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Fatal Foodborne *Clostridium perfringens* Illness at a State Psychiatric Hospital — Louisiana, 2010

Clostridium perfringens, the third most common cause of foodborne illness in the United States (*1*), most often causes a self-limited, diarrheal disease lasting 12–24 hours. Fatalities are very rare, occurring in <0.03% of cases (*1*). Death usually is caused by dehydration and occurs among the very young, the very old, and persons debilitated by illness (*2*). On May 7, 2010, 42 residents and 12 staff members at a Louisiana state psychiatric hospital experienced vomiting, abdominal cramps, and diarrhea. Within 24 hours, three patients had died. The three fatalities occurred among patients aged 41–61 years who were receiving medications that had anti–intestinal motility side effects. For two of three decedents, the cause of death found on postmortem examination was necrotizing colitis. Investigation by the Louisiana Office of Public Health (OPH) and CDC found that eating chicken served at dinner on May 6 was associated with illness. The chicken was cooked approximately 24 hours before serving and not cooled in accordance with hospital guidelines. *C. perfringens* enterotoxin (CPE) was detected in 20 of 23 stool specimens from ill residents and staff members. Genetic testing of *C. perfringens* toxins isolated from chicken and stool specimens was carried out to determine which of the two strains responsible for *C. perfringens* foodborne illness was present. The specimens tested negative for the beta-toxin gene, excluding *C. perfringens* type C as the etiologic agent and implicating *C. perfringens* type A. This outbreak underscores the need for strict food preparation guidelines at psychiatric inpatient facilities and the potential risk for adverse outcomes among any patients with impaired intestinal motility caused by medications, disease, and extremes of age when exposed to *C. perfringens* enterotoxin.

On May 8, a state psychiatric hospital contacted OPH to report three resident deaths that occurred following an outbreak of gastrointestinal illness in patients and staff members that began late in the evening of May 6. The only common exposure was food from the hospital's kitchen. CDC joined the investigation on May 13 to help identify the outbreak cause. A case was defined as onset of any loose stools or vomiting from the evening of May 6 through the morning of May 8 in residents or staff members. Hospital infection control staff members identified 42 cases from among the 136 residents (attack rate = 31%). Illness onset ranged from 9:00 p.m. on May 6 through 3:00 p.m. on May 7 (Figure). Because of the tight clustering of symptom onset, food served at the evening meal on May 6 was considered to be the most likely cause of illness. The mean incubation time from eating the suspect meal was 13 hours (range: 5–21 hours). The most common symptoms were diarrhea (94%), abdominal cramps (51%), nausea (39%), and vomiting (27%).

Histories of food eaten were not obtained from patients because of their difficulties in recalling events, and food consumption was not recorded in nursing notes. However, 32 employees were

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interviewed, and 13 reported eating some portion of the kitchen-prepared suspect meal. Among these 13, nine had illness that met the case definition (attack rate = 69%). None of the staff members who did not eat the suspect dinner were ill (relative risk = infinity, 95% confidence interval = 3.7–infinity).

Interviews of the kitchen staff members revealed that the chicken served at the suspect meal was delivered frozen to the kitchen on May 4, and was cooked on May 5, the day before serving. Contrary to hospital guidelines, the chicken was placed in 6-inch deep pans after cooking and covered with aluminum foil, which slowed cooling, and the first temperature check was not until 16 hours later. During the 24 hours between cooking and serving, the chicken also was removed from cooling three times for preparation steps before being served as cold chicken sandwiches or chicken salad. Inspection of the hospital kitchen by OPH sanitarians found no critical violations of Louisiana sanitary code.

The state public health laboratory detected *C. perfringens* enterotoxin by reversed passive latex agglutination (RPLA) in 20 of 23 stool specimens from ill residents and staff members. CDC's Enteric Diseases Laboratory Branch detected *C. perfringens* enterotoxin by RPLA and polymerase chain reaction (PCR) assays for species-specific *C. perfringens* and CPE genes in 15 of 20 stool specimens available for testing. CDC's laboratory also isolated enterotoxin-producing *C. perfringens* and detected the CPE gene in all four of the samples of chicken served at the suspect meal. The stool specimens and bacterial isolates tested negative for the beta toxin gene, confirming that *C. perfringens* type C was not the etiologic agent and implicating *C. perfringens* type A.

In response to this outbreak, regional public health sanitarians conducted food safety presentations for all food service workers at the hospital. After reviewing its food preparation policies, the hospital additionally required all of its food service workers to attend a six-part food safety training course and temperature logs were developed to monitor cooling procedures.

Decedents

Patient 1. The first decedent was an ambulatory black woman aged 43 years with a history of bipolar-type schizoaffective disorder, seizures, and controlled hypothyroidism, but no known history of constipation. Her medications were citalopram, valproic acid, ziprasidone, *quetiapine*,* levothyroxine, and lithium. The morning after eating the suspect evening meal she experienced fecal incontinence, loose stools, clammy skin, and atypical behavior and was referred to a nearby medical center emergency department. In the emergency department, the patient was noted to have a progressive abdominal distention. Five hours after her arrival at the emergency department, the patient developed bradycardia, became apneic, and died. Her stool tested positive for *C. perfringens* enterotoxin by RPLA.

* Drugs with constipation listed as a common side effect are italicized in the text and include *benztropine*, *clozapine*, *fluphenazine*, *hydrochlorothiazide*, *loperamide*, and *quetiapine*.

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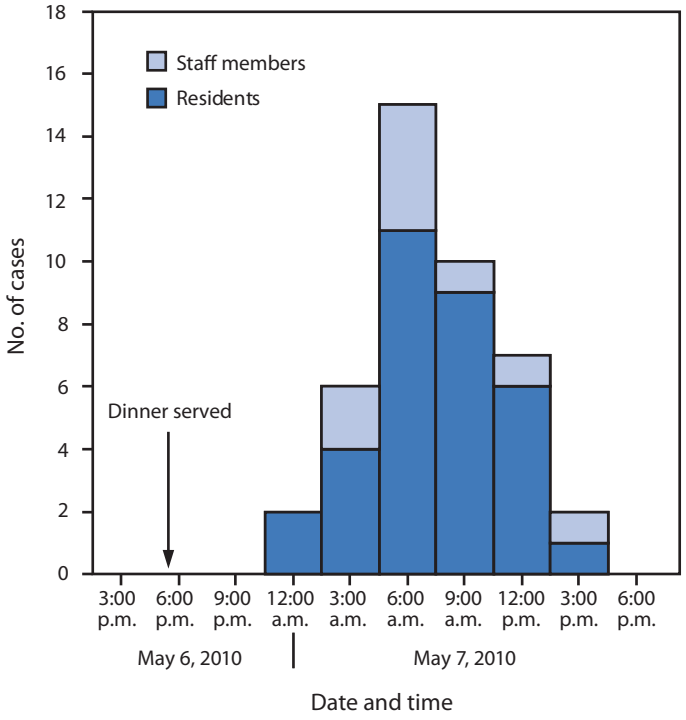
FIGURE. Date and time of symptom onset during an outbreak of *Clostridium perfringens* food poisoning at a state psychiatric hospital — Louisiana, 2010



Autopsy revealed necrotizing colitis involving 95% of the colon and no evidence of perforation. Postmortem pathology using a *C. perfringens*–specific PCR assay targeting the alpha-toxin gene revealed no evidence of *C. perfringens* in stomach or colon. Immunohistochemical testing for *C. perfringens* using rabbit anti-*Clostridium* spp. antibody was also negative.

Patient 2. The second decedent was an ambulatory black man aged 41 years with a history of schizophrenia, hypertension, gastroesophageal reflux disorder, and frequent constipation. His medications were pantoprazole, atenolol, *fluphenazine*, asenapine, *benztropine*, *hydrochlorothiazide*, lithium, and lorazepam. Several hours after the suspect evening meal the patient complained of abdominal pain and was evaluated the next morning at an emergency department where radiography revealed a large amount of stool in the left colon. He was treated with magnesium citrate and discharged, but returned later in the day complaining of continued abdominal pain.

Shortly after his arrival in the emergency department, the patient passed a large loose stool and vomited once; he soon collapsed in cardiac arrest and died. Blood cultures and testing for *Clostridium difficile* toxin were negative. His stool tested positive for *C. perfringens* enterotoxin by RPLA.

Autopsy revealed necrotizing colitis involving 30% of the proximal half of the colon and 100% of the distal colon, but no evidence of perforation. Postmortem pathology using the PCR alpha-toxin assay and rabbit anti-*Clostridium* antibody revealed no evidence of *C. perfringens* in stomach and colon tissue.

Patient 3. The third decedent was an ambulatory black man aged 61 years with a history of schizophrenia, diabetes, and hypertension, and with no recorded history of constipation. His medications were *clozapin*e, glipizide, omeprazole, ezetimibe, atenolol, losartan, and travoprost eye drops. The patient had been complaining of feeling unwell and having diarrhea throughout the day after eating the suspect evening meal, and was given *loperamide* (an anti–intestinal motility agent) that evening for his complaints of diarrhea.

At 5:00 a.m., the patient was found dead in his bed. His stool tested positive for *C. perfringens* enterotoxin by RPLA. An autopsy revealed distended, fluid-filled bowel, but with no colonic discoloration, hemorrhage, ulceration, or necrosis. Microscopic examination of the colon revealed only postmortem autolysis. Postmortem pathology using the alpha-toxin PCR assay revealed evidence of *C. perfringens* in stomach and colon tissue. The rabbit anti-*Clostridium* antibody test for *C. perfringens* was negative.

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Editorial Note

The laboratory results, clinical course, and epidemiologic findings indicate that this outbreak was caused by *C. perfringens* type A. A related organism, *C. perfringens* type C, causes clostridial necrotizing enteritis or "pigbel," a type of foodborne illness characterized by necrotizing small bowel inflammation caused by the beta toxin. Necrotizing enteritis is caused when the normal trypsin-mediated degradation of beta toxin is impaired by a protein-poor diet or coingestion of foods such as sweet potatoes that contain trypsin inhibitors. Clostridial necrotizing enteritis has a mortality rate of 15%–25%, but it is rare in developed countries such as the United States (*2*) and was ruled out in this outbreak when samples tested negative for the beta-toxin gene.

What is already known on this topic?

Clostridium perfringens is an underrecognized but common cause of foodborne illness that usually causes self-limited disease and rarely is fatal.

What is added by this report?

This is the second reported outbreak of *C. perfringens* foodborne illness with fatalities attributed to necrotizing colitis in the United States. That these outbreaks have occurred in psychiatric inpatient facilities increases concern that the impaired intestinal motility caused by antipsychotic medications renders these patients vulnerable to necrotizing colitis when exposed to *C. perfringens* enterotoxin.

What are the implications for public health practice?

Application of food preparation guidelines to prevent *C. perfringens* foodborne illness is warranted in any setting where institutional food preparation creates a risk for *C. perfringens* illness outbreaks. Given the potential for fatal outcomes, such guidelines deserve reinforcement in psychiatric hospitals and other settings where patients might have impaired intestinal motility for any reason to reduce the risk for necrotizing colitis after *C. perfringens* infection.

This is the second reported outbreak of foodborne illness caused by *C. perfringens* type A with fatalities attributed to necrotizing colitis (*3*) that occurred in a U.S. psychiatric inpatient facility. In the first reported outbreak, which occurred in 2001, two of three patients who had necrotizing colitis died. Each had experienced a clinical course similar to that found in the 2010 outbreak. In one other report of a foodborne *C. perfringens* type A outbreak, two fatalities occurred in a psychogeriatric hospital in England (*4*). Evidence of chronic constipation and fecal impaction was found, but necrotizing colitis was not found on postmortem examination (*4*).

Psychiatric hospital residents exposed to *C. perfringens* might be at increased risk for developing necrotizing colitis because of impaired gastrointestinal motility from chronic use of anticholinergic medications. All three deceased patients in this outbreak were taking medications with anticholinergic side effects: *quetiapine, fluphenazine, benztropine*, and *clozapine*. Additionally, one patient was on a constipating diuretic medication, *hydrochlorothiazide*. Another was given an opiate antimotility agent (*loperamide*), but did not have necrotizing colitis. These medications delay the usual elimination of enterotoxin by *C. perfringens*–induced diarrhea, causing longer exposure to the toxin. Prolonged exposure to *C. perfringens* enterotoxin has been shown to cause severe intestinal damage and death in a rabbit model (*5*).

The findings in this report are subject to at least two limitations. First, patient information was obtained from secondary sources: hospital staff members, nursing notes, and emergency department records. These contained approximate measures of onset time, reducing the reliability of incubation time calculation. Second, no records were kept of the quantity of food each patient ate, which prevented a determination of correlation with disease severity.

Why these patients developed fatal necrotizing colitis when many other ill patients who also were taking psychiatric medications with anti–intestinal motility side effects experienced a self-limited illness with full recovery is unclear. The amount of inoculum ingested, the dose of antipsychotic medication administered to patients, and the variation in host susceptibility to anticholinergic side effects might affect disease outcome. The precise mechanism causing death remains in question; one patient who died in the outbreak had no evidence of necrotizing colitis or other abnormality on postmortem examination, raising the possibility that a systemic effect of clostridial toxin plays a role. Despite these unanswered questions, the results of this investigation suggest that psychiatric inpatients, especially those with constipation, are vulnerable to severe outcomes from *C. perfringens* intoxication. Institutions should ensure that precautions to prevent *C. perfringens* and other causes of foodborne illness are in place.† Providers of psychiatric care also should be aware that impaired intestinal motility places their patients at risk for adverse outcomes, including death, when exposed to enterotoxin-producing *C. perfringens*.

† Available resources include the Food and Drug Administration's *Food Code*, available at http://www.fda.gov/food/foodsafety/retailfoodprotection/foodcode/default.htm.

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Evolution of Varicella Surveillance — Selected States, 2000–2010

Varicella surveillance practices have evolved since varicella first became nationally notifiable in 1972 (*1*) (Table 1). Because national surveillance data were not adequate for monitoring the impact of varicella vaccine when it became available in the United States, active surveillance for varicella was established in sentinel sites in 1995 (*1,2*). With declines in varicella incidence after 1 dose of varicella vaccine was added to the routine childhood vaccination schedule in 1996 (*3*) and a second dose was recommended in 2006 (*4*), the number of cases of varicella in the active surveillance sites became insufficient to monitor further impact of vaccination. CDC evaluated varicella surveillance data reported via the National Notifiable Diseases Surveillance System (NNDSS) during 2000–2010 to determine whether these data might now be adequate for monitoring vaccination impact. By 2010, a total of 39 states required reporting of varicella cases, 38 states were conducting passive case-based surveillance, and 31 met CDC's ad hoc criteria for adequate and consistent reporting. Varicella incidence in the states that met these criteria declined 79% overall, from 43 per 100,000 population in 2000 to nine in 2010. While 1 dose of varicella vaccine was recommended, incidence declined 43% during 2000–2005, and after a second dose was added to the routine childhood schedule, incidence declined 72% during 2006–2010. State varicella surveillance data reported to CDC through NNDSS are now adequate for monitoring trends in varicella incidence, but continued strengthening of the surveillance system and participation of all states is needed.

Demographic data from cases of varicella reported through passive surveillance to states and local health departments are transmitted to CDC via NNDSS. Because varicella reporting has not been consistent over time, CDC established ad hoc criteria for inclusion of state NNDSS data in its analysis. A state's data reported to NNDSS were included if the state reported to CDC a minimum of one case per 100,000 population each year (considered adequate reporting by CDC) for ≥3 consecutive years (considered consistent reporting by CDC) during 2000–2010. To calculate national incidence rates from passive surveillance data using the CDC criteria, the total number of cases classified as confirmed, probable, or unknown reported from states meeting CDC's inclusion criteria were aggregated and divided by the aggregate population of the same states using U.S. Census data. Age-specific incidence rates for states with adequate and consistent reporting and age data were calculated for 2000 through 2010.

In 2009, CDC began receiving case-based varicella-specific data from states via Health Level Seven (HL7) messages. These data were analyzed to evaluate vaccination status, disease severity (measured by number of lesions), and hospitalizations in cases reported in 2009 and 2010.

In 2000, a total of 12 states required reporting of varicella cases to the state, two states were conducting passive case-based surveillance, and 10 were conducting aggregate reporting; 10 states had adequate and consistent reporting. By 2010, a total of 39 states had made varicella reportable to the state, 38 states were conducting passive case-based surveillance, and 31 had adequate and consistent reporting.* Overall incidence in the states that met adequate and consistent reporting criteria declined 79.4%, from 43.2 per 100,000 in 2000 to 8.9 in 2010. During 2000–2005, when a single dose of varicella vaccine was

* Alabama, Alaska, Arkansas, Colorado, Connecticut, District of Columbia, Delaware, Florida, Hawaii, Illinois, Kansas, Louisiana, Maine, Massachusetts, Michigan, Missouri, Montana, New Hampshire, New Mexico, North Dakota, Ohio, Pennsylvania, South Carolina, South Dakota, Texas, Utah, Vermont, Virginia, West Virginia, Wisconsin, and Wyoming. (For this report, the District of Columbia is counted as a state.)

