening infection, with a case-fatality ratio of 10%–15%; survivors often lose limbs or suffer brain damage. In 2015, rates of meningococcal disease continued to be at historic lows in the United States (0.12 cases per 100,000 population); however, during 2015, two outbreaks of serogroup B meningococcal disease occurred on college campuses in the United States, resulting in nine cases and one death. In 2015, CDC's Advisory Committee on Immunization Practices (ACIP) recommended routine use of serogroup B meningococcal (MenB) vaccine in certain groups at increased risk for disease, including use during outbreaks of serogroup B meningococcal disease (1). ACIP also recommended that a MenB vaccine series may be administered to adolescents and young adults aged 16–23 years to provide short-term protection against most strains of serogroup B meningococcal disease (2). The preferred age for serogroup B meningococcal vaccination is age 16–18 years (2).

1. Folaranmi T, Rubin L, Martin SW, Patel M, MacNeil JR. Use of serogroup B meningococcal (MenB) vaccines in persons aged ≥10 years at increased risk for serogroup B meningococcal disease: recommendations of the Advisory Committee on Immunization Practices (ACIP), 2015. *MMWR Morb Mortal Wkly Rep* 2015;64:608–12.
2. MacNeil JR, Rubin L, Folaranmi T, Ortega-Sanchez IR, Patel M, Martin SW. Use of serogroup B meningococcal (MenB) vaccines in adolescents and young adults: recommendations of the Advisory Committee on Immunization Practices (ACIP), 2015. *MMWR Morb Mortal Wkly Rep* 2015;64:1171–6. <https://doi.org/10.15585/mmwr.mm6441a3>

## Mumps

A total of 1,329 mumps cases in the United States were reported during 2015 from 38 states, with the majority being from three states (Illinois, Iowa, and New York). Of these 1,329 cases, 705 (53%) came from eight outbreaks of 20 or

more cases. The majority (88%) of the outbreaks occurred in close-contact settings including universities, high schools and athletic teams; 83% of the large outbreak case-patients were fully vaccinated.

Outbreaks of mumps among university settings are known to occur despite high 2-dose vaccine coverage (1). The reported vaccine-effectiveness for mumps vaccine is 78% for 1-dose and 88% for 2-doses (2). Close and prolonged contact likely facilitates mumps transmission.

1. Dayan GH, Quinlisk MP, Parker AA, et al. Recent resurgence of mumps in the United States. *N Engl J Med* 2008;358:1580–9. <https://doi.org/10.1056/NEJMoa0706589>
2. McLean HQ, Fiebelkorn AP, Temte JL, Wallace GS. Prevention of measles, rubella, congenital rubella syndrome, and mumps, 2013: summary recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR Recomm Rep* 2013;62(No. RR-4):1–34.

## Novel Influenza A Virus Infections

In 2007, CSTE added human infection with a novel influenza A virus to the list of conditions reportable to NNDSS (1). Novel influenza A virus infections are human infections with influenza A viruses that are different from currently circulating human seasonal influenza viruses. These viruses include those that are subtyped as nonhuman in origin and those that cannot be subtyped with standard methods and reagents used for currently circulating influenza viruses.

Influenza viruses that normally circulate in swine are called swine influenza viruses when isolated from swine, but are called variant viruses when isolated from humans. During 2005–2015, all reported novel influenza A human infections in the United States involved variant viruses rather than avian-origin influenza viruses. Although most persons identified with variant influenza virus infection report contact with swine preceding their illness, suggesting swine-to-human spread, limited human-to-human transmission of these viruses has occurred (2). Because the implications of ongoing transmission of these novel viruses between humans are potentially severe, prompt and thorough investigation of human infections with novel influenza viruses is critical so that the potential public health risk can be more fully understood and appropriate public health measures can be taken (3).

In 2015, seven human infections with novel influenza A viruses were reported from five states (Iowa [one], Michigan [one], Minnesota [three], New Jersey [one], and Ohio [one]) (4–6). Four of these infections were associated with influenza A (H1N2) variant viruses (H1N2v) and three with influenza A (H3N2) variant viruses (H3N2v). The median age of patients was 27 years (range: 6–43 years), and six (85.7%) were male. Reported symptoms associated with infection were fever

(85.7%), cough (85.7%), fatigue (42.9%), shortness of breath (71.4%), muscle aches (28.6%), and vomiting or diarrhea (57.1%); six (85.7%) cases reported influenza-like illness (e.g., fever ( $\geq 100^{\circ}\text{F}$  [ $37.8^{\circ}\text{C}$ ] with cough and/or sore throat). Three (42.9%) cases had an underlying medical condition known to confer increased risk for complications from influenza (7). All seven patients sought health care for their illness and five (71.4%) were hospitalized. Six (85.7%) patients fully recovered from their illness and one patient died from complications of their infection. Four patients reported direct contact with (e.g., touching or handling) or proximity to (e.g., walking through an area or coming within 6 feet of) swine in the week preceding illness onset. Three patients worked, lived, or visited areas near where swine were housed, but no direct contact with swine in the week before illness onset was reported. No likely human-to-human transmission of novel influenza A viruses was identified.

Variant virus infections usually occurs among persons with direct, unprotected contact with swine or environments where swine are or have been present (e.g., agricultural fairs, farms, and petting zoos). CDC conducts year-round surveillance for human infections with novel influenza A viruses in conjunction with state and local public health laboratories and conducts extensive epidemiologic investigations on each report of human infection with a novel influenza virus. Any specimen with results suggestive of a novel influenza A virus infection or that cannot be subtyped using standard methods and reagents at a public health laboratory should be immediately submitted to CDC for further testing.

1. Council of State and Territorial Epidemiologists. Public health reporting and national notification for novel influenza A virus infection. Position statement 13-ID-14. Atlanta, GA: Council of State and Territorial Epidemiologists; 2012. <http://c.yumcdn.com/sites/www.cste.org/resource/resmgr/PS/13-ID-14.pdf>
2. Nhung MA, Epperson S, Biggerstaff M, et al. Outbreak of variant influenza A(H3N2) virus in the United States. *Clin Infect Dis* 2013;57:1703–12. <https://doi.org/10.1093/cid/cit649>
3. Richards S, Glazier M, Masterson K, et al. Update: Influenza A (H3N2)v transmission and guidelines—five states, 2011. *MMWR Morb Mortal Wkly Rep* 2012;60:1741–4.
4. Blanton L, Kniss K, Smith S, et al. Update: influenza activity—United States and worldwide, May 24–September 5, 2015. *MMWR Morb Mortal Wkly Rep* 2015;64:1011–6. <https://doi.org/10.15585/mmwr.mm6436a4>
5. Appiah GD, Blanton L, D'Mello T, et al. Influenza activity—United States, 2014–15 season and composition of the 2015–16 influenza vaccine. *MMWR Morb Mortal Wkly Rep* 2015;64:583–90.
6. Davlin SL, Blanton L, Kniss K, et al. Influenza activity—United States, 2015–16 season and composition of the 2016–17 influenza vaccine. *MMWR Morb Mortal Wkly Rep* 2016;65:567–75. <https://doi.org/10.15585/mmwr.mm6522a3>
7. Grohskopf LA, Sokolow LZ, Broder KR, et al. Prevention and control of seasonal influenza with vaccines: recommendations of the Advisory Committee on Immunization Practices—United States, 2016–17 influenza season. *MMWR Recomm Rep* 2016;65(No. RR-5):1–54. <https://doi.org/10.15585/mmwr.rr6505a1>

## Pertussis

Reported pertussis incidence decreased 37.9% from 2014 (incidence: 10.3 per 100,000 population) to 2015 (6.5 per 100,000 population). Although overall reporting declined, pertussis incidence varies geographically, and 11 states reported increases in incidence, with two states (Washington and West Virginia) reporting more than double the number of cases they reported during 2014. The highest incidence of reported pertussis continues to be observed among infants aged <1 year (67.2 per 100,000 population); however, the greatest proportion of reported pertussis cases is contributed by adolescents aged 11–19 years (32%), likely the result of waning immunity among adolescents exclusively vaccinated with acellular pertussis vaccines (1–3). Six pertussis-related deaths were reported through NNDSS during 2015. Three deaths occurred among infants aged <3 months, and the remaining were reported from adolescents and adults with co-morbidities. Two of the three pertussis-related deaths among infants aged <3 months had known maternal Tdap status, and neither mother received Tdap during the recommended 27–36 weeks of gestation. Vaccinating women with Tdap during the third trimester of every pregnancy remains the primary recommendation for preventing pertussis among young infants (4).

1. Misegades LK, Winter K, Harriman K, et al. Association of childhood pertussis with receipt of 5 doses of pertussis vaccine by time since last vaccine dose, California, 2010. *JAMA* 2012;308:2126–32. <https://doi.org/10.1001/jama.2012.14939>
2. Skoff TH, Martin SW. Impact of tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccinations on reported pertussis cases among those 11 to 18 years of age in an era of waning pertussis immunity: a follow-up analysis. *JAMA Pediatr* 2016;170:453–8. <https://doi.org/10.1001/jamapediatrics.2015.4875>
3. Acosta AM, DeBolt C, Tasslimi A, et al. Tdap vaccine effectiveness in adolescents during the 2012 Washington State pertussis epidemic. *Pediatrics* 2015;135:981–9. <https://doi.org/10.1542/peds.2014-3358>
4. CDC. Updated recommendations for use of tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccine (Tdap) in pregnant women—Advisory Committee on Immunization Practices (ACIP), 2012. *MMWR Morb Mortal Wkly Rep* 2013;62:131–5.

## Plague

Plague is a fulminant, life-threatening zoonosis caused by the bacterium *Yersinia pestis*. Transmission to humans usually occurs through the bite of an infected rodent flea and less commonly through direct contact with tissues or inhalation of respiratory secretions from infected animals. Clinical presentation varies according to the route of infection, with bubonic plague being the most common. Bubonic and septicemic plague cannot be transmitted from person to person; however, persons with pneumonic plague can transmit *Y. pestis* via respiratory droplets (1).

In 2015, a total of 16 confirmed cases of plague were reported to CDC, the most since 2006; four cases were fatal. Cases were reported from residents of eight states: Arizona (two cases), California (one case), Colorado (four cases), Georgia (one case), Michigan (one case), New Mexico (four cases), Oregon (two cases), and Utah (one case). Two of the confirmed cases were linked to exposures in or near Yosemite National Park, the site of a plague epizootic in 2015 (2,3).

1. Inglesby TV, Dennis DT, Henderson DA, et al.; Working Group on Civilian Biodefense. Plague as a biological weapon: medical and public health management. *JAMA* 2000;283:2281–90. <https://doi.org/10.1001/jama.283.17.2281>
2. Kwit N, Nelson C, Kugeler K, et al. Human plague—United States, 2015. *MMWR Morb Mortal Wkly Rep* 2015;64:918–9. <https://doi.org/10.15585/mmwr.mm6433a6>
3. Danforth M, Novak M, Petersen J, et al. Investigation of and response to 2 plague cases, Yosemite National Park, California, USA, 2015. *Emerg Infect Dis* 2016;22. <https://doi.org/10.3201/eid2212.160560>

## Rabies

During 2015, all 50 states reported a total of 5,491 rabid animals to CDC (1), representing a 9.1% decrease from the 6,033 rabid animals in 2014 (2). Two human rabies deaths occurred in 2015 (1,3), compared with one human rabies death reported in 2014. Of the 5,491 cases of animal rabies, 4,983 (90.7%) involved wildlife. Increases in the number of animals reported rabid were observed for the following species: foxes (4.5%), and dogs (13.6%) (1). Decreases in the number of animals reported rabid were observed for the following species: bats (3%), cats (10.3%), raccoons (11%), and skunks (14%) (1). There were no significant changes in the number of rabid cattle reported from 2014. Other reported rabid wildlife included six bobcats (*Lynx rufus*), 15 coyotes (*Canis latrans*), six deer (presumably *Odocoileus virginianus*), two opossums (*Didelphis virginiana*), two otters (presumably *Lontra canadensis*), one elk (*Cervus elaphus*), and one ringtail (*Bassariscus astutus*) (1). Rabid rodents and lagomorphs reported in 2015 included 25 groundhogs (*Marmota monax*), six rabbits (not specified), one squirrel (not specified), and two beavers (*Castor canadensis*) (1). There was a 4.1% decrease in the number of samples submitted for rabies testing in 2015 as compared with 2014. Two human rabies deaths occurred in 2015 (1,3). The first was a male aged 65 years in Massachusetts who was bitten by a dog while abroad. The second involved a female aged 77 years in Wyoming who had contact with a bat.

1. Birhane MG, Cleaton JM, Monroe BP, et al. Rabies surveillance in the United States during 2015. *J Am Vet Med Assoc* 2017;250:1117–30. <https://doi.org/10.2460/javma.250.10.1117>

2. Monroe BP, Yager P, Blanton J, et al. Rabies surveillance in the United States during 2014. *J Am Vet Med Assoc* 2016;248:777–88. <https://doi.org/10.2460/javma.248.7.777>
3. Harrist A, Styczynski A, Wynn D, et al. Human rabies—Wyoming and Utah, 2015. *MMWR Morb Mortal Wkly Rep* 2016;65:529–33. <https://doi.org/10.15585/mmwr.mm6521a1>

## Salmonellosis

In 2015, the incidence of salmonellosis in the United States was 17.2 laboratory-confirmed infections per 100,000 population, one and a half times the 2020 national health objectives target of 11.4 (1). Data from the Foodborne Diseases Active Surveillance Network (FoodNet), which conducts active surveillance for salmonellosis in 10 U.S. sites, showed a preliminary annual incidence of *Salmonella* of 15.9 in 2015, slightly lower than the rate reported to NNDSS (2). During 2015, as in previous years of surveillance, children aged <5 years had the highest reported incidence rate of salmonellosis. Salmonellosis is reported most frequently in late summer and early fall; in 2015, this seasonality was evident, with most reported infections occurring during July–October.

*Salmonella* causes an estimated 1.2 million illnesses annually in the United States; of these, an estimated 1 million are transmitted by food consumed in the United States (3). *Salmonella* can contaminate a wide range of foods, and different serotypes tend to have different animal reservoirs and food sources, making control challenging. The largest multistate outbreak of *Salmonella* infections in 2015 (serotype Poona) was traced to imported cucumbers; other notable outbreaks in 2015 were linked to small turtles (serotypes Sandiego and Poona), pork (serotypes I 4,[5],12:i:- and Infantis), live poultry (serotypes Enteritidis, Hadar, Indiana and Muenchen), raw, frozen, stuffed chicken entrees (serotype Enteritidis), frozen raw tuna (serotypes Paratyphi B variant L[+] tartrate[+] and Weltevreden), pet crested geckos (serotype Muenchen), and raw sprouted nut butter spreads (serotype Paratyphi B variant L[+] tartrate[+]) (4).

1. US Department of Health and Human Services. Healthy people 2020 objectives. Washington, DC: US Department of Health and Human Services; 2017. <https://www.healthypeople.gov/2020/topics-objectives/topic/food-safety/objectives?topicId=14>
2. CDC. Foodborne Diseases Active Surveillance Network. Atlanta, GA: US Department of Health and Human Services, CDC; 2016. <https://www.cdc.gov/foodnet/reports/data/infections.html>
3. Scallan E, Hoekstra RM, Angulo FJ, et al. Foodborne illness acquired in the United States—major pathogens. *Emerg Infect Dis* 2011;17:7–15. <https://doi.org/10.3201/eid1701.P11101>
4. CDC. Reports of selected salmonella outbreak investigations, 2015. Atlanta, GA: US Department of Health and Human Services, CDC; 2015. <https://www.cdc.gov/salmonella/outbreaks-2015.html>



## Shiga toxin-producing *Escherichia coli* (STEC)

In 2015, the incidence of laboratory-confirmed Shiga toxin-producing *Escherichia coli* (STEC) infections in the United States was 2.2 cases per 100,000 population. Preliminary data from FoodNet, an active, population-based surveillance system for enteric diseases, reported culture-confirmed STEC incidence of 2.6 in 2015 (1). As in previous years of FoodNet surveillance, the age group with the highest incidence of reported STEC infections was children aged 1–4 years (8.0 per 100,000 population). In 2015, multistate outbreaks of STEC infection were linked to rotisserie chicken salad (STEC O157:H7) and multiple outbreaks linked to an unidentified food or ingredient served at several locations of a national Mexican chain restaurant (STEC O26) (2).

Public health actions to monitor, prevent, and control STEC infections are based on serogroup characterization. Development of postdiarrheal hemolytic uremic syndrome (HUS), a severe complication of STEC infection, is most strongly associated with STEC O157. Non-O157 STEC, a diverse group that varies in virulence, comprises approximately 50 other serogroups. Increased use of culture-independent diagnostic tests in recent years has led to increased detection and reporting of non-O157 STEC infection (3,4). STEC produces Shiga toxins (Stx): Stx1, Stx2, or both. In general, strains that produce certain types of Stx2 are the most virulent (5). Accounting for underdiagnosis, an estimated 96,000 illnesses are caused by STEC O157 and 168,000 illnesses by non-O157 STEC each year (6,7).

Stool specimens from patients with community-acquired diarrhea submitted to clinical laboratories should be tested routinely both by culture for STEC O157 and by an assay that detects Shiga toxins (or the genes that encode them). Detection of Shiga toxin alone is inadequate for clinical management and public health investigation; characterizing STEC isolates by serogroup and by pulsed-field gel electrophoresis pattern is important to detect, investigate, and control outbreaks.

1. CDC. Foodborne Diseases Active Surveillance Network. Atlanta, GA: US Department of Health and Human Services, CDC; 2016. <https://www.cdc.gov/foodnet/reports/data/infections.html>
2. CDC. Reports of selected *E. coli* outbreak investigations from 2015. Atlanta, GA: US Department of Health and Human Services, CDC; 2015. <https://www.cdc.gov/ecoli/2015-outbreaks.html>
3. Gould LH, Mody RK, Ong KL, et al.; Emerging Infections Program Foodnet Working Group. Increased recognition of non-O157 Shiga toxin-producing *Escherichia coli* infections in the United States during 2000–2010: epidemiologic features and comparison with *E. coli* O157 infections. *Foodborne Pathog Dis* 2013;10:453–60. <https://doi.org/10.1089/fpd.2012.1401>

4. Iwamoto M, Huang JY, Cronquist AB, et al. Bacterial enteric infections detected by culture-independent diagnostic tests—FoodNet, United States, 2012–2014. *MMWR Morb Mortal Wkly Rep* 2015;64:252–7.
5. Mody RK, Griffin PM. Fecal shedding of Shiga toxin-producing *Escherichia coli*: what should be done to prevent secondary cases? *Clin Infect Dis* 2013;56:1141–4. <https://doi.org/10.1093/cid/cis1222>
6. Heiman KE, Mody RK, Johnson SD, Griffin PM, Gould LH. *Escherichia coli* O157 Outbreaks in the United States, 2003–2012. *Emerg Infect Dis* 2015;21:1293–301. <https://doi.org/10.3201/eid2108.141364>
7. Scallan E, Hoekstra RM, Angulo FJ, et al. Foodborne illness acquired in the United States—major pathogens. *Emerg Infect Dis* 2011;17:7–15. <https://doi.org/10.3201/eid1701.P11101>

## Shigellosis

In 2015, the probable case definition of shigellosis was updated to include cases detected by culture-independent diagnostic tests (CIDT) in addition to cases epidemiologically linked to a probable or confirmed case of shigellosis. Incidence of shigellosis reported in the United States during 2015 was 7.3 culture-confirmed and CIDT-positive infections per 100,000 population. Preliminary 2015 data from the Foodborne Diseases Active Surveillance Network (FoodNet), which conducts active surveillance for shigellosis in 10 U.S. sites, showed an annual incidence of 6.5 culture-confirmed and CIDT-positive infections of *Shigella* per 100,000 population (1). As in previous years, the highest number of reported cases of shigellosis in 2015 occurred among children aged <10 years. Shigellosis does not demonstrate marked seasonality, likely reflecting the contribution of year-round person-to-person transmission.

Adjusting for underdiagnosis, *Shigella* causes an estimated 500,000 illnesses annually in the United States (2). *Shigella* is most often transmitted person-to-person, including through sexual contact between men who have sex with men (MSM), and also can be transmitted by contaminated food or contaminated water used for drinking or recreational purposes (3–5). Childcare-associated outbreaks are common and are often difficult to control (6). Homeless persons (4) and international travelers (7,8) are also at higher risk for infection.

*Shigella* species have caused multidrug-resistant outbreaks in the United States (8–10). In 2014, the National Antimicrobial Resistance Monitoring System (NARMS) reported that among *Shigella* isolates tested for resistance to first-line antimicrobial agents, 2.4% were resistant to ciprofloxacin and 4.7% were resistant to azithromycin; 15.3% of isolates were resistant to at least ampicillin and trimethoprim-sulfamethoxazole (11). MSM and HIV-infected persons appear to be at greater risk for antibiotic resistant *Shigella* infections than the general adult population (9,10,12,13).

When shigellosis is suspected, clinicians should obtain a relevant clinical history, including sexual history in sexually active patients; collect stool specimens for laboratory testing;

base treatment, if indicated, on results of antimicrobial susceptibility; and counsel patients about prevention.

- Huang JY, Henao OL, Griffin PM, et al. Infection with pathogens transmitted commonly through food and the effect of increasing use of culture-independent diagnostic tests on surveillance—Foodborne Diseases Active Surveillance Network, 10 U.S. sites, 2012–2015. *MMWR Morb Mortal Wkly Rep* 2016;65:368–71. <https://doi.org/10.15585/mmwr.mm6514a2>
- Scallan E, Hoekstra RM, Angulo FJ, et al. Foodborne illness acquired in the United States—major pathogens. *Emerg Infect Dis* 2011;17:7–15. <https://doi.org/10.3201/eid1701.P11101>
- Gupta A, Polyak CS, Bishop RD, Sobel J, Mintz ED. Laboratory-confirmed shigellosis in the United States, 1989–2002: epidemiologic trends and patterns. *Clin Infect Dis* 2004;38:1372–7. <https://doi.org/10.1086/386326>
- Hines JZ, Pinsent T, Rees K, et al. Shigellosis outbreak among men who have sex with men and homeless persons—Oregon, 2015–2016. *MMWR Morb Mortal Wkly Rep* 2016;65:812–3. <https://doi.org/10.15585/mmwr.mm6531a5>
- Baker KS, Dallman TJ, Ashton PM, et al. Intercontinental dissemination of azithromycin-resistant shigellosis through sexual transmission: a cross-sectional study. *Lancet Infect Dis* 2015;15:913–21. [https://doi.org/10.1016/S1473-3099\(15\)00002-X](https://doi.org/10.1016/S1473-3099(15)00002-X)
- Arvelo W, Hinkle CJ, Nguyen TA, et al. Transmission risk factors and treatment of pediatric shigellosis during a large daycare center-associated outbreak of multidrug resistant *Shigella sonnei*: implications for the management of shigellosis outbreaks among children. *Pediatr Infect Dis J* 2009;28:976–80. <https://doi.org/10.1097/INF.0b013e3181a76eab>
- Gray MD, Lampel KA, Strockbine NA, Fernandez RE, Melton-Celsa AR, Maurelli AT. Clinical isolates of Shiga toxin 1a-producing *Shigella flexneri* with an epidemiological link to recent travel to Hispaniola. *Emerg Infect Dis* 2014;20:1669–77. <https://doi.org/10.3201/eid2010.140292>
- Bowen A, Hurd J, Hoover C, et al. Importation and domestic transmission of *Shigella sonnei* resistant to ciprofloxacin—United States, May 2014–February 2015. *MMWR Morb Mortal Wkly Rep* 2015;64:318–20.
- Heiman KE, Karlsson M, Grass J, et al. Notes from the field: *Shigella* with decreased susceptibility to azithromycin among men who have sex with men—United States, 2002–2013. *MMWR Morb Mortal Wkly Rep* 2014;63:132–3.
- Bowen A, Eikmeier D, Talley P, et al. Notes from the field: outbreaks of *Shigella sonnei* infection with decreased susceptibility to azithromycin among men who have sex with men—Chicago and Metropolitan Minneapolis-St. Paul, 2014. *MMWR Morb Mortal Wkly Rep* 2015;64:597–8.
- CDC. National Antimicrobial Resistance Monitoring System for enteric bacteria (NARMS): human isolates surveillance report for 2014 (final report). Atlanta, GA: US Department of Health and Human Services, CDC; 2016.
- Bowen A, Grass J, Bicknese A, Campbell D, Hurd J, Kirkcaldy RD. Elevated risk for multidrug-resistant *Shigella* infections among men who have sex with men—United States, 2011–2015. *Emerg Infect Dis* 2016;22:1613–6. <https://doi.org/10.3201/eid2209.160624>
- Chiou CS, Izumiya H, Kawamura M, et al. The worldwide spread of ciprofloxacin-resistant *Shigella sonnei* among HIV-infected men who have sex with men, Taiwan. *Clin Microbiol Infect*. 2016;22(4):383 e11–6.

## Spotted Fever Rickettsiosis

Spotted fever group rickettsioses are a group of diseases caused by closely related bacteria in the genus *Rickettsia*. These bacteria are spread to humans through the bite of infected arthropods, primarily ticks. Incidence of spotted fever rickettsioses rose

12% between 2014 and 2015 to the second highest level ever reported. American Indians continue to be disproportionately impacted by spotted fever rickettsioses. In 2015, incidence of spotted fever rickettsiosis among American Indians was more than twice that of whites, nine times higher than blacks, and 25 times higher than Asians and Pacific Islanders. Epidemics of Rocky Mountain spotted fever have been ongoing since 2003 on tribal lands of Arizona (*1*). High incidence in this region might contribute to the disproportionate burden of spotted fever rickettsiosis in American Indian populations.

- Demma LJ, Traeger MS, Nicholson WL, et al. Rocky Mountain spotted fever from an unexpected tick vector in Arizona. *N Engl J Med* 2005;353:587–94. <https://doi.org/10.1056/NEJMoa050043>

## Trichinellosis

In 2015, a total of 13\* cases of trichinellosis were reported to CDC (10 confirmed and three probable). A known or suspected source of *Trichinella* infection was documented for 10 (77%) of these cases, and included bear (seven), commercial pork (one), pork from an unspecified source (one), and pork consumed during international travel (one).

Two outbreaks of trichinellosis were reported in 2015. The first outbreak included one confirmed and two probable cases in persons from Texas who reportedly consumed meat from a black bear hunted in Alaska. CDC's laboratory detected *Trichinella* larvae in a sample of the leftover bear meat via microscopy. The second outbreak included two confirmed and one probable case (one confirmed and one probable from Colorado and one confirmed from Idaho), in persons who also reportedly consumed meat from a bear hunted in Alaska. Persons in both outbreaks reported cooking the bear meat via open-fire roasting or barbecue. The best way to prevent *Trichinella* infection is to thoroughly cook all meats to the USDA-recommended temperatures (as verified with a food thermometer) before consumption (*1*).

\* This number differs from the denominator of 14 cases presented in tables below; one case from Wisconsin was reclassified as suspect from confirmed after the deadline for finalizing data.

- CDC. Trichinellosis: prevention and control. Atlanta, GA: US Department of Health and Human Services, CDC; 2013. <https://www.cdc.gov/parasites/trichinellosis/prevent.html>

## Tuberculosis

Tuberculosis (TB) is one of the world's most common deadly airborne diseases. In 2015, an estimated 10.4 million persons worldwide had TB, and 1.4 million died from the disease (*1*).



In 2014, an estimated 1.7 billion persons worldwide had latent TB infection (LTBI), which can later develop into active disease (2). Over one million persons were granted permanent U.S. residency in 2015, approximately one-third of whom were from countries identified as having a high burden of TB disease (3). CDC and the U.S. Preventive Services Task Force recommend screening persons who have lived in countries with a high burden of TB disease for LTBI (4).

In the United States, new cases of TB disease have been reported annually since 1953 to CDC's National Tuberculosis Surveillance System (NTSS) (5). CDC receives data from 60 reporting jurisdictions (all 50 U.S. states, the District of Columbia, New York City, and eight U.S.-affiliated islands) through a standardized data collection form, the Report of Verified Case of Tuberculosis (RVCT). In 2009, the RVCT was revised, and NTSS transitioned into an online reporting system. TB case rates remained at approximately 3.0 cases/100,000 persons each year during 2013–2015 (5). For the first time since 1992, TB cases increased by 1.6% from 9,406 cases in 2014 to 9,557 in 2015 (5).

Among all TB cases in the United States, members of racial and ethnic minorities, especially persons who were born in countries with higher TB incidence than the United States, are disproportionately affected. In 2015, 66.4% (6,350 of 9,557) of persons with TB in the United States were foreign-born. Asians comprised 33.2% (3,177 of 9,557) of all cases and 47.8% (3,033 of 6,350) of cases among foreign-born persons. In 2015, the TB rate among Asians (18.2 per 100,000 persons) was 30 times as high as the rate (0.6) among non-Hispanic whites (5).

TB drug resistance continues to be a major concern. During 1996–2015, the percentage of primary multidrug-resistant (MDR) TB cases (i.e., cases in patients with no previous history of TB disease and with a *Mycobacterium tuberculosis* isolate that was resistant to at least isoniazid [INH] and rifampin [RIF]) has fluctuated between 0.9% and 1.3% each year. The percentage of U.S.-born patients with primary MDR TB has remained <1.0%. However, of the total number of reported primary MDR-TB cases, the percentage occurring among foreign-born persons increased from 25.3% (103/407 persons) in 1993 to 86.3% (63/73 persons) in 2015, which is similar to the proportion in 2014. In addition, 16 extensively drug-resistant (XDR) TB cases (i.e., patients with isolates resistant to INH and RIF, plus resistance to any fluoroquinolone and at least one of three injectable second-line anti-TB drugs) have been reported since 2009 (5).

For TB elimination (<1 case/1,000,000 population) to be achieved (6), intensified efforts are needed to address the persistent disparities that exist in populations with a high risk

for TB disease. Improved awareness, testing, and treatment of LTBI and TB disease among minorities and foreign-born populations are essential parts of these efforts. CDC is collaborating with partners in efforts to enhance TB testing, monitoring, and treatment of LTBI to prevent its progression to TB disease and accelerate the decrease in TB cases.

1. World Health Organization. Global tuberculosis report 2016. Geneva, Switzerland: World Health Organization; 2016. [http://www.who.int/tb/publications/global\\_report/en](http://www.who.int/tb/publications/global_report/en)
2. Houben RM, Dodd PJ. The global burden of latent tuberculosis infection: a re-estimation using mathematical modelling. *PLoS Med* 2016;13:e1002152. <https://doi.org/10.1371/journal.pmed.1002152>
3. US Department of Homeland Security. 2015 yearbook of immigration statistics, table 3. Persons obtaining lawful permanent resident status by region and country of birth: fiscal years 2013 to 2015. <https://www.dhs.gov/immigration-statistics/yearbook/2015/table3>
4. Bibbins-Domingo K, Grossman DC, Curry SJ, et al.; US Preventive Services Task Force. Screening for latent tuberculosis infection in adults. *JAMA* 2016;316:962–9. <https://doi.org/10.1001/jama.2016.11046>
5. CDC. Reported tuberculosis in the United States, 2015. Atlanta, GA: US Department of Health and Human Services, CDC; 2016. <https://www.cdc.gov/tb/statistics/reports/2015/default.htm>
6. CDC. Division of Tuberculosis Elimination strategic plan 2016–2020. Atlanta, GA: US Department of Health and Human Services, CDC, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention; 2015. <https://www.cdc.gov/tb/about/strategicplan.htm>

## Tularemia

Tularemia is a zoonotic disease caused by the bacterium *Francisella tularensis*. Transmission to humans occurs through the bite of infected ticks or deer flies, direct contact with tissues of sick or dead animals, ingestion of contaminated water or undercooked meat, or inhalation of contaminated aerosols, including aerosols generated during laboratory procedures (1).

In 2015, a total of 314 tularemia cases were reported to CDC, the largest number since 1964 and a 74% increase relative to 2014. The majority of cases were reported from eight states: Arkansas (24 cases), Colorado (52 cases), Kansas (34 cases), Missouri (29 cases), Nebraska (25 cases), Oklahoma (23 cases), South Dakota (25 cases), and Wyoming (21 cases). A disproportionate increase in cases was noted in Colorado, Nebraska, South Dakota and Wyoming, possibly related to increased rabbit populations (2).

1. Dennis DT, Inglesby TV, Henderson DA, et al.; Working Group on Civilian Biodefense. Tularemia as a biological weapon: medical and public health management. *JAMA* 2001;285:2763–73. <https://doi.org/10.1001/jama.285.21.2763>
2. Pedati C, House J, Hancock-Allen J, et al. Notes from the field: increase in human cases of tularemia—Colorado, Nebraska, South Dakota, and Wyoming, January–September 2015. *MMWR Morb Mortal Wkly Rep* 2015;64:1317–8. <https://doi.org/10.15585/mmwr.mm6447a4>

## Typhoid

Typhoid fever is rare in the United States. Since 2009, an annual average of fewer than 400 cases has been reported. In 2015, a total of 367 cases were reported. Approximately 86% of U.S. cases are associated with international travel, and the risk for infection is highest for travelers visiting friends and relatives in countries where typhoid fever is endemic, especially in southern Asia, where 82% of patients with typhoid travelled within 30 days preceding their illness (1). These persons might stay for extended periods and are less likely than other travelers to seek pretravel vaccination and to observe strict safe water and food practices, perhaps due to misperception of disease risk (2). Travelers face a risk for typhoid fever when visiting even for a short time areas where the disease is endemic (3) and should consult guidelines for prevention of typhoid at <https://wwwnc.cdc.gov/travel/diseases/typhoid>. Paratyphoid fever, although caused by different organisms and not nationally notifiable, is an illness similar to typhoid fever and is of similar concern to travelers in regions where the disease is endemic. There is no vaccine available for paratyphoid fever (1).

1. Date KA, Newton AE, Medalla F, et al. Changing patterns in enteric fever incidence and increasing antibiotic resistance of enteric fever isolates in the United States, 2008–2012. *Clin Infect Dis* 2016;63:322–9. <https://doi.org/10.1093/cid/ciw232>
2. Angell SY, Cetron MS. Health disparities among travelers visiting friends and relatives abroad. *Ann Intern Med* 2005;142:67–72. <https://doi.org/10.7326/0003-4819-142-1-200501040-00013>
3. Steinberg EB, Bishop R, Haber P, et al. Typhoid fever in travelers: who should be targeted for prevention? *Clin Infect Dis* 2004;39:186–91. <https://doi.org/10.1086/421945>

## Varicella

Important declines in varicella incidence occurred during the first nine years of implementation of the 2-dose varicella vaccination program (1–3). Based on reports of varicella cases to CDC through NNDSS, varicella incidence has declined 85% from an average of 25.4 per 100,000 in 2005–2006 (the end of the 1-dose varicella vaccination program) to 3.8 per 100,000 in 2015. Statistically significant declines in incidence were reported for all age groups during this time, with the largest declines among children aged 5–9 years (91%) and 10–14 years (89%). During the same period, the number of states reporting varicella cases has increased from 27 in 2005 to 40 in 2015.

Varicella-specific variables important for monitoring impact of the varicella vaccination program include age, vaccination status, disease severity (e.g., number of lesions), outcome of the case (e.g., hospitalized), and whether the case is associated with an outbreak. In 2015, 96% (9,455/9,789) of cases reported to CDC from 38 states had data on at least one of the above

mentioned varicella-specific variables. Of the 9,455 cases, completeness of reporting for these variables ranged from a low of 8% (n=780) for whether the case resulted in hospitalization to a high of 98% (n = 9,299) for age; completeness for other key variables was 53% (n = 4,982) for vaccination status, 43% (n = 4,028) for disease severity, and 68% (n=6,464) for whether the case was associated with an outbreak.

Among the 9,299 cases with data on age, 49% (4,553) were in persons 1–9 years, 20% (1,930) were in persons aged 10–19 years, and 21% (1,984) were in persons aged ≥20 years. Among cases for which information on vaccination status was available (n = 4,982), 58% (n = 2,900) of reported cases were in patients who had received at least 1 dose of varicella vaccine, and of those reported cases who received at least 1 dose of vaccine and had information on number of varicella doses received (n = 2,207), 57% (1,261) had received 2 doses. Mild disease (<50 lesions) was reported in 50% (2,008/4,028) of cases; 5% (36/780) of cases resulted in hospitalization; and 22% (1,446/6,464) of cases were associated with outbreaks. Less than one third of total reported cases had specimens tested for varicella (29%; 1,305/4,491), but 83% (1,086/1,305) of cases with testing were laboratory confirmed as varicella.

States are working to improve reporting of cases and completeness of varicella-specific variables (3), which will strengthen the use of national surveillance in monitoring the impact of the varicella vaccination program. Although states are sending varicella-specific data to CDC, findings describing patient characteristics should be interpreted with caution given the large proportion of missing data. Finally, increased testing of suspect cases of varicella will also improve reliability of varicella surveillance data.

1. Bialek SR, Perella D, Zhang J, et al. Impact of a routine two-dose varicella vaccination program on varicella epidemiology. *Pediatrics* 2013;132:e1134–40. <https://doi.org/10.1542/peds.2013-0863>
2. Leung J, Lopez AS, Blostein J, et al. Impact of the US two-dose Varicella Vaccination Program on the epidemiology of varicella outbreaks: data from nine states, 2005–2012. *Pediatr Infect Dis J* 2015;34:1105–9. <https://doi.org/10.1097/INF.0000000000000821>
3. Lopez AS, Zhang J, Marin M. Epidemiology of varicella during the 2-dose Varicella Vaccination Program—United States, 2005–2014. *MMWR Morb Mortal Wkly Rep* 2016;65:902–5. <https://doi.org/10.15585/mmwr.mm6534a4>

## Vibriosis

Vibriosis, defined as infection caused by a species from the family *Vibrionaceae* other than toxigenic *Vibrio cholerae* O1 or O139, is associated with consumption of seafood, primarily raw oysters, or direct exposure to salt water, marine wildlife, or seafood drippings. Although most infections result in mild gastrointestinal illness or skin infection, severe illness or death is

possible and occurs more often in those with pre-existing conditions such as liver disease, immunodeficiency, or decreased stomach acid levels (1,2).

The incidence of vibriosis has shown an overall increase since becoming a nationally notifiable disease in 2007 (3). Cases reported to NNDSS increased from 0.25 cases per 100,000 in 2007 to 0.42 cases per 100,000 population in 2015. The Foodborne Diseases Active Surveillance Network (FoodNet), which conducts active, population-based surveillance for vibriosis in 10 U.S. states also reported an increase in incidence from 0.24 per 100,000 in 2007 to a preliminary incidence of 0.39 per 100,000 population in 2015 (4). Incidence of vibriosis reported to FoodNet is used to track progress towards the *Healthy People 2020* goal for vibriosis of 0.2 cases per 100,000 population (5). Of the 1,323 vibriosis cases reported to NNDSS, 386 (29.2%) were reported from Gulf coast states, and 374 (28.3%) were reported from Pacific coast states.

1. Iwamoto M, Ayers T, Mahon BE, Swerdlow DL. Epidemiology of seafood-associated infections in the United States. *Clin Microbiol Rev* 2010;23:399–411. <https://doi.org/10.1128/CMR.00059-09>
2. Dechet AM, Yu PA, Koram N, Painter J. Nonfoodborne *Vibrio* infections: an important cause of morbidity and mortality in the United States, 1997–2006. *Clin Infect Dis* 2008;46:970–6. <https://doi.org/10.1086/529148>
3. Newton A, Kendall M, Vugia DJ, Henao OL, Mahon BE. Increasing rates of vibriosis in the United States, 1996–2010: review of surveillance data from 2 systems. *Clin Infect Dis* 2012;54(Suppl 5):S391–5. <https://doi.org/10.1093/cid/cis243>
4. Huang JY, Henao OL, Griffin PM, et al. Infection with pathogens transmitted commonly through food and the effect of increasing use of culture-independent diagnostic tests on surveillance—Foodborne Diseases Active Surveillance Network, 10 U.S. Sites, 2012–2015. *MMWR Morb Mortal Wkly Rep* 2016;65:368–71. <https://doi.org/10.15585/mmwr.mm6514a2>
5. US Department of Health and Human Services. Healthy people 2020. FS-1.6 data details: reduce infections caused by *Vibrio* species transmitted commonly through food. Washington, DC: US Department of Health and Human Services, 2017. [https://www.healthypeople.gov/node/4480/data\\_details](https://www.healthypeople.gov/node/4480/data_details)

## Viral Hemorrhagic Fever

Viral Hemorrhagic Fever (VHF) is a group of acute febrile illnesses that are caused by over 30 viruses (1). Nationally notifiable VHFs are those with documented person to person transmission, such as: Crimean-Congo hemorrhagic fever, Ebola virus disease (EVD), Lassa fever, Lujo, Marburg, and several New World Arenaviruses (Junin, Machupo, Guanarito, and Sabia).

In response to the West Africa EVD epidemic, enhanced screening of all airline passengers who had traveled to Liberia, Sierra Leone, and Guinea within the previous 21 days continued into 2015; enhanced screening was progressively discontinued as control measures brought the epidemic to a close in these countries. Entry risk assessment and active monitoring was discontinued for travelers returning from Liberia in September and from Sierra Leone in December. Over the duration of the enhanced entry risk assessment and management program, approximately 38,000 travelers were assessed at U.S. ports of entry (2).

In May 2015, a returning traveler from Liberia presented to a New Jersey hospital with illness that was laboratory-confirmed to be Lassa fever. This patient later died. This is the eighth known imported case to the United States (3). Lassa fever is endemic in West Africa, with an estimated 100,000 to 300,000 cases and 5,000 deaths annually. Physicians should remain aware of the potential for VHF infections in recent travelers.

1. Rollin PE, Nichol ST, Zaki S, Ksiazek TG. Arenaviruses and filoviruses. In: Murray PR, Baron EJ, Landry ML, Jorgensen JH, Pfaller MA, eds. *Manual of clinical microbiology*, 11th ed. Washington, DC: ASM Press; 2015:1669–86.
2. Cohen NJ, Brown CM, Alvarado-Ramy F, et al. Travel and border health measures to prevent the international spread of Ebola. *MMWR Suppl* 2016;65(No. Suppl 3):57–67.
3. Amorosa V, MacNeil A, McConnell R, et al. Imported Lassa fever, Pennsylvania, USA, 2010. *Emerg Infect Dis* 2010;16:1598–600. <https://doi.org/10.3201/eid1610.100774>

## PART 1

### Summary of Notifiable Diseases in the United States, 2015

#### Abbreviations and Symbols Used in Tables

**U** Data not available.

**N** Not reportable (i.e., report of disease is not required in that jurisdiction).

— No reported cases.

**Notes:** Rates <0.01 after rounding are listed as 0.

Data in the *MMWR Summary of Notifiable Diseases — United States, 2015* might differ from data in other CDC surveillance reports because of differences in the timing of reports, the source of the data, the use of different case definitions, and print criteria.



**TABLE 1. Number of reported cases of notifiable diseases\* and rate per 100,000 population, excluding U.S. territories — United States, 2015**

| Disease  | No.       | Rate     |
|--|-----------|----------|
| Arboviral diseases <sup>†</sup>                            |           |          |
| Chikungunya virus disease                                  |           |          |
| neuroinvasive  | 4         | (0.00)   |
| nonneuroinvasive   | 892       | (0.28)   |
| Eastern equine encephalitis virus disease                  |           |          |
| neuroinvasive  | 6         | (0.00)   |
| Jamestown Canyon virus disease                             |           |          |
| neuroinvasive  | 6         | (0.00)   |
| nonneuroinvasive   | 5         | (0.00)   |
| La Crosse virus disease                                    |           |          |
| neuroinvasive  | 51        | (0.02)   |
| nonneuroinvasive   | 4         | (0.00)   |
| Powassan virus disease                                     |           |          |
| neuroinvasive  | 6         | (0.00)   |
| nonneuroinvasive   | 1         | (0.00)   |
| St. Louis virus disease                                    |           |          |
| neuroinvasive  | 19        | (0.01)   |
| nonneuroinvasive   | 4         | (0.00)   |
| West Nile virus disease                                    |           |          |
| neuroinvasive  | 1,455     | (0.45)   |
| nonneuroinvasive   | 720       | (0.22)   |
| Babesiosis, total  | 2,100     | (0.96)   |
| confirmed  | 1,804     | (0.82)   |
| probable   | 296       | (0.14)   |
| Botulism, total  | 195       | (0.06)   |
| foodborne  | 37        | (0.01)   |
| infant   | 138       | (3.47)   |
| other (wound and unspecified)                              | 20        | (0.01)   |
| Brucellosis  | 126       | (0.04)   |
| Campylobacteriosis   | 54,556    | (17.68)  |
| Chancroid <sup>§</sup>                                     | 11        | (0.00)   |
| <i>Chlamydia trachomatis</i> infection <sup>§</sup>        | 1,526,658 | (474.97) |
| Cholera  | 5         | (0.00)   |
| Coccidioidomycosis <sup>¶</sup>                            | 11,072    | (8.82)   |
| Cryptosporidiosis, total                                   | 9,735     | (3.03)   |
| confirmed  | 6,145     | (1.91)   |
| probable   | 3,590     | (1.12)   |
| Cyclosporiasis   | 645       | (0.22)   |
| Dengue virus infections <sup>‡</sup>                       |           |          |
| dengue   | 929       | (0.29)   |
| dengue-like illness  | 16        | (0.00)   |
| severe dengue  | 6         | (0.00)   |
| Ehrlichiosis/Anaplasmosis                                  |           |          |
| <i>Anaplasma phagocytophilum</i> infection                 | 3,656     | (1.19)   |
| <i>Ehrlichia chaffeensis</i> infection                     | 1,288     | (0.42)   |
| <i>Ehrlichia ewingii</i> infection                         | 14        | (0.00)   |
| undetermined ehrlichiosis/anaplasmosis                     | 179       | (0.06)   |
| Giardiasis   | 14,485    | (5.74)   |
| Gonorrhea <sup>§</sup>                                     | 395,216   | (122.96) |
| <i>Haemophilus influenzae</i> , invasive disease           |           |          |
| All ages, serotypes  | 4,138     | (1.29)   |
| Age <5 yrs   |           |          |
| serotype b   | 29        | (0.15)   |
| nontypeable  | 175       | (0.98)   |
| non-b serotype   | 135       | (0.75)   |
| unknown serotype   | 167       | (0.93)   |
| Hansen's disease   | 89        | (0.03)   |
| Hantavirus infection, non-Hantavirus pulmonary syndrome    | 3         | (0.00)   |
| Hantavirus pulmonary syndrome                              | 21        | (0.01)   |
| Hemolytic uremic syndrome postdiarrheal                    | 274       | (0.09)   |
| Hepatitis  |           |          |
| A acute  | 1,390     | (0.43)   |
| B acute  | 3,370     | (1.06)   |
| B chronic**  | 14,147    | (5.27)   |
| B perinatal infection                                      | 37        | (0.01)   |
| C acute <sup>††</sup>                                      | 2,447     | (0.81)   |
| C past or present <sup>§§</sup>                            | 179,584   | (72.64)  |
| Human immunodeficiency virus (HIV) diagnoses <sup>¶¶</sup> | 33,817    | (10.52)  |
| Influenza-associated pediatric mortality***                | 130       | (0.18)   |
| Lassa viral hemorrhagic fever                              | 1         | (0.00)   |

See table footnotes on next page.

TABLE 1. (Continued) Number of reported cases of notifiable diseases\* and rate per 100,000 population, excluding U.S. territories — United States, 2015

| Disease   | No.    | Rate    |
|---|--------|---------|
| Legionellosis   | 6,079  | (1.89)  |
| Leptospirosis   | 40     | (0.02)  |
| Listeriosis   | 768    | (0.24)  |
| Lyme disease, total   | 38,069 | (11.90) |
| confirmed   | 28,453 | (8.89)  |
| probable  | 9,616  | (3.01)  |
| Malaria   | 1,390  | (0.43)  |
| Measles, total  | 188    | (0.06)  |
| indigenous  | 162    | (0.05)  |
| imported  | 26     | (0.01)  |
| Meningococcal disease   |        |         |
| all serogroups  | 372    | (0.12)  |
| serogroups ACWY   | 120    | (0.04)  |
| serogroup B   | 111    | (0.03)  |
| other serogroups  | 21     | (0.01)  |
| unknown serogroup   | 120    | (0.04)  |
| Mumps   | 1,329  | (0.41)  |
| Novel influenza A virus infections                              | 7      | (0.00)  |
| Pertussis   | 20,762 | (6.46)  |
| Plague  | 16     | (0.00)  |
| Psittacosis   | 4      | (0.00)  |
| Q fever, total  | 156    | (0.05)  |
| acute   | 122    | (0.04)  |
| chronic   | 34     | (0.01)  |
| Rabies  |        |         |
| animal <sup>†††</sup>   | 5,491  | (1.71)  |
| human   | 2      | (0.00)  |
| Rubella   | 5      | (0.00)  |
| Rubella, congenital syndrome                                    | 1      | (0.00)  |
| Salmonellosis   | 55,108 | (17.15) |
| Shiga toxin-producing <i>Escherichia coli</i>                   | 7,059  | (2.20)  |
| Shigellosis   | 23,590 | (7.34)  |
| Spotted fever rickettsiosis, total                              | 4,198  | (1.31)  |
| confirmed   | 199    | (0.06)  |
| probable  | 3,999  | (1.25)  |
| Streptococcal toxic shock syndrome                              | 335    | (0.16)  |
| <i>Streptococcus pneumoniae</i> , invasive pneumococcal disease |        |         |
| all ages  | 16,163 | (6.93)  |
| age <5 yrs  | 1,177  | (7.87)  |
| Syphilis, total, all stages <sup>§,§§§</sup>                    | 74,702 | (23.24) |
| congenital <sup>§</sup>   | 487    | (12.24) |
| primary and secondary <sup>§</sup>                              | 23,872 | (7.43)  |
| Tetanus   | 29     | (0.01)  |
| Toxic shock syndrome (other than streptococcal)                 | 64     | (0.03)  |
| Trichinellosis  | 14     | (0.00)  |
| Tuberculosis <sup>¶¶¶</sup>                                     | 9,557  | (2.97)  |
| Tularemia   | 314    | (0.10)  |
| Typhoid fever   | 367    | (0.11)  |
| Vancomycin-intermediate <i>Staphylococcus aureus</i>            | 183    | (0.07)  |
| Vancomycin-resistant <i>Staphylococcus aureus</i>               | 3      | (0.00)  |
| Varicella morbidity   | 9,789  | (3.76)  |
| Varicella mortality <sup>****</sup>                             | 6      | (0.00)  |
| Vibriosis   | 1,323  | (0.42)  |

\* No cases of anthrax; Crimean-Congo viral hemorrhagic fever; diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; Ebola viral hemorrhagic fever; Guanarito viral hemorrhagic fever; Junin viral hemorrhagic fever; Lujo viral hemorrhagic fever; Machupo viral hemorrhagic fever; Marburg viral hemorrhagic fever; poliomyelitis, paralytic; poliovirus infection, nonparalytic; Sabia viral hemorrhagic fever; severe acute respiratory syndrome-associated coronavirus disease; smallpox; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; and yellow fever were reported in the United States during 2015.

<sup>†</sup> Totals reported to the Division of Vector-Borne Diseases, National Center for Emerging and Zoonotic Infectious Diseases (NCEZID), (ArboNET Surveillance), as of July 1, 2016.

<sup>§</sup> Totals reported to the Division of STD Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (NCHHSTP), as of June 8, 2016.

<sup>¶</sup> Reportable in <25 states.

<sup>\*\*</sup> Total number of cases reported from 42 states. Reports might not reflect unique cases.

<sup>††</sup> Total number of cases reported from 42 states.

<sup>§§</sup> Total number of cases reported from 39 states. Reports might not reflect unique cases.

<sup>¶¶</sup> Total number of HIV diagnoses reported to the Division of HIV/AIDS Prevention, NCHHSTP through December 31, 2016.

<sup>\*\*\*</sup> Totals reported to the Influenza Division, National Center for Immunization and Respiratory Diseases (NCIRD), as of June 30, 2016.

<sup>†††</sup> Totals reported to the Division of High-Consequence Pathogens and Pathology, NCEZID (National Rabies Surveillance System), as of December 31, 2016.

<sup>§§§</sup> Includes the following categories: primary, secondary, early latent, late latent, late with clinical manifestations, and congenital syphilis.

<sup>¶¶¶</sup> Totals reported to the Division of Tuberculosis Elimination, NCHHSTP, as of June 8, 2016.

<sup>\*\*\*\*</sup> Totals reported to the Division of Viral Diseases, NCIRD, as of June 30, 2016.

TABLE 2a. Number of reported cases of notifiable diseases,\* by geographic division and area — United States and U.S. territories, 2015

| Area                 | Total resident population (in thousands) | Arboviral diseases†       |                  |   |                                |                  |                         |                  |
|----------------------|--|---------------------------|------------------|---|--------------------------------|------------------|-------------------------|------------------|
|                      |  | Chikungunya virus disease |                  | Eastern equine encephalitis virus disease | Jamestown Canyon virus disease |                  | La Crosse virus disease |                  |
|                      |  | Neuroinvasive             | Nonneuroinvasive | Neuroinvasive                             | Neuroinvasive                  | Nonneuroinvasive | Neuroinvasive           | Nonneuroinvasive |
| United States        | 321,417                                  | 4                         | 892              | 6   | 6                              | 5                | 51                      | 4                |
| New England          | 14,727                                   | —                         | 59               | 1   | 1                              | —                | —                       | —                |
| Connecticut          | 3,591                                    | —                         | 16               | —   | —                              | —                | —                       | —                |
| Maine                | 1,329                                    | —                         | 2                | 1   | —                              | —                | —                       | —                |
| Massachusetts        | 6,794                                    | —                         | 34               | —   | 1                              | —                | —                       | —                |
| New Hampshire        | 1,331                                    | —                         | 1                | —   | —                              | —                | —                       | —                |
| Rhode Island         | 1,056                                    | —                         | 5                | —   | —                              | —                | —                       | —                |
| Vermont              | 626                                      | —                         | 1                | —   | —                              | —                | —                       | —                |
| Mid. Atlantic        | 41,556                                   | —                         | 138              | 3   | 1                              | —                | —                       | —                |
| New Jersey           | 8,958                                    | —                         | 31               | —   | 1                              | —                | —                       | —                |
| New York (upstate)   | 11,245                                   | —                         | 37               | 3   | —                              | —                | —                       | —                |
| New York City        | 8,550                                    | —                         | 62               | —   | —                              | —                | —                       | —                |
| Pennsylvania         | 12,803                                   | —                         | 8                | —   | —                              | —                | —                       | —                |
| E. N. Central        | 46,787                                   | 1                         | 53               | —   | 3                              | 2                | 29                      | 1                |
| Illinois             | 12,860                                   | 1                         | 19               | —   | —                              | —                | —                       | —                |
| Indiana              | 6,620                                    | —                         | 7                | —   | —                              | —                | —                       | —                |
| Michigan             | 9,923                                    | —                         | 9                | —   | —                              | —                | —                       | —                |
| Ohio                 | 11,613                                   | —                         | 10               | —   | 1                              | —                | 23                      | 1                |
| Wisconsin            | 5,771                                    | —                         | 8                | —   | 2                              | 2                | 6                       | —                |
| W.N. Central         | 21,121                                   | 1                         | 40               | —   | 1                              | 2                | 1                       | 1                |
| Iowa                 | 3,124                                    | —                         | 4                | —   | —                              | 1                | —                       | —                |
| Kansas               | 2,912                                    | —                         | 11               | —   | —                              | —                | 1                       | —                |
| Minnesota            | 5,490                                    | —                         | 15               | —   | 1                              | 1                | —                       | 1                |
| Missouri             | 6,084                                    | —                         | 5                | —   | —                              | —                | —                       | —                |
| Nebraska             | 1,896                                    | —                         | 4                | —   | —                              | —                | —                       | —                |
| North Dakota         | 757                                      | 1                         | 1                | —   | —                              | —                | —                       | —                |
| South Dakota         | 858                                      | —                         | —                | —   | —                              | —                | —                       | —                |
| S. Atlantic          | 63,276                                   | 1                         | 146              | 1   | —                              | —                | 17                      | 1                |
| Delaware             | 946                                      | —                         | —                | —   | —                              | —                | —                       | —                |
| District of Columbia | 672                                      | —                         | —                | —   | —                              | —                | —                       | —                |
| Florida              | 20,271                                   | —                         | 73               | —   | —                              | —                | —                       | —                |
| Georgia              | 10,215                                   | —                         | 9                | —   | —                              | —                | 2                       | —                |
| Maryland             | 6,006                                    | —                         | 19               | —   | —                              | —                | —                       | —                |
| North Carolina       | 10,043                                   | —                         | 19               | 1   | —                              | —                | 11                      | —                |
| South Carolina       | 4,896                                    | 1                         | 2                | —   | —                              | —                | 1                       | —                |
| Virginia             | 8,383                                    | —                         | 24               | —   | —                              | —                | —                       | —                |
| West Virginia        | 1,844                                    | —                         | —                | —   | —                              | —                | 3                       | 1                |
| E.S. Central         | 18,876                                   | —                         | 19               | —   | —                              | —                | 3                       | 1                |
| Alabama              | 4,859                                    | —                         | 1                | —   | —                              | —                | —                       | —                |
| Kentucky             | 4,425                                    | —                         | 8                | —   | —                              | —                | —                       | —                |
| Mississippi          | 2,992                                    | —                         | 1                | —   | —                              | —                | —                       | —                |
| Tennessee            | 6,600                                    | —                         | 9                | —   | —                              | —                | 3                       | 1                |
| W.S. Central         | 39,029                                   | —                         | 70               | 1   | —                              | —                | 1                       | —                |
| Arkansas             | 2,978                                    | —                         | 4                | —   | —                              | —                | —                       | —                |
| Louisiana            | 4,671                                    | —                         | 7                | 1   | —                              | —                | 1                       | —                |
| Oklahoma             | 3,911                                    | —                         | 4                | —   | —                              | —                | —                       | —                |
| Texas                | 27,469                                   | —                         | 55               | —   | —                              | —                | —                       | —                |
| Mountain             | 23,531                                   | —                         | 42               | —   | —                              | 1                | —                       | —                |
| Arizona              | 6,828                                    | —                         | 24               | —   | —                              | —                | —                       | —                |
| Colorado             | 5,457                                    | —                         | 8                | —   | —                              | —                | —                       | —                |
| Idaho                | 1,655                                    | —                         | 5                | —   | —                              | —                | —                       | —                |
| Montana              | 1,033                                    | —                         | 1                | —   | —                              | —                | —                       | —                |
| Nevada               | 2,891                                    | —                         | 1                | —   | —                              | —                | —                       | —                |
| New Mexico           | 2,085                                    | —                         | —                | —   | —                              | —                | —                       | —                |
| Utah                 | 2,996                                    | —                         | 3                | —   | —                              | —                | —                       | —                |
| Wyoming              | 586                                      | —                         | —                | —   | —                              | 1                | —                       | —                |

See table footnotes on next page.

TABLE 2a. (Continued) Number of reported cases of notifiable diseases,\* by geographic division and area -- United States and U.S. territories, 2015

| Area                | Total resident population (in thousands) | Arboviral diseases†       |                  |   |               |                                |               |
|---------------------|--|---------------------------|------------------|---|---------------|--------------------------------|---------------|
|                     |  | Chikungunya virus disease |                  | Eastern equine encephalitis virus disease |               | Jamestown Canyon virus disease |               |
|                     |  | Neuroinvasive             | Nonneuroinvasive | Neuroinvasive                             | Neuroinvasive | Nonneuroinvasive               | Neuroinvasive |
|                     |  |                           |                  |   |               |                                |               |
| <b>Pacific</b>      | 52,514                                   | 1                         | 325              | —   | —             | —                              | —             |
| Alaska              | 738                                      | —                         | 1                | —   | —             | —                              | —             |
| California          | 39,145                                   | —                         | 276              | —   | —             | —                              | —             |
| Hawaii              | 1,432                                    | —                         | 7                | —   | —             | —                              | —             |
| Oregon              | 4,029                                    | —                         | 3                | —   | —             | —                              | —             |
| Washington          | 7,170                                    | 1                         | 38               | —   | —             | —                              | —             |
| <b>Territories</b>  |  |                           |                  |   |               |                                |               |
| American Samoa      | 54                                       | —                         | —                | —   | —             | —                              | —             |
| C.N.M.I.            | 52                                       | —                         | —                | —   | —             | —                              | —             |
| Guam                | 162                                      | —                         | —                | —   | —             | —                              | —             |
| Puerto Rico         | 3,598                                    | —                         | 216              | —   | —             | —                              | —             |
| U.S. Virgin Islands | 104                                      | —                         | 21               | —   | —             | —                              | —             |

\* No cases of anthrax; Crimean-Congo viral hemorrhagic fever; diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; Ebola viral hemorrhagic fever; Guanarito viral hemorrhagic fever; Junin viral hemorrhagic fever; Lujo viral hemorrhagic fever; Machupo viral hemorrhagic fever; Marburg viral hemorrhagic fever; poliomyelitis, paralytic; poliovirus infection, nonparalytic; Sabia viral hemorrhagic fever; severe acute respiratory syndrome-associated coronavirus disease; smallpox; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; and yellow fever were reported in the United States during 2015.

† Totals reported to the Division of Vector-Borne Diseases (DVBD), National Center for Emerging and Zoonotic Infectious Diseases (NCEZID) (ArboNET Surveillance), as of July 1, 2016.



TABLE 2b. Number of reported cases of notifiable diseases,\* by geographic division and area — United States and U.S. territories, 2015

| Area                 | Arboviral diseases (continued) <sup>†</sup> |                  |                                      |                  |                         |                  |
|----------------------|---|------------------|--------------------------------------|------------------|-------------------------|------------------|
|                      | Powassan virus disease                      |                  | St. Louis encephalitis virus disease |                  | West Nile virus disease |                  |
|                      | Neuroinvasive                               | Nonneuroinvasive | Neuroinvasive                        | Nonneuroinvasive | Neuroinvasive           | Nonneuroinvasive |
| <b>United States</b> | 6   | 1                | 19                                   | 4                | 1,455                   | 720              |
| <b>New England</b>   | 4   | —                | —                                    | —                | 16                      | 5                |
| Connecticut          | —   | —                | —                                    | —                | 8                       | 2                |
| Maine                | 1   | —                | —                                    | —                | 1                       | —                |
| Massachusetts        | 3   | —                | —                                    | —                | 7                       | 3                |
| New Hampshire        | —   | —                | —                                    | —                | —                       | —                |
| Rhode Island         | —   | —                | —                                    | —                | —                       | —                |
| Vermont              | —   | —                | —                                    | —                | —                       | —                |
| Mid. Atlantic        | 1   | 1                | —                                    | —                | 82                      | 31               |
| New Jersey           | 1   | —                | —                                    | —                | 23                      | 3                |
| New York (upstate)   | —   | 1                | —                                    | —                | 12                      | 7                |
| New York City        | —   | —                | —                                    | —                | 30                      | 8                |
| Pennsylvania         | —   | —                | —                                    | —                | 17                      | 13               |
| <b>E. N. Central</b> | 1   | —                | —                                    | —                | 112                     | 48               |
| Illinois             | —   | —                | —                                    | —                | 51                      | 26               |
| Indiana              | —   | —                | —                                    | —                | 16                      | 5                |
| Michigan             | —   | —                | —                                    | —                | 16                      | 2                |
| Ohio                 | —   | —                | —                                    | —                | 23                      | 12               |
| Wisconsin            | 1   | —                | —                                    | —                | 6                       | 3                |
| <b>W. N. Central</b> | —   | —                | —                                    | —                | 82                      | 135              |
| Iowa                 | —   | —                | —                                    | —                | 4                       | 10               |
| Kansas               | —   | —                | —                                    | —                | 12                      | 22               |
| Minnesota            | —   | —                | —                                    | —                | 3                       | 6                |
| Missouri             | —   | —                | —                                    | —                | 23                      | 6                |
| Nebraska             | —   | —                | —                                    | —                | 19                      | 49               |
| North Dakota         | —   | —                | —                                    | —                | 10                      | 13               |
| South Dakota         | —   | —                | —                                    | —                | 11                      | 29               |
| <b>S. Atlantic</b>   | —   | —                | —                                    | —                | 76                      | 33               |
| Delaware             | —   | —                | —                                    | —                | —                       | 6                |
| District of Columbia | —   | —                | —                                    | —                | 3                       | 2                |
| Florida              | —   | —                | —                                    | —                | 12                      | 1                |
| Georgia              | —   | —                | —                                    | —                | 13                      | 2                |
| Maryland             | —   | —                | —                                    | —                | 31                      | 14               |
| North Carolina       | —   | —                | —                                    | —                | 4                       | —                |
| South Carolina       | —   | —                | —                                    | —                | —                       | —                |
| Virginia             | —   | —                | —                                    | —                | 13                      | 8                |
| West Virginia        | —   | —                | —                                    | —                | —                       | —                |
| <b>E.S. Central</b>  | —   | —                | —                                    | —                | 36                      | 21               |
| Alabama              | —   | —                | —                                    | —                | 5                       | 4                |
| Kentucky             | —   | —                | —                                    | —                | 1                       | 1                |
| Mississippi          | —   | —                | —                                    | —                | 25                      | 13               |
| Tennessee            | —   | —                | —                                    | —                | 5                       | 3                |
| <b>W.S. Central</b>  | —   | —                | —                                    | —                | 302                     | 131              |
| Arkansas             | —   | —                | —                                    | —                | 16                      | 2                |
| Louisiana            | —   | —                | —                                    | —                | 41                      | 10               |
| Oklahoma             | —   | —                | —                                    | —                | 49                      | 40               |
| Texas                | —   | —                | —                                    | —                | 196                     | 79               |
| <b>Mountain</b>      | —   | —                | 19                                   | 4                | 156                     | 101              |
| Arizona              | —   | —                | 19                                   | 4                | 67                      | 36               |
| Colorado             | —   | —                | —                                    | —                | 57                      | 44               |
| Idaho                | —   | —                | —                                    | —                | 5                       | 8                |
| Montana              | —   | —                | —                                    | —                | 3                       | —                |
| Nevada               | —   | —                | —                                    | —                | 4                       | 3                |
| New Mexico           | —   | —                | —                                    | —                | 12                      | 2                |
| Utah                 | —   | —                | —                                    | —                | 5                       | 3                |
| Wyoming              | —   | —                | —                                    | —                | 3                       | 5                |

See table footnotes on next page.

