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Illness Associated with Red Tide — Nassau County, Florida, 2007

A “red tide” is a harmful algal bloom that occurs when toxic, microscopic algae in seawater proliferate to a higher-than-normal concentration (i.e., bloom), often discoloring the water red, brown, green, or yellow. Red tides can kill fish, birds, and marine mammals and cause illness in humans (1). Florida red tide is caused by the dinoflagellate *Karenia brevis*, which produces toxins called brevetoxins and is most commonly found in the Gulf of Mexico; however, *K. brevis* blooms also can occur along the Atlantic coast. On September 25, 2007, a cluster of respiratory illnesses was reported to the Nassau County Health Department (NCHD) in northeastern Florida. All of the ill persons were employed at a beach restoration worksite by a dredging company operating at Fernandina Beach; they reported symptoms of eye or respiratory irritation (e.g., coughing, sneezing, sniffing, and throat irritation). NCHD and the Florida Department of Health promptly conducted epidemiologic and environmental investigations and determined the illnesses likely were associated with exposure to a red tide along the Atlantic coast. These actions highlight the importance of rapid investigation of health concerns with potential environmental causes to enable timely notification of the public and prevent further illness.

Epidemiologic Investigation

The dredging company had been contracted by the U.S. Army Corps of Engineers to clear a channel for military submarines to navigate the Amelia River. During September 25–29, as part of this operation, the company was dredging material off the ocean floor from a ship located 3 miles offshore, near the mouth of the river. The dredged material was pumped through a pipe from the ship to the beach worksite. Approximately 50 dredging company workers were stationed aboard the ship and 13 at the beach worksite, where they redistributed the piped mix of sediment on the beach. All of the dredging company employees worked 12-hour shifts. Ship

workers spent a greater portion of their shifts working indoors than did beach workers and had varying levels of exposure to outdoor elements.

On September 25, after receiving the initial reports of respiratory illness among the dredging company workers, NCHD staff members suspected the cause might be exposure to a chemical toxin. However, when staff members visited the Fernandina Beach worksite on the same day, they observed dead fish and detected the characteristic odor of brevetoxin, the toxin produced naturally by *K. brevis*. During September 25–26, NCHD conducted interviews with workers in two groups: those working at the beach worksite and those working aboard the company ship. The interviews used a standard questionnaire for outbreaks to assess exposure to dredging materials, occupational and recreational water exposure, travel history, medical history, and current health status. Ten of the 13 beach workers with daytime exposure history (the other three worked only at night) were interviewed, followed by the first 10 workers who were available on the ship. Because of logistical difficulties, additional workers on the ship could not be interviewed.

Mean age of the 20 dredging company workers was 45 years (range: 23–66 years); 90% were male. Six workers reported preexisting health conditions, including two with asthma. Nine of the 20 reported a recent history of smoking. The 20 workers reported experiencing symptoms of respiratory or eye irritation beginning September 16, when the dredging operation began. Predominant symptoms were coughing (12 workers), throat irritation (12), eye irritation (11), sneezing (11), and sniffing (10) (Table 1). None of the workers required medical care or experienced impairment of their ability to do their

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TABLE 1. Number of interviewed dredging company workers who reported eye or respiratory symptoms during red tide (*Karenia brevis*) algal bloom, by worksite — Nassau County, Florida, 2007

Symptom	Total (N = 20)	Beach (n = 10)	Aboard ship (n = 10)
Coughing	12	10	2
Throat irritation	12	9	3
Eye irritation	11	10	1
Sneezing	11	9	2
Sniffing	10	9	1
Mucous with cough	9	7	2
Breathing difficulty	5	4	1

jobs. Several reported abrupt onset and resolution of their symptoms upon arrival and departure each day from the beach worksite.

During September 25–29, additional reports of respiratory irritation were received by public health agencies from persons along Florida's Atlantic coast, up to 200 miles south of Fernandina Beach. Also during this period, approximately 15–20 reports were received daily by NCHD from beachgoers with symptoms of respiratory illness.

Environmental Assessment

On September 25, water samples were collected from the Atlantic Ocean near the Fernandina Beach shoreline for evaluation by the Fish and Wildlife Research Institute of the Florida Fish and Wildlife Conservation Commission. Light microscopy was performed to assess algal species composition and abundance.