TABLE 1. History of national varicella surveillance and related events — United States, 1972–2006

Year	Surveillance milestone
1972	Varicella becomes a nationally notifiable disease.
1981	Varicella is removed from the nationally notifiable diseases list.*
1991	Council of State and Territorial Epidemiologists (CSTE) recommends that states develop or maintain sources of varicella surveillance data (e.g., active surveillance in health maintenance organizations or cities/counties/schools, sentinel reporting systems, notifiable disease reporting where feasible, death certificate data, or surveys) to monitor trends in disease incidence.
1995	Varicella vaccine is licensed for use in the United States.
1996	A single dose of varicella vaccine is recommended for routine childhood vaccination in the United States.
1997	CSTE recommends that states and territories investigate all varicella-related deaths to monitor changes in varicella-related mortality and to understand why deaths occurred.
1998	CSTE recommends that states establish some form of ongoing systematic morbidity surveillance (e.g., aggregate case reporting, hospital discharge data review, sentinel systems, or surveys).
1998	Varicella deaths become nationally notifiable, with implementation on January 1, 1999.
2002	CSTE recommends including varicella in the National Notifiable Disease Surveillance System by 2003 and establishing case-based surveillance in all states by 2005, with implementation on January 1, 2003.
2006	Two doses of varicella vaccine are recommended routinely as part of the childhood vaccination schedule in the United States.

Source: CDC. Varicella surveillance practices—United States, 2004. MMWR 2006;55:1126–9. Available at http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5541a4.htm?s_cid=mm5541a4_e.

* During 1972–1997, a total of 14 states maintained continuous varicella reporting to CDC.

recommended, incidence declined 43.3%; during 2006–2010, when 2 doses were recommended routinely, incidence declined a further 71.6% (Figure 1).

As an additional criterion, states were asked in 2010 when they first considered their varicella reporting to CDC to be reliable (i.e., considered reliable by the reporting state). Twenty-six of the 31 states with adequate and consistent reporting responded; all 26 stated that they considered their varicella data reported to CDC in 2010 to be reliable. Overall incidence in these 26 states declined 81.8% from 2000 to 2010, 45.4% from 2000 to 2005, and 77.4% from 2006 to 2010.

In 2000, case data from three states, representing 33.6% of varicella cases reported to CDC through NNDSS, included age. By 2010, the number of states reporting age had increased to 28, representing 86.1% of cases. Based on data from these states, from 2000 to 2010, varicella incidence declined most among children aged 1–4 years (69.7%) and 5–9 years (86.2%), the age groups for whom 1 dose of vaccine was routinely recommended during 2000–2005 and 2 doses were recommended during 2006–2010 (Figure 2). During 2000–2005, age-specific incidence declined 37.4% and 49.8% among children aged 1–4 and 5–9 years, respectively. Declines continued during 2006–2010, when 2 doses were recommended, with incidence in children aged 1–4 and 5–9 years decreasing 59.3% and 82.3%, respectively (Table 2).

During 2009–2010, 15, 12, and 11 states reported to CDC data on varicella vaccination status, disease severity, and hospitalizations, respectively, through HL7 messaging; 64.2% (7,906 of 12,313) of the cases were in persons who had received varicella vaccine, 52.3% (2,062 of 3,942) were in persons who had fewer than 50 lesions, and 1.6% (146 of 9,068) were in persons who were hospitalized. Of the cases occurring in vaccinated persons, 64.9% (1,638 of 3,517) were in persons who had fewer than 50 lesions.

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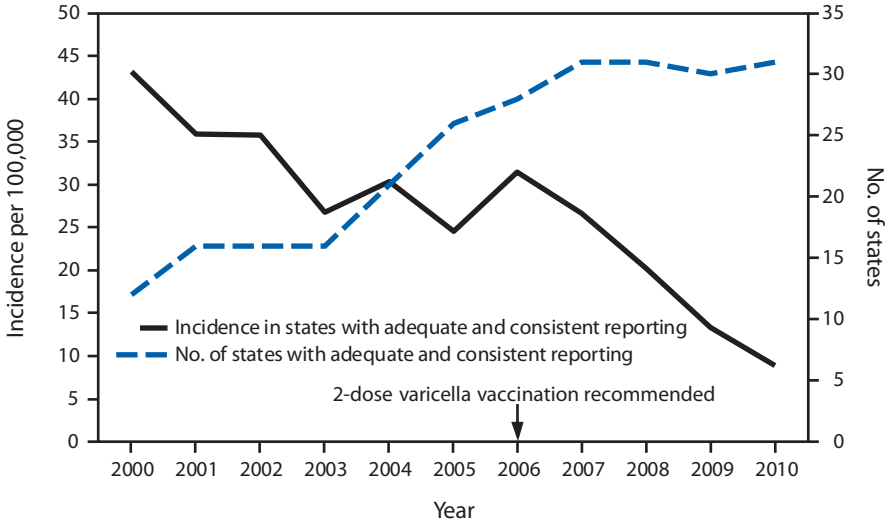
Editorial Note

National varicella surveillance has improved greatly since 1996, when varicella vaccine was first recommended for use in the United States, with 31 states having adequate and consistent reporting to CDC as of 2010. In the states with adequate and consistent reporting, overall varicella incidence decreased 79% from 2000 to 2010. Since 2 doses of varicella vaccine were recommended for routine use in 2006, varicella incidence decreased approximately 70% overall, with the greatest declines observed among children aged 5–9 years, the age group targeted for 2 doses. Although state varicella surveillance data are now adequate to monitor trends in varicella incidence, challenges remain in improving data quality.

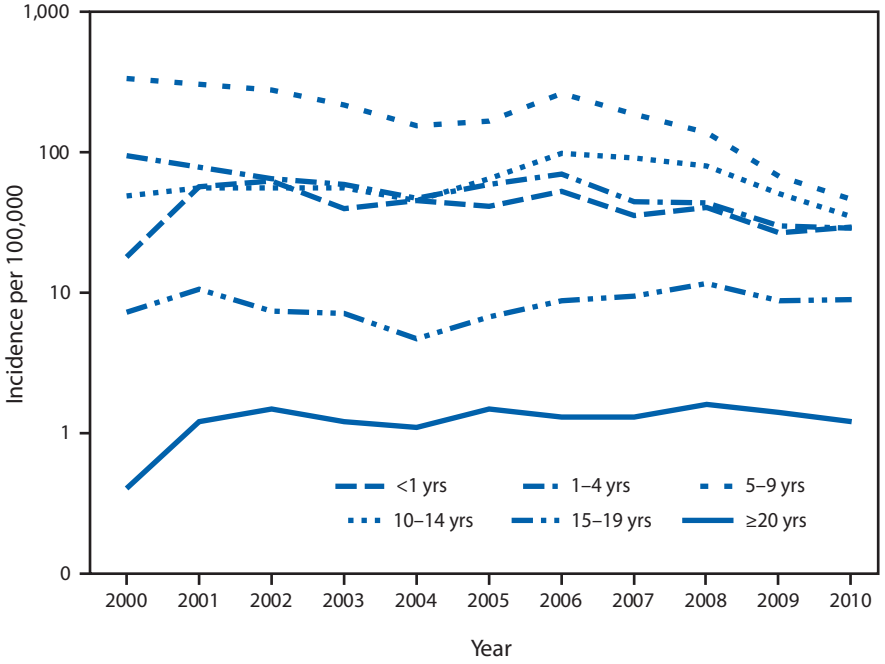
When a single dose of varicella vaccine was first recommended, varicella surveillance consisted of passive aggregate reporting and was conducted in only 17 states. Before universal surveillance could be implemented in all states, CDC, in collaboration with selected state and local health departments, established the varicella active surveillance project (VASP). From 1995 to 2005, when routine vaccination included a single dose, two VASP sites documented a 90% decline in varicella incidence that coincided with varicella vaccination coverage surpassing 90% in both sites by 2005 (5). From 2000 to 2005, declines in incidence reported by the states (43%) mirrored declines observed in the VASP sites (54%–60%). The differences in the decline in varicella incidence observed in the state and active surveillance site data might be attributed, in part, to differences

FIGURE 1. Incidence of varicella in states meeting the criteria for adequate and consistent reporting* and number of states reporting, by year — United States, 2000–2010



* Defined as reporting at least one varicella case per 100,000 population (considered adequate) for ≥3 consecutive years (considered consistent) to the National Notifiable Diseases Surveillance System. States meeting the criteria for adequate and consistent reporting in 2010: Alabama, Alaska, Arkansas, Colorado, Connecticut, District of Columbia, Delaware, Florida, Hawaii, Illinois, Kansas, Louisiana, Maine, Massachusetts, Michigan, Missouri, Montana, New Hampshire, New Mexico, North Dakota, Ohio, Pennsylvania, South Carolina, South Dakota, Texas, Utah, Vermont, Virginia, West Virginia, Wisconsin, and Wyoming. (For this report, the District of Columbia is counted as a state.)

FIGURE 2. Incidence of varicella* in states meeting the criteria for adequate and consistent reporting,† by age group§ — United States, 2000–2010



* Presented using a logarithmic scale.

† Defined as reporting at least one varicella case per 100,000 population (considered adequate) for ≥3 consecutive years (considered consistent) to the National Notifiable Diseases Surveillance System. States meeting the criteria for adequate and consistent reporting in 2010: Alabama, Alaska, Arkansas, Colorado, Connecticut, District of Columbia, Delaware, Florida, Hawaii, Illinois, Kansas, Louisiana, Maine, Massachusetts, Michigan, Missouri, Montana, New Hampshire, New Mexico, North Dakota, Ohio, Pennsylvania, South Carolina, South Dakota, Texas, Utah, Vermont, Virginia, West Virginia, Wisconsin, and Wyoming. (For this report, the District of Columbia is counted as a state.)

§ Reported varicella cases with missing age information decreased over time, from 66% in 2000 to 14% in 2010.

TABLE 2. Change in varicella incidence during the periods when the first and second doses of varicella vaccine were routinely recommended for children, by age group — United States, 2000–2010*

	% change in varicella incidence	
Age group (yrs)	2000–2005 (1-dose recommendation)	2006–2010 (2-dose recommendation)
<1	+129.0	–44.5
1–4	–37.4	–59.3
5–9	–49.8	–82.3
10–14	+32.2	–64.5
15–19	–8.2	+1.1
≥20	+275.0	–7.7

* States meeting the criteria for adequate and consistent reporting in 2010 (defined as reporting at least one varicella case per 100,000 population [considered adequate] for ≥3 consecutive years [considered consistent] to the National Notifiable Diseases Surveillance System): Alabama, Alaska, Arkansas, Colorado, Connecticut, District of Columbia, Delaware, Florida, Hawaii, Illinois, Kansas, Louisiana, Maine, Massachusetts, Michigan, Missouri, Montana, New Hampshire, New Mexico, North Dakota, Ohio, Pennsylvania, South Carolina, South Dakota, Texas, Utah, Vermont, Virginia, West Virginia, Wisconsin, and Wyoming. (For this report, the District of Columbia is counted as a state.)

in vaccination coverage in the areas under surveillance. The impact of the second routine dose recommended in 2006 is demonstrated with decreases in varicella incidence ranging from 72% in the state surveillance data to approximately 79% in VASP sites (*6*). Although the VASP sites provided unique data on the changing epidemiology of varicella during the routine 1-dose varicella vaccination program, the number of cases reported by the sites has decreased, so that it is no longer feasible to use VASP to continue monitoring the impact of the vaccination program.

A total of 39 states were reporting varicella data to CDC as of 2010, with 38 conducting passive varicella case-based surveillance and one conducting aggregate reporting. However, of the states conducting case-based surveillance, only 15 were reporting their varicella-specific data to CDC. Although data from these states were consistent with data reported from one of the VASP sites, reporting of varicella-specific data by more states will be critical for ensuring that the impact of the 2-dose varicella vaccine recommendation is fully monitored. For states not yet reporting their varicella-specific case-level data to CDC, data can be sent via HL7 messaging.†

Reporting of case-based surveillance variables is necessary so that national passive varicella surveillance data can be used to monitor the changing epidemiology of varicella and vaccine effectiveness over time. The variables of most importance include age, vaccination status and number of doses, and disease severity (*1*). However, at this stage of the vaccination program, reporting complete case information, including outcomes such as complications, hospitalizations, and deaths, is needed and increasingly feasible to collect because varicella incidence has declined 97% since the start of the varicella vaccination program (from an average 7.2 per 1,000 in 1995 to 0.2 per 1,000 in 2010).

Varicella-related deaths, which were made reportable in 1999 (*7*), also are important for tracking disease severity and missed opportunities for vaccination. Four varicella-related deaths were reported in 2010, none of which were in patients with a documented history of varicella vaccination. As 2-dose varicella vaccination coverage increases and circulation of the varicella-zoster virus declines, a greater proportion of varicella

† Additional information is available at http://www.cdc.gov/phin/library/guides/varicella_message_mapping_guide_v2_01.pdf.

What is already known on this topic?

When 1 dose of the varicella vaccine was added to the childhood immunization schedule in 1996, national passive varicella surveillance was not adequate to monitor the impact of the vaccination program. Varicella surveillance during the first 10 years of the varicella vaccination program relied on active surveillance sites, which demonstrated substantial declines in varicella incidence during 1995–2005.

What is added by this report?

During 2000–2010, the number of states meeting criteria for inclusion in national passive surveillance analysis increased from 12 to 31. Varicella incidence in the states meeting these criteria declined 79% overall, from 43 cases per 100,000 population in 2000 to nine cases per 100,000 in 2010.

What are the implications for public health practice?

State varicella surveillance data reported to CDC are now adequate for monitoring national trends in varicella incidence. Continued strengthening of the surveillance system and participation from all states is needed to monitor fully the impact of the routine second dose of varicella vaccine recommended for children in 2006.

cases are expected among vaccinated persons. Breakthrough varicella generally is mild and can be difficult to diagnose clinically (*8*). Consequently, laboratory confirmation of disease is increasingly important to ensure accurate diagnosis and management of suspected cases of varicella. Polymerase chain reaction testing of lesion or scab specimens is recommended for laboratory confirmation of varicella cases.[§]

The findings in this report are subject to at least four limitations. First, the validity of the ad hoc definitions of adequate and consistent reporting was not assessed. The minimum incidence requirement of one reported case per 100,000 population for the adequacy criterion was selected because this incidence was much lower than what was reported in VASP. Coupled with the consistent criterion of reporting for at least 3 consecutive years, these criteria seemed reasonable to CDC varicella experts and corresponded fairly closely with the qualitative judgments of reporting quality provided by the states. Second, not all states reported varicella data to CDC. Without information from all states, it is impossible to understand varicella trends completely, especially if states that did not report have varicella vaccination coverage that differs from states that did report or if they have populations in whom varicella disease epidemiology differs. However, among the 39 states reporting data to CDC as of 2010, varicella epidemiology does not appear to differ. Third, because varicella data included in this report are collected through passive reporting to the state, case ascertainment likely is incomplete, and these results might underestimate actual varicella incidence. Finally, some proportion of reported cases might not actually be varicella, resulting in an overestimate of incidence.

With the cessation of active surveillance for varicella, national passive surveillance will be critical for monitoring changes in the epidemiology of varicella, detecting gaps in protection of specific populations (e.g., those for whom catch-up vaccination is recommended or populations who refuse vaccination), assessing vaccine effectiveness, and monitoring the impact of the current 2-dose vaccination recommendation. Further declines in varicella incidence since those reported shortly after implementation of the 2-dose vaccination program (*6,9*) are expected as 2-dose varicella vaccination coverage increases. However, to continue monitoring the implementation and impact of the 2-dose program effectively, it is increasingly important for all states to move toward case-based varicella surveillance. These data will be critical for informing vaccination policy moving forward.

[§] Information on how to collect specimens is available at http://www.cdc.gov/chickenpox/lab-testing/collecting-specimens.html.

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Prevention and Control of Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices (ACIP) — United States, 2012–13 Influenza Season

In 2010, the Advisory Committee on Immunization Practices (ACIP) first recommended annual influenza vaccination for all persons aged ≥6 months in the United States (*1*). Annual influenza vaccination of all persons aged ≥6 months continues to be recommended. This document 1) describes influenza vaccine virus strains included in the U.S. seasonal influenza vaccine for 2012–13; 2) provides guidance for the use of influenza vaccines during the 2012–13 season, including an updated vaccination schedule for children aged 6 months through 8 years and a description of available vaccine products and indications; 3) discusses febrile seizures associated with administration of influenza and 13-valent pneumococcal conjugate (PCV-13) vaccines; 4) provides vaccination recommendations for persons with a history of egg allergy; and 5) discusses the development of quadrivalent influenza vaccines for use in future influenza seasons. Information regarding issues related to influenza vaccination that are not addressed in this update is available in CDC's *Prevention and Control of Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices (ACIP), 2010* and associated updates (*1,2*).