TABLE 2b. (Continued) Number of reported cases of notifiable diseases,\* by geographic division and area — United States and U.S. territories, 2015

| Area                | Arboviral diseases (continued) <sup>†</sup> |                  |                                      |                  |                         |                  |
|---------------------|---|------------------|--------------------------------------|------------------|-------------------------|------------------|
|                     | Powassan virus disease                      |                  | St. Louis encephalitis virus disease |                  | West Nile virus disease |                  |
|                     | Neuroinvasive                               | Nonneuroinvasive | Neuroinvasive                        | Nonneuroinvasive | Neuroinvasive           | Nonneuroinvasive |
| <b>Pacific</b>      | —   | —                | —                                    | —                | 593                     | 215              |
| Alaska              | —   | —                | —                                    | —                | —                       | —                |
| California          | —   | —                | —                                    | —                | 585                     | 198              |
| Hawaii              | —   | —                | —                                    | —                | —                       | —                |
| Oregon              | —   | —                | —                                    | —                | —                       | 1                |
| Washington          | —   | —                | —                                    | —                | 8                       | 16               |
| <b>Territories</b>  |   |                  |                                      |                  |                         |                  |
| American Samoa      | —   | —                | —                                    | —                | —                       | —                |
| C.N.M.I.            | —   | —                | —                                    | —                | —                       | —                |
| Guam                | —   | —                | —                                    | —                | —                       | —                |
| Puerto Rico         | —   | —                | —                                    | —                | —                       | —                |
| U.S. Virgin Islands | —   | —                | —                                    | —                | —                       | —                |

\* No cases of anthrax; Crimean-Congo viral hemorrhagic fever; diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; Ebola viral hemorrhagic fever; Guanarito viral hemorrhagic fever; Junin viral hemorrhagic fever; Lujo viral hemorrhagic fever; Machupo viral hemorrhagic fever; Marburg viral hemorrhagic fever; poliomyelitis, paralytic; poliovirus infection, nonparalytic; Sabia viral hemorrhagic fever; severe acute respiratory syndrome-associated coronavirus disease; smallpox; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; and yellow fever were reported in the United States during 2015.

<sup>†</sup> Totals reported to the Division of Vector-Borne Diseases (DVBD), National Center for Emerging and Zoonotic Infectious Diseases (NCEZID) (ArboNET Surveillance), as of July 1, 2016.

TABLE 2c. Number of reported cases of notifiable diseases,\* by geographic division and area — United States and U.S. territories, 2015

| Area                 | Babesiosis |           |          | Botulism |           |        |                    | Brucellosis |
|----------------------|------------|-----------|----------|----------|-----------|--------|--------------------|-------------|
|                      | Total      | Confirmed | Probable | Total    | Foodborne | Infant | Other <sup>†</sup> |             |
| <b>United States</b> | 2,100      | 1,804     | 296      | 195      | 37        | 138    | 20                 | 126         |
| <b>New England</b>   | 1,078      | 973       | 105      | 1        | —         | 1      | —                  | 2           |
| Connecticut          | 328        | 286       | 42       | —        | —         | —      | —                  | —           |
| Maine                | 55         | 53        | 2        | —        | —         | —      | —                  | —           |
| Massachusetts        | 443        | 425       | 18       | —        | —         | —      | —                  | 2           |
| New Hampshire        | 53         | 51        | 2        | —        | —         | —      | —                  | —           |
| Rhode Island         | 190        | 151       | 39       | 1        | —         | 1      | —                  | —           |
| Vermont              | 9          | 7         | 2        | —        | —         | —      | —                  | —           |
| <b>Mid. Atlantic</b> | 889        | 727       | 162      | 31       | —         | 31     | —                  | 11          |
| New Jersey           | 297        | 244       | 53       | 6        | —         | 6      | —                  | —           |
| New York (upstate)   | 521        | 418       | 103      | 1        | —         | 1      | —                  | 4           |
| New York City        | 71         | 65        | 6        | 3        | —         | 3      | —                  | 4           |
| Pennsylvania         | N          | N         | N        | 21       | —         | 21     | —                  | 3           |
| <b>E. N. Central</b> | 64         | 51        | 13       | 31       | 25        | 5      | 1                  | 10          |
| Illinois             | 3          | 3         | —        | 2        | 2         | —      | —                  | 5           |
| Indiana              | —          | —         | —        | —        | —         | —      | —                  | 2           |
| Michigan             | 3          | 2         | 1        | 1        | —         | 1      | —                  | 1           |
| Ohio                 | 2          | —         | 2        | 28       | 23        | 4      | 1                  | 1           |
| Wisconsin            | 56         | 46        | 10       | —        | —         | —      | —                  | 1           |
| <b>W. N. Central</b> | 48         | 38        | 10       | 6        | —         | 5      | 1                  | 8           |
| Iowa                 | N          | N         | N        | 2        | —         | 2      | N                  | 1           |
| Kansas               | N          | N         | N        | 1        | —         | 1      | —                  | —           |
| Minnesota            | 45         | 35        | 10       | 1        | —         | 1      | —                  | 4           |
| Missouri             | N          | N         | N        | —        | —         | —      | —                  | —           |
| Nebraska             | —          | —         | —        | —        | —         | —      | —                  | 1           |
| North Dakota         | 3          | 3         | —        | 2        | —         | 1      | 1                  | 2           |
| South Dakota         | —          | —         | —        | —        | —         | —      | —                  | —           |
| <b>S. Atlantic</b>   | 7          | 4         | 3        | 20       | —         | 18     | 2                  | 21          |
| Delaware             | 1          | 1         | —        | 2        | —         | 2      | —                  | —           |
| District of Columbia | N          | N         | N        | —        | —         | —      | —                  | 4           |
| Florida              | N          | N         | N        | 1        | —         | —      | 1                  | 8           |
| Georgia              | N          | N         | N        | —        | —         | —      | —                  | 3           |
| Maryland             | 4          | 1         | 3        | 10       | —         | 9      | 1                  | 1           |
| North Carolina       | N          | N         | N        | 3        | —         | 3      | —                  | 1           |
| South Carolina       | 2          | 2         | —        | —        | —         | —      | —                  | 2           |
| Virginia             | N          | N         | N        | 3        | —         | 3      | —                  | 2           |
| West Virginia        | —          | —         | —        | 1        | —         | 1      | —                  | —           |
| <b>E.S. Central</b>  | 3          | 2         | 1        | 7        | —         | 7      | —                  | 6           |
| Alabama              | 2          | 1         | 1        | 1        | —         | 1      | —                  | 2           |
| Kentucky             | —          | —         | —        | 1        | —         | 1      | —                  | 1           |
| Mississippi          | N          | N         | N        | 1        | —         | 1      | —                  | —           |
| Tennessee            | 1          | 1         | —        | 4        | —         | 4      | —                  | 3           |
| <b>W.S. Central</b>  | 2          | 2         | —        | 14       | —         | 12     | 2                  | 27          |
| Arkansas             | —          | —         | —        | —        | —         | —      | —                  | 1           |
| Louisiana            | 1          | 1         | —        | 3        | —         | 3      | —                  | 2           |
| Oklahoma             | N          | N         | N        | 2        | —         | 2      | —                  | 1           |
| Texas                | 1          | 1         | —        | 9        | —         | 7      | 2                  | 23          |
| <b>Mountain</b>      | —          | —         | —        | 20       | 4         | 15     | 1                  | 6           |
| Arizona              | N          | N         | N        | 3        | —         | 2      | 1                  | 1           |
| Colorado             | N          | N         | N        | 3        | —         | 3      | —                  | 1           |
| Idaho                | N          | N         | N        | 2        | —         | 2      | —                  | —           |
| Montana              | —          | —         | —        | —        | —         | —      | —                  | 1           |
| Nevada               | N          | N         | N        | —        | —         | —      | —                  | —           |
| New Mexico           | N          | N         | N        | 3        | 2         | 1      | —                  | —           |
| Utah                 | —          | —         | —        | 8        | 2         | 6      | —                  | 3           |
| Wyoming              | —          | —         | —        | 1        | —         | 1      | —                  | —           |

See table footnotes on next page.

TABLE 2c. (Continued) Number of reported cases of notifiable diseases,\* by geographic division and area — United States and U.S. territories, 2015

| Area                | Babesiosis |           |          | Botulism |           |        |                    | Brucellosis |
|---------------------|------------|-----------|----------|----------|-----------|--------|--------------------|-------------|
|                     | Total      | Confirmed | Probable | Total    | Foodborne | Infant | Other <sup>†</sup> |             |
| <b>Pacific</b>      | 9          | 7         | 2        | 65       | 8         | 44     | 13                 | 35          |
| Alaska              | N          | N         | N        | 5        | 4         | 1      | —                  | 1           |
| California          | 5          | 5         | —        | 50       | 1         | 36     | 13                 | 29          |
| Hawaii              | N          | N         | N        | 1        | —         | 1      | —                  | 1           |
| Oregon              | 2          | 1         | 1        | 3        | 3         | —      | —                  | —           |
| Washington          | 2          | 1         | 1        | 6        | —         | 6      | —                  | 4           |
| <b>Territories</b>  |            |           |          |          |           |        |                    |             |
| American Samoa      | U          | U         | U        | —        | —         | —      | —                  | —           |
| C.N.M.I             | —          | —         | —        | —        | —         | —      | —                  | —           |
| Guam                | —          | —         | —        | —        | —         | —      | —                  | —           |
| Puerto Rico         | N          | N         | N        | —        | —         | —      | —                  | —           |
| U.S. Virgin Islands | —          | —         | —        | —        | —         | —      | —                  | —           |

\* No cases of anthrax; Crimean-Congo viral hemorrhagic fever; diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; Ebola viral hemorrhagic fever; Guanarito viral hemorrhagic fever; Junin viral hemorrhagic fever; Lujo viral hemorrhagic fever; Machupo viral hemorrhagic fever; Marburg viral hemorrhagic fever; poliomyelitis, paralytic; poliovirus infection, nonparalytic; Sabia viral hemorrhagic fever; severe acute respiratory syndrome-associated coronavirus disease; smallpox; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; and yellow fever were reported in the United States during 2015.

<sup>†</sup> Includes cases reported as wound and unspecified botulism.



TABLE 2d. Number of reported cases of notifiable diseases,\* by geographic division and area — United States and U.S. territories, 2015

| Area                 | Campylobacteriosis | Chancroid <sup>†</sup> | <i>Chlamydia trachomatis</i> infection <sup>†</sup> | Cholera | Coccidioidomycosis <sup>§</sup> |
|----------------------|--------------------|------------------------|---|---------|---------------------------------|
| <b>United States</b> | 54,556             | 11                     | 1,526,658   | 5       | 11,072                          |
| <b>New England</b>   | 3,114              | 3                      | 50,762  | —       | —                               |
| Connecticut          | 780                | —                      | 13,126  | —       | N                               |
| Maine                | 221                | —                      | 3,965   | —       | N                               |
| Massachusetts        | 1,456              | 3                      | 24,100  | —       | —                               |
| New Hampshire        | 252                | —                      | 3,095   | —       | —                               |
| Rhode Island         | 232                | —                      | 4,575   | —       | —                               |
| Vermont              | 173                | —                      | 1,901   | —       | N                               |
| <b>Mid. Atlantic</b> | 8,005              | —                      | 188,412   | 1       | —                               |
| New Jersey           | 1,907              | —                      | 31,337  | —       | N                               |
| New York (upstate)   | 1,982              | —                      | 40,860  | 1       | N                               |
| New York City        | 1,716              | —                      | 62,755  | —       | N                               |
| Pennsylvania         | 2,400              | —                      | 53,460  | —       | N                               |
| <b>E. N. Central</b> | 5,433              | 1                      | 226,089   | —       | 40                              |
| Illinois             | N                  | —                      | 69,610  | —       | N                               |
| Indiana              | 914                | 1                      | 28,886  | —       | N                               |
| Michigan             | 1,339              | —                      | 46,486  | —       | 20                              |
| Ohio                 | 1,722              | —                      | 56,726  | —       | 13                              |
| Wisconsin            | 1,458              | —                      | 24,381  | —       | 7                               |
| <b>W.N. Central</b>  | 5,092              | —                      | 88,804  | —       | 108                             |
| Iowa                 | 769                | —                      | 12,085  | —       | N                               |
| Kansas               | 679                | —                      | 11,464  | —       | N                               |
| Minnesota            | 1,407              | —                      | 21,243  | —       | 80                              |
| Missouri             | 1,207              | —                      | 28,948  | —       | 10                              |
| Nebraska             | 505                | —                      | 7,956   | —       | 9                               |
| North Dakota         | 176                | —                      | 3,159   | —       | 9                               |
| South Dakota         | 349                | —                      | 3,949   | —       | N                               |
| <b>S. Atlantic</b>   | 8,949              | —                      | 320,277   | 3       | 5                               |
| Delaware             | 156                | —                      | 4,605   | —       | —                               |
| District of Columbia | 8                  | —                      | 7,894   | —       | —                               |
| Florida              | 3,351              | —                      | 90,468  | 3       | N                               |
| Georgia              | 1,093              | —                      | 57,639  | —       | N                               |
| Maryland             | 789                | —                      | 27,450  | —       | 5                               |
| North Carolina       | 1,298              | —                      | 64,376  | —       | N                               |
| South Carolina       | 363                | —                      | 27,538  | —       | N                               |
| Virginia             | 1,564              | —                      | 35,349  | —       | N                               |
| West Virginia        | 327                | —                      | 4,958   | —       | N                               |
| <b>E.S. Central</b>  | 2,331              | —                      | 92,446  | —       | —                               |
| Alabama              | 589                | —                      | 26,359  | —       | N                               |
| Kentucky             | 788                | —                      | 17,444  | —       | —                               |
| Mississippi          | 195                | —                      | 17,371  | —       | N                               |
| Tennessee            | 759                | —                      | 31,272  | —       | N                               |
| <b>W.S. Central</b>  | 5,619              | 2                      | 210,674   | —       | 11                              |
| Arkansas             | 448                | —                      | 16,166  | —       | 7                               |
| Louisiana            | 365                | —                      | 32,325  | —       | 4                               |
| Oklahoma             | 862                | —                      | 21,025  | —       | N                               |
| Texas                | 3,944              | 2                      | 141,158   | —       | N                               |
| <b>Mountain</b>      | 4,319              | 2                      | 102,286   | —       | 7,845                           |
| Arizona              | 1,379              | 1                      | 32,387  | —       | 7,622                           |
| Colorado             | 965                | —                      | 23,857  | —       | N                               |
| Idaho                | 409                | —                      | 5,631   | —       | N                               |
| Montana              | 323                | —                      | 4,184   | —       | 12                              |
| Nevada               | 175                | —                      | 12,925  | —       | 115                             |
| New Mexico           | 479                | —                      | 12,632  | —       | 31                              |
| Utah                 | 435                | —                      | 8,633   | —       | 52                              |
| Wyoming              | 154                | 1                      | 2,037   | —       | 13                              |

See table footnotes on next page.

TABLE 2d. (Continued) Number of reported cases of notifiable diseases,\* by geographic division and area — United States and U.S. territories, 2015

| Area                | Campylobacteriosis | Chancroid <sup>†</sup> | <i>Chlamydia trachomatis</i> infection <sup>†</sup> | Cholera | Coccidioidomycosis <sup>§</sup> |
|---------------------|--------------------|------------------------|---|---------|---------------------------------|
| <b>Pacific</b>      | 11,694             | 3                      | 246,908   | 1       | 3,063                           |
| Alaska              | 98                 | —                      | 5,660   | —       | N                               |
| California          | 8,304              | 2                      | 189,170   | —       | 3,053                           |
| Hawaii              | 569                | —                      | 7,074   | 1       | N                               |
| Oregon              | 882                | —                      | 16,305  | —       | 10                              |
| Washington          | 1,841              | 1                      | 28,699  | —       | N                               |
| <b>Territories</b>  |                    |                        |   |         |                                 |
| American Samoa      | —                  | —                      | —   | —       | N                               |
| C.N.M.I.            | —                  | —                      | —   | —       | —                               |
| Guam                | 4                  | —                      | 881   | —       | —                               |
| Puerto Rico         | 28                 | —                      | 5,295   | —       | N                               |
| U.S. Virgin Islands | —                  | —                      | 743   | —       | —                               |

\* No cases of anthrax; Crimean-Congo viral hemorrhagic fever; diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; Ebola viral hemorrhagic fever; Guanarito viral hemorrhagic fever; Junin viral hemorrhagic fever; Lujo viral hemorrhagic fever; Machupo viral hemorrhagic fever; Marburg viral hemorrhagic fever; poliomyelitis, paralytic; poliovirus infection, nonparalytic; Sabia viral hemorrhagic fever; severe acute respiratory syndrome-associated coronavirus disease; smallpox; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; and yellow fever were reported in the United States during 2015.

<sup>†</sup> Totals reported to the Division of STD Prevention (DSTDP), National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (NCHHSTP), as of June 8, 2016.

<sup>§</sup> Notifiable in <25 states.

TABLE 2e. Number of reported cases of notifiable diseases,\* by geographic division and area — United States and U.S. territories, 2015

| Area                 | Cryptosporidiosis |           |          | Cyclosporiasis | Dengue virus infections <sup>†</sup> |                     |               |
|----------------------|-------------------|-----------|----------|----------------|--------------------------------------|---------------------|---------------|
|                      | Total             | Confirmed | Probable |                | Dengue                               | Dengue-like illness | Severe dengue |
| <b>United States</b> | 9,735             | 6,145     | 3,590    | 645            | 929                                  | 16                  | 6             |
| <b>New England</b>   | 443               | 394       | 49       | 40             | 22                                   | 2                   | —             |
| Connecticut          | 82                | 82        | —        | 16             | 4                                    | 1                   | —             |
| Maine                | 34                | 24        | 10       | N              | 4                                    | —                   | —             |
| Massachusetts        | 211               | 211       | —        | 21             | 8                                    | —                   | —             |
| New Hampshire        | 36                | 23        | 13       | 3              | 1                                    | —                   | —             |
| Rhode Island         | 25                | 25        | —        | —              | 3                                    | —                   | —             |
| Vermont              | 55                | 29        | 26       | —              | 2                                    | 1                   | —             |
| <b>Mid. Atlantic</b> | 818               | 673       | 145      | 93             | 187                                  | 4                   | 1             |
| New Jersey           | 86                | 84        | 2        | 21             | 57                                   | 3                   | —             |
| New York (upstate)   | 269               | 263       | 6        | 21             | 33                                   | —                   | —             |
| New York City        | 133               | 131       | 2        | 51             | 74                                   | 1                   | 1             |
| Pennsylvania         | 330               | 195       | 135      | N              | 23                                   | —                   | —             |
| <b>E. N. Central</b> | 1,672             | 1,182     | 490      | 45             | 63                                   | —                   | —             |
| Illinois             | 240               | 100       | 140      | 21             | 29                                   | —                   | —             |
| Indiana              | 188               | 123       | 65       | —              | —                                    | —                   | —             |
| Michigan             | 238               | 210       | 28       | 8              | 16                                   | —                   | —             |
| Ohio                 | 424               | 167       | 257      | 2              | 11                                   | —                   | —             |
| Wisconsin            | 582               | 582       | —        | 14             | 7                                    | —                   | —             |
| <b>W.N. Central</b>  | 1,794             | 826       | 968      | 20             | 36                                   | —                   | 1             |
| Iowa                 | 373               | 109       | 264      | 4              | 4                                    | —                   | —             |
| Kansas               | 179               | 94        | 85       | 6              | 4                                    | —                   | —             |
| Minnesota            | 318               | 232       | 86       | 1              | 20                                   | —                   | 1             |
| Missouri             | 401               | 160       | 241      | 5              | 3                                    | —                   | —             |
| Nebraska             | 259               | 200       | 59       | 4              | 2                                    | —                   | —             |
| North Dakota         | 17                | 17        | —        | N              | 1                                    | —                   | —             |
| South Dakota         | 247               | 14        | 233      | —              | 2                                    | —                   | —             |
| <b>S. Atlantic</b>   | 1,960             | 1,169     | 791      | 84             | 148                                  | 3                   | 2             |
| Delaware             | 15                | 10        | 5        | 1              | 1                                    | —                   | —             |
| District of Columbia | 24                | 21        | 3        | —              | 8                                    | 2                   | 1             |
| Florida              | 856               | 384       | 472      | 32             | 82                                   | —                   | —             |
| Georgia              | 350               | 350       | —        | 34             | 8                                    | —                   | —             |
| Maryland             | 99                | 73        | 26       | 3              | 11                                   | 1                   | 1             |
| North Carolina       | 282               | 192       | 90       | 4              | 9                                    | —                   | —             |
| South Carolina       | 77                | 50        | 27       | 2              | 4                                    | —                   | —             |
| Virginia             | 234               | 72        | 162      | 8              | 24                                   | —                   | —             |
| West Virginia        | 23                | 17        | 6        | —              | 1                                    | —                   | —             |
| <b>E.S. Central</b>  | 669               | 439       | 230      | 1              | 19                                   | —                   | —             |
| Alabama              | 261               | 147       | 114      | N              | 3                                    | —                   | —             |
| Kentucky             | 95                | 52        | 43       | —              | 1                                    | —                   | —             |
| Mississippi          | 35                | 34        | 1        | N              | 2                                    | —                   | —             |
| Tennessee            | 278               | 206       | 72       | 1              | 13                                   | —                   | —             |
| <b>W.S. Central</b>  | 1,057             | 648       | 409      | 320            | 37                                   | —                   | 2             |
| Arkansas             | 69                | 65        | 4        | 3              | 1                                    | —                   | —             |
| Louisiana            | 132               | 66        | 66       | 1              | 4                                    | —                   | —             |
| Oklahoma             | 116               | 48        | 68       | N              | 2                                    | —                   | —             |
| Texas                | 740               | 469       | 271      | 316            | 30                                   | —                   | 2             |
| <b>Mountain</b>      | 596               | 358       | 238      | 22             | 37                                   | 5                   | —             |
| Arizona              | 62                | 49        | 13       | 1              | 12                                   | 5                   | —             |
| Colorado             | 136               | 77        | 59       | 8              | 13                                   | —                   | —             |
| Idaho                | 95                | 85        | 10       | N              | 3                                    | —                   | —             |
| Montana              | 39                | 39        | —        | 3              | 4                                    | —                   | —             |
| Nevada               | 12                | 8         | 4        | N              | 1                                    | —                   | —             |
| New Mexico           | 51                | 48        | 3        | 2              | 3                                    | —                   | —             |
| Utah                 | 173               | 24        | 149      | 8              | 1                                    | —                   | —             |
| Wyoming              | 28                | 28        | —        | —              | —                                    | —                   | —             |

See table footnotes on next page.

TABLE 2e. (Continued) Number of reported cases of notifiable diseases,\* by geographic division and area — United States and U.S. territories, 2015

| Area                | Cryptosporidiosis |           |          | Cyclosporiasis | Dengue virus infections <sup>†</sup> |                     |               |
|---------------------|-------------------|-----------|----------|----------------|--------------------------------------|---------------------|---------------|
|                     | Total             | Confirmed | Probable |                | Dengue                               | Dengue-like illness | Severe dengue |
| <b>Pacific</b>      | 726               | 456       | 270      | 20             | 380                                  | 2                   | —             |
| Alaska              | 9                 | 8         | 1        | —              | 1                                    | —                   | —             |
| California          | 372               | 345       | 27       | 15             | 138                                  | —                   | —             |
| Hawaii              | 22                | 22        | —        | —              | 219                                  | —                   | —             |
| Oregon              | 213               | 15        | 198      | —              | 3                                    | 2                   | —             |
| Washington          | 110               | 66        | 44       | 5              | 19                                   | —                   | —             |
| <b>Territories</b>  |                   |           |          |                |                                      |                     |               |
| American Samoa      | N                 | N         | N        | N              | —                                    | —                   | —             |
| C.N.M.I.            | —                 | —         | —        | —              | —                                    | —                   | —             |
| Guam                | —                 | —         | —        | —              | —                                    | —                   | —             |
| Puerto Rico         | —                 | —         | —        | —              | 58                                   | —                   | —             |
| U.S. Virgin Islands | —                 | —         | —        | —              | 3                                    | —                   | —             |

\* No cases of anthrax; Crimean-Congo viral hemorrhagic fever; diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; Ebola viral hemorrhagic fever; Guanarito viral hemorrhagic fever; Junin viral hemorrhagic fever; Lujo viral hemorrhagic fever; Machupo viral hemorrhagic fever; Marburg viral hemorrhagic fever; poliomyelitis, paralytic; poliovirus infection, nonparalytic; Sabia viral hemorrhagic fever; severe acute respiratory syndrome-associated coronavirus disease; smallpox; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; and yellow fever were reported in the United States during 2015.

<sup>†</sup> Total number of reported laboratory-positive dengue cases including all confirmed cases [by anti-dengue virus (DENV) molecular diagnostic methods or seroconversion of anti-DENV IgM] and all probable cases (by a single, positive anti-DENV IgM). Totals reported to the Division of Vector-Borne Diseases (DVBD), National Center for Emerging and Zoonotic Infectious Diseases (NCEZID) (ArboNET Surveillance), as of July 1, 2016.



TABLE 2f. Number of reported cases of notifiable diseases,\* by geographic division and area — United State and U.S. territories, 2015

| Area                 | Ehrlichiosis/Anaplasmosis                  |  |                                    |  | Giardiasis | Gonorrhea <sup>†</sup> |
|----------------------|--|--|------------------------------------|--|------------|------------------------|
|                      | <i>Anaplasma phagocytophilum</i> infection | <i>Ehrlichia chaffeensis</i> infection | <i>Ehrlichia Ewingii</i> infection | Undetermined ehrlichiosis/anaplasmosis |            |                        |
| <b>United States</b> | 3,656                                      | 1,288                                  | 14                                 | 179                                    | 14,485     | 395,216                |
| <b>New England</b>   | 1,438                                      | 77                                     | 1                                  | 3                                      | 1,151      | 7,302                  |
| Connecticut          | 120  | —                                      | N                                  | N                                      | 215        | 2,088                  |
| Maine                | 186  | 5                                      | —                                  | 1                                      | 116        | 417                    |
| Massachusetts        | 767  | 12                                     | —                                  | —                                      | 678        | 3,817                  |
| New Hampshire        | 110  | 12                                     | 1                                  | —                                      | 102        | 245                    |
| Rhode Island         | 116  | 44                                     | —                                  | —                                      | 40         | 580                    |
| Vermont              | 139  | 4                                      | —                                  | 2                                      | N          | 155                    |
| <b>Mid. Atlantic</b> | 929  | 181                                    | 1                                  | 26                                     | 2,835      | 45,580                 |
| New Jersey           | 125  | 61                                     | 1                                  | 5                                      | 443        | 7,228                  |
| New York (upstate)   | 727  | 109                                    | —                                  | 11                                     | 860        | 8,719                  |
| New York City        | 56   | 7                                      | —                                  | —                                      | 871        | 16,842                 |
| Pennsylvania         | 21   | 4                                      | —                                  | 10                                     | 661        | 12,791                 |
| <b>E. N. Central</b> | 563  | 74                                     | —                                  | 82                                     | 1,493      | 57,127                 |
| Illinois             | 10   | 30                                     | —                                  | 1                                      | N          | 17,130                 |
| Indiana              | —  | —                                      | —                                  | 20                                     | 178        | 7,843                  |
| Michigan             | 6  | 5                                      | —                                  | —                                      | 444        | 10,330                 |
| Ohio                 | 1  | 17                                     | —                                  | 1                                      | 383        | 16,564                 |
| Wisconsin            | 546  | 22                                     | —                                  | 60                                     | 488        | 5,260                  |
| <b>W. N. Central</b> | 637  | 286                                    | 9                                  | 32                                     | 1,487      | 21,257                 |
| Iowa                 | N  | N                                      | N                                  | N                                      | 213        | 2,247                  |
| Kansas               | 5  | 46                                     | 2                                  | 1                                      | 108        | 2,536                  |
| Minnesota            | 613  | 4                                      | —                                  | 21                                     | 617        | 4,097                  |
| Missouri             | 15   | 231                                    | 7                                  | 9                                      | 251        | 8,942                  |
| Nebraska             | 1  | 4                                      | —                                  | —                                      | 131        | 1,703                  |
| North Dakota         | 3  | 1                                      | —                                  | 1                                      | 39         | 684                    |
| South Dakota         | —  | —                                      | —                                  | —                                      | 128        | 1,048                  |
| <b>S. Atlantic</b>   | 43   | 274                                    | —                                  | 13                                     | 2,634      | 87,900                 |
| Delaware             | 4  | 14                                     | —                                  | —                                      | 28         | 1,310                  |
| District of Columbia | N  | 1                                      | —                                  | —                                      | 121        | 2,742                  |
| Florida              | 5  | 18                                     | —                                  | 1                                      | 1,038      | 24,125                 |
| Georgia              | —  | 33                                     | —                                  | 1                                      | 736        | 15,982                 |
| Maryland             | 4  | 30                                     | —                                  | —                                      | 251        | 6,858                  |
| North Carolina       | 19   | 74                                     | —                                  | —                                      | N          | 19,809                 |
| South Carolina       | 1  | 3                                      | —                                  | —                                      | 125        | 8,206                  |
| Virginia             | 10   | 96                                     | —                                  | 10                                     | 269        | 8,099                  |
| West Virginia        | —  | 5                                      | —                                  | 1                                      | 66         | 769                    |
| <b>E.S. Central</b>  | 17   | 132                                    | 1                                  | 16                                     | 188        | 26,035                 |
| Alabama              | 7  | 9                                      | —                                  | 2                                      | 188        | 7,196                  |
| Kentucky             | —  | 53                                     | —                                  | —                                      | N          | 4,678                  |
| Mississippi          | —  | 9                                      | 1                                  | 3                                      | N          | 5,775                  |
| Tennessee            | 10   | 61                                     | —                                  | 11                                     | N          | 8,386                  |
| <b>W.S. Central</b>  | 19   | 264                                    | 2                                  | 2                                      | 352        | 61,321                 |
| Arkansas             | 16   | 192                                    | 1                                  | —                                      | 119        | 4,780                  |
| Louisiana            | —  | 2                                      | —                                  | 2                                      | 233        | 10,282                 |
| Oklahoma             | —  | 62                                     | 1                                  | —                                      | N          | 6,542                  |
| Texas                | 3  | 8                                      | —                                  | —                                      | N          | 39,717                 |
| <b>Mountain</b>      | 3  | —                                      | —                                  | 3                                      | 1,128      | 21,804                 |
| Arizona              | —  | —                                      | —                                  | 3                                      | 143        | 8,245                  |
| Colorado             | N  | N                                      | N                                  | N                                      | 370        | 4,387                  |
| Idaho                | N  | N                                      | N                                  | N                                      | 161        | 472                    |
| Montana              | 1  | —                                      | —                                  | —                                      | 93         | 844                    |
| Nevada               | —  | —                                      | —                                  | —                                      | 53         | 3,630                  |
| New Mexico           | N  | N                                      | N                                  | N                                      | 77         | 2,489                  |
| Utah                 | 2  | —                                      | —                                  | —                                      | 196        | 1,562                  |
| Wyoming              | —  | —                                      | —                                  | —                                      | 35         | 175                    |

See table footnotes on next page.

TABLE 2f. (Continued) Number of reported cases of notifiable diseases,\* by geographic division and area — United State and U.S. territories, 2015

| Area                | Ehrlichiosis/Anaplasmosis                  |  |                                    |  | Giardiasis | Gonorrhea <sup>†</sup> |
|---------------------|--|--|------------------------------------|--|------------|------------------------|
|                     | <i>Anaplasma phagocytophilum</i> infection | <i>Ehrlichia chaffeensis</i> infection | <i>Ehrlichia Ewingii</i> infection | Undetermined ehrlichiosis/anaplasmosis |            |                        |
| <b>Pacific</b>      | 7  | —                                      | —                                  | 2                                      | 3,217      | 66,890                 |
| Alaska              | N  | N                                      | N                                  | N                                      | 94         | 1,113                  |
| California          | 3  | —                                      | —                                  | 1                                      | 2,150      | 54,135                 |
| Hawaii              | N  | N                                      | N                                  | N                                      | 38         | 1,239                  |
| Oregon              | 3  | —                                      | —                                  | 1                                      | 334        | 3,232                  |
| Washington          | 1  | —                                      | —                                  | —                                      | 601        | 7,171                  |
| <b>Territories</b>  |  |  |                                    |  |            |                        |
| American Samoa      | N  | N                                      | N                                  | N                                      | —          | —                      |
| C.N.M.I             | —  | —                                      | —                                  | —                                      | —          | —                      |
| Guam                | N  | N                                      | N                                  | N                                      | 1          | 147                    |
| Puerto Rico         | N  | N                                      | N                                  | N                                      | 23         | 620                    |
| U.S. Virgin Islands | —  | —                                      | —                                  | —                                      | —          | 52                     |

\* No cases of anthrax; Crimean-Congo hemorrhagic fever; dengue hemorrhagic fever; diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; Ebola hemorrhagic fever; Guanarito hemorrhagic fever; Junin hemorrhagic fever; Lujo virus; Machupo hemorrhagic fever; Marburg fever; poliomyelitis, paralytic; poliovirus infection, nonparalytic; Sabia-associated hemorrhagic fever; severe acute respiratory syndrome-associated coronavirus disease (SARS-CoV); smallpox; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; and yellow fever were reported in the United States during 2015.

<sup>†</sup> Totals reported to the Division of STD Prevention (DSTDP), National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (NCHHSTP), as of June 8, 2016.

TABLE 2g. Number of reported cases of notifiable diseases,\* by geographic division and area — United States and U.S. territories, 2015

| Area                 | Haemophilus influenzae, invasive disease |              |                  |                    |   | Hansen's disease<br>(leprosy) | Hantavirus infections               |         |
|----------------------|--|--------------|------------------|--------------------|---|-------------------------------|-------------------------------------|---------|
|                      | All ages,<br>serotypes                   | Age <5 Years |                  |                    | Non-Hantavirus<br>Pulmonary<br>syndrome |                               | Hantavirus<br>Pulmonary<br>syndrome |         |
|                      |  | Serotype b   | Non-<br>typeable | Non-<br>b serotype |   |                               |                                     | Unknown |
| United States        | 4,138                                    | 29           | 175              | 135                | 167                                     | 89                            | 3                                   | 21      |
| New England          | 259                                      | 1            | 8                | 9                  | 1                                       | 1                             | —                                   | —       |
| Connecticut          | 42                                       | —            | —                | 3                  | —                                       | —                             | N                                   | N       |
| Maine                | 39                                       | 1            | 1                | 1                  | —                                       | N                             | —                                   | —       |
| Massachusetts        | 122                                      | —            | 4                | 5                  | —                                       | —                             | —                                   | —       |
| New Hampshire        | 23                                       | —            | 1                | —                  | 1                                       | 1                             | —                                   | —       |
| Rhode Island         | 20                                       | —            | 1                | —                  | —                                       | —                             | —                                   | —       |
| Vermont              | 13                                       | —            | 1                | —                  | —                                       | N                             | —                                   | —       |
| Mid. Atlantic        | 633                                      | 2            | 14               | 4                  | 29                                      | 7                             | —                                   | —       |
| New Jersey           | 136                                      | —            | —                | —                  | 18                                      | 1                             | N                                   | —       |
| New York (upstate)   | 197                                      | 1            | 9                | 2                  | —                                       | —                             | —                                   | —       |
| New York City        | 97                                       | —            | —                | —                  | 6                                       | 3                             | —                                   | —       |
| Pennsylvania         | 203                                      | 1            | 5                | 2                  | 5                                       | 3                             | —                                   | —       |
| E. N. Central        | 723                                      | 8            | 39               | 20                 | 8                                       | 4                             | 2                                   | 1       |
| Illinois             | 204                                      | 1            | 12               | 6                  | 3                                       | —                             | 1                                   | —       |
| Indiana              | 119                                      | 4            | 4                | 3                  | 1                                       | 1                             | —                                   | 1       |
| Michigan             | 132                                      | —            | 5                | 6                  | 2                                       | 1                             | —                                   | —       |
| Ohio                 | 161                                      | 2            | 12               | 3                  | —                                       | 2                             | —                                   | —       |
| Wisconsin            | 107                                      | 1            | 6                | 2                  | 2                                       | —                             | 1                                   | —       |
| W. N. Central        | 334                                      | 1            | 3                | 12                 | 26                                      | 1                             | —                                   | 1       |
| Iowa                 | 2  | —            | —                | —                  | —                                       | —                             | —                                   | —       |
| Kansas               | 48                                       | —            | 3                | 5                  | —                                       | —                             | N                                   | —       |
| Minnesota            | 105                                      | —            | —                | —                  | 11                                      | 1                             | —                                   | —       |
| Missouri             | 121                                      | —            | —                | —                  | 14                                      | —                             | —                                   | —       |
| Nebraska             | 32                                       | —            | —                | 4                  | 1                                       | —                             | —                                   | —       |
| North Dakota         | 25                                       | 1            | —                | 3                  | —                                       | N                             | —                                   | 1       |
| South Dakota         | 1  | —            | —                | —                  | —                                       | —                             | —                                   | —       |
| S. Atlantic          | 1,009                                    | 2            | 48               | 25                 | 40                                      | 36                            | —                                   | —       |
| Delaware             | 18                                       | —            | —                | —                  | 3                                       | —                             | —                                   | —       |
| District of Columbia | 9  | —            | 1                | —                  | —                                       | —                             | N                                   | —       |
| Florida              | 239                                      | —            | 24               | 7                  | 6                                       | 29                            | —                                   | —       |
| Georgia              | 210                                      | 1            | 10               | 8                  | 6                                       | 3                             | —                                   | —       |
| Maryland             | 85                                       | —            | 4                | 2                  | —                                       | —                             | —                                   | —       |
| North Carolina       | 182                                      | —            | —                | —                  | 20                                      | 1                             | —                                   | —       |
| South Carolina       | 100                                      | —            | 2                | 5                  | 5                                       | 1                             | —                                   | —       |
| Virginia             | 121                                      | 1            | 5                | 3                  | —                                       | 2                             | N                                   | —       |
| West Virginia        | 45                                       | —            | 2                | —                  | —                                       | N                             | —                                   | —       |
| E.S. Central         | 320                                      | —            | 13               | 12                 | 6                                       | 2                             | —                                   | —       |
| Alabama              | 80                                       | —            | 3                | 2                  | 1                                       | 1                             | N                                   | N       |
| Kentucky             | 49                                       | —            | 1                | 1                  | 3                                       | —                             | —                                   | —       |
| Mississippi          | 45                                       | —            | —                | 4                  | —                                       | 1                             | —                                   | —       |
| Tennessee            | 146                                      | —            | 9                | 5                  | 2                                       | —                             | —                                   | —       |
| W.S. Central         | 245                                      | 4            | 17               | 10                 | 3                                       | 22                            | —                                   | 2       |
| Arkansas             | 56                                       | —            | 6                | 3                  | 1                                       | 2                             | —                                   | —       |
| Louisiana            | 61                                       | —            | 1                | 3                  | 2                                       | —                             | —                                   | —       |
| Oklahoma             | 117                                      | —            | 10               | 4                  | —                                       | N                             | N                                   | —       |
| Texas                | 11                                       | 4            | N                | N                  | N                                       | 20                            | —                                   | 2       |
| Mountain             | 415                                      | 9            | 27               | 34                 | 5                                       | 2                             | 1                                   | 14      |
| Arizona              | 133                                      | 3            | 13               | 18                 | 2                                       | 1                             | —                                   | 1       |
| Colorado             | 92                                       | 1            | 5                | 2                  | 1                                       | —                             | —                                   | 6       |
| Idaho                | 27                                       | 1            | 3                | 1                  | 1                                       | —                             | N                                   | —       |
| Montana              | 15                                       | —            | —                | 2                  | —                                       | —                             | —                                   | 4       |
| Nevada               | 31                                       | 2            | —                | —                  | —                                       | —                             | —                                   | —       |
| New Mexico           | 62                                       | 1            | 1                | 8                  | —                                       | —                             | —                                   | 1       |
| Utah                 | 50                                       | —            | 5                | 3                  | 1                                       | 1                             | 1                                   | 1       |
| Wyoming              | 5  | 1            | —                | —                  | —                                       | —                             | —                                   | 1       |

See table footnotes on next page.

TABLE 2g. (Continued) Number of reported cases of notifiable diseases,\* by geographic division and area — United States and U.S. territories, 2015

| Area                | <i>Haemophilus influenzae</i> , invasive disease |              |                  |                    |                | Hansen's disease<br>(leprosy) | Hantavirus infections |                       |
|---------------------|--|--------------|------------------|--------------------|----------------|-------------------------------|-----------------------|-----------------------|
|                     | All ages,<br>serotypes                           | Age <5 Years |                  |                    | Non-Hantavirus |                               | Hantavirus            |                       |
|                     |  | Serotype b   | Non-<br>typeable | Non-<br>b serotype | Unknown        |                               | Pulmonary<br>syndrome | Pulmonary<br>syndrome |
| Pacific             | 200  | 2            | 6                | 9                  | 49             | 14                            | —                     | 3                     |
| Alaska              | 22   | 1            | 1                | 5                  | —              | —                             | —                     | —                     |
| California          | 64   | —            | —                | —                  | 46             | 7                             | —                     | 2                     |
| Hawaii              | 12   | —            | —                | —                  | 3              | 7                             | —                     | —                     |
| Oregon              | 97   | —            | 3                | 2                  | —              | N                             | —                     | —                     |
| Washington          | 5  | 1            | 2                | 2                  | —              | N                             | N                     | 1                     |
| Territories         |  |              |                  |                    |                |                               |                       |                       |
| American Samoa      | —  | —            | —                | —                  | —              | —                             | —                     | N                     |
| C.N.M.I.            | —  | —            | —                | —                  | —              | —                             | —                     | —                     |
| Guam                | —  | —            | —                | —                  | —              | 22                            | —                     | N                     |
| Puerto Rico         | —  | —            | —                | —                  | —              | —                             | —                     | —                     |
| U.S. Virgin Islands | —  | —            | —                | —                  | —              | —                             | —                     | —                     |

\* No cases of anthrax; Crimean-Congo viral hemorrhagic fever; diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; Ebola viral hemorrhagic fever; Guanarito viral hemorrhagic fever; Junin viral hemorrhagic fever; Lujo viral hemorrhagic fever; Machupo viral hemorrhagic fever; Marburg viral hemorrhagic fever; poliomyelitis, paralytic; poliovirus infection, nonparalytic; Sabia viral hemorrhagic fever; severe acute respiratory syndrome-associated coronavirus disease; smallpox; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; and yellow fever were reported in the United States during 2015.



TABLE 2h. Number of reported cases of notifiable diseases,\* by geographic division and area — United States and U.S. territories, U.S. territories

| Area                 | Hemolytic uremic syndrome, postdiarrheal | Hepatitis |          |                         |                        |                       |                                 |
|----------------------|--|-----------|----------|-------------------------|------------------------|-----------------------|---------------------------------|
|                      |  | A, acute  | B, acute | B, chronic <sup>†</sup> | B, perinatal infection | C, acute <sup>§</sup> | C, past or present <sup>¶</sup> |
| <b>United States</b> | 274                                      | 1,390     | 3,370    | 14,147                  | 37                     | 2,447                 | 179,584                         |
| <b>New England</b>   | 11                                       | 60        | 43       | 412                     | 2                      | 295                   | 11,067                          |
| Connecticut          | 2  | 9         | 6        | 38                      | 1                      | 15                    | 3,291                           |
| Maine                | 7  | 8         | 9        | 51                      | —                      | 30                    | 1,486                           |
| Massachusetts        | 1  | 34        | 25       | 284                     | 1                      | 249                   | 5,482                           |
| New Hampshire        | —  | 2         | —        | U                       | —                      | N                     | N                               |
| Rhode Island         | 1  | 4         | U        | —                       | —                      | U                     | —                               |
| Vermont              | —  | 3         | 3        | 39                      | —                      | 1                     | 808                             |
| <b>Mid. Atlantic</b> | 16                                       | 225       | 226      | 3,445                   | 4                      | 380                   | 34,974                          |
| New Jersey           | 2  | 59        | 85       | 273                     | —                      | 130                   | 7,928                           |
| New York (upstate)   | 7  | 50        | 32       | 561                     | —                      | 112                   | 8,335                           |
| New York City        | 5  | 73        | 48       | 1,754                   | 4                      | 9                     | 6,723                           |
| Pennsylvania         | 2  | 43        | 61       | 857                     | —                      | 129                   | 11,988                          |
| <b>E. N. Central</b> | 39                                       | 172       | 658      | 1,748                   | 2                      | 438                   | 34,672                          |
| Illinois             | 3  | 57        | 55       | 440                     | —                      | 31                    | 8,696                           |
| Indiana              | 10                                       | 19        | 133      | 68                      | —                      | 138                   | N                               |
| Michigan             | 12                                       | 51        | 56       | 350                     | —                      | 83                    | 6,808                           |
| Ohio                 | 3  | 36        | 409      | 890                     | —                      | 122                   | 19,165                          |
| Wisconsin            | 11                                       | 9         | 5        | —                       | 2                      | 64                    | 3                               |
| <b>W. N. Central</b> | 39                                       | 66        | 96       | 1,045                   | 4                      | 75                    | 13,786                          |
| Iowa                 | 5  | 16        | 16       | 39                      | —                      | U                     | 20                              |
| Kansas               | 5  | 7         | 19       | 130                     | —                      | 22                    | 1,697                           |
| Minnesota            | 10                                       | 21        | 19       | 186                     | 3                      | 37                    | 2,015                           |
| Missouri             | 14                                       | 9         | 35       | 521                     | —                      | 8                     | 7,800                           |
| Nebraska             | 1  | 6         | 3        | 93                      | 1                      | 8                     | 893                             |
| North Dakota         | 3  | 5         | 2        | 53                      | —                      | —                     | 794                             |
| South Dakota         | 1  | 2         | 2        | 23                      | —                      | —                     | 567                             |
| <b>S. Atlantic</b>   | 24                                       | 278       | 1,135    | 5,422                   | 6                      | 512                   | 56,385                          |
| Delaware             | —  | 2         | 8        | 122                     | —                      | U                     | U                               |
| District of Columbia | —  | U         | U        | U                       | U                      | U                     | U                               |
| Florida              | 5  | 108       | 432      | 1,423                   | —                      | 126                   | 22,793                          |
| Georgia              | 5  | 30        | 119      | 1,867                   | 2                      | 84                    | 7,175                           |
| Maryland             | 2  | 19        | 40       | 566                     | —                      | 38                    | 7,425                           |
| North Carolina       | 3  | 45        | 165      | 507                     | 1                      | 144                   | N                               |
| South Carolina       | 4  | 16        | 30       | 156                     | —                      | 5                     | 4,515                           |
| Virginia             | 4  | 50        | 69       | 556                     | 1                      | 52                    | 8,138                           |
| West Virginia        | 1  | 8         | 272      | 225                     | 2                      | 63                    | 6,339                           |
| <b>E.S. Central</b>  | 28                                       | 55        | 556      | —                       | 1                      | 362                   | —                               |
| Alabama              | 3  | 23        | 101      | N                       | 1                      | 70                    | N                               |
| Kentucky             | 9  | 16        | 162      | N                       | —                      | 119                   | N                               |
| Mississippi          | 1  | 2         | 50       | N                       | —                      | U                     | —                               |
| Tennessee            | 15                                       | 14        | 243      | N                       | —                      | 173                   | N                               |
| <b>W.S. Central</b>  | 39                                       | 173       | 319      | 285                     | 1                      | 109                   | 3,068                           |
| Arkansas             | 5  | 10        | 36       | N                       | —                      | 2                     | N                               |
| Louisiana            | 3  | 5         | 87       | 201                     | —                      | 24                    | 2,478                           |
| Oklahoma             | 17                                       | 11        | 37       | 84                      | —                      | 35                    | 590                             |
| Texas                | 14                                       | 147       | 159      | N                       | 1                      | 48                    | N                               |
| <b>Mountain</b>      | 25                                       | 118       | 102      | 525                     | 2                      | 141                   | 11,662                          |
| Arizona              | 2  | 54        | 25       | 133                     | —                      | U                     | U                               |
| Colorado             | 4  | 25        | 28       | 163                     | 1                      | 40                    | 3,561                           |
| Idaho                | 6  | 9         | 8        | 51                      | —                      | 4                     | 1,017                           |
| Montana              | 2  | 2         | 4        | 31                      | —                      | 15                    | 1,354                           |
| Nevada               | 7  | 11        | 25       | —                       | 1                      | 12                    | —                               |
| New Mexico           | —  | 6         | 2        | 41                      | —                      | 40                    | 3,680                           |
| Utah                 | 4  | 8         | 10       | 64                      | —                      | 30                    | 1,578                           |
| Wyoming              | —  | 3         | U        | 42                      | —                      | U                     | 472                             |

See table footnotes on next page.

**TABLE 2h. (Continued) Number of reported cases of notifiable diseases,\* by geographic division and area — United States and U.S. territories, U.S. territories**

| Area                | Hemolytic uremic syndrome, postdiarrheal | Hepatitis |          |                         |                        |                       |                                 |
|---------------------|--|-----------|----------|-------------------------|------------------------|-----------------------|---------------------------------|
|                     |  | A, acute  | B, acute | B, chronic <sup>†</sup> | B, perinatal infection | C, acute <sup>§</sup> | C, past or present <sup>¶</sup> |
| <b>Pacific</b>      | 53                                       | 243       | 235      | 1,265                   | 15                     | 135                   | 13,970                          |
| Alaska              | —  | 4         | 3        | —                       | —                      | N                     | 1,604                           |
| California          | 38                                       | 179       | 160      | 1,008                   | 11                     | 59                    | 1,182                           |
| Hawaii              | —  | 6         | 14       | U                       | 1                      | —                     | U                               |
| Oregon              | 15                                       | 28        | 24       | 138                     | 2                      | 13                    | 5,472                           |
| Washington          | N  | 26        | 34       | 119                     | 1                      | 63                    | 5,712                           |
| <b>Territories</b>  |  |           |          |                         |                        |                       |                                 |
| American Samoa      | N  | —         | —        | N                       | —                      | —                     | —                               |
| C.N.M.I.            | —  | —         | —        | —                       | —                      | —                     | —                               |
| Guam                | —  | 48        | —        | 113                     | —                      | —                     | 138                             |
| Puerto Rico         | N  | 2         | 24       | 9                       | —                      | N                     | 960                             |
| U.S. Virgin Islands | —  | —         | —        | —                       | —                      | —                     | —                               |

\* No cases of anthrax; Crimean-Congo viral hemorrhagic fever; diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; Ebola viral hemorrhagic fever; Guanarito viral hemorrhagic fever; Junin viral hemorrhagic fever; Lujo viral hemorrhagic fever; Machupo viral hemorrhagic fever; Marburg viral hemorrhagic fever; poliomyelitis, paralytic; poliovirus infection, nonparalytic; Sabia viral hemorrhagic fever; severe acute respiratory syndrome-associated coronavirus disease; smallpox; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; and yellow fever were reported in the United States during 2015.

<sup>†</sup> Totals number of cases reported from 42 states. Reports might not reflect unique cases.

<sup>§</sup> Total number of cases reported from 42 states.

<sup>¶</sup> Total number of cases reported from 39 states. Reports might not reflect unique cases.

TABLE 2i. Number of reported cases of notifiable diseases,\* by geographic division and area — United States and U.S. territories, 2015

| Area                 | HIV<br>diagnoses <sup>†</sup> | Influenza-<br>associated<br>pediatric<br>mortality <sup>§</sup> | Lassa viral<br>hemorrhagic<br>fever | Legionellosis | Leptospirosis | Listeriosis | Lyme disease |           |          |
|----------------------|-------------------------------|---|-------------------------------------|---------------|---------------|-------------|--------------|-----------|----------|
|                      |                               |   |                                     |               |               |             | Total        | Confirmed | Probable |
| <b>United States</b> | 33,817                        | 130   | 1                                   | 6,079         | 40            | 768         | 38,069       | 28,453    | 9,616    |
| <b>New England</b>   | 804                           | 3   | —                                   | 306           | 1             | 57          | 10,109       | 7,279     | 2,830    |
| Connecticut          | 233                           | —   | —                                   | 57            | N             | 25          | 2,541        | 1,873     | 668      |
| Maine                | 32                            | —   | —                                   | 16            | —             | 7           | 1,201        | 993       | 208      |
| Massachusetts        | 456                           | 1   | —                                   | 162           | —             | 19          | 4,224        | 2,922     | 1,302    |
| New Hampshire        | 21                            | —   | —                                   | 32            | N             | 3           | 529          | 436       | 93       |
| Rhode Island         | 50                            | 2   | —                                   | 21            | 1             | 3           | 904          | 564       | 340      |
| Vermont              | 12                            | —   | —                                   | 18            | —             | —           | 710          | 491       | 219      |
| <b>Mid. Atlantic</b> | 4,665                         | 10  | 1                                   | 1,464         | 5             | 149         | 18,217       | 14,535    | 3,682    |
| New Jersey           | 952                           | 1   | 1                                   | 214           | —             | 26          | 4,855        | 3,932     | 923      |
| New York (upstate)   | 735                           | 3   | —                                   | 433           | N             | 43          | 3,376        | 2,650     | 726      |
| New York City        | 1,997                         | 2   | —                                   | 437           | 5             | 34          | 938          | 602       | 336      |
| Pennsylvania         | 981                           | 4   | —                                   | 380           | —             | 46          | 9,048        | 7,351     | 1,697    |
| <b>E. N. Central</b> | 3,360                         | 17  | —                                   | 1,434         | 4             | 128         | 2,621        | 1,935     | 686      |
| Illinois             | 1,065                         | 3   | —                                   | 315           | 2             | 46          | 287          | 287       | —        |
| Indiana              | 567                           | 2   | —                                   | 177           | 2             | 19          | 138          | 102       | 36       |
| Michigan             | 643                           | 3   | —                                   | 251           | —             | 20          | 148          | 125       | 23       |
| Ohio                 | 877                           | 4   | —                                   | 572           | —             | 27          | 154          | 112       | 42       |
| Wisconsin            | 208                           | 5   | —                                   | 119           | —             | 16          | 1,894        | 1,309     | 585      |
| <b>W.N. Central</b>  | 1,078                         | 15  | —                                   | 299           | —             | 16          | 2,200        | 1,342     | 858      |
| Iowa                 | 121                           | 3   | —                                   | 36            | N             | 3           | 318          | 130       | 188      |
| Kansas               | 129                           | 1   | —                                   | 31            | N             | 3           | 23           | 11        | 12       |
| Minnesota            | 252                           | 7   | —                                   | 51            | —             | 3           | 1,805        | 1,174     | 631      |
| Missouri             | 454                           | 1   | —                                   | 148           | —             | 5           | 5            | 2         | 3        |
| Nebraska             | 78                            | 1   | —                                   | 18            | —             | 1           | 11           | 5         | 6        |
| North Dakota         | 21                            | —   | —                                   | 5             | N             | 1           | 33           | 15        | 18       |
| South Dakota         | 23                            | 2   | —                                   | 10            | N             | —           | 5            | 5         | —        |
| <b>S. Atlantic</b>   | 10,653                        | 11  | —                                   | 1,027         | 7             | 140         | 4,558        | 3,181     | 1,377    |
| Delaware             | 99                            | —   | —                                   | 24            | —             | 4           | 435          | 334       | 101      |
| District of Columbia | 254                           | —   | —                                   | 13            | —             | 2           | 121          | 78        | 43       |
| Florida              | 4,903                         | 3   | —                                   | 306           | 4             | 42          | 166          | 116       | 50       |
| Georgia              | 1,421                         | —   | —                                   | 121           | —             | 16          | 8            | 8         | —        |
| Maryland             | 957                           | 1   | —                                   | 153           | 3             | 15          | 1,728        | 1,249     | 479      |
| North Carolina       | 1,284                         | —   | —                                   | 177           | —             | 14          | 230          | 38        | 192      |
| South Carolina       | 736                           | 3   | —                                   | 59            | —             | 15          | 42           | 13        | 29       |
| Virginia             | 931                           | 3   | —                                   | 139           | N             | 22          | 1,539        | 1,102     | 437      |
| West Virginia        | 68                            | 1   | —                                   | 35            | —             | 10          | 289          | 243       | 46       |
| <b>E.S. Central</b>  | 1,751                         | 11  | —                                   | 303           | —             | 23          | 104          | 36        | 68       |
| Alabama              | 350                           | —   | —                                   | 59            | —             | 5           | 25           | 14        | 11       |
| Kentucky             | 261                           | 3   | —                                   | 87            | N             | 3           | 49           | 12        | 37       |
| Mississippi          | 493                           | 1   | —                                   | 38            | N             | 6           | 4            | 4         | —        |
| Tennessee            | 647                           | 7   | —                                   | 119           | N             | 9           | 26           | 6         | 20       |
| <b>W.S. Central</b>  | 5,256                         | 28  | —                                   | 419           | —             | 57          | 57           | 20        | 37       |
| Arkansas             | 235                           | 4   | —                                   | 37            | N             | 3           | —            | —         | —        |
| Louisiana            | 1,148                         | 3   | —                                   | 42            | —             | 7           | 3            | 2         | 1        |
| Oklahoma             | 279                           | 7   | —                                   | 48            | —             | 6           | —            | —         | —        |
| Texas                | 3,594                         | 14  | —                                   | 292           | N             | 41          | 54           | 18        | 36       |
| <b>Mountain</b>      | 1,635                         | 20  | —                                   | 265           | —             | 26          | 41           | 21        | 20       |
| Arizona              | 663                           | 2   | —                                   | 93            | —             | 5           | 12           | 8         | 4        |
| Colorado             | 342                           | 5   | —                                   | 74            | N             | 10          | —            | —         | —        |
| Idaho                | 29                            | —   | —                                   | 13            | —             | 4           | 9            | 3         | 6        |
| Montana              | 18                            | —   | —                                   | 8             | —             | 1           | 5            | 2         | 3        |
| Nevada               | 382                           | 8   | —                                   | 25            | —             | 3           | 7            | 5         | 2        |
| New Mexico           | 123                           | 1   | —                                   | 17            | —             | 3           | —            | —         | —        |
| Utah                 | 65                            | 3   | —                                   | 31            | —             | —           | 7            | 3         | 4        |
| Wyoming              | 13                            | 1   | —                                   | 4             | —             | —           | 1            | —         | 1        |

See table footnotes on next page.

TABLE 2i. (Continued) Number of reported cases of notifiable diseases,\* by geographic division and area — United States and U.S. territories, 2015

| Area                | HIV<br>diagnoses <sup>†</sup> | Influenza-<br>associated<br>pediatric<br>mortality <sup>§</sup> | Lassa viral<br>hemorrhagic<br>fever | Legionellosis | Leptospirosis | Listeriosis | Lyme disease |           |          |
|---------------------|-------------------------------|---|-------------------------------------|---------------|---------------|-------------|--------------|-----------|----------|
|                     |                               |   |                                     |               |               |             | Total        | Confirmed | Probable |
| <b>Pacific</b>      | 4,615                         | 15  | —                                   | 562           | 23            | 172         | 162          | 104       | 58       |
| Alaska              | 24                            | 1   | —                                   | —             | —             | 1           | 9            | 1         | 8        |
| California          | 3,879                         | 11  | —                                   | 453           | 1             | 128         | 98           | 83        | 15       |
| Hawaii              | 99                            | 1   | —                                   | 6             | 22            | 6           | N            | N         | N        |
| Oregon              | 182                           | 1   | —                                   | 47            | —             | 16          | 31           | 3         | 28       |
| Washington          | 431                           | 1   | —                                   | 56            | —             | 21          | 24           | 17        | 7        |
| <b>Territories</b>  |                               |   |                                     |               |               |             |              |           |          |
| American Samoa      | —                             | —   | —                                   | N             | —             | N           | N            | N         | N        |
| C.N.M.I.            | —                             | —   | —                                   | —             | —             | —           | —            | —         | —        |
| Guam                | 1                             | —   | —                                   | —             | 11            | —           | —            | —         | —        |
| Puerto Rico         | 437                           | —   | —                                   | 14            | 45            | 2           | N            | N         | N        |
| U.S. Virgin Islands | 8                             | —   | —                                   | —             | —             | —           | —            | —         | —        |

\* No cases of anthrax; Crimean-Congo viral hemorrhagic fever; diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; Ebola viral hemorrhagic fever; Guaranito viral hemorrhagic fever; Junin viral hemorrhagic fever; Lujo viral hemorrhagic fever; Machupo viral hemorrhagic fever; Marburg viral hemorrhagic fever; poliomyelitis, paralytic; poliovirus infection, nonparalytic; Sabia viral hemorrhagic fever; severe acute respiratory syndrome-associated coronavirus disease; smallpox; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; and yellow fever were reported in the United States during 2015.

<sup>†</sup> Total number of HIV diagnoses reported to the Division of HIV/AIDS Prevention, NCHHSTP through December 31, 2015.

<sup>§</sup> Totals reported to the Influenza Division, National Center for Immunization and Respiratory Diseases (NCIRD), as of June 30, 2016.