The water samples from near the Fernandina Beach worksite first revealed *K. brevis* on September 25. Within 2 weeks, samples with *K. brevis* had been collected from additional locations up to 200 miles to the south (2). The initial water samples had "medium" levels of *K. brevis* (100,000 to <1,000,000 cells/L), which can cause respiratory irritation and fish kills (Table 2). However, September 26, water samples collected in Jacksonville, 35 miles south of Fernandina Beach, had "high" levels ($\geq 1,000,000$ cells/L), which can cause seawater discoloration in addition to respiratory irritation and probable fish kills. Onshore wind patterns likely facilitated the transport of aerosolized brevetoxins, resulting in exposure to beachgoers.

On September 29, a storm with prolonged wind, rain, and flooding struck northeast Florida, and public reports of respiratory symptoms began to decline. Water samples collected after September 29 detected "low a" levels of *K. brevis* (>1,000 to <5,000 cells/L) and "present" levels ($\leq 1,000$ cells/L), indicating that the storm likely contributed to dissipation of the red tide (Table 2). On November 8, all five water samples collected in Nassau County had cell counts of zero (3).

TABLE 2. Laboratory classifications and possible effects of *Karenia brevis*, by cell count — Fish and Wildlife Research Institute, Florida Fish and Wildlife Conservation Commission

Classification	<i>K. brevis</i> (cells/L)	Possible effects (<i>K. brevis</i> only)
Present	background levels of $\leq 1,000$ cells	None
Very low a	$>1,000$ to $<5,000$	Possible respiratory irritation
Very low b	$5,000$ to $10,000$	Possible respiratory irritation and requisite shellfish harvesting closures
Low a	$>10,000$ to $<50,000$	Respiratory irritation, but chlorophyll levels too low to be detected by satellites
Low b	$50,000$ to $<100,000$	Respiratory irritation, possible fish kills, and bloom chlorophyll probably detected by satellites
Medium	$100,000$ to $<1,000,000$	Respiratory irritation and probable fish kills
High	$\geq 1,000,000$	As above, plus discoloration

Public Health Actions

During the red tide event, NCHD issued several beach advisories, beginning September 25, alerting the public to the health risks of exposure to brevetoxins, especially for persons with preexisting respiratory conditions. Advisories were disseminated using Nassau County Emergency Management (NCEM) and NCHD communications systems and “blast faxes” to local physicians, veterinarians, schools, governmental organizations, hotels, and restaurants. In addition, advisories were posted at beach locations, in local newspapers, and on NCHD and NCEM websites. Persons who experienced respiratory irritation or sought additional red tide information were instructed to contact NCHD or the Florida Poison Control Center’s Aquatic Toxins Hotline.

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Editorial Note: The initial detection of the 2007 northeast Florida red tide described in this report was unusual because public health authorities were first alerted by a cluster of reported symptoms of human respiratory illness among dredging workers rather than by more common means (e.g., observation of dead fish or birds, detection of contaminated seafood, or use of satellite imagery or routine beach water sampling). Upon initial investigation of the human illnesses, NCHD observed dead fish and detected the odor of brevetoxin, both indications of red tide. Water sampling confirmed that an ongoing red tide bloom was in the proximity. Because only a small convenience sample of workers could be interviewed on the dredging ship, no conclusions can be drawn about the relative prevalence of red tide symptoms at the two worksites. However, the results suggest that symptoms occurred more frequently among beach workers. During red tides, symptoms are frequently more intense in persons exposed on beaches, because of aerosolization of brevetoxins in beach surf (4).

Wildlife species have been particularly valuable sentinels for human brevetoxin illness. In the past, the Florida Department of Health has used reports of dead fish or birds (which eat contaminated fish) as an early warning mechanism for red

tide blooms (5). During the red tide event described in this report, dead sea turtles were observed on Nassau County beaches. Brevetoxin also accumulates in molluscan shellfish and is associated with human neurotoxic shellfish poisoning when contaminated seafood is ingested (6). Shellfish beds in Florida coastal waters are sampled routinely for brevetoxin.

Studies attempting to assess the human health effects of red tide blooms have been reported. One study, in Sarasota, Florida, found a 19% increase in the rate of pneumonia cases diagnosed during a 3-month onshore red tide event and, among coastal residents, a 54% higher rate of diagnoses of respiratory illness (pneumonia, bronchitis, asthma, and upper airway disease) (7). Other studies have found significant measureable adverse changes in the lung function of asthma patients after exposure to brevetoxins (6,8).

Red tide blooms have been uncommon in northeastern Florida, occurring with much greater frequency in the Gulf of Mexico. Florida red tide was first documented on the Atlantic coast in 1972, south of Fernandina Beach, and further south in Jacksonville in 1980 and 1999 (9). Florida records indicate that, before the 2007 bloom, *K. brevis* had not been detected in Nassau County since 1953; that detection was not associated with a red tide event.