Methodology for the formulation of the ACIP annual vaccine recommendations has been described previously (*1*). The ACIP Influenza Work Group meets every 2–4 weeks throughout the year. Work Group membership includes several voting members of ACIP and representatives of ACIP Liaison Organizations. Meetings are held by teleconference and include discussion of influenza-related issues, such as influenza surveillance, vaccine effectiveness and safety, coverage in groups recommended for vaccination, program feasibility, cost-effectiveness, and anticipated vaccine supply. Presentations are requested from invited experts, and published and unpublished data are discussed. CDC's Influenza Division provides data on influenza surveillance, antiviral resistance, and vaccine effectiveness. CDC's Immunization Safety Office provides information on vaccine safety, and CDC's Immunization Services Division provides information on vaccine distribution and coverage.

Recommendations for routine use of vaccines in children and adolescents are issued by CDC and are harmonized to the greatest extent possible with recommendations made by the American Academy of Pediatrics, the American Academy of Family Physicians (AAFP), and the American College of Obstetrics and Gynecology (ACOG). CDC recommendations for routine use of vaccines in adults are harmonized to the greatest extent possible with recommendations made by AAFP, ACOG, and the American College of Physicians. The Advisory Committee on Immunization Practices (ACIP) is chartered as a federal advisory committee to provide expert external advice and guidance to the Director of CDC on use of vaccines in the civilian population of the United States. ACIP members are named by the Secretary of the U.S. Department of Health and Human Services. ACIP recommendations become CDC policy once approved by the Director of CDC, on the date published by *MMWR*.

Vaccine Strains for the 2012–13 Influenza Season

U.S. influenza vaccines for 2012–13 will contain A/California/7/2009 (H1N1)-like, A/Victoria/361/2011 (H3N2)-like, and B/Wisconsin/1/2010-like (Yamagata lineage) antigens. The influenza A(H3N2) and B antigens differ from the respective 2010–11 and 2011–12 seasonal vaccine antigens (*3*). The influenza A(H1N1) vaccine virus strain is derived from an influenza A(H1N1)pdm09 (2009[H1N1]) virus and was included in the 2009(H1N1) monovalent pandemic vaccine as well as the 2010–11 and 2011–12 seasonal vaccines.

Recommendations for Vaccination

Routine annual influenza vaccination is recommended for all persons aged ≥6 months. To permit time for production of protective antibody levels (*4,5*), vaccination optimally should occur before onset of influenza activity in the community. Therefore, vaccination providers should offer vaccination as soon as vaccine is available. Vaccination should be offered throughout the influenza season (i.e., as long as influenza viruses are circulating in the community).

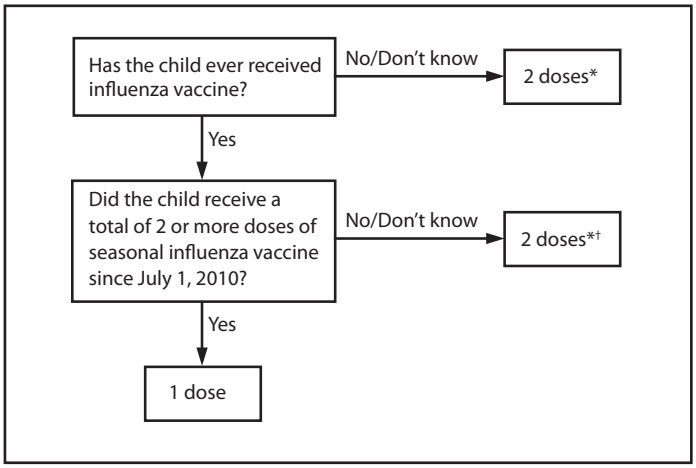
Vaccine Dose Considerations for Children Aged 6 Months Through 8 Years

Children aged 6 months through 8 years require 2 doses of influenza vaccine (administered a minimum of 4 weeks apart) during their first season of vaccination to optimize immune response. In a study of children aged 5 through 8 years receiving trivalent inactivated influenza vaccine (TIV) for the first time,

the proportion of children with protective antibody responses was significantly higher after 2 doses compared with a single dose (*6*). Several studies have indicated that the time interval between two initial doses (from 4 weeks up to 1 year) of the same antigen might not be critical (*7–9*). However, because of the antigenic novelty of the 2009(H1N1) pandemic virus, which is anticipated to continue circulating during 2012–13, exposure history to this antigen also must be considered. Children who last received seasonal (trivalent) influenza vaccine before the 2010–11 season but did not receive a vaccine containing 2009(H1N1) antigen (either seasonal vaccine since July 2010 or monovalent 2009[H1N1] vaccine) will not have received this antigen. These children are recommended to receive 2 doses this season, even if 2 doses of seasonal influenza vaccine were received before the 2010–11 season. This is illustrated in two approaches for determining the number of doses required for children aged 6 months through 8 years, both of which are acceptable (Figure 1).

1. The first approach takes into consideration only doses of seasonal influenza vaccine received since July 1, 2010. This recommendation is harmonized with that of the American Academy of Pediatrics (*10*). This approach has the advantage of simplicity, particularly in settings in which ascertaining vaccination history before the 2010–11 season is difficult. Using this approach, children aged 6 months through 8 years need only 1 dose of vaccine in 2012–13 if they received a total of 2 or more doses of seasonal vaccine since July 1, 2010. Children who did not receive a total of 2 or more doses of seasonal vaccine since July 1, 2010, require 2 doses in 2012–13.
2. In settings where adequate vaccination history from before the 2010–11 season is available, the second approach may be used. By this approach, if a child aged 6 months through 8 years is known to have received at least 2 seasonal influenza vaccines during any previous season, and at least 1 dose of a 2009(H1N1)-containing vaccine (i.e., either 2010–11 or 2011–12 seasonal vaccine or the monovalent 2009[H1N1] vaccine), then the child needs only 1 dose for 2012–13. Using this approach, children aged 6 months through 8 years need only 1 dose of vaccine in 2012–13 if they have received any of the following:
   - 2 or more doses of seasonal influenza vaccine since July 1, 2010; or
   - 2 or more doses of seasonal influenza vaccine before July 1, 2010, and 1 or more doses of monovalent 2009(H1N1) vaccine; or
   - 1 or more doses of seasonal influenza vaccine before July 1, 2010, and 1 or more doses of seasonal influenza vaccine since July 1, 2010.

FIGURE 1. Influenza vaccine dosing algorithm for aged children 6 months through 8 years — Advisory Committee on Immunization Practices, United States, 2012–13 influenza season



* Doses should be administered at least 4 weeks apart.

† For simplicity, this algorithm takes into consideration only doses of seasonal influenza vaccine received since July 1, 2010. As an alternative approach in settings where vaccination history from before July 1, 2010, is available, if a child aged 6 months through 8 years is known to have received at least 2 seasonal influenza vaccines during any previous season, and at least 1 dose of a 2009(H1N1)-containing vaccine (i.e., either 2010–11 or 2011–12 seasonal vaccine or the monovalent 2009[H1N1] vaccine), then the child needs only 1 dose for 2012–13. Using this approach, children aged 6 months through 8 years need only 1 dose of vaccine in 2012–13 if they have received any of the following: 1) 2 or more doses of seasonal influenza vaccine since July 1, 2010; 2) 2 or more doses of seasonal influenza vaccine before July 1, 2010, and 1 or more doses of monovalent 2009(H1N1) vaccine; or 3) 1 or more doses of seasonal influenza vaccine before July 1, 2010, and 1 or more doses of seasonal influenza vaccine since July 1, 2010. Children for whom one of these conditions is not met require 2 doses in 2012–2013.

Children for whom one of these conditions is not met require 2 doses in 2012–13.

Available Vaccine Products and Indications

Multiple influenza vaccines (with the same antigenic composition) are expected to be available during the 2012–13 season (Table). Current package inserts should be consulted for updated information and description of additional components of various vaccine formulations, indications, contraindications, and precautions.

TIV preparations, with the exception of Fluzone Intradermal (Sanofi Pasteur), should be administered intramuscularly. For adults and older children, the deltoid is the preferred site. Infants and younger children should be vaccinated in the anterolateral thigh. Specific guidance regarding site and needle length for intramuscular administration can be found in ACIP's General Recommendations on Immunization (*11*). For intramuscular TIV preparations, children aged 6 through 35 months receive 0.25 mL per dose; persons aged ≥36 months receive 0.5 mL per dose (Table). Fluzone Intradermal is administered intradermally

TABLE. Influenza vaccine information, by age group — United States, 2012–13 influenza season*

Vaccine	Trade name	Manufacturer	Presentation	Mercury content (μg Hg per 0.5 mL dose)	Ovalbumin content (μg per 0.5mL dose)†	Age group	No. of doses	Route
TIV	Fluzone	Sanofi Pasteur	0.25 mL prefilled syringe	0.0	—§	6–35 mos	1 or 2¶	IM**
			0.5 mL prefilled syringe	0.0	—§	≥36 mos	1 or 2¶	IM**
			0.5 mL vial	0.0	—§	≥36 mos	1 or 2¶	IM**
			5.0 mL multidose vial	25.0	—§	≥6 mos	1 or 2¶	IM**
TIV	Agriflu	Novartis Vaccines	0.5 mL prefilled syringe	0	<0.4	≥18 yrs	1	IM**
TIV	Fluvirin	Novartis Vaccines	0.5 mL prefilled syringe	≤1	≤1	≥4 yrs	1 or 2¶	IM**
			5.0 mL multidose vial	25.0	≤1			
TIV	Fluarix	GlaxoSmithKline	0.5 mL prefilled syringe	0	≤0.05	≥3 yrs	1 or 2¶	IM**
TIV	FluLaval	ID Biomedical Corporation of Quebec (distributed by GlaxoSmithKline)	5.0 mL multidose vial	<25.0	≤0.3	≥18 yrs	1	IM**
TIV	Afluria	CSL Biotherapies (distributed by Merck)	0.5 mL prefilled syringe	0.0	≤1	≥9 yrs††	1	IM**
			5.0 mL multidose vial	24.5	≤1			
TIV high- dose§§	Fluzone High-Dose	Sanofi Pasteur	0.5 mL prefilled syringe	0.0	—§	≥65 yrs	1	IM**
TIV intradermal¶¶	Fluzone Intradermal	Sanofi Pasteur	0.1 mL prefilled microinjection system	0.0 (per 0.1 mL)	—§	18–64 yrs	1	ID
LAIV	FluMist***	MedImmune	0.2 mL prefilled intranasal sprayer	0.0 (per 0.2 mL)	<0.24 (per 0.2mL)†††	2–49 yrs§§§	1 or 2¶	IN

Abbreviations: TIV = trivalent inactivated vaccine; LAIV = live-attenuated influenza vaccine; IM = intramuscular; ID = intradermal; IN = intranasal.

* Vaccination providers should consult Food and Drug Administration–approved prescribing information for 2012–13 influenza vaccines for the most updated information, including indications, contraindications, and precautions.

† Data on maximum ovalbumin content is supplied in package inserts of certain vaccines. Persons with a history of mild allergy to egg (specifically, those who experience only hives) should receive TIV with additional precautions (Figure 2).

§ Information is not included in package insert but is available upon request from the manufacturer, Sanofi Pasteur, by contacting 1-800-822-2463 or mis.emails@sanofipasteur.com.

¶ Figure 1 describes two approaches for determining the number of doses needed for children aged 6 months through 8 years.

** For adults and older children, the recommended site of vaccination is the deltoid muscle. The preferred site for infants and young children is the anterolateral aspect of the thigh.

†† Age indication per package insert is ≥5 years; however, the Advisory Committee on Immunization Practices recommends that Afluria not be used in children aged 6 months through 8 years because of increased risk for febrile reactions noted in this age group with CSL's 2010 Southern Hemisphere TIV. If no other age-appropriate, licensed inactivated seasonal influenza vaccine is available for a child aged 5 through 8 years who has a medical condition that increases the child's risk for influenza complications, Afluria can be used; however, vaccination providers should discuss with the parents or caregivers the benefits and risks of influenza vaccination with Afluria before administering this vaccine. Afluria may be used in persons aged ≥9 years.

§§ A 0.5-mL dose contains 60 μg of each vaccine antigen (180 μg total).

¶¶ A 0.1-mL dose contains 9 μg of each vaccine antigen (27 μg total).

*** A new quadrivalent formulation of FluMist was approved by the Food and Drug Administration in February 2012. It is anticipated that this formulation will replace the currently available seasonal trivalent LAIV formulation for the 2013–14 season. FluMist is shipped refrigerated and stored in the refrigerator at 35°F–46°F (2°C–8°C) after arrival in the vaccination clinic. The dose is 0.2 mL divided equally between each nostril. Health-care providers should consult the medical record, when available, to identify children aged 2 through 4 years with asthma or recurrent wheezing that might indicate asthma. In addition, to identify children who might be at greater risk for asthma and possibly at increased risk for wheezing after receiving LAIV, parents or caregivers of children aged 2 through 4 years should be asked, "In the past 12 months, has a health-care provider ever told you that your child had wheezing or asthma?" Children whose parents or caregivers answer "yes" to this question and children who have asthma or who had a wheezing episode noted in the medical record within the past 12 months should not receive FluMist.

††† Insufficient data available for use of LAIV in egg-allergic persons.

§§§ Flumist is indicated for healthy, nonpregnant persons aged 2 through 49 years. Persons who care for severely immunosuppressed persons who require a protective environment should not receive FluMist given the theoretical risk for transmission of the live-attenuated vaccine virus.

via a single-dose, prefilled microinjection syringe. The preferred site for administration is over the deltoid muscle.

Age indications for the various TIV products differ. All TIV preparations contain the same quantity of hemagglutinin (15 μg per vaccine virus strain per 0.5 mL dose; 45 μg total), except Fluzone Intradermal and Fluzone High-Dose (Sanofi Pasteur). Fluzone Intradermal is indicated for persons aged 18 through 64 years and contains 9 μg of hemagglutinin per vaccine virus strain (27 μg total) in a 0.1 mL dose. Fluzone High-Dose is indicated for persons aged ≥65 years and contains 60 μg of hemagglutinin per vaccine virus strain (180 μg total) in a 0.5 mL dose. Within specified age indications, ACIP expresses no preference for any given TIV formulation over another.

The intranasally administered live-attenuated influenza vaccine (LAIV), FluMist (MedImmune), is indicated for healthy, nonpregnant persons aged 2 through 49 years. No preference is indicated for LAIV versus TIV in this age group

(*1*). Persons with a history of egg allergy should receive TIV rather than LAIV. Persons who care for severely immunosuppressed persons who require a protective environment should not receive LAIV given the theoretical risk for transmission of the live-attenuated vaccine virus.

Febrile Seizures Associated with TIV and PCV13

Febrile seizures are common in young children. At least one febrile seizure is experienced by 2%–5% of children, and nearly all children who have a febrile seizure recover quickly and are healthy afterwards (*12*). Before the 2010–11 influenza season, an increased risk for febrile seizures after TIV administration had not been observed in the United States (*13,14*). During the 2010–11 influenza season, CDC and the Food and Drug Administration (FDA) conducted enhanced monitoring for febrile seizures after influenza vaccination because of reports of an increased risk for fever and febrile seizures in young children in Australia associated with a 2010 Southern Hemisphere vaccine produced by CSL Biotherapies (up to nine febrile seizures per 1,000 doses) (*15*). Because of the findings in Australia, ACIP does not recommend the U.S.-licensed CSL Biotherapies' TIV, Afluria, for children aged <9 years (*2,16*) (Table).

Surveillance for U.S.-licensed influenza vaccines during the 2010–11 season subsequently detected safety signals for febrile seizures in young children after TIV administration (*17,18*). Further assessment determined that the increased risk was in children aged 6 months through 4 years on the day of vaccination to the day after (the 0–1 day risk window). The risk was higher when children received concomitant PCV13 (i.e., when the two vaccines are administered at the same health-care visit) and peaked at approximately age 16 months (*18*). No increased risk was observed in children aged ≥5 years after TIV or in children of any age after LAIV. The magnitude of the increased risk for febrile seizures in young children in the United States (<1 per 1,000 children vaccinated) was substantially lower than the risk observed in Australia in 2010 (*15*).

After evaluating the data on febrile seizures from the 2010–11 influenza season and taking into consideration benefits and risks of vaccination, no policy change was recommended for use of TIV or PCV13 for the 2011–12 season (*16,19,20*). Surveillance data on febrile seizures in young children after administration of influenza vaccine for the 2011–12 influenza season (same vaccine formulation as 2010–11) were consistent with those from the 2010–11 influenza season (CDC, unpublished data, 2012). No changes in the use of TIV or PCV13 are recommended for the 2012–13 influenza season. As stated previously, ACIP does not recommend the U.S.-licensed CSL Biotherapies' TIV, Afluria, for children aged <9 years (*2,16*) (Table).