TABLE 2j. Number of reported cases of notifiable diseases,\* by geographic division and area — United States and U.S. territories, 2015

| Area                 | Malaria | Measles |            |          | Meningococcal disease |                 |             |                  |                   |
|----------------------|---------|---------|------------|----------|-----------------------|-----------------|-------------|------------------|-------------------|
|                      |         | Total   | Indigenous | Imported | All serogroups        | Serogroups ACWY | Serogroup B | Other serogroups | Unknown serogroup |
| <b>United States</b> | 1,390   | 188     | 162        | 26       | 372                   | 120             | 111         | 21               | 120               |
| <b>New England</b>   | 92      | —       | —          | —        | 27                    | 7               | 14          | 6                | —                 |
| Connecticut          | 12      | —       | —          | —        | 5                     | 1               | 2           | 2                | —                 |
| Maine                | 7       | —       | —          | —        | 4                     | —               | 2           | 2                | —                 |
| Massachusetts        | 51      | —       | —          | —        | 12                    | 6               | 6           | —                | —                 |
| New Hampshire        | 6       | —       | —          | —        | 1                     | —               | —           | 1                | —                 |
| Rhode Island         | 16      | —       | —          | —        | 4                     | —               | 4           | —                | —                 |
| Vermont              | —       | —       | —          | —        | 1                     | —               | —           | 1                | —                 |
| <b>Mid. Atlantic</b> | 381     | 11      | 4          | 7        | 34                    | 4               | 13          | —                | 17                |
| New Jersey           | 86      | 3       | 3          | —        | 8                     | —               | —           | —                | 8                 |
| New York (upstate)   | 58      | 1       | —          | 1        | 9                     | 2               | 7           | —                | —                 |
| New York City        | 200     | 6       | 1          | 5        | 8                     | —               | —           | —                | 8                 |
| Pennsylvania         | 37      | 1       | —          | 1        | 9                     | 2               | 6           | —                | 1                 |
| <b>E. N. Central</b> | 121     | 19      | 18         | 1        | 56                    | 20              | 27          | 5                | 4                 |
| Illinois             | 50      | 17      | 17         | —        | 15                    | 10              | 3           | 2                | —                 |
| Indiana              | 9       | —       | —          | —        | 6                     | —               | 5           | 1                | —                 |
| Michigan             | 20      | 1       | 1          | —        | 8                     | 4               | 2           | —                | 2                 |
| Ohio                 | 37      | 1       | —          | 1        | 18                    | 3               | 13          | 2                | —                 |
| Wisconsin            | 5       | —       | —          | —        | 9                     | 3               | 4           | —                | 2                 |
| <b>W.N. Central</b>  | 98      | 8       | 5          | 3        | 27                    | 3               | 2           | 1                | 21                |
| Iowa                 | 17      | —       | —          | —        | 5                     | —               | 1           | 1                | 3                 |
| Kansas               | 6       | —       | —          | —        | 5                     | 2               | 1           | —                | 2                 |
| Minnesota            | 43      | 2       | —          | 2        | 7                     | —               | —           | —                | 7                 |
| Missouri             | 19      | 1       | —          | 1        | 7                     | —               | —           | —                | 7                 |
| Nebraska             | 4       | 3       | 3          | —        | 2                     | —               | —           | —                | 2                 |
| North Dakota         | 5       | —       | —          | —        | —                     | —               | —           | —                | —                 |
| South Dakota         | 4       | 2       | 2          | —        | 1                     | 1               | —           | —                | —                 |
| <b>S. Atlantic</b>   | 336     | 11      | 5          | 6        | 66                    | 31              | 16          | 5                | 14                |
| Delaware             | 3       | 1       | —          | 1        | —                     | —               | —           | —                | —                 |
| District of Columbia | 17      | 3       | 2          | 1        | 3                     | 1               | —           | —                | 2                 |
| Florida              | 40      | 5       | 3          | 2        | 23                    | 15              | 6           | 1                | 1                 |
| Georgia              | 56      | 1       | —          | 1        | 17                    | 10              | 1           | —                | 6                 |
| Maryland             | 122     | —       | —          | —        | 2                     | 1               | 1           | —                | —                 |
| North Carolina       | 27      | —       | —          | —        | 6                     | 3               | 2           | —                | 1                 |
| South Carolina       | 3       | —       | —          | —        | 3                     | —               | —           | 2                | 1                 |
| Virginia             | 66      | 1       | —          | 1        | 10                    | —               | 6           | 2                | 2                 |
| West Virginia        | 2       | —       | —          | —        | 2                     | 1               | —           | —                | 1                 |
| <b>E.S. Central</b>  | 31      | —       | —          | —        | 13                    | 3               | 5           | 1                | 4                 |
| Alabama              | 11      | —       | —          | —        | 6                     | 2               | 3           | —                | 1                 |
| Kentucky             | 4       | —       | —          | —        | 3                     | —               | —           | —                | 3                 |
| Mississippi          | 1       | —       | —          | —        | —                     | —               | —           | —                | —                 |
| Tennessee            | 15      | —       | —          | —        | 4                     | 1               | 2           | 1                | —                 |
| <b>W.S. Central</b>  | 131     | 2       | —          | 2        | 40                    | 18              | 14          | —                | 8                 |
| Arkansas             | 9       | —       | —          | —        | 2                     | 2               | —           | —                | —                 |
| Louisiana            | 11      | —       | —          | —        | 5                     | 1               | 2           | —                | 2                 |
| Oklahoma             | 12      | 1       | —          | 1        | 3                     | 1               | 2           | —                | —                 |
| Texas                | 99      | 1       | —          | 1        | 30                    | 14              | 10          | —                | 6                 |
| <b>Mountain</b>      | 58      | 18      | 17         | 1        | 15                    | 9               | 2           | 3                | 1                 |
| Arizona              | 14      | 7       | 7          | —        | 5                     | 3               | 1           | 1                | —                 |
| Colorado             | 21      | 1       | 1          | —        | 4                     | 2               | —           | 1                | 1                 |
| Idaho                | 6       | —       | —          | —        | —                     | —               | —           | —                | —                 |
| Montana              | 1       | —       | —          | —        | 1                     | 1               | —           | —                | —                 |
| Nevada               | 6       | 9       | 9          | —        | 1                     | —               | —           | 1                | —                 |
| New Mexico           | 3       | —       | —          | —        | 1                     | 1               | —           | —                | —                 |
| Utah                 | 6       | 1       | —          | 1        | 2                     | 1               | 1           | —                | —                 |
| Wyoming              | 1       | —       | —          | —        | 1                     | 1               | —           | —                | —                 |

See table footnotes on next page.

TABLE 2j. (Continued) Number of reported cases of notifiable diseases,\* by geographic division and area — United States and U.S. territories, 2015

| Area                | Malaria | Measles |            |          | Meningococcal disease |                 |             |                  |                   |
|---------------------|---------|---------|------------|----------|-----------------------|-----------------|-------------|------------------|-------------------|
|                     |         | Total   | Indigenous | Imported | All serogroups        | Serogroups ACWY | Serogroup B | Other serogroups | Unknown serogroup |
| <b>Pacific</b>      | 142     | 119     | 113        | 6        | 94                    | 25              | 18          | —                | 51                |
| Alaska              | 3       | —       | —          | —        | 4                     | 4               | —           | —                | —                 |
| California          | 97      | 109     | 103        | 6        | 46                    | —               | —           | —                | 46                |
| Hawaii              | 1       | —       | —          | —        | 4                     | 1               | 1           | —                | 2                 |
| Oregon              | 20      | —       | —          | —        | 30                    | 13              | 14          | —                | 3                 |
| Washington          | 21      | 10      | 10         | —        | 10                    | 7               | 3           | —                | —                 |
| <b>Territories</b>  |         |         |            |          |                       |                 |             |                  |                   |
| American Samoa      | —       | —       | —          | —        | —                     | —               | —           | —                | —                 |
| C.N.M.I.            | —       | —       | —          | —        | —                     | —               | —           | —                | —                 |
| Guam                | —       | 1       | —          | 1        | —                     | —               | —           | —                | —                 |
| Puerto Rico         | 7       | —       | —          | —        | —                     | —               | —           | —                | —                 |
| U.S. Virgin Islands | —       | —       | —          | —        | —                     | —               | —           | —                | —                 |

\* No cases of anthrax; Crimean-Congo viral hemorrhagic fever; diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; Ebola viral hemorrhagic fever; Guanarito viral hemorrhagic fever; Junin viral hemorrhagic fever; Lujo viral hemorrhagic fever; Machupo viral hemorrhagic fever; Marburg viral hemorrhagic fever; poliomyelitis, paralytic; poliovirus infection, nonparalytic; Sabia viral hemorrhagic fever; severe acute respiratory syndrome-associated coronavirus disease; smallpox; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; and yellow fever were reported in the United States during 2015.

TABLE 2k. Number of reported cases of notifiable diseases,\* by geographic division and area — United States and U.S. territories, 2015

| Area                 | Mumps | Novel<br>influenza A<br>virus<br>infections | Pertussis | Plague | Psittacosis | Q fever |       |         |
|----------------------|-------|---|-----------|--------|-------------|---------|-------|---------|
|                      |       |   |           |        |             | Total   | Acute | Chronic |
| <b>United States</b> | 1,329 | 7   | 20,762    | 16     | 4           | 156     | 122   | 34      |
| <b>New England</b>   | 16    | —   | 723       | —      | —           | —       | —     | —       |
| Connecticut          | 4     | —   | 74        | —      | N           | —       | —     | —       |
| Maine                | —     | —   | 281       | —      | —           | —       | —     | —       |
| Massachusetts        | 6     | —   | 251       | —      | —           | —       | —     | —       |
| New Hampshire        | 2     | —   | 41        | —      | —           | N       | N     | N       |
| Rhode Island         | 3     | —   | 27        | —      | —           | —       | —     | —       |
| Vermont              | 1     | —   | 49        | —      | —           | N       | —     | —       |
| <b>Mid. Atlantic</b> | 166   | 1   | 2,431     | —      | 1           | 14      | 11    | 3       |
| New Jersey           | 27    | 1   | 491       | —      | 1           | 3       | 3     | —       |
| New York (upstate)   | 24    | —   | 616       | —      | —           | 4       | 3     | 1       |
| New York City        | 101   | —   | 436       | —      | —           | —       | —     | —       |
| Pennsylvania         | 14    | —   | 888       | —      | —           | 7       | 5     | 2       |
| <b>E. N. Central</b> | 528   | 2   | 2,998     | 1      | —           | 18      | 16    | 2       |
| Illinois             | 430   | —   | 718       | —      | —           | 4       | 4     | —       |
| Indiana              | 6     | —   | 223       | —      | —           | 1       | 1     | —       |
| Michigan             | 8     | 1   | 475       | 1      | —           | 4       | 2     | 2       |
| Ohio                 | 18    | 1   | 827       | —      | —           | 4       | 4     | —       |
| Wisconsin            | 66    | —   | 755       | —      | —           | 5       | 5     | —       |
| <b>W.N. Central</b>  | 451   | 4   | 2,033     | —      | 2           | 19      | 15    | 4       |
| Iowa                 | 411   | 1   | 173       | —      | —           | N       | N     | N       |
| Kansas               | —     | —   | 421       | —      | —           | —       | —     | —       |
| Minnesota            | 6     | 3   | 598       | —      | —           | 2       | 2     | —       |
| Missouri             | 32    | —   | 266       | —      | —           | 7       | 5     | 2       |
| Nebraska             | 2     | —   | 515       | —      | 2           | 5       | 3     | 2       |
| North Dakota         | —     | —   | 43        | —      | —           | —       | —     | —       |
| South Dakota         | —     | —   | 17        | —      | —           | 5       | 5     | —       |
| <b>S. Atlantic</b>   | 67    | —   | 1,811     | 1      | 1           | 16      | 12    | 4       |
| Delaware             | 2     | —   | 20        | —      | —           | 1       | 1     | —       |
| District of Columbia | —     | —   | 11        | —      | —           | N       | —     | —       |
| Florida              | 10    | —   | 339       | —      | 1           | 1       | 1     | —       |
| Georgia              | —     | —   | 244       | 1      | —           | 3       | —     | 3       |
| Maryland             | 16    | —   | 134       | —      | —           | 2       | 2     | —       |
| North Carolina       | 4     | —   | 443       | —      | —           | 4       | 4     | —       |
| South Carolina       | —     | —   | 171       | —      | —           | 3       | 3     | —       |
| Virginia             | 34    | —   | 369       | —      | —           | —       | —     | —       |
| West Virginia        | 1     | —   | 80        | —      | —           | 2       | 1     | 1       |
| <b>E.S. Central</b>  | 8     | —   | 542       | —      | —           | 4       | 4     | —       |
| Alabama              | 1     | —   | 160       | —      | —           | —       | —     | —       |
| Kentucky             | 4     | —   | 184       | —      | —           | —       | —     | —       |
| Mississippi          | —     | —   | 12        | —      | —           | 1       | 1     | —       |
| Tennessee            | 3     | —   | 186       | —      | —           | 3       | 3     | —       |
| <b>W.S. Central</b>  | 30    | —   | 1,706     | —      | —           | 17      | 11    | 6       |
| Arkansas             | 7     | —   | 59        | —      | —           | 3       | 3     | N       |
| Louisiana            | 2     | —   | 55        | —      | —           | —       | —     | —       |
| Oklahoma             | 1     | —   | 88        | —      | —           | 1       | —     | 1       |
| Texas                | 20    | —   | 1,504     | —      | N           | 13      | 8     | 5       |
| <b>Mountain</b>      | 17    | —   | 2,798     | 11     | —           | 24      | 16    | 8       |
| Arizona              | 2     | —   | 580       | 2      | —           | 7       | 4     | 3       |
| Colorado             | 6     | —   | 913       | 4      | —           | 8       | 7     | 1       |
| Idaho                | 8     | —   | 194       | —      | —           | 1       | —     | 1       |
| Montana              | —     | —   | 230       | —      | —           | 5       | 3     | 2       |
| Nevada               | —     | —   | 112       | —      | —           | 3       | 2     | 1       |
| New Mexico           | 1     | —   | 242       | 4      | —           | —       | —     | —       |
| Utah                 | —     | —   | 498       | 1      | —           | —       | —     | —       |
| Wyoming              | —     | —   | 29        | —      | —           | —       | —     | —       |

See table footnotes on next page.

TABLE 2k. (Continued) Number of reported cases of notifiable diseases,\* by geographic division and area — United States and U.S. territories, 2015

| Area                | Mumps | Novel<br>influenza A<br>virus<br>infections | Pertussis | Plague | Psittacosis | Q fever |       |         |
|---------------------|-------|---|-----------|--------|-------------|---------|-------|---------|
|                     |       |   |           |        |             | Total   | Acute | Chronic |
| <b>Pacific</b>      | 46    | —   | 5,720     | 3      | —           | 44      | 37    | 7       |
| Alaska              | —     | —   | 105       | —      | —           | —       | —     | —       |
| California          | 33    | —   | 3,597     | 1      | —           | 39      | 33    | 6       |
| Hawaii              | 3     | —   | 47        | —      | —           | —       | —     | —       |
| Oregon              | 3     | —   | 589       | 2      | —           | 2       | 2     | —       |
| Washington          | 7     | —   | 1,382     | —      | —           | 3       | 2     | 1       |
| <b>Territories</b>  |       |   |           |        |             |         |       |         |
| American Samoa      | —     | —   | —         | —      | N           | N       | N     | N       |
| C.N.M.I.            | —     | —   | —         | —      | —           | —       | —     | —       |
| Guam                | 5     | —   | 55        | —      | —           | N       | N     | N       |
| Puerto Rico         | 4     | —   | 10        | —      | N           | —       | —     | —       |
| U.S. Virgin Islands | —     | —   | —         | —      | —           | —       | —     | —       |

\* No cases of anthrax; Crimean-Congo viral hemorrhagic fever; diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; Ebola viral hemorrhagic fever; Guanarito viral hemorrhagic fever; Junin viral hemorrhagic fever; Lujo viral hemorrhagic fever; Machupo viral hemorrhagic fever; Marburg viral hemorrhagic fever; poliomyelitis, paralytic; poliovirus infection, nonparalytic; Sabia viral hemorrhagic fever; severe acute respiratory syndrome-associated coronavirus disease; smallpox; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; and yellow fever were reported in the United States during 2015.



TABLE 2I. Number of reported cases of notifiable diseases,\* by geographic division and area — United States and U.S. territories, 2015

| Area                 | Rabies Animal† | Rabies Human | Rubella | Rubella,<br>congenital<br>syndrome | Salmonellosis | Shiga toxin-<br>producing<br><i>Escherichia Coli</i> § | Shigellosis |
|----------------------|----------------|--------------|---------|------------------------------------|---------------|--|-------------|
| <b>United States</b> | 5,491          | 2            | 5       | 1                                  | 55,108        | 7,059  | 23,590      |
| <b>New England</b>   | 415            | 1            | —       | —                                  | 2,103         | 247  | 265         |
| Connecticut          | 170            | —            | —       | —                                  | 434           | 82   | 57          |
| Maine                | 34             | —            | —       | —                                  | 123           | 29   | 4           |
| Massachusetts        | 145            | 1            | —       | —                                  | 1,153         | 69   | 165         |
| New Hampshire        | 24             | —            | —       | —                                  | 173           | 29   | 5           |
| Rhode Island         | 17             | —            | —       | —                                  | 144           | 9  | 28          |
| Vermont              | 25             | —            | —       | —                                  | 76            | 29   | 6           |
| <b>Mid. Atlantic</b> | 1,031          | —            | —       | 1                                  | 4,975         | 667  | 1,811       |
| New Jersey           | 308            | —            | —       | —                                  | 1,145         | 137  | 370         |
| New York (upstate)   | 372            | —            | —       | —                                  | 1,312         | 199  | 335         |
| New York City        | 6              | —            | —       | 1                                  | 929           | 104  | 685         |
| Pennsylvania         | 345            | —            | —       | —                                  | 1,589         | 227  | 421         |
| <b>E. N. Central</b> | 196            | —            | 1       | —                                  | 5,806         | 927  | 2,641       |
| Illinois             | 97             | —            | —       | —                                  | 1,839         | 179  | 886         |
| Indiana              | 13             | —            | —       | —                                  | 667           | 136  | 278         |
| Michigan             | 38             | —            | —       | —                                  | 962           | 124  | 507         |
| Ohio                 | 26             | —            | —       | —                                  | 1,359         | 262  | 693         |
| Wisconsin            | 22             | —            | 1       | —                                  | 979           | 226  | 277         |
| <b>W.N. Central</b>  | 234            | —            | 1       | —                                  | 3,760         | 1,031  | 2,658       |
| Iowa                 | 12             | —            | —       | —                                  | 618           | 164  | 683         |
| Kansas               | 100            | —            | —       | —                                  | 509           | 121  | 150         |
| Minnesota            | 28             | —            | —       | —                                  | 970           | 268  | 299         |
| Missouri             | 31             | —            | 1       | —                                  | 984           | 244  | 1,126       |
| Nebraska             | 28             | —            | —       | —                                  | 309           | 128  | 92          |
| North Dakota         | 6              | —            | —       | —                                  | 145           | 44   | 24          |
| South Dakota         | 29             | —            | —       | —                                  | 225           | 62   | 284         |
| <b>S. Atlantic</b>   | 1,764          | —            | 1       | —                                  | 14,751        | 583  | 4,341       |
| Delaware             | 11             | —            | —       | —                                  | 159           | 5  | 21          |
| District of Columbia | 10             | —            | —       | —                                  | 122           | 5  | 45          |
| Florida              | 85             | —            | —       | —                                  | 5,924         | 135  | 1,737       |
| Georgia              | 266            | —            | —       | —                                  | 2,154         | 107  | 1,302       |
| Maryland             | 342            | —            | —       | —                                  | 960           | 85   | 234         |
| North Carolina       | 342            | —            | —       | —                                  | 2,538         | 78   | 381         |
| South Carolina       | 130            | —            | 1       | —                                  | 1,514         | 38   | 287         |
| Virginia             | 528            | —            | —       | —                                  | 1,181         | 107  | 317         |
| West Virginia        | 50             | —            | —       | —                                  | 199           | 23   | 17          |
| <b>E.S. Central</b>  | 139            | —            | —       | —                                  | 3,648         | 302  | 1,418       |
| Alabama              | 87             | —            | —       | —                                  | 1,151         | 41   | 679         |
| Kentucky             | 11             | —            | —       | —                                  | 537           | 74   | 417         |
| Mississippi          | 4              | —            | —       | —                                  | 1,066         | 22   | 100         |
| Tennessee            | 37             | —            | —       | —                                  | 894           | 165  | 222         |
| <b>W.S. Central</b>  | 1,116          | —            | 2       | —                                  | 8,733         | 904  | 7,012       |
| Arkansas             | 73             | —            | —       | —                                  | 773           | 85   | 115         |
| Louisiana            | 5              | —            | —       | —                                  | 1,328         | 45   | 224         |
| Oklahoma             | 86             | —            | —       | —                                  | 905           | 164  | 1,050       |
| Texas                | 952            | —            | 2       | —                                  | 5,727         | 610  | 5,623       |
| <b>Mountain</b>      | 329            | 1            | —       | —                                  | 3,843         | 807  | 871         |
| Arizona              | 120            | —            | —       | —                                  | 1,160         | 128  | 549         |
| Colorado             | 119            | —            | —       | —                                  | 618           | 207  | 110         |
| Idaho                | 10             | —            | —       | —                                  | 588           | 157  | 31          |
| Montana              | 22             | —            | —       | —                                  | 195           | 85   | 14          |
| Nevada               | 8              | —            | —       | —                                  | 276           | 59   | 44          |
| New Mexico           | 13             | —            | —       | —                                  | 447           | 36   | 77          |
| Utah                 | 22             | —            | —       | —                                  | 460           | 97   | 36          |
| Wyoming              | 15             | 1            | —       | —                                  | 99            | 38   | 10          |

See table footnotes on next page.

TABLE 2I. (Continued) Number of reported cases of notifiable diseases,\* by geographic division and area — United States and U.S. territories, 2015

| Area                | Rabies Animal <sup>†</sup> | Rabies Human | Rubella | Rubella,<br>congenital<br>syndrome | Salmonellosis | Shiga toxin-<br>producing<br><i>Escherichia Coli</i> <sup>§</sup> | Shigellosis |
|---------------------|----------------------------|--------------|---------|------------------------------------|---------------|---|-------------|
| <b>Pacific</b>      | 267                        | —            | —       | —                                  | 7,489         | 1,591   | 2,573       |
| Alaska              | 7                          | —            | —       | —                                  | 78            | 10  | 5           |
| California          | 230                        | —            | —       | —                                  | 5,562         | 926   | 2,224       |
| Hawaii              | —                          | —            | —       | —                                  | 286           | 40  | 80          |
| Oregon              | 20                         | —            | —       | —                                  | 528           | 229   | 112         |
| Washington          | 10                         | —            | —       | —                                  | 1,035         | 386   | 152         |
| <b>Territories</b>  |                            |              |         |                                    |               |   |             |
| American Samoa      | —                          | U            | —       | —                                  | —             | —   | —           |
| C.N.M.I.            | —                          | —            | —       | —                                  | —             | —   | —           |
| Guam                | —                          | —            | —       | —                                  | 18            | —   | 14          |
| Puerto Rico         | 17                         | 1            | —       | —                                  | 641           | 2   | 19          |
| U.S. Virgin Islands | —                          | —            | —       | —                                  | —             | —   | —           |

\* No cases of anthrax; Crimean-Congo viral hemorrhagic fever; diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; Ebola viral hemorrhagic fever; Guanarito viral hemorrhagic fever; Junin viral hemorrhagic fever; Lujo viral hemorrhagic fever; Machupo viral hemorrhagic fever; Marburg viral hemorrhagic fever; poliomyelitis, paralytic; poliovirus infection, nonparalytic; Sabia viral hemorrhagic fever; severe acute respiratory syndrome-associated coronavirus disease; smallpox; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; and yellow fever were reported in the United States during 2015.

<sup>†</sup> Totals reported to the Division of High-Consequence Pathogens and Pathology (DHCPP), National Center for Emerging and Zoonotic Infectious Diseases (NCEZID) (ArboNET Surveillance), as of December 31, 2015.

<sup>§</sup> Includes *Escherichia coli* O157:H7; shiga toxin-positive, serogroup non-O157; and shiga toxin positive, not serogrouped.

TABLE 2m. Number of reported cases of notifiable diseases,\* by geographic division and area — United States and U.S. territories, 2015

| Area                 | Spotted fever rickettsiosis |           |          | Streptococcal<br>toxic shock<br>syndrome | Streptococcus pneumoniae,<br>invasive pneumococcal<br>disease <sup>†, §</sup> |                 | Syphilis <sup>¶</sup> |            |                          |
|----------------------|-----------------------------|-----------|----------|--|---|-----------------|-----------------------|------------|--------------------------|
|                      | Total                       | Confirmed | Probable |  | All<br>ages   | Age<br><5 years | All<br>stages**       | Congenital | Primary and<br>secondary |
| <b>United States</b> | 4,198                       | 199       | 3,999    | 335                                      | 16,163  | 1,177           | 74,702                | 487        | 23,872                   |
| <b>New England</b>   | 21                          | 2         | 19       | 50                                       | 1,086   | 45              | 1,783                 | 5          | 664                      |
| Connecticut          | 5                           | 1         | 4        | 23                                       | 238   | 6               | 220                   | 1          | 92                       |
| Maine                | 1                           | —         | 1        | 13                                       | 135   | 5               | 38                    | —          | 28                       |
| Massachusetts        | 13                          | 1         | 12       | 9  | 487   | 20              | 1,263                 | 4          | 418                      |
| New Hampshire        | —                           | —         | —        | 1  | 102   | 7               | 84                    | —          | 40                       |
| Rhode Island         | 2                           | —         | 2        | 3  | 62  | 3               | 163                   | —          | 77                       |
| Vermont              | —                           | —         | —        | 1  | 62  | 4               | 15                    | —          | 9                        |
| <b>Mid. Atlantic</b> | 119                         | 7         | 112      | 30                                       | 2,474   | 135             | 10,889                | 19         | 3,033                    |
| New Jersey           | 63                          | 1         | 62       | 15                                       | 538   | 27              | 1,306                 | —          | 372                      |
| New York (upstate)   | 36                          | 6         | 30       | 14                                       | 805   | 41              | 1,540                 | 3          | 502                      |
| New York City        | 4                           | —         | 4        | —  | 664   | 39              | 6,255                 | 9          | 1,504                    |
| Pennsylvania         | 16                          | —         | 16       | 1  | 467   | 28              | 1,788                 | 7          | 655                      |
| <b>E. N. Central</b> | 101                         | 2         | 99       | 111                                      | 2,822   | 171             | 6,687                 | 63         | 2,412                    |
| Illinois             | 52                          | 1         | 51       | 70                                       | N   | 3               | 3,289                 | 30         | 1,085                    |
| Indiana              | 30                          | —         | 30       | 21                                       | 627   | 38              | 699                   | 5          | 285                      |
| Michigan             | 2                           | —         | 2        | 11                                       | 779   | 43              | 1,089                 | 11         | 403                      |
| Ohio                 | 12                          | 1         | 11       | 7  | 978   | 57              | 1,348                 | 17         | 560                      |
| Wisconsin            | 5                           | —         | 5        | 2  | 438   | 30              | 262                   | —          | 79                       |
| <b>W. N. Central</b> | 521                         | 10        | 511      | 16                                       | 1,035   | 83              | 2,096                 | 5          | 810                      |
| Iowa                 | 8                           | —         | 8        | —  | N   | N               | 232                   | —          | 75                       |
| Kansas               | 146                         | 1         | 145      | —  | 173   | 13              | 240                   | —          | 87                       |
| Minnesota            | 10                          | —         | 10       | 10                                       | 530   | 36              | 653                   | 2          | 246                      |
| Missouri             | 324                         | 4         | 320      | 2  | N   | 20              | 777                   | 3          | 307                      |
| Nebraska             | 25                          | 4         | 21       | 1  | 141   | 8               | 81                    | —          | 45                       |
| North Dakota         | 6                           | —         | 6        | —  | 82  | 6               | 42                    | —          | 11                       |
| South Dakota         | 2                           | 1         | 1        | 3  | 109   | N               | 71                    | —          | 39                       |
| <b>S. Atlantic</b>   | 969                         | 126       | 843      | 54                                       | 2,673   | 242             | 18,297                | 94         | 6,017                    |
| Delaware             | 19                          | —         | 19       | —  | 77  | 6               | 110                   | 1          | 41                       |
| District of Columbia | —                           | —         | —        | —  | 67  | 6               | 322                   | 1          | 95                       |
| Florida              | 21                          | —         | 21       | N  | 431   | 68              | 7,132                 | 38         | 2,083                    |
| Georgia              | 114                         | 114       | —        | 20                                       | 991   | 76              | 4,156                 | 21         | 1,413                    |
| Maryland             | 4                           | —         | 4        | —  | 411   | 22              | 1,870                 | 18         | 509                      |
| North Carolina       | 459                         | 5         | 454      | 10                                       | N   | N               | 2,741                 | 9          | 1,196                    |
| South Carolina       | 47                          | 2         | 45       | 4  | 439   | 21              | 834                   | 3          | 294                      |
| Virginia             | 296                         | 5         | 291      | 19                                       | 28  | 28              | 1,023                 | 3          | 334                      |
| West Virginia        | 9                           | —         | 9        | 1  | 229   | 15              | 109                   | —          | 52                       |
| <b>E.S. Central</b>  | 1,127                       | 20        | 1,107    | 5  | 1,628   | 123             | 3,091                 | 9          | 993                      |
| Alabama              | 288                         | 1         | 287      | N  | 298   | 28              | 657                   | 3          | 280                      |
| Kentucky             | 134                         | —         | 134      | 5  | 219   | 10              | 433                   | 1          | 145                      |
| Mississippi          | 100                         | 4         | 96       | N  | 246   | 27              | 760                   | —          | 219                      |
| Tennessee            | 605                         | 15        | 590      | —  | 865   | 58              | 1,241                 | 5          | 349                      |
| <b>W.S. Central</b>  | 1,272                       | 15        | 1,257    | 3  | 2,371   | 234             | 11,733                | 114        | 2,719                    |
| Arkansas             | 889                         | 5         | 884      | —  | 324   | 25              | 500                   | 5          | 134                      |
| Louisiana            | 15                          | 1         | 14       | 3  | 354   | 30              | 2,465                 | 53         | 696                      |
| Oklahoma             | 307                         | 7         | 300      | N  | N   | 19              | 521                   | 7          | 209                      |
| Texas                | 61                          | 2         | 59       | N  | 1,693   | 160             | 8,247                 | 49         | 1,680                    |
| <b>Mountain</b>      | 48                          | 17        | 31       | 66                                       | 1,909   | 133             | 3,597                 | 24         | 1,427                    |
| Arizona              | 17                          | 10        | 7        | 1  | 678   | 49              | 1,496                 | 14         | 589                      |
| Colorado             | 7                           | —         | 7        | 14                                       | 505   | 29              | 553                   | —          | 245                      |
| Idaho                | 3                           | —         | 3        | 5  | N   | 11              | 102                   | —          | 57                       |
| Montana              | 9                           | 5         | 4        | 4  | 60  | —               | 20                    | —          | 13                       |
| Nevada               | 2                           | 1         | 1        | 18                                       | 174   | 11              | 915                   | 8          | 335                      |
| New Mexico           | 2                           | —         | 2        | —  | 284   | 18              | 332                   | 2          | 118                      |
| Utah                 | 7                           | 1         | 6        | 23                                       | 189   | 14              | 169                   | —          | 65                       |
| Wyoming              | 1                           | —         | 1        | 1  | 19  | 1               | 10                    | —          | 5                        |

See table footnotes on next page.

TABLE 2m. (Continued) Number of reported cases of notifiable diseases,\* by geographic division and area — United States and U.S. territories, 2015

| Area                | Spotted fever rickettsiosis |           |          | Streptococcal toxic shock syndrome | Streptococcus pneumoniae, invasive pneumococcal disease†, § |              | Syphilis¶    |            |                       |
|---------------------|-----------------------------|-----------|----------|------------------------------------|---|--------------|--------------|------------|-----------------------|
|                     | Total                       | Confirmed | Probable |                                    | All ages  | Age <5 years | All stages** | Congenital | Primary and secondary |
| <b>Pacific</b>      | 20                          | —         | 20       | —                                  | 165   | 11           | 16,529       | 154        | 5,797                 |
| Alaska              | N                           | N         | N        | N                                  | 99  | 7            | 24           | —          | 8                     |
| California          | 10                          | —         | 10       | N                                  | N   | N            | 14,450       | 141        | 4,908                 |
| Hawaii              | N                           | N         | N        | —                                  | 66  | 4            | 163          | 2          | 91                    |
| Oregon              | 6                           | —         | 6        | —                                  | N   | N            | 783          | 6          | 345                   |
| Washington          | 4                           | —         | 4        | N                                  | N   | N            | 1,109        | 5          | 445                   |
| <b>Territories</b>  |                             |           |          |                                    |   |              |              |            |                       |
| American Samoa      | N                           | N         | N        | N                                  | N   | —            | —            | —          | —                     |
| C.N.M.I.            | —                           | —         | —        | —                                  | —   | —            | —            | —          | —                     |
| Guam                | N                           | N         | N        | —                                  | —   | —            | 21           | 1          | 2                     |
| Puerto Rico         | N                           | N         | N        | N                                  | —   | —            | 1,267        | 5          | 531                   |
| U.S. Virgin Islands | —                           | —         | —        | —                                  | —   | —            | 25           | —          | 8                     |

\* No cases of anthrax; Crimean-Congo viral hemorrhagic fever; diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; Ebola viral hemorrhagic fever; Guanarito viral hemorrhagic fever; Junin viral hemorrhagic fever; Lujo viral hemorrhagic fever; Machupo viral hemorrhagic fever; Marburg viral hemorrhagic fever; poliomyelitis, paralytic; poliovirus infection, nonparalytic; Sabia viral hemorrhagic fever; severe acute respiratory syndrome-associated coronavirus disease; smallpox; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; and yellow fever were reported in the United States during 2015.

† Since January 1, 2010, "Invasive pneumococcal disease (IPD)" has been nationally notifiable and separate notifications for "Drug-resistant *S. pneumoniae*" and "IPD in children <5 years of age" have been discontinued.

§ Invasive pneumococcal disease

¶ Totals reported to the Division of STD Prevention (DSTDP), National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (NCHHSTP), as of June 8, 2016.

\*\*Includes the following categories: primary, secondary, early latent, late latent, late with clinical manifestations, and congenital syphilis.

TABLE 2n. Number of reported cases of notifiable diseases,\* by geographic division and area — United States and U.S. territories, 2015

| Area                 | Tetanus | Toxic shock syndrome | Trichinellosis | Tuberculosis <sup>†</sup> | Tularemia | Typhoid fever |
|----------------------|---------|----------------------|----------------|---------------------------|-----------|---------------|
| <b>United States</b> | 29      | 64                   | 14             | 9,557                     | 314       | 367           |
| <b>New England</b>   | —       | —                    | —              | 330                       | 5         | 23            |
| Connecticut          | —       | N                    | —              | 70                        | —         | 8             |
| Maine                | —       | —                    | —              | 18                        | —         | —             |
| Massachusetts        | —       | —                    | —              | 192                       | 4         | 14            |
| New Hampshire        | —       | —                    | —              | 13                        | 1         | —             |
| Rhode Island         | —       | —                    | —              | 30                        | —         | 1             |
| Vermont              | —       | —                    | —              | 7                         | —         | —             |
| <b>Mid. Atlantic</b> | 3       | 12                   | 1              | 1,291                     | 4         | 87            |
| New Jersey           | —       | 3                    | —              | 326                       | 1         | 22            |
| New York (upstate)   | 1       | 4                    | —              | 188                       | —         | 12            |
| New York City        | 1       | —                    | —              | 577                       | —         | 40            |
| Pennsylvania         | 1       | 5                    | 1              | 200                       | 3         | 13            |
| <b>E. N. Central</b> | 3       | 10                   | 2              | 802                       | 16        | 45            |
| Illinois             | 1       | 1                    | —              | 343                       | 10        | 20            |
| Indiana              | —       | 2                    | 1              | 116                       | 3         | 6             |
| Michigan             | —       | 5                    | —              | 131                       | —         | 8             |
| Ohio                 | 1       | 1                    | —              | 143                       | 1         | 7             |
| Wisconsin            | 1       | 1                    | 1              | 69                        | 2         | 4             |
| <b>W.N. Central</b>  | 2       | 14                   | —              | 375                       | 118       | 18            |
| Iowa                 | —       | —                    | —              | 38                        | —         | 7             |
| Kansas               | —       | —                    | —              | 36                        | 34        | 1             |
| Minnesota            | —       | 10                   | —              | 150                       | —         | 3             |
| Missouri             | 1       | 1                    | —              | 92                        | 29        | 3             |
| Nebraska             | —       | 3                    | —              | 33                        | 25        | 1             |
| North Dakota         | —       | —                    | —              | 9                         | 5         | 2             |
| South Dakota         | 1       | —                    | —              | 17                        | 25        | 1             |
| <b>S. Atlantic</b>   | 8       | 4                    | 2              | 1,682                     | 6         | 41            |
| Delaware             | —       | 1                    | —              | 22                        | —         | —             |
| District of Columbia | —       | —                    | —              | 33                        | —         | —             |
| Florida              | 4       | N                    | —              | 602                       | —         | 6             |
| Georgia              | —       | —                    | N              | 324                       | —         | 4             |
| Maryland             | —       | N                    | 2              | 176                       | —         | 9             |
| North Carolina       | 3       | 2                    | —              | 199                       | 1         | 11            |
| South Carolina       | 1       | 1                    | —              | 104                       | —         | —             |
| Virginia             | —       | N                    | —              | 212                       | 4         | 11            |
| West Virginia        | —       | —                    | —              | 10                        | 1         | —             |
| <b>E.S. Central</b>  | 1       | 6                    | —              | 391                       | 4         | 4             |
| Alabama              | 1       | N                    | —              | 119                       | —         | —             |
| Kentucky             | —       | —                    | —              | 67                        | 1         | 3             |
| Mississippi          | —       | N                    | —              | 74                        | —         | —             |
| Tennessee            | —       | 6                    | —              | 131                       | 3         | 1             |
| <b>W.S. Central</b>  | 3       | 2                    | 4              | 1,610                     | 48        | 66            |
| Arkansas             | —       | 1                    | N              | 90                        | 24        | 2             |
| Louisiana            | 1       | 1                    | —              | 119                       | —         | 3             |
| Oklahoma             | —       | N                    | —              | 67                        | 23        | 37            |
| Texas                | 2       | N                    | 4              | 1,334                     | 1         | 24            |
| <b>Mountain</b>      | 5       | 8                    | 4              | 464                       | 99        | 13            |
| Arizona              | 2       | —                    | —              | 198                       | 4         | 2             |
| Colorado             | 2       | 7                    | 2              | 73                        | 52        | 6             |
| Idaho                | —       | 1                    | 1              | 11                        | 2         | —             |
| Montana              | —       | —                    | —              | 9                         | 7         | —             |
| Nevada               | —       | —                    | —              | 85                        | —         | 3             |
| New Mexico           | 1       | —                    | —              | 47                        | 8         | 1             |
| Utah                 | —       | —                    | 1              | 37                        | 5         | 1             |
| Wyoming              | —       | —                    | —              | 4                         | 21        | —             |

See table footnotes on next page.



TABLE 2n. (Continued) Number of reported cases of notifiable diseases,\* by geographic division and area — United States and U.S. territories, 2015

| Area                | Tetanus | Toxic shock syndrome | Trichinellosis | Tuberculosis <sup>†</sup> | Tularemia | Typhoid fever |
|---------------------|---------|----------------------|----------------|---------------------------|-----------|---------------|
| <b>Pacific</b>      | 4       | 8                    | 1              | 2,612                     | 14        | 70            |
| Alaska              | —       | N                    | —              | 68                        | 2         | —             |
| California          | 3       | 8                    | —              | 2,133                     | 2         | 55            |
| Hawaii              | —       | N                    | —              | 127                       | —         | 4             |
| Oregon              | 1       | N                    | —              | 76                        | 6         | 1             |
| Washington          | —       | N                    | 1              | 208                       | 4         | 10            |
| <b>Territories</b>  |         |                      |                |                           |           |               |
| American Samoa      | —       | N                    | N              | 4                         | —         | —             |
| C.N.M.I.            | —       | —                    | —              | 27                        | —         | —             |
| Guam                | —       | —                    | —              | 76                        | —         | —             |
| Puerto Rico         | 1       | N                    | N              | 52                        | —         | —             |
| U.S. Virgin Islands | —       | —                    | —              | —                         | —         | —             |

\* No cases of anthrax; Crimean-Congo viral hemorrhagic fever; diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; Ebola viral hemorrhagic fever; Guanarito viral hemorrhagic fever; Junin viral hemorrhagic fever; Lujo viral hemorrhagic fever; Machupo viral hemorrhagic fever; Marburg viral hemorrhagic fever; poliomyelitis, paralytic; poliovirus infection, nonparalytic; Sabia viral hemorrhagic fever; severe acute respiratory syndrome-associated coronavirus disease; smallpox; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; and yellow fever were reported in the United States during 2015.

<sup>†</sup> Totals reported to the Division of Tuberculosis Elimination, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, as of June 8, 2016.

TABLE 2o. Number of reported cases of notifiable diseases,\* by geographic division and area — United States and U.S. territories, 2015

| Area                 | Vancomycin-intermediate<br><i>Staphylococcus aureus</i> | Vancomycin-resistant<br><i>Staphylococcus aureus</i> | Varicella |                        | Vibriosis |
|----------------------|---|--|-----------|------------------------|-----------|
|                      |   |  | Morbidity | Mortality <sup>†</sup> |           |
| <b>United States</b> | 183   | 3  | 9,789     | 6                      | 1,323     |
| <b>New England</b>   | 5   | —  | 945       | —                      | 127       |
| Connecticut          | —   | —  | 165       | —                      | 32        |
| Maine                | 2   | —  | 233       | —                      | 6         |
| Massachusetts        | 3   | —  | 365       | —                      | 78        |
| New Hampshire        | N   | —  | 96        | —                      | 6         |
| Rhode Island         | —   | —  | 53        | —                      | 3         |
| Vermont              | —   | —  | 33        | —                      | 2         |
| <b>Mid. Atlantic</b> | 45  | —  | 1,207     | 1                      | 117       |
| New Jersey           | 4   | —  | 466       | —                      | 34        |
| New York (upstate)   | 13  | —  | N         | 1                      | 48        |
| New York City        | 24  | —  | —         | —                      | 18        |
| Pennsylvania         | 4   | —  | 741       | —                      | 17        |
| <b>E. N. Central</b> | 40  | —  | 1,957     | 2                      | 62        |
| Illinois             | 21  | —  | 443       | —                      | 26        |
| Indiana              | N   | —  | 173       | —                      | 3         |
| Michigan             | 4   | —  | 549       | —                      | 10        |
| Ohio                 | 11  | —  | 458       | —                      | 15        |
| Wisconsin            | 4   | —  | 334       | 2                      | 8         |
| <b>W.N. Central</b>  | 53  | —  | 859       | 1                      | 33        |
| Iowa                 | N   | —  | N         | —                      | N         |
| Kansas               | —   | —  | 240       | —                      | 5         |
| Minnesota            | —   | —  | 361       | —                      | 21        |
| Missouri             | 51  | —  | 170       | 1                      | 5         |
| Nebraska             | —   | —  | 25        | —                      | 1         |
| North Dakota         | —   | —  | 36        | —                      | 1         |
| South Dakota         | 2   | —  | 27        | —                      | N         |
| <b>S. Atlantic</b>   | 18  | 1  | 1,666     | —                      | 345       |
| Delaware             | —   | 1  | 16        | —                      | 11        |
| District of Columbia | —   | —  | 28        | —                      | —         |
| Florida              | 4   | —  | 740       | —                      | 196       |
| Georgia              | 5   | —  | 160       | —                      | 23        |
| Maryland             | 3   | —  | N         | —                      | 37        |
| North Carolina       | 2   | —  | N         | —                      | 25        |
| South Carolina       | 3   | —  | 208       | —                      | 11        |
| Virginia             | 1   | —  | 354       | —                      | 40        |
| West Virginia        | —   | —  | 160       | —                      | 2         |
| <b>E.S. Central</b>  | 5   | —  | 178       | 1                      | 42        |
| Alabama              | 2   | —  | 165       | —                      | 18        |
| Kentucky             | N   | N  | N         | —                      | 5         |
| Mississippi          | 1   | —  | 13        | —                      | 14        |
| Tennessee            | 2   | —  | N         | 1                      | 5         |
| <b>W.S. Central</b>  | 16  | 2  | 1,799     | —                      | 166       |
| Arkansas             | —   | —  | 198       | —                      | 3         |
| Louisiana            | 4   | 1  | 110       | —                      | 56        |
| Oklahoma             | 3   | 1  | N         | —                      | 5         |
| Texas                | 9   | —  | 1,491     | —                      | 102       |
| <b>Mountain</b>      | 1   | —  | 1,001     | —                      | 57        |
| Arizona              | 1   | —  | 270       | —                      | 33        |
| Colorado             | N   | —  | 311       | —                      | 12        |
| Idaho                | N   | N  | N         | —                      | N         |
| Montana              | —   | —  | 132       | —                      | —         |
| Nevada               | —   | —  | N         | —                      | 3         |
| New Mexico           | N   | N  | 57        | —                      | —         |
| Utah                 | —   | —  | 217       | —                      | 9         |
| Wyoming              | —   | —  | 14        | —                      | —         |

See table footnotes on next page.

TABLE 2o. (Continued) Number of reported cases of notifiable diseases,\* by geographic division and area — United States and U.S. territories, 2015

| Area                | Vancomycin-intermediate<br><i>Staphylococcus aureus</i> | Vancomycin-resistant<br><i>Staphylococcus aureus</i> | Varicella |            | Vibriosis |
|---------------------|---|--|-----------|------------|-----------|
|                     |   |  | Morbidity | Mortality† |           |
| <b>Pacific</b>      | —   | —  | 177       | 1          | 374       |
| Alaska              | N   | —  | 59        | —          | 3         |
| California          | N   | N  | 61        | 1          | 240       |
| Hawaii              | —   | —  | 57        | —          | 37        |
| Oregon              | N   | N  | N         | —          | 26        |
| Washington          | N   | —  | N         | —          | 68        |
| <b>Territories</b>  |   |  |           |            |           |
| American Samoa      | N   | N  | N         | —          | N         |
| C.N.M.I.            | —   | —  | —         | —          | —         |
| Guam                | —   | —  | 29        | —          | —         |
| Puerto Rico         | —   | —  | 103       | —          | —         |
| U.S. Virgin Islands | —   | —  | —         | —          | —         |

\* No cases of anthrax; Crimean-Congo viral hemorrhagic fever; diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; Ebola viral hemorrhagic fever; Guanarito viral hemorrhagic fever; Junin viral hemorrhagic fever; Lujo viral hemorrhagic fever; Machupo viral hemorrhagic fever; Marburg viral hemorrhagic fever; poliomyelitis, paralytic; poliovirus infection, nonparalytic; Sabia viral hemorrhagic fever; severe acute respiratory syndrome-associated coronavirus disease; smallpox; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; and yellow fever were reported in the United States during 2015.

† Totals reported to the Division of Viral Diseases (DVD), National Center for Immunization and Respiratory Diseases (NCIRD), as of May 2, 2016.

TABLE 3. Number of reported cases of notifiable diseases,\* by month<sup>†</sup> excluding U.S. territories — United States, 2015

| Disease  | Jan.    | Feb.    | Mar.    | Apr.    | May     | June    | July    | Aug.    | Sept.   | Oct.    | Nov.    | Dec.    | Not stated | Total     |
|--|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|------------|-----------|
| Arboviral diseases <sup>§</sup>                            |         |         |         |         |         |         |         |         |         |         |         |         |            |           |
| Chikungunya virus disease                                  |         |         |         |         |         |         |         |         |         |         |         |         |            |           |
| neuroinvasive  | —       | 1       | —       | —       | 1       | 1       | —       | —       | —       | 1       | —       | —       | —          | 4         |
| nonneuroinvasive   | 118     | 28      | 36      | 35      | 51      | 84      | 180     | 154     | 72      | 47      | 47      | 40      | —          | 892       |
| Eastern equine encephalitis virus disease                  |         |         |         |         |         |         |         |         |         |         |         |         |            |           |
| neuroinvasive  | —       | —       | —       | —       | 1       | —       | 1       | 1       | 3       | —       | —       | —       | —          | 6         |
| Jamestown Canyon virus disease                             |         |         |         |         |         |         |         |         |         |         |         |         |            |           |
| neuroinvasive  | —       | —       | —       | —       | —       | 2       | 2       | 1       | —       | 1       | —       | —       | —          | 6         |
| nonneuroinvasive   | —       | —       | —       | —       | 1       | 1       | 3       | —       | —       | —       | —       | —       | —          | 5         |
| La Crosse virus disease                                    |         |         |         |         |         |         |         |         |         |         |         |         |            |           |
| neuroinvasive  | —       | —       | —       | —       | 1       | 5       | 6       | 22      | 16      | 1       | —       | —       | —          | 51        |
| nonneuroinvasive   | —       | —       | —       | —       | —       | 1       | 1       | 1       | 1       | —       | —       | —       | —          | 4         |
| Powassan virus disease                                     |         |         |         |         |         |         |         |         |         |         |         |         |            |           |
| neuroinvasive  | —       | —       | —       | —       | 2       | 1       | —       | —       | 1       | —       | 2       | —       | —          | 6         |
| nonneuroinvasive   | —       | —       | —       | —       | —       | 1       | —       | —       | —       | —       | —       | —       | —          | 1         |
| St. Louis virus disease                                    |         |         |         |         |         |         |         |         |         |         |         |         |            |           |
| neuroinvasive  | —       | —       | —       | —       | 2       | —       | 13      | 1       | 2       | 1       | —       | —       | —          | 19        |
| nonneuroinvasive   | —       | —       | —       | —       | —       | 1       | 2       | —       | 1       | —       | —       | —       | —          | 4         |
| West Nile virus disease                                    |         |         |         |         |         |         |         |         |         |         |         |         |            |           |
| neuroinvasive  | —       | —       | 2       | 2       | 2       | 31      | 146     | 531     | 511     | 190     | 38      | 2       | —          | 1,455     |
| nonneuroinvasive   | —       | —       | —       | —       | 5       | 20      | 113     | 293     | 210     | 62      | 14      | 3       | —          | 720       |
| Babesiosis, total  | 10      | 12      | 8       | 14      | 55      | 217     | 614     | 606     | 150     | 185     | 55      | 174     | —          | 2,100     |
| confirmed  | 4       | 5       | 4       | 7       | 39      | 180     | 565     | 546     | 127     | 143     | 45      | 139     | —          | 1,804     |
| probable   | 6       | 7       | 4       | 7       | 16      | 37      | 49      | 60      | 23      | 42      | 10      | 35      | —          | 296       |
| Botulism, total  | 11      | 11      | 15      | 35      | 20      | 7       | 17      | 22      | 11      | 14      | 13      | 19      | —          | 195       |
| foodborne  | —       | 3       | —       | 24      | 6       | 1       | 3       | —       | —       | —       | —       | —       | —          | 37        |
| infant   | 11      | 8       | 10      | 11      | 13      | 5       | 11      | 17      | 10      | 13      | 11      | 18      | —          | 138       |
| other (wound and unspecified)                              | —       | —       | 5       | —       | 1       | 1       | 3       | 5       | 1       | 1       | 2       | 1       | —          | 20        |
| Brucellosis  | 1       | 6       | 9       | 9       | 20      | 11      | 16      | 14      | 12      | 11      | 4       | 13      | —          | 126       |
| Campylobacteriosis   | 2,588   | 2,733   | 2,995   | 3,485   | 4,764   | 5,395   | 6,093   | 6,657   | 4,436   | 5,045   | 3,754   | 6,611   | —          | 54,556    |
| Chancroid <sup>¶</sup>                                     | 2       | —       | —       | 2       | 1       | 1       | 1       | 1       | —       | —       | 1       | 2       | —          | 11        |
| <i>Chlamydia trachomatis</i> infection <sup>¶</sup>        | 116,406 | 114,089 | 113,764 | 115,968 | 141,454 | 114,117 | 116,355 | 150,643 | 121,031 | 156,586 | 117,623 | 148,622 | —          | 1,526,658 |
| Cholera  | 1       | 1       | 1       | —       | 1       | —       | —       | —       | —       | —       | —       | 1       | —          | 5         |
| Coccidioidomycosis**                                       | 602     | 594     | 586     | 664     | 934     | 757     | 929     | 1,212   | 1,198   | 1,373   | 1,023   | 1,200   | —          | 11,072    |
| Cryptosporidiosis, total                                   | 417     | 360     | 495     | 463     | 571     | 543     | 785     | 1,735   | 1,433   | 1,369   | 628     | 936     | —          | 9735      |
| confirmed  | 279     | 230     | 312     | 282     | 340     | 356     | 498     | 1,126   | 943     | 828     | 393     | 558     | —          | 6,145     |
| probable   | 138     | 130     | 183     | 181     | 231     | 187     | 287     | 609     | 490     | 541     | 235     | 378     | —          | 3,590     |
| Cyclosporiasis   | 2       | 5       | 2       | 5       | 27      | 139     | 264     | 141     | 19      | 18      | 9       | 14      | —          | 645       |
| Dengue virus infections <sup>§</sup>                       |         |         |         |         |         |         |         |         |         |         |         |         |            |           |
| dengue   | 47      | 27      | 34      | 31      | 37      | 48      | 53      | 101     | 90      | 137     | 159     | 165     | —          | 929       |
| dengue-like illness  | —       | —       | —       | —       | 1       | —       | 2       | 3       | —       | 4       | 3       | 3       | —          | 16        |
| severe dengue  | 1       | —       | —       | —       | —       | 1       | —       | 1       | 1       | —       | 1       | 1       | —          | 6         |
| Ehrlichiosis/Anaplasmosis                                  |         |         |         |         |         |         |         |         |         |         |         |         |            |           |
| <i>Anaplasma phagocytophilum</i> Infection                 | 20      | 13      | 19      | 48      | 465     | 875     | 841     | 397     | 186     | 285     | 282     | 225     | —          | 3,656     |
| <i>Ehrlichia chaffeensis</i> infection                     | 11      | 9       | 14      | 42      | 143     | 272     | 246     | 206     | 111     | 64      | 38      | 132     | —          | 1,288     |
| <i>Ehrlichia ewingii</i> infection                         | —       | —       | —       | —       | —       | 4       | 4       | 3       | 1       | 1       | —       | 1       | —          | 14        |
| undetermined ehrlichiosis/<br>anaplasmosis                 | 4       | 2       | 5       | 6       | 34      | 28      | 41      | 23      | 20      | 5       | 6       | 5       | —          | 179       |
| Giardiasis   | 843     | 898     | 884     | 913     | 1,104   | 903     | 1,088   | 1,777   | 1,458   | 1,605   | 1,146   | 1,866   | —          | 14,485    |
| Gonorrhea <sup>¶</sup>                                     | 27,498  | 28,785  | 28,038  | 27,411  | 35,122  | 29,628  | 30,272  | 39,260  | 32,262  | 42,129  | 31,956  | 42,855  | —          | 395,216   |
| <i>Haemophilus influenzae</i> , invasive disease           |         |         |         |         |         |         |         |         |         |         |         |         |            |           |
| all ages, serotypes  | 394     | 298     | 290     | 333     | 391     | 317     | 309     | 304     | 302     | 334     | 289     | 577     | —          | 4,138     |
| age <5 yrs   |         |         |         |         |         |         |         |         |         |         |         |         |            |           |
| serotype b   | 2       | 2       | 2       | 3       | 4       | —       | 2       | 4       | 2       | 2       | —       | 6       | —          | 29        |
| nontypeable  | 24      | 17      | 17      | 17      | 13      | 7       | 18      | 15      | 4       | 6       | 13      | 24      | —          | 175       |
| non-b serotype   | 9       | 11      | 7       | 11      | 15      | 7       | 7       | 7       | 9       | 20      | 11      | 21      | —          | 135       |
| unknown serotype   | 13      | 19      | 18      | 9       | 19      | 9       | 12      | 9       | 11      | 10      | 11      | 27      | —          | 167       |
| Hansen's disease   | 3       | 6       | 7       | 6       | 4       | 5       | 13      | 9       | 7       | 7       | 5       | 17      | —          | 89        |
| Hantavirus infection, non-Hantavirus<br>pulmonary syndrome | —       | —       | —       | —       | —       | —       | —       | 2       | —       | —       | 1       | —       | —          | 3         |
| Hantavirus pulmonary syndrome                              | 1       | 1       | 2       | 2       | 1       | 3       | 5       | 2       | —       | —       | 1       | 3       | —          | 21        |
| Hemolytic uremic syndrome<br>postdiarrheal                 | 8       | 13      | 8       | 16      | 21      | 25      | 36      | 36      | 25      | 36      | 23      | 27      | —          | 274       |

See table footnotes on next page.

TABLE 3. (Continued) Number of reported cases of notifiable diseases,\* by month† excluding U.S. territories — United States, 2015

| Disease   | Jan.   | Feb.   | Mar.   | Apr.   | May    | June   | July   | Aug.   | Sept.  | Oct.   | Nov.   | Dec.   | Not stated | Total   |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------------|---------|
| Hepatitis   |        |        |        |        |        |        |        |        |        |        |        |        |            |         |
| A acute   | 90     | 95     | 88     | 114    | 120    | 113    | 111    | 156    | 100    | 108    | 103    | 192    | —          | 1,390   |
| B acute   | 192    | 314    | 256    | 271    | 288    | 263    | 270    | 318    | 257    | 313    | 259    | 369    | —          | 3,370   |
| B chronic††   | 1,403  | 1,396  | 1,284  | 1,341  | 1,431  | 1,125  | 1,080  | 1,339  | 904    | 1,002  | 800    | 1,042  | —          | 14,147  |
| B perinatal infection   | 5      | 5      | 2      | 1      | 1      | 1      | 3      | 4      | 3      | 5      | 1      | 6      | —          | 37      |
| C acute§§   | 173    | 155    | 217    | 191    | 234    | 164    | 188    | 220    | 169    | 240    | 169    | 327    | —          | 2,447   |
| C past or present¶¶   | 13,133 | 13,364 | 14,463 | 14,412 | 17,565 | 14,512 | 13,782 | 18,303 | 13,712 | 17,295 | 12,856 | 16,187 | —          | 179,584 |
| Human immunodeficiency virus (HIV) diagnoses***                 | 3,135  | 2,993  | 3,310  | 3,334  | 3,044  | 3,419  | 3,407  | 3,187  | 3,124  | 2,733  | 1,663  | 467    | 1          | 33,817  |
| Influenza-associated pediatric mortality†††                     | 43     | 29     | 26     | 10     | 10     | —      | 2      | 1      | 1      | 1      | 2      | 5      | —          | 130     |
| Lassa viral hemorrhagic fever                                   | —      | —      | —      | —      | 1      | —      | —      | —      | —      | —      | —      | —      | —          | 1       |
| Legionellosis   | 281    | 295    | 295    | 289    | 462    | 464    | 885    | 937    | 645    | 657    | 384    | 485    | —          | 6,079   |
| Leptospirosis   | 1      | 1      | 2      | 1      | 3      | 2      | 3      | 10     | 5      | 5      | 3      | 4      | —          | 40      |
| Listeriosis   | 34     | 32     | 28     | 41     | 63     | 64     | 80     | 112    | 81     | 79     | 71     | 83     | —          | 768     |
| Lyme disease, total   | 626    | 687    | 725    | 974    | 2,263  | 5,854  | 9,522  | 7,581  | 3,200  | 2,970  | 1,688  | 1,979  | —          | 38,069  |
| confirmed   | 435    | 458    | 505    | 680    | 1,593  | 4,516  | 7,542  | 5,807  | 2,316  | 2,053  | 1,202  | 1,346  | —          | 28,453  |
| probable  | 191    | 229    | 220    | 294    | 670    | 1,338  | 1,980  | 1,774  | 884    | 917    | 486    | 633    | —          | 9,616   |
| Malaria   | 76     | 38     | 35     | 56     | 116    | 127    | 178    | 206    | 148    | 146    | 112    | 152    | —          | 1,390   |
| Measles, total  | 108    | 46     | 2      | 4      | 6      | 3      | 5      | 4      | —      | —      | —      | 10     | —          | 188     |
| indigenous  | 101    | 43     | 1      | 2      | 2      | —      | 1      | 2      | —      | —      | —      | 10     | —          | 162     |
| imported  | 7      | 3      | 1      | 2      | 4      | 3      | 4      | 2      | —      | —      | —      | —      | —          | 26      |
| Meningococcal disease   |        |        |        |        |        |        |        |        |        |        |        |        |            |         |
| all serogroups  | 36     | 39     | 33     | 40     | 39     | 26     | 17     | 23     | 19     | 36     | 27     | 37     | —          | 372     |
| serogroups ACWY   | 10     | 6      | 12     | 9      | 16     | 12     | 3      | 3      | 5      | 9      | 14     | 21     | —          | 120     |
| serogroup B   | 10     | 13     | 12     | 13     | 9      | 6      | 4      | 11     | 4      | 12     | 6      | 11     | —          | 111     |
| other serogroups  | 2      | 4      | —      | 4      | 1      | 3      | 3      | 1      | —      | 3      | —      | —      | —          | 21      |
| unknown serogroup   | 14     | 16     | 9      | 14     | 13     | 5      | 7      | 8      | 10     | 12     | 7      | 5      | —          | 120     |
| Mumps   | 55     | 28     | 29     | 27     | 71     | 46     | 66     | 150    | 205    | 227    | 184    | 241    | —          | 1,329   |
| Novel influenza A virus infections                              | 1      | —      | —      | —      | 1      | —      | 1      | 2      | —      | —      | —      | 2      | —          | 7       |
| Pertussis   | 1,993  | 1,729  | 1,438  | 1,502  | 1,800  | 1,364  | 1,570  | 1,860  | 1,151  | 1,526  | 1,360  | 3,469  | —          | 20,762  |
| Plague  | —      | —      | —      | —      | 1      | 1      | 4      | 7      | 2      | 1      | —      | —      | —          | 16      |
| Psittacosis   | —      | —      | —      | 1      | 1      | —      | —      | —      | 1      | —      | 1      | —      | —          | 4       |
| Q fever, total  | 8      | 8      | 14     | 15     | 21     | 18     | 8      | 15     | 11     | 15     | 7      | 16     | —          | 156     |
| acute   | 6      | 5      | 9      | 14     | 17     | 17     | 8      | 9      | 9      | 12     | 3      | 13     | —          | 122     |
| chronic   | 2      | 3      | 5      | 1      | 4      | 1      | —      | 6      | 2      | 3      | 4      | 3      | —          | 34      |
| Rabies  |        |        |        |        |        |        |        |        |        |        |        |        |            |         |
| animal§§§   | 189    | 212    | 334    | 465    | 519    | 406    | 400    | 622    | 386    | 357    | 239    | 219    | 1,143      | 5,491   |
| human   | —      | —      | —      | —      | —      | —      | —      | 1      | —      | —      | 1      | —      | —          | 2       |
| Rubella   | —      | —      | —      | 1      | —      | —      | —      | 1      | 2      | —      | —      | 1      | —          | 5       |
| Rubella, congenital syndrome                                    | —      | —      | —      | —      | 1      | —      | —      | —      | —      | —      | —      | —      | —          | 1       |
| Salmonellosis   | 2,167  | 2,142  | 2,518  | 2,917  | 4,559  | 4,722  | 5,607  | 7,872  | 6,516  | 6,311  | 3,895  | 5,882  | —          | 55,108  |
| Shiga toxin-producing <i>Escherichia coli</i>                   | 226    | 244    | 305    | 387    | 632    | 678    | 811    | 960    | 623    | 793    | 485    | 915    | —          | 7,059   |
| Shigellosis   | 1,269  | 1,312  | 1,293  | 1,196  | 2,213  | 1,998  | 1,864  | 2,322  | 1,664  | 2,762  | 2,284  | 3,413  | —          | 23,590  |
| Spotted fever rickettsiosis, total                              | 41     | 32     | 50     | 132    | 440    | 712    | 685    | 780    | 485    | 314    | 106    | 421    | —          | 4,198   |
| confirmed   | 2      | 2      | 4      | 5      | 24     | 35     | 41     | 26     | 27     | 11     | 7      | 15     | —          | 199     |
| probable  | 39     | 30     | 46     | 127    | 416    | 677    | 644    | 754    | 458    | 303    | 99     | 406    | —          | 3,999   |
| Streptococcal toxic shock syndrome                              | 22     | 25     | 56     | 39     | 40     | 29     | 13     | 21     | 14     | 26     | 20     | 30     | —          | 335     |
| <i>Streptococcus pneumoniae</i> , invasive pneumococcal disease |        |        |        |        |        |        |        |        |        |        |        |        |            |         |
| all ages  | 1,793  | 1,612  | 1,608  | 1,685  | 1,777  | 906    | 677    | 619    | 724    | 1,256  | 1,213  | 2,293  | —          | 16,163  |
| age <5 yrs  | 106    | 104    | 112    | 109    | 127    | 62     | 46     | 49     | 84     | 109    | 114    | 155    | —          | 1,177   |
| Syphilis, total, all stages¶¶¶                                  | 5,026  | 5,335  | 5,700  | 5,738  | 6,851  | 6,006  | 5,893  | 7,598  | 5,891  | 7,628  | 5,653  | 7,383  | —          | 74,702  |
| congenital¶   | 45     | 31     | 45     | 43     | 36     | 37     | 43     | 36     | 31     | 50     | 36     | 54     | —          | 487     |
| primary and secondary¶  | 1,481  | 1,669  | 1,760  | 1,782  | 2,130  | 1,901  | 1,894  | 2,507  | 2,006  | 2,466  | 1,799  | 2,477  | —          | 23,872  |
| Tetanus   | 3      | —      | 2      | 1      | —      | 8      | 1      | 2      | —      | 5      | 4      | 3      | —          | 29      |
| Toxic shock syndrome (other than streptococcal)                 | 3      | 10     | 5      | 6      | 3      | 8      | 2      | 9      | 3      | 6      | 6      | 3      | —          | 64      |
| Trichinellosis  | —      | —      | 1      | 2      | 1      | —      | 1      | 1      | 2      | —      | 3      | 3      | —          | 14      |
| Tuberculosis****  | 514    | 627    | 749    | 813    | 824    | 853    | 819    | 769    | 746    | 796    | 740    | 1,307  | —          | 9,557   |
| Tularemia   | 3      | 2      | 2      | 8      | 24     | 47     | 66     | 65     | 43     | 28     | 8      | 18     | —          | 314     |
| Typhoid fever   | 21     | 57     | 22     | 29     | 32     | 22     | 26     | 38     | 37     | 28     | 8      | 47     | —          | 367     |
| Vancomycin-intermediate <i>Staphylococcus aureus</i>            | 10     | 7      | 16     | 22     | 19     | 17     | 11     | 14     | 20     | 17     | 13     | 17     | —          | 183     |
| Vancomycin-resistant <i>Staphylococcus aureus</i>               | —      | —      | 1      | —      | —      | —      | —      | 1      | —      | —      | —      | 1      | —          | 3       |
| Varicella morbidity   | 721    | 831    | 782    | 786    | 1,073  | 579    | 498    | 643    | 925    | 1,060  | 854    | 1,037  | —          | 9,789   |
| Varicella mortality††††   | —      | 2      | 2      | —      | —      | —      | —      | 1      | —      | —      | —      | 1      | —          | 6       |
| Vibriosis   | 34     | 37     | 42     | 67     | 84     | 126    | 185    | 258    | 166    | 133    | 48     | 143    | —          | 1,323   |

See table footnotes on next page.