In addition to the limited number of interviews with the ship workers, the findings in this report are subject to at least two other limitations. First, assessment of symptom onset dates was not possible because symptom-specific onset dates were not collected. Second, systematic collection of data on symptoms of other persons in the area of the bloom was not possible; therefore, the effects of the red tide event among populations other than the dredging company workers (e.g., beachgoers) could not be assessed.

During this red tide event, prompt investigation of a small cluster of symptoms led to quick identification of the *K. brevis* bloom. This public health vigilance enabled authorities to take immediate action to issue advisories and otherwise alert the public to an illness of environmental etiology.

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West Nile Virus Activity — United States, 2007

West Nile virus (WNV) is the leading cause of arboviral encephalitis in the United States. Originally identified in Africa in 1937, WNV was first detected in the western hemisphere in 1999 in New York City. Since then, WNV has caused seasonal epidemics of febrile illness and neurologic disease in the United States. This report summarizes national WNV surveillance data for 2007. WNV transmission to humans or animals expanded into 19 counties that had not reported transmission previously and recurred in 1,148 counties where transmission had been reported in previous years. A total of 1,227 cases of WNV neuroinvasive disease (WNND) and 117 deaths were reported. These findings highlight the need for ongoing surveillance, mosquito control, promotion of personal protection from mosquito bites, and research into additional prevention strategies, including a WNV human vaccine.

WNV data are reported to CDC through ArboNET, an Internet-based arbovirus surveillance system managed by state health departments and CDC. State and local health departments 1) collect reports from health-care providers and clinical laboratories regarding cases of WNV disease in humans; 2) collect reports of WNV presumptive viremic blood donors

(PVDs)* from blood collection agencies; 3) collect and test dead birds, often focusing on corvids (e.g., crows, jays, and magpies), which have high mortality attributed to WNV infection; 4) collaborate with veterinarians to collect reports of WNV infection in nonhuman mammals; and 5) collect mosquitoes to test for evidence of WNV infection. Human WNV disease cases are classified as 1) WNND (i.e., meningitis, encephalitis, or acute flaccid paralysis); 2) West Nile fever (WNF), which is symptomatic WNV disease that does not affect the nervous system; or 3) an unspecified clinical syndrome. WNF reporting is highly variable by jurisdiction, depending on the level of interest in reporting and use of diagnostic testing; therefore, most of this report focuses on WNND cases, which are thought to be more consistently identified and reported because of the severity of the illness.

Human Surveillance

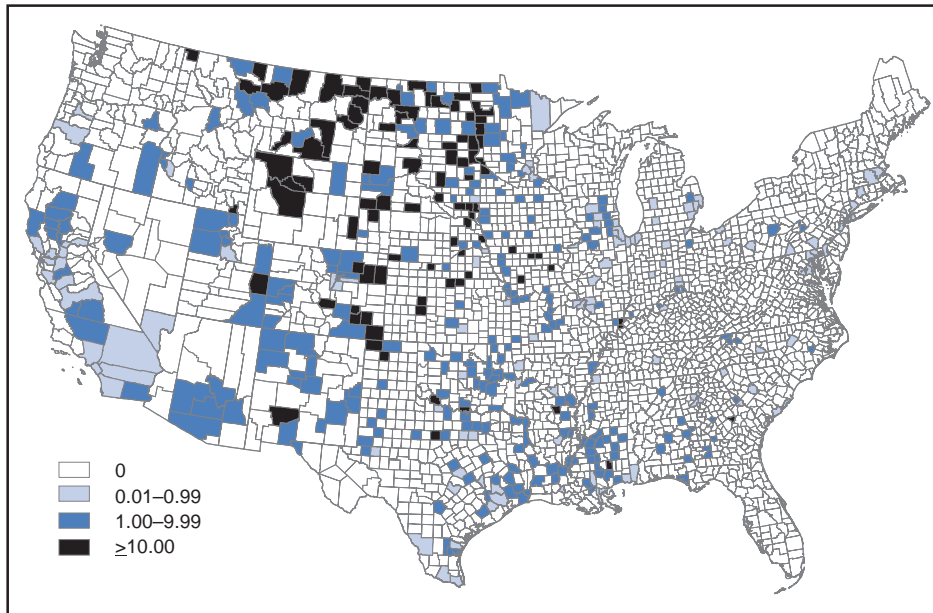
During 2007, a total of 3,630 cases of WNV disease in humans were reported from 775 counties in 44 states (i.e., 25% of the 3,142 counties in the United States). Of these cases, 1,227 (34%) were WNND, 2,350 (65%) were WNF, and 53 (1%) were unspecified clinical syndromes. A total of 352 PVDs were identified through routine screening of the blood supply. Of these PVDs, 281 (80%) were asymptomatic, five (1%) subsequently developed WNND, and 66 (19%) subsequently had WNF.