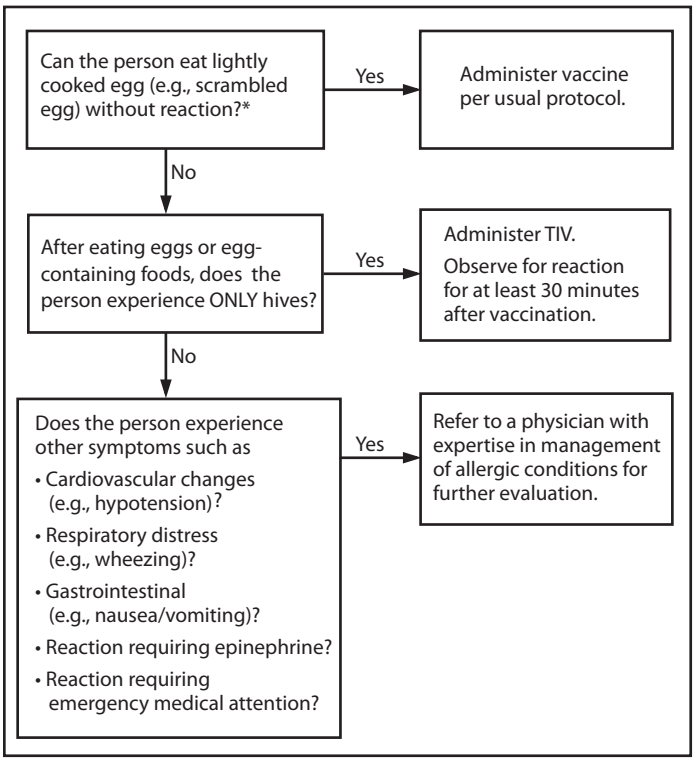
Influenza Vaccination of Persons with a History of Egg Allergy

Severe allergic and anaphylactic reactions can occur in response to a number of influenza vaccine components, but such reactions are rare. All currently available influenza vaccines are prepared by means of inoculation of virus into chicken eggs. The use of influenza vaccines for persons with a history of egg allergy has been reviewed recently by ACIP (*16*). For the 2011–12 influenza season, ACIP recommended that persons with egg allergy who report only hives after egg exposure should receive TIV, with several additional safety measures, as described in this document. Recent examination of VAERS data indicated no disproportionate reporting of allergy or anaphylaxis after influenza vaccination during the 2011–12 season (*21*). For the 2012–13 influenza season, ACIP recommends the following:

1. Persons with a history of egg allergy who have experienced only hives after exposure to egg should receive influenza vaccine, with the following additional safety measures (Figure 2):
   a) Because studies published to date involved use of TIV, TIV rather than LAIV should be used (*22*);
   b) Vaccine should be administered by a health-care provider who is familiar with the potential manifestations of egg allergy; and
   c) Vaccine recipients should be observed for at least 30 minutes for signs of a reaction after administration of each vaccine dose (*22*).

   Other measures, such as dividing and administering the vaccine by a two-step approach and skin testing with vaccine, are not necessary (*22*).
2. Persons who report having had reactions to egg involving such symptoms as angioedema, respiratory distress, lightheadedness, or recurrent emesis; or who required epinephrine or another emergency medical intervention, particularly those that occurred immediately or within a short time (minutes to hours) after egg exposure, are more likely to have a serious systemic or anaphylactic reaction upon reexposure to egg proteins. Before receipt of vaccine, such persons should be referred to a physician with expertise in the management of allergic conditions for further risk assessment (Figure 2).

FIGURE 2. Recommendations regarding influenza vaccination for persons who report allergy to eggs — Advisory Committee on Immunization Practices, United States, 2012–13 influenza season



Abbreviation: TIV = trivalent inactivated vaccine.
* Persons with egg allergy might tolerate egg in baked products (e.g., bread or cake). Tolerance to egg-containing foods does not exclude the possibility of egg allergy.

3. All vaccines should be administered in settings in which personnel and equipment for rapid recognition and treatment of anaphylaxis are available. ACIP recommends that all vaccination providers should be familiar with the office emergency plan (*11*).
4. Some persons who report allergy to egg might not be egg-allergic. Those who are able to eat lightly cooked egg (e.g., scrambled egg) without reaction are unlikely to be allergic. Egg-allergic persons might tolerate egg in baked products (e.g., bread or cake). Tolerance to egg-containing foods does not exclude the possibility of egg allergy (*23*). Egg allergy can be confirmed by a consistent medical history of adverse reactions to eggs and egg-containing foods, plus skin and/or blood testing for immunoglobulin E antibodies to egg proteins.
5. A previous severe allergic reaction to influenza vaccine, regardless of the component suspected to be responsible for the reaction, is a contraindication to future receipt of the vaccine.

Quadrivalent Influenza Vaccines

All currently available influenza vaccines are trivalent and contain A(H1N1), A(H3N2), and B viral antigens. There are two antigenically distinct lineages of influenza B viruses referred to as Victoria and Yamagata lineages (*24*). Immunization against B virus strains of one lineage provides limited cross-protection against strains in the other lineage (*25*). Because of this and the difficulty of predicting which B virus lineage will predominate during a given season, inclusion of a second influenza B vaccine virus strain in seasonal influenza vaccines has been proposed. A recent analysis indicates that the impact of such a quadrivalent vaccine could result in a modest reduction in influenza-associated outcomes, depending upon adequate vaccine supply, coverage, effectiveness, and incidence of influenza associated with the two B lineages (*26*).

In February 2012, FDA approved a new seasonal quadrivalent LAIV, FluMist Quadrivalent (MedImmune). This vaccine currently is not anticipated to be available until the 2013–14 influenza season, at which time it is expected to replace the currently available seasonal trivalent FluMist formulation (Table). Inactivated quadrivalent influenza vaccines currently are in development. These vaccines will be addressed in the ACIP influenza statement as they are approved and become available commercially.

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Acknowledgments

Members of the Advisory Committee on Immunization Practices; member roster for July 2011–June 2012 available at http://www.cdc.gov/vaccines/recs/acip/members-archive/07-2011-06-2012.htm.

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Evaluation of Rapid Influenza Diagnostic Tests for Influenza A (H3N2)v Virus and Updated Case Count — United States, 2012

On August 10, 2012, this report was posted as an MMWR *Early Release on the* MMWR *website (http://www.cdc.gov/mmwr).*

Previous reports have described cases of influenza A (H3N2) variant (H3N2v) virus* infection with the influenza A (H1N1)pdm09 M gene detected in the United States during July 2011–July 2012 (*1–3*). This report provides 1) an update on the number of reported cases of H3N2v infections from July 12 to August 9, 2012, in the United States, 2) an updated results interpretation for the CDC Flu Real-Time Reverse Transcription Polymerase Chain Reaction (rRT-PCR) Dx Panel for A(H3N2)v for public health laboratories, and 3) an evaluation of rapid influenza diagnostic tests for the detection of H3N2v viruses.

From July 12 to August 9, a total of 153 cases of H3N2v infections were reported in Indiana (120 cases), Ohio (31), Hawaii (one), and Illinois (one). Of the 138 reported cases for which demographic information was available, 128 (93%) occurred in persons aged <18 years, and 10 (7%) occurred in adults. The median age of patients was 7 years. Two persons were hospitalized as a result of their illness; no deaths occurred. The patient in Hawaii was exposed to swine on the job, and no additional cases were found in Hawaii. The 152 patients reported from Illinois, Indiana, and Ohio resided in 27 counties; all reported direct or indirect exposure to swine, the majority at agricultural fairs.

H3N2v viruses can be detected by qualified U.S. public health laboratories using the CDC Flu rRT-PCR Dx Panel. Initially, if specimens tested positive for influenza A, H3, and pandemic influenza A markers and negative for H1 and pandemic H1 markers, they were reported as inconclusive until confirmed as influenza A (H3N2)v at the CDC laboratory (*1*). On August 7, CDC updated the results interpretation of the CDC Flu rRT-PCR Dx Panel for H3N2v for public health laboratories. Specimens with these findings may now be reported as "presumptive positive for influenza A (H3N2)v virus" and, for the ongoing investigations, cases with presumptive-positive test results at the state or local public health laboratory will now be classified as confirmed, as are those cases confirmed at CDC.

The CDC Flu rRT-PCR Dx Panel is available in public health laboratories but is not a point-of-care test available to clinicians. Rapid influenza diagnostic tests (RIDTs) frequently are used for the diagnosis of influenza infection in clinical settings, and the recent outbreaks of H3N2v virus (*2,3*) have highlighted the need to evaluate commercially available, widely used RIDTs for their ability to detect H3N2v viruses. As an initial assessment, CDC conducted an evaluation of seven FDA-cleared RIDTs with seven H3N2v viruses (Table 1). Five 10-fold dilutions in physiological saline of each virus grown in Madin-Darby Canine Kidney (MDCK) cells were tested with all of the RIDTs in duplicate. Tests with BinaxNOW, Directigen, FluAlert, QuickVue, and Sofia were performed according to the procedures in the kit inserts for nasal washes or aspirates. Xpect tests were performed according to their procedure for nasal washes and swab specimens transported in liquid media. For the Veritor test, 100 μL of diluted specimen was added directly to the reagent tube. Positive and negative controls contained in each RIDT were run before testing the viruses in the study to verify performance of each assay lot, with the exception of FluAlert, which does not provide controls.

Only four of seven RIDTs in this study (Directigen, Sofia, Veritor, and Xpect) detected all influenza A (H3N2)v viruses (Table 2). BinaxNOW detected five of seven, and QuickVue detected three of seven. FluAlert detected only one of seven.

Reported by

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Editorial Note

The H3N2v viruses identified since July 12, 2012, are similar to the 13 H3N2v viruses identified during July 2011–April 2012 (*1*); all sequenced viruses had the M gene from the influenza A (H1N1)pdm09 virus. As of August 9, all H3N2v patients for whom contact information was available reported contact with swine or attended an agricultural fair where swine were

* Influenza viruses that circulate in swine are called swine influenza viruses when isolated from swine, but are called variant viruses when isolated from humans. A variant virus (human isolate) might or might not have the M gene from the influenza A (H1N1)pdm09 virus, along with other genetic changes. Seasonal influenza A (H3N2) viruses that circulate worldwide in the human population have significant antigenic and genetic differences from influenza A (H3N2) viruses circulating in swine. Additional information is available at http://www.who.int/influenza/gisrs_laboratory/terminology_ah3n2v/en/index.html.

TABLE 1. Evaluation of seven FDA-cleared RIDTs for the ability to detect H3N2v viral antigens — CDC, United States, 2012

RIDT (manufacturer)	Abbreviated name	Approved specimens*	Analyzer for interpretation
BinaxNOW Influenza A&B (Alere)	BinaxNOW	NP swab Nasal wash/aspirate/swab	No
Directigen EZ Flu A+B (Becton-Dickinson)	Directigen	NP wash/aspirate/swab Throat swab	No
SAS FluAlert A&B (SA Scientific)	FluAlert	Nasal wash/aspirate	No
QuickVue Influenza A+B Test (Quidel)	QuickVue	NP swab Nasal wash/aspirate/swab	No
Sofia Influenza A+B (Quidel)	Sofia	NP aspirate/swab/wash Nasal wash	Required
BD Veritor System for Rapid Detection of Flu A+B (Becton Dickinson)	Veritor	NP swab/nasal swab	Required
Xpect Flu A&B (Remel)	Xpect	Nasal wash/swab Throat swab	No

Abbreviations: FDA = Food and Drug Administration; RIDTs = rapid influenza diagnostic tests; NP = nasopharyngeal.
* Approved respiratory specimens according to manufacturer's package insert. Test performance has only been demonstrated for these specimen types.

present. During 2011, evidence of limited human-to-human transmission of H3N2v was observed in some cases, and human-to-human transmission might occur in the current outbreak. Enhanced surveillance for influenza H3N2v virus infection is indicated, especially in regions and states with confirmed H3N2v cases. The initial goal of enhanced surveillance is to detect the source and geographic spread of these viruses, but once cases are detected, particular emphasis should be placed on detection of ongoing transmission within the community through investigation of close contacts of patients with confirmed cases. In addition, surveillance in hospitals will be important to determine whether severe illnesses are occurring as a result of H3N2v infections.

The predominance of children among persons with confirmed H3N2v infections is consistent with serologic studies that found children less likely to have cross-protective antibodies than adults (*4*). However, confirmation of cases in adults highlights the fact that persons of any age can be infected. Persons who are at increased risk for influenza complications (e.g., those with underlying chronic medical conditions, or who are pregnant, or aged <5 or ≥65 years, or who have weakened immune systems [*5*]) should avoid exposure to pigs and swine barns this summer, particularly if ill swine have been identified. Persons with increased risk for complications who develop influenza-like illness should see their health-care provider promptly to determine whether treatment with antiviral medications is warranted. Clinicians should consider antiviral treatment with oral oseltamivir or inhaled zanamivir in patients with suspected or confirmed H3N2v infection. Antiviral treatment is most effective when started as soon as possible after influenza illness onset (*5*).

The sensitivity of RIDTs to detect seasonal influenza viruses compared with virus isolation or rRT-PCR varies among commercial kits but has been shown to be low in some reports (*6–9*). In this evaluation of seven RIDTs, the ability to detect H3N2v virus varied substantially among the tests. This evaluation emphasizes the fact that a negative RIDT result should not be considered as conclusive evidence of lack of infection with influenza A (H3N2)v. More data are needed on the clinical performance of all RIDTs in detecting H3N2v virus in various respiratory specimens. Results from RIDTs, both positive and negative, always should be interpreted in the broader context of the circulating influenza strains present in the area, level of clinical suspicion, severity of illness, and risk for complications in a patient with suspected infection. Clinicians should minimize the occurrence of false RIDT results by strictly following the manufacturer's instructions, collecting specimens soon after onset of influenza-like illness (ideally within the first 72 hours), and confirming RIDT results by sending a specimen to a public health laboratory (*10*). Additional CDC guidance on interpretation of RIDTs for testing of patients

TABLE 2. Number of 10-fold virus dilutions (maximum = five) detected by seven FDA-cleared RIDTs, by H3N2v strain designation — CDC, United States, 2012

			RIDT						
Subtype	Strain designation	$TCID_{50}$/mL	BinaxNOW	Directigen	FluAlert	QuickVue	Sofia	Veritor	Xpect
H3N2v	A/Kansas/13/2009	$10^{4.5}$	1	4	U	U	2	4	4
H3N2v	A/Pennsylvania/14/2010	$10^{4.5}$	2	4	U	2	2	4	3
H3N2v	A/Minnesota/11/2010	$10^{4.5}$	U	3	U	U	3	3	2
H3N2v	A/Indiana/08/2011	$10^{6.0}$	1	3	U	U	2	3	2
H3N2v	A/Indiana/10/2011	$10^{4.0}$	U	3	U	U	2	4	2
H3N2v	A/West Virginia/06/2011	$10^{6.0}$	2	3	U	2	4	4	2
H3N2v	A/Iowa/07/2011	$10^{4.5}$	2	4	1	1	3	4	3

Abbreviations: FDA = Food and Drug Administration; $TCID_{50}$/mL = infectious titer of stock virus; RIDT = rapid influenza diagnostic test; U = undetected at any concentration tested.

What is known on this topic?

From July 2011 to April 2012, 13 cases of influenza A (H3N2)v virus infection in humans were reported. In July 2012, four new cases were reported from Indiana, all in persons who had contact with swine at a county fair.

What is added by this report?

From July 12 to August 9, 2012, a total of 153 cases of H3N2v virus infection were reported in four states (Hawaii, Illinois, Indiana, and Ohio); all patients for whom such information was available reported direct or indirect contact with swine. Testing of the sensitivity of rapid influenza diagnostic tests (RIDTs) for detection of influenza A (H3N2)v virus produced mixed results regarding the detection capabilities of the individual tests.

What are the implications for public health?

With the substantial increase in the number of cases of H3N2v virus infection during July–August, enhanced surveillance for detection of these cases is indicated. Health-care workers also should note that the sensitivity of RIDTs to detect H3N2v virus infection varies, and a negative RIDT should not be considered evidence of lack of infection with influenza A (H3N2)v.

with suspected H3N2v infection is available at http://www.cdc.gov/flu/swineflu/h3n2v-testing.htm.

Specimens from patients with influenza-like illness in whom H3N2v is suspected should be sent to public health laboratories for additional diagnostic testing. Public health laboratories are requested to continue to contact the CDC Influenza Division immediately when they identify these viruses to coordinate transfer of the specimen to CDC for additional testing.

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Notes from the Field

Lymphocytic Choriomeningitis Virus Infections in Employees of a Rodent Breeding Facility — Indiana, May–June 2012

In late April 2012, an infectious disease physician contacted CDC regarding a patient with aseptic meningitis who worked at a rodent breeding facility in Indiana. Lymphocytic choriomeningitis virus (LCMV) infection was suspected, and LCMV-specific antibody was detected in blood and cerebrospinal fluid from the patient, confirming the diagnosis. LCMV is an arenavirus carried by the common house mouse. Persons become infected through close contact with infected rodents, through infected organ transplantation, or from mother to fetus. In immunocompetent adults, symptoms can range from mild febrile illness to meningeal symptoms (e.g., headache, stiff neck, or sensitivity to light). Congenitally infected infants can have a range of severe birth defects including hydrocephalus, chorioretinitis, blindness, and mental retardation (*1*). Infections in organ recipients, who are immunosuppressed, can have a case-fatality rate approaching 90% (*2*).