**TABLE 3. (Continued) Number of reported cases of notifiable diseases,\* by month<sup>†</sup> excluding U.S. territories — United States, 2015**

- \* No cases of anthrax; Crimean-Congo viral hemorrhagic fever; diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; Ebola viral hemorrhagic fever; Guanarito viral hemorrhagic fever; Junin viral hemorrhagic fever; Lujo viral hemorrhagic fever; Machupo viral hemorrhagic fever; Marburg viral hemorrhagic fever; poliomyelitis, paralytic; poliovirus infection, nonparalytic; Sabia viral hemorrhagic fever; severe acute respiratory syndrome-associated coronavirus disease; smallpox; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; and yellow fever were reported in the United States during 2015.
- <sup>†</sup> Month is defined using MMWR week ([http://www.cdc.gov/nndss/document/MMWR\\_Week\\_overview.pdf](http://www.cdc.gov/nndss/document/MMWR_Week_overview.pdf)). MMWR week calendars can be found at <http://www.cdc.gov/nndss/script/downloads.aspx>.
- <sup>§</sup> Totals reported to the Division of Vector-Borne Diseases, National Center for Emerging and Zoonotic Infectious Diseases (NCEZID) (ArboNET Surveillance), as of July 1, 2016.
- <sup>¶</sup> Totals reported to the Division of STD Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (NCHHSTP), as of June 8, 2016.
- <sup>\*\*</sup> Reportable in <25 states.
- <sup>††</sup> Total number of cases reported from 42 states. Reports might not reflect unique cases.
- <sup>§§</sup> Total number of cases reported from 42 states.
- <sup>¶¶</sup> Total number of cases reported from 39 states. Reports might not reflect unique cases.
- <sup>\*\*\*</sup> Total number of HIV diagnoses reported to the Division of HIV/AIDS Prevention, NCHHSTP through December 31, 2016.
- <sup>†††</sup> Totals reported to the Influenza Division, National Center for Immunization and Respiratory Diseases (NCIRD), as of June 30, 2016.
- <sup>§§§</sup> Totals reported to the Division of High-Consequence Pathogens and Pathology, NCEZID (National Rabies Surveillance System), as of December 31, 2016.
- <sup>¶¶¶</sup> Includes the following categories: primary, secondary, early latent, late latent, late with clinical manifestations, and congenital syphilis.
- <sup>\*\*\*\*</sup> Totals reported to the Division of Tuberculosis Elimination, NCHHSTP, as of June 8, 2016.
- <sup>††††</sup> Totals reported to the Division of Viral Diseases, NCIRD, as of June 30, 2016.



**TABLE 4. Number of reported cases of notifiable diseases\* and rates per 100,000 population, by age group, excluding U.S. territories — United States, 2015**

| Disease   | <1 yr |         | 1–4 yrs |         | 5–14 yrs |         | 15–24 yrs |           | 25–39 yrs |          | 40–64 yrs |         | ≥65 yrs |         | Age not stated | Total     |
|---|-------|---------|---------|---------|----------|---------|-----------|-----------|-----------|----------|-----------|---------|---------|---------|----------------|-----------|
|   | No.   | Rate    | No.     | Rate    | No.      | Rate    | No.       | Rate      | No.       | Rate     | No.       | Rate    | No.     | Rate    |                |           |
| Arboviral diseases <sup>†</sup>                         |       |         |         |         |          |         |           |           |           |          |           |         |         |         |                |           |
| Chikungunya virus disease                               |       |         |         |         |          |         |           |           |           |          |           |         |         |         |                |           |
| neuroinvasive   | —     | (0.00)  | —       | (0.00)  | —        | (0.00)  | —         | (0.00)    | 1         | (0.00)   | 1         | (0.00)  | 2       | (0.00)  | —              | 4         |
| nonneuroinvasive  | 1     | (0.03)  | 4       | (0.03)  | 36       | (0.09)  | 84        | (0.19)    | 181       | (0.28)   | 464       | (0.44)  | 122     | (0.26)  | —              | 892       |
| Eastern equine encephalitis virus disease               |       |         |         |         |          |         |           |           |           |          |           |         |         |         |                |           |
| neuroinvasive   | 1     | (0.03)  | —       | (0.00)  | —        | (0.00)  | —         | (0.00)    | —         | (0.00)   | 3         | (0.00)  | 2       | (0.00)  | —              | 6         |
| Jamestown Canyon virus disease                          |       |         |         |         |          |         |           |           |           |          |           |         |         |         |                |           |
| neuroinvasive   | —     | (0.00)  | —       | (0.00)  | —        | (0.00)  | —         | (0.00)    | 2         | (0.00)   | 3         | (0.00)  | 1       | (0.00)  | —              | 6         |
| nonneuroinvasive  | —     | (0.00)  | —       | (0.00)  | —        | (0.00)  | 1         | (0.00)    | —         | (0.00)   | 3         | (0.00)  | 1       | (0.00)  | —              | 5         |
| La Crosse virus disease                                 |       |         |         |         |          |         |           |           |           |          |           |         |         |         |                |           |
| neuroinvasive   | 1     | (0.03)  | 11      | (0.07)  | 33       | (0.08)  | 3         | (0.01)    | —         | (0.00)   | 2         | (0.00)  | 1       | (0.00)  | —              | 51        |
| nonneuroinvasive  | —     | (0.00)  | 2       | (0.01)  | 1        | (0.00)  | —         | (0.00)    | —         | (0.00)   | 1         | (0.00)  | —       | (0.00)  | —              | 4         |
| Powassan virus disease                                  |       |         |         |         |          |         |           |           |           |          |           |         |         |         |                |           |
| neuroinvasive   | —     | (0.00)  | —       | (0.00)  | —        | (0.00)  | —         | (0.00)    | —         | (0.00)   | 3         | (0.00)  | 3       | (0.01)  | —              | 6         |
| nonneuroinvasive  | —     | (0.00)  | —       | (0.00)  | —        | (0.00)  | —         | (0.00)    | —         | (0.00)   | 1         | (0.00)  | —       | (0.00)  | —              | 1         |
| St. Louis virus disease                                 |       |         |         |         |          |         |           |           |           |          |           |         |         |         |                |           |
| neuroinvasive   | —     | (0.00)  | —       | (0.00)  | —        | (0.00)  | 1         | (0.00)    | —         | (0.00)   | 8         | (0.01)  | 10      | (0.02)  | —              | 19        |
| nonneuroinvasive  | —     | (0.00)  | —       | (0.00)  | —        | (0.00)  | —         | (0.00)    | —         | (0.00)   | 2         | (0.00)  | 2       | (0.00)  | —              | 4         |
| West Nile virus disease                                 |       |         |         |         |          |         |           |           |           |          |           |         |         |         |                |           |
| neuroinvasive   | —     | (0.00)  | 1       | (0.01)  | 18       | (0.04)  | 50        | (0.11)    | 148       | (0.23)   | 648       | (0.62)  | 590     | (1.24)  | —              | 1,455     |
| nonneuroinvasive  | —     | (0.00)  | —       | (0.00)  | 14       | (0.03)  | 32        | (0.07)    | 129       | (0.20)   | 362       | (0.35)  | 183     | (0.38)  | —              | 720       |
| Babesiosis, total                                       | 7     | (0.25)  | 3       | (0.03)  | 27       | (0.09)  | 51        | (0.16)    | 116       | (0.25)   | 923       | (1.26)  | 962     | (2.95)  | 11             | 2,100     |
| confirmed   | 7     | (0.25)  | 2       | (0.02)  | 21       | (0.07)  | 35        | (0.11)    | 94        | (0.21)   | 769       | (1.05)  | 868     | (2.66)  | 8              | 1,804     |
| probable  | —     | (0.00)  | 1       | (0.01)  | 6        | (0.02)  | 16        | (0.05)    | 22        | (0.05)   | 154       | (0.21)  | 94      | (0.29)  | 3              | 296       |
| Botulism, total   | 141   | (3.54)  | 1       | (0.00)  | 2        | (0.00)  | 1         | (0.00)    | 10        | (0.02)   | 28        | (0.03)  | 12      | (0.03)  | —              | 195       |
| foodborne   | 3     | (0.08)  | —       | (0.00)  | 1        | (0.00)  | —         | (0.00)    | 6         | (0.01)   | 15        | (0.01)  | 12      | (0.03)  | —              | 37        |
| infant  | 138   | (3.47)  | —       | (0.00)  | —        | (0.00)  | —         | (0.00)    | —         | (0.00)   | —         | (0.00)  | —       | (0.00)  | —              | 138       |
| other (wound and unspecified)                           | —     | (0.00)  | 1       | (0.01)  | 1        | (0.00)  | 1         | (0.00)    | 4         | (0.01)   | 13        | (0.01)  | —       | (0.00)  | —              | 20        |
| Brucellosis   | 1     | (0.03)  | —       | (0.00)  | 5        | (0.01)  | 18        | (0.04)    | 35        | (0.05)   | 45        | (0.04)  | 21      | (0.04)  | 1              | 126       |
| Campylobacteriosis                                      | 1,752 | (45.83) | 5,201   | (33.99) | 4,723    | (11.97) | 6,336     | (15.05)   | 9,756     | (15.76)  | 17,082    | (17.07) | 9,606   | (20.91) | 100            | 54,556    |
| Chancroid <sup>§</sup>                                  | —     | (0.00)  | —       | (0.00)  | —        | (0.00)  | 6         | (0.01)    | 4         | (0.01)   | 1         | (0.00)  | —       | (0.00)  | —              | 11        |
| <i>Chlamydia trachomatis</i> infection <sup>§,¶</sup>   | —     | (0.00)  | —       | (0.00)  | —        | (0.00)  | 981,359   | (2238.08) | 464,200   | (719.56) | 66,968    | (64.22) | 1,596   | (3.34)  | 1,233          | 1,526,658 |
| Cholera   | —     | (0.00)  | —       | (0.00)  | 1        | (0.00)  | —         | (0.00)    | 1         | (0.00)   | 2         | (0.00)  | 1       | (0.00)  | —              | 5         |
| Coccidioidomycosis**                                    | 6     | (0.37)  | 52      | (0.81)  | 332      | (2.00)  | 913       | (5.13)    | 1,888     | (7.25)   | 4,495     | (10.74) | 3,356   | (17.66) | 30             | 11,072    |
| Cryptosporidiosis, total                                | 122   | (3.07)  | 1,293   | (8.12)  | 1,341    | (3.26)  | 1,348     | (3.07)    | 2,368     | (3.67)   | 2,206     | (2.12)  | 1,005   | (2.10)  | 52             | 9,735     |
| confirmed   | 74    | (1.86)  | 879     | (5.52)  | 921      | (2.24)  | 891       | (2.03)    | 1,497     | (2.32)   | 1,348     | (1.29)  | 528     | (1.11)  | 7              | 6,145     |
| probable  | 48    | (1.21)  | 414     | (2.60)  | 420      | (1.02)  | 457       | (1.04)    | 871       | (1.35)   | 858       | (0.82)  | 477     | (1.00)  | 45             | 3,590     |
| Cyclosporiasis  | —     | (0.00)  | 3       | (0.02)  | 7        | (0.02)  | 42        | (0.11)    | 155       | (0.27)   | 342       | (0.36)  | 88      | (0.21)  | 8              | 645       |
| Dengue virus infections <sup>†</sup>                    |       |         |         |         |          |         |           |           |           |          |           |         |         |         |                |           |
| dengue  | 3     | (0.08)  | 6       | (0.04)  | 61       | (0.15)  | 142       | (0.32)    | 237       | (0.37)   | 371       | (0.36)  | 107     | (0.22)  | 2              | 929       |
| dengue-like illness                                     | —     | (0.00)  | —       | (0.00)  | 1        | (0.00)  | 3         | (0.01)    | 4         | (0.01)   | 8         | (0.01)  | —       | (0.00)  | —              | 16        |
| severe dengue   | —     | (0.00)  | —       | (0.00)  | 2        | (0.00)  | 1         | (0.00)    | 1         | (0.00)   | 2         | (0.00)  | —       | (0.00)  | —              | 6         |
| Ehrlichiosis/Anaplasmosis                               |       |         |         |         |          |         |           |           |           |          |           |         |         |         |                |           |
| <i>Anaplasma phagocytophilum</i> infection              | —     | (0.00)  | 11      | (0.07)  | 105      | (0.27)  | 141       | (0.34)    | 315       | (0.51)   | 1,625     | (1.63)  | 1,439   | (3.16)  | 20             | 3,656     |
| <i>Ehrlichia chaffeensis</i> infection                  | —     | (0.00)  | 13      | (0.09)  | 32       | (0.08)  | 69        | (0.16)    | 149       | (0.24)   | 584       | (0.59)  | 433     | (0.95)  | 8              | 1,288     |
| <i>Ehrlichia ewingii</i> infection                      | —     | (0.00)  | —       | (0.00)  | —        | (0.00)  | 1         | (0.00)    | —         | (0.00)   | 10        | (0.01)  | 3       | (0.01)  | —              | 14        |
| undetermined ehrlichiosis/anaplasmosis                  | —     | (0.00)  | —       | (0.00)  | 14       | (0.04)  | 14        | (0.03)    | 15        | (0.02)   | 79        | (0.08)  | 57      | (0.13)  | —              | 179       |
| Giardiasis  | 64    | (2.09)  | 1,534   | (12.48) | 1,760    | (5.55)  | 1,788     | (5.23)    | 3,054     | (6.05)   | 4,728     | (5.74)  | 1,481   | (3.86)  | 76             | 14,485    |
| Gonorrhea <sup>§</sup>                                  | —     | (0.00)  | —       | (0.00)  | —        | (0.00)  | 196,593   | (448.35)  | 154,685   | (239.78) | 39,856    | (38.22) | 1,191   | (2.49)  | 353            | 395,216   |
| <i>Haemophilus influenzae</i> , invasive disease        |       |         |         |         |          |         |           |           |           |          |           |         |         |         |                |           |
| all ages, serotypes                                     | 299   | (7.52)  | 207     | (1.30)  | 117      | (0.28)  | 99        | (0.23)    | 254       | (0.39)   | 1,032     | (0.99)  | 2,129   | (4.46)  | 1              | 4,138     |
| age <5 yrs  |       |         |         |         |          |         |           |           |           |          |           |         |         |         |                |           |
| serotype b  | 21    | (0.53)  | 8       | (0.05)  | —        | (0.00)  | —         | (0.00)    | —         | (0.00)   | —         | (0.00)  | —       | (0.00)  | —              | 29        |
| nontypeable   | 119   | (3.33)  | 56      | (0.35)  | —        | (0.00)  | —         | (0.00)    | —         | (0.00)   | —         | (0.00)  | —       | (0.00)  | —              | 175       |
| non-b serotype  | 62    | (1.73)  | 73      | (0.45)  | —        | (0.00)  | —         | (0.00)    | —         | (0.00)   | —         | (0.00)  | —       | (0.00)  | —              | 135       |
| unknown serotype  | 97    | (2.71)  | 70      | (0.43)  | —        | (0.00)  | —         | (0.00)    | —         | (0.00)   | —         | (0.00)  | —       | (0.00)  | —              | 167       |
| Hansen's disease  | —     | (0.00)  | —       | (0.00)  | 3        | (0.01)  | 8         | (0.02)    | 15        | (0.03)   | 33        | (0.04)  | 22      | (0.05)  | 8              | 89        |
| Hantavirus infection, non-Hantavirus pulmonary syndrome | —     | (0.00)  | —       | (0.00)  | —        | (0.00)  | —         | (0.00)    | 1         | (0.00)   | 2         | (0.00)  | —       | (0.00)  | —              | 3         |

See table footnotes on next page.

**TABLE 4. (Continued) Number of reported cases of notifiable diseases\* and rates per 100,000 population, by age group, excluding U.S. territories — United States, 2015**

| Disease   | <1 yr |          | 1–4 yrs |         | 5–14 yrs |         | 15–24 yrs |         | 25–39 yrs |          | 40–64 yrs |          | ≥65 yrs |         | Age not stated | Total   |
|---|-------|----------|---------|---------|----------|---------|-----------|---------|-----------|----------|-----------|----------|---------|---------|----------------|---------|
|   | No.   | Rate     | No.     | Rate    | No.      | Rate    | No.       | Rate    | No.       | Rate     | No.       | Rate     | No.     | Rate    |                |         |
| Hantavirus pulmonary syndrome                                   | —     | (0.00)   | —       | (0.00)  | —        | (0.00)  | 6         | (0.01)  | 8         | (0.01)   | 5         | (0.00)   | 2       | (0.00)  | —              | 21      |
| Hemolytic uremic syndrome postdiarrheal                         | 3     | (0.08)   | 122     | (0.79)  | 83       | (0.21)  | 20        | (0.05)  | 4         | (0.01)   | 23        | (0.02)   | 17      | (0.04)  | 2              | 274     |
| Hepatitis   |       |          |         |         |          |         |           |         |           |          |           |          |         |         |                |         |
| A acute   | —     | (0.00)   | 16      | (0.10)  | 57       | (0.14)  | 211       | (0.48)  | 381       | (0.59)   | 465       | (0.45)   | 257     | (0.54)  | 3              | 1,390   |
| B acute   | 1     | (0.03)   | —       | (0.00)  | 1        | (0.00)  | 123       | (0.28)  | 1,336     | (2.09)   | 1,719     | (1.66)   | 169     | (0.36)  | 21             | 3,370   |
| B chronic <sup>††</sup>   | 7     | (0.21)   | 17      | (13.99) | 99       | (0.29)  | 870       | (2.39)  | 5,122     | (9.54)   | 6,593     | (7.52)   | 1,248   | (3.07)  | 191            | 14,147  |
| B perinatal infection   | 21    | (0.53)   | 15      | (0.09)  | —        | (0.00)  | —         | (0.00)  | —         | (0.00)   | —         | (0.00)   | —       | (0.00)  | 1              | 37      |
| C acute <sup>§§</sup>   | 5     | (0.13)   | 1       | (0.01)  | 3        | (0.01)  | 542       | (1.31)  | 1,238     | (2.03)   | 609       | (0.62)   | 47      | (0.10)  | 2              | 2,447   |
| C past or present <sup>¶¶</sup>                                 | 243   | (8.09)   | 152     | (1.26)  | 131      | (0.42)  | 15,121    | (45.15) | 50,238    | (101.42) | 93,156    | (115.35) | 16,562  | (44.39) | 3,981          | 179,584 |
| Human immunodeficiency virus (HIV) diagnoses <sup>***</sup>     | 35    | (0.90)   | 20      | (0.10)  | 69       | (0.20)  | 7,397     | (16.90) | 14,598    | (22.60)  | 10,975    | (10.50)  | 723     | (1.50)  | —              | 33,817  |
| Influenza-associated pediatric mortality <sup>†††</sup>         | 25    | (0.63)   | 37      | (0.23)  | 56       | (0.14)  | 12        | (0.10)  | —         | (0.00)   | —         | (0.00)   | —       | (0.00)  | —              | 130     |
| Lassa viral hemorrhagic fever                                   | —     | (0.00)   | —       | (0.00)  | —        | (0.00)  | —         | (0.00)  | —         | (0.00)   | 1         | (0.00)   | —       | (0.00)  | —              | 1       |
| Legionellosis   | 3     | (0.08)   | 5       | (0.03)  | 4        | (0.01)  | 57        | (0.13)  | 404       | (0.63)   | 2,844     | (2.73)   | 2,559   | (5.36)  | 203            | 6,079   |
| Leptospirosis   | —     | (0.00)   | —       | (0.00)  | —        | (0.00)  | 9         | (0.03)  | 11        | (0.02)   | 18        | (0.02)   | 1       | (0.00)  | 1              | 40      |
| Listeriosis   | 35    | (0.88)   | 6       | (0.04)  | 2        | (0.00)  | 25        | (0.06)  | 52        | (0.08)   | 190       | (0.18)   | 456     | (0.95)  | 2              | 768     |
| Lyme disease, total   | 31    | (0.78)   | 1,462   | (9.22)  | 6,245    | (15.25) | 3,637     | (8.33)  | 4,676     | (7.28)   | 13,684    | (13.18)  | 7,505   | (15.79) | 829            | 38,069  |
| confirmed   | 25    | (0.63)   | 1,259   | (7.94)  | 4,988    | (12.18) | 2,572     | (5.89)  | 3,415     | (5.32)   | 10,214    | (9.84)   | 5,280   | (11.11) | 700            | 28,453  |
| probable  | 6     | (0.15)   | 203     | (1.28)  | 1,257    | (3.07)  | 1,065     | (2.44)  | 1,261     | (1.96)   | 3,470     | (3.34)   | 2,225   | (4.68)  | 129            | 9,616   |
| Malaria   | 2     | (0.05)   | 48      | (0.30)  | 126      | (0.31)  | 192       | (0.44)  | 385       | (0.60)   | 545       | (0.52)   | 90      | (0.19)  | 2              | 1,390   |
| Measles, total  | 26    | (0.65)   | 21      | (0.13)  | 25       | (0.06)  | 38        | (0.09)  | 42        | (0.07)   | 34        | (0.03)   | 2       | (0.00)  | —              | 188     |
| indigenous  | 22    | (0.55)   | 19      | (0.12)  | 23       | (0.06)  | 29        | (0.07)  | 37        | (0.06)   | 30        | (0.03)   | 2       | (0.00)  | —              | 162     |
| imported  | 4     | (0.10)   | 2       | (0.01)  | 2        | (0.00)  | 9         | (0.02)  | 5         | (0.01)   | 4         | (0.00)   | —       | (0.00)  | —              | 26      |
| Meningococcal disease   |       |          |         |         |          |         |           |         |           |          |           |          |         |         |                |         |
| all serogroups  | 45    | (1.13)   | 31      | (0.19)  | 15       | (0.04)  | 53        | (0.12)  | 67        | (0.10)   | 97        | (0.09)   | 63      | (0.13)  | 1              | 372     |
| serogroups ACWY   | 9     | (0.23)   | 10      | (0.06)  | 2        | (0.00)  | 11        | (0.03)  | 28        | (0.04)   | 29        | (0.03)   | 31      | (0.06)  | —              | 120     |
| serogroup B   | 25    | (0.63)   | 12      | (0.08)  | 6        | (0.01)  | 23        | (0.05)  | 16        | (0.02)   | 23        | (0.02)   | 6       | (0.01)  | —              | 111     |
| other serogroups  | 1     | (0.03)   | 1       | (0.01)  | 1        | (0.00)  | 5         | (0.01)  | 5         | (0.01)   | 7         | (0.01)   | 1       | (0.00)  | —              | 21      |
| unknown serogroup   | 10    | (0.25)   | 8       | (0.05)  | 6        | (0.01)  | 14        | (0.03)  | 18        | (0.03)   | 38        | (0.04)   | 25      | (0.05)  | 1              | 120     |
| Mumps   | —     | (0.00)   | 30      | (0.19)  | 67       | (0.16)  | 857       | (1.95)  | 173       | (0.27)   | 158       | (0.15)   | 25      | (0.05)  | 19             | 1,329   |
| Novel influenza A virus infections                              | —     | (0.00)   | —       | (0.00)  | 3        | (0.01)  | —         | (0.00)  | 3         | (0.00)   | 1         | (0.00)   | —       | (0.00)  | —              | 7       |
| Pertussis   | 2,672 | (67.17)  | 2,806   | (17.62) | 6,870    | (16.71) | 4,193     | (9.56)  | 1,293     | (2.00)   | 2,154     | (2.07)   | 736     | (1.54)  | 38             | 20,762  |
| Plague  | —     | (0.00)   | —       | (0.00)  | 1        | (0.00)  | 5         | (0.01)  | —         | (0.00)   | 5         | (0.00)   | 4       | (0.01)  | 1              | 16      |
| Psittacosis   | —     | (0.00)   | —       | (0.00)  | —        | (0.00)  | 1         | (0.00)  | 3         | (0.01)   | —         | (0.00)   | —       | (0.00)  | —              | 4       |
| Q fever, total  | —     | (0.00)   | —       | (0.00)  | —        | (0.00)  | 8         | (0.02)  | 20        | (0.03)   | 85        | (0.08)   | 41      | (0.09)  | 2              | 156     |
| acute   | —     | (0.00)   | —       | (0.00)  | —        | (0.00)  | 7         | (0.02)  | 17        | (0.03)   | 69        | (0.07)   | 28      | (0.06)  | 1              | 122     |
| chronic   | —     | (0.00)   | —       | (0.00)  | —        | (0.00)  | 1         | (0.00)  | 3         | (0.00)   | 16        | (0.02)   | 13      | (0.03)  | 1              | 34      |
| Rabies  |       |          |         |         |          |         |           |         |           |          |           |          |         |         |                |         |
| human   | —     | (0.00)   | —       | (0.00)  | —        | (0.00)  | —         | (0.00)  | —         | (0.00)   | —         | (0.00)   | 2       | (0.00)  | —              | 2       |
| Rubella   | —     | (0.00)   | —       | (0.00)  | —        | (0.00)  | 2         | (0.00)  | 3         | (0.00)   | —         | (0.00)   | —       | (0.00)  | —              | 5       |
| Rubella, congenital syndrome                                    | 1     | (0.03)   | —       | (0.00)  | —        | (0.00)  | —         | (0.00)  | —         | (0.00)   | —         | (0.00)   | —       | (0.00)  | —              | 1       |
| Salmonellosis   | 5,238 | (131.67) | 7,335   | (46.05) | 6,255    | (15.22) | 5,422     | (12.37) | 8,104     | (12.56)  | 14,048    | (13.47)  | 8,509   | (17.82) | 197            | 55,108  |
| Shiga toxin-producing <i>Escherichia coli</i>                   | 238   | (5.98)   | 1,599   | (10.04) | 1,348    | (3.28)  | 1,244     | (2.84)  | 1,006     | (1.56)   | 961       | (0.92)   | 620     | (1.30)  | 43             | 7,059   |
| Shigellosis   | 357   | (8.97)   | 5,964   | (37.44) | 7,188    | (17.49) | 1,763     | (4.02)  | 3,988     | (6.18)   | 3,315     | (3.18)   | 908     | (1.90)  | 107            | 23,590  |
| Spotted fever rickettsiosis, total                              | 1     | (0.03)   | 39      | (0.25)  | 238      | (0.58)  | 320       | (0.73)  | 731       | (1.14)   | 1,954     | (1.89)   | 910     | (1.92)  | 5              | 4,198   |
| confirmed   | 1     | (0.03)   | 2       | (0.01)  | 16       | (0.04)  | 14        | (0.03)  | 33        | (0.05)   | 93        | (0.09)   | 40      | (0.08)  | —              | 199     |
| probable  | —     | (0.00)   | 37      | (0.23)  | 222      | (0.54)  | 306       | (0.70)  | 698       | (1.09)   | 1,861     | (1.80)   | 870     | (1.83)  | 5              | 3,999   |
| Streptococcal toxic shock syndrome                              | 3     | (0.12)   | 9       | (0.09)  | 13       | (0.05)  | 18        | (0.06)  | 38        | (0.09)   | 151       | (0.22)   | 103     | (0.32)  | —              | 335     |
| <i>Streptococcus pneumoniae</i> , invasive pneumococcal disease |       |          |         |         |          |         |           |         |           |          |           |          |         |         |                |         |
| all ages  | 398   | (13.85)  | 737     | (6.41)  | 405      | (1.36)  | 278       | (0.88)  | 1,224     | (2.64)   | 6,583     | (8.66)   | 6,499   | (18.44) | 39             | 16,163  |
| age <5 yrs  | 391   | (12.34)  | 727     | (5.73)  | —        | (0.00)  | —         | (0.00)  | —         | (0.00)   | —         | (0.00)   | —       | (0.00)  | 59             | 1,177   |
| Syphilis, total, all stages <sup>§,¶,§§§</sup>                  | —     | (0.00)   | —       | (0.00)  | —        | (0.00)  | 15,591    | (35.56) | 33,966    | (52.65)  | 23,011    | (22.07)  | 1,567   | (3.28)  | 15             | 74,702  |
| congenital <sup>§</sup>   | 487   | (0.00)   | —       | (0.00)  | —        | (0.00)  | —         | (0.00)  | —         | (0.00)   | —         | (0.00)   | —       | (0.00)  | —              | 487     |
| primary and secondary <sup>§,¶</sup>                            | —     | (0.00)   | —       | (0.00)  | —        | (0.00)  | 5,914     | (13.49) | 11,199    | (17.36)  | 6,538     | (6.27)   | 207     | (0.43)  | 2              | 23,872  |
| Tetanus   | —     | (0.00)   | —       | (0.00)  | 2        | (0.00)  | 1         | (0.00)  | 9         | (0.01)   | 9         | (0.01)   | 3       | (0.01)  | 5              | 29      |

See table footnotes on next page.

**TABLE 4. (Continued) Number of reported cases of notifiable diseases\* and rates per 100,000 population, by age group, excluding U.S. territories — United States, 2015**

| Disease  | <1 yr |        | 1–4 yrs |        | 5–14 yrs |        | 15–24 yrs |        | 25–39 yrs |        | 40–64 yrs |        | ≥65 yrs |        | Age not stated | Total        |
|--|-------|--------|---------|--------|----------|--------|-----------|--------|-----------|--------|-----------|--------|---------|--------|----------------|--------------|
|  | No.   | Rate   | No.     | Rate   | No.      | Rate   | No.       | Rate   | No.       | Rate   | No.       | Rate   | No.     | Rate   |                |              |
| Toxic shock syndrome (other than streptococcal)      | —     | (0.00) | 2       | (0.02) | 14       | (0.05) | 25        | (0.08) | 4         | (0.01) | 13        | (0.02) | 4       | (0.01) | 2              | <b>64</b>    |
| Trichinellosis                                       | —     | (0.00) | 1       | (0.01) | —        | (0.00) | 6         | (0.01) | 4         | (0.01) | 3         | (0.00) | —       | (0.00) | —              | <b>14</b>    |
| Tuberculosis <sup>¶¶¶</sup>                          | 54    | (1.36) | 190     | (1.19) | 196      | (0.48) | 935       | (2.13) | 2,214     | (3.43) | 3,672     | (3.52) | 2,294   | (4.80) | 2              | <b>9,557</b> |
| Tularemia  | 1     | (0.03) | 10      | (0.06) | 29       | (0.07) | 19        | (0.04) | 37        | (0.06) | 136       | (0.13) | 82      | (0.17) | —              | <b>314</b>   |
| Typhoid fever  | 2     | (0.05) | 40      | (0.25) | 89       | (0.22) | 63        | (0.14) | 115       | (0.18) | 44        | (0.04) | 8       | (0.02) | 6              | <b>367</b>   |
| Vancomycin-intermediate <i>Staphylococcus aureus</i> | 3     | (0.10) | 4       | (0.03) | 4        | (0.01) | 11        | (0.03) | 23        | (0.05) | 80        | (0.10) | 55      | (0.15) | 3              | <b>183</b>   |
| Vancomycin-resistant <i>Staphylococcus aureus</i>    | —     | (0.00) | —       | (0.00) | —        | (0.00) | —         | (0.00) | —         | (0.00) | 1         | (0.00) | 2       | (0.00) | —              | <b>3</b>     |
| Vibriosis  | —     | (0.00) | 11      | (0.07) | 100      | (0.25) | 94        | (0.22) | 263       | (0.51) | 520       | (0.48) | 326     | (0.70) | 9              | <b>1,323</b> |

\* No cases of anthrax; Crimean-Congo viral hemorrhagic fever; diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; Ebola viral hemorrhagic fever; Guanarito viral hemorrhagic fever; Junin viral hemorrhagic fever; Lujo viral hemorrhagic fever; Machupo viral hemorrhagic fever; Marburg viral hemorrhagic fever; poliomyelitis, paralytic; poliovirus infection, nonparalytic; Sabia viral hemorrhagic fever; severe acute respiratory syndrome-associated coronavirus disease; smallpox; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; and yellow fever were reported in the United States during 2015.

<sup>†</sup> Totals reported to the Division of Vector-Borne Diseases, National Center for Emerging and Zoonotic Infectious Diseases (ArboNET Surveillance), as of July 1, 2016.

<sup>§</sup> Cases among persons aged <15 years are not shown (except for Syphilis, congenital); totals reported to the Division of STD Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (NCHHSTP), as of June 8, 2016.

<sup>¶</sup> Data are suppressed for those aged <15 years. The count displayed in the "Total" column reflects the total count across all age groups for this condition.

<sup>\*\*</sup> Reportable in <25 states.

<sup>††</sup> Total number of cases reported from 42 states. Reports might not reflect unique cases.

<sup>§§</sup> Total number of cases reported from 42 states.

<sup>¶¶</sup> Total number of cases reported from 39 states. Reports might not reflect unique cases.

<sup>\*\*\*</sup> Total number of HIV diagnoses reported to the Division of HIV/AIDS Prevention, NCHHSTP through December 31, 2016.

<sup>†††</sup> Totals reported to the Influenza Division, National Center for Immunization and Respiratory Diseases, as of June 30, 2016.

<sup>§§§</sup> Includes the following categories: primary, secondary, early latent, late latent, late with clinical manifestations, and congenital syphilis. Totals reported to the DSTDP, NCHHSTP, as of June 8, 2016.

<sup>¶¶¶</sup> Totals reported to the Division of Tuberculosis Elimination, NCHHSTP, as of June 8, 2016.

TABLE 5. Number of reported cases of notifiable diseases\* and rates per 100,000 population, by sex, excluding U.S. territories — United States, 2015

| Disease   | Male    |          | Female    |          | Sex not stated | Total     |
|---|---------|----------|-----------|----------|----------------|-----------|
|   | No.     | Rate     | No.       | Rate     |                |           |
| Arboviral diseases <sup>†</sup>                         |         |          |           |          |                |           |
| Chikungunya virus disease                               |         |          |           |          |                |           |
| neuroinvasive   | 2       | (0.00)   | 2         | (0.00)   | —              | 4         |
| nonneuroinvasive  | 286     | (0.18)   | 606       | (0.37)   | —              | 892       |
| Eastern equine encephalitis virus disease               |         |          |           |          |                |           |
| neuroinvasive   | 6       | (0.00)   | —         | (0.00)   | —              | 6         |
| Jamestown Canyon virus disease                          |         |          |           |          |                |           |
| neuroinvasive   | 6       | (0.00)   | —         | (0.00)   | —              | 6         |
| nonneuroinvasive  | —       | (0.00)   | 5         | (0.00)   | —              | 5         |
| La Crosse virus disease                                 |         |          |           |          |                |           |
| neuroinvasive   | 29      | (0.02)   | 22        | (0.01)   | —              | 51        |
| nonneuroinvasive  | 2       | (0.00)   | 2         | (0.00)   | —              | 4         |
| Powassan virus disease                                  |         |          |           |          |                |           |
| neuroinvasive   | 4       | (0.00)   | 2         | (0.00)   | —              | 6         |
| nonneuroinvasive  | 1       | (0.00)   | —         | (0.00)   | —              | 1         |
| St. Louis virus disease                                 |         |          |           |          |                |           |
| neuroinvasive   | 14      | (0.01)   | 5         | (0.00)   | —              | 19        |
| nonneuroinvasive  | 1       | (0.00)   | 3         | (0.00)   | —              | 4         |
| West Nile virus disease                                 |         |          |           |          |                |           |
| neuroinvasive   | 903     | (0.57)   | 552       | (0.34)   | —              | 1,455     |
| nonneuroinvasive  | 386     | (0.24)   | 334       | (0.20)   | —              | 720       |
| Babesiosis, total                                       | 1,393   | (1.25)   | 704       | (0.61)   | 3              | 2,100     |
| confirmed   | 1,220   | (1.10)   | 582       | (0.51)   | 2              | 1,804     |
| probable  | 173     | (0.16)   | 122       | (0.11)   | 1              | 296       |
| Botulism, total   | 97      | (0.06)   | 97        | (0.06)   | 1              | 195       |
| foodborne   | 14      | (0.01)   | 23        | (0.01)   | —              | 37        |
| infant  | 68      | (3.34)   | 69        | (3.55)   | 1              | 138       |
| other (wound and unspecified)                           | 15      | (0.01)   | 5         | (0.00)   | —              | 20        |
| Brucellosis   | 76      | (0.05)   | 50        | (0.03)   | —              | 126       |
| Campylobacteriosis                                      | 28,952  | (19.06)  | 25,326    | (16.17)  | 278            | 54,556    |
| Chancroid <sup>§</sup>                                  | 6       | (0.00)   | 5         | (0.00)   | —              | 11        |
| <i>Chlamydia trachomatis</i> infection <sup>§</sup>     | 478,981 | (302.71) | 1,045,143 | (640.45) | 2,534          | 1,526,658 |
| Cholera   | 2       | (0.00)   | 3         | (0.00)   | —              | 5         |
| Coccidioidomycosis <sup>¶</sup>                         | 5,659   | (9.12)   | 5,395     | (8.49)   | 18             | 11,072    |
| Cryptosporidiosis, total                                | 4,768   | (3.01)   | 4,935     | (3.02)   | 32             | 9,735     |
| confirmed   | 3,073   | (1.94)   | 3,048     | (1.87)   | 24             | 6,145     |
| probable  | 1,695   | (1.07)   | 1,887     | (1.16)   | 8              | 3,590     |
| Cyclosporiasis  | 289     | (0.20)   | 354       | (0.24)   | 2              | 645       |
| Dengue virus infections <sup>†</sup>                    |         |          |           |          |                |           |
| dengue  | 443     | (0.28)   | 486       | (0.30)   | —              | 929       |
| dengue-like illness                                     | 5       | (0.00)   | 11        | (0.01)   | —              | 16        |
| severe dengue   | 6       | (0.00)   | —         | (0.00)   | —              | 6         |
| Ehrlichiosis/Anaplasmosis                               |         |          |           |          |                |           |
| <i>Anaplasma phagocytophilum</i> infection              | 2,244   | (1.49)   | 1,405     | (0.90)   | 7              | 3,656     |
| <i>Ehrlichia chaffeensis</i> infection                  | 774     | (0.51)   | 506       | (0.32)   | 8              | 1,288     |
| <i>Ehrlichia ewingii</i> infection                      | 11      | (0.01)   | 3         | (0.00)   | —              | 14        |
| undetermined ehrlichiosis/anaplasmosis                  | 91      | (0.06)   | 88        | (0.06)   | —              | 179       |
| Giardiasis  | 8,997   | (7.24)   | 5,409     | (4.22)   | 79             | 14,485    |
| Gonorrhea <sup>§</sup>                                  | 221,070 | (139.71) | 173,514   | (106.33) | 632            | 395,216   |
| <i>Haemophilus influenzae</i> , invasive disease        |         |          |           |          |                |           |
| all ages, serotypes                                     | 1,927   | (1.22)   | 2,182     | (1.34)   | 29             | 4,138     |
| age <5 yrs  |         |          |           |          |                |           |
| serotype b  | 18      | (0.18)   | 11        | (0.11)   | —              | 29        |
| nontypeable   | 92      | (1.00)   | 82        | (0.94)   | 1              | 175       |
| non-b serotype  | 73      | (0.80)   | 60        | (0.68)   | 2              | 135       |
| unknown serotype  | 91      | (0.99)   | 73        | (0.83)   | 3              | 167       |
| Hansen's disease  | 55      | (0.04)   | 27        | (0.02)   | 7              | 89        |
| Hantavirus infection, non-Hantavirus pulmonary syndrome | 2       | (0.00)   | 1         | (0.00)   | —              | 3         |
| Hantavirus pulmonary syndrome                           | 16      | (0.01)   | 5         | (0.00)   | —              | 21        |
| Hemolytic uremic syndrome postdiarrheal                 | 114     | (0.07)   | 160       | (0.10)   | —              | 274       |
| Hepatitis   |         |          |           |          |                |           |
| A acute   | 726     | (0.46)   | 662       | (0.41)   | 2              | 1,390     |
| B acute   | 2,080   | (1.32)   | 1,280     | (0.79)   | 10             | 3,370     |
| B chronic**   | 8,068   | (6.10)   | 5,949     | (4.36)   | 130            | 14,147    |
| B perinatal infection                                   | 15      | (0.01)   | 22        | (0.01)   | —              | 37        |
| C acute††   | 1,339   | (0.90)   | 1,102     | (0.72)   | 6              | 2,447     |
| C past or present§§                                     | 110,164 | (90.54)  | 68,794    | (54.80)  | 626            | 179,584   |

See table footnotes on next page.

**TABLE 5. (Continued) Number of reported cases of notifiable diseases\* and rates per 100,000 population, by sex, excluding U.S. territories — United States, 2015**

| Disease   | Male   |         | Female |         | Sex not stated | Total  |
|---|--------|---------|--------|---------|----------------|--------|
|   | No.    | Rate    | No.    | Rate    |                |        |
| Human immunodeficiency virus (HIV) diagnoses <sup>¶¶</sup>      | 27,470 | (17.36) | 6,347  | (3.89)  | —              | 33,817 |
| Influenza-associated pediatric mortality <sup>***</sup>         | 66     | (0.18)  | 64     | (0.18)  | —              | 130    |
| Lassa viral hemorrhagic fever                                   | 1      | (0.00)  | —      | (0.00)  | —              | 1      |
| Legionellosis   | 3,748  | (2.37)  | 2,328  | (1.43)  | 3              | 6,079  |
| Leptospirosis   | 38     | (0.03)  | 2      | (0.00)  | —              | 40     |
| Listeriosis   | 374    | (0.24)  | 392    | (0.24)  | 2              | 768    |
| Lyme disease, total   | 22,038 | (13.99) | 15,572 | (9.58)  | 459            | 38,069 |
| confirmed   | 16,450 | (10.44) | 11,662 | (7.18)  | 341            | 28,453 |
| probable  | 5,588  | (3.55)  | 3,910  | (2.41)  | 118            | 9,616  |
| Malaria   | 882    | (0.56)  | 503    | (0.31)  | 5              | 1,390  |
| Measles, total  | 95     | (0.06)  | 93     | (0.06)  | —              | 188    |
| indigenous  | 82     | (0.05)  | 80     | (0.05)  | —              | 162    |
| imported  | 13     | (0.01)  | 13     | (0.01)  | —              | 26     |
| Meningococcal disease   |        |         |        |         |                |        |
| all serogroups  | 185    | (0.12)  | 187    | (0.11)  | —              | 372    |
| serogroups ACWY   | 65     | (0.04)  | 55     | (0.03)  | —              | 120    |
| serogroup B   | 57     | (0.04)  | 54     | (0.03)  | —              | 111    |
| other serogroups  | 11     | (0.01)  | 10     | (0.01)  | —              | 21     |
| unknown serogroup   | 52     | (0.03)  | 68     | (0.04)  | —              | 120    |
| Mumps   | 737    | (0.47)  | 571    | (0.35)  | 21             | 1,329  |
| Novel influenza A virus infections                              | 6      | (0.00)  | 1      | (0.00)  | —              | 7      |
| Pertussis   | 9,301  | (5.88)  | 11,378 | (6.97)  | 83             | 20,762 |
| Plague  | 9      | (0.01)  | 7      | (0.00)  | —              | 16     |
| Psittacosis   | 1      | (0.00)  | 3      | (0.00)  | —              | 4      |
| Q fever, total  | 121    | (0.08)  | 35     | (0.02)  | —              | 156    |
| acute   | 94     | (0.06)  | 28     | (0.02)  | —              | 122    |
| chronic   | 27     | (0.02)  | 7      | (0.00)  | —              | 34     |
| Rabies  |        |         |        |         |                |        |
| human   | 1      | (0.00)  | 1      | (0.00)  | —              | 2      |
| Rubella   | 2      | (0.00)  | 3      | (0.00)  | —              | 5      |
| Rubella, congenital syndrome                                    | 0      | (0.00)  | 1      | (0.00)  | —              | 1      |
| Salmonellosis   | 25,771 | (16.29) | 29,094 | (17.83) | 243            | 55,108 |
| Shiga toxin-producing <i>Escherichia coli</i>                   | 3,176  | (2.01)  | 3,865  | (2.37)  | 18             | 7,059  |
| Shigellosis   | 11,618 | (7.34)  | 11,908 | (7.30)  | 64             | 23,590 |
| Spotted fever rickettsiosis, total                              | 2,788  | (1.77)  | 1,404  | (0.87)  | 6              | 4,198  |
| confirmed   | 130    | (0.08)  | 69     | (0.04)  | —              | 199    |
| probable  | 2,658  | (1.69)  | 1,335  | (0.82)  | 6              | 3,999  |
| Streptococcal toxic shock syndrome                              | 159    | (0.15)  | 176    | (0.16)  | —              | 335    |
| <i>Streptococcus pneumoniae</i> , invasive pneumococcal disease |        |         |        |         |                |        |
| all ages  | 8,331  | (7.26)  | 7,736  | (6.52)  | 96             | 16,163 |
| age <5 yrs  | 618    | (8.09)  | 471    | (6.45)  | 88             | 1,177  |
| Syphilis, total, all stages <sup>§,†††</sup>                    | 61,506 | (38.87) | 12,631 | (7.74)  | 565            | 74,702 |
| congenital <sup>§</sup>   | 10     | (0.49)  | 8      | (0.41)  | 469            | 487    |
| primary and secondary <sup>§</sup>                              | 21,547 | (13.62) | 2,298  | (1.41)  | 27             | 23,872 |
| Tetanus   | 23     | (0.01)  | 6      | (0.00)  | —              | 29     |
| Toxic shock syndrome (other than streptococcal)                 | 17     | (0.02)  | 47     | (0.04)  | —              | 64     |
| Trichinellosis  | 9      | (0.01)  | 5      | (0.00)  | —              | 14     |
| Tuberculosis <sup>§§§</sup>                                     | 5,724  | (3.62)  | 3,827  | (2.35)  | 6              | 9,557  |
| Tularemia   | 220    | (0.14)  | 93     | (0.06)  | 1              | 314    |
| Typhoid fever   | 202    | (0.13)  | 165    | (0.10)  | —              | 367    |
| Vancomycin-intermediate <i>Staphylococcus aureus</i>            | 113    | (0.09)  | 70     | (0.06)  | —              | 183    |
| Vancomycin-resistant <i>Staphylococcus aureus</i>               | 1      | (0.00)  | 2      | (0.00)  | —              | 3      |
| Vibriosis   | 891    | (0.57)  | 420    | (0.26)  | 12             | 1,323  |

\* No cases of anthrax; Crimean-Congo viral hemorrhagic fever; diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; Ebola viral hemorrhagic fever; Guanarito viral hemorrhagic fever; Junin viral hemorrhagic fever; Lujo viral hemorrhagic fever; Machupo viral hemorrhagic fever; Marburg viral hemorrhagic fever; poliomyelitis, paralytic; poliovirus infection, nonparalytic; Sabia viral hemorrhagic fever; severe acute respiratory syndrome-associated coronavirus disease; smallpox; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; and yellow fever were reported in the United States during 2015.

† Totals reported to the Division of Vector-Borne Diseases, National Center for Emerging and Zoonotic Infectious Diseases (ArboNET Surveillance), as of July 1, 2016.

§ Totals reported to the Division of STD Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (NCHHSTP), as of June 8, 2016.

¶ Reportable in <25 states.

\*\* Total number of cases reported from 42 states. Reports might not reflect unique cases.

†† Total number of cases reported from 42 states.

§§ Total number of cases reported from 39 states. Reports might not reflect unique cases.

¶¶ Total number of HIV diagnoses reported to the Division of HIV/AIDS Prevention, NCHHSTP through December 31, 2016.

\*\*\* Totals reported to the Influenza Division, National Center for Immunization and Respiratory Diseases, as of June 30, 2016.

††† Includes the following categories: primary, secondary, early latent, late latent, late with clinical manifestations, and congenital syphilis.

§§§ Totals reported to the Division of Tuberculosis Elimination, NCHHSTP, as of June 8, 2016.

TABLE 6. Number of reported cases of notifiable diseases\* and rates per 100,000 population, by race, excluding U.S. territories — United States, 2015

| Disease  | American Indian or Alaska Native |          | Asian or Pacific Islander |          | Black   |          | White   |          | Other race | Race not stated | Total     |
|--|----------------------------------|----------|---------------------------|----------|---------|----------|---------|----------|------------|-----------------|-----------|
|  | No.                              | Rate     | No.                       | Rate     | No.     | Rate     | No.     | Rate     |            |                 |           |
| Arboviral diseases <sup>†</sup>                            |                                  |          |                           |          |         |          |         |          |            |                 |           |
| Chikungunya virus disease                                  |                                  |          |                           |          |         |          |         |          |            |                 |           |
| nonneuroinvasive   | 2                                | (0.04)   | 41                        | (0.20)   | 17      | (0.04)   | 442     | (0.18)   | 94         | 296             | 892       |
| La Crosse virus disease                                    |                                  |          |                           |          |         |          |         |          |            |                 |           |
| neuroinvasive  | —                                | (0.00)   | —                         | (0.00)   | 2       | (0.00)   | 47      | (0.02)   | —          | 2               | 51        |
| West Nile virus disease                                    |                                  |          |                           |          |         |          |         |          |            |                 |           |
| neuroinvasive  | 11                               | (0.24)   | 18                        | (0.09)   | 74      | (0.16)   | 852     | (0.34)   | 45         | 455             | 1,455     |
| nonneuroinvasive   | 9                                | (0.20)   | 9                         | (0.04)   | 9       | (0.02)   | 470     | (0.19)   | 15         | 208             | 720       |
| Babesiosis, total  | 6                                | (0.20)   | 55                        | (0.35)   | 49      | (0.17)   | 1,245   | (0.70)   | 52         | 693             | 2,100     |
| confirmed  | 6                                | (0.20)   | 49                        | (0.31)   | 46      | (0.16)   | 1,093   | (0.61)   | 50         | 560             | 1,804     |
| probable   | —                                | (0.00)   | 6                         | (0.04)   | 3       | (0.01)   | 152     | (0.09)   | 2          | 133             | 296       |
| Botulism, total  | 2                                | (0.04)   | 10                        | (0.05)   | 6       | (0.01)   | 129     | (0.05)   | 3          | 45              | 195       |
| foodborne  | 1                                | (0.02)   | 3                         | (0.01)   | —       | (0.00)   | 28      | (0.01)   | —          | 5               | 37        |
| infant   | 1                                | (1.27)   | 6                         | (2.47)   | 5       | (0.73)   | 90      | (3.03)   | 3          | 33              | 138       |
| Brucellosis  | 3                                | (0.07)   | 5                         | (0.02)   | 5       | (0.01)   | 71      | (0.03)   | 13         | 29              | 126       |
| Campylobacteriosis   | 399                              | (8.89)   | 1,282                     | (6.62)   | 2,166   | (5.05)   | 32,445  | (13.42)  | 2,640      | 15,624          | 54,556    |
| <i>Chlamydia trachomatis</i> infection <sup>§</sup>        | 17,767                           | (388.11) | 23,611                    | (117.45) | 437,081 | (974.25) | 494,697 | (196.41) | 67,675     | 485,827         | 1,526,658 |
| Coccidioidomycosis <sup>¶</sup>                            | 179                              | (3.91)   | 229                       | (1.14)   | 338     | (0.75)   | 2,858   | (1.13)   | 374        | 7,094           | 11,072    |
| Cryptosporidiosis, total                                   | 49                               | (1.07)   | 114                       | (0.57)   | 901     | (2.01)   | 6,725   | (2.67)   | 343        | 1,603           | 9,735     |
| confirmed  | 39                               | (0.85)   | 83                        | (0.41)   | 588     | (1.31)   | 4,023   | (1.60)   | 222        | 1,190           | 6,145     |
| probable   | 10                               | (0.22)   | 31                        | (0.15)   | 313     | (0.70)   | 2,702   | (1.07)   | 121        | 413             | 3,590     |
| Cyclosporiasis   | 1                                | (0.03)   | 16                        | (0.08)   | 16      | (0.04)   | 470     | (0.21)   | 14         | 128             | 645       |
| Dengue virus infections <sup>†</sup>                       |                                  |          |                           |          |         |          |         |          |            |                 |           |
| dengue   | 9                                | (0.20)   | 200                       | (0.99)   | 21      | (0.05)   | 426     | (0.17)   | 62         | 211             | 929       |
| Ehrlichiosis/Anaplasmosis                                  |                                  |          |                           |          |         |          |         |          |            |                 |           |
| <i>Anaplasma phagocytophilum</i> infection                 | 25                               | (0.62)   | 24                        | (0.13)   | 15      | (0.03)   | 2,482   | (1.04)   | 48         | 1,062           | 3,656     |
| <i>Ehrlichia chaffeensis</i> infection                     | 14                               | (0.34)   | 8                         | (0.04)   | 32      | (0.07)   | 905     | (0.38)   | 26         | 303             | 1,288     |
| undetermined ehrlichiosis/anaplasmosis                     | 1                                | (0.02)   | 1                         | (0.01)   | 1       | (0.00)   | 120     | (0.05)   | 11         | 45              | 179       |
| Giardiasis   | 79                               | (2.23)   | 475                       | (2.75)   | 1,156   | (3.40)   | 7,073   | (3.58)   | 566        | 5,136           | 14,485    |
| Gonorrhea <sup>§</sup>                                     | 4,835                            | (105.62) | 4,783                     | (23.79)  | 168,799 | (376.25) | 116,032 | (46.07)  | 15,853     | 84,914          | 395,216   |
| <i>Haemophilus influenzae</i> , invasive disease           |                                  |          |                           |          |         |          |         |          |            |                 |           |
| all ages, serotypes  | 43                               | (0.94)   | 71                        | (0.35)   | 517     | (1.15)   | 2,674   | (1.06)   | 105        | 728             | 4,138     |
| age <5 yrs   |                                  |          |                           |          |         |          |         |          |            |                 |           |
| serotype b   | 1                                | (0.26)   | —                         | (0.00)   | 2       | (0.06)   | 22      | (0.15)   | —          | 4               | 29        |
| nontypeable  | 3                                | (0.82)   | 8                         | (0.69)   | 48      | (1.53)   | 86      | (0.65)   | 7          | 23              | 175       |
| non-b serotype   | 13                               | (3.57)   | 2                         | (0.17)   | 29      | (0.92)   | 55      | (0.41)   | 9          | 27              | 135       |
| unknown serotype   | 1                                | (0.27)   | 11                        | (0.95)   | 31      | (0.99)   | 81      | (0.61)   | 8          | 35              | 167       |
| Hansen's disease   | 1                                | (0.03)   | 20                        | (0.11)   | 6       | (0.01)   | 44      | (0.02)   | 2          | 16              | 89        |
| Hemolytic uremic syndrome postdiarrheal                    | —                                | (0.00)   | 7                         | (0.04)   | 5       | (0.01)   | 220     | (0.09)   | 16         | 26              | 274       |
| Hepatitis  |                                  |          |                           |          |         |          |         |          |            |                 |           |
| A acute  | 6                                | (0.13)   | 114                       | (0.57)   | 71      | (0.16)   | 855     | (0.34)   | 89         | 255             | 1,390     |
| B acute  | 18                               | (0.40)   | 68                        | (0.34)   | 399     | (0.90)   | 2,275   | (0.91)   | 69         | 541             | 3,370     |
| B chronic**  | 38                               | (0.92)   | 3,451                     | (19.93)  | 1,987   | (5.46)   | 2,351   | (1.12)   | 650        | 5,670           | 14,147    |
| B perinatal infection                                      | —                                | (0.00)   | 29                        | (0.14)   | 1       | (0.00)   | 2       | (0.00)   | 1          | 4               | 37        |
| C acute <sup>††</sup>                                      | 40                               | (1.00)   | 16                        | (0.08)   | 113     | (0.27)   | 1,835   | (0.77)   | 66         | 377             | 2,447     |
| C past or present <sup>§§</sup>                            | 1,746                            | (49.29)  | 1,212                     | (7.32)   | 13,417  | (39.52)  | 62,301  | (32.25)  | 7,078      | 93,830          | 179,584   |
| Human immunodeficiency virus (HIV) diagnoses <sup>¶¶</sup> | 184                              | (7.80)   | 833                       | (4.80)   | 15,062  | (37.70)  | 9,394   | (4.70)   | 8,344      |                 | 33,817    |
| Influenza-associated pediatric mortality***                | 4                                | (0.29)   | 8                         | (0.18)   | 27      | (0.22)   | 78      | (0.14)   | 1          | 12              | 130       |
| Legionellosis  | 18                               | (0.39)   | 86                        | (0.43)   | 1,111   | (2.48)   | 3,761   | (1.49)   | 150        |                 | 953       |
| Leptospirosis  | —                                | (0.00)   | 9                         | (0.05)   | 1       | (0.00)   | 15      | (0.01)   |            | 5               | 10        |
| Listeriosis  | 3                                | (0.07)   | 56                        | (0.28)   | 76      | (0.17)   | 506     | (0.20)   |            | 37              | 90        |
| Lyme disease, total  | 100                              | (2.19)   | 391                       | (2.04)   | 349     | (0.78)   | 21,366  | (8.50)   | 1,031      |                 | 14,832    |
| confirmed  | 58                               | (1.27)   | 285                       | (1.49)   | 249     | (0.56)   | 15,852  | (6.30)   | 831        |                 | 11,178    |
| probable   | 42                               | (0.92)   | 106                       | (0.55)   | 100     | (0.22)   | 5,514   | (2.19)   | 200        |                 | 3,654     |
| Malaria  | 4                                | (0.09)   | 88                        | (0.44)   | 690     | (1.54)   | 201     | (0.08)   |            | 51              | 356       |
| Measles, total   | 2                                | (0.04)   | 13                        | (0.06)   | 4       | (0.01)   | 122     | (0.05)   |            | 11              | 36        |
| indigenous   | 2                                | (0.04)   | 3                         | (0.01)   | 3       | (0.01)   | 115     | (0.05)   |            | 10              | 29        |
| imported   | —                                | (0.00)   | 10                        | (0.05)   | 1       | (0.00)   | 7       | (0.00)   |            | 1               | 7         |

See table footnotes on next page.



**TABLE 6. (Continued)** Number of reported cases of notifiable diseases\* and rates per 100,000 population, by race, excluding U.S. territories — United States, 2015

| Disease   | American Indian or Alaska Native |         | Asian or Pacific Islander |         | Black  |         | White  |         | Other race | Race not stated | Total  |
|---|----------------------------------|---------|---------------------------|---------|--------|---------|--------|---------|------------|-----------------|--------|
|   | No.                              | Rate    | No.                       | Rate    | No.    | Rate    | No.    | Rate    |            |                 |        |
| Meningococcal disease   |                                  |         |                           |         |        |         |        |         |            |                 |        |
| all serogroups  | 5                                | (0.11)  | 11                        | (0.05)  | 52     | (0.12)  | 247    | (0.10)  | 9          | 48              | 372    |
| serogroups ACWY   | 2                                | (0.04)  | 5                         | (0.02)  | 25     | (0.06)  | 70     | (0.03)  | 4          | 14              | 120    |
| serogroup B   | 2                                | (0.04)  | 3                         | (0.01)  | 7      | (0.02)  | 83     | (0.03)  | 2          | 14              | 111    |
| unknown serogroup   | 1                                | (0.02)  | 3                         | (0.01)  | 15     | (0.03)  | 83     | (0.03)  | 3          | 15              | 120    |
| Mumps   | 1                                | (0.02)  | 53                        | (0.26)  | 79     | (0.18)  | 604    | (0.24)  | 18         | 574             | 1,329  |
| Pertussis   | 173                              | (3.78)  | 362                       | (1.80)  | 870    | (1.94)  | 13,937 | (5.53)  | 688        | 4,732           | 20,762 |
| Q fever, total  | 1                                | (0.02)  | 3                         | (0.02)  | 3      | (0.01)  | 94     | (0.04)  | 7          | 48              | 156    |
| acute   | —                                | (0.00)  | 3                         | (0.02)  | 3      | (0.01)  | 73     | (0.03)  | 6          | 37              | 122    |
| chronic   | 1                                | (0.02)  | —                         | (0.00)  | —      | (0.00)  | 21     | (0.01)  | 1          | 11              | 34     |
| Salmonellosis   | 466                              | (10.18) | 1,771                     | (8.81)  | 4,695  | (10.47) | 35,064 | (13.92) | 2,298      | 10,814          | 55,108 |
| Shiga toxin-producing <i>Escherichia coli</i>                   | 47                               | (1.03)  | 174                       | (0.87)  | 275    | (0.61)  | 4,923  | (1.95)  | 283        | 1,357           | 7,059  |
| Shigellosis   | 238                              | (5.20)  | 354                       | (1.76)  | 4,898  | (10.92) | 12,943 | (5.14)  | 1,039      | 4,118           | 23,590 |
| Spotted fever rickettsiosis, total                              | 100                              | (2.25)  | 18                        | (0.09)  | 106    | (0.24)  | 2,785  | (1.11)  | 76         | 1,113           | 4,198  |
| confirmed   | 12                               | (0.27)  | 2                         | (0.01)  | 3      | (0.01)  | 122    | (0.05)  | 6          | 54              | 199    |
| probable  | 88                               | (1.98)  | 16                        | (0.08)  | 103    | (0.23)  | 2,663  | (1.06)  | 70         | 1,059           | 3,999  |
| Streptococcal toxic shock syndrome                              | 3                                | (0.12)  | 10                        | (0.10)  | 46     | (0.15)  | 225    | (0.14)  | 9          | 42              | 335    |
| <i>Streptococcus pneumoniae</i> , invasive pneumococcal disease |                                  |         |                           |         |        |         |        |         |            |                 |        |
| all ages  | 243                              | (8.70)  | 201                       | (1.75)  | 2,550  | (7.08)  | 9,686  | (5.29)  | 381        | 3,102           | 16,163 |
| age <5 yrs  | 22                               | (8.10)  | 26                        | (3.33)  | 247    | (8.70)  | 517    | (4.68)  | 42         | 323             | 1,177  |
| Syphilis, total, all stages <sup>§,†††</sup>                    | 441                              | (9.63)  | 1,940                     | (9.65)  | 27,102 | (60.41) | 34,385 | (13.65) | 4,767      | 6,067           | 74,702 |
| congenital <sup>§</sup>   | 4                                | (5.06)  | 17                        | (7.00)  | 216    | (31.47) | 214    | (7.21)  | 10         | 26              | 487    |
| primary and secondary <sup>§</sup>                              | 147                              | (3.21)  | 590                       | (2.93)  | 8,551  | (19.06) | 11,698 | (4.64)  | 1,330      | 1,556           | 23,872 |
| Tetanus   | 1                                | (0.02)  | —                         | (0.00)  | 7      | (0.02)  | 15     | (0.01)  | 1          | 5               | 29     |
| Toxic shock syndrome (other than streptococcal)                 | —                                | (0.00)  | —                         | (0.00)  | —      | (0.00)  | 41     | (0.02)  | 1          | 22              | 64     |
| Tuberculosis <sup>§§§</sup>                                     | 156                              | (3.41)  | 3,198                     | (15.91) | 2,056  | (4.58)  | 3,799  | (1.51)  | 256        | 92              | 9,557  |
| Tularemia   | 12                               | (0.26)  | 0                         | (0.00)  | 4      | (0.01)  | 237    | (0.09)  | 9          | 52              | 314    |
| Typhoid fever   | 3                                | (0.07)  | 219                       | (1.09)  | 19     | (0.04)  | 50     | (0.02)  | 29         | 47              | 367    |
| Vancomycin-intermediate <i>Staphylococcus aureus</i>            | —                                | (0.00)  | —                         | (0.00)  | 36     | (0.09)  | 98     | (0.05)  | 2          | 47              | 183    |
| Vibriosis   | 8                                | (0.18)  | 55                        | (0.28)  | 63     | (0.14)  | 929    | (0.38)  | 45         | 223             | 1,323  |

\* Conditions for which <25 cases were reported for the year are not included in the table. No cases of anthrax; Crimean-Congo viral hemorrhagic fever; diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; Ebola viral hemorrhagic fever; Guanarito viral hemorrhagic fever; Junin viral hemorrhagic fever; Lujo viral hemorrhagic fever; Machupo viral hemorrhagic fever; Marburg viral hemorrhagic fever; poliomyelitis, paralytic; poliovirus infection, nonparalytic; Sabia viral hemorrhagic fever; severe acute respiratory syndrome-associated coronavirus disease; smallpox; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; and yellow fever were reported in the United States during 2015.