CDC notified the Indiana State Department of Health of a potential outbreak of LCMV infection at the rodent breeding facility and subsequently notified county health officials and the Indiana Board of Animal Health. A serosurvey was performed; 52 current and former employees of the facility consented to serum testing. Of the 52 tested, 13 (25%) demonstrated recent LCMV infection as evidenced by the prescence of immunoglobulin M (IgM) and IgG by enzyme-linked immunosorbent assay (ELISA). Nine employees who showed laboratory evidence of recent exposure reported experiencing a clinical illness consistent with LCMV; symptoms ranged from severe influenza-like illness to meningeal symptoms that required hospitalization. Of the persons experiencing illness, 89% were male; ages ranged from 20 to 48 years. No employees, including those not tested, were known to be pregnant at the time of the serosurvey. All employees who experienced clinical illness have since recovered. Three additional employees had evidence of a previous LCMV infection, with detectable anti-LCMV IgG and no IgM.

The rodent facility bred and raised mice and rats for sale as live and frozen feeder animals for reptiles or birds of prey. The facility housed approximately 155,000 adult mice and 14,000 adult rats. A representative sample of healthy-appearing adult rodents was tested for evidence of LCMV infection by ELISA and polymerase chain reaction. Of 1,421 mice tested, 296 (20.8%) had detectable anti-LCMV IgG, and 10 (0.7%) had detectable LCMV RNA. Of 399 rats tested, none were positive by ELISA or polymerase chain reaction. All living mice at the facility were euthanized. All rodents remaining in cold storage at the time of diagnosis also were disposed of in accordance with local environmental regulations. The buildings and equipment housing the mice were cleaned and disinfected. Used litter and contaminated feed were disposed of in accordance with local environmental regulations. Live mice distributed from the facility before the LCMV diagnosis currently are being followed to the point of purchase through an ongoing investigation.

Any persons with direct or indirect contact with these animals should be made aware of the public health risk and should seek medical evaluation if they have had any recent illness. Pregnant women or immunocompromised persons should be cautioned to avoid contact with rodents in general. Wild mice in the United States have a prevalence of LCMV estimated at 3.9%–13.4% (*3*). Any additional rodent populations that have come into direct contact with potentially infected mice should be depopulated.

Employers of rodent breeding facilities of all kinds should make their employees aware that working with rodents can expose them to LCMV and should educate workers regarding risks for exposure, including potential health effects. Employers also should work with their local health departments to develop guidance material on disease prevention and provide the recommended personal protective equipment for employees. Routine serologic testing of rodents can be used to detect and control LCMV infections. Evidence of LCMV infection in rodents should be dealt with promptly to prevent human illness from occurring. Purchasers of frozen rodents used to feed another pet should be reminded to always wear plastic gloves when handling the rodents and to wash their hands afterward.

Reported by

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Announcement

Updated Online NCHHSTP Atlas

CDC's National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (NCHHSTP) recently launched an update to the NCHHSTP Atlas, an interactive, online mapping tool and platform for accessing data collected by the center. With this update, the atlas allows users to observe disease trends and patterns of not only human immunodeficiency virus infection, acquired immunodeficiency syndrome, and some sexually transmitted infections (i.e., chlamydia, gonorrhea, and primary and secondary syphilis), but also of acute viral hepatitis A, B, and C, and tuberculosis. The atlas also allows users to create detailed reports, maps, and other graphics of these surveillance data.

The interactive atlas is a valuable tool to help public health professionals, researchers, community leaders, health-care providers, and others view overlapping disease trends, set research priorities, and plan prevention and care services. The NCHHSTP Atlas is available at http://www.cdc.gov/nchhstp/atlas.

Notices to Readers

Scanned 1952–1982 Issues of *MMWR* Available Online

Issues from the first 30 years of *MMWR* are now available to the public online as one of the collections in "CDC Stacks," an institutional repository. As with other documents in CDC Stacks, the *MMWR* issues are in portable document format (PDF), and the text can be searched electronically.

In addition to the first 30 years of *MMWR*, CDC Stacks contains documents spanning the history of the agency, including CDC Open Access, Influenza Surveillance Reports, and CDC Guidelines and Recommendations. CDC Stacks allows users to browse journal articles by public health subjects and explore collections of documents on relevant topics. New documents are added each week. CDC Stacks is available at http://stacks.cdc.gov. The *MMWR* collection is available at http://stacks.cdc.gov/mmwr.

Final 2011 Reports of Nationally Notifiable Infectious Diseases

The tables listed in this report on pages 625–637 summarize finalized data, as of June 30, 2012, from the National Notifiable Diseases Surveillance System (NNDSS) for 2011. These data will be published in more detail in the *Summary of Notifiable Diseases — United States, 2011* (*1*). Because no cases were reported in the United States during 2011, the following diseases do not appear in these early release tables: diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; poliomyelitis, paralytic; poliovirus infection, nonparalytic; rubella, congenital syndrome; severe acute respiratory syndrome-associated coronavirus disease; smallpox; vancomycin-resistant *Staphylococcus aureus*; western equine encephalitis virus disease, neuroinvasive and non-neuroinvasive; yellow fever; and viral hemorrhagic fevers.

Policies for reporting NNDSS data to CDC can vary by disease or reporting jurisdiction depending on case status classification (i.e., confirmed, probable, or suspected). The publication criteria used for the 2011 finalized tables are listed in the "Print Criteria" column of the NNDSS event code list, available at http://wwwn.cdc.gov/nndss/document/nndss_event_code_list_july_2011_28_final.pdf. The NNDSS website is updated annually to include the latest national surveillance case definitions approved by the Council of State and Territorial Epidemiologists (CSTE) for enumerating data on nationally notifiable infectious diseases.

Population estimates are from the National Center for Health Statistics postcensal estimates of the resident population of the United States for July 1, 2010–July 1, 2011, by year, county, single-year of age (0 to ≥85 years), bridged-race, (white, black or African American, American Indian or Alaska Native, Asian or Pacific Islander), Hispanic origin (not Hispanic or Latino, Hispanic or Latino), and sex (vintage 2010), prepared under a collaborative arrangement with the U.S. Census Bureau. Population estimates for states are available at http://www.cdc.gov/nchs/nvss/bridged_race/data_documentation.htm#vintage2010 as of May 31, 2012. Population estimates for territories are 2010 estimates from the U.S. Census Bureau (*2*).

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TABLE 2. Reported cases of notifiable diseases,* by geographic division and area — United States, 2011

Area	Total resident population (in thousands)	Anthrax	Arboviral diseases†								
			California serogroup virus		Eastern equine encephalitis virus	Powassan virus		St. Louis encephalitis virus		West Nile virus	
			Neuro-invasive	Nonneuro-invasive	Neuro-invasive	Neuro-invasive	Nonneuro-invasive	Neuro-invasive	Nonneuro-invasive	Neuro-invasive	Nonneuro-invasive
United States	309,049	1	120	17	4	12	4	4	2	486	226
New England	14,474	—	—	—	1	—	—	—	—	15	2
Connecticut	3,527	—	—	—	—	—	—	—	—	8	1
Maine	1,313	—	—	—	—	—	—	—	—	—	—
Massachusetts	6,631	—	—	—	1	—	—	—	—	5	1
New Hampshire	1,324	—	—	—	—	—	—	—	—	—	—
Rhode Island	1,057	—	—	—	—	—	—	—	—	1	—
Vermont	622	—	—	—	—	—	—	—	—	1	—
Mid. Atlantic	40,943	—	—	—	1	1	—	—	—	35	22
New Jersey	8,733	—	—	—	—	—	—	—	—	2	5
New York (Upstate)	11,146	—	—	—	1	—	—	—	—	19	14
New York City	8,431	—	—	—	—	—	—	—	—	9	2
Pennsylvania	12,633	—	—	—	—	1	—	—	—	5	1
E.N. Central	46,521	—	51	12	1	2	2	—	—	73	28
Illinois	12,944	—	1	—	—	—	—	—	—	22	12
Indiana	6,445	—	2	—	—	—	—	—	—	7	2
Michigan	9,931	—	1	—	—	—	—	—	—	32	2
Ohio	11,532	—	44	6	—	—	—	—	—	10	11
Wisconsin	5,669	—	3	6	1	2	2	—	—	2	1
W.N. Central	20,451	—	1	—	1	9	2	—	1	31	29
Iowa	3,023	—	—	—	—	—	—	—	—	5	4
Kansas	2,841	—	—	—	—	—	—	—	—	4	—
Minnesota	5,290	—	1	—	—	9	2	—	—	1	1
Missouri	6,012	—	—	—	1	—	—	—	1	6	4
Nebraska	1,811	—	—	—	—	—	—	—	—	14	15
North Dakota	654	—	—	—	—	—	—	—	—	1	3
South Dakota	820	—	—	—	—	—	—	—	—	—	2
S. Atlantic	59,659	1	52	5	—	—	—	—	1	67	27
Delaware	891	—	—	—	—	—	—	—	—	1	—
District of Columbia	611	—	—	—	—	—	—	—	—	10	5
Florida	18,678	1	1	—	—	—	—	—	—	20	4
Georgia	9,908	—	2	—	—	—	—	—	—	14	8
Maryland	5,737	—	—	—	—	—	—	—	1	10	9
North Carolina	9,459	—	26	—	—	—	—	—	—	2	—
South Carolina	4,597	—	1	—	—	—	—	—	—	—	—
Virginia	7,952	—	—	1	—	—	—	—	—	8	1
West Virginia	1,826	—	22	4	—	—	—	—	—	2	—
E.S. Central	18,367	—	15	—	—	—	—	1	—	56	24
Alabama	4,730	—	1	—	—	—	—	1	—	5	—
Kentucky	4,339	—	1	—	—	—	—	—	—	4	1
Mississippi	2,960	—	1	—	—	—	—	—	—	31	21
Tennessee	6,338	—	12	—	—	—	—	—	—	16	2
W.S. Central	36,376	—	—	—	—	—	—	3	—	28	11
Arkansas	2,910	—	—	—	—	—	—	3	—	1	—
Louisiana	4,529	—	—	—	—	—	—	—	—	6	4
Oklahoma	3,724	—	—	—	—	—	—	—	—	1	—
Texas	25,213	—	—	—	—	—	—	—	—	20	7
Mountain	22,380	—	1	—	—	—	—	—	—	71	35
Arizona	6,677	—	1	—	—	—	—	—	—	49	20
Colorado	5,095	—	—	—	—	—	—	—	—	2	5
Idaho	1,560	—	—	—	—	—	—	—	—	1	2
Montana	980	—	—	—	—	—	—	—	—	1	—
Nevada	2,655	—	—	—	—	—	—	—	—	12	4
New Mexico	2,034	—	—	—	—	—	—	—	—	4	—
Utah	2,831	—	—	—	—	—	—	—	—	1	2
Wyoming	548	—	—	—	—	—	—	—	—	1	2
Pacific	49,878	—	—	—	—	—	—	—	—	110	48
Alaska	709	—	—	—	—	—	—	—	—	—	—
California	37,267	—	—	—	—	—	—	—	—	110	48
Hawaii	1,300	—	—	—	—	—	—	—	—	—	—
Oregon	3,856	—	—	—	—	—	—	—	—	—	—
Washington	6,746	—	—	—	—	—	—	—	—	—	—
Territories											
American Samoa	55	—	—	—	—	—	—	—	—	—	—
C.N.M.I.	54	—	—	—	—	—	—	—	—	—	—
Guam	159	—	—	—	—	—	—	—	—	—	—
Puerto Rico	3,722	—	—	—	—	—	—	—	—	—	—
U.S. Virgin Islands	106	—	—	—	—	—	—	—	—	—	—

N: Not reportable U: Unavailable — : No reported cases C.N.M.I.: Commonwealth of Northern Mariana Islands.

* No cases of diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; poliomyelitis, paralytic; poliovirus infection, nonparalytic; rubella, congenital syndrome; severe acute respiratory syndrome-associated coronavirus disease; smallpox; vancomycin-resistant *Staphylococcus aureus*; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; yellow fever; and viral hemorrhagic fevers were reported in the United States during 2011. Data on hepatitis B virus, perinatal infection, chronic hepatitis B and hepatitis C virus infection (past or present) are not included because they are undergoing data quality review. Data on human immunodeficiency virus (HIV) infections are not included because HIV infection reporting has been implemented on different dates and using different methods than for acquired immunodeficiency syndrome (AIDS) case reporting.

† Totals reported to the Division of Vector-Borne Infectious Diseases (DVBD), National Center for Emerging and Zoonotic Infectious Diseases (NCZVED) (ArboNET Surveillance), as of April 17, 2012.

TABLE 2. (*Continued*) Reported cases of notifiable diseases,* by geographic division and area — United States, 2011

Area	Babesiosis	Botulism				Brucellosis	Chancroid§	*Chlamydia trachomatis* infection§
		Total	Foodborne	Infant	Other†			
United States	1,128	153	24	97	32	79	8	1,412,791
New England	378	—	—	—	—	1	2	48,146
Connecticut	74	—	—	—	—	—	—	13,649
Maine	9	—	—	—	—	—	—	3,094
Massachusetts	208	—	—	—	—	1	2	22,764
New Hampshire	13	—	—	—	—	—	—	3,010
Rhode Island	73	—	—	—	—	—	—	4,146
Vermont	1	—	—	—	—	—	—	1,483
Mid. Atlantic	584	29	2	27	—	7	—	181,856
New Jersey	166	11	—	11	—	1	—	26,209
New York (Upstate)	361	2	1	1	—	—	—	37,494
New York City	57	4	1	3	—	3	—	65,269
Pennsylvania	N	12	—	12	—	3	—	52,884
E.N. Central	80	3	2	1	—	10	1	219,580
Illinois	—	—	—	—	—	8	—	64,939
Indiana	—	1	1	—	—	—	—	27,801
Michigan	—	—	—	—	—	1	1	49,568
Ohio	N	2	1	1	—	1	—	52,653
Wisconsin	80	—	—	—	—	—	—	24,619
W.N. Central	74	2	—	1	1	1	—	78,726
Iowa	—	—	—	—	—	1	—	10,705
Kansas	N	1	—	1	—	—	—	10,598
Minnesota	73	1	—	—	1	—	—	16,902
Missouri	N	—	—	—	—	—	—	27,887
Nebraska	—	—	—	—	—	—	—	6,780
North Dakota	1	—	—	—	—	—	—	2,445
South Dakota	N	—	—	—	—	—	—	3,409
S. Atlantic	5	9	1	8	—	13	2	293,101
Delaware	1	2	—	2	—	—	—	4,508
District of Columbia	—	—	—	—	—	—	—	6,585
Florida	—	—	—	—	—	6	—	76,033
Georgia	—	1	1	—	—	5	—	54,403
Maryland	4	2	—	2	—	1	—	27,212
North Carolina	N	2	—	2	—	—	—	54,819
South Carolina	—	—	—	—	—	1	2	28,932
Virginia	N	2	—	2	—	—	—	36,314
West Virginia	—	—	—	—	—	—	—	4,295
E.S. Central	2	7	—	7	—	4	—	98,576
Alabama	1	—	—	—	—	1	—	29,626
Kentucky	N	2	—	2	—	—	—	16,629
Mississippi	—	2	—	2	—	1	—	21,216
Tennessee	1	3	—	3	—	2	—	31,105
W.S. Central	—	6	1	4	1	15	1	187,144
Arkansas	—	—	—	—	—	3	—	16,052
Louisiana	—	—	—	—	—	—	—	31,614
Oklahoma	N	1	1	—	—	1	—	14,596
Texas	N	5	—	4	1	11	1	124,882
Mountain	—	26	10	15	1	10	1	90,226
Arizona	—	5	2	3	—	3	1	29,251
Colorado	—	4	—	3	1	—	—	21,811
Idaho	N	2	—	2	—	2	—	4,699
Montana	—	—	—	—	—	—	—	3,406
Nevada	N	1	—	1	—	—	—	10,507
New Mexico	—	2	—	2	—	2	—	11,374
Utah	N	12	8	4	—	3	—	7,086
Wyoming	—	—	—	—	—	—	—	2,092
Pacific	5	71	8	34	29	18	1	215,436
Alaska	—	6	6	—	—	—	—	5,739
California	4	58	1	30	27	15	1	166,773
Hawaii	—	—	—	—	—	1	—	6,001
Oregon	1	2	1	1	—	1	—	13,643
Washington	—	5	—	3	2	1	—	23,280
Territories								
American Samoa	—	—	—	—	—	—	—	—
C.N.M.I.	—	—	—	—	—	—	—	—
Guam	—	—	—	—	—	—	—	1,071
Puerto Rico	N	—	—	—	N	—	—	5,634
U.S. Virgin Islands	N	—	—	—	—	—	—	820

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* No cases of diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; poliomyelitis, paralytic; poliovirus infection, nonparalytic; rubella, congenital syndrome; severe acute respiratory syndrome-associated coronavirus disease; smallpox; vancomycin-resistant *Staphylococcus aureus*; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; yellow fever; and viral hemorrhagic fevers were reported in the United States during 2011. Data on hepatitis B virus, perinatal infection, chronic hepatitis B and hepatitis C virus infection (past or present) are not included because they are undergoing data quality review. Data on human immunodeficiency virus (HIV) infections are not included because HIV infection reporting has been implemented on different dates and using different methods than for acquired immunodeficiency syndrome (AIDS) case reporting.