† Totals reported to the Division of Vector-Borne Diseases, National Center for Emerging and Zoonotic Infectious Diseases (ArboNET Surveillance), as of July 1, 2016.

§ Totals reported to the Division of STD Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (NCHHSTP), as of June 8, 2016.

¶ Reportable in <25 states.

\*\* Total number of cases reported from 42 states. Reports might not reflect unique cases.

†† Total number of cases reported from 42 states.

§§ Total number of cases reported from 39 states. Reports might not reflect unique cases.

¶¶ Total number of HIV diagnoses reported to the Division of HIV/AIDS Prevention, NCHHSTP through December 31, 2016.

\*\*\* Totals reported to the Influenza Division, National Center for Immunization and Respiratory Diseases, as of June 30, 2016.

††† Includes the following categories: primary, secondary, early latent, late latent, late with clinical manifestations, and congenital syphilis.

§§§ Totals reported to the Division of Tuberculosis Elimination, NCHHSTP, as of June 8, 2016.

**TABLE 7. Number of reported cases of notifiable diseases\* and rates per 100,000 population, by ethnicity, excluding U.S. territories — United States, 2015**

| Disease  | Hispanic |          | Non-Hispanic |          | Ethnicity not stated | Total     |
|--|----------|----------|--------------|----------|----------------------|-----------|
|  | No.      | Rate     | No.          | Rate     |                      |           |
| Arboviral diseases <sup>†</sup>                            |          |          |              |          |                      |           |
| Chikungunya virus disease                                  |          |          |              |          |                      |           |
| nonneuroinvasive   | 506      | (0.89)   | 199          | (0.08)   | 187                  | 892       |
| La Crosse virus disease                                    |          |          |              |          |                      |           |
| neuroinvasive  | 2        | (0.00)   | 44           | (0.02)   | 5                    | 51        |
| West Nile virus disease                                    |          |          |              |          |                      |           |
| neuroinvasive  | 197      | (0.35)   | 724          | (0.27)   | 534                  | 1,455     |
| nonneuroinvasive   | 52       | (0.09)   | 413          | (0.16)   | 255                  | 720       |
| Babesiosis, total  | 106      | (0.24)   | 1,032        | (0.57)   | 962                  | 2,100     |
| confirmed  | 98       | (0.23)   | 903          | (0.50)   | 803                  | 1,804     |
| probable   | 8        | (0.02)   | 129          | (0.07)   | 159                  | 296       |
| Botulism, total  | 33       | (0.06)   | 110          | (0.04)   | 52                   | 195       |
| foodborne  | 2        | (0.00)   | 29           | (0.01)   | 6                    | 37        |
| infant   | 25       | (2.44)   | 75           | (2.54)   | 38                   | 138       |
| Brucellosis  | 56       | (0.10)   | 45           | (0.02)   | 25                   | 126       |
| Campylobacteriosis   | 6,330    | (11.63)  | 28,761       | (11.32)  | 19,465               | 54,556    |
| <i>Chlamydia trachomatis</i> infection <sup>§</sup>        | 206,285  | (364.51) | 742,047      | (280.20) | 578,326              | 1,526,658 |
| Coccidioidomycosis <sup>¶</sup>                            | 1,197    | (4.93)   | 2,648        | (2.61)   | 7,227                | 11,072    |
| Cryptosporidiosis, total                                   | 805      | (1.42)   | 6,559        | (2.48)   | 2,371                | 9,735     |
| confirmed  | 512      | (0.90)   | 3,979        | (1.50)   | 1,654                | 6,145     |
| probable   | 293      | (0.52)   | 2,580        | (0.97)   | 717                  | 3,590     |
| Cyclosporiasis   | 86       | (0.16)   | 430          | (0.18)   | 129                  | 645       |
| Dengue virus infections <sup>†</sup>                       |          |          |              |          |                      |           |
| dengue   | 253      | (0.45)   | 517          | (0.20)   | 159                  | 929       |
| Ehrlichiosis/Anaplasmosis                                  |          |          |              |          |                      |           |
| <i>Anaplasma phagocytophilum</i> infection                 | 51       | (0.09)   | 2,211        | (0.88)   | 1,394                | 3,656     |
| <i>Ehrlichia chaffeensis</i> infection                     | 30       | (0.06)   | 896          | (0.35)   | 362                  | 1,288     |
| undetermined ehrlichiosis/anaplasmosis                     | 2        | (0.00)   | 113          | (0.05)   | 64                   | 179       |
| Giardiasis   | 970      | (2.32)   | 7,478        | (3.55)   | 6,037                | 14,485    |
| Gonorrhea <sup>§</sup>                                     | 44,550   | (78.72)  | 236,759      | (89.40)  | 113,907              | 395,216   |
| <i>Haemophilus influenzae</i> , invasive disease           |          |          |              |          |                      |           |
| all ages, serotypes  | 208      | (0.37)   | 2,646        | (1.00)   | 1,284                | 4,138     |
| age <5 yrs   |          |          |              |          |                      |           |
| serotype b   | 4        | (0.08)   | 20           | (0.14)   | 5                    | 29        |
| nontypeable  | 31       | (0.75)   | 110          | (0.80)   | 34                   | 175       |
| non-b serotype   | 9        | (0.22)   | 84           | (0.61)   | 42                   | 135       |
| unknown serotype   | 25       | (0.60)   | 95           | (0.69)   | 47                   | 167       |
| Hansen's disease   | 13       | (0.02)   | 63           | (0.03)   | 13                   | 89        |
| Hemolytic uremic syndrome postdiarrheal                    | 31       | (0.06)   | 203          | (0.08)   | 40                   | 274       |
| Hepatitis  |          |          |              |          |                      |           |
| A acute  | 219      | (0.39)   | 852          | (0.32)   | 319                  | 1,390     |
| B acute**  | 175      | (0.31)   | 2,387        | (0.91)   | 808                  | 3,370     |
| B chronic  | 321      | (0.72)   | 6,224        | (2.78)   | 7,602                | 14,147    |
| B perinatal infection                                      | 0        | (0.00)   | 33           | (0.01)   | 4                    | 37        |
| C acute <sup>††</sup>                                      | 148      | (0.28)   | 1,616        | (0.65)   | 683                  | 2,447     |
| C past or present <sup>§§</sup>                            | 4,966    | (12.05)  | 50,772       | (24.65)  | 123,846              | 179,584   |
| Human immunodeficiency virus (HIV) diagnoses <sup>¶¶</sup> | 7,716    | (13.60)  | 26,101       | (9.90)   | 0                    | 33,817    |
| Influenza-associated pediatric mortality <sup>***</sup>    | 23       | (0.13)   | 86           | (0.15)   | 21                   | 130       |
| Legionellosis  | 408      | (0.72)   | 4,356        | (1.64)   | 1,315                | 6,079     |
| Leptospirosis  | 2        | (0.00)   | 24           | (0.01)   | 14                   | 40        |
| Listeriosis  | 91       | (0.16)   | 543          | (0.21)   | 134                  | 768       |
| Lyme disease, total  | 660      | (1.17)   | 15,669       | (5.95)   | 21,740               | 38,069    |
| confirmed  | 486      | (0.86)   | 11,571       | (4.39)   | 16,396               | 28,453    |
| probable   | 174      | (0.31)   | 4,098        | (1.55)   | 5,344                | 9,616     |
| Malaria  | 41       | (0.07)   | 1,106        | (0.42)   | 243                  | 1,390     |
| Measles, total   | 52       | (0.09)   | 107          | (0.04)   | 29                   | 188       |
| indigenous   | 50       | (0.09)   | 86           | (0.03)   | 26                   | 162       |
| imported   | 2        | (0.00)   | 21           | (0.01)   | 3                    | 26        |

See table footnotes on next page.

TABLE 7. (Continued) Number of reported cases of notifiable diseases\* and rates per 100,000 population, by ethnicity, excluding U.S. territories — United States, 2015

| Disease   | Hispanic |         | Non-Hispanic |         | Ethnicity not stated | Total  |
|---|----------|---------|--------------|---------|----------------------|--------|
|   | No.      | Rate    | No.          | Rate    |                      |        |
| Meningococcal disease   |          |         |              |         |                      |        |
| all serogroups  | 53       | (0.09)  | 252          | (0.10)  | 67                   | 372    |
| serogroups ACWY   | 13       | (0.02)  | 89           | (0.03)  | 18                   | 120    |
| serogroup B   | 15       | (0.03)  | 75           | (0.03)  | 21                   | 111    |
| unknown serogroup   | 23       | (0.04)  | 72           | (0.03)  | 25                   | 120    |
| Mumps   | 55       | (0.10)  | 615          | (0.23)  | 659                  | 1,329  |
| Pertussis   | 3,596    | (6.35)  | 12,008       | (4.53)  | 5,158                | 20,762 |
| Q fever, total  | 20       | (0.04)  | 87           | (0.03)  | 49                   | 156    |
| acute   | 16       | (0.03)  | 71           | (0.03)  | 35                   | 122    |
| chronic   | 4        | (0.01)  | 16           | (0.01)  | 14                   | 34     |
| Salmonellosis   | 8,104    | (14.32) | 32,710       | (12.35) | 14,294               | 55,108 |
| Shiga toxin-producing <i>Escherichia coli</i>                   | 991      | (1.75)  | 4,466        | (1.69)  | 1,602                | 7,059  |
| Shigellosis   | 5,735    | (10.13) | 12,761       | (4.82)  | 5,094                | 23,590 |
| Spotted fever rickettsiosis, total                              | 98       | (0.17)  | 2,866        | (1.09)  | 1,234                | 4,198  |
| confirmed   | 9        | (0.02)  | 119          | (0.05)  | 71                   | 199    |
| probable  | 89       | (0.16)  | 2,747        | (1.05)  | 1,163                | 3,999  |
| Streptococcal toxic shock syndrome                              | 24       | (0.10)  | 238          | (0.13)  | 73                   | 335    |
| <i>Streptococcus pneumoniae</i> , invasive pneumococcal disease |          |         |              |         |                      |        |
| all ages  | 1,009    | (2.81)  | 9,323        | (4.72)  | 5,831                | 16,163 |
| age <5 yrs  | 158      | (4.62)  | 640          | (5.55)  | 379                  | 1,177  |
| Syphilis, total, all stages <sup>§,††</sup>                     | 18,404   | (32.52) | 50,183       | (18.95) | 6,115                | 74,702 |
| congenital <sup>§</sup>   | 140      | (13.67) | 319          | (10.80) | 28                   | 487    |
| primary and secondary <sup>§</sup>                              | 5,012    | (8.86)  | 17,169       | (6.48)  | 1,691                | 23,872 |
| Tetanus   | 2        | (0.00)  | 16           | (0.01)  | 11                   | 29     |
| Toxic shock syndrome (other than streptococcal)                 | 2        | (0.01)  | 34           | (0.02)  | 28                   | 64     |
| Tuberculosis <sup>§§§</sup>                                     | 2,694    | (4.76)  | 6,849        | (2.59)  | 14                   | 9,557  |
| Tularemia   | 17       | (0.03)  | 219          | (0.08)  | 78                   | 314    |
| Typhoid fever   | 36       | (0.06)  | 285          | (0.11)  | 46                   | 367    |
| Vancomycin-intermediate <i>Staphylococcus aureus</i>            | 9        | (0.02)  | 104          | (0.05)  | 70                   | 183    |
| Vibriosis   | 152      | (0.27)  | 891          | (0.34)  | 280                  | 1,323  |

\* Conditions for which <25 cases were reported for the year are not included in the table. No cases of anthrax; Crimean-Congo viral hemorrhagic fever; diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; Ebola viral hemorrhagic fever; Guanarito viral hemorrhagic fever; Junin viral hemorrhagic fever; Lujo viral hemorrhagic fever; Machupo viral hemorrhagic fever; Marburg viral hemorrhagic fever; poliomyelitis, paralytic; poliovirus infection, nonparalytic; Sabia viral hemorrhagic fever; severe acute respiratory syndrome-associated coronavirus disease; smallpox; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; and yellow fever were reported in the United States during 2015.

† Totals reported to the Division of Vector-Borne Diseases, National Center for Emerging and Zoonotic Infectious Diseases (ArboNET Surveillance), as of July 1, 2016.

§ Totals reported to the Division of STD Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (NCHHSTP), as of June 8, 2016.

¶ Reportable in <25 states.

\*\* Total number of cases reported from 42 states. Reports might not reflect unique cases.

†† Total number of cases reported from 42 states.

§§ Total number of cases reported from 39 states. Reports might not reflect unique cases.

¶¶ Total number of HIV diagnoses reported to the Division of HIV/AIDS Prevention, NCHHSTP through December 31, 2016.

\*\*\* Totals reported to the Influenza Division, National Center for Immunization and Respiratory Diseases, as of June 30, 2016.

††† Includes the following categories: primary, secondary, early latent, late latent, late with clinical manifestations, and congenital syphilis.

§§§ Totals reported to the Division of Tuberculosis Elimination, NCHHSTP, as of June 8, 2016.

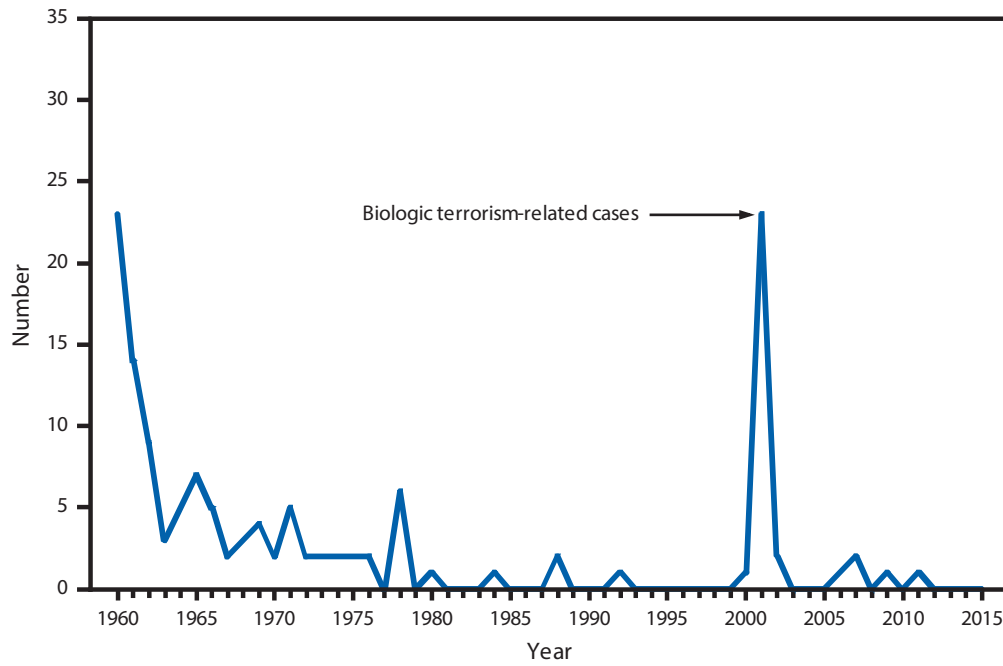
## **PART 2**

### **Graphs and Maps for Selected Notifiable Diseases in the United States, 2015**

#### **Abbreviations and Symbols Used in Graphs and Maps**

|             |   |
|-------------|---|
| <b>U</b>    | Data not available.   |
| <b>N</b>    | Not reportable (i.e., report of disease not required in that jurisdiction). |
| <b>DC</b>   | District of Columbia  |
| <b>NYC</b>  | New York City   |
| <b>AS</b>   | American Samoa  |
| <b>CNMI</b> | Commonwealth of Northern Mariana Islands                                    |
| <b>GU</b>   | Guam  |
| <b>PR</b>   | Puerto Rico   |
| <b>VI</b>   | U.S. Virgin Islands   |

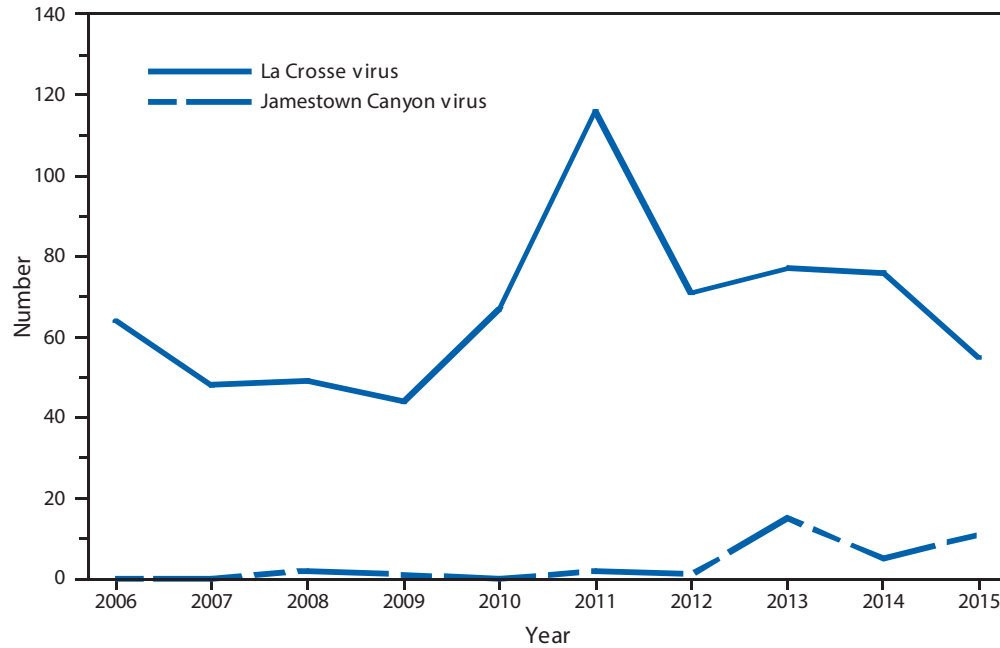
**ANTHRAX. Number of reported cases, by year — United States, 1960–2015\***



\* One epizootic-associated cutaneous case was reported in 2001 from Texas.

In 2015, there were no reported human anthrax cases from zoonotic or other causes.

**ARBOVIRAL DISEASES. Number\* of reported cases of selected neuroinvasive disease, by year — United States, 2006–2015**

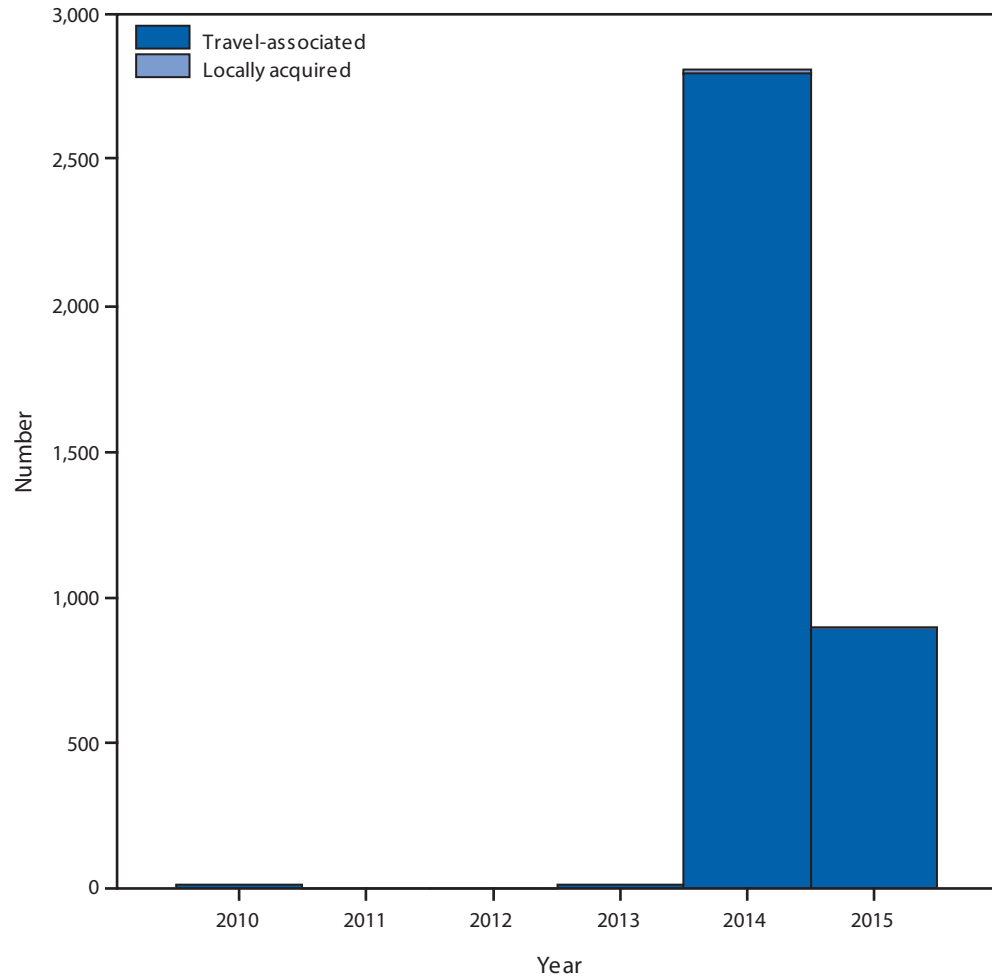


\* Data from the Division of Vector-Borne Diseases, National Center for Emerging and Zoonotic Infectious Diseases (ArboNET Surveillance). Only reported cases of neuroinvasive disease are shown.

During 2006–2015, an average of 66 La Crosse virus neuroinvasive disease cases were reported each year. La Crosse virus was the most common cause of neuroinvasive arboviral disease among children. During that same time period, Jamestown Canyon virus caused an average of three neuroinvasive disease cases per year. Starting in 2013, following the implementation of routine antibody testing for Jamestown Canyon virus disease, the number of reported cases has increased.



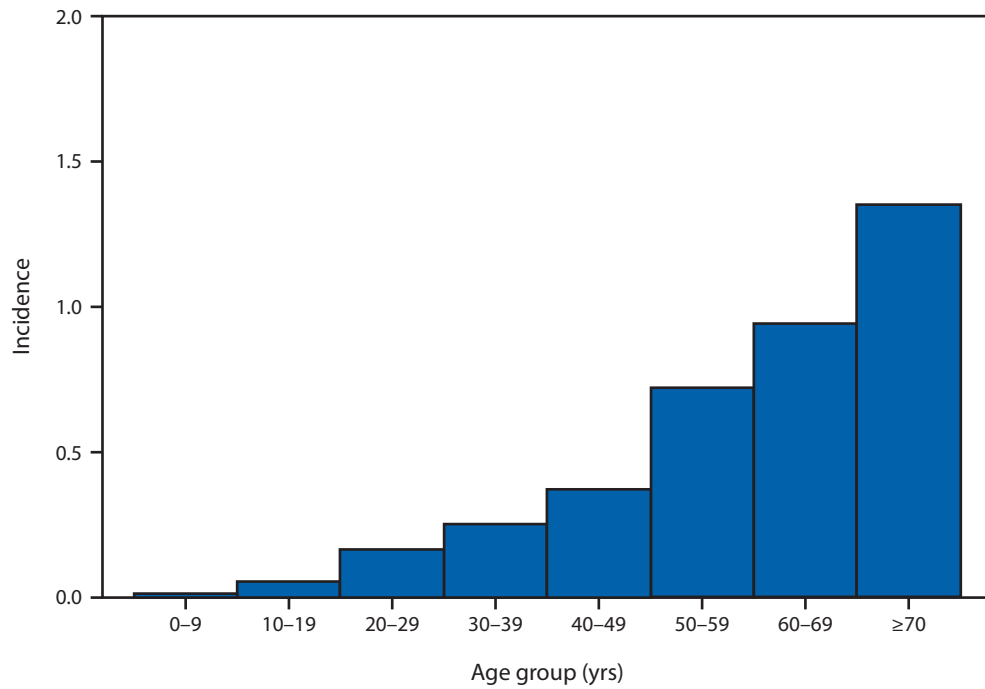
**ARBOVIRAL DISEASES, CHIKUNGUNYA VIRUS. Number of reported cases, by year,\* excluding U.S. territories — United States, 2010–2015**



\* Chikungunya virus did not become a nationally notifiable condition until 2015.

In 2015, a total of 896 chikungunya virus disease cases were reported. One locally acquired case was reported from Texas. All other cases occurred in travelers returning from affected areas.

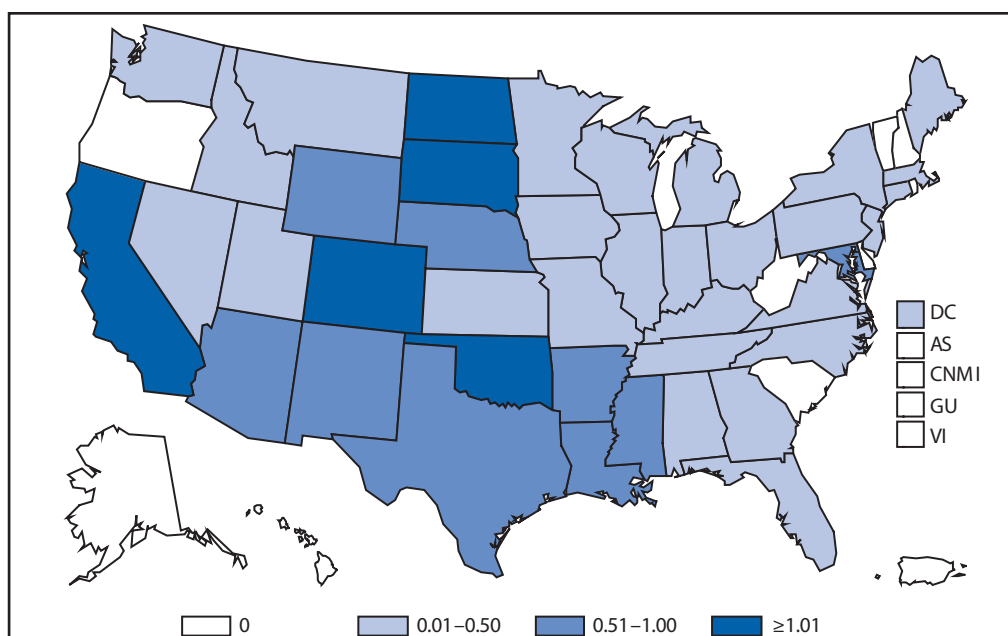
**ARBOVIRAL DISEASES, WEST NILE VIRUS. Incidence\* of reported cases of neuroinvasive disease, by age group — United States, 2015**



\* Per 100,000 population. Data from the Division of Vector-Borne Diseases, National Center for Emerging and Zoonotic Infectious Diseases (ArboNET Surveillance).

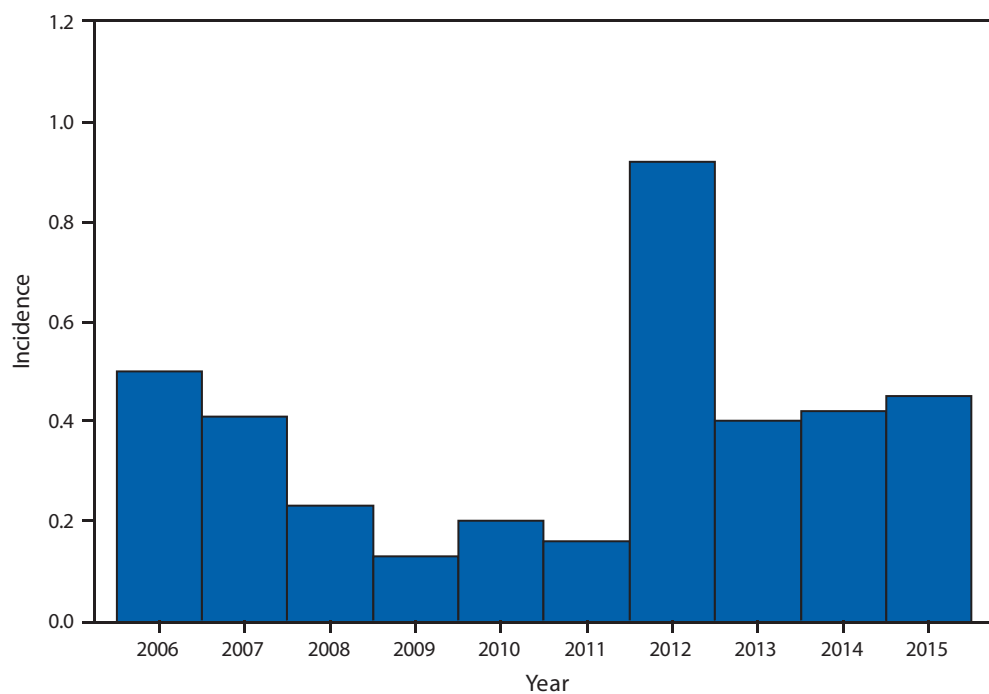
In 2015, West Nile virus neuroinvasive disease incidence increased with increasing age, from 0.04 per 100,000 among persons aged <18 years to 1.36 among those aged ≥70 years.

**ARBOVIRAL DISEASES, WEST NILE VIRUS. Incidence\* of reported cases of neuroinvasive disease — United States and U.S. territories, 2015**



\* Per 100,000 population. Data from the Division of Vector-Borne Diseases, National Center for Emerging and Zoonotic Infectious Diseases (ArboNET Surveillance).

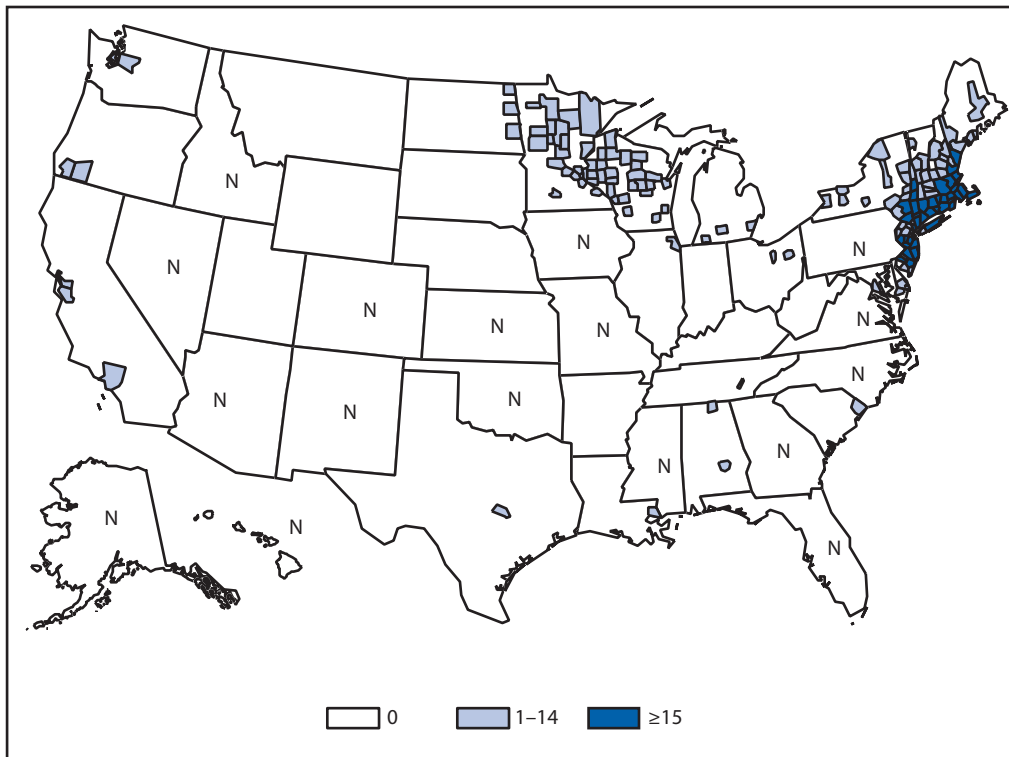
In 2015, the states with the highest reported incidence of West Nile virus (WNV) neuroinvasive disease were California (1.49 per 100,000), North Dakota (1.32), South Dakota (1.28), Oklahoma (1.25) and Colorado (1.04). Over half (61%) of all WNV neuroinvasive disease cases were reported from California (585 cases) and Texas (196).

**ARBOVIRAL DISEASES, WEST NILE VIRUS. Incidence\* of reported cases of neuroinvasive disease, by year — United States, 2006–2015**

\* Per 100,000 population. Data from the Division of Vector-Borne Diseases, National Center for Emerging and Zoonotic Infectious Diseases (ArboNET Surveillance).

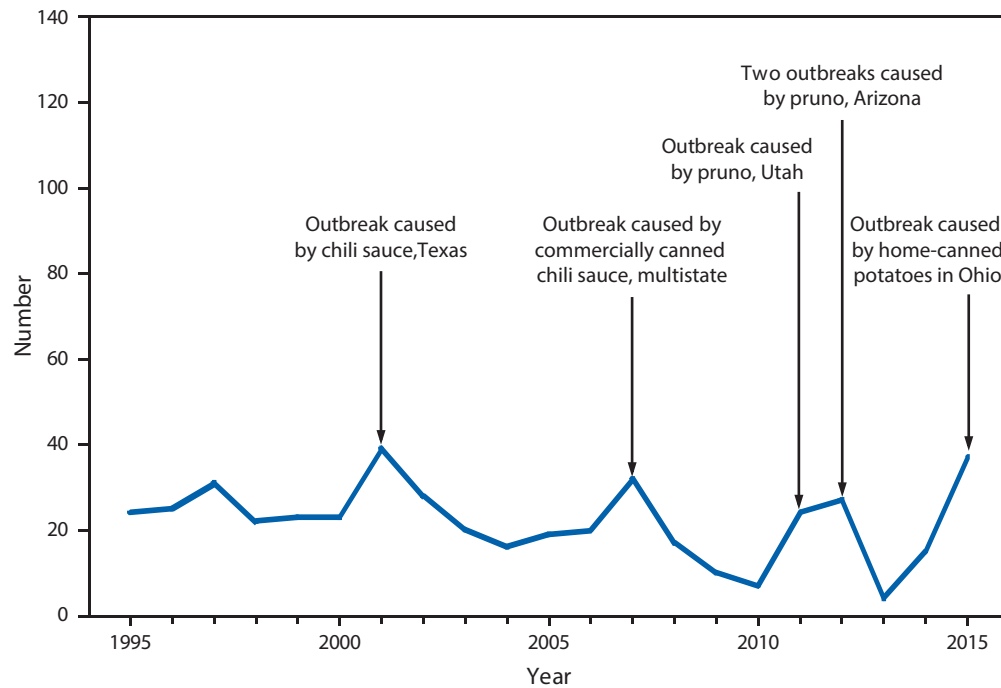
Nationally, West Nile virus neuroinvasive disease incidence in 2015 was similar to the median incidence during 2006–2014.

## BABESIOSIS. Number of reported cases, by county — United States, 2015



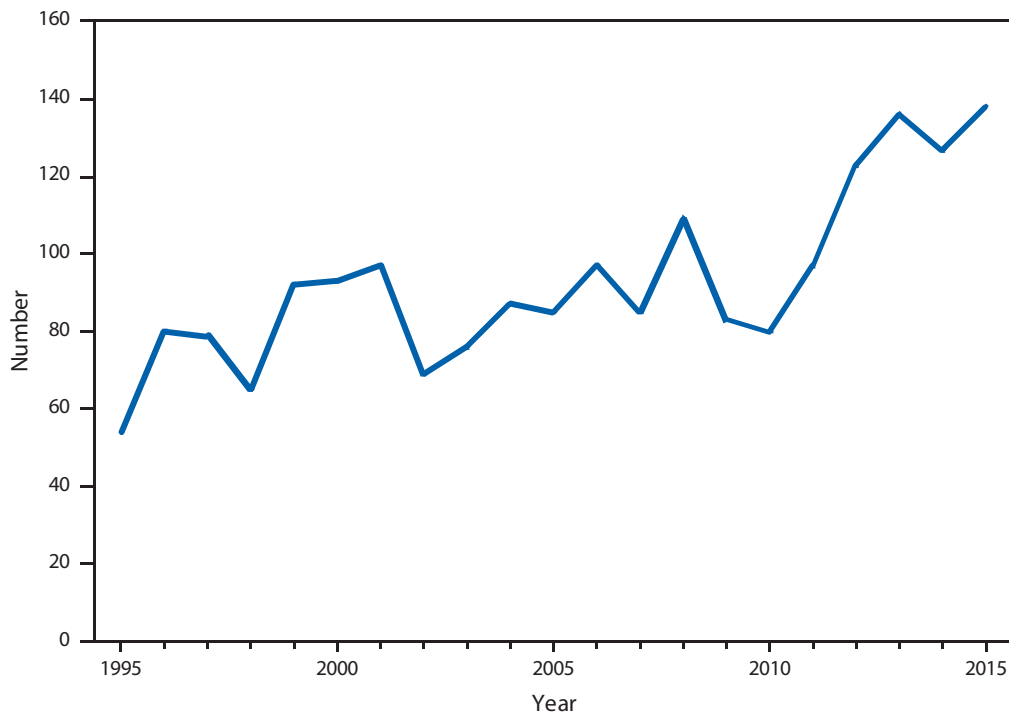
Abbreviation: N = not reportable.

In 2015, babesiosis was reportable in 33 states. Twenty-four of the 33 states notified CDC of at least one case of babesiosis; however, 93% of the reported cases ( $n = 1,925/2,074$ ) occurred in residents of seven of the states in which tickborne transmission of *Babesia microti* has been well documented (i.e., in Connecticut, Massachusetts, New Jersey, New York, and Rhode Island in the Northeast; and Minnesota and Wisconsin in the upper Midwest).

**BOTULISM, FOODBORNE. Number of reported cases, by year — United States, 1995–2015**

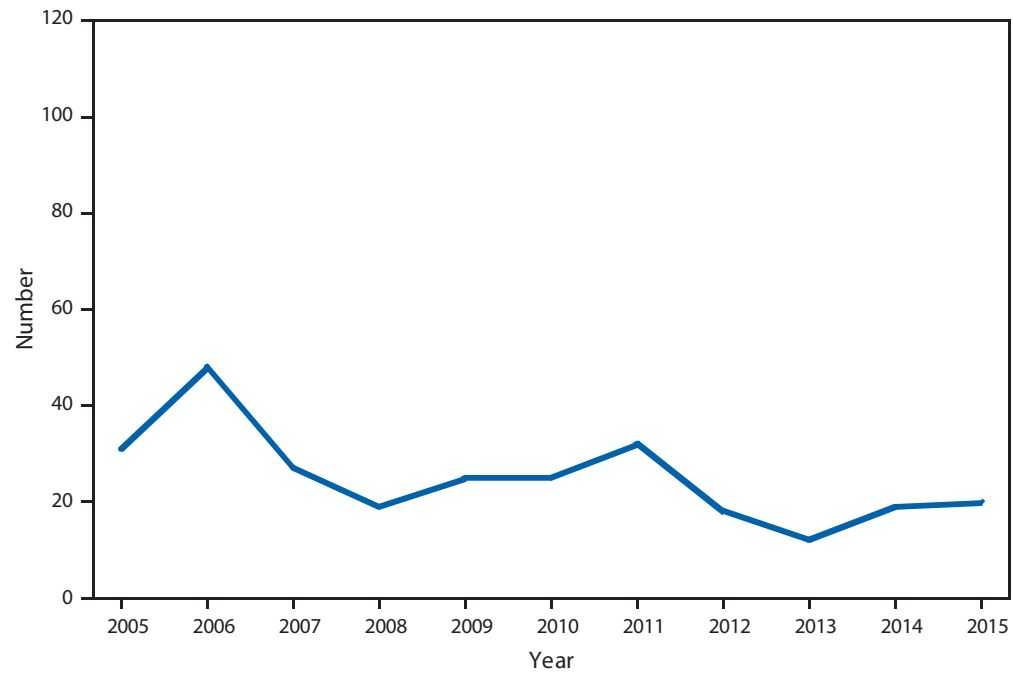
In 2015, most of the foodborne botulism cases caused by ingestion of food containing preformed toxin occurred in an outbreak associated with home-canned potatoes in a potato salad consumed at a church potluck. Pruno, which caused the 2011 and 2012 outbreaks in Utah and Arizona, respectively, is an illicit alcoholic beverage brewed by prison inmates.



**BOTULISM, INFANT. Number of reported cases, by year — United States, 1995–2015**

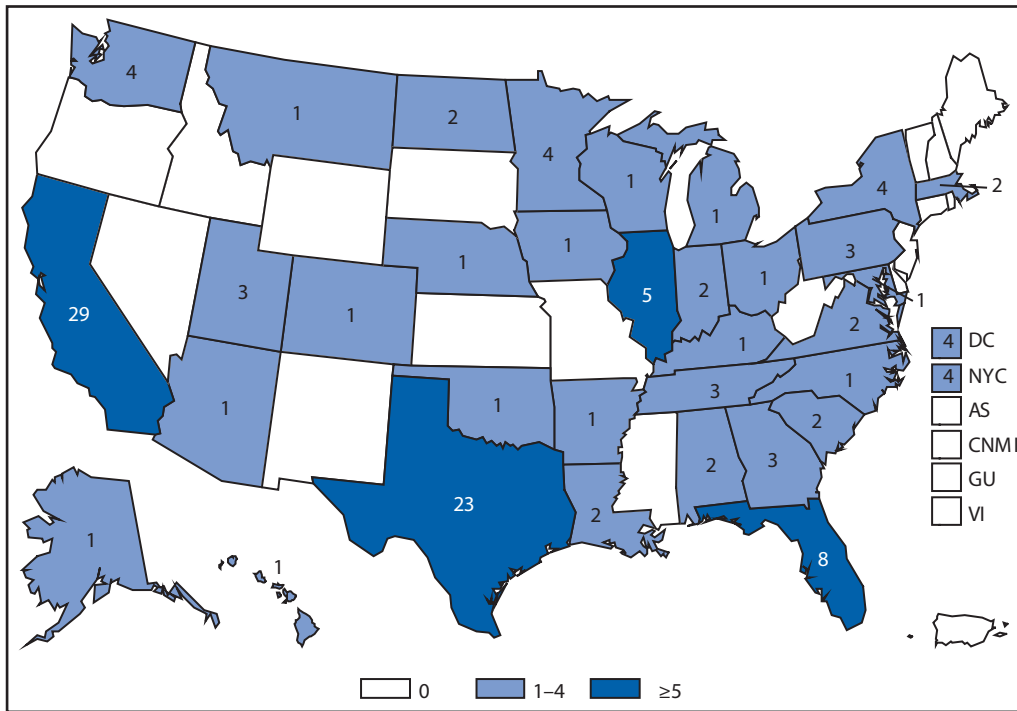
Infant botulism remains the most common type of botulism in the United States and accounted for most botulism cases in 2015. Reported cases have increased overall since 2010.

**BOTULISM, OTHER. Number of reported cases, by year — United States, 2005–2015**

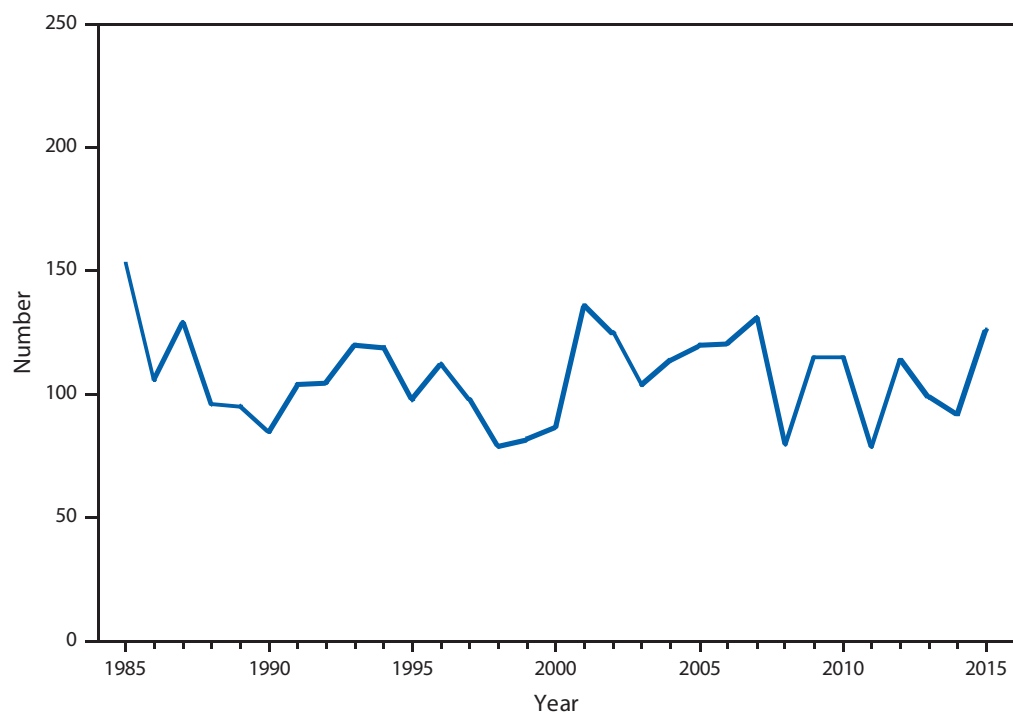


Annual number of cases of wound botulism and of botulism in “unspecified” transmission categories has remained generally unchanged since 2007.

**BRUCELLOSIS. Number of reported cases — United States and U.S. territories, 2015**

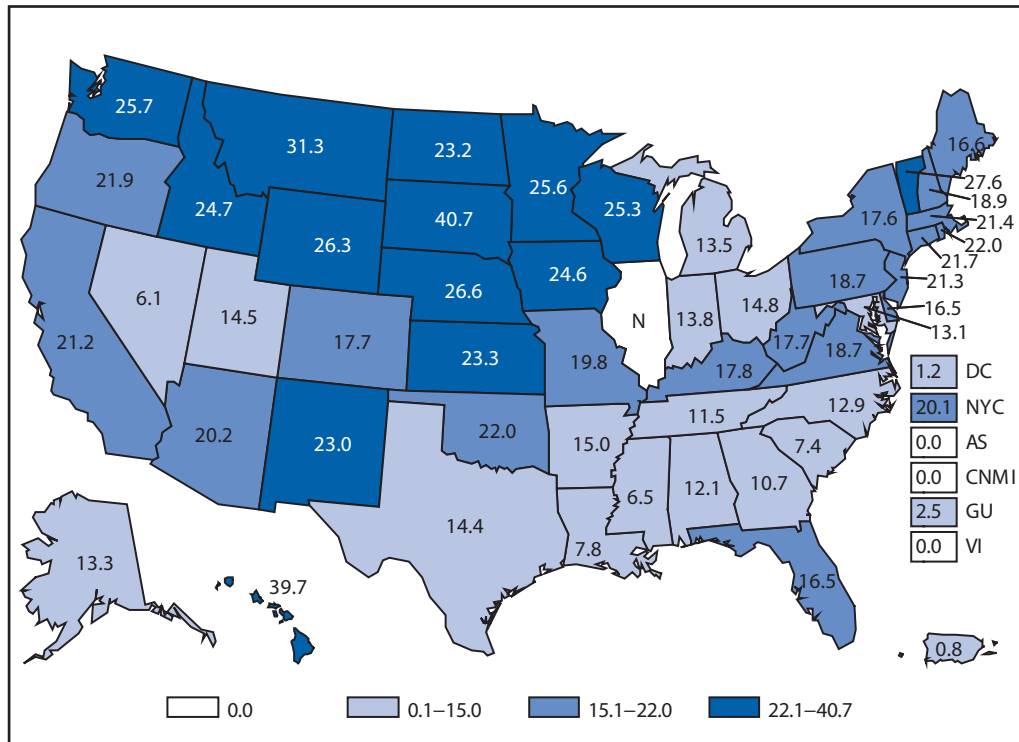


Cases in Illinois, Florida, Texas, and California combined represent over half of the brucellosis cases reported to NNDSS during 2015 (65/126; 52%).

**BRUCELLOSIS. Number of reported cases, by year — United States, 1985–2015**

The number of brucellosis cases reported to NNDSS has fluctuated since 1985, showing no particular trend.

**CAMPYLOBACTERIOSIS. Incidence\* of reported cases — United States and U.S. territories, 2015**

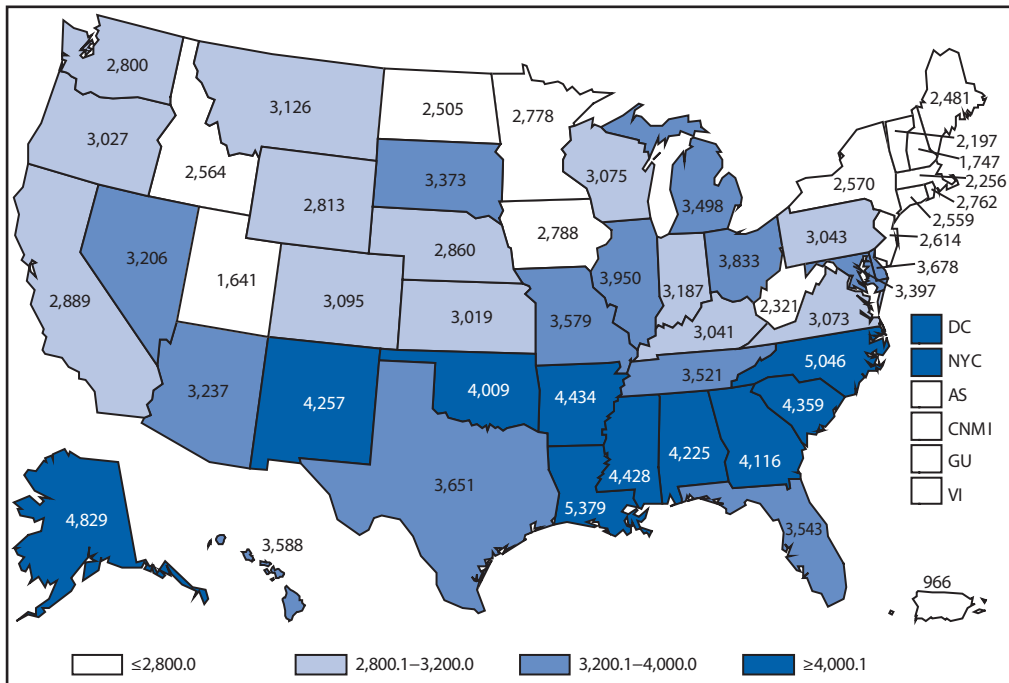


**Abbreviation:** N = not reportable.

\* Per 100,000 population.

Incidence of confirmed and probable campylobacteriosis was highest in northern and western states.

**CHLAMYDIA. Incidence\* of reported cases among women aged 15–24 years — United States and U.S. territories, 2015**

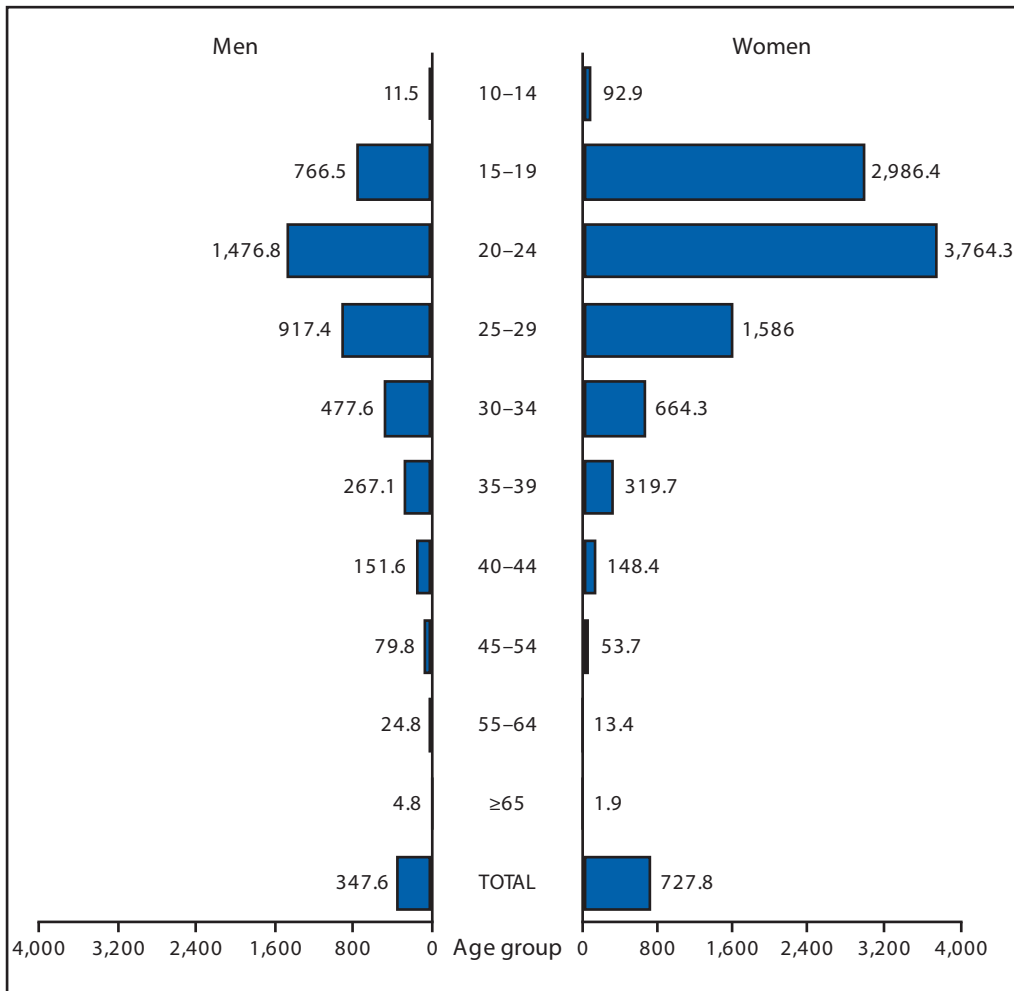


\* Per 100,000 population. Rate of reported cases for DC (5,974), New York City (4,296), Guam (466), and Virgin Islands (1,009). Rates for AS and CNMI are not available.

The overall rate of reported cases of chlamydia among women aged 15–24 years, which is the population targeted for chlamydia screening, was 3,377.6 per 100,000 females (excluding U.S. territories). There was variation by state, with the Southern region reporting the highest case rates.



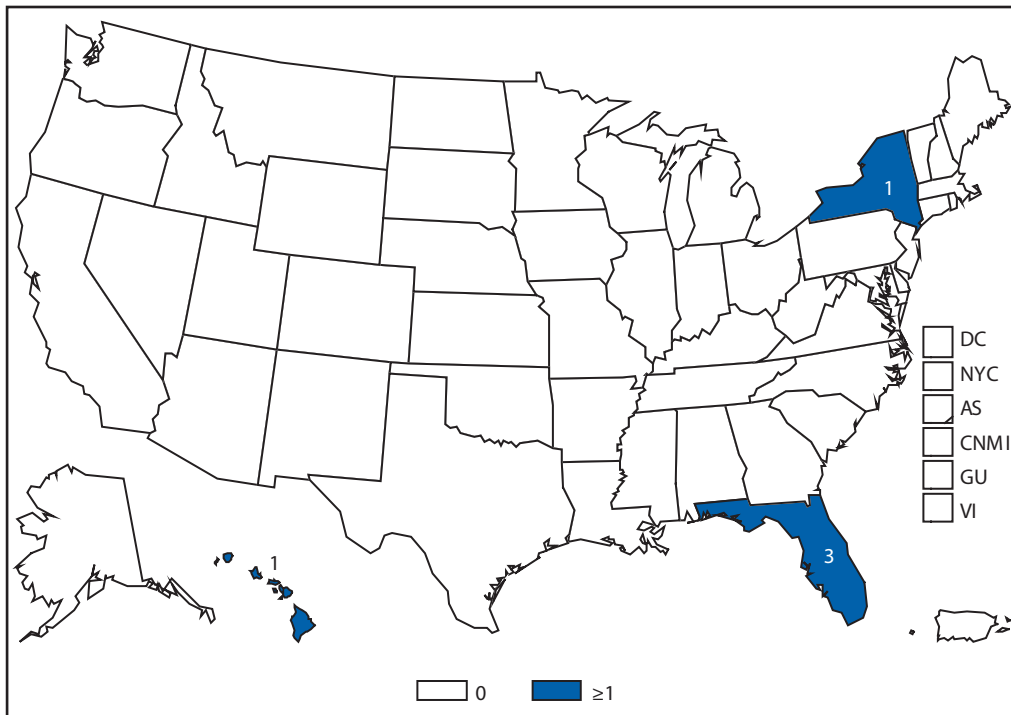
## CHLAMYDIA. Incidence\* of reported cases, by age group and sex — United States, 2015



\* Per 100,000 population.

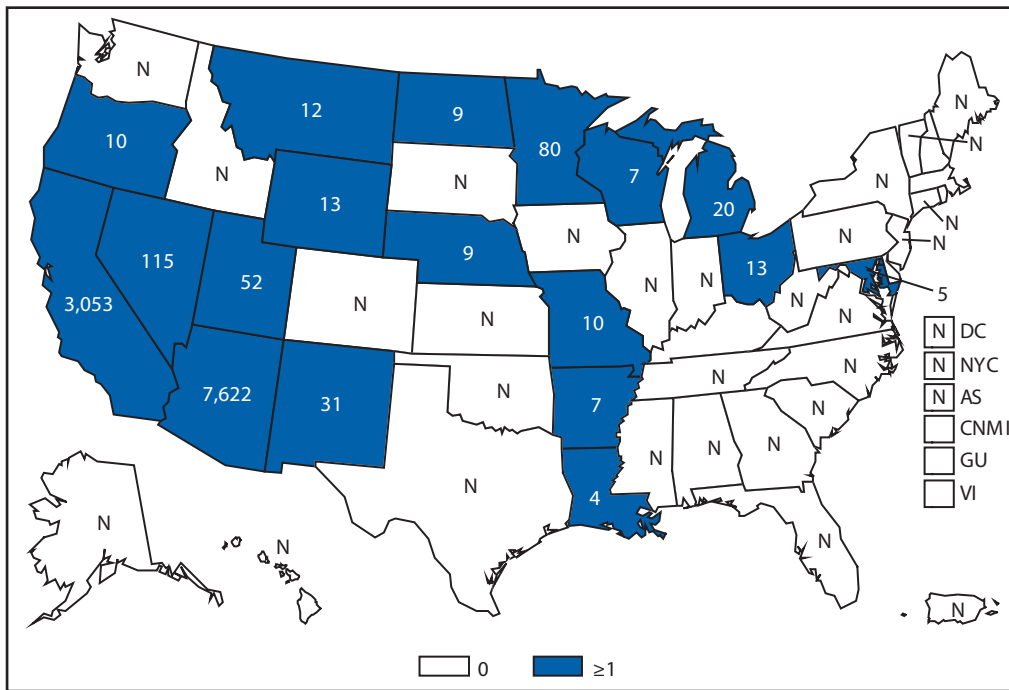
The highest age-specific rates of reported cases of chlamydia among women in 2015 were in those aged 20-24 years (3,764.3 cases per 100,000 females) followed by those aged 15-19 years (2,986.4 cases per 100,000 females). The age-specific rates of reported cases of chlamydia among men, despite being consistently about half the rate of women, were similarly highest in men aged 20-24 years (1,476.8 cases per 100,000 males) followed by men aged 15-19 years (766.5 cases per 100,000 males).

**CHOLERA. Number of reported cases — United States and U.S. territories, 2015**



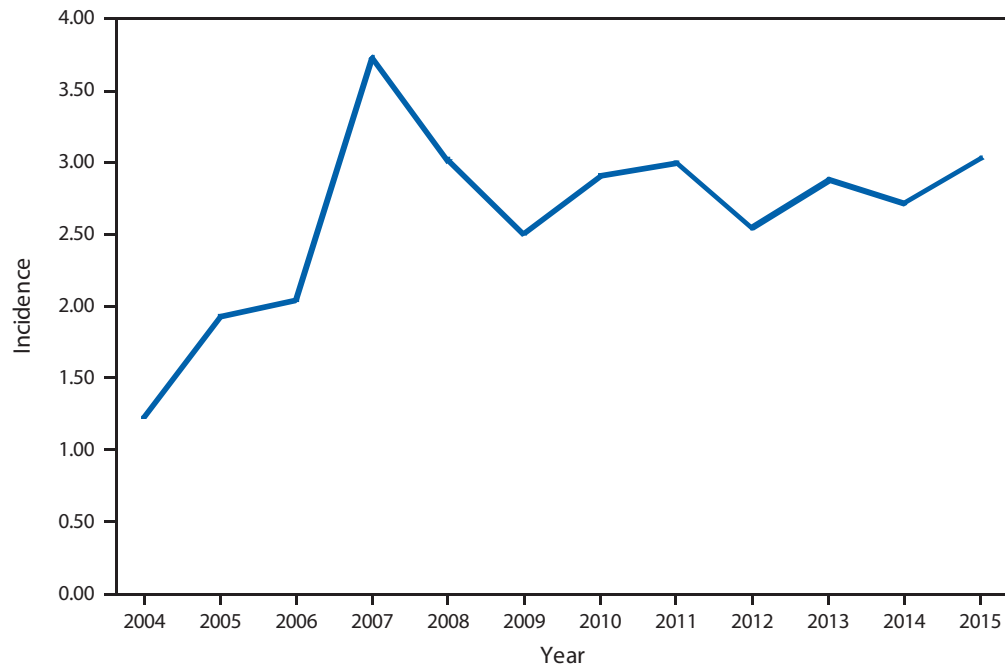
In 2015, five cases of cholera were reported from three states. Four cases were travel-associated, and one case was associated with the consumption of imported seafood.

## COCCIDIOIDOMYCOSIS. Number of reported cases — United States and U.S. territories, 2015



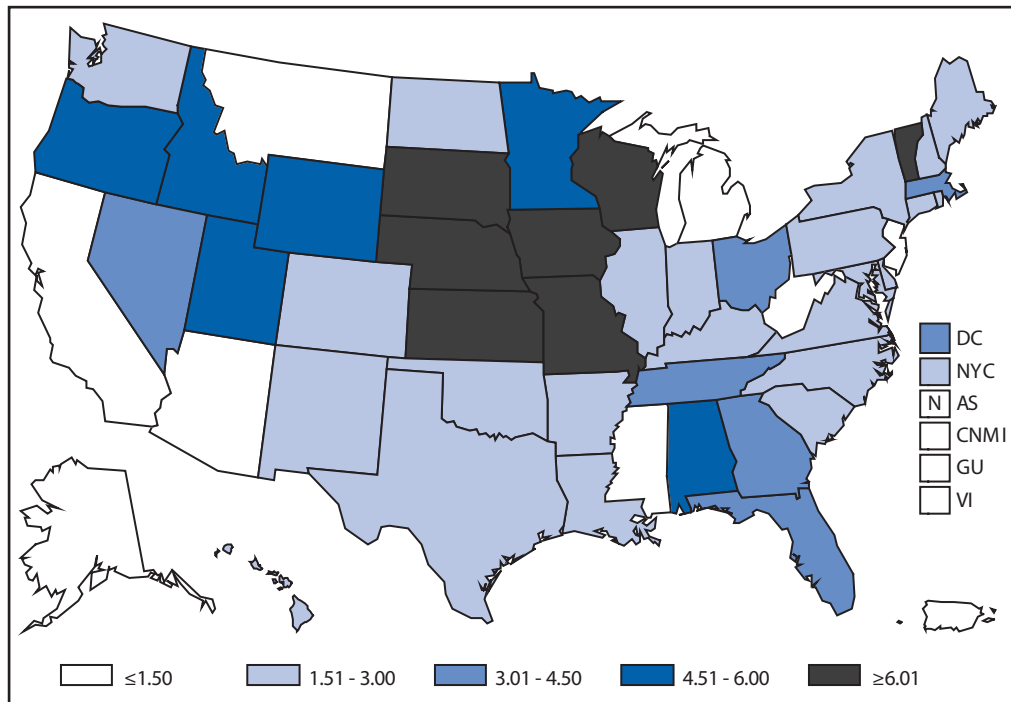
**Abbreviation:** N = not reportable.

In the United States, coccidioidomycosis is endemic in the Southwestern states. The fungus that causes coccidioidomycosis has also been found in south-central Washington. Cases reported from states outside the endemic area usually occur among travelers returning from areas in which the disease is endemic.

**CRYPTOSPORIDIOSIS. Incidence\* of reported cases, by year — United States, 2004–2015**

\* Per 100,000 population.

The incidence of reported cryptosporidiosis after 2007 remains elevated (>2.5 cases per 100,000 population) relative to the baseline observed before 2005 (<1.5). Whether this increase reflects a change in the true incidence of cryptosporidiosis or changing diagnosis, testing, or reporting patterns is unclear.

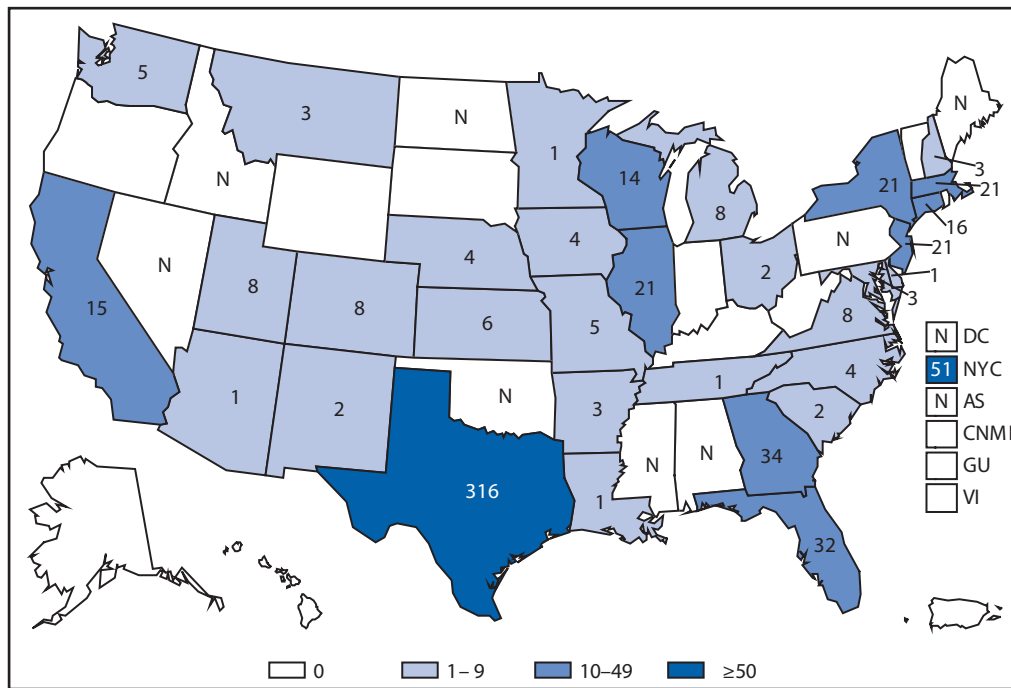
**CRYPTOSPORIDIOSIS. Incidence\* of reported cases — United States and U.S. territories, 2015**


**Abbreviation:** N = not reportable.

\* Per 100,000 population.

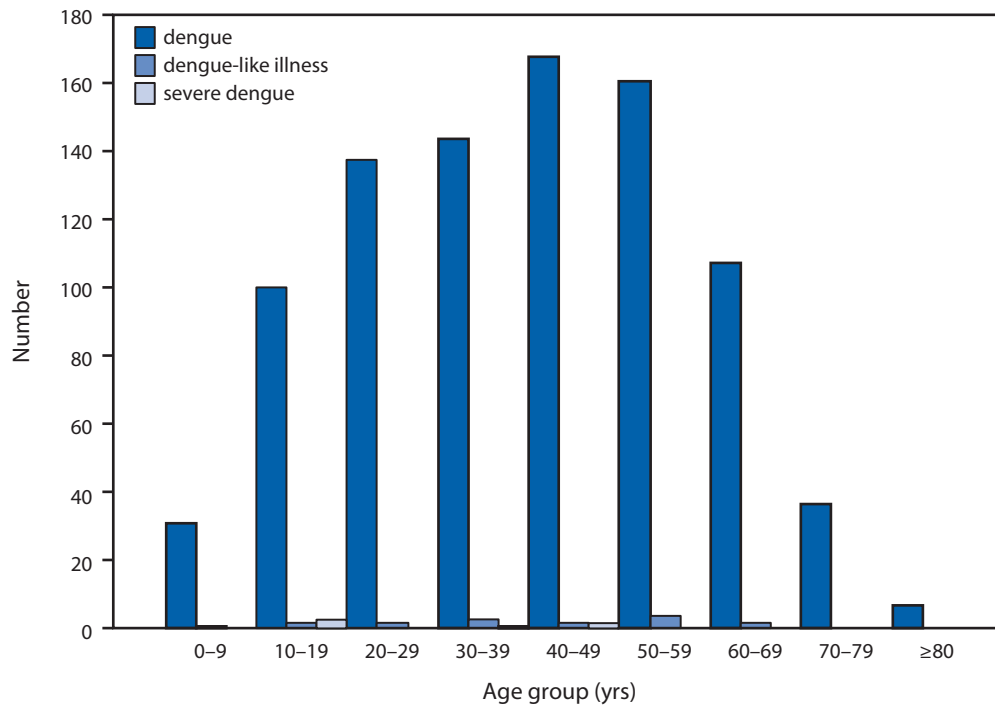
Cryptosporidiosis is widespread geographically in the United States. Although incidence appears to be consistently higher in certain states, differences in incidence among states might reflect differences in risk factors; the number of cases associated with outbreaks; or the capacity to detect, investigate, and report cases.

## CYCLOSPORIASIS. Number of reported cases — United States and U.S. territories, 2015



Abbreviation: N = not reportable.

In 2015, a total of 644 cyclosporiasis cases (599 confirmed and 45 probable) were reported from 32 states and New York City. This number differs slightly from the denominator of 645 cases reported in the tables. One erroneous report was not retracted before the deadline for finalizing the data. Of the 644 cases, 394 (61%) were domestically acquired (i.e., they occurred in persons with no history of travel outside the United States and Canada during the 14-day incubation period), at least 357 (91%) of which occurred in persons with illness onset during May–August. A vehicle of infection (fresh cilantro from Mexico) was identified for 61 restaurant-associated cases in a multistate outbreak involving Georgia, Texas, and Wisconsin. An additional 29 probable cases were associated with this multistate outbreak but were not reported to NNDSS or included here.

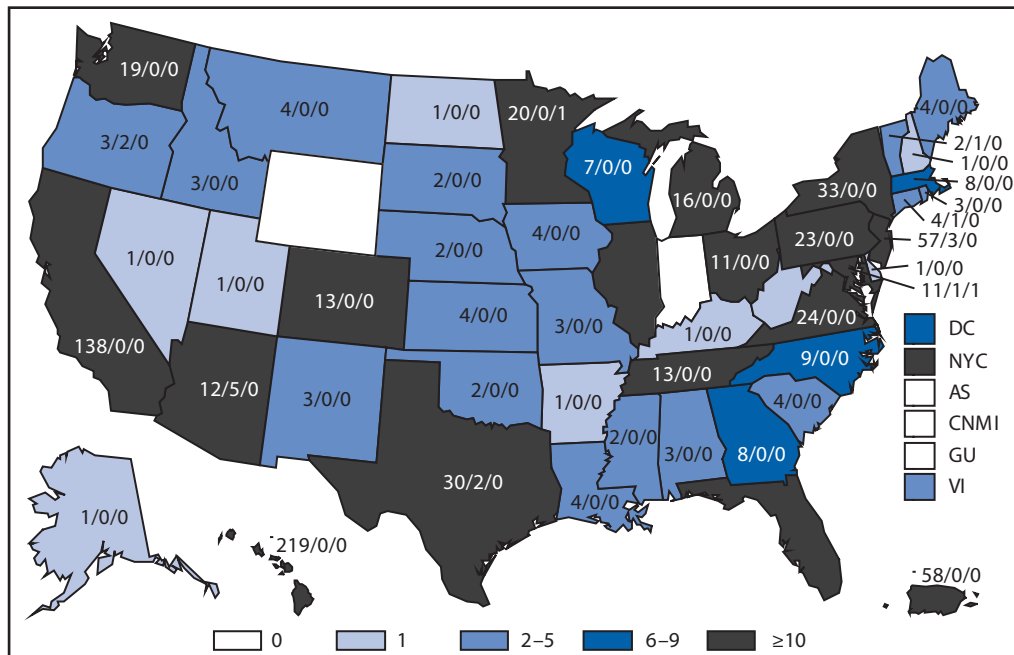
**DENGUE. Number\* of reported cases, by age group — United States, 2015**

\* Data from the Division of Vector-Borne Diseases, National Center for Emerging and Zoonotic Infectious Diseases (ArboNET Surveillance). Two age-unknown cases of dengue. No age-unknown cases of dengue-like illness and severe dengue.

In 2015, a total of 929 dengue cases were reported in all age groups, but most (77%) cases were among adults aged 18–64 years. Sixteen cases of dengue-like illness were reported, 14 (88%) of which were in adults aged 18–64 years. Six cases of severe dengue were reported in patients aged 12–48 years.



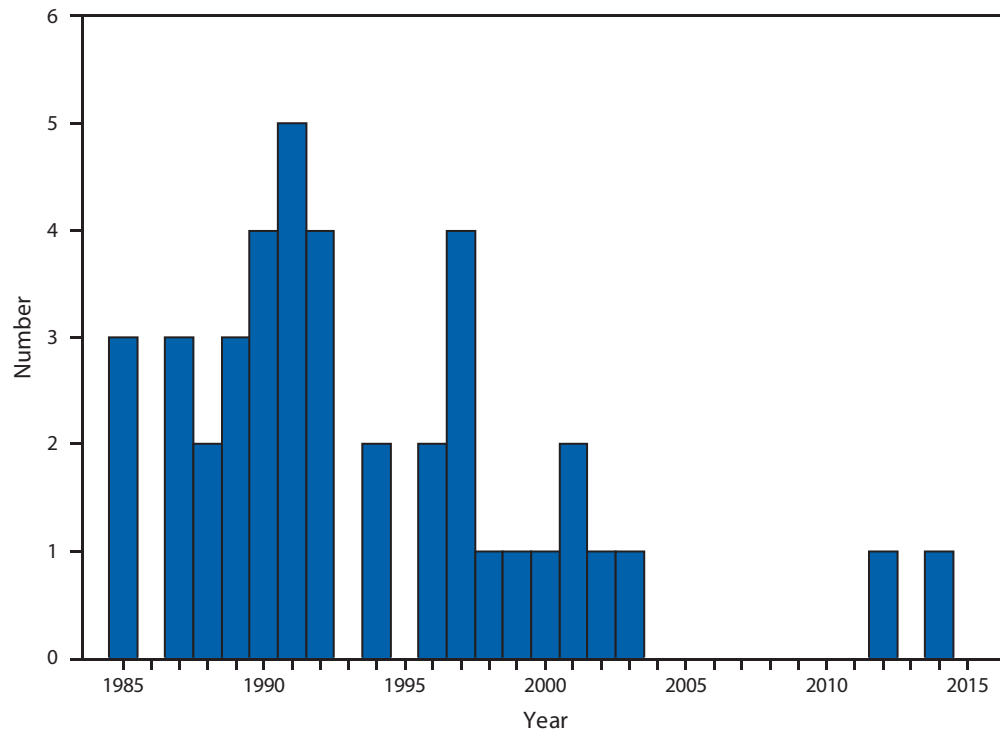
## DENGUE. Number\* of reported cases, by location of residence — United States and U.S. territories, 2015



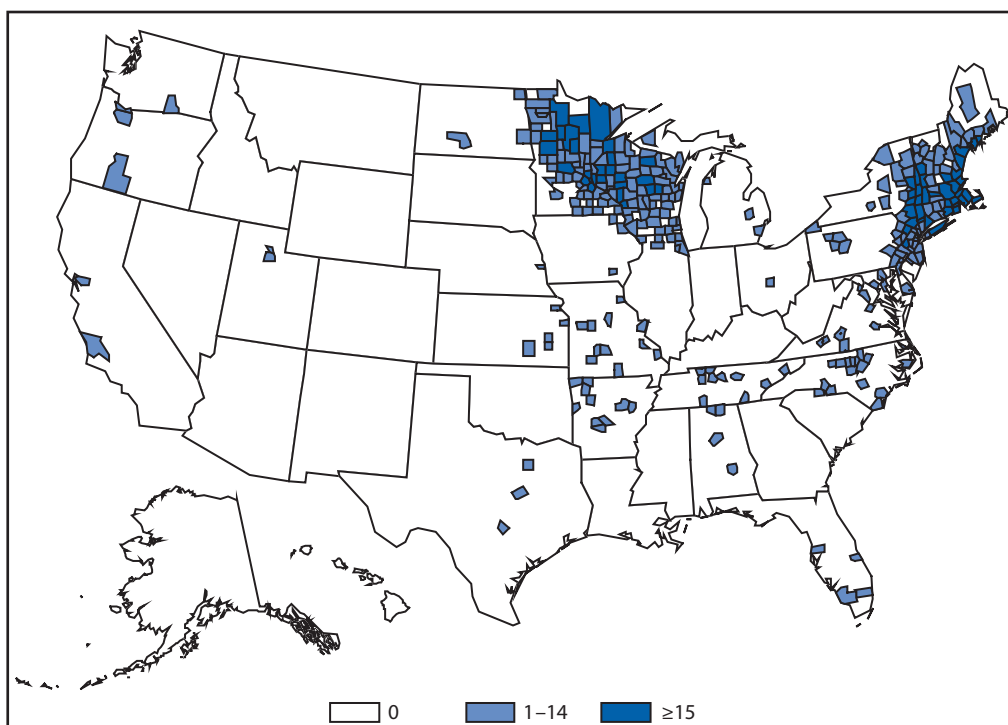
\* Number of dengue/dengue-like illness/severe dengue cases. Data from the Division of Vector-Borne Diseases, National Center for Emerging and Zoonotic Infectious Diseases (ArboNET Surveillance). The reported cases for DC (8/2/1), NYC (74/1/1), and VI (3/0/0).

In 2015, a total of 951 laboratory-positive dengue cases were reported from 48 of the 50 states, two of the five territories, and the District of Columbia. Sixteen cases of dengue-like illness and six cases of severe dengue were reported, all in travelers and none in residents of U.S. territories. The states that reported the most travel-associated cases of dengue, dengue-like illness, or severe dengue were California (138), Florida (81), New York City (76), New Jersey (60), and Texas (32). States that reported locally acquired dengue cases were Hawaii (200) and Florida (1).

**DIPHTHERIA. Number of reported cases, by year — United States, 1985–2015**

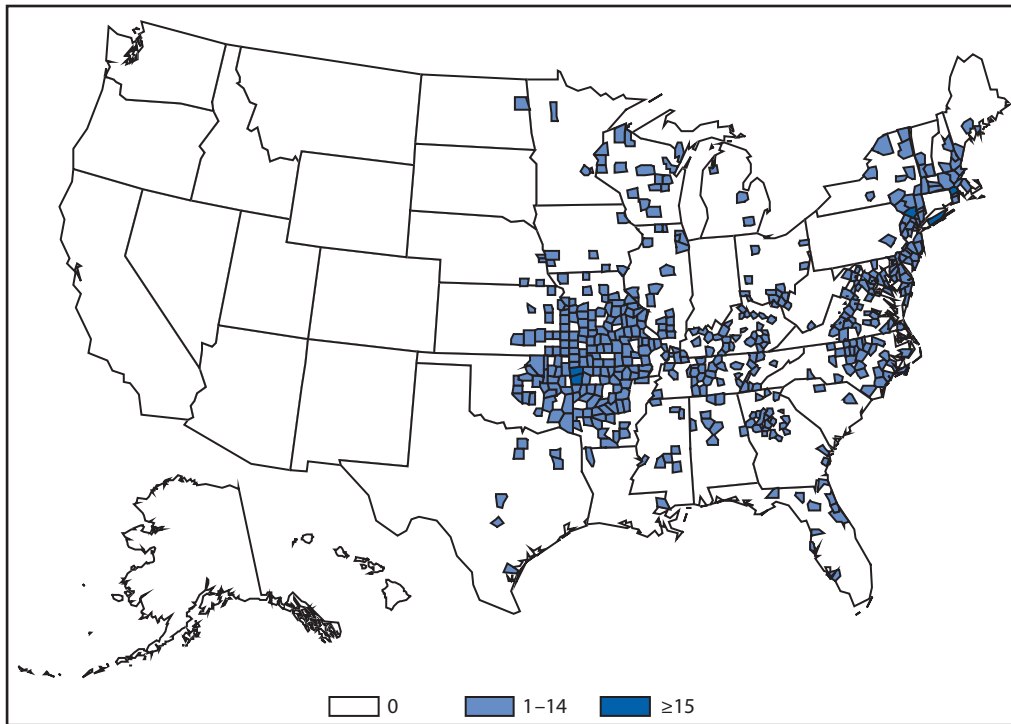


Diphtheria is rare in the United States. No cases were reported during 2015.

**EHRlichiosis and Anaplasmosis, *Anaplasma phagocytophilum*. Number of reported cases, by county — United States, 2015**

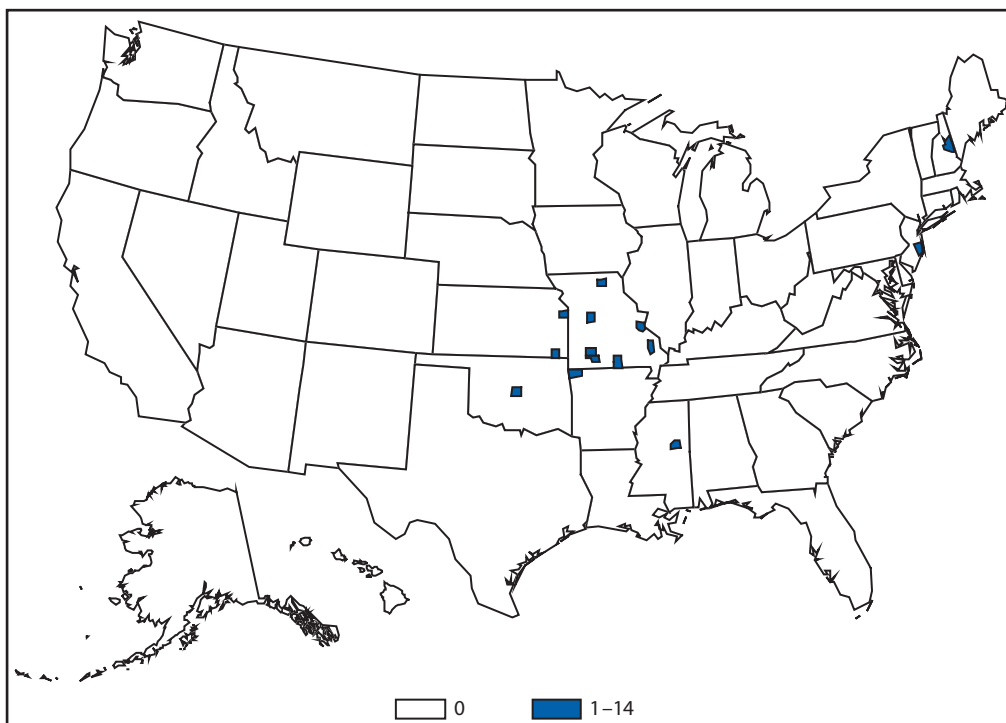
*Anaplasma phagocytophilum* is primarily transmitted by *Ixodes scapularis* in the eastern United States and *Ixodes pacificus* in the west. Minnesota, Wisconsin, New York, and Massachusetts continue to report the highest number of anaplasmosis cases.

**EHRlichiosis AND ANAPLASMOSIS, *EHRlichia CHAFFEENSIS*. Number of reported cases, by county — United States, 2015**

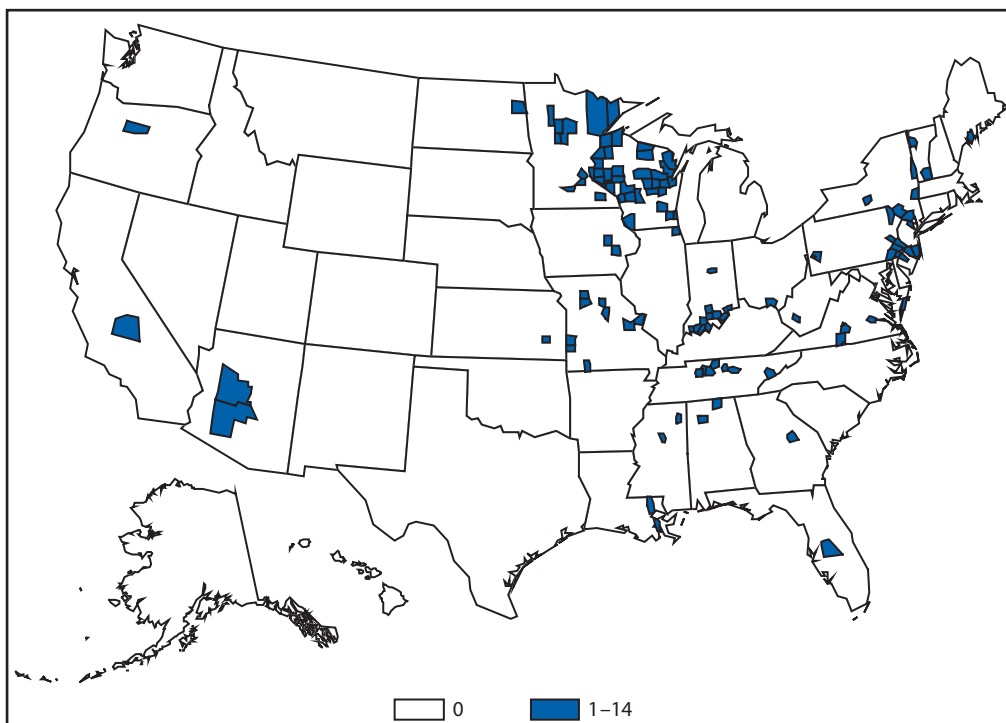


*Ehrlichia chaffeensis* is the most common cause of human ehrlichiosis in the United States. Cases are primarily distributed within the central United States within the known distribution of the principle vector, *Amblyomma americanum*.

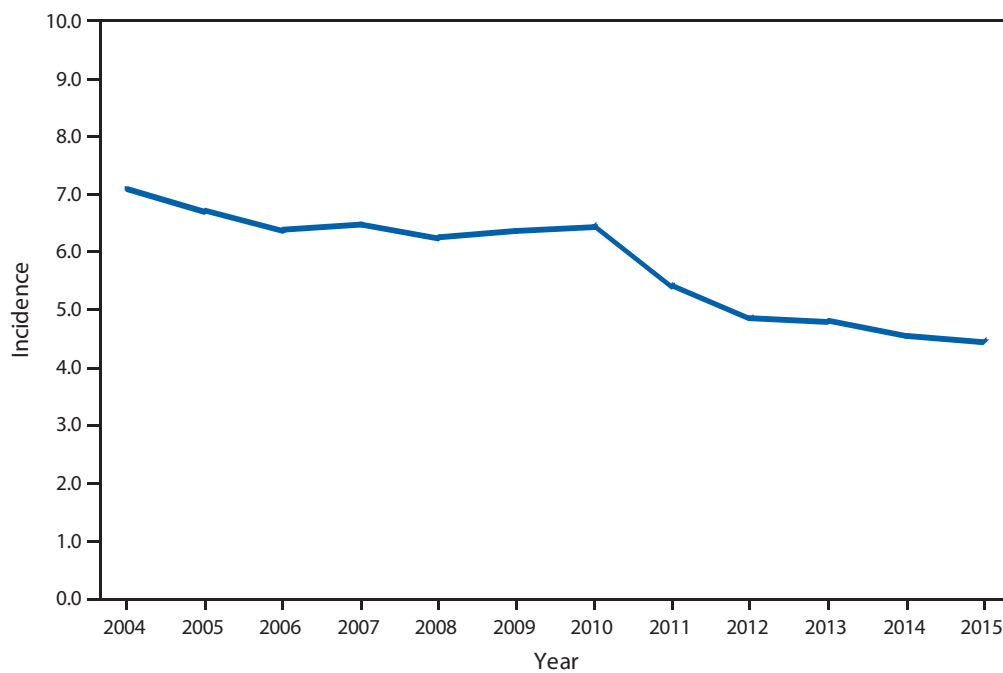
**EHRlichiosis AND ANAPLASMOSIS, *EHRlichia EWINGII*. Number of reported cases, by county — United States, 2015**



*Ehrlichia ewingii* is a less commonly reported cause of human ehrlichiosis. Cases of *Ehrlichia ewingii* are primarily reported from the Midwest and have recently expanded to include regions such as the Northeast.

**EHRlichiosis AND ANAPLASMOSIS, UNDERTERMINED. Number of reported cases, by county — United States, 2015**

The reporting category of undetermined ehrlichiosis/anaplasmosis is used in situations where multiple *Ehrlichia* or *Anaplasma* species may be present yet laboratory evidence is unable to provide species differentiation. Cases in this category are reported throughout the United States.

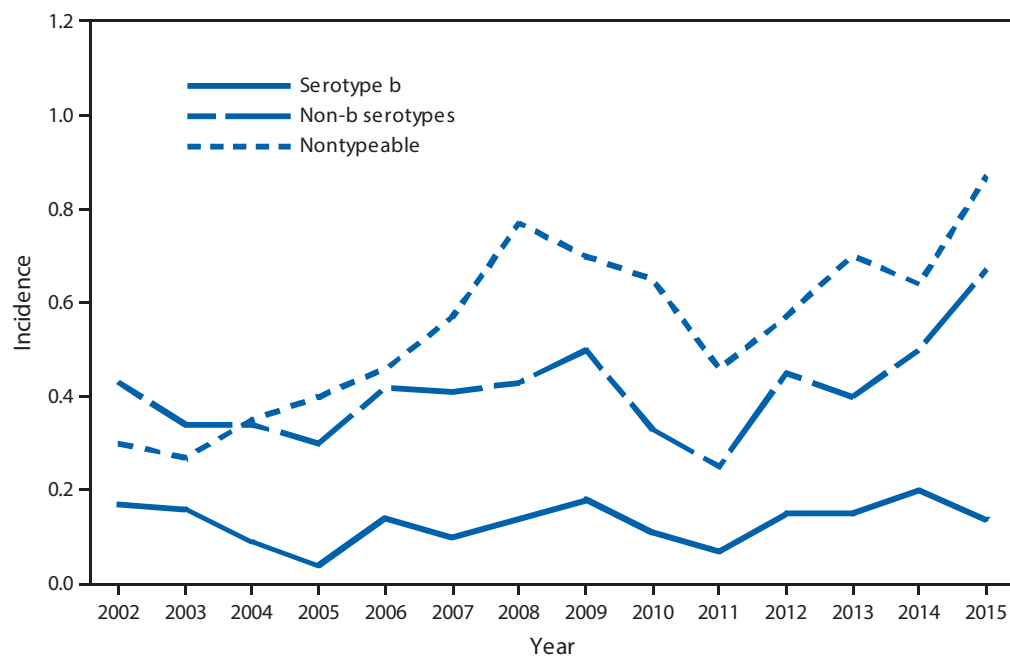
**GIARDIASIS. Incidence\* of reported cases, by year — United States, 2004–2015**

\* Per 100,000 population.

The incidence of giardiasis in 2015 is similar to previous years, following a decline in 2011. The incidence of giardiasis can be affected by actual changes in disease transmission, changes in diagnostics, and changes in surveillance priorities in some states.



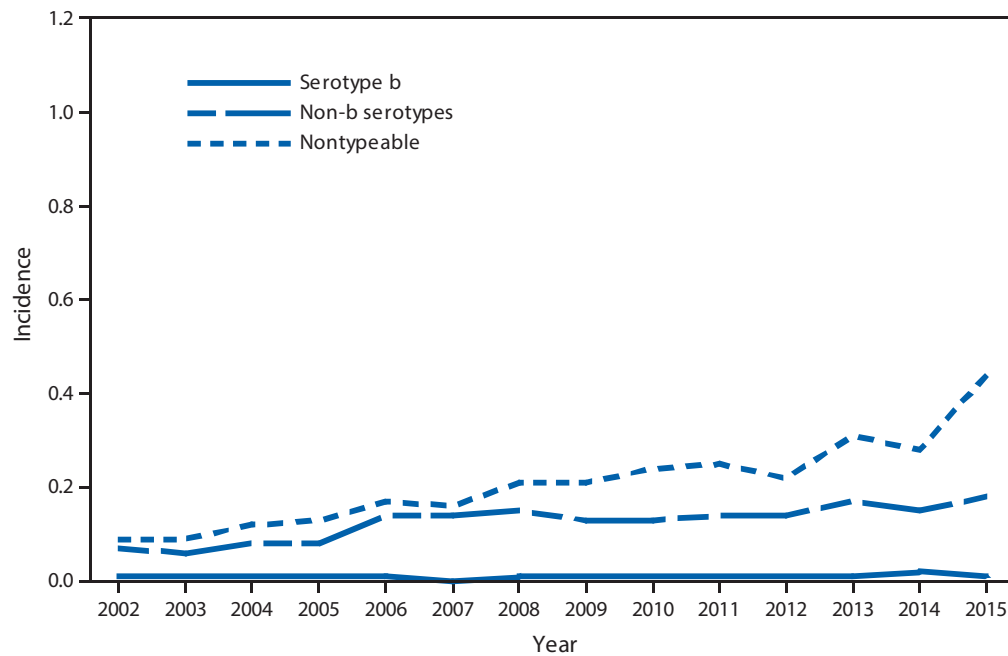
**HAEMOPHILUS INFLUENZAE, INVASIVE DISEASE. Incidence\* of reported cases, among persons aged <5 years, by serotype — United States, 2002–2015**



\* Per 100,000 population. Cases for which serotype was not tested or is unknown are excluded.

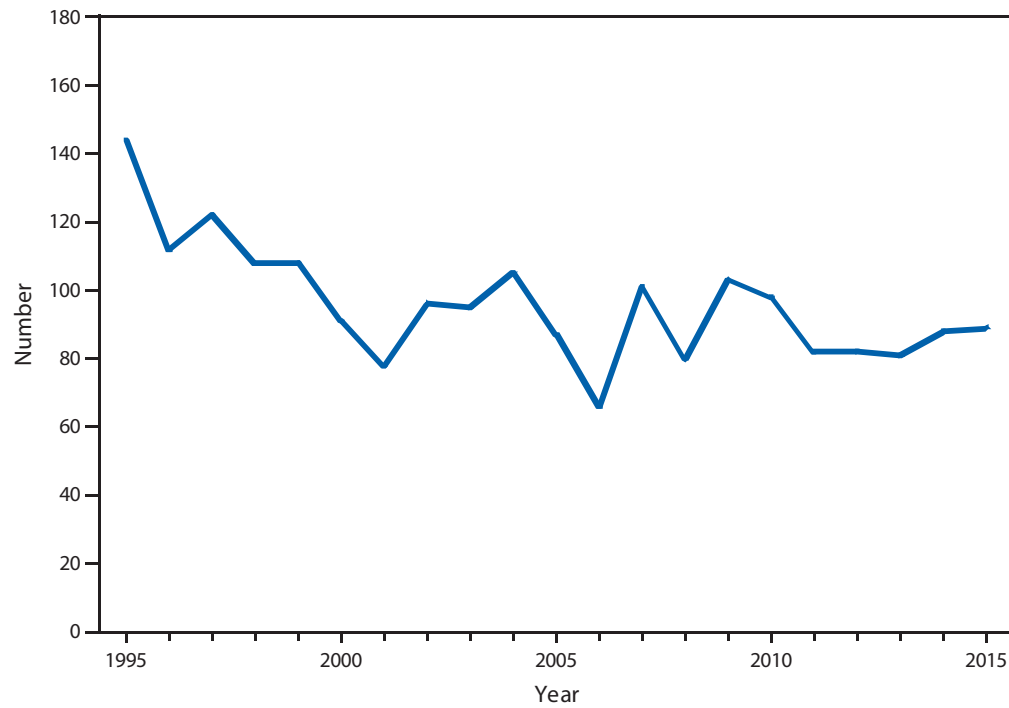
Rates of all invasive *Haemophilus influenzae* disease remain low; the majority of cases of invasive disease in children aged <5 years are caused by nontypeable *Haemophilus influenzae*. *Haemophilus influenzae* type b incidence remains below the *Healthy People 2020* goal of 0.27 per 100,000 population among those aged <5 years.

**HAEMOPHILUS INFLUENZAE, INVASIVE DISEASE. Incidence\* of reported cases, among persons aged  $\geq 5$  years, by serotype — United States, 2002–2015**



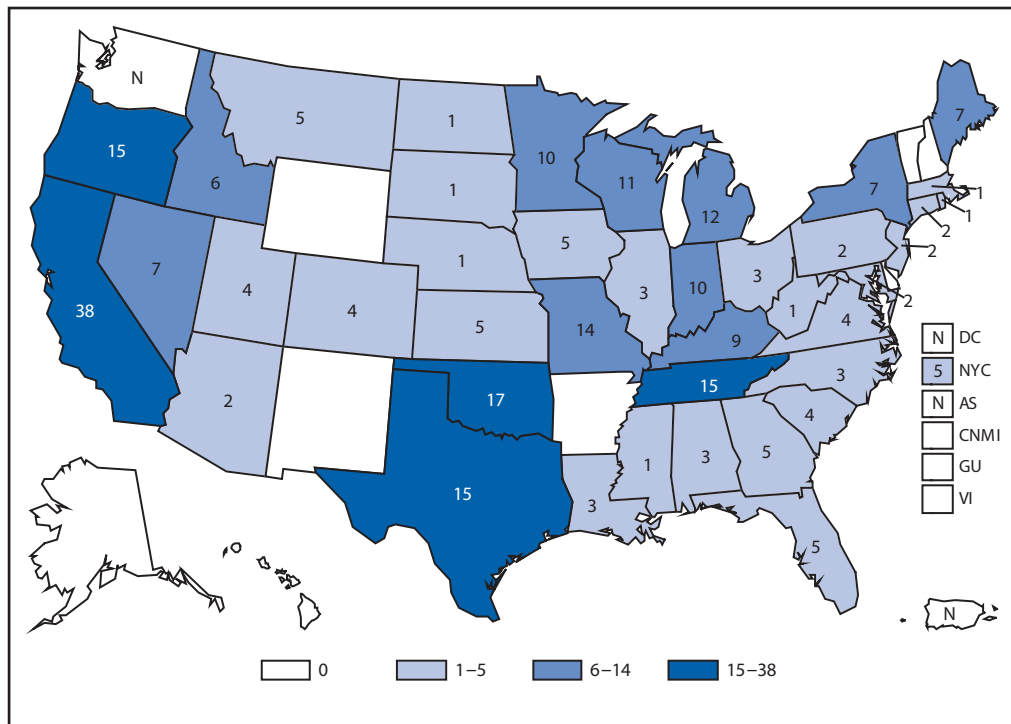
\* Per 100,000 population. Cases for which serotype was not tested or is unknown are excluded.

Rates of all invasive *Haemophilus influenzae* disease remain low; the majority of cases of invasive disease in persons aged  $\geq 5$  years are caused by nontypeable *Haemophilus influenzae*.

**HANSEN'S DISEASE (LEPROSY). Number of reported cases, by year — United States, 1995–2015**

After a decrease in reported Hansen's disease cases during 2010–2011, the number of reported cases has remained fairly stable. In the last decade, the highest number of Hansen's disease cases reported was in 2009. Reported cases for 2014 and 2015 remained stable.

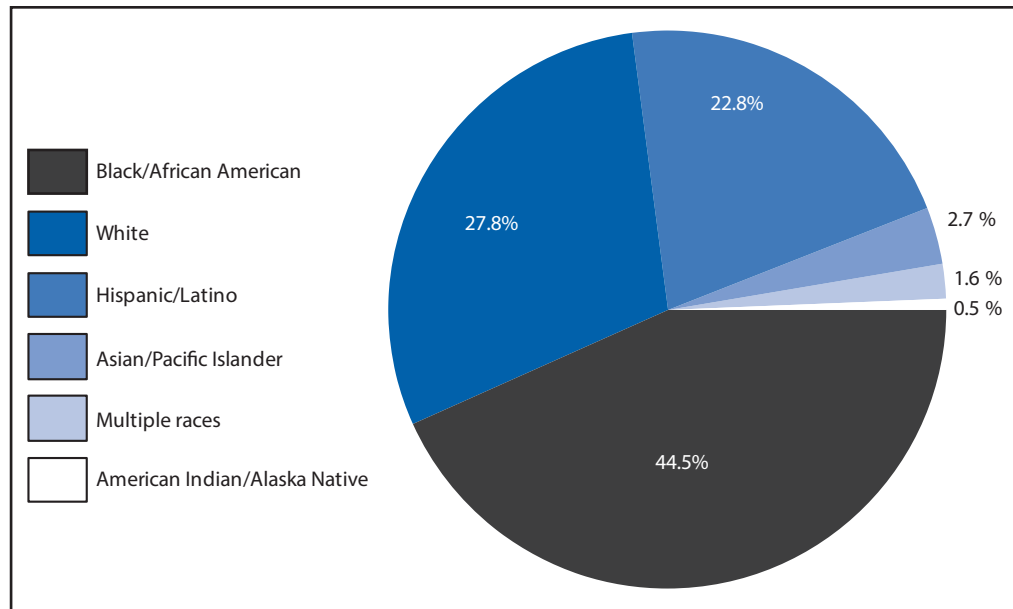
**HEMOLYTIC UREMIC SYNDROME, POSTDIARRHEAL. Number of reported cases — United States and U.S. territories, 2015**



**Abbreviation:** N = not reportable.

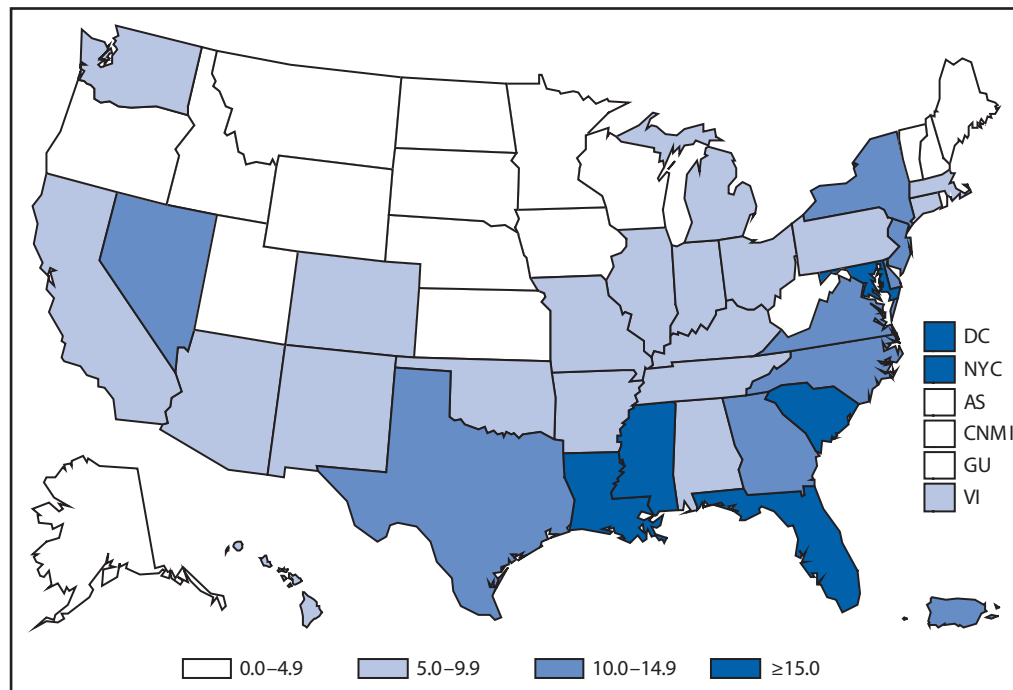
In 2015, a total of 42 of 56 jurisdictions (states, districts, and territories) reported hemolytic uremic syndrome (HUS) cases to NNDSS, and four jurisdictions had missing data. Most cases of postdiarrheal HUS are caused by Shiga toxin-producing *Escherichia coli* (STEC).

**HUMAN IMMUNODEFICIENCY VIRUS DIAGNOSES. Percentage of diagnosed cases, by race/ethnicity — United States, 2015**



Among persons with HIV infection diagnosed in 2015, the greatest percentage was among blacks/African Americans, followed by whites, Hispanics/Latinos, Asians/Pacific Islanders, persons of multiple races, and American Indians/Alaska Natives.

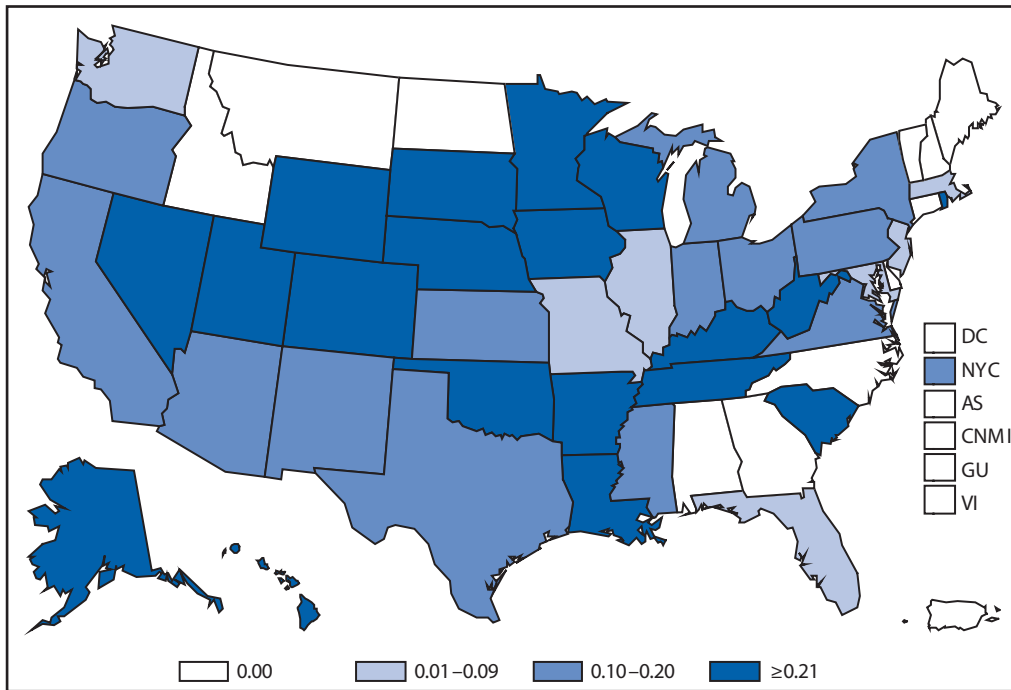
# HUMAN IMMUNODEFICIENCY VIRUS DIAGNOSES. Diagnosis incidence\* — United States and U.S. territories, 2015



\* Per 100,000 population.

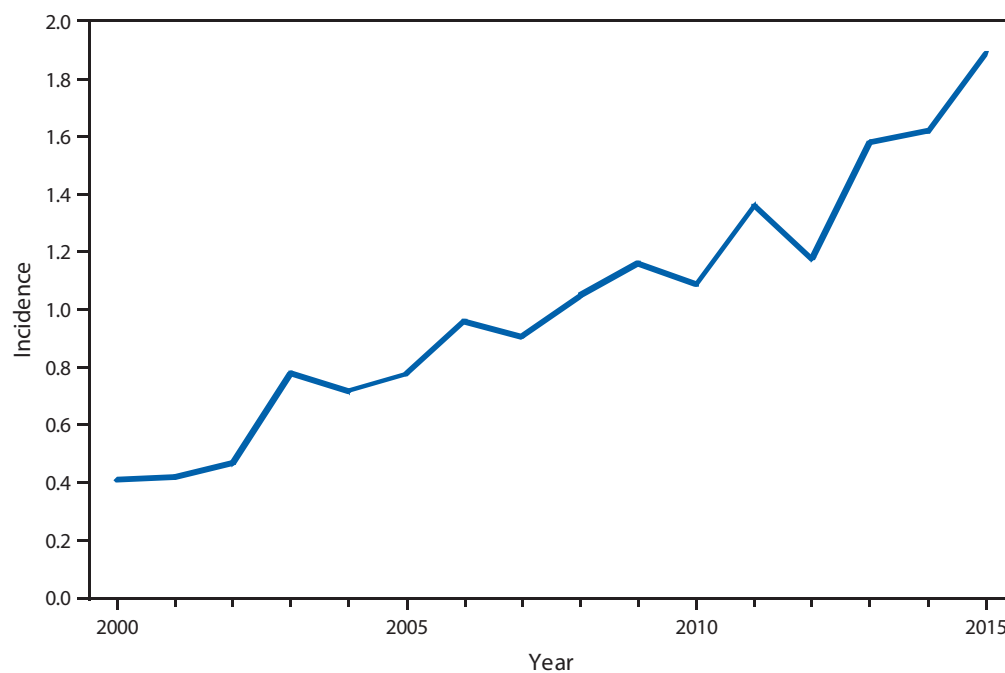
The highest rates (i.e.,  $\geq 15$  diagnoses per 100,000 population) of HIV diagnoses were in certain states in the Southeast and Northeast. A rate of  $\geq 15$  diagnoses per 100,000 population also was observed in the District of Columbia.

**INFLUENZA-ASSOCIATED PEDIATRIC MORTALITY. Incidence\* of reported cases — United States and U.S. territories, 2015**



\* Per 100,000 population.

In 2015, New York City and 39 states reported 130 influenza-associated pediatric deaths for an overall incidence rate of 0.18 deaths per 100,000 children aged <18 years.

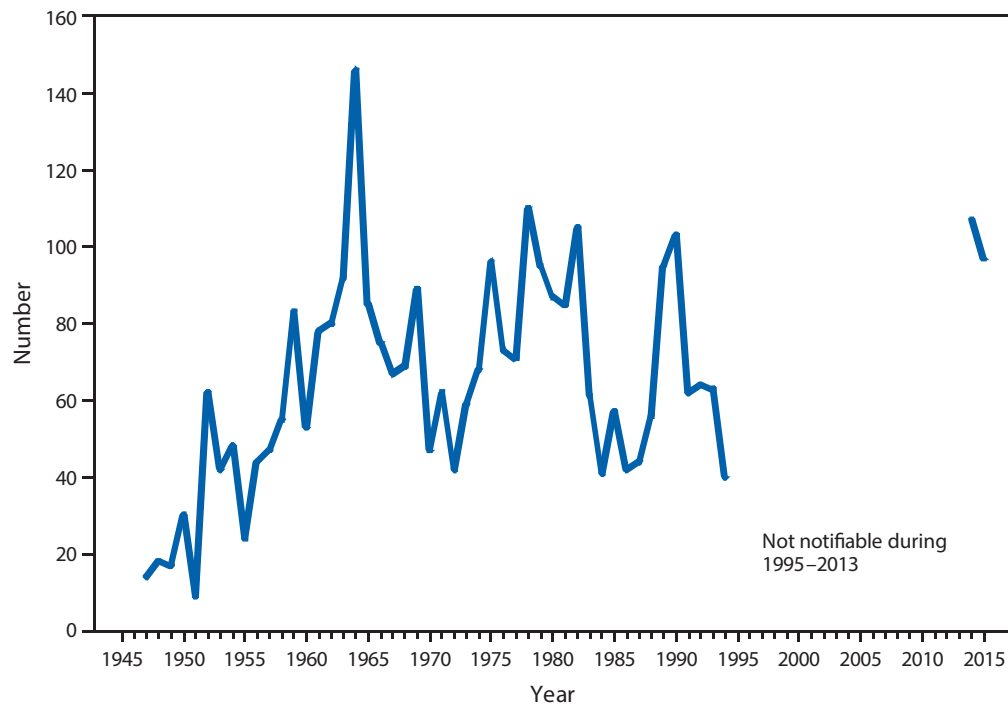
**LEGIONELLOSIS. Incidence\* of reported cases, by year — United States, 2000–2015**

\* Per 100,000 population.

From 2014 to 2015, the reported incidence of legionellosis rose over 16%, continuing an upward trend that began in 2003. The incidence in 2015 was more than four times that in 2000. More diagnostic testing and more disease transmission might have contributed to this increase.



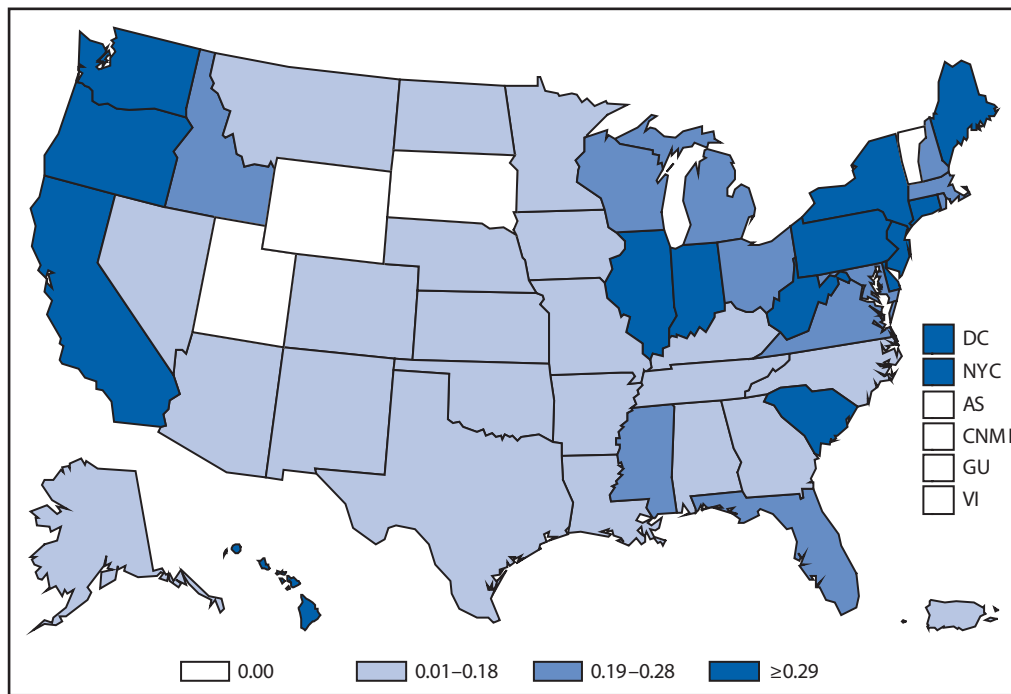
## LEPTOSPIROSIS. Number of reported cases, by year — United States and U.S. territories, 1947–2015



In 2015, a total of 96 leptospirosis cases were reported, of which 45 (47%) were reported by Puerto Rico and 22 (23%) were reported by Hawaii. A temporal peak in case incidence occurred in August, with 10 cases reported that month in five states and jurisdictions (excluding cases reported from territories).

**Note:** Although leptospirosis was first notifiable starting in 1947, territories did not begin reporting leptospirosis cases until 1959. Territory data for 1970 and 1978 are not available.

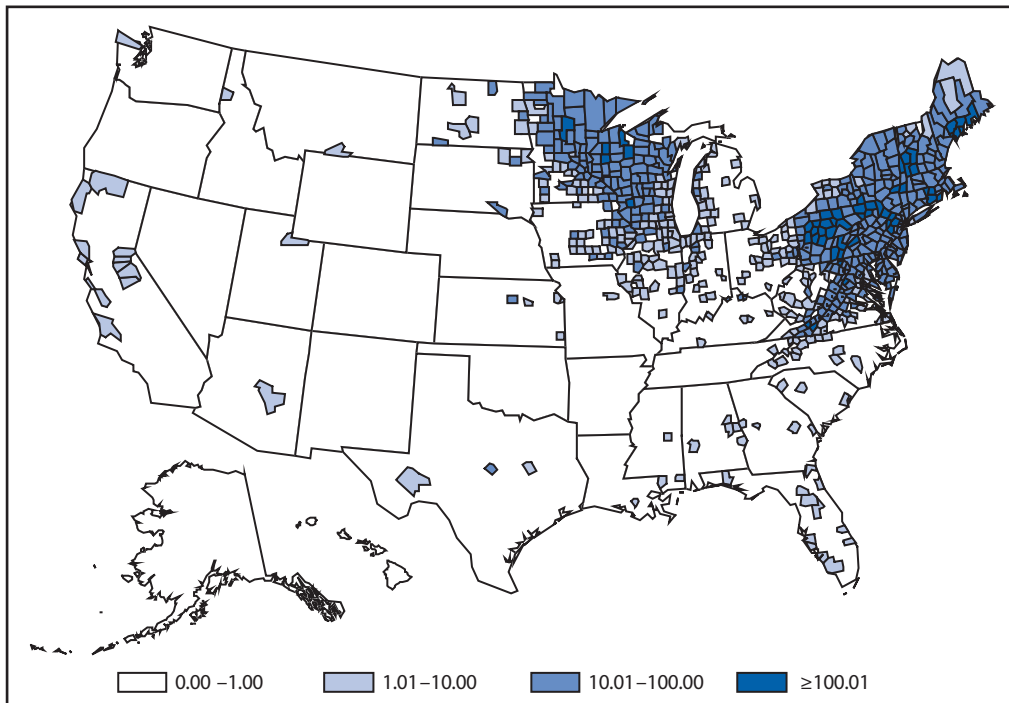
**LISTERIOSIS. Incidence\* of reported cases — United States and U.S. territories, 2015**



\* Per 100,000 population.

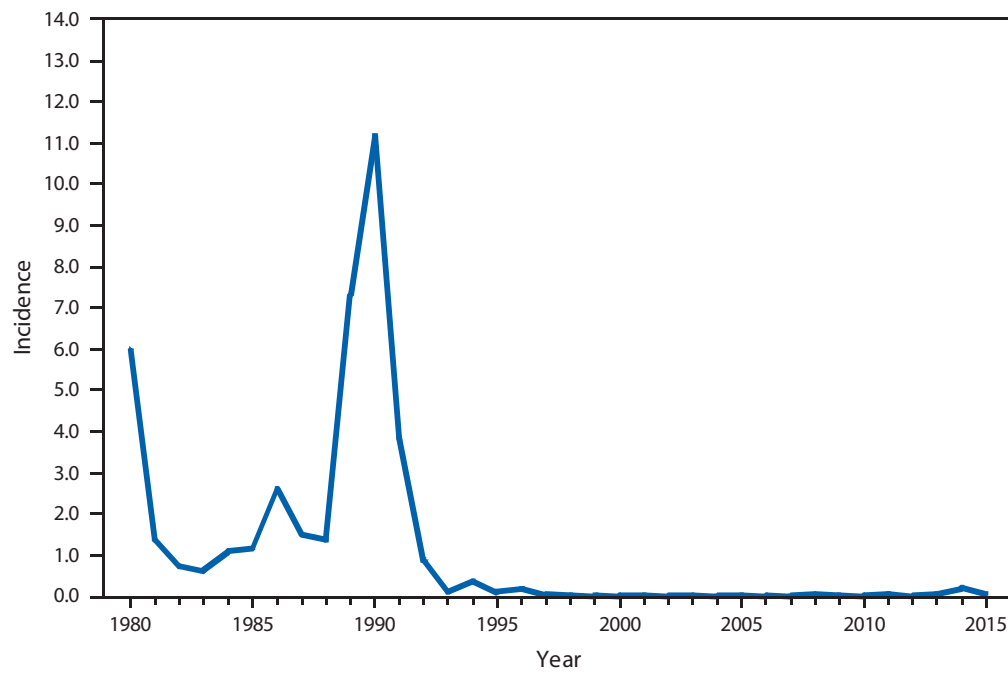
In 2015, a total of 46 states, the District of Columbia, and New York City reported 768 cases of Listeriosis to NNDSS for an overall incidence rate in the United States of 0.24 infections per 100,000, which is unchanged from 2014.

## LYME DISEASE. Incidence\* of reported confirmed cases, by county — United States, 2015



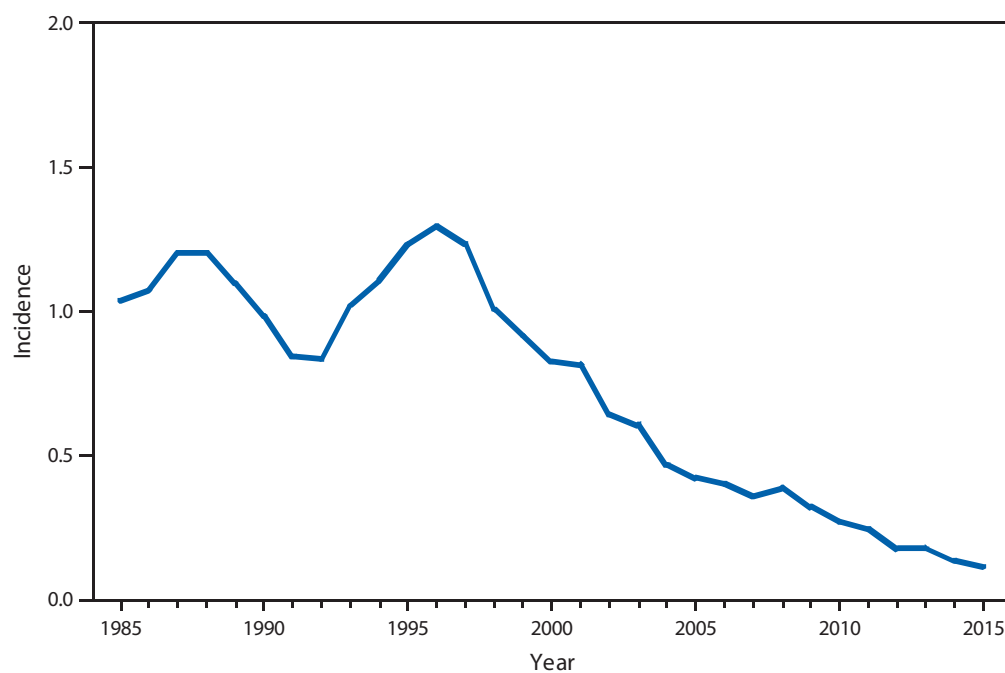
\* Per 100,000 population.

Lyme disease was the most commonly reported vector-borne disease in 2015; however, risk for infection is highly variable, with little to no risk in many parts of the United States. Cases are concentrated in the northeast and upper Midwest regions of the United States. In 2015, 95% of confirmed Lyme disease cases were reported from 14 states: Connecticut (1,873 cases), Delaware (334 cases), Maine (993 cases), Maryland (1,249 cases), Massachusetts (2,922 cases), Minnesota (1,174 cases), New Hampshire (436 cases), New Jersey (3,932 cases), New York (3,252 cases), Pennsylvania (7,351 cases), Rhode Island (564 cases), Vermont (491 cases), Virginia (1,102 cases), and Wisconsin (1,309 cases). Lyme disease cases are reported to CDC by state of patient residence; therefore, travel-associated cases might be reported from states where risk of infection is absent.

**MEASLES. Incidence\* of reported cases, by year — United States, 1980–2015**

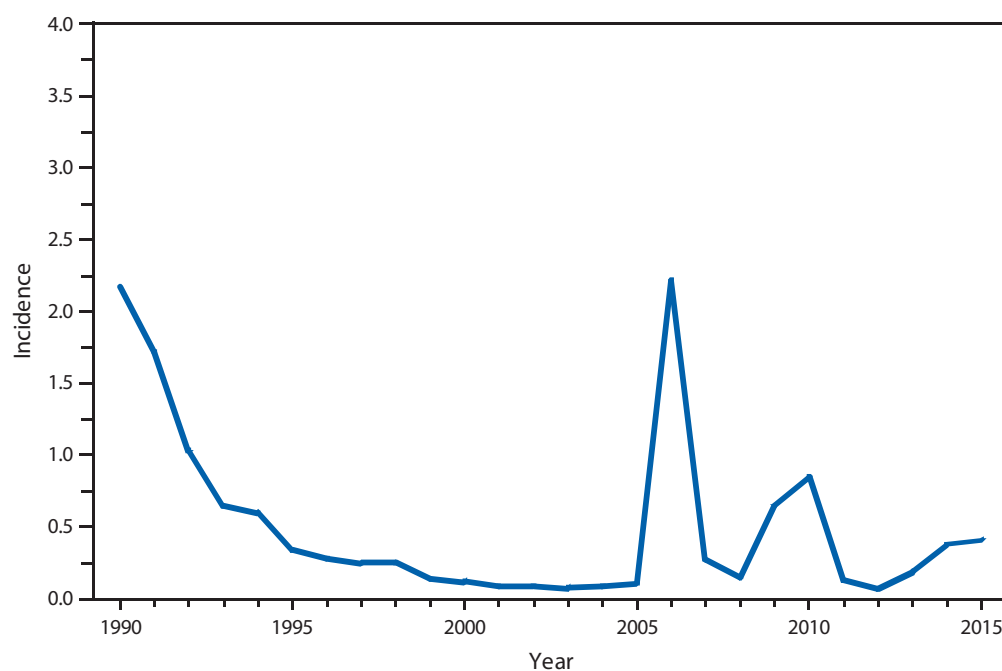
\* Per 100,000 population.

Although measles incidence rates declined substantially soon after licensure of a measles vaccine in the United States in 1963, outbreaks continued to be reported across the country through the 1980s, and a resurgence of measles occurred during 1989–1991. Improvements in vaccination coverage in the early and mid-1990s led to a record low number of cases in ensuing years, and a declaration of measles elimination in 2000. Since 1997, the reported annual incidence has been <1 case per 1 million population, except in 2014, when measles was introduced into several communities with pockets of unvaccinated persons, which allowed spread and outbreaks to occur.

**MENINGOCOCCAL DISEASE. Incidence\* of reported cases, by year — United States, 1985–2015**

\* Per 100,000 population.

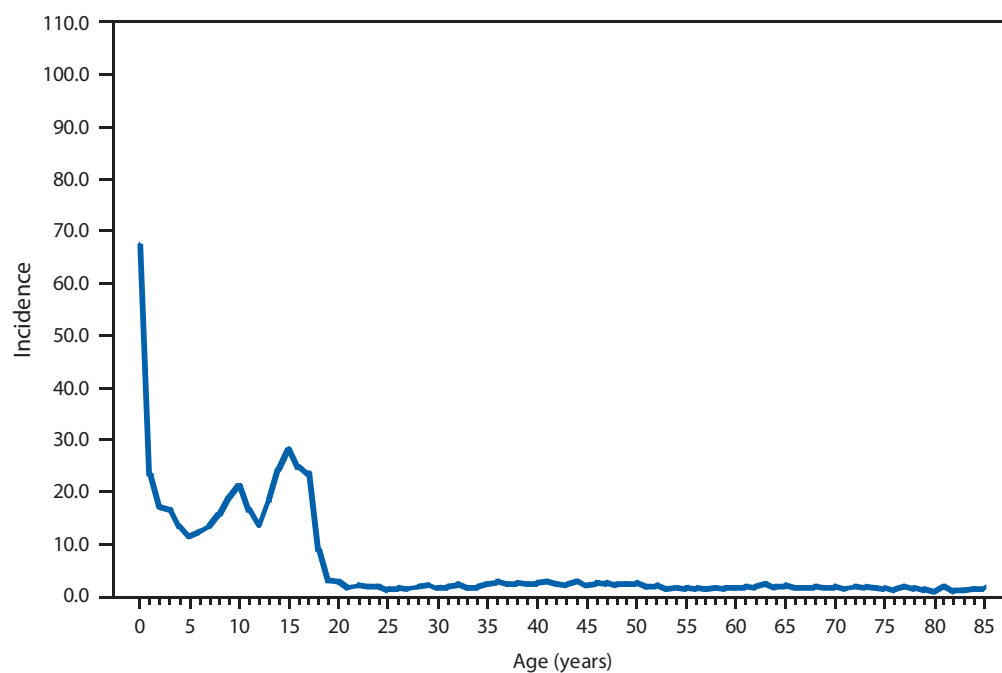
In 2015, meningococcal disease incidence continued to decline; incidence remains at a historic low in the United States (0.12 cases per 100,000 population).