† Includes cases reported as wound and unspecified botulism.

§ Totals reported to the Division of STD Prevention, NCHHSTP, as of June 7, 2012.

TABLE 2. (*Continued*) Reported cases of notifiable diseases,* by geographic division and area — United States, 2011

Area	Cholera	Coccidioidomycosis	Cryptosporidiosis			Cyclosporiasis	Dengue virus infection†	
			Total	Confirmed	Probable		Dengue fever	Dengue hemorrhagic fever
United States	40	22,634	9,250	6,130	3,120	151	251	3
New England	4	2	418	358	60	12	4	—
Connecticut	—	N	71	71	—	10	1	—
Maine	—	N	51	19	32	N	—	—
Massachusetts	4	—	168	168	—	2	—	—
New Hampshire	—	1	68	40	28	—	—	—
Rhode Island	—	1	12	12	—	—	—	—
Vermont	—	N	48	48	—	N	3	—
Mid. Atlantic	14	6	904	824	80	38	69	—
New Jersey	1	N	56	55	1	8	—	—
New York (Upstate)	2	N	234	226	8	11	8	—
New York City	10	N	86	86	—	19	45	—
Pennsylvania	1	6	528	457	71	N	16	—
E.N. Central	2	56	2,676	1,476	1,200	7	21	2
Illinois	1	N	213	31	182	—	6	2
Indiana	—	N	261	79	182	—	2	—
Michigan	1	36	358	325	33	7	6	—
Ohio	—	20	1,106	303	803	—	2	—
Wisconsin	—	—	738	738	—	—	5	—
W.N. Central	1	130	1,563	714	849	3	13	—
Iowa	—	N	364	61	303	1	5	—
Kansas	1	N	42	42	—	—	1	—
Minnesota	—	104	309	309	—	—	6	—
Missouri	—	18	495	156	339	1	—	—
Nebraska	—	8	175	124	51	1	—	—
North Dakota	—	N	32	1	31	N	1	—
South Dakota	—	N	146	21	125	—	—	—
S. Atlantic	13	5	1,239	791	448	69	92	1
Delaware	—	—	7	7	—	1	2	—
District of Columbia	—	—	N	—	—	N	—	—
Florida	11	N	437	203	234	58	66	—
Georgia	1	N	307	307	—	6	6	—
Maryland	—	5	70	66	4	1	6	—
North Carolina	—	N	115	69	46	1	4	—
South Carolina	—	N	132	66	66	—	1	—
Virginia	1	N	140	54	86	2	7	1
West Virginia	—	N	31	19	12	—	—	—
E.S. Central	2	—	457	301	156	2	11	—
Alabama	—	N	138	16	122	N	4	—
Kentucky	2	N	177	160	17	N	4	—
Mississippi	—	N	50	50	—	N	—	—
Tennessee	—	N	92	75	17	2	3	—
W.S. Central	1	3	712	579	133	15	10	—
Arkansas	—	N	32	32	—	—	—	—
Louisiana	—	3	87	87	—	1	3	—
Oklahoma	—	N	89	2	87	—	—	—
Texas	1	N	504	458	46	14	7	—
Mountain	1	16,712	641	552	89	1	6	—
Arizona	—	16,467	46	42	4	—	2	—
Colorado	—	N	147	126	21	—	—	—
Idaho	—	N	111	79	32	N	—	—
Montana	—	5	77	77	—	N	—	—
Nevada	—	104	17	3	14	N	1	—
New Mexico	1	75	134	134	—	1	2	—
Utah	—	58	63	62	1	—	1	—
Wyoming	—	3	46	29	17	—	—	—
Pacific	2	5,720	640	535	105	4	25	—
Alaska	1	N	12	12	—	N	—	—
California	1	5,697	332	332	—	—	5	—
Hawaii	—	N	1	1	—	—	11	—
Oregon	—	13	207	179	28	—	—	—
Washington	—	10	88	11	77	4	9	—
Territories								
American Samoa	—	N	N	—	—	N	—	—
C.N.M.I.	—	—	—	—	—	—	—	—
Guam	—	—	—	—	—	—	—	—
Puerto Rico	1	N	N	—	—	N	1,507	34
U.S. Virgin Islands	—	—	—	—	—	—	—	—

N: Not reportable U: Unavailable — : No reported cases C.N.M.I.: Commonwealth of Northern Mariana Islands.

* No cases of diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; poliomyelitis, paralytic; poliovirus infection, nonparalytic; rubella, congenital syndrome; severe acute respiratory syndrome-associated coronavirus disease; smallpox; vancomycin-resistant *Staphylococcus aureus*; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; yellow fever; and viral hemorrhagic fevers were reported in the United States during 2011. Data on hepatitis B virus, perinatal infection, chronic hepatitis B and hepatitis C virus infection (past or present) are not included because they are undergoing data quality review. Data on human immunodeficiency virus (HIV) infections are not included because HIV infection reporting has been implemented on different dates and using different methods than for acquired immunodeficiency syndrome (AIDS) case reporting.

† 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 April 17, 2012.

TABLE 2. (*Continued*) Reported cases of notifiable diseases,* by geographic division and area — United States, 2011

Area	Ehrlichiosis/Anaplasmosis				Giardiasis	Gonorrhea†
	Anaplasma phagocytophilum	*Ehrlichia chaffeensis*	*Ehrlichia ewingii*	Undetermined		
United States	2,575	850	13	148	16,747	321,849
New England	461	4	—	2	1,594	5,612
Connecticut	152	—	—	—	233	2,449
Maine	26	1	—	—	171	272
Massachusetts	172	—	—	—	758	2,353
New Hampshire	31	1	—	1	130	130
Rhode Island	72	2	—	1	79	360
Vermont	8	—	—	—	223	48
Mid. Atlantic	482	108	—	25	3,293	41,824
New Jersey	126	60	—	7	437	7,348
New York (Upstate)	314	41	—	11	1,144	6,240
New York City	36	4	—	—	917	14,466
Pennsylvania	6	3	—	7	795	13,770
E.N. Central	710	42	—	58	2,657	58,022
Illinois	11	25	—	—	407	17,037
Indiana	—	—	—	18	324	6,569
Michigan	—	4	—	5	550	12,901
Ohio	9	6	—	1	799	16,726
Wisconsin	690	7	—	34	577	4,789
W.N. Central	808	178	6	25	1,769	16,420
Iowa	N	N	N	N	271	1,920
Kansas	6	18	—	1	139	2,209
Minnesota	770	7	1	10	672	2,284
Missouri	25	151	5	13	344	7,802
Nebraska	1	1	—	1	179	1,352
North Dakota	3	—	—	—	54	251
South Dakota	3	1	—	—	110	602
S. Atlantic	72	272	6	16	2,756	79,089
Delaware	1	15	2	—	34	827
District of Columbia	N	N	N	N	56	2,569
Florida	11	15	—	—	1,255	19,689
Georgia	11	23	1	3	651	16,428
Maryland	7	33	2	—	291	6,458
North Carolina	21	83	—	1	N	17,454
South Carolina	—	2	—	1	117	8,350
Virginia	21	100	1	9	290	6,518
West Virginia	—	1	—	2	62	796
E.S. Central	15	78	1	14	171	27,134
Alabama	4	5	—	—	171	9,132
Kentucky	—	16	—	—	N	4,521
Mississippi	1	3	—	—	N	5,814
Tennessee	10	54	1	14	N	7,667
W.S. Central	20	167	—	1	349	49,001
Arkansas	8	53	—	—	123	4,687
Louisiana	1	—	—	1	226	9,169
Oklahoma	9	110	—	—	—	4,215
Texas	2	4	—	—	N	30,930
Mountain	1	—	—	5	1,326	11,336
Arizona	—	—	—	4	133	4,564
Colorado	N	N	N	N	445	2,363
Idaho	N	N	N	N	178	162
Montana	N	N	N	N	86	85
Nevada	—	—	—	—	79	2,000
New Mexico	N	N	N	N	108	1,839
Utah	—	—	—	1	256	277
Wyoming	1	—	—	—	41	46
Pacific	6	1	—	2	2,832	33,411
Alaska	N	N	N	N	101	984
California	—	—	—	2	1,728	27,516
Hawaii	N	N	N	N	38	685
Oregon	6	—	—	—	436	1,489
Washington	—	1	—	—	529	2,737
Territories						
American Samoa	N	N	N	N	—	—
C.N.M.I.	—	—	—	—	—	—
Guam	N	N	N	N	—	96
Puerto Rico	N	N	N	N	84	341
U.S. Virgin Islands	—	—	—	—	—	139

N: Not reportable U: Unavailable — : No reported cases C.N.M.I.: Commonwealth of Northern Mariana Islands.

* No cases of diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; poliomyelitis, paralytic; poliovirus infection, nonparalytic; rubella, congenital syndrome; severe acute respiratory syndrome-associated coronavirus disease; smallpox; vancomycin-resistant *Staphylococcus aureus*; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; yellow fever; and viral hemorrhagic fevers were reported in the United States during 2011. Data on hepatitis B virus, perinatal infection, chronic hepatitis B and hepatitis C virus infection (past or present) are not included because they are undergoing data quality review. Data on human immunodeficiency virus (HIV) infections are not included because HIV infection reporting has been implemented on different dates and using different methods than for acquired immunodeficiency syndrome (AIDS) case reporting.

† Totals reported to the Division of STD Prevention, NCHHSTP, as of June 7, 2012.

TABLE 2. (*Continued*) Reported cases of notifiable diseases,* by geographic division and area — United States, 2011

Area	*Haemophilus influenza*, invasive disease				Hansen disease (leprosy)	Hantavirus pulmonary syndrome	Hemolytic uremic syndrome, postdiarrheal
	All ages, serotypes	Age <5 years					
		Serotype b	Nonserotype b	Unknown serotype			
United States	3,539	14	145	226	82	23	290
New England	252	—	9	6	3	—	12
Connecticut	65	—	—	4	—	N	2
Maine	26	—	1	—	N	—	2
Massachusetts	121	—	7	—	2	—	5
New Hampshire	17	—	1	1	—	—	—
Rhode Island	16	—	—	—	1	—	2
Vermont	7	—	—	1	N	—	1
Mid. Atlantic	771	—	13	45	4	1	21
New Jersey	123	—	—	9	—	—	4
New York (Upstate)	195	—	8	1	N	1	13
New York City	187	—	—	15	4	—	4
Pennsylvania	266	—	5	20	—	—	N
E.N. Central	645	3	30	28	3	—	36
Illinois	188	—	6	8	—	—	7
Indiana	117	1	9	—	1	—	—
Michigan	72	—	—	14	—	—	9
Ohio	173	2	15	—	2	—	5
Wisconsin	95	—	—	6	—	—	15
W.N. Central	224	2	4	23	2	2	49
Iowa	3	—	—	—	—	1	13
Kansas	23	—	—	3	—	—	4
Minnesota	71	1	3	—	—	—	12
Missouri	80	—	—	13	2	—	20
Nebraska	30	1	1	4	—	—	—
North Dakota	16	—	—	3	N	—	—
South Dakota	1	—	—	—	—	1	—
S. Atlantic	783	2	25	46	14	—	24
Delaware	6	—	—	—	—	—	—
District of Columbia	1	—	—	—	—	N	N
Florida	232	—	—	23	11	—	4
Georgia	140	—	10	10	—	—	7
Maryland	95	1	7	1	2	—	2
North Carolina	85	—	—	8	—	—	5
South Carolina	79	—	2	3	—	—	3
Virginia	108	1	5	—	1	—	3
West Virginia	37	—	1	1	N	—	—
E.S. Central	225	3	14	7	1	—	25
Alabama	57	1	5	—	—	N	9
Kentucky	41	—	1	4	—	—	N
Mississippi	19	1	1	—	1	N	1
Tennessee	108	1	7	3	—	—	15
W.S. Central	163	—	9	13	19	—	41
Arkansas	35	—	5	—	2	—	12
Louisiana	53	—	—	13	1	—	—
Oklahoma	73	—	4	—	N	—	7
Texas	2	—	N	N	16	—	22
Mountain	294	3	31	16	2	16	25
Arizona	95	1	13	2	—	3	5
Colorado	67	—	5	—	—	3	6
Idaho	21	—	2	1	—	1	3
Montana	3	—	—	—	—	2	1
Nevada	17	—	—	3	1	2	2
New Mexico	47	—	2	10	—	5	2
Utah	42	2	9	—	1	—	5
Wyoming	2	—	—	—	—	—	1
Pacific	182	1	10	42	34	4	57
Alaska	26	—	—	11	—	N	N
California	44	—	—	27	14	—	42
Hawaii	32	—	—	4	20	—	1
Oregon	72	—	3	—	N	2	14
Washington	8	1	7	—	N	2	—
Territories							
American Samoa	—	—	—	—	—	N	N
C.N.M.I.	—	—	—	—	—	—	—
Guam	—	—	—	—	—	N	—
Puerto Rico	—	—	—	—	—	—	N
U.S. Virgin Islands	N	—	—	—	—	N	N

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* No cases of diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; poliomyelitis, paralytic; poliovirus infection, nonparalytic; rubella, congenital syndrome; severe acute respiratory syndrome-associated coronavirus disease; smallpox; vancomycin-resistant *Staphylococcus aureus*; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; yellow fever; and viral hemorrhagic fevers were reported in the United States during 2011. Data on hepatitis B virus, perinatal infection, chronic hepatitis B and hepatitis C virus infection (past or present) are not included because they are undergoing data quality review. Data on human immunodeficiency virus (HIV) infections are not included because HIV infection reporting has been implemented on different dates and using different methods than for acquired immunodeficiency syndrome (AIDS) case reporting.

TABLE 2. (*Continued*) Reported cases of notifiable diseases,* by geographic division and area — United States, 2011

Area	Hepatitis, viral, acute A	Hepatitis, viral, acute B	Hepatitis, viral, acute C	HIV diagnoses†	Influenza-associated pediatric mortality§	Legionellosis	Listeriosis
United States	1,398	2,903	1,229	35,266	118	4,202	870
New England	77	97	88	1,003	4	406	61
Connecticut	18	19	47	305	1	81	18
Maine	6	8	12	46	1	18	4
Massachusetts	39	67	23	523	1	240	32
New Hampshire	—	3	N	40	—	26	4
Rhode Island	8	U	U	88	—	29	3
Vermont	6	—	6	1	1	12	—
Mid. Atlantic	252	291	140	5,628	15	1,353	158
New Jersey	79	73	53	812	4	235	33
New York (Upstate)	47	54	44	1,301	2	400	48
New York City	66	80	8	2,246	3	216	30
Pennsylvania	60	84	35	1,269	6	502	47
E.N. Central	214	353	143	3,641	19	864	116
Illinois	73	85	6	1,351	7	151	34
Indiana	24	70	84	434	2	71	11
Michigan	70	91	32	610	6	187	29
Ohio	39	90	6	987	1	386	29
Wisconsin	8	17	15	259	3	69	13
W.N. Central	59	124	35	1,085	9	122	62
Iowa	8	15	—	116	—	11	5
Kansas	4	15	8	126	—	14	14
Minnesota	27	20	17	283	3	29	6
Missouri	13	60	8	481	1	55	21
Nebraska	5	12	2	46	—	8	9
North Dakota	—	—	—	12	1	3	6
South Dakota	2	2	—	21	4	2	1
S. Atlantic	222	775	284	10,925	22	640	111
Delaware	2	13	U	99	—	24	—
District of Columbia	—	—	—	495	—	N	N
Florida	87	213	64	4,890	2	185	38
Georgia	27	142	53	1,431	4	55	9
Maryland	26	62	35	851	—	143	19
North Carolina	31	109	60	1,439	10	83	21
South Carolina	11	39	1	771	—	25	6
Virginia	30	84	25	857	5	93	15
West Virginia	8	113	46	92	1	32	3
E.S. Central	48	519	248	2,191	2	180	22
Alabama	8	119	23	592	—	29	9
Kentucky	10	151	142	233	2	53	4
Mississippi	7	57	U	552	—	14	4
Tennessee	23	192	83	814	—	84	5
W.S. Central	157	423	97	4,967	16	165	79
Arkansas	3	57	—	199	—	14	6
Louisiana	5	62	7	1,281	1	25	7
Oklahoma	11	100	53	262	4	15	15
Texas	138	204	37	3,225	11	111	51
Mountain	129	88	85	1,410	12	147	98
Arizona	77	14	U	494	4	46	8
Colorado	21	23	28	362	3	41	51
Idaho	6	2	12	16	—	9	5
Montana	3	—	9	17	—	1	3
Nevada	5	29	10	320	3	16	5
New Mexico	7	10	14	111	1	12	15
Utah	8	10	10	76	1	18	5
Wyoming	2	—	2	14	—	4	6
Pacific	240	233	109	4,416	19	325	163
Alaska	4	3	—	25	—	—	—
California	186	157	48	3,679	16	261	123
Hawaii	8	6	—	50	1	5	12
Oregon	11	32	20	213	1	22	9
Washington	31	35	41	449	1	37	19
Territories							
American Samoa	—	—	—	—	—	N	N
C.N.M.I.	—	—	—	—	—	—	—
Guam	43	120	70	1	—	—	—
Puerto Rico	21	28	N	436	—	9	—
U.S. Virgin Islands	—	5	—	22	—	1	—

N: Not reportable U: Unavailable — : No reported cases C.N.M.I.: Commonwealth of Northern Mariana Islands.