**MUMPS. Incidence\* of reported cases, by year — United States, 1990–2015**

\* Per 100,000 population.

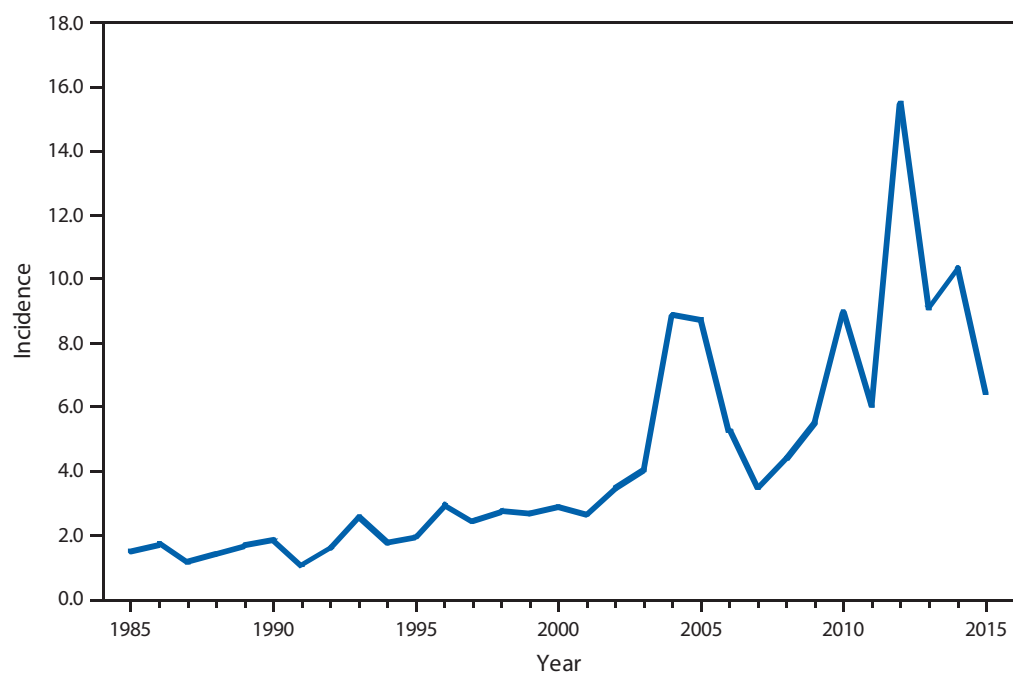
The widespread use of a second dose of mumps vaccine beginning in 1989 was followed by historically low morbidity until 2006, when the United States experienced the largest mumps outbreak in two decades. The 2006 outbreak of approximately 6,000 cases primarily affected college students in the Midwest. A second large outbreak occurred during 2009–2010 and affected Orthodox Jewish communities in the Northeast. Multiple outbreaks have occurred in the following years, mostly in close-contact settings.

## PERTUSSIS. Incidence\* of reported cases, by age — United States, 2015



\* Per 100,000 population.

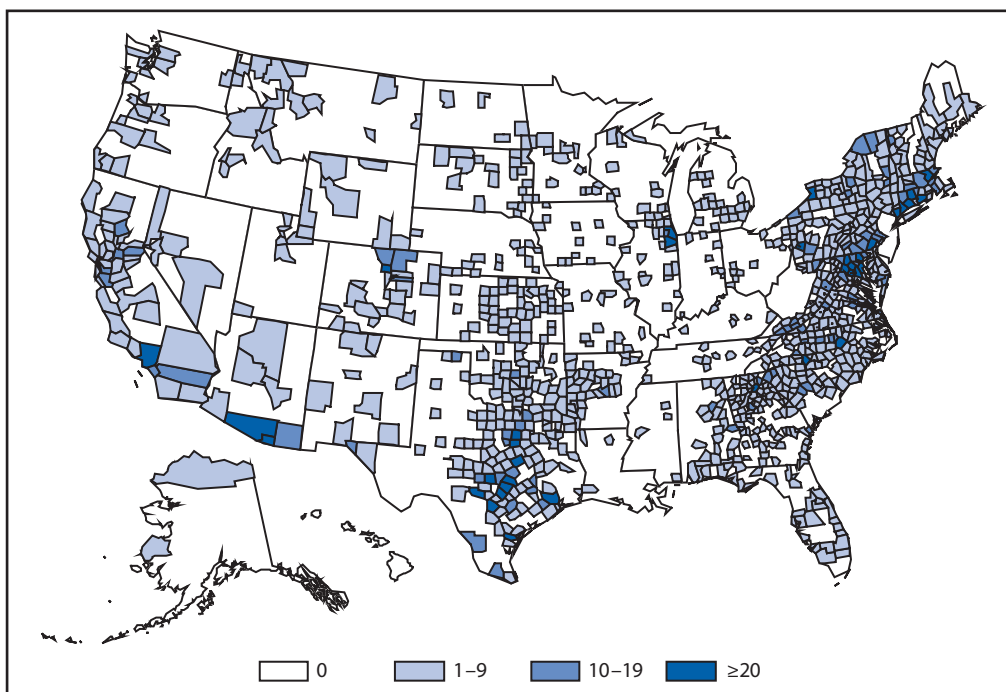
During 2015, pertussis incidence remained highest among infants, and increased incidence continues to be observed among adolescents.

**PERTUSSIS. Incidence\* of reported cases, by year — United States, 1985–2015**

\* Per 100,000 population.

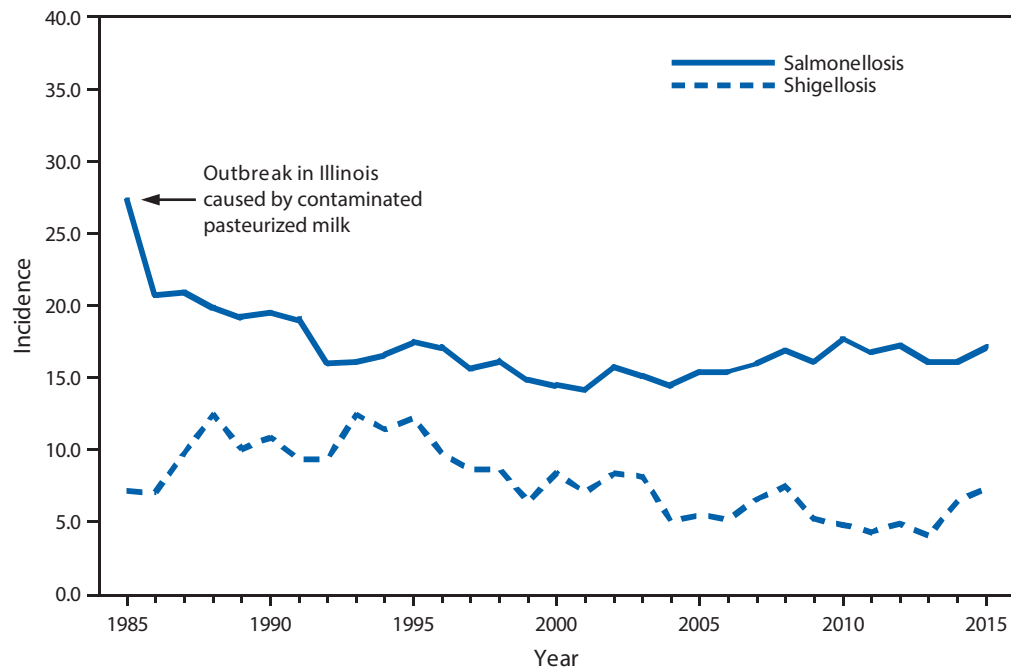
Incidence of reported pertussis declined from 2014 to 2015; however, overall incidence remains elevated compared with rates observed during the 1990s and early 2000s.



**RABIES, ANIMAL. Number\* of reported cases, by county — United States, 2015**


\* Data from the Division of High Consequence Pathogens and Pathology, National Center for Emerging and Zoonotic Infectious Diseases.

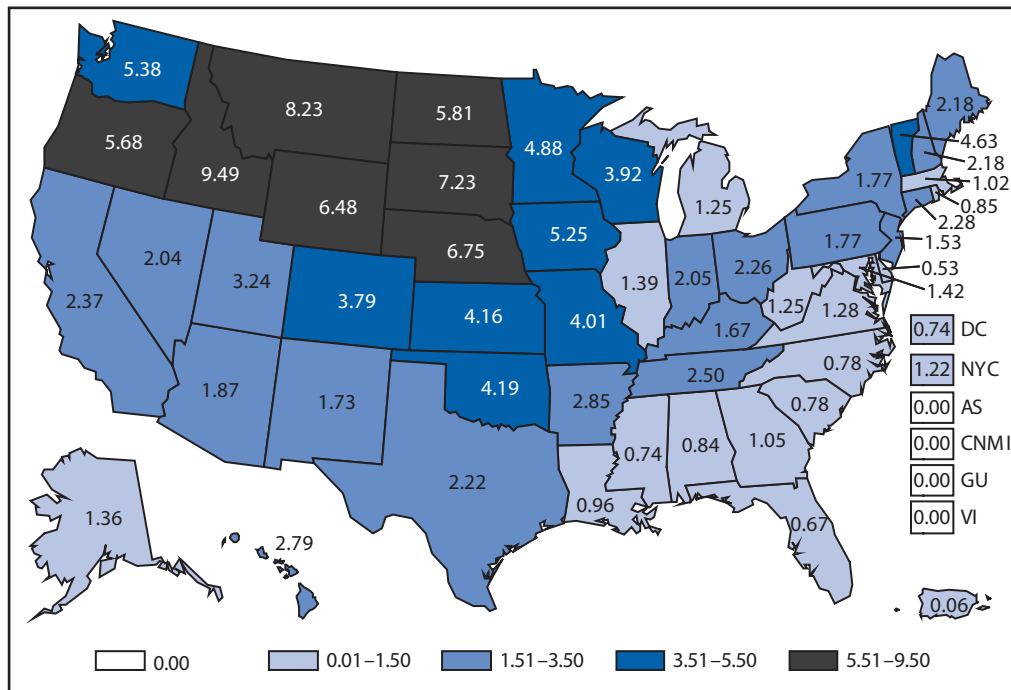
In 2015, rabid animals were reported in all jurisdictions except Hawaii. Because reporting is based on the number of animals tested, the burden of disease is likely underestimated.

**SALMONELLOSIS AND SHIGELLOSIS. Incidence\* of reported cases, by year — United States, 1985–2015**

\* Per 100,000 population.

Incidence of salmonellosis has been stable since the mid-1990s. Incidence of shigellosis decreased overall between 1995 and 2013 and increased between 2013 and 2015.

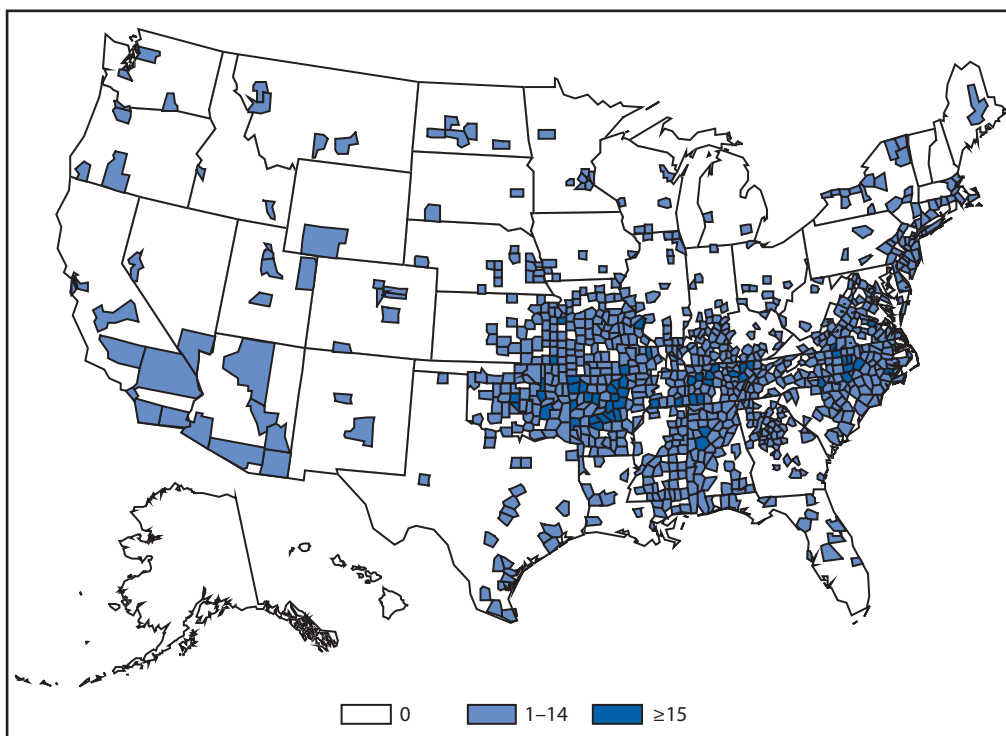
**SHIGA TOXIN-PRODUCING *ESCHERICHIA COLI* (STEC). Incidence\* of reported cases — United States and U.S. territories, 2015**



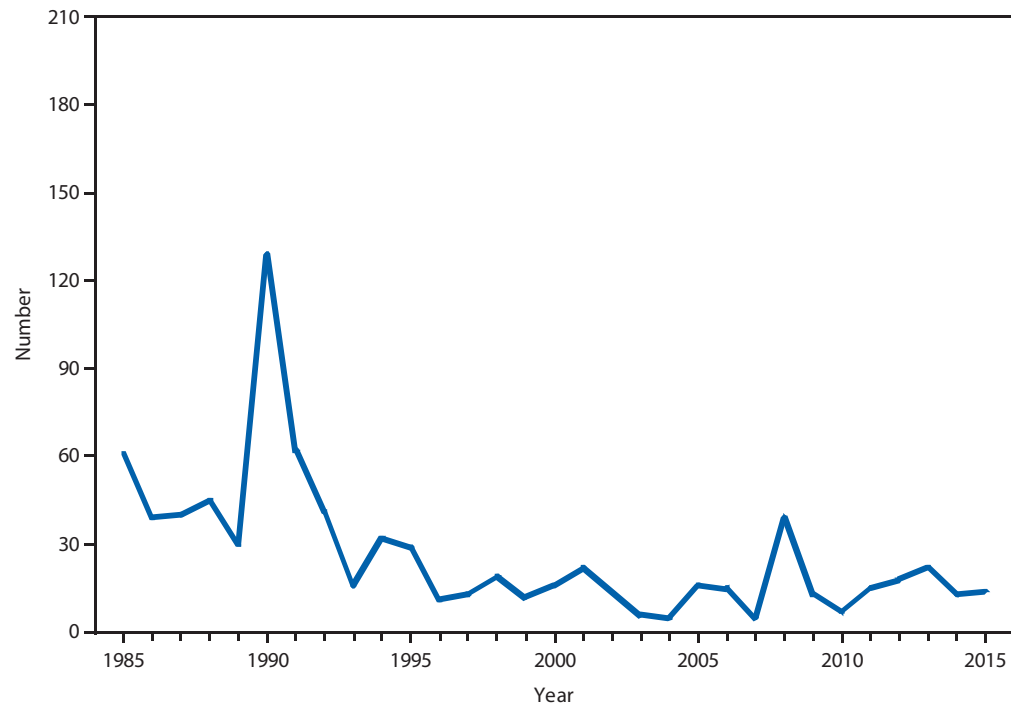
\* Per 100,000 population.

Shiga toxin-producing *Escherichia coli* incidence rates were generally highest in the northern and western states. States with the highest incidence rates were Idaho, Montana, and South Dakota.

## SPOTTED FEVER RICKETTSIOSIS. Number of reported cases, by county — United States, 2015

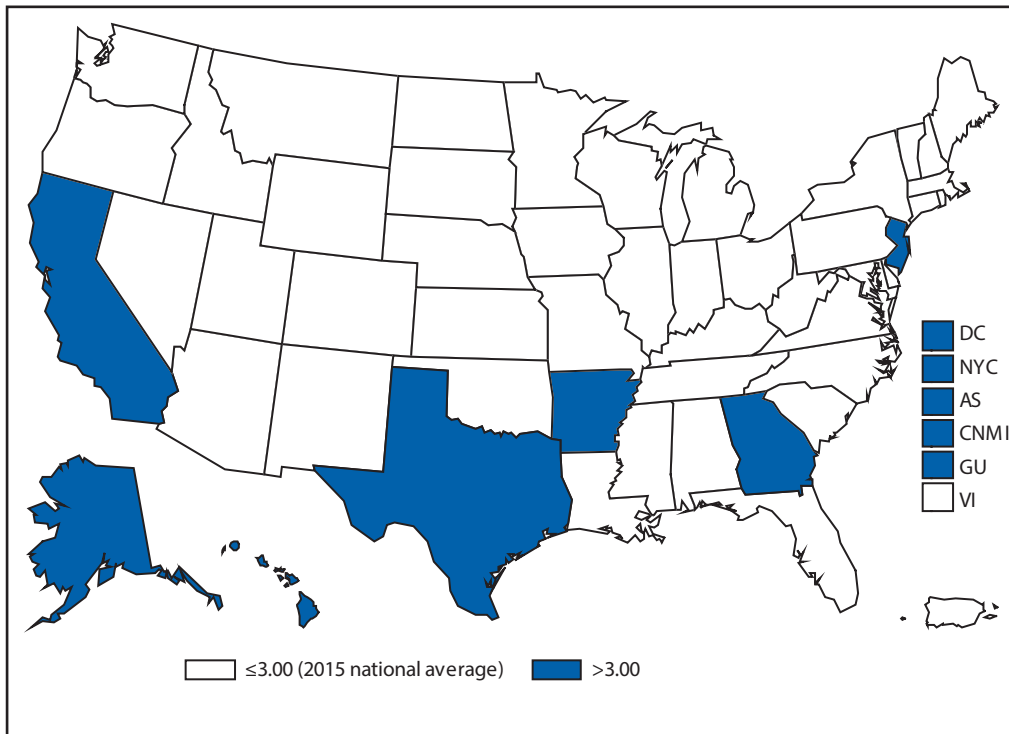


Most spotted fever rickettsiosis cases originating in the United States are attributed to infection with *Rickettsia rickettsii* (the causative agent for Rocky Mountain spotted fever). However, rickettsioses caused by other spotted fevers including *Rickettsia parkeri*, *Rickettsia* species 364D (provisionally called *Rickettsia philipii*) and *Rickettsia akari* are being diagnosed and reported more frequently.

**TRICHINELLOSIS. Number of reported cases, by year — United States, 1985–2015**

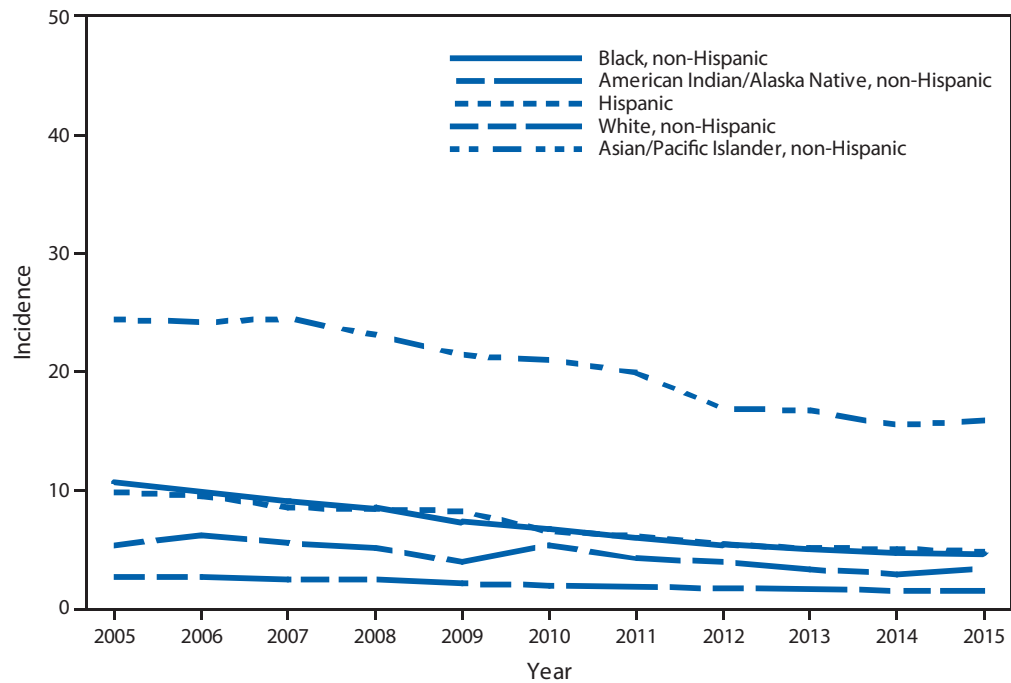
In 2015, a total of 13 trichinellosis cases were reported. This number differs from the denominator of 14 cases presented in the tables; one case from Wisconsin was reclassified as suspect from confirmed, which was not changed before the deadline for finalizing data. Two outbreaks of three cases each occurred in persons who consumed black bear hunted in Alaska. Overall, a majority of reported trichinellosis cases occurred in persons with a history of consumption of undercooked wild game meat.

**TUBERCULOSIS. Incidence\* of reported cases — United States and U.S. territories, 2015**



\* Per 100,000 population.

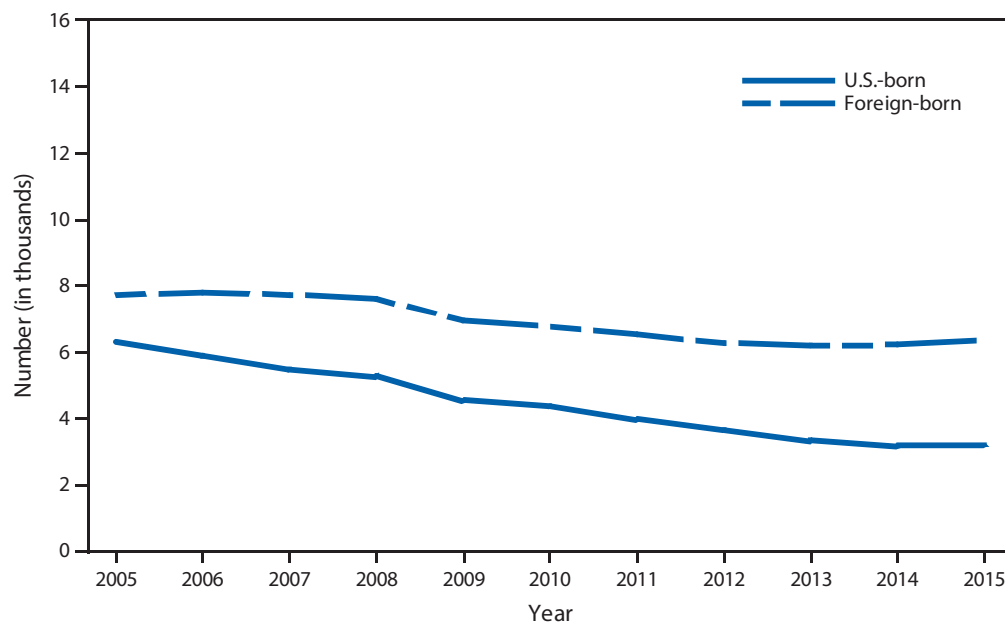
Seven states, New York City, the District of Columbia, and three territories (American Samoa, the Commonwealth of the Northern Mariana Islands, and Guam) had a tuberculosis incidence rate above the national average of 3.0 cases per 100,000 population.

**TUBERCULOSIS. Incidence\* of reported cases, by race/ethnicity — United States, 2005–2015**

\* Per 100,000 population. Data from the Division of Tuberculosis Elimination, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention.

After approximately 20 consecutive years of declining tuberculosis incidence, the decline in incidence for most race/ethnicities has slowed over the past few years.

**TUBERCULOSIS. Number\* of reported cases among U.S.-born and foreign-born persons,<sup>†</sup> by year — United States, 2005–2015**

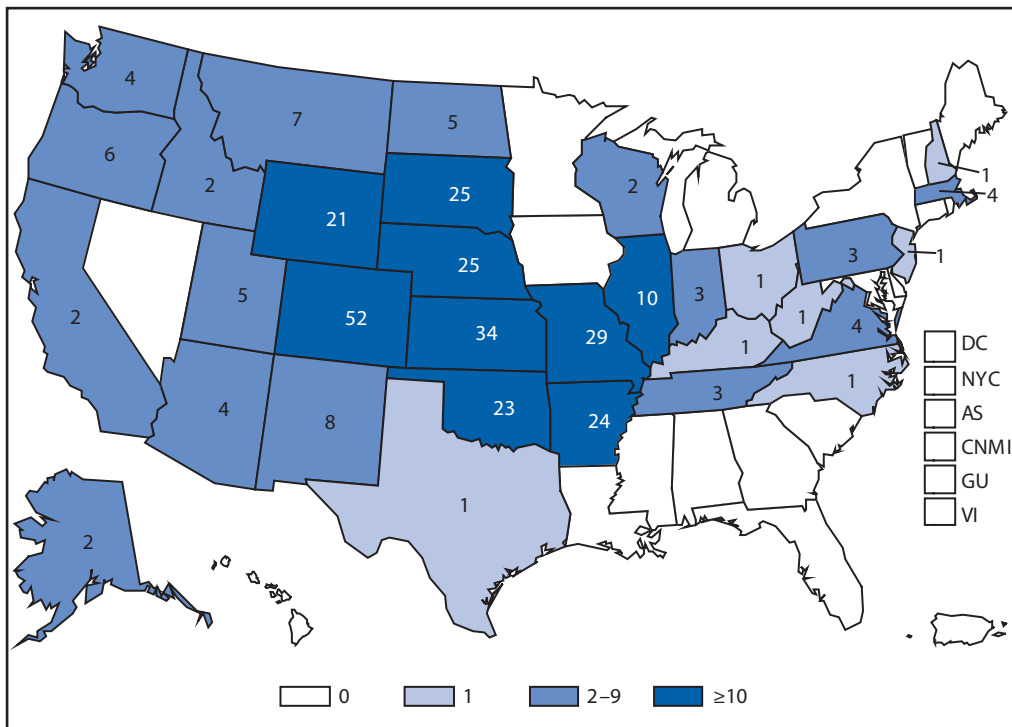


\* Number represented is in thousands. Data from the Division of Tuberculosis Elimination, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention.

<sup>†</sup> For 2015, the origin of birth for 18 patients was unknown.

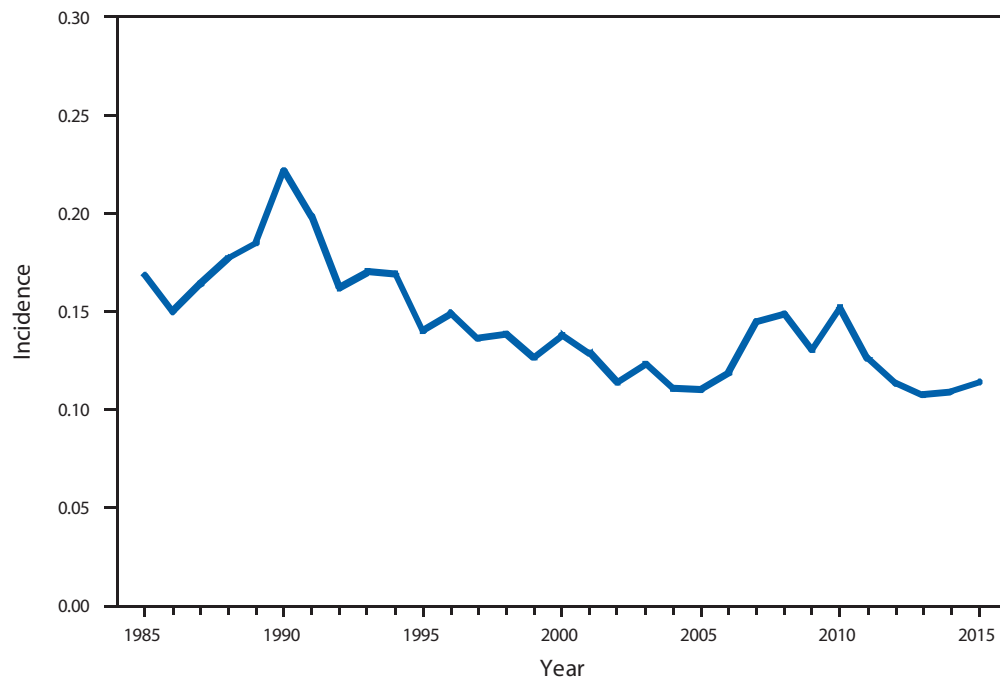
The number of U.S.-born tuberculosis cases was similar in 2015 compared to 2014, after consistent declines since 2005, while the number of foreign-born cases increased slightly.



**TULAREMIA. Number of reported cases — United States and U.S. territories, 2015**


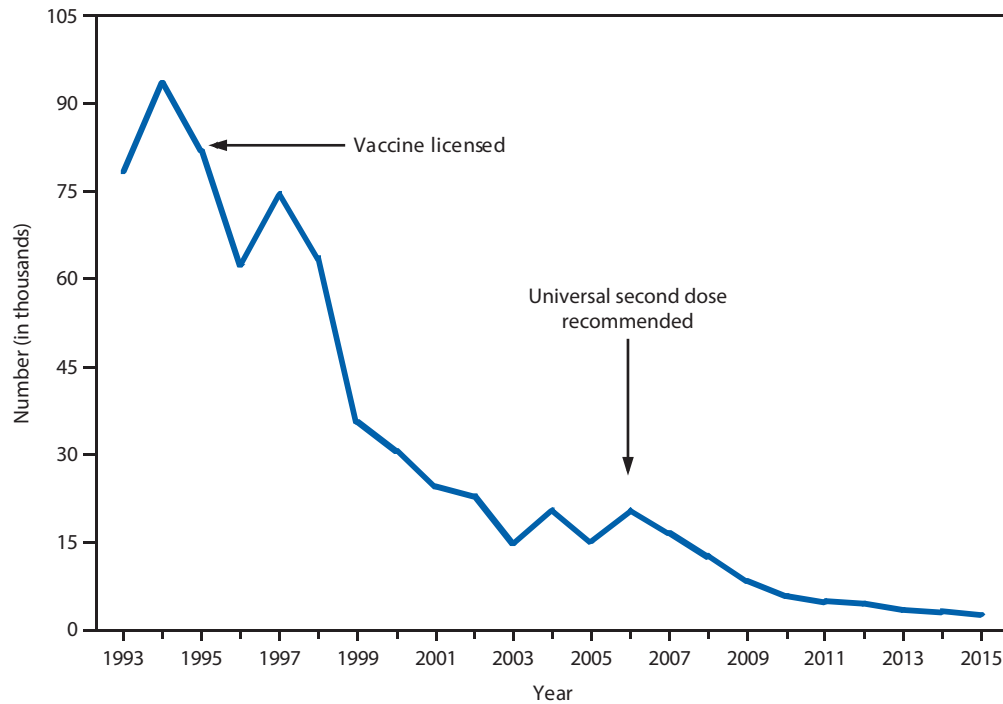
In 2015, a total of 314 cases of tularemia were reported to CDC, the most since 1964. The majority of cases were reported from states in the central United States; cases reported from Colorado, Nebraska, South Dakota and Wyoming increased substantially compared to 2014.

## TYPHOID FEVER. Incidence\* of reported cases, by year — United States, 1985–2015

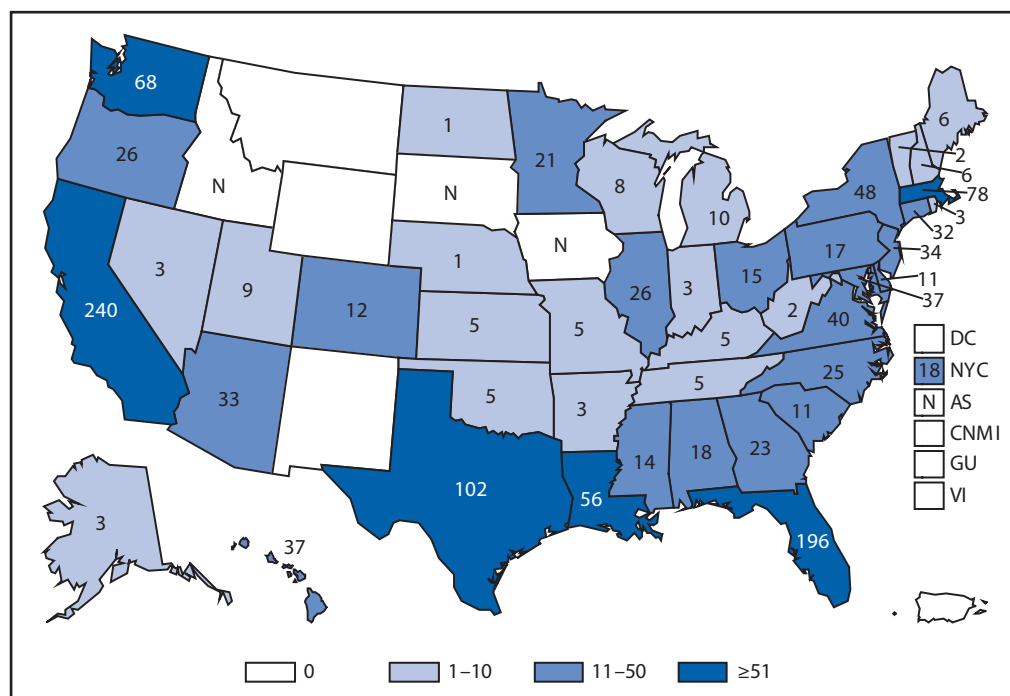


\* Per 100,000 population.

In the United States, typhoid fever remains primarily a disease of travelers to countries where typhoid fever is endemic, for whom vaccination against typhoid fever is recommended. During the last 30 years, the annual number of typhoid fever cases peaked in 1990 (552 cases; 0.22 per 100,000) and then declined to a low of 321 (0.11 per 100,000) cases in 2002. Case counts then returned to levels observed in the early 1990s, followed by a 5% increase from 349 (0.11 per 100,000) in 2014 to 367 in 2015 (0.11 per 100,000).

**VARICELLA (CHICKENPOX). Number of reported cases — Illinois, Michigan, Texas, and West Virginia, 1993–2015**

In four states (Illinois, Michigan, Texas, and West Virginia), the number of varicella cases reported in 2015 was 15.5% lower than in 2014, 87.6% lower than the average annual number reported during the mature 1-dose varicella vaccination era of 2000–2006, and 96.9% lower than the average annual number reported during the prevaccine years of 1993–1995.

**VIBRIOSIS. Number of reported cases — United States and U.S. territories, 2015**


**Abbreviation:** N = not reportable.

In 2015, a total of 1,323 cases of vibriosis were reported. California, Florida, Texas, and Massachusetts reported the greatest number of cases.

## Selected Reading for 2015

## General

- Adekoya N, Truman BI, Ajani UA. Completeness of reporting of race and ethnicity data in the nationally notifiable diseases surveillance system, United States, 2006–2010. *J Public Health Manag Pract* 2015;21:E16–22. <https://doi.org/10.1097/PHH.0000000000000075>
- Adams DA, Thomas KR, Jajosky RA, et al. Summary of notifiable infectious diseases and conditions—United States, 2014. *MMWR Morb Mortal Wkly Rep* 2016;63. <https://doi.org/10.15585/mmwr.mm6354a1>
- Beltran VM, Harrison KM, Hall HI, Dean HD. Collection of social determinant of health measures in U.S. national surveillance systems for HIV, viral hepatitis, STDs, and TB. *Public Health Rep* 2011;126(Suppl 3):41–53.
- Blau DM, Clark SC, Nolte KB; National Association of Medical Examiners Ad-hoc Committee for Bioterrorism and Infectious Diseases. Infectious disease surveillance by medical examiners and coroners. *Emerg Infect Dis* 2013;19:821–2. <https://doi.org/10.3201/eid1905.121661>
- Boehmer TK, Patnaik JL, Burnite SJ, Ghosh TS, Gershman K, Vogt RL. Use of hospital discharge data to evaluate notifiable disease reporting to Colorado's Electronic Disease Reporting System. *Public Health Rep* 2011;126:100–6.
- Buehler JW, Hopkins RS, Overhage JM, Sosin DM, Tong V; CDC Working Group. Framework for evaluating public health surveillance systems for early detection of outbreaks: recommendations from the CDC Working Group. *MMWR Recomm Rep* 2004;53(No. RR-5):1–11.
- CDC. CDC's vision for public health surveillance in the 21st century. *MMWR Suppl* 2012;2012:61 (July 27, 2012).
- CDC. Comparison of provisional with final notifiable disease case counts—National Notifiable Diseases Surveillance System, 2009. *MMWR Morb Mortal Wkly Rep* 2013;62:747–51.
- Adekoya N, Truman B, Landen M. Incidence of notifiable diseases among American Indians/Alaska Natives—United States, 2007–2011. *MMWR Morb Mortal Wkly Rep* 2015;64:16–9.
- CDC. Manual for the surveillance of vaccine-preventable diseases. 6th ed. Atlanta, GA: US Department of Health and Human Services, CDC; 2013. <https://www.cdc.gov/vaccines/pubs/surv-manual/index.html>
- National Electronic Disease Surveillance System Working Group. National Electronic Disease Surveillance System (NEDSS): a standards-based approach to connect public health and clinical medicine. *J Public Health Manag Pract* 2001;7:43–50. <https://doi.org/10.1097/00124784-200107060-00005>
- CDC. National Notifiable Diseases Surveillance System (NNDSS). Atlanta, GA: US Department of Health and Human Services, CDC; 2015. <https://wwwn.cdc.gov/nndss>
- CDC. NNDSS Modernization Initiative (NMI). Atlanta, GA: US Department of Health and Human Services, CDC; 2017. <https://www.cdc.gov/nmi/index.html>
- CDC. Potential effects of electronic laboratory reporting on improving timeliness of infectious disease notification—Florida, 2002–2006. *MMWR Morb Mortal Wkly Rep* 2008;57:1325–8.
- CDC. Reporting race and ethnicity data—National Electronic Telecommunications System for Surveillance, 1994–1997. *MMWR Morb Mortal Wkly Rep* 1999;48:305–12.
- CDC. State electronic disease surveillance systems—United States, 2007 and 2010. *MMWR Morb Mortal Wkly Rep* 2011;60:1421–3.
- German RR, Lee LM, Horan JM, Milstein RL, Pertowski CA, Waller MN; Guidelines Working Group. Updated guidelines for evaluating public health surveillance systems: recommendations from the Guidelines Working Group. *MMWR Recomm Rep* 2001;50(No. RR-13):1–35, quiz CE1–7.
- Lamb E, Satre J, Hurd-Kundeti G, et al. Update on progress in electronic reporting of laboratory results to public health agencies—United States, 2014. *MMWR Morb Mortal Wkly Rep* 2015;64:328–30.
- CDC. Use of race and ethnicity in public health surveillance: summary of the CDC/ATSDR workshop. *MMWR Recomm Rep* 1993;42(No. RR-10).
- Cronquist AB, Mody RK, Atkinson R, et al. Impacts of culture-independent diagnostic practices on public health surveillance for bacterial enteric pathogens. *Clin Infect Dis* 2012;54(Suppl 5):S432–9. <https://doi.org/10.1093/cid/cis267>
- Dato V, Wagner MM, Fapohunda A. How outbreaks of infectious disease are detected: a review of surveillance systems and outbreaks. *Public Health Rep* 2004;119:464–71. <https://doi.org/10.1016/j.phr.2004.07.003>
- Dixon BE, Siegel JA, Oemig TV, Grannis SJ. Electronic health information quality challenges and interventions to improve public health surveillance data and practice. *Public Health Rep* 2013;128:546–53.
- Effler P, Ching-Lee M, Bogard A, Jeong MC, Nekomoto T, Jernigan D. Statewide system of electronic notifiable disease reporting from clinical laboratories: comparing automated reporting with conventional methods. *JAMA* 1999;282:1845–50. <https://doi.org/10.1001/jama.282.19.1845>
- Fairchild A, Bayer R, Colgrove J. Privacy and public health surveillance: the enduring tension. *Virtual Mentor* 2007;9:838–41. <https://doi.org/10.1001/virtualmentor.2007.9.12.mhst1-0712>
- Friedman DJ, Parrish RG, Ross DA. Electronic health records and US public health: current realities and future promise. *Am J Public Health* 2013;103:1560–7. <https://doi.org/10.2105/AJPH.2013.301220>
- German RR. Sensitivity and predictive value positive measurements for public health surveillance systems. *Epidemiology* 2000;11:720–7. <https://doi.org/10.1097/00001648-200011000-00020>
- Greene SK, Peterson ER, Kapell D, Fine AD, Kulldorff M. Daily reportable disease spatiotemporal cluster detection, New York City, New York, USA, 2014–2015. *Emerg Infect Dis* 2016;22:1808–12. <https://doi.org/10.3201/eid2210.160097>
- Government Accountability Office. Emerging infectious diseases: review of state and federal disease surveillance efforts. Washington, DC: Government Accountability Office; 2004. GAO-04-877. <http://www.gao.gov/new.items/d04877.pdf>
- Heymann DL, editor. Control of communicable diseases manual. 20th ed. Washington, DC: American Public Health Association; 2014.
- Hopkins RS. Design and operation of state and local infectious disease surveillance systems. *J Public Health Manag Pract* 2005;11:184–90. <https://doi.org/10.1097/00124784-200505000-00002>
- Jajosky RA, Groseclose SL. Evaluation of reporting timeliness of public health surveillance systems for infectious diseases. *BMC Public Health* 2004;4:29. <https://doi.org/10.1186/1471-2458-4-29>
- Krause G, Brodhun B, Altmann D, Claus H, Benzler J. Reliability of case definitions for public health surveillance assessed by Round-Robin test methodology. *BMC Public Health* 2006;6:129. <https://doi.org/10.1186/1471-2458-6-129>
- Lazarus R, Klompas M, Campion FX, et al. Electronic Support for Public Health: validated case finding and reporting for notifiable diseases using electronic medical data. *J Am Med Inform Assoc* 2009;16:18–24. <https://doi.org/10.1197/jamia.M2848>
- Lee LM, Teutsch SM, Thacker SB, St Louis ME, eds. Principles and practice of public health surveillance. 3rd ed. New York, NY: Oxford University Press; 2010:1–17.
- Lee LM, Thacker SB. The cornerstone of public health practice: public health surveillance, 1961–2011. *MMWR Surv Summ* 2011;60(No. Suppl 4):15–21.

- Levin-Rector A, Wilson EL, Fine AD, Greene SK. Refining historical limits method to improve disease cluster detection, New York City, New York, USA. *Emerg Infect Dis* 2015;21:265–72. <https://doi.org/10.3201/eid2102.140098>
- Jajosky RA, Ward J. National, state, and local public health surveillance systems. In: M'ikanatha NM, Iskander J, eds. *Concepts and methods in infectious disease surveillance*. Hoboken, NJ: Wiley; 2015.
- M'ikanatha NM, Lynfield R, Van Beneden CA, de Valk H. *Infectious disease surveillance*. 2nd ed. Malden, MA: Wiley; 2013.
- Nguyen TQ, Thorpe L, Makki HA, Mostashari F. Benefits and barriers to electronic laboratory results reporting for notifiable diseases: the New York City Department of Health and Mental Hygiene experience. *Am J Public Health* 2007;97(Suppl 1):S142–5. <https://doi.org/10.2105/AJPH.2006.098996>
- Overhage JM, Grannis S, McDonald CJ. A comparison of the completeness and timeliness of automated electronic laboratory reporting and spontaneous reporting of notifiable conditions. *Am J Public Health* 2008;98:344–50. <https://doi.org/10.2105/AJPH.2006.092700>
- Pickering LK, ed. *Red Book: 2015 Report of the Committee on Infectious Diseases*. 30th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2015.
- Roush SW, Murphy TV; Vaccine-Preventable Disease Table Working Group. Historical comparisons of morbidity and mortality for vaccine-preventable diseases in the United States. *JAMA* 2007;298:2155–63. <https://doi.org/10.1001/jama.298.18.2155>
- Scallan E, Hoekstra RM, Angulo FJ, et al. Foodborne illness acquired in the United States—major pathogens. *Emerg Infect Dis* 2011;17:7–15. <https://doi.org/10.3201/eid1701.P11101>
- Sickbert-Bennett EE, Weber DJ, Poole C, MacDonald PD, Maillard JM. Completeness of communicable disease reporting, North Carolina, USA, 1995–1997 and 2000–2006. *Emerg Infect Dis* 2011;17:23–9. <https://doi.org/10.3201/eid1701.100660>
- Silk BJ, Berkelman RL. A review of strategies for enhancing the completeness of notifiable disease reporting. *J Public Health Manag Pract* 2005;11:191–200. <https://doi.org/10.1097/00124784-200505000-00003>
- Struelens MJ, Brisse S. From molecular to genomic epidemiology: transforming surveillance and control of infectious diseases. *Euro Surveill* 2013;18:20386.
- Vogel J, Brown JS, Land T, Platt R, Klompas M. MDPHnet: secure, distributed sharing of electronic health record data for public health surveillance, evaluation, and planning. *Am J Public Health* 2014;104:2265–70. <https://doi.org/10.2105/AJPH.2014.302103>
- Zhou H, Burkom H, Katz S, et al. Comparing historical limits method with regression model for weekly monitoring of notifiable diseases, Seattle, WA, August 8–13, 2015, Joint Statistical Meetings, and Published on the JSM Conference proceeding. 2015.

## Anthrax

- Bower W, Hendricks K, Pillai S, Guarnizo J, Meaney-Delman D. Clinical framework and medical countermeasure use during an anthrax mass-casualty incident: CDC recommendations. *MMWR Recomm Rep* 2015;64(No. RR-4).
- Bradley JS, Peacock G, Krug SE, et al.; AAP Committee on Infectious Diseases and Disaster Preparedness Advisory Council. Pediatric anthrax clinical management. *Pediatrics* 2014;133:e1411–36. <https://doi.org/10.1542/peds.2014-0563>
- Hendricks KA, Wright ME, Shadomy SV, et al.; Workgroup on Anthrax Clinical Guidelines. Centers for disease control and prevention expert panel meetings on prevention and treatment of anthrax in adults. *Emerg Infect Dis* 2014;20:10.3201/eid2002.1306870. <https://doi.org/10.3201/eid2002.130687>
- Katharios-Lanwermyer S, Holty JE, Person M, et al. Identifying meningitis during an anthrax mass casualty incident: systematic review of systemic anthrax since 1880. *Clin Infect Dis* 2016;62:1537–45. <https://doi.org/10.1093/cid/ciw184>
- Meaney-Delman D, Zotti ME, Creanga AA, et al.; Workgroup on Anthrax in Pregnant and Postpartum Women. Special considerations for prophylaxis for and treatment of anthrax in pregnant and postpartum women. *Emerg Infect Dis* 2014;20:e130611. <https://doi.org/10.3201/eid2002.130611>
- Pillai SK, Huang E, Guarnizo JT, et al. Antimicrobial treatment for systemic anthrax: analysis of cases from 1945 to 2014 identified through a systematic literature review. *Health Secur* 2015;13:355–64. <https://doi.org/10.1089/hs.2015.0033>

## Arboviral, Neuroinvasive and Nonneuroinvasive

- Gaensbauer JT, Lindsey NP, Messacar K, Staples JE, Fischer M. Neuroinvasive arboviral disease in the United States: 2003 to 2012. *Pediatrics* 2014;134:e642–50. <https://doi.org/10.1542/peds.2014-0498>
- Hahn MB, Monaghan AJ, Hayden MH, et al. Meteorological conditions associated with increased incidence of West Nile virus disease in the United States, 2004–2012. *Am J Trop Med Hyg* 2015;92:1013–22. <https://doi.org/10.4269/ajtmh.14-0737>
- Healy JM, Reisen WK, Kramer VL, et al. Comparison of the efficiency and cost of West Nile virus surveillance methods in California. *Vector Borne Zoonotic Dis* 2015;15:147–55. <https://doi.org/10.1089/vbz.2014.1689>
- Krow-Lucal E, Lindsey NP, Lehman J, Fischer M, Staples JE. West Nile virus and other nationally notifiable arboviral diseases—United States, 2015. *MMWR Morb Mortal Wkly Rep* 2017;66:51–5. <https://doi.org/10.15585/mmwr.mm6602a3>
- Lindsey NP, Fischer M, Neitzel D, et al. Hospital-based enhanced surveillance for West Nile virus neuroinvasive disease. *Epidemiol Infect* 2016;1:1–6.
- Lindsey NP, Prince HE, Kosoy O, et al. Chikungunya virus infections among travelers—United States, 2010–2013. *Am J Trop Med Hyg* 2015;92:82–7. <https://doi.org/10.4269/ajtmh.14-0442>
- Lindsey NP, Staples JE, Delorey MJ, Fischer M. Lack of evidence of increased West Nile virus disease severity in the United States in 2012. *Am J Trop Med Hyg* 2014;90:163–8. <https://doi.org/10.4269/ajtmh.13-0432>
- Lindsey NP, Staples JE, Lehman JA, Fischer M. Surveillance for West Nile virus disease—United States, 1999–2008. *MMWR Surv Summ* 2010;59(No. SS-2).
- Pastula DM, Hoang Johnson DK, White JL, Dupuis AP 2nd, Fischer M, Staples JE. Jamestown Canyon virus disease in the United States—2000–2013. *Am J Trop Med Hyg* 2015;93:384–9. <https://doi.org/10.4269/ajtmh.15-0196>
- Reimann CA, Hayes EB, DiGiuseppi C, et al. Epidemiology of neuroinvasive arboviral disease in the United States, 1999–2007. *Am J Trop Med Hyg* 2008;79:974–9.
- Staples JE, Shankar MB, Sejvar JJ, Meltzer MI, Fischer M. Initial and long-term costs of patients hospitalized with West Nile virus disease. *Am J Trop Med Hyg* 2014;90:402–9. <https://doi.org/10.4269/ajtmh.13-0206>
- Venkat H, Krow-Lucal E, Hennessey M, et al. Notes from the field: concurrent outbreaks of St. Louis encephalitis virus and West Nile virus disease—Arizona, 2015. *MMWR Morb Mortal Wkly Rep* 2015;64:1349–50.
- Yendell SJ, Fischer M, Staples JE. Colorado tick fever in the United States, 2002–2012. *Vector Borne Zoonotic Dis* 2015;15:311–6. <https://doi.org/10.1089/vbz.2014.1755>



## Babesiosis

- Acosta ME, Ender PT, Smith EM, Jahre JA. *Babesia microti* infection, eastern Pennsylvania, USA. *Emerg Infect Dis* 2013;19:1105–7. <https://doi.org/10.3201/eid1907.121593>
- CDC. Babesiosis surveillance—18 states, 2011. *MMWR Morb Mortal Wkly Rep* 2012;61:505–9.
- Herwaldt BL, Linden JV, Bosserman E, Young C, Olkowska D, Wilson M. Transfusion-associated babesiosis in the United States: a description of cases. *Ann Intern Med* 2011;155:509–19. <https://doi.org/10.7326/0003-4819-155-8-201110180-00362>
- Joseph JT, Purtill K, Wong SJ, et al. Vertical transmission of *Babesia microti*, United States. *Emerg Infect Dis* 2012;18:1318–21. <https://doi.org/10.3201/eid1808.110988>
- Vannier E, Krause PJ. Human babesiosis. *N Engl J Med* 2012;366:2397–407. <https://doi.org/10.1056/NEJMra1202018>

## Botulism

- Anon SS, Barzilay EJ. Clostridial infections: botulism and infant botulism. In: Pickering LK, Baker CJ, Kimberlin DW, Long SS, eds. *Red Book: 2009 report of the Committee on Infectious Diseases*. Elk Grove Village, IL: American Academy of Pediatrics; 2009:259–62.
- CDC. Infant botulism—New York City, 2001–2002. *MMWR Morb Mortal Wkly Rep* 2003;52:21–4.
- Fagan RP, McLaughlin JB, Castrodale LJ, et al. Endemic foodborne botulism among Alaska Native persons—Alaska, 1947–2007. *Clin Infect Dis* 2011;52:585–92. <https://doi.org/10.1093/cid/ciq240>
- Newkirk RW, Hedberg CW. Rapid detection of foodborne botulism outbreaks facilitated by epidemiological linking of cases: implications for food defense and public health response. *Foodborne Pathog Dis* 2012;9:150–5. <https://doi.org/10.1089/fpd.2011.0971>
- Rao A, Jackson KA. Botulism. In: DL Heymann, ed. *Control of communicable diseases manual*. Washington, DC: American Public Health Association Press; 2015.
- Sobel S. Botulism. *Clin Infect Dis* 2005;41:1167–73. <https://doi.org/10.1086/444507>
- Sobel J, Tucker N, Sulka A, McLaughlin J, Maslanka S. Foodborne botulism in the United States, 1990–2000. *Emerg Infect Dis* 2004;10:1606–11. <https://doi.org/10.3201/eid1009.030745>
- Shapiro RL, Hatheway C, Becher J, Swerdlow DL. Botulism surveillance and emergency response. A public health strategy for a global challenge. *JAMA* 1997;278:433–5. <https://doi.org/10.1001/jama.1997.03550050095041>
- Shapiro RL, Hatheway C, Swerdlow DL. Botulism in the United States: a clinical and epidemiologic review. *Ann Intern Med* 1998;129:221–8. <https://doi.org/10.7326/0003-4819-129-3-199808010-00011>
- Werner SB, Passaro D, McGee J, Schechter R, Vugia DJ. Wound botulism in California, 1951–1998: recent epidemic in heroin injectors. *Clin Infect Dis* 2000;31:1018–24. <https://doi.org/10.1086/318134>

## Brucellosis

- Ashford DA, di Pietra J, Lingappa J, et al. Adverse events in humans associated with accidental exposure to the livestock brucellosis vaccine RB51. *Vaccine* 2004;22:3435–9. <https://doi.org/10.1016/j.vaccine.2004.02.041>
- CDC. Brucellosis. Atlanta, GA: US Department of Health and Human Services, CDC; 2010. <https://www.cdc.gov/nczved/divisions/dfbmd/diseases/brucellosis>
- CDC. Brucellosis (*Brucella melitensis*, *abortus*, *suis*, and *canis*). Atlanta, GA: US Department of Health and Human Services, CDC; 2012.
- CDC. Brucellosis case definition. Atlanta, GA: US Department of Health and Human Services, CDC; 2010. <https://wwwn.cdc.gov/nndss/conditions/brucellosis/case-definition/2010>

- CDC. *Brucella suis* infection associated with feral swine hunting—three states, 2007–2008. *MMWR Morb Mortal Wkly Rep* 2009;58:618–21.
- CDC. Laboratory-acquired brucellosis—Indiana and Minnesota, 2006. *MMWR Morb Mortal Wkly Rep* 2008;57:39–42.
- CDC. Public health consequences of a false-positive laboratory test result for *Brucella*—Florida, Georgia, and Michigan, 2005. *MMWR Morb Mortal Wkly Rep* 2008;57:603–5.
- Glynn MK, Lynn TV. Brucellosis. *J Am Vet Med Assoc* 2008;233:900–8. <https://doi.org/10.2460/javma.233.6.900>
- Traxler RM, Lehman MW, Bosserman EA, Guerra MA, Smith TL. A literature review of laboratory-acquired brucellosis. *J Clin Microbiol* 2013;51:3055–62. <https://doi.org/10.1128/JCM.00135-13>
- Yagupsky P, Baron EJ. Laboratory exposures to *brucellae* and implications for bioterrorism. *Emerg Infect Dis* 2005;11:1180–5. <https://doi.org/10.3201/eid1108.041197>

## Campylobacteriosis

- Davis KR, Dunn AC, Burnett C, et al. *Campylobacter jejuni* infections associated with raw milk consumption—Utah, 2014. *MMWR Morb Mortal Wkly Rep* 2016;65:301–5. <https://doi.org/10.15585/mmwr.mm6512a1>
- CDC. Multistate outbreak of *Campylobacter jejuni* infections associated with undercooked chicken livers—northeastern United States, 2012. *MMWR Morb Mortal Wkly Rep* 2013;62:874–6.
- Noormohamed A, Fakhr MK. Incidence and antimicrobial resistance profiling of *Campylobacter* in retail chicken livers and gizzards. *Foodborne Pathog Dis* 2012;9:617–24. <https://doi.org/10.1089/fpd.2011.1074>
- Ailes E, Scallan E, Berkelman RL, Kleinbaum DG, Tauxe RV, Moe CL. Do differences in risk factors, medical care seeking, or medical practices explain the geographic variation in campylobacteriosis in Foodborne Diseases Active Surveillance Network (FoodNet) sites? *Clin Infect Dis* 2012;54(Suppl 5):S464–71. <https://doi.org/10.1093/cid/cis050>
- Samuel MC, Vugia DJ, Shallow S, et al.; Emerging Infections Program FoodNet Working Group. Epidemiology of sporadic *Campylobacter* infection in the United States and declining trend in incidence, FoodNet 1996–1999. *Clin Infect Dis* 2004;38(Suppl 3):S165–74. <https://doi.org/10.1086/381583>

## Chlamydia trachomatis Infection

- CDC. Sexually transmitted disease surveillance, 2015. Atlanta, GA: US Department of Health and Human Services, CDC; 2016.
- Lee KC, Ngo-Metzger Q, Wolff T, Chowdhury J, LeFevre ML, Meyers DS. Sexually transmitted infections: recommendations from the U.S. Preventive Services Task Force. *Am Fam Physician* 2016;94:907–15.
- Satterwhite CL, Torrone E, Meites E, et al. Sexually transmitted infections among US women and men: prevalence and incidence estimates, 2008. *Sex Transm Dis* 2013;40:187–93. <https://doi.org/10.1097/OLQ.0b013e318286bb53>
- Torrone E, Papp J, Weinstock H. Prevalence of *Chlamydia trachomatis* genital infection among persons aged 14–39 years—United States, 2007–2012. *MMWR Morb Mortal Wkly Rep* 2014;63:834–8.

## Cholera

- Besser RE, Feikin DR, Eberhart-Phillips JE, Mascola L, Griffin PM. Diagnosis and treatment of cholera in the United States. Are we prepared? *JAMA* 1994;272:1203–5. <https://doi.org/10.1001/jama.1994.03520150071039>
- Loharikar A, Newton AE, Stroika S, et al. Cholera in the United States, 2001–2011: a reflection of patterns of global epidemiology and travel. *Epidemiol Infect* 2015;143:695–9. <https://doi.org/10.1017/S0950268814001186>

- Mintz ED, Guerrant RL. A lion in our village—the unconscionable tragedy of cholera in Africa. *N Engl J Med* 2009;360:1060–3. <https://doi.org/10.1056/NEJMp0810559>
- Newton AE, Heiman KE, Schmitz A, et al. Cholera in United States associated with epidemic in Hispaniola. *Emerg Infect Dis* 2011;17:2166–8. <https://doi.org/10.3201/eid1711.110808>
- Siddique AK, Nair GB, Alam M, et al. El Tor cholera with severe disease: a new threat to Asia and beyond. *Epidemiol Infect* 2010;138:347–52. <https://doi.org/10.1017/S0950268809990550>
- Steinberg EB, Greene KD, Bopp CA, Cameron DN, Wells JG, Mintz ED. Cholera in the United States, 1995–2000: trends at the end of the twentieth century. *J Infect Dis* 2001;184:799–802. <https://doi.org/10.1086/322989>
- Tappero JW, Tauxe RV. Lessons learned during public health response to cholera epidemic in Haiti and the Dominican Republic. *Emerg Infect Dis* 2011;17:2087–93. <https://doi.org/10.3201/eid1711.110827>
- World Health Organization. Cholera, 2012. *Wkly Epidemiol Rec* 2013;88:321–34.

## Coccidioidomycosis

- Engelthaler DM, Roe CC, Hepp CM, et al. local population structure and patterns of western hemisphere dispersal for *Coccidioides spp.*, the fungal cause of valley fever. *MBio* 2016;7:e00550-16. <https://doi.org/10.1128/mBio.00550-16>
- Galgiani JN, Ampel NM, Blair JE, et al. 2016 Infectious Diseases Society of America (IDSA) clinical practice guideline for the treatment of Coccidioidomycosis. *Clin Infect Dis* 2016;63:e112–46. <https://doi.org/10.1093/cid/ciw360>
- Sondermeyer GL, Lee LA, Gilliss D, Vugia DJ. Coccidioidomycosis-associated deaths in California, 2000–2013. *Public Health Rep* 2016;131:531–5. <https://doi.org/10.1177/0033354916662210>

## Cryptosporidiosis

- CDC. CryptoNet: molecular-based tracking to better understand U.S. *Cryptosporidium* transmission. Atlanta, GA: US Department of Health and Human Services, CDC; 2013. <https://www.cdc.gov/parasites/crypto/cryptonet.html>
- CDC. DPDx: Laboratory identification of parasitic diseases of public health concern: diagnostic procedures for cryptosporidiosis. Atlanta, GA: US Department of Health and Human Services, CDC; 2013. <https://www.cdc.gov/dpdx/diagnosticprocedures/stool/antigendetection.html>
- Hlavsa MC, Roberts VA, Kahler AM, et al. Outbreaks of illness associated with recreational water—United States, 2011–2012. *MMWR Morb Mortal Wkly Rep* 2015;64:668–72.
- Painter JE, Gargano JW, Yoder JS, Collier SA, Hlavsa MC. Evolving epidemiology of reported cryptosporidiosis cases in the United States, 1995–2012. *Epidemiol Infect* 2016;144:1792–802. <https://doi.org/10.1017/S0950268815003131>
- Painter JE, Hlavsa MC, Collier SA, Xiao L, Yoder JS. Cryptosporidiosis surveillance—United States, 2011–2012. *MMWR Suppl* 2015;64 (No. SS-3):1–14.
- Roy SL, DeLong SM, Stenzel SA, et al.; Emerging Infections Program FoodNet Working Group. Risk factors for sporadic cryptosporidiosis among immunocompetent persons in the United States from 1999 to 2001. *J Clin Microbiol* 2004;42:2944–51. <https://doi.org/10.1128/JCM.42.7.2944-2951.2004>

## Cyclosporiasis

- Abanyie F, Harvey RR, Harris JR, et al.; Multistate Cyclosporiasis Outbreak Investigation Team. 2013 multistate outbreaks of *Cyclospora cayetanensis* infections associated with fresh produce: focus on the Texas investigations. *Epidemiol Infect* 2015;143:3451–8. <https://doi.org/10.1017/S0950268815000370>
- Hall RL, Jones JL, Herwaldt BL. Surveillance for laboratory-confirmed sporadic cases of cyclosporiasis—United States, 1997–2008. *MMWR Surveill Summ* 2011;60 (No. SS-2):1–11.
- Hall RL, Jones JL, Hurd S, Smith G, Mahon BE, Herwaldt BL. Population-based active surveillance for *Cyclospora* infection—United States, Foodborne Diseases Active Surveillance Network (FoodNet), 1997–2009. *Clin Infect Dis* 2012;54 (Suppl 5):S411–7. <https://doi.org/10.1093/cid/cis049>
- Herwaldt BL. *Cyclospora cayetanensis*: a review, focusing on the outbreaks of cyclosporiasis in the 1990s. *Clin Infect Dis* 2000;31:1040–57. <https://doi.org/10.1086/314051>
- Herwaldt BL. The ongoing saga of U.S. outbreaks of cyclosporiasis associated with imported fresh produce: what *Cyclospora cayetanensis* has taught us and what we have yet to learn. In: Institute of Medicine. Addressing foodborne threats to health: policies, practices, and global coordination. Washington, DC: The National Academies Press; 2006:85–115, 133–40.