* No cases of diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; poliomyelitis, paralytic; poliovirus infection, nonparalytic; rubella, congenital syndrome; severe acute respiratory syndrome-associated coronavirus disease; smallpox; vancomycin-resistant *Staphylococcus aureus*; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; yellow fever; and viral hemorrhagic fevers were reported in the United States during 2011. Data on hepatitis B virus, perinatal infection, chronic hepatitis B and hepatitis C virus infection (past or present) are not included because they are undergoing data quality review. Data on human immunodeficiency virus (HIV) infections are not included because HIV infection reporting has been implemented on different dates and using different methods than for acquired immunodeficiency syndrome (AIDS) case reporting.

† Data on HIV diagnoses include persons with a diagnosis of HIV infection regardless of stage of disease (i.e., AIDS status) at diagnosis. Total number of HIV diagnoses case counts was reported to the Division of HIV/AIDS Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (NCHHSTP) through December 31, 2011.

§ Totals reported to the Division of Influenza, National Center for Immunization and Respiratory Diseases (NCIRD), as of December 31, 2011.

TABLE 2. (*Continued*) Reported cases of notifiable diseases,* by geographic division and area — United States, 2011

Area	Lyme disease			Malaria	Measles		
	Total	Confirmed	Probable		Total	Indigenous	Imported†
United States	33,097	24,364	8,733	1,724	222	142	80
New England	8,602	6,080	2,522	109	28	18	10
Connecticut	3,039	2,004	1,035	20	1	—	1
Maine	1,006	801	205	6	—	—	—
Massachusetts	2,476	1,801	675	68	24	17	7
New Hampshire	1,299	887	412	3	1	—	1
Rhode Island	159	111	48	6	1	—	1
Vermont	623	476	147	6	1	1	—
Mid. Atlantic	14,114	11,255	2,859	438	49	35	14
New Jersey	4,262	3,398	864	97	4	3	1
New York (Upstate)	3,759	2,678	1,081	53	7	4	3
New York City	731	440	291	227	25	16	9
Pennsylvania	5,362	4,739	623	61	13	12	1
E.N. Central	4,094	2,808	1,286	174	21	15	6
Illinois	194	194	—	66	3	1	2
Indiana	94	81	13	14	14	13	1
Michigan	104	89	15	34	2	1	1
Ohio	53	36	17	41	—	—	—
Wisconsin	3,649	2,408	1,241	19	2	—	2
W.N. Central	2,291	1,304	987	109	34	30	4
Iowa	100	72	28	22	1	—	1
Kansas	17	11	6	10	6	6	—
Minnesota	2,124	1,185	939	46	26	23	3
Missouri	8	5	3	21	—	—	—
Nebraska	11	7	4	8	—	—	—
North Dakota	27	22	5	—	1	1	—
South Dakota	4	2	2	2	—	—	—
S. Atlantic	3,637	2,720	917	478	20	7	13
Delaware	873	767	106	7	1	1	—
District of Columbia	N	—	—	18	N	—	—
Florida	115	78	37	99	8	3	5
Georgia	32	32	—	91	—	—	—
Maryland	1,351	938	413	128	2	—	2
North Carolina	88	18	70	49	2	—	2
South Carolina	37	24	13	7	—	—	—
Virginia	1,023	756	267	78	7	3	4
West Virginia	118	107	11	1	—	—	—
E.S. Central	69	20	49	41	4	1	3
Alabama	24	9	15	9	—	—	—
Kentucky	3	3	—	10	1	—	1
Mississippi	5	3	2	1	—	—	—
Tennessee	37	5	32	21	3	1	2
W.S. Central	78	31	47	121	6	5	1
Arkansas	—	—	—	7	—	—	—
Louisiana	2	1	1	2	—	—	—
Oklahoma	2	2	—	10	—	—	—
Texas	74	28	46	102	6	5	1
Mountain	52	32	20	67	22	15	7
Arizona	15	8	7	21	2	—	2
Colorado	—	—	—	24	—	—	—
Idaho	4	3	1	2	—	—	—
Montana	11	9	2	2	—	—	—
Nevada	5	3	2	8	1	—	1
New Mexico	6	2	4	5	4	1	3
Utah	9	6	3	5	15	14	1
Wyoming	2	1	1	—	—	—	—
Pacific	160	114	46	187	38	16	22
Alaska	11	9	2	5	—	—	—
California	92	79	13	129	31	12	19
Hawaii	N	N	N	7	—	—	—
Oregon	38	9	29	22	3	2	1
Washington	19	17	2	24	4	2	2
Territories							
American Samoa	N	—	—	1	—	—	—
C.N.M.I.	—	—	—	—	—	—	—
Guam	—	—	—	—	—	—	—
Puerto Rico	N	—	—	1	—	—	—
U.S. Virgin Islands	N	—	—	—	—	—	—

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* No cases of diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; poliomyelitis, paralytic; poliovirus infection, nonparalytic; rubella, congenital syndrome; severe acute respiratory syndrome-associated coronavirus disease; smallpox; vancomycin-resistant *Staphylococcus aureus*; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; yellow fever; and viral hemorrhagic fevers were reported in the United States during 2011. Data on hepatitis B virus, perinatal infection, chronic hepatitis B and hepatitis C virus infection (past or present) are not included because they are undergoing data quality review. Data on human immunodeficiency virus (HIV) infections are not included because HIV infection reporting has been implemented on different dates and using different methods than for acquired immunodeficiency syndrome (AIDS) case reporting.

† Imported cases include only those directly related to importation from other countries.

TABLE 2. (*Continued*) Reported cases of notifiable diseases,* by geographic division and area — United States, 2011

Area	Meningococcal disease					Mumps	Novel influenza A virus infections
	All serogroups	Serogroup A, C, Y, and W-135	Serogroup B	Serogroup other	Serogroup unknown		
United States	759	257	159	20	323	404	14
New England	29	18	7	2	2	12	2
Connecticut	3	2	—	—	1	—	—
Maine	5	3	2	—	—	2	2
Massachusetts	14	8	3	2	1	4	—
New Hampshire	1	1	—	—	—	—	—
Rhode Island	1	—	1	—	—	5	—
Vermont	5	4	1	—	—	1	—
Mid. Atlantic	92	20	5	1	66	55	3
New Jersey	13	—	—	—	13	13	—
New York (Upstate)	23	18	4	1	—	10	—
New York City	31	—	—	—	31	29	—
Pennsylvania	25	2	1	—	22	3	3
E.N. Central	115	59	44	6	6	110	3
Illinois	35	19	12	1	3	78	—
Indiana	25	12	12	1	—	3	2
Michigan	12	4	6	1	1	9	—
Ohio	24	13	7	2	2	16	—
Wisconsin	19	11	7	1	—	4	1
W.N. Central	63	15	15	3	30	35	4
Iowa	14	6	6	1	1	8	3
Kansas	5	—	—	—	5	4	—
Minnesota	15	6	8	1	—	2	1
Missouri	15	—	—	—	15	11	—
Nebraska	11	3	1	1	6	6	—
North Dakota	—	—	—	—	—	4	—
South Dakota	3	—	—	—	3	—	—
S. Atlantic	135	42	23	4	66	46	2
Delaware	1	—	—	—	1	—	—
District of Columbia	1	—	—	—	1	2	—
Florida	51	—	—	—	51	11	—
Georgia	14	10	1	2	1	5	—
Maryland	15	10	4	1	—	2	—
North Carolina	15	10	4	—	1	9	—
South Carolina	9	5	4	—	—	3	—
Virginia	18	3	8	—	7	13	—
West Virginia	11	4	2	1	4	1	2
E.S. Central	31	13	10	2	6	6	—
Alabama	11	4	5	—	2	2	—
Kentucky	8	3	1	1	3	—	—
Mississippi	3	1	1	1	—	3	—
Tennessee	9	5	3	—	1	1	—
W.S. Central	70	25	20	1	24	76	—
Arkansas	12	5	5	—	2	4	—
Louisiana	16	—	—	—	16	—	—
Oklahoma	12	7	4	1	—	4	—
Texas	30	13	11	—	6	68	—
Mountain	55	32	17	—	6	11	—
Arizona	16	7	5	—	4	—	—
Colorado	9	5	4	—	—	7	—
Idaho	7	6	1	—	—	2	—
Montana	4	—	4	—	—	—	—
Nevada	5	3	1	—	1	—	—
New Mexico	3	2	—	—	1	1	—
Utah	11	9	2	—	—	—	—
Wyoming	—	—	—	—	—	1	—
Pacific	169	33	18	1	117	53	—
Alaska	2	—	—	—	2	1	—
California	110	—	—	—	110	43	—
Hawaii	4	1	—	1	2	3	—
Oregon	31	22	6	—	3	4	—
Washington	22	10	12	—	—	2	—
Territories							
American Samoa	—	—	—	—	—	—	—
C.N.M.I.	—	—	—	—	—	—	—
Guam	—	—	—	—	—	3	—
Puerto Rico	—	—	—	—	—	4	—
U.S. Virgin Islands	—	—	—	—	—	—	—

N: Not reportable U: Unavailable — : No reported cases C.N.M.I.: Commonwealth of Northern Mariana Islands.

* No cases of diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; poliomyelitis, paralytic; poliovirus infection, nonparalytic; rubella, congenital syndrome; severe acute respiratory syndrome-associated coronavirus disease; smallpox; vancomycin-resistant *Staphylococcus aureus*; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; yellow fever; and viral hemorrhagic fevers were reported in the United States during 2011. Data on hepatitis B virus, perinatal infection, chronic hepatitis B and hepatitis C virus infection (past or present) are not included because they are undergoing data quality review. Data on human immunodeficiency virus (HIV) infections are not included because HIV infection reporting has been implemented on different dates and using different methods than for acquired immunodeficiency syndrome (AIDS) case reporting.

TABLE 2. (*Continued*) Reported cases of notifiable diseases,* by geographic division and area — United States, 2011

Area	Pertussis	Plague	Psittacosis	Q fever			Rabies	
				Total	Acute	Chronic	Animal	Human
United States	18,719	3	2	134	110	24	4,357	6
New England	870	—	—	2	1	1	344	2
Connecticut	68	—	N	—	—	—	195	—
Maine	205	—	—	2	1	1	66	—
Massachusetts	271	—	—	—	—	—	—	2
New Hampshire	170	—	—	—	N	N	25	—
Rhode Island	62	—	—	—	—	—	27	—
Vermont	94	—	—	—	N	N	31	—
Mid. Atlantic	2,305	—	1	14	11	3	835	2
New Jersey	312	—	—	6	6	—	—	1
New York (Upstate)	928	—	—	5	2	3	370	1
New York City	323	—	—	1	1	—	13	—
Pennsylvania	742	—	1	2	2	—	452	—
E.N. Central	4,526	—	1	20	16	4	195	—
Illinois	1,509	—	—	4	4	—	51	—
Indiana	367	—	—	1	1	—	28	—
Michigan	691	—	1	10	8	2	65	—
Ohio	767	—	—	1	1	—	51	—
Wisconsin	1,192	—	—	4	2	2	N	—
W.N. Central	1,636	—	—	5	3	2	197	—
Iowa	232	—	—	—	N	N	25	—
Kansas	145	—	—	—	—	—	31	—
Minnesota	658	—	—	1	1	—	56	—
Missouri	438	—	—	1	—	1	29	—
Nebraska	56	—	—	2	1	1	33	—
North Dakota	70	—	—	—	—	—	23	—
South Dakota	37	—	—	1	1	—	—	—
S. Atlantic	1,506	—	—	18	15	3	1,147	1
Delaware	29	—	—	—	—	—	—	—
District of Columbia	9	—	—	—	N	N	—	—
Florida	312	—	—	3	3	—	120	—
Georgia	179	—	—	2	2	—	—	—
Maryland	123	—	—	2	2	—	305	—
North Carolina	198	—	—	5	5	—	—	—
South Carolina	156	—	—	2	1	1	N	1
Virginia	399	—	—	3	1	2	618	—
West Virginia	101	—	—	1	1	—	104	—
E.S. Central	481	—	—	2	—	2	162	—
Alabama	143	—	—	1	—	1	83	—
Kentucky	179	—	—	1	—	1	16	—
Mississippi	49	—	—	—	—	—	—	—
Tennessee	110	—	—	—	—	—	63	—
W.S. Central	1,140	—	—	27	24	3	1,144	—
Arkansas	80	—	—	5	5	—	60	—
Louisiana	31	—	—	—	—	—	6	—
Oklahoma	68	—	—	3	3	—	60	—
Texas	961	—	N	19	16	3	1,018	—
Mountain	2,574	2	—	21	18	3	75	—
Arizona	867	—	—	2	1	1	N	—
Colorado	416	—	—	3	2	1	—	—
Idaho	192	—	—	—	—	—	6	—
Montana	134	—	—	15	14	1	N	—
Nevada	34	—	—	—	—	—	17	—
New Mexico	273	2	—	—	—	—	19	—
Utah	645	—	—	—	—	—	7	—
Wyoming	13	—	—	1	1	—	26	—
Pacific	3,681	1	—	25	22	3	258	1
Alaska	27	—	—	—	—	—	14	—
California	2,319	—	—	16	16	—	216	1
Hawaii	59	—	—	—	—	—	—	—
Oregon	314	1	—	1	—	1	17	—
Washington	962	—	—	8	6	2	11	—
Territories								
American Samoa	—	—	N	—	N	N	N	N
C.N.M.I.	—	—	—	—	—	—	—	—
Guam	7	—	—	—	—	N	—	—
Puerto Rico	8	—	N	—	—	—	47	—
U.S. Virgin Islands	—	—	—	—	—	—	—	—

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TABLE 2. (*Continued*) Reported cases of notifiable diseases,* by geographic division and area — United States, 2011

Area	Rubella	Salmonellosis	Shiga toxin-producing *E. coli* (STEC)†	Shigellosis	Spotted fever rickettsiosis§		
					Total	Confirmed	Probable
United States	4	51,887	6,047	13,352	2,802	234	2,562
New England	1	2,106	212	271	10	2	8
Connecticut	—	466	57	41	—	—	—
Maine	—	134	28	32	1	—	1
Massachusetts	1	1,049	80	179	4	—	4
New Hampshire	—	178	22	4	3	2	1
Rhode Island	—	194	8	9	2	—	2
Vermont	—	85	17	6	—	—	—
Mid. Atlantic	—	5,649	663	1,430	179	4	175
New Jersey	—	1,222	143	481	136	2	134
New York (Upstate)	—	1,423	221	378	12	2	10
New York City	—	1,132	90	448	12	—	12
Pennsylvania	—	1,872	209	123	19	—	19
E.N. Central	—	5,119	1,023	925	120	8	106
Illinois	—	1,694	241	262	51	—	51
Indiana	—	634	132	88	33	3	24
Michigan	—	854	152	190	4	—	4
Ohio	—	1,187	183	314	21	3	18
Wisconsin	—	750	315	71	11	2	9
W.N. Central	—	3,001	1,021	381	301	21	280
Iowa	—	448	189	18	7	—	7
Kansas	—	463	108	72	—	—	—
Minnesota	—	717	285	87	11	—	11
Missouri	—	900	282	182	270	13	257
Nebraska	—	252	103	14	10	5	5
North Dakota	—	59	13	2	2	2	—
South Dakota	—	162	41	6	1	1	—
S. Atlantic	1	15,305	624	3,921	751	128	623
Delaware	—	175	16	6	20	—	20
District of Columbia	—	92	6	35	4	1	3
Florida	—	5,923	103	2,635	12	3	9
Georgia	—	2,645	122	670	88	88	—
Maryland	—	1,010	71	94	29	3	26
North Carolina	1	2,519	155	225	327	16	311
South Carolina	—	1,567	18	142	36	12	24
Virginia	—	1,208	123	107	231	5	226
West Virginia	—	166	10	7	4	—	4
E.S. Central	—	4,364	296	1,025	370	15	355
Alabama	—	1,266	74	322	79	5	74
Kentucky	—	606	75	252	4	3	1
Mississippi	—	1,438	37	241	24	1	23
Tennessee	—	1,054	110	210	263	6	257
W.S. Central	—	8,333	655	3,397	955	21	934
Arkansas	—	848	61	96	558	10	548
Louisiana	—	1,440	20	487	10	—	10
Oklahoma	—	827	88	275	335	8	327
Texas	—	5,218	486	2,539	52	3	49
Mountain	—	2,599	706	880	103	32	71
Arizona	—	886	126	434	77	31	46
Colorado	—	522	169	89	3	—	3
Idaho	—	143	117	17	2	—	2
Montana	—	120	37	124	1	—	1
Nevada	—	175	42	36	2	—	2
New Mexico	—	341	43	123	—	—	—
Utah	—	338	142	55	8	1	7
Wyoming	—	74	30	2	10	—	10
Pacific	2	5,411	847	1,122	13	3	10
Alaska	—	54	N	5	N	—	—
California	—	4,072	504	908	8	2	6
Hawaii	—	332	9	48	N	N	N
Oregon	—	364	136	57	1	—	1
Washington	2	589	198	104	4	1	3
Territories							
American Samoa	—	—	—	1	N	—	—
C.N.M.I.	—	—	—	—	—	—	—
Guam	2	19	—	16	N	—	—
Puerto Rico	—	468	—	6	N	—	—
U.S. Virgin Islands	—	6	—	—	N	—	—

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* No cases of diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; poliomyelitis, paralytic; poliovirus infection, nonparalytic; rubella, congenital syndrome; severe acute respiratory syndrome-associated coronavirus disease; smallpox; vancomycin-resistant *Staphylococcus aureus*; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; yellow fever; and viral hemorrhagic fevers were reported in the United States during 2011. Data on hepatitis B virus, perinatal infection, chronic hepatitis B and hepatitis C virus infection (past or present) are not included because they are undergoing data quality review. Data on human immunodeficiency virus (HIV) infections are not included because HIV infection reporting has been implemented on different dates and using different methods than for acquired immunodeficiency syndrome (AIDS) case reporting.

† Includes *Escherichia coli* O157:H7; shiga toxin-positive, serogroup non-O157; and shiga toxin positive, not serogrouped.

§ Total case count includes six unknown case status reports.

TABLE 2. (*Continued*) Reported cases of notifiable diseases,* by geographic division and area — United States, 2011

Area	Streptococcal toxic-shock syndrome	*Streptococcus pneumoniae*, invasive disease†		Syphilis§			Tetanus	Toxic-shock syndrome
		All ages	Age <5 years	All stages¶	Congenital (age <2 yr)	Primary and secondary		
United States	168	17,138	1,459	46,042	360	13,970	36	78
New England	25	807	54	1,110	—	416	1	3
Connecticut	N	354	14	189	—	65	—	N
Maine	12	136	4	24	—	12	—	—
Massachusetts	6	38	19	770	—	266	—	2
New Hampshire	—	110	5	33	—	18	—	1
Rhode Island	—	97	5	84	—	46	1	—
Vermont	7	72	7	10	—	9	—	—
Mid. Atlantic	54	2,598	138	6,882	23	1,688	1	13
New Jersey	23	680	43	971	5	232	—	1
New York (Upstate)	25	1,183	56	881	13	194	—	4
New York City	—	735	39	3,905	—	889	—	—
Pennsylvania	6	N	N	1,125	5	373	1	8
E.N. Central	37	3,283	262	4,812	37	1,845	8	16
Illinois	—	N	76	2,426	18	881	1	5
Indiana	13	819	40	468	—	173	—	2
Michigan	6	694	36	762	6	286	4	5
Ohio	18	1,278	83	954	13	440	1	—
Wisconsin	—	492	27	202	—	65	2	4
W.N. Central	—	835	112	982	1	330	4	10
Iowa	—	N	N	70	—	20	—	1
Kansas	—	N	N	76	—	24	1	1
Minnesota	—	580	47	367	—	139	1	3
Missouri	—	N	35	414	1	136	2	2
Nebraska	—	121	12	36	—	10	—	3
North Dakota	—	91	4	5	—	1	—	—
South Dakota	—	43	14	14	—	—	—	—
S. Atlantic	30	4,009	376	10,619	72	3,448	6	14
Delaware	1	52	—	124	—	27	—	—
District of Columbia	—	55	6	552	1	165	—	—
Florida	N	1,324	138	4,142	32	1,257	3	N
Georgia	—	1,173	94	1,895	10	678	2	10
Maryland	N	587	51	1,278	24	452	—	N
North Carolina	15	N	N	1,254	5	431	—	1
South Carolina	2	452	29	639	—	221	1	3
Virginia	7	N	33	726	—	213	—	N
West Virginia	5	366	25	9	—	4	—	—
E.S. Central	5	1,408	121	2,866	26	826	3	4
Alabama	N	42	10	758	10	228	2	—
Kentucky	5	226	23	335	2	129	—	2
Mississippi	N	148	14	748	6	191	1	N
Tennessee	—	992	74	1,025	8	278	—	2
W.S. Central	—	2,090	229	8,946	142	1,882	6	1
Arkansas	—	228	14	464	15	182	1	1
Louisiana	—	259	25	2,043	18	447	3	—
Oklahoma	N	N	37	270	2	84	—	N
Texas	N	1,603	153	6,169	107	1,169	2	N
Mountain	17	1,963	155	2,036	17	648	4	6
Arizona	—	767	55	906	14	274	2	2
Colorado	—	494	38	367	—	133	—	2
Idaho	—	N	5	42	—	13	1	—
Montana	N	20	N	9	—	7	—	N
Nevada	1	124	6	430	3	136	—	1
New Mexico	—	329	24	212	—	71	—	—
Utah	16	206	27	64	—	14	—	1
Wyoming	—	23	—	6	—	—	1	—
Pacific	—	145	12	7,789	42	2,887	3	11
Alaska	—	138	10	11	—	5	—	N
California	N	N	N	6,782	40	2,443	3	11
Hawaii	—	7	2	32	—	14	—	N
Oregon	N	N	N	252	—	97	—	N
Washington	N	N	N	712	2	328	—	N
Territories								
American Samoa	N	N	—	—	—	—	—	N
C.N.M.I.	—	—	—	—	—	—	—	—
Guam	—	—	—	26	—	5	—	—
Puerto Rico	N	—	—	671	2	254	1	N
U.S. Virgin Islands	—	—	—	7	—	—	—	—

N: Not reportable U: Unavailable — : No reported cases C.N.M.I.: Commonwealth of Northern Mariana Islands.

* No cases of diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; poliomyelitis, paralytic; poliovirus infection, nonparalytic; rubella, congenital syndrome; severe acute respiratory syndrome-associated coronavirus disease; smallpox; vancomycin-resistant *Staphylococcus aureus*; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; yellow fever; and viral hemorrhagic fevers were reported in the United States during 2011. Data on hepatitis B virus, perinatal infection, chronic hepatitis B and hepatitis C virus infection (past or present) are not included because they are undergoing data quality review. Data on human immunodeficiency virus (HIV) infections are not included because HIV infection reporting has been implemented on different dates and using different methods than for acquired immunodeficiency syndrome (AIDS) case reporting.

† The previous categories of invasive pneumococcal disease among children less than 5 years and invasive, drug-resistant *Streptococcus pneumoniae* were eliminated. All cases of invasive *S. pneumoniae* disease, regardless of age or drug resistance are reported under a single disease code.

§ Includes the following categories: primary, secondary, latent (including early latent, late latent, and latent syphilis of unknown duration), neurosyphilis, late (including late syphilis with clinical manifestations other than neurosyphilis), and congenital syphilis.

¶ Totals reported to the Division of STD Prevention, NCHHSTP, as of June 7, 2012.

TABLE 2. (*Continued*) Reported cases of notifiable diseases,* by geographic division and area — United States, 2011

Area	Trichinellosis	Tuberculosis†	Tularemia	Typhoid fever	Vancomycin-intermediate *Staphylococcus aureus*
United States	15	10,528	166	390	82
New England	1	334	8	29	6
Connecticut	—	83	—	5	1
Maine	1	9	—	—	—
Massachusetts	—	196	8	24	5
New Hampshire	—	11	—	—	N
Rhode Island	—	27	—	—	—
Vermont	—	8	—	—	—
Mid. Atlantic	2	1,501	4	93	35
New Jersey	1	331	3	39	4
New York (Upstate)	1	221	—	15	23
New York City	—	689	—	26	4
Pennsylvania	—	260	1	13	4
E.N. Central	2	844	8	45	14
Illinois	—	359	5	28	3
Indiana	1	100	1	4	N
Michigan	—	170	—	6	5
Ohio	1	145	1	3	5
Wisconsin	—	70	1	4	1
W.N. Central	2	356	49	15	3
Iowa	—	40	3	4	N
Kansas	—	36	11	4	N
Minnesota	2	137	—	3	2
Missouri	—	98	21	1	1
Nebraska	—	23	4	3	—
North Dakota	—	7	2	—	—
South Dakota	—	15	8	—	—
S. Atlantic	3	2,029	7	52	11
Delaware	—	21	1	—	—
District of Columbia	—	56	—	—	N
Florida	—	754	—	8	3
Georgia	N	347	—	9	—
Maryland	—	233	—	17	2
North Carolina	—	244	—	8	1
South Carolina	—	140	—	1	3
Virginia	2	221	6	9	2
West Virginia	1	13	—	—	—
E.S. Central	—	479	4	—	1
Alabama	—	161	—	—	—
Kentucky	N	71	1	—	N
Mississippi	—	91	—	—	1
Tennessee	—	156	3	—	—
W.S. Central	3	1,671	52	31	9
Arkansas	N	85	37	2	—
Louisiana	1	167	—	1	3
Oklahoma	—	94	15	2	—
Texas	2	1,325	—	26	6
Mountain	1	527	18	13	3
Arizona	1	255	—	3	2
Colorado	—	70	3	5	N
Idaho	—	12	2	—	N
Montana	—	8	3	—	N
Nevada	—	95	1	4	—
New Mexico	—	49	7	1	N
Utah	—	34	1	—	1
Wyoming	—	4	1	—	—
Pacific	1	2,787	16	112	—
Alaska	—	67	—	—	N
California	1	2,323	6	96	N
Hawaii	—	123	—	1	—
Oregon	—	74	5	6	N
Washington	—	200	5	9	N
Territories					
American Samoa	N	3	—	2	N
C.N.M.I.	—	27	—	—	—
Guam	—	78	—	—	—
Puerto Rico	N	50	—	—	—
U.S. Virgin Islands	1	—	—	—	—

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* No cases of diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; poliomyelitis, paralytic; poliovirus infection, nonparalytic; rubella, congenital syndrome; severe acute respiratory syndrome-associated coronavirus disease; smallpox; vancomycin-resistant *Staphylococcus aureus*; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; yellow fever; and viral hemorrhagic fevers were reported in the United States during 2011. Data on hepatitis B virus, perinatal infection, chronic hepatitis B and hepatitis C virus infection (past or present) are not included because they are undergoing data quality review. Data on human immunodeficiency virus (HIV) infections are not included because HIV infection reporting has been implemented on different dates and using different methods than for acquired immunodeficiency syndrome (AIDS) case reporting.

† Totals reported to the Division of Tuberculosis Elimination, NCHHSTP, as of June 25, 2012.

TABLE 2. (*Continued*) Reported cases of notifiable diseases,* by geographic division and area — United States, 2011

Area	Varicella		Vibriosis
	Morbidity	Mortality†	
United States	14,513	5	832
New England	1,360	—	32
Connecticut	304	—	25
Maine	226	—	4
Massachusetts	513	N	—
New Hampshire	158	—	1
Rhode Island	42	—	2
Vermont	117	N	—
Mid. Atlantic	1,567	—	63
New Jersey	466	—	28
New York (Upstate)	N	N	N
New York City	—	—	26
Pennsylvania	1,101	—	9
E.N. Central	3,679	1	40
Illinois	881	—	16
Indiana	293	—	2
Michigan	1,036	—	9
Ohio	1,047	1	7
Wisconsin	422	—	6
W.N. Central	819	—	14
Iowa	N	N	N
Kansas	418	—	N
Minnesota	1	—	9
Missouri	248	—	3
Nebraska	20	—	—
North Dakota	65	—	2
South Dakota	67	N	N
S. Atlantic	1,905	—	286
Delaware	11	—	6
District of Columbia	12	—	1
Florida	861	—	155
Georgia	33	—	33
Maryland	N	—	35
North Carolina	N	N	15
South Carolina	13	—	11
Virginia	549	N	30
West Virginia	426	—	N
E.S. Central	294	—	35
Alabama	279	N	8
Kentucky	N	N	2
Mississippi	15	N	13
Tennessee	N	—	12
W.S. Central	3,005	1	135
Arkansas	347	—	N
Louisiana	100	N	54
Oklahoma	N	N	2
Texas	2,558	1	79
Mountain	1,737	2	42
Arizona	660	1	26
Colorado	447	N	6
Idaho	N	N	N
Montana	163	—	N
Nevada	N	N	6
New Mexico	65	1	2
Utah	389	—	1
Wyoming	13	N	1
Pacific	147	1	185
Alaska	64	N	—
California	39	—	100
Hawaii	44	—	33
Oregon	N	N	7
Washington	N	1	45
Territories			
American Samoa	N	N	N
C.N.M.I.	—	—	—
Guam	102	N	1
Puerto Rico	444	—	N
U.S. Virgin Islands	1	—	—

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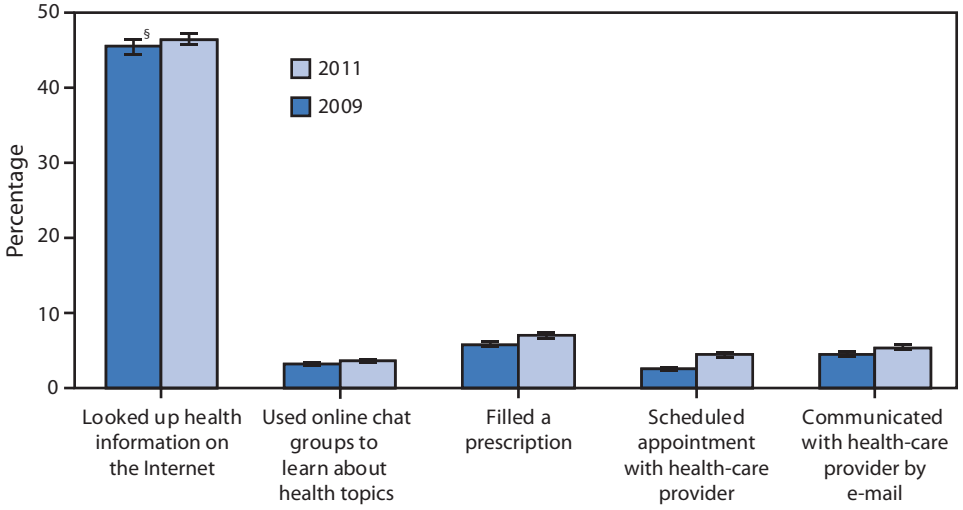
* No cases of diphtheria; eastern equine encephalitis virus disease, nonneuroinvasive; poliomyelitis, paralytic; poliovirus infection, nonparalytic; rubella, congenital syndrome; severe acute respiratory syndrome-associated coronavirus disease; smallpox; vancomycin-resistant *Staphylococcus aureus*; western equine encephalitis virus disease, neuroinvasive and nonneuroinvasive; yellow fever; and viral hemorrhagic fevers were reported in the United States during 2011. Data on hepatitis B virus, perinatal infection, chronic hepatitis B and hepatitis C virus infection (past or present) are not included because they are undergoing data quality review. Data on human immunodeficiency virus (HIV) infections are not included because HIV infection reporting has been implemented on different dates and using different methods than for acquired immunodeficiency syndrome (AIDS) case reporting.

† Totals reported to the Division of Viral Diseases, National Center for Immunization and Respiratory Diseases (NCIRD), as of June 30, 2012.

QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

Use of Health Information Technology* Among Adults Aged ≥18 Years — National Health Interview Survey (NHIS), United States, 2009 and 2011†



* Based on responses to the following question in 2009: "Have you ever used computers for any of the following? ...Looked up health information on the Internet ...Refilled a prescription on the Internet ...Scheduled an appointment with a health-care provider using the Internet ...Communicated with a health-care provider over e-mail" and "Have you ever used online chat groups to learn about health topics." Each question was followed by an additional question asking if the respondent had performed the particular activity in the past 12 months. In a supplement to the 2011 NHIS, the questions were slightly reworded to combine the measure and period ("DURING THE PAST 12 MONTHS, have you ever used computers for any of the following ...Look up health information on the Internet ...Fill a prescription ...Schedule an appointment with a health-care provider ...Communicate with a health-care provider by e-mail ...Use online chat groups to learn about health topics.").

† Estimates are based on household interviews of a sample of the 2009 and 2011 civilian, noninstitutionalized U.S. adult populations. Denominators for each percentage exclude adults who refused to answer or did not know.

§ 95% confidence interval.

From 2009 to 2011, increases were noted in the proportion of adults aged ≥18 years who used the Internet to fill a prescription (5.9% to 7.1%), schedule an appointment with a health-care provider (2.6% to 4.5%), and communicate with a health-care provider by e-mail (4.6% to 5.5%). The use of online chat groups to learn about health topics also increased (3.3% to 3.7%). The percentage of adults who looked up health information on the Internet did not change significantly from 2009 (45.5%) to 2011 (46.5%), but in both years, looking up health information on the Internet was seven to 14 times as likely to occur as each of the other four activities.

Source: National Health Interview Survey, 2009 and 2011 Sample Adult access to health care and utilization supplemental components.

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