## Dengue

- Simmons CP, Farrar JJ, Nguyen V, Wills B. Dengue. *N Engl J Med* 2012;366:1423–32. <https://doi.org/10.1056/NEJMra1110265>
- Stanaway JD, Shepard DS, Undurraga EA, et al. The global burden of dengue: an analysis from the Global Burden of Disease Study 2013. *Lancet Infect Dis* 2016;16:712–23. [https://doi.org/10.1016/S1473-3099\(16\)00026-8](https://doi.org/10.1016/S1473-3099(16)00026-8)

## Diphtheria

- DeWinter LM, Bernard KA, Romney MG. Human clinical isolates of *Corynebacterium diphtheriae* and *Corynebacterium ulcerans* collected in Canada from 1999 to 2003 but not fitting reporting criteria for cases of diphtheria. *J Clin Microbiol* 2005;43:3447–9. <https://doi.org/10.1128/JCM.43.7.3447-3449.2005>
- Tiwari TW, Wharton M. Diphtheria toxoid In: Plotkin O, Orenstein W, Offitt P, eds. *Vaccines*. Edinburgh, UK: Saunders, 2012.
- Wagner KS, Stickings P, White JM, et al. A review of the international issues surrounding the availability and demand for diphtheria antitoxin for therapeutic use. *Vaccine* 2009;28:14–20. <https://doi.org/10.1016/j.vaccine.2009.09.094>
- Wagner KS, White JM, Crowcroft NS, De Martin S, Mann G, Efstratiou A. Diphtheria in the United Kingdom, 1986–2008: the increasing role of *Corynebacterium ulcerans*. *Epidemiol Infect* 2010;138:1519–30. <https://doi.org/10.1017/S0950268810001895>
- Wagner KS, White JM, Lucenko I, et al.; Diphtheria Surveillance Network. Diphtheria in the postepidemic period, Europe, 2000–2009. *Emerg Infect Dis* 2012;18:217–25. <https://doi.org/10.3201/eid1802.110987>
- Zakikhany K, Efstratiou A. Diphtheria in Europe: current problems and new challenges. *Future Microbiol* 2012;7:595–607. <https://doi.org/10.2217/fmb.12.24>

## Ehrlichiosis and Anaplasmosis

- CDC. Diagnosis and management of tickborne rickettsial diseases: Rocky Mountain spotted fever and other spotted fever group rickettsioses, ehrlichioses, and anaplasmosis—United States: a practical guide for health care and public health professionals. *MMWR Recomm Rep* 2016;65 (No. RR-2).



- Dahlgren FS, Heitman KN, Drexler NA, Massung RF, Behravesh CB. Human granulocytic anaplasmosis in the United States from 2008 to 2012: a summary of national surveillance data. *Am J Trop Med Hyg* 2015;93:66–72. <https://doi.org/10.4269/ajtmh.15-0122>
- Dahlgren FS, Nichols Heitman K, Drexler N, Massung RF, Barton Behravesh C. Undetermined ehrlichiosis and anaplasmosis in the United States, 2008–2012: a catch-all for passive surveillance. *Am J Trop Med Hyg* 2016;94:299–301. <https://doi.org/10.4269/ajtmh.15-0691>
- Harris RM, Couturier BA, Sample SC, Coulter KS, Casey KK, Schlager R. Expanded geographic distribution and clinical characteristics of *Ehrlichia ewingii* infections, United States. *Emerg Infect Dis* 2016;22:862–5. <https://doi.org/10.3201/eid2205.152009>
- Johnson DK, Schiffman EK, Davis JP, et al. Human infection with *Ehrlichia muris*-like pathogen, United States, 2007–2013. *Emerg Infect Dis* 2015;21:1794–9. <https://doi.org/10.3201/eid2110.150143>
- Nichols Heitman K, Dahlgren FS, Drexler NA, Massung RF, Behravesh CB. Increasing incidence of Ehrlichiosis in the United States: a summary of national surveillance of *Ehrlichia chaffeensis* and *Ehrlichia ewingii* infections in the United States, 2008–2012. *Am J Trop Med Hyg* 2016;94:52–60. <https://doi.org/10.4269/ajtmh.15-0540>

## Giardiasis

- Adam EA, Yoder JS, Gould H, Hlavsa MC. Giardiasis outbreaks in the United States, 1971–2011. *Epidemiol Infect* 2016. <https://www.ncbi.nlm.nih.gov/pubmed/26750152>
- Anonymous. Drugs for parasitic infections. *Treat Guidel Med Lett* 2010;8:e5.
- Cantey PT, Roy S, Lee B, et al. Study of nonoutbreak giardiasis: novel findings and implications for research. *Am J Med* 2011;124:1175.e1–8. <https://doi.org/10.1016/j.amjmed.2011.06.012>
- Clinical and Laboratory Standards Institute. Procedures for the recovery and identification of parasites from the intestinal tract; approved guideline. CLSI document M28-A2, 2nd ed. Wayne, PA: Clinical and Laboratory Standards Institute; 2005.

## Gonorrhea

- CDC. Sexually transmitted disease surveillance, 2015. Atlanta, GA: US Department of Health and Human Services, CDC; 2016. <https://www.cdc.gov/std/stats15/default.htm>
- LeFevre ML; U.S. Preventive Services Task Force. Screening for Chlamydia and gonorrhea: U.S. Preventive Services Task Force recommendation statement. *Ann Intern Med* 2014;161:902–10. <https://doi.org/10.7326/M14-1981>
- Torrone EA, Johnson RE, Tian LH, Papp JR, Datta SD, Weinstock HS. Prevalence of *Neisseria gonorrhoeae* among persons 14 to 39 years of age, United States, 1999 to 2008. *Sex Transm Dis* 2013;40:202–5. <https://doi.org/10.1097/OLQ.0b013e31827c5a71>
- Workowski KA, Bolan GA. Sexually transmitted diseases treatment guidelines, 2015. *MMWR Recomm Rep* 2015;64(No. RR-3):1–137.

## *Haemophilus influenzae*

- Blain, A, MacNeil, J, Wang, X et al. Invasive *Haemophilus influenzae* disease in adults ≥65 years, United States, 2011. *Open Forum Infectious Diseases* 2014;1:ofuo44.
- Briere EC, Jackson M, Shah SG, et al. *Haemophilus influenzae* type b disease and vaccine booster dose deferral, United States, 1998–2009. *Pediatrics* 2012;130:414–20. <https://doi.org/10.1542/peds.2012-0266>

- Briere EC, Rubin L, Moro PL, Cohn A, Clark T, Messonnier N. Prevention and control of *haemophilus influenzae* type b disease: recommendations of the advisory committee on immunization practices (ACIP). *MMWR Recomm Rep* 2014;63(No. RR-1):1–14.
- MacNeil JR, Cohn AC, Farley M, et al. Current epidemiology and trends in invasive *Haemophilus influenzae* disease—United States, 1989–2008. *Clin Infect Dis* 2011;53:1230–6. <https://doi.org/10.1093/cid/cir735>
- Schuchat A, Messonnier NR. From pandemic suspect to the postvaccine era: the *Haemophilus influenzae* story. *Clin Infect Dis* 2007;44:817–9. <https://doi.org/10.1086/511886>

## Hansen's Disease (Leprosy)

- Britton WJ, Lockwood DN. Leprosy. *Lancet* 2004;363:1209–19. [https://doi.org/10.1016/S0140-6736\(04\)15952-7](https://doi.org/10.1016/S0140-6736(04)15952-7)
- Hartzell JD, Zapor M, Peng S, Straight T. Leprosy: a case series and review. *South Med J* 2004;97:1252–6. <https://doi.org/10.1097/01.SMJ.0000146549.63078.39>
- Hastings R, editor. Leprosy. 2nd ed. New York, NY: Churchill Livingstone; 1994.
- Scollard DM, Adams LB, Gillis TP, Krahenbuhl JL, Truman RW, Williams DL. The continuing challenges of leprosy. *Clin Microbiol Rev* 2006;19:338–81. <https://doi.org/10.1128/CMR.19.2.338-381.2006>
- Scollard D, Stryjewska B. Epidemiology, microbiology, clinical manifestations, and diagnosis of leprosy. UpToDate 2015. <http://www.uptodate.com/contents/epidemiology-microbiology-clinical-manifestations-and-diagnosis-of-leprosy>
- Sharma R, Singh P, Loughry WJ, et al. Zoonotic leprosy in the Southeastern United States. *Emerg Infect Dis* 2015;21:2127–34. <https://doi.org/10.3201/eid2112.150501>
- Woodall P, Scollard D, Rajan L. Hansen disease among Micronesian and Marshallese persons living in the United States. *Emerg Infect Dis* 2011;17:1202–8. <https://doi.org/10.3201/eid1707.102036>
- Worobec SM. Current approaches and future directions in the treatment of leprosy. *Res Rep Trop Med* 2012;3:79–91. <https://doi.org/10.2147/RRTM.S27395>

## Hemolytic Uremic Syndrome

- Gould LH, Demma L, Jones TF, et al. Hemolytic uremic syndrome and death in persons with *Escherichia coli* O157:H7 infection, foodborne diseases active surveillance network sites, 2000–2006. *Clin Infect Dis* 2009;49:1480–5. <https://doi.org/10.1086/644621>
- Luna-Gierke RE, Wymore K, Sadlowski J, et al. Multiple-aetiology enteric infections involving non-O157 Shiga toxin-producing *Escherichia coli*—FoodNet, 2001–2010. *Zoonoses Public Health* 2014;61:492–8. <https://doi.org/10.1111/zph.12098>
- Mody RK, Gu W, Griffin PM, et al. Postdiarrheal hemolytic uremic syndrome in United States children: clinical spectrum and predictors of in-hospital death. *J Pediatr* 2015;166:1022–9. <https://doi.org/10.1016/j.jpeds.2014.12.064>
- Mody RK, Luna-Gierke RE, Jones TF, et al. Infections in pediatric postdiarrheal hemolytic uremic syndrome: factors associated with identifying shiga toxin-producing *Escherichia coli*. *Arch Pediatr Adolesc Med* 2012;166:902–9. <https://doi.org/10.1001/archpediatrics.2012.471>
- Ong KL, Apostol M, Comstock N, et al. Strategies for surveillance of pediatric hemolytic uremic syndrome: Foodborne Diseases Active Surveillance Network (FoodNet), 2000–2007. *Clin Infect Dis* 2012;54(Suppl 5):S424–31. <https://doi.org/10.1093/cid/cis208>
- Tarr PI, Gordon CA, Chandler WL. Shiga-toxin-producing *Escherichia coli* and haemolytic uraemic syndrome. *Lancet* 2005;365:1073–86.

## Human Immunodeficiency Virus Diagnoses

- CDC. HIV Surveillance Report, 2015. Atlanta, GA: US Department of Health and Human Services; 2016. <https://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-report-2015-vol-27.pdf>
- CDC. Monitoring selected national HIV prevention and care objectives by using HIV surveillance data—United States and 6 dependent areas—2014. HIV Surveillance Supplemental Report 2016;21(No.4).
- Schneider E, Whitmore S, Glynn KM, Dominguez K, Mitsch A, McKenna MT. Revised surveillance case definitions for HIV infection among adults, adolescents, and children aged <18 months and for HIV infection and AIDS among children aged 18 months to <13 years—United States, 2008. MMWR Recomm Rep 2008;57(No. RR-10):1–12.
- CDC. Revised surveillance case definition for HIV infection—United States, 2014. MMWR Recomm Rep 2014;63(No. RR-3):1–10.
- Cohen SM, Gray KM, Ocfemia MC, Johnson AS, Hall HI. The status of the National HIV Surveillance System, United States, 2013. Public Health Rep 2014;129:335–41.
- Frieden TR, Foti KE, Mermin J. Applying public health principles to the HIV epidemic—how are we doing? N Engl J Med 2015;373:2281–7. <https://doi.org/10.1056/NEJMms1513641>

## Influenza-Associated Pediatric Mortality

- Bhat N, Wright JG, Broder KR, et al.; Influenza Special Investigations Team. Influenza-associated deaths among children in the United States, 2003–2004. N Engl J Med 2005;353:2559–67. <https://doi.org/10.1056/NEJMoa051721>
- Blanton L, Peacock G, Cox C, Jhung M, Finelli L, Moore C. Neurologic disorders among pediatric deaths associated with the 2009 pandemic influenza. Pediatrics 2012;130:390–6. <https://doi.org/10.1542/peds.2011-3343>
- Council of State and Territorial Epidemiologists. Position statement 04-ID-04: Influenza-associated pediatric mortality 2004. Atlanta, GA: Council of State and Territorial Epidemiologists; 2004. <http://c.ymcdn.com/sites/www.cste.org/resource/resmgr/PS/04-ID-04-FINAL.pdf>
- Council of State and Territorial Epidemiologists. Position statement 07-ID-14: Influenza-associated pediatric mortality 2007. Atlanta, GA: Council of State and Territorial Epidemiologists; 2007. <http://c.ymcdn.com/sites/www.cste.org/resource/resmgr/PS/07-ID-14.pdf>
- Cox CM, Blanton L, Dhara R, Brammer L, Finelli L. 2009 Pandemic influenza A (H1N1) deaths among children—United States, 2009–2010. Clin Infect Dis 2011;52(Suppl 1):S69–74. <https://doi.org/10.1093/cid/ciq011>
- Finelli L, Fiore A, Dhara R, et al. Influenza-associated pediatric mortality in the United States: increase of *Staphylococcus aureus* coinfection. Pediatrics 2008;122:805–11. <https://doi.org/10.1542/peds.2008-1336>
- Guarner J, Paddock CD, Shieh WJ, et al. Histopathologic and immunohistochemical features of fatal influenza virus infection in children during the 2003–2004 season. Clin Infect Dis 2006;43:132–40. <https://doi.org/10.1086/505122>
- Peebles PJ, Dhara R, Brammer L, Fry AM, Finelli L. Influenza-associated mortality among children—United States: 2007–2008. Influenza Other Respi Viruses 2011;5:25–31. <https://doi.org/10.1111/j.1750-2659.2010.00166.x>
- Quandelacy TM, Viboud C, Charu V, Lipsitch M, Goldstein E. Age- and sex-related risk factors for influenza-associated mortality in the United States between 1997–2007. Am J Epidemiol 2014;179:156–67. <https://doi.org/10.1093/aje/kwt235>
- Wong KK, Jain S, Blanton L, et al. Influenza-associated pediatric deaths in the United States, 2004–2012. Pediatrics 2013;132:796–804. <https://doi.org/10.1542/peds.2013-1493>

## Invasive Pneumococcal Disease

- CDC. Antibiotic resistance threats in the United States, 2013. Atlanta, GA: US Department of Health and Human Services, CDC; 2014. <https://www.cdc.gov/drugresistance/threat-report-2013>
- CDC. Use of 13-valent pneumococcal conjugate vaccine and 23-valent pneumococcal polysaccharide vaccine among children aged 6–18 years with immunocompromising conditions: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Morb Mortal Wkly Rep 2013;62:521–4.
- CDC. Use of 13-valent pneumococcal conjugate vaccine and 23-valent pneumococcal polysaccharide vaccine for adults with immunocompromising conditions: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Morb Mortal Wkly Rep 2012;61:816–9.
- Kobayashi M, Bennett NM, Gierke R, et al. Intervals between PCV13 and PPSV23 vaccines: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Morb Mortal Wkly Rep 2015;64:944–7. <https://doi.org/10.15585/mmwr.mm6434a4>
- Moore MR, Link-Gelles R, Schaffner W, et al. Effect of use of 13-valent pneumococcal conjugate vaccine in children on invasive pneumococcal disease in children and adults in the USA: analysis of multisite, population-based surveillance. Lancet Infect Dis 2015;15:301–9. [https://doi.org/10.1016/S1473-3099\(14\)71081-3](https://doi.org/10.1016/S1473-3099(14)71081-3)
- Nuorti JP, Whitney CG. Prevention of pneumococcal disease among infants and children—use of 13-valent pneumococcal conjugate vaccine and 23-valent pneumococcal polysaccharide vaccine: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Recomm Rep 2010;(No. RR-11).
- Tomczyk S, Bennett NM, Stoecker C, et al. Use of 13-valent pneumococcal conjugate vaccine and 23-valent pneumococcal polysaccharide vaccine among adults aged ≥65 years: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Morb Mortal Wkly Rep 2014;63:822–5.
- Tomczyk S, Lynfield R, Schaffner W, et al. Prevention of antibiotic-nonsusceptible invasive pneumococcal disease with the 13-valent pneumococcal conjugate vaccine. Clin Infect Dis 2016;62:1119–25. <https://doi.org/10.1093/cid/ciw067>

## Legionellosis

- ASHRAE. Legionellosis: Risk management for building water systems. ANSI/ASHRAE Standard 188. Atlanta, GA: ASHRAE; 2015. <https://www.ashrae.org>
- Beer KD, Gargano JW, Roberts VA, et al. Outbreaks associated with environmental and undetermined water exposures—United States, 2011–2012. MMWR Morb Mortal Wkly Rep 2015;64:849–51. <https://doi.org/10.15585/mmwr.mm6431a3>
- Beer KD, Gargano JW, Roberts VA, et al. Surveillance for waterborne disease outbreaks associated with drinking water—United States, 2011–2012. MMWR Morb Mortal Wkly Rep 2015;64:842–8. <https://doi.org/10.15585/mmwr.mm6431a2>
- CDC. Legionellosis—United States, 2000–2009. MMWR Morb Mortal Wkly Rep 2011;60:1083–6.
- CDC. Surveillance for travel-associated legionnaires disease—United States, 2005–2006. MMWR Morb Mortal Wkly Rep 2007;56:1261–3.
- Department of Veterans Affairs. Prevention of healthcare-associated *Legionella* disease and scald injury from potable water distribution systems. VHA Directive. 1061;2014. [https://www.va.gov/vhapublications/ViewPublication.asp?pub\\_ID=3033](https://www.va.gov/vhapublications/ViewPublication.asp?pub_ID=3033)
- Dooling KL, Toews KA, Hicks LA, et al. Active Bacterial Core surveillance for legionellosis—United States, 2011–2013. MMWR Morb Mortal Wkly Rep 2015;64:1190–3. <https://doi.org/10.15585/mmwr.mm6442a2>

Fields BS, Benson RF, Besser RE. *Legionella* and Legionnaires' disease: 25 years of investigation. *Clin Microbiol Rev* 2002;15:506–26. <https://doi.org/10.1128/CMR.15.3.506-526.2002>

Garrison LE, Kunz JM, Cooley LA, et al. Vital signs: deficiencies in environmental control identified in outbreaks of Legionnaires' disease—North America, 2000–2014. *MMWR Morb Mortal Wkly Rep* 2016;65:576–84. <https://doi.org/10.15585/mmwr.mm6522e1>

Hlavsa MC, Roberts VA, Kahler AM, et al. Outbreaks of illness associated with recreational water—United States, 2011–2012. *MMWR Morb Mortal Wkly Rep* 2015;64:668–72.

Kozak-Muiznieks NA, Lucas CE, Brown E, et al. Prevalence of sequence types among clinical and environmental isolates of *Legionella pneumophila* serogroup 1 in the United States from 1982 to 2012. *J Clin Microbiol* 2014;52:201–11. <https://doi.org/10.1128/JCM.01973-13>

Kunz J, Cooley L. Preventing Legionnaires' disease: environmental health expertise is key. *J Environ Health* 2016;79:24–6.

Marston BJ, Lipman HB, Breiman RF. Surveillance for Legionnaires' disease. Risk factors for morbidity and mortality. *Arch Intern Med* 1994;154:2417–22. <https://doi.org/10.1001/archinte.1994.00420210049006>

Weiss D, Boyd C, Rakeman JL, et al.; South Bronx Legionnaires' Disease Investigation Team. A large community outbreak of Legionnaires' disease associated with a cooling tower in New York City, 2015. *Public Health Rep* 2017;132:241–50. <https://doi.org/10.1177/0033354916689620>

## Leptospirosis

Adler B, editor. *Leptospira* and Leptospirosis. New York, NY: Springer; 2015.

Bharti AR, Nally JE, Ricaldi JN, et al.; Peru-United States Leptospirosis Consortium. Leptospirosis: a zoonotic disease of global importance. *Lancet Infect Dis* 2003;3:757–71. [https://doi.org/10.1016/S1473-3099\(03\)00830-2](https://doi.org/10.1016/S1473-3099(03)00830-2)

Haake D, Levett P. *Leptospira* Species (Leptospirosis). In: Bennett J, Dolin R, Blaser M, eds. *Mandell, Douglas, and Bennett's principles and practice of infectious diseases*. 8th ed. Philadelphia, PA: Elsevier Inc.; 2015: 2714–20.

Levett PN. Leptospirosis. *Clin Microbiol Rev* 2001;14:296–326. <https://doi.org/10.1128/CMR.14.2.296-326.2001>

Levett PN. Usefulness of serologic analysis as a predictor of the infecting serovar in patients with severe leptospirosis. *Clin Infect Dis* 2003;36:447–52. <https://doi.org/10.1086/346208>

## Listeriosis

Cartwright EJ, Jackson KA, Johnson SD, Graves LM, Silk BJ, Mahon BE. Listeriosis outbreaks and associated food vehicles, United States, 1998–2008. *Emerg Infect Dis* 2013;19:1–9, quiz 184. <https://doi.org/10.3201/eid1901.120393>

CDC. Vital signs: Listeria illnesses, deaths, and outbreaks—United States, 2009–2011. *MMWR Morb Mortal Wkly Rep* 2013;62:448–52.

Heiman KE, Garalde VB, Gronostaj M, et al. Multistate outbreak of listeriosis caused by imported cheese and evidence of cross-contamination of other cheeses, USA, 2012. *Epidemiol Infect* 2016;144:2698–708. <https://doi.org/10.1017/S095026881500117X>

Jackson KA, Biggerstaff M, Tobin-D'Angelo M, et al. Multistate outbreak of *Listeria monocytogenes* associated with Mexican-style cheese made from pasteurized milk among pregnant, Hispanic women. *J Food Prot* 2011;74:949–53. <https://doi.org/10.4315/0362-028X.JFP-10-536>

Jackson KA, Iwamoto M, Swerdlow D. Pregnancy-associated listeriosis. *Epidemiol Infect* 2010;138:1503–9. <https://doi.org/10.1017/S0950268810000294>

Jackson KA, Stroika S, Katz LS, et al. Use of whole genome sequencing and patient interviews to link a case of sporadic listeriosis to consumption of prepackaged lettuce. *J Food Prot* 2016;79:806–9. <https://doi.org/10.4315/0362-028X.JFP-15-384>

de Noordhout CM, Devleeschauwer B, Angulo FJ, et al. The global burden of listeriosis: a systematic review and meta-analysis. *Lancet Infect Dis* 2014;14:1073–82. [https://doi.org/10.1016/S1473-3099\(14\)70870-9](https://doi.org/10.1016/S1473-3099(14)70870-9)

Matanock A, Katz LS, Jackson KA, et al. Two *Listeria monocytogenes* pseudo-outbreaks caused by contaminated laboratory culture media. *J Clin Microbiol* 2016;54:768–70. <https://doi.org/10.1128/JCM.02035-15>

McCollum JT, Cronquist AB, Silk BJ, et al. Multistate outbreak of listeriosis associated with cantaloupe. *N Engl J Med* 2013;369:944–53. <https://doi.org/10.1056/NEJMoa1215837>

Pouillot R, Hoelzer K, Jackson KA, Henao OL, Silk BJ. Relative risk of listeriosis in Foodborne Diseases Active Surveillance Network (FoodNet) sites according to age, pregnancy, and ethnicity. *Clin Infect Dis* 2012;54(Suppl 5):S405–10. <https://doi.org/10.1093/cid/cis269>

Scallan E, Hoekstra RM, Angulo FJ, et al. Foodborne illness acquired in the United States—major pathogens. *Emerg Infect Dis* 2011;17:7–15. <https://doi.org/10.3201/eid1701.P11101>

Silk BJ, Date KA, Jackson KA, et al. Invasive listeriosis in the Foodborne Diseases Active Surveillance Network (FoodNet), 2004–2009: further targeted prevention needed for higher-risk groups. *Clin Infect Dis* 2012;54(Suppl 5):S396–404. <https://doi.org/10.1093/cid/cis268>

Silk BJ, McCoy MH, Iwamoto M, Griffin PM. Foodborne listeriosis acquired in hospitals. *Clin Infect Dis* 2014;59:532–40. <https://doi.org/10.1093/cid/ciu365>

## Lyme Disease

Bacon RM, Kugeler KJ, Mead PS. Surveillance for Lyme disease—United States, 1992–2006. *MMWR Surveill Summ* 2008;57(No. SS-10):1–9.

Bjork J, Brown C, Friedlander H, Schiffman E, Neitzel D. Validation of random sampling as an estimation procedure for Lyme disease surveillance in Massachusetts and Minnesota. *Zoonoses Public Health* 2016. <https://doi.org/10.1111/zph.12297>

CDC. Three sudden cardiac deaths associated with Lyme carditis—United States, November 2012–July 2013. *MMWR Morb Mortal Wkly Rep* 2013;62:993–6.

Hayes EB, Piesman J. How can we prevent Lyme disease? *N Engl J Med* 2003;348:2424–30. <https://doi.org/10.1056/NEJMra021397>

Hinckley AF, Connally NP, Meek JI, et al. Lyme disease testing by large commercial laboratories in the United States. *Clin Infect Dis* 2014;59:676–81. <https://doi.org/10.1093/cid/ciu397>

Kugeler KJ, Farley GM, Forrester JD, Mead PS. Geographic distribution and expansion of human Lyme disease, United States. *Emerg Infect Dis* 2015;21:1455–7. <https://doi.org/10.3201/eid2108.141878>

Mead P, Hinckley A, Hook S, Beard CB. TickNET-A collaborative public health approach to tickborne disease surveillance and research. *Emerg Infect Dis* 2015;21:1574–7. <https://doi.org/10.3201/eid2109.150301>

Nelson C, Hojvat S, Johnson B, et al. Concerns regarding a new culture method for *Borrelia burgdorferi* not approved for the diagnosis of Lyme disease. *MMWR Morb Mortal Wkly Rep* 2014;63:333.

Nelson CA, Saha S, Kugeler KJ, et al. Incidence of clinician-diagnosed Lyme disease, United States, 2005–2010. *Emerg Infect Dis* 2015;21:1625–31. <https://doi.org/10.3201/eid2109.150417>

Pritt BS, Mead PS, Johnson DK, et al. Identification of a novel pathogenic *Borrelia* species causing Lyme borreliosis with unusually high spirochaetemia: a descriptive study. *Lancet Infect Dis* 2016;16:556–64. [https://doi.org/10.1016/S1473-3099\(15\)00464-8](https://doi.org/10.1016/S1473-3099(15)00464-8)

Rutz HJ, Wee S, Feldman KA. Characterizing Lyme disease surveillance in an endemic state. *Zoonoses Public Health* 2016; Published online July 29, 2016.

White J, Noonan-Toly C, Lukacik G, et al. Lyme disease surveillance in New York State: an assessment of case underreporting. *Zoonoses Public Health* 2016. <https://doi.org/10.1111/zph.12307>



Wormser GP, Dattwyler RJ, Shapiro ED, et al. The clinical assessment, treatment, and prevention of Lyme disease, human granulocytic anaplasmosis, and babesiosis: clinical practice guidelines by the Infectious Diseases Society of America. *Clin Infect Dis* 2006;43:1089–134. <https://doi.org/10.1086/508667>

## Malaria

Abanyie FA, Arguin PM, Gutman J. State of malaria diagnostic testing at clinical laboratories in the United States, 2010: a nationwide survey. *Malar J* 2011;10:340. <https://doi.org/10.1186/1475-2875-10-340>

Cullen KA, Mace KE, Arguin PM. Malaria surveillance—United States, 2013. *MMWR Surveill Summ* 2016;65(No. SS-2):1–22. <https://doi.org/10.15585/mmwr.ss6502a1>

Hwang J, Cullen KA, Kachur SP, Arguin PM, Baird JK. Severe morbidity and mortality risk from malaria in the United States, 1985–2011. *Open Forum Infect Dis* 2014;1:ofu034. <https://doi.org/10.1093/ofid/ofu034>

Jensenius M, Han PV, Schlagenhauf P, et al.; GeoSentinel Surveillance Network. Acute and potentially life-threatening tropical diseases in western travelers—a GeoSentinel multicenter study, 1996–2011. *Am J Trop Med Hyg* 2013;88:397–404. <https://doi.org/10.4269/ajtmh.12-0551>

Krause G, Schöneberg I, Altmann D, Stark K. Chemoprophylaxis and malaria death rates. *Emerg Infect Dis* 2006;12:447–51. <https://doi.org/10.3201/eid1203.050736>

Mace KE, Arguin PM. Malaria Surveillance—United States, 2014. *MMWR Surveill Summ* 2017;66(No. SS-12):1–24. <https://doi.org/10.15585/mmwr.ss6612a1>

Tan KR, Cullen KA, Koumans EH, Arguin PM. Inadequate diagnosis and treatment of malaria among travelers returning from Africa during the Ebola epidemic—United States, 2014–2015. *MMWR Morb Mortal Wkly Rep* 2016;65:27–9. <https://doi.org/10.15585/mmwr.mm6502a3>

## Measles

McLean HQ, Fiebelkorn AP, Temte JL, Wallace GS; Centers for Disease Control and Prevention. Prevention of measles, rubella, congenital rubella syndrome, and mumps, 2013: summary recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR Recomm Rep* 2013;62(No. RR-4):1–34.

Papania MJ, Wallace GS, Rota PA, et al. Elimination of endemic measles, rubella, and congenital rubella syndrome from the Western hemisphere: the US experience. *JAMA Pediatr* 2014;168:148–55. <https://doi.org/10.1001/jamapediatrics.2013.4342>

## Meningococcal Disease

Cohn AC, MacNeil JR, Clark TA, et al. Prevention and control of meningococcal disease: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR Recomm Rep* 2013;62(No. RR-2):1–28.

Cohn AC, MacNeil JR, Harrison LH, et al. Changes in *Neisseria meningitidis* disease epidemiology in the United States, 1998–2007: implications for prevention of meningococcal disease. *Clin Infect Dis* 2010;50:184–91. <https://doi.org/10.1086/649209>

Rosenstein NE, Perkins BA, Stephens DS, Popovic T, Hughes JM. Meningococcal disease. *N Engl J Med* 2001;344:1378–88. <https://doi.org/10.1056/NEJM200105033441807>

## Mumps

Fiebelkorn AP, Lawler J, Curns AT, Brandenburg C, Wallace GS. Mumps postexposure prophylaxis with a third dose of measles-mumps-rubella vaccine, Orange County, New York, USA. *Emerg Infect Dis* 2013;19:1411–7. <https://doi.org/10.3201/eid1909.130299>

Parker Fiebelkorn AP, Rosen JB, Brown C, et al. Environmental factors potentially associated with mumps transmission in yeshivas during a mumps outbreak among highly vaccinated students: Brooklyn, New York, 2009–2010. *Hum Vaccin Immunother* 2013;9:189–94. <https://doi.org/10.4161/hv.22415>

## Novel Influenza A Virus Infections

Bowman AS, Workman JD, Nolting JM, Nelson SW, Slemmons RD. Exploration of risk factors contributing to the presence of influenza A virus in swine at agricultural fairs. *Emerg Microbes Infect* 2014;3:e5. <https://doi.org/10.1038/emi.2014.5>

CDC. Antibodies cross-reactive to influenza A (H3N2) variant virus and impact of 2010–11 seasonal influenza vaccine on cross-reactive antibodies—United States. *MMWR Morb Mortal Wkly Rep* 2012;61:237–41.

Ducatez MF, Hause B, Stigger-Rosser E, et al. Multiple reassortment between pandemic (H1N1) 2009 and endemic influenza viruses in pigs, United States. *Emerg Infect Dis* 2011;17:1624–9. <https://doi.org/10.3201/1709.110338>

Epperson S, Jhung M, Richards S, et al.; Influenza A (H3N2)v Virus Investigation Team. Human infections with influenza A(H3N2) variant virus in the United States, 2011–2012. *Clin Infect Dis* 2013;57(Suppl 1):S4–11. <https://doi.org/10.1093/cid/cit272>

Jhung MA, Epperson S, Biggerstaff M, et al. Outbreak of variant influenza A(H3N2) virus in the United States. *Clin Infect Dis* 2013;57:1703–12. <https://doi.org/10.1093/cid/cit649>

Myers KP, Olsen CW, Gray GC. Cases of swine influenza in humans: a review of the literature. *Clin Infect Dis* 2007;44:1084–8. <https://doi.org/10.1086/512813>

National Assembly of State Animal Health Officials; National Association of State Public Health Veterinarians. Measures to minimize influenza transmission at swine exhibitions. Arlington, VA: National Assembly of State Animal Health Officials; 2014. <https://www.cdc.gov/flu/pdf/swineflu/influenza-transmission-swine-exhibitions-2014.pdf>

Olsen CW. The emergence of novel swine influenza viruses in North America. *Virus Res* 2002;85:199–210. [https://doi.org/10.1016/S0168-1702\(02\)00027-8](https://doi.org/10.1016/S0168-1702(02)00027-8)

Rajão DS, Gauger PC, Anderson TK, et al. Novel reassortant human-like H3N2 and H3N1 influenza A viruses detected in pigs are virulent and antigenically distinct from swine viruses endemic to the United States. *J Virol* 2015;89:11213–22. <https://doi.org/10.1128/JVI.01675-15>

Schicker RS, Rossow J, Eckel S, et al. Outbreak of influenza A (H3N2) variant virus infections among persons attending agricultural fairs housing infected swine—Michigan and Ohio, July–August 2016. *MMWR Morb Mortal Wkly Rep* 2016;65:1157–60. <https://doi.org/10.15585/mmwr.mm6542a1>

Shinde V, Bridges CB, Uyeki TM, et al. Triple-reassortant swine influenza A (H1) in humans in the United States, 2005–2009. *N Engl J Med* 2009;360:2616–25. <https://doi.org/10.1056/NEJMoa0903812>

Vincent AL, Ma W, Lager KM, Janke BH, Richt JA. Swine influenza viruses a North American perspective. *Adv Virus Res* 2008;72:127–54. [https://doi.org/10.1016/S0065-3527\(08\)00403-X](https://doi.org/10.1016/S0065-3527(08)00403-X)

Vincent AL, Swenson SL, Lager KM, Gauger PC, Loiacono C, Zhang Y. Characterization of an influenza A virus isolated from pigs during an outbreak of respiratory disease in swine and people during a county fair in the United States. *Vet Microbiol* 2009;137:51–9. <https://doi.org/10.1016/j.vetmic.2009.01.003>

## Pertussis

Acosta AM, DeBolt C, Tasslimi A, et al. Tdap vaccine effectiveness in adolescents during the 2012 Washington State pertussis epidemic. *Pediatrics* 2015;135:981–9. <https://doi.org/10.1542/peds.2014-3358>

Breakwell L, Kelso P, Finley C, et al. Pertussis vaccine effectiveness in the setting of pertactin-deficient pertussis, Vermont. *Pediatrics* 2016;137:e20153973. <https://doi.org/10.1542/peds.2015-3973>

CDC. Updated recommendations for use of tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) vaccine in adults aged 65 years and older—Advisory Committee on Immunization Practices (ACIP), 2012. *MMWR Morb Mortal Wkly Rep* 2012;61:468–70.

CDC. Updated recommendations for use of tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccine (Tdap) in pregnant women—Advisory Committee on Immunization Practices (ACIP), 2012. *MMWR Morb Mortal Wkly Rep* 2013;62:131–5.

Skoff TH, Kenyon C, Cocoros N, et al. Sources of infant pertussis infection in the United States. *Pediatrics* 2015;136:635–41. <https://doi.org/10.1542/peds.2015-1120>

Skoff TH, Martin SW. Impact of tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccination on reported pertussis cases among adolescents 11–18 years of age in an era of waning pertussis immunity: a follow-up analysis. *JAMA Pediatr* 2016;170:453–8. <https://doi.org/10.1001/jamapediatrics.2015.4875>

## Plague

Dennis DT, Gage KL, Gratz N, Poland JD, Tikhomirov E. *Plague manual: epidemiology, distribution, surveillance, and control*. Geneva, Switzerland: World Health Organization; 1999.

Inglesby TV, Dennis DT, Henderson DA, et al.; Working Group on Civilian Biodefense. Plague as a biological weapon: medical and public health management. *JAMA* 2000;283:2281–90. <https://doi.org/10.1001/jama.283.17.2281>

Kugeler KJ, Staples JE, Hinckley AF, Gage KL, Mead PS. Epidemiology of human plague in the United States, 1900–2012. *Emerg Infect Dis* 2015;21:16–22. <https://doi.org/10.3201/eid2101.140564>

Kwit N, Nelson C, Kugeler K, et al. Human plague—United States, 2015. *MMWR Morb Mortal Wkly Rep* 2015;64:918–9. <https://doi.org/10.15585/mmwr.mm6433a6>

Runfola JK, House J, Miller L, et al. Outbreak of human pneumonic plague with dog-to-human and possible human-to-human transmission—Colorado, June–July 2014. *MMWR Morb Mortal Wkly Rep* 2015;64:429–34.

Tourdjman M, Ibraheem M, Brett M, et al. Misidentification of *Yersinia pestis* by automated systems, resulting in delayed diagnoses of human plague infections—Oregon and New Mexico, 2010–2011. *Clin Infect Dis* 2012;55:e58–60. <https://doi.org/10.1093/cid/cis578>

## Q Fever

Anderson A, Bijlmer H, Fournier PE, et al. Diagnosis and management of Q Fever—United States, 2013: recommendations from CDC and the Q Fever working group. *MMWR Recomm Rep* 2013;62(No. RR-3):1–30.

Dahlgren FS, Haberling DL, McQuiston JH. Q fever is underestimated in the United States: a comparison of fatal Q fever cases from two national reporting systems. *Am J Trop Med Hyg* 2015;92:244–6. <https://doi.org/10.4269/ajtmh.14-0502>

Dahlgren FS, McQuiston JH, Massung RF, Anderson AD. Q fever in the United States: summary of case reports from two national surveillance systems, 2000–2012. *Am J Trop Med Hyg* 2015;92:247–55. <https://doi.org/10.4269/ajtmh.14-0503>

Eldin C, Mélenotte C, Mediannikov O, et al. From Q Fever to *Coxiella burnetii* infection: a paradigm change. *Clin Microbiol Rev* 2017;30:115–90. <https://doi.org/10.1128/CMR.00045-16>

## Rabies

CDC. Human rabies prevention—United States, 2008: recommendation of the Advisory Committee on Immunization Practices (ACIP). *MMWR Recomm Rep* 2008;57(No. RR-3).

Brown CM, Slavinski S, Ettestad P, Sidwa TJ, Sorhage FE; National Association of State Public Health Veterinarians; Compendium of Animal Rabies Prevention and Control Committee. Compendium of animal rabies prevention and control, 2016. *J Am Vet Med Assoc* 2016;248:505–17. <https://doi.org/10.2460/javma.248.5.505>

Rupprecht CE, Briggs D, Brown CM, et al. Use of a reduced (4-dose) vaccine schedule for postexposure prophylaxis to prevent human rabies: recommendations of the advisory committee on immunization practices. *MMWR Recomm Rep* 2010;59(No. RR-2):1–9.

## Salmonellosis

Chai SJ, White PL, Lathrop SL, et al. *Salmonella enterica* serotype Enteritidis: increasing incidence of domestically acquired infections. *Clin Infect Dis* 2012;54(Suppl 5):S488–97. <https://doi.org/10.1093/cid/cis231>

Guo C, Hoekstra RM, Schroeder CM, et al. Application of Bayesian techniques to model the burden of human salmonellosis attributable to U.S. food commodities at the point of processing: adaptation of a Danish model. *Foodborne Pathog Dis* 2011;8:509–16. <https://doi.org/10.1089/fpd.2010.0714>

Jackson BR, Griffin PM, Cole D, Walsh KA, Chai SJ. Outbreak-associated *Salmonella enterica* serotypes and food commodities, United States, 1998–2008. *Emerg Infect Dis* 2013;19:1239–44. <https://doi.org/10.3201/eid1908.121511>

Jones TF, Ingram LA, Cieslak PR, et al. Salmonellosis outcomes differ substantially by serotype. *J Infect Dis* 2008;198:109–14. <https://doi.org/10.1086/588823>

Painter JA, Hoekstra RM, Ayers T, et al. Attribution of foodborne illnesses, hospitalizations, and deaths to food commodities by using outbreak data, United States, 1998–2008. *Emerg Infect Dis* 2013;19:407–15. <https://doi.org/10.3201/eid1903.111866>

Scallan E, Mahon BE, Hoekstra RM, Griffin PM. Estimates of illnesses, hospitalizations and deaths caused by major bacterial enteric pathogens in young children in the United States. *Pediatr Infect Dis J* 2013;32:217–21.

Medalla F, Gu W, Mahon BE, et al. Estimated incidence of antimicrobial drug-resistant nontyphoidal *Salmonella* infections, United States, 2004–2012. *Emerg Infect Dis* 2016;23:29–37. <https://doi.org/10.3201/eid2301.160771>

Iwamoto M, Reynolds J, Karp BE, et al. Ceftriaxone-resistant nontyphoidal *Salmonella* from humans, retail meats, and food animals in the United States, 1996–2013. *Foodborne Pathog Dis* 2017;14:74–83. <https://doi.org/10.1089/fpd.2016.2180>

## Shiga toxin-producing *Escherichia coli* (STEC)

- Gould LH, Mody RK, Ong KL, et al.; Emerging Infections Program Foodnet Working Group. Increased recognition of non-O157 Shiga toxin-producing *Escherichia coli* infections in the United States during 2000–2010: epidemiologic features and comparison with *E. coli* O157 infections. *Foodborne Pathog Dis* 2013;10:453–60. <https://doi.org/10.1089/fpd.2012.1401>
- Hale CR, Scallan E, Cronquist AB, et al. Estimates of enteric illness attributable to contact with animals and their environments in the United States. *Clin Infect Dis* 2012;54(Suppl 5):S472–9. <https://doi.org/10.1093/cid/cis051>
- Iwamoto M, Huang JY, Cronquist AB, et al. Bacterial enteric infections detected by culture-independent diagnostic tests—FoodNet, United States, 2012–2014. *MMWR Morb Mortal Wkly Rep* 2015;64:252–7.
- Jones TF, Gerner-Smidt P. Nonculture diagnostic tests for enteric diseases. *Emerg Infect Dis* 2012;18:513–4. <https://doi.org/10.3201/eid1803.111914>
- Mody RK, Griffin PM. Fecal shedding of Shiga toxin-producing *Escherichia coli*: what should be done to prevent secondary cases? *Clin Infect Dis* 2013;56:1141–4. <https://doi.org/10.1093/cid/cis1222>
- Mody RK, Griffin PM. Increasing evidence that certain antibiotics should be avoided for shiga toxin-producing *Escherichia coli* infections: more data needed. *Clin Infect Dis* 2016;62:1259–61. <https://doi.org/10.1093/cid/ciw101>
- Mody RK, Luna-Gierke RE, Jones TF, et al. Infections in pediatric postdiarrheal hemolytic uremic syndrome: factors associated with identifying shiga toxin-producing *Escherichia coli*. *Arch Pediatr Adolesc Med* 2012;166:902–9. <https://doi.org/10.1001/archpediatrics.2012.471>
- Tarr PI, Gordon CA, Chandler WL. Shiga-toxin-producing *Escherichia coli* and haemolytic uraemic syndrome. *Lancet* 2005;365:1073–86.

## Shigellosis

- Arvelo W, Hinkle CJ, Nguyen TA, et al. Transmission risk factors and treatment of pediatric shigellosis during a large daycare center-associated outbreak of multidrug resistant *Shigella sonnei*: implications for the management of shigellosis outbreaks among children. *Pediatr Infect Dis J* 2009;28:976–80. <https://doi.org/10.1097/INF.0b013e3181a76eab>
- Baker KS, Dallman TJ, Ashton PM, et al. Intercontinental dissemination of azithromycin-resistant shigellosis through sexual transmission: a cross-sectional study. *Lancet Infect Dis* 2015;15:913–21. [https://doi.org/10.1016/S1473-3099\(15\)00002-X](https://doi.org/10.1016/S1473-3099(15)00002-X)
- Bowen A, Hurd J, Hoover C, et al. Importation and domestic transmission of *Shigella sonnei* resistant to ciprofloxacin—United States, May 2014–February 2015. *MMWR Morb Mortal Wkly Rep* 2015;64:318–20.
- CDC. Outbreaks of multidrug-resistant *Shigella sonnei* gastroenteritis associated with day care centers—Kansas, Kentucky, and Missouri, 2005. *MMWR Morb Mortal Wkly Rep* 2006;55:1068–71.
- CDC. Notes from the field: Outbreak of infections caused by *Shigella sonnei* with decreased susceptibility to azithromycin—Los Angeles, California, 2012. *MMWR Morb Mortal Wkly Rep* 2013;62:171.
- Bowen A, Eikmeier D, Talley P, et al. Notes from the field: outbreaks of *Shigella sonnei* infection with decreased susceptibility to azithromycin among men who have sex with men—Chicago and Metropolitan Minneapolis-St. Paul, 2014. *MMWR Morb Mortal Wkly Rep* 2015;64:597–8.
- Folster JB, Pecic G, Bowen A, Rickert R, Carattoli A, Whichard JM. Decreased susceptibility to ciprofloxacin among *Shigella* isolates in the United States, 2006 to 2009. *Antimicrob Agents Chemother* 2011;55:1758–60. <https://doi.org/10.1128/AAC.01463-10>

- Garrett V, Bornschlegel K, Lange D, et al. A recurring outbreak of *Shigella sonnei* among traditionally observant Jewish children in New York City: the risks of daycare and household transmission. *Epidemiol Infect* 2006;134:1231–6. <https://doi.org/10.1017/S0950268806006182>
- Gray MD, Lampel KA, Strockbine NA, Fernandez RE, Melton-Celsa AR, Maurelli AT. Clinical isolates of Shiga toxin 1a-producing *Shigella flexneri* with an epidemiological link to recent travel to Hispaniola. *Emerg Infect Dis* 2014;20:1669–77. <https://doi.org/10.3201/eid2010.140292>
- Gupta A, Polyak CS, Bishop RD, Sobel J, Mintz ED. Laboratory-confirmed shigellosis in the United States, 1989–2002: epidemiologic trends and patterns. *Clin Infect Dis* 2004;38:1372–7. <https://doi.org/10.1086/386326>
- Huang JY, Henao OL, Griffin PM, et al. Infection with pathogens transmitted commonly through food and the effect of increasing use of culture-independent diagnostic tests on surveillance—Foodborne Diseases Active Surveillance Network, 10 U.S. sites, 2012–2015. *MMWR Morb Mortal Wkly Rep* 2016;65:368–71. <https://doi.org/10.15585/mmwr.mm6514a2>
- Lederer I, Taus K, Allerberger F, et al. Shigellosis in refugees, Austria, July to November 2015. *Euro Surveill* 2015;20:30081. <https://doi.org/10.2807/1560-7917.ES.2015.20.48.30081>
- Nygren BL, Schilling KA, Blanton EM, Silk BJ, Cole DJ, Mintz ED. Foodborne outbreaks of shigellosis in the USA, 1998–2008. *Epidemiol Infect* 2013;141:233–41. <https://doi.org/10.1017/S0950268812000222>
- Scallan E, Mahon BE, Hoekstra RM, Griffin PM. Estimates of illnesses, hospitalizations and deaths caused by major bacterial enteric pathogens in young children in the United States. *Pediatr Infect Dis J* 2013;32:217–21.

## Spotted Fever Rickettsiosis

- CDC. Diagnosis and management of tickborne rickettsial diseases: Rocky Mountain spotted fever and other spotted fever group rickettsioses, ehrlichioses, and anaplasmosis—United States: a practical guide for health care and public health professionals. *MMWR Recomm Rep* 2016;65(No. RR-2).
- Dahlgren FS, Paddock CD, Springer YP, Eisen RJ, Behravesh CB. Expanding range of *Amblyomma americanum* and simultaneous changes in the epidemiology of spotted fever group Rickettsiosis in the United States, 1999–2007. *Am J Trop Med Hyg* 2016;94:35–42. <https://doi.org/10.4269/ajtmh.15-0580>
- Drexler NA, Dahlgren FS, Heitman KN, Massung RF, Paddock CD, Behravesh CB. National surveillance of spotted fever group Rickettsiosis in the United States, 2008–2012. *Am J Trop Med Hyg* 2016;94:26–34. <https://doi.org/10.4269/ajtmh.15-0472>
- Herrick KL, Pena SA, Yaglom HD, et al. *Rickettsia parkeri* Rickettsiosis, Arizona, USA. *Emerg Infect Dis* 2016;22:780–5. <https://doi.org/10.3201/eid2205.151824>
- Johnston SH, Glaser CA, Padgett K, et al. *Rickettsia* spp. 364D causing a cluster of eschar-associated illness, California. *Pediatr Infect Dis J* 2013;32:1036–9. <https://doi.org/10.1097/INF.0b013e318296b24b>
- Paddock CD, Goddard J. The evolving medical and veterinary importance of the Gulf Coast tick (*Acar: Ixodidae*). *J Med Entomol* 2015;52:230–52. <https://doi.org/10.1093/jme/tju022>
- Padgett KA, Bonilla D, Ereemeeva ME, et al. The Eco-epidemiology of Pacific Coast Tick Fever in California. *PLoS Negl Trop Dis* 2016;10:e0005020. <https://doi.org/10.1371/journal.pntd.0005020>
- Straily A, Feldpausch A, Ulbrich C, et al. Notes from the field: *Rickettsia parkeri* Rickettsiosis—Georgia, 2012–2014. *MMWR Morb Mortal Wkly Rep* 2016;65:718–9. <https://doi.org/10.15585/mmwr.mm6528a3>



## Streptococcal Toxic Shock Syndrome

- CDC. Active Bacterial Core Surveillance Report, Emerging Infections Program Network, Group A Streptococcus—2014. <https://www.cdc.gov/abcs/reports-findings/survreports/gas14.pdf>
- CDC. Investigating clusters of group A streptococcal disease. Atlanta, GA: US Department of Health and Human Services, CDC; 2009. <https://www.cdc.gov/groupastrep/outbreaks/calculator>
- Nelson GE, Pondo T, Toews KA, et al. Epidemiology of invasive group A streptococcal infections in the United States, 2005–2012. *Clin Infect Dis* 2016;63:478–86. <https://doi.org/10.1093/cid/ciw248>
- Prevention of Invasive Group A Streptococcal Infections Workshop Participants. Prevention of invasive group A streptococcal disease among household contacts of case patients and among postpartum and postsurgical patients: recommendations from the Centers for Disease Control and Prevention. *Clin Infect Dis* 2002;35:950–9. <https://doi.org/10.1086/342692>
- Smit MA, Nyquist AC, Todd JK. Infectious shock and toxic shock syndrome diagnoses in hospitals, Colorado, USA. *Emerg Infect Dis* 2013;19:1855–8. <https://doi.org/10.3201/eid1911.121547>
- Steer AC, Carapetis JR, Dale JB, et al. Status of research and development of vaccines for *Streptococcus pyogenes*. *Vaccine* 2016;34:2953–8. <https://doi.org/10.1016/j.vaccine.2016.03.073>

## Syphilis

- CDC. Sexually transmitted disease surveillance, 2015. Atlanta, GA: US Department of Health and Human Services, CDC; 2016.
- Patton ME, Su JR, Nelson R, Weinstock H. Primary and secondary syphilis—United States, 2005–2013. *MMWR Morb Mortal Wkly Rep* 2014;63:402–6.
- Workowski KA, Bolan GA. Sexually transmitted diseases treatment guidelines, 2015. *MMWR Recomm Rep* 2015;64(No. RR-3):1–137.

## Syphilis, Congenital

- Bowen V, Su J, Torrone E, Kidd S, Weinstock H. Increase in incidence of congenital syphilis—United States, 2012–2014. *MMWR Morb Mortal Wkly Rep* 2015;64:1241–5. <https://doi.org/10.15585/mmwr.mm6444a3>
- CDC. Sexually transmitted disease surveillance, 2015. Atlanta, GA: US Department of Health and Human Services, CDC; 2016.
- Workowski KA, Bolan GA. Sexually transmitted diseases treatment guidelines, 2015. *MMWR Recomm Rep* 2015;64(No. RR-3):1–137.

## Tetanus

- CDC. Tetanus—Puerto Rico, 2002. *MMWR Morb Mortal Wkly Rep* 2002;51:613–5.
- Khetsuriani N, Zakikhany K, Jabirov S, et al. Seroepidemiology of diphtheria and tetanus among children and young adults in Tajikistan: nationwide population-based survey, 2010. *Vaccine* 2013;31:4917–22. <https://doi.org/10.1016/j.vaccine.2013.07.015>
- McQuillan GM, Kruszon-Moran D, Deforest A, Chu SY, Wharton M. Serologic immunity to diphtheria and tetanus in the United States. *Ann Intern Med* 2002;136:660–6. <https://doi.org/10.7326/0003-4819-136-9-200205070-00008>
- Pascual FB, McGinley EL, Zanardi LR, Cortese MM, Murphy TV. Tetanus surveillance—United States, 1998–2000. *MMWR Surveill Summ* 2003;52(No. SS-3):1–8.
- Roper M, Wassilak S, Tiwari T, Orenstein W. Tetanus toxoid. In: Plotkin O, Orenstein W, Offitt P, eds. *Vaccines*. Edinburgh: Saunders, 2012.

## Trichinellosis

- Greene YG, Padovani T, Rudroff JA, Hall R, Austin C, Vernon M. Trichinellosis caused by consumption of wild boar meat—Illinois, 2013. *MMWR Morb Mortal Wkly Rep* 2014;63:451.
- Gamble HR, Bessonov AS, Cuperlovic K, et al. International Commission on Trichinellosis: recommendations on methods for the control of *Trichinella* in domestic and wild animals intended for human consumption. *Vet Parasitol* 2000;93:393–408. [https://doi.org/10.1016/S0304-4017\(00\)00354-X](https://doi.org/10.1016/S0304-4017(00)00354-X)
- Gottstein B, Pozio E, Nöckler K. Epidemiology, diagnosis, treatment, and control of trichinellosis. *Clin Microbiol Rev* 2009;22:127–45. <https://doi.org/10.1128/CMR.00026-08>
- Holzbauer SM, Agger WA, Hall RL, et al. Outbreak of *Trichinella spiralis* infections associated with a wild boar hunted at a game farm in Iowa. *Clin Infect Dis* 2014;59:1750–6. <https://doi.org/10.1093/cid/ciu713>
- Kennedy ED, Hall RL, Montgomery SP, Pyburn DG, Jones JL. Trichinellosis surveillance—United States, 2002–2007. *MMWR Surveill Summ* 2009;58(No. SS-9):1–7.
- Roy SL, Lopez AS, Schantz PM. Trichinellosis surveillance—United States, 1997–2001. *MMWR Surveill Summ* 2003;52(No. SS-6):1–8.
- Wilson NO, Hall RL, Montgomery SP, Jones JL. Trichinellosis surveillance—United States, 2008–2012. *MMWR Surveill Summ* 2015;64(No. SS-1):1–8.

## Tuberculosis

- CDC. Reported tuberculosis in the United States, 2015. Atlanta, GA: US Department of Health and Human Services, CDC; 2016.
- France AM, Grant J, Kammerer JS, Navin TR. A field-validated approach using surveillance and genotyping data to estimate tuberculosis attributable to recent transmission in the United States. *Am J Epidemiol* 2015;182:799–807. <https://doi.org/10.1093/aje/kwv121>
- Manangan LP, Tryon C, Magee E, Miramontes R. Innovative quality-assurance strategies for tuberculosis surveillance in the United States. *Tuberc Res Treat* 2012;2012:481230.
- Salinas JL, Mindra G, Haddad MB, Pratt R, Price SF, Langer AJ. Leveling of tuberculosis incidence—United States, 2013–2015. *MMWR Morb Mortal Wkly Rep* 2016;65:273–8. <https://doi.org/10.15585/mmwr.mm6511a2>
- Woodruff RS, Winston CA, Miramontes R. Predicting U.S. tuberculosis case counts through 2020. *PLoS One* 2013;8:e65276. <https://doi.org/10.1371/journal.pone.0065276>
- Yelk Woodruff RS, Pratt RH, Armstrong LR. The US National Tuberculosis Surveillance System: A descriptive assessment of the completeness and consistency of data reported from 2008 to 2012. *JMIR Public Health Surveill* 2015;1:e15. <https://doi.org/10.2196/publichealth.4991>
- Yuen CM, Kammerer JS, Marks K, Navin TR, France AM. Recent transmission of tuberculosis—United States, 2011–2014. *PLoS One* 2016;11:e0153728. <https://doi.org/10.1371/journal.pone.0153728>

## Tularemia

- CDC. Tularemia—United States, 2001–2010. *MMWR Morb Mortal Wkly Rep* 2013;62:963–6.
- Dennis DT, Inglesby TV, Henderson DA, et al.; Working Group on Civilian Biodefense. Tularemia as a biological weapon: medical and public health management. *JAMA* 2001;285:2763–73. <https://doi.org/10.1001/jama.285.21.2763>
- Kugeler KJ, Mead PS, Janusz AM, et al. Molecular epidemiology of *Francisella tularensis* in the United States. *Clin Infect Dis* 2009;48:863–70. <https://doi.org/10.1086/597261>

Pedati C, House J, Hancock-Allen J, et al. Notes from the field: increase in human cases of tularemia—Colorado, Nebraska, South Dakota, and Wyoming, January–September 2015. *MMWR Morb Mortal Wkly Rep* 2015;64:1317–8. <https://doi.org/10.15585/mmwr.mm6447a4>

Tarnvik A. WHO guidelines on tularemia. Geneva, Switzerland: World Health Organization; 2007.

Weber IB, Turabelidze G, Patrick S, Griffith KS, Kugeler KJ, Mead PS. Clinical recognition and management of tularemia in Missouri: a retrospective records review of 121 cases. *Clin Infect Dis* 2012;55:1283–90. <https://doi.org/10.1093/cid/cis706>

## Typhoid

Date KA, Newton AE, Medalla F, et al. Changing patterns in enteric fever incidence and increasing antibiotic resistance of enteric fever isolates in the United States, 2008–2012. *Clin Infect Dis* 2016;63:322–9. <https://doi.org/10.1093/cid/ciw232>

Imanishi M, Newton AE, Vieira AR, et al. Typhoid fever acquired in the United States, 1999–2010: epidemiology, microbiology, and use of a space-time scan statistic for outbreak detection. *Epidemiol Infect* 2015;143:2343–54. <https://doi.org/10.1017/S0950268814003021>

Loharikar A, Newton A, Rowley P, et al. Typhoid fever outbreak associated with frozen mamey pulp imported from Guatemala to the western United States, 2010. *Clin Infect Dis* 2012;55:61–6. <https://doi.org/10.1093/cid/cis296>

Lynch ME, Blanton EM, Bulens S, et al. Typhoid fever in the United States, 1999–2006. *JAMA* 2009;302:859–65. <https://doi.org/10.1001/jama.2009.1229>

Mahon BE, Newton AE, Mintz ED. Effectiveness of typhoid vaccination in US travelers. *Vaccine* 2014;32:3577–9. <https://doi.org/10.1016/j.vaccine.2014.04.055>

Olsen SJ, Bleasdale SC, Magnano AR, et al. Outbreaks of typhoid fever in the United States, 1960–99. *Epidemiol Infect* 2003;130:13–21. <https://doi.org/10.1017/S0950268802007598>

Steinberg EB, Bishop R, Haber P, et al. Typhoid fever in travelers: who should be targeted for prevention? *Clin Infect Dis* 2004;39:186–91. <https://doi.org/10.1086/421945>

## Varicella

Bialek SR, Perella D, Zhang J, et al. Impact of a routine two-dose varicella vaccination program on varicella epidemiology. *Pediatrics* 2013;132:e1134–40. <https://doi.org/10.1542/peds.2013-0863>

Lopez AS, Zhang J, Brown C, Bialek S. Varicella-related hospitalizations in the United States, 2000–2006: the 1-dose varicella vaccination era. *Pediatrics* 2011;127:238–45. <https://doi.org/10.1542/peds.2010-0962>

Lopez AS, Zhang J, Marin M. Epidemiology of varicella during the 2-dose Varicella Vaccination Program—United States, 2005–2014. *MMWR Morb Mortal Wkly Rep* 2016;65:902–5. <https://doi.org/10.15585/mmwr.mm6534a4>

Marin M, Güris D, Chaves SS, Schmid S, Seward JF; Advisory Committee on Immunization Practices, CDC. Prevention of varicella: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR Recomm Rep* 2007;56(No. RR-4):1–40.

Marin M, Zhang JX, Seward JF. Near elimination of varicella deaths in the US after implementation of the vaccination program. *Pediatrics* 2011;128:214–20. <https://doi.org/10.1542/peds.2010-3385>

## Vibriosis

Crowe SJ, Newton AE, Gould LH, et al. Vibriosis, not cholera: toxigenic *Vibrio cholerae* non-O1, non-O139 infections in the United States, 1984–2014. *Epidemiol Infect* 2016;144:3335–41. <https://doi.org/10.1017/S0950268816001783>

Daniels NA, MacKinnon L, Bishop R, et al. *Vibrio parahaemolyticus* infections in the United States, 1973–1998. *J Infect Dis* 2000;181:1661–6. <https://doi.org/10.1086/315459>

Dechet AM, Yu PA, Koram N, Painter J. Nonfoodborne *Vibrio* infections: an important cause of morbidity and mortality in the United States, 1997–2006. *Clin Infect Dis* 2008;46:970–6. <https://doi.org/10.1086/529148>

McLaughlin JB, DePaola A, Bopp CA, et al. Outbreak of *Vibrio parahaemolyticus* gastroenteritis associated with Alaskan oysters. *N Engl J Med* 2005;353:1463–70. <https://doi.org/10.1056/NEJMoa051594>

Newton AE, Garrett N, Stroika SG, Halpin JL, Turnsek M, Mody RK. Increase in *Vibrio parahaemolyticus* infections associated with consumption of Atlantic Coast shellfish—2013. *MMWR Morb Mortal Wkly Rep* 2014;63:335–6.

Newton A, Kendall M, Vugia DJ, Henao OL, Mahon BE. Increasing rates of vibriosis in the United States, 1996–2010: review of surveillance data from 2 systems. *Clin Infect Dis* 2012;54(Suppl 5):S391–5. <https://doi.org/10.1093/cid/cis243>

Shapiro RL, Altekruze S, Hutwagner L, et al.; Vibrio Working Group. The role of Gulf Coast oysters harvested in warmer months in *Vibrio vulnificus* infections in the United States, 1988–1996. *J Infect Dis* 1998;178:752–9. <https://doi.org/10.1086/515367>

Tobin-D'Angelo M, Smith AR, Bulens SN, et al. Severe diarrhea caused by cholera toxin-producing *vibrio cholerae* serogroup O75 infections acquired in the southeastern United States. *Clin Infect Dis* 2008;47:1035–40. <https://doi.org/10.1086/591973>

Vugia DJ, Tabnak F, Newton AE, Hernandez M, Griffin PM. Impact of 2003 state regulation on raw oyster-associated *Vibrio vulnificus* illnesses and deaths, California, USA. *Emerg Infect Dis* 2013;19:1276–80. <https://doi.org/10.3201/eid1908.121861>







The *Morbidity and Mortality Weekly Report (MMWR)* Series is prepared by the Centers for Disease Control and Prevention (CDC) and is available free of charge in electronic format. To receive an electronic copy each week, visit MMWR's free subscription page at <http://www.cdc.gov/mmwr/mmwrsubscribe.html>. Paper copy subscriptions are available through the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402; telephone 202-512-1800.

Readers who have difficulty accessing this PDF file may access the HTML file at <http://www.cdc.gov/mmwr/xxxxxxxxx>. Address all inquiries about the *MMWR* Series, including material to be considered for publication, to Executive Editor, *MMWR* Series, Mailstop E-90, CDC, 1600 Clifton Rd., N.E., Atlanta, GA 30329-4027 or to [mmwrq@cdc.gov](mailto:mmwrq@cdc.gov).

All material in the *MMWR* Series is in the public domain and may be used and reprinted without permission; citation as to source, however, is appreciated.

Use of trade names and commercial sources is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services.

References to non-CDC sites on the Internet are provided as a service to *MMWR* readers and do not constitute or imply endorsement of these organizations or their programs by CDC or the U.S. Department of Health and Human Services. CDC is not responsible for the content of these sites. URL addresses listed in *MMWR* were current as of the date of publication.

ISSN: 0149-2195 (Print)