Overall, the incidence of WNND in the United States was 0.4 per 100,000 population. The highest incidence of WNND occurred primarily in the west-central United States (Figure 1); the five states with highest incidence were North Dakota (7.7 cases per 100,000 residents), South Dakota (6.2), Wyoming (4.6), Montana (4.0), and Colorado (2.2). Among all states, WNND peaked during the first week in August, and 1,086 (89%) cases were reported during July–September (Figure 2). This seasonality was consistent with trends observed in the preceding 7 years.

Of the 1,227 WNND cases, 729 (59%) occurred in males. The median age of patients was 57 years (range: 1 month–97 years), with increasing incidence among older age groups (Figure 3). Overall, 1,089 (89%) patients were hospitalized (median age: 59 years; range: 1 month–97 years), and 117 (10%) died (median age: 77 years; range: 43–96 years). A total of 765 (62%) WNND cases were classified as encephalitis, 452 (37%) as meningitis, and 63 (5%) as acute flaccid

* A PVD is a person whose blood tested positive when screened for the presence of WNV. PVDs are followed up by the blood collection agency with additional tests to verify their infection. Some PVDs go on to develop symptoms after donation, at which point they are considered to have WNV disease.

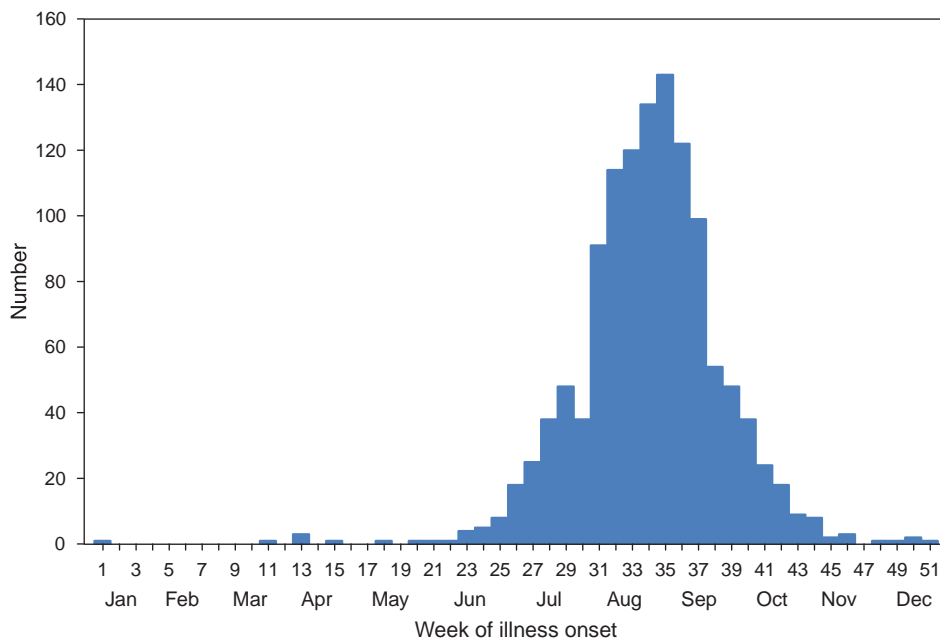
FIGURE 1. Incidence* of West Nile virus neuroinvasive disease, by area — United States, 2007†



* Per 100,000 population.

† Includes meningitis, encephalitis, and acute flaccid paralysis.

FIGURE 2. Number* of West Nile virus neuroinvasive disease cases, by week of illness onset — United States, 2007†



* N = 1,227.

† Includes meningitis, encephalitis, and acute flaccid paralysis.

paralysis; 53 of these cases were classified as acute flaccid paralysis coincident with encephalitis or meningitis.

Animal Surveillance

In 2007, a total of 2,182 dead WNV-infected birds were reported from 315 counties in 35 states and Puerto Rico; 157 counties in 28 states and Puerto Rico reported infected birds but no clinically apparent human disease. The number of reported WNV-infected birds peaked during the first week of September. Corvids accounted for 1,690 (77%) of the birds; most states targeted corvids for surveillance. Since 1999, WNV infection has been reported in 321 avian species, including four species (Bronzed Cowbird, Cackling Goose, Le Conte's Thrasher, and Northern Pintail) in which WNV was identified for the first time during 2007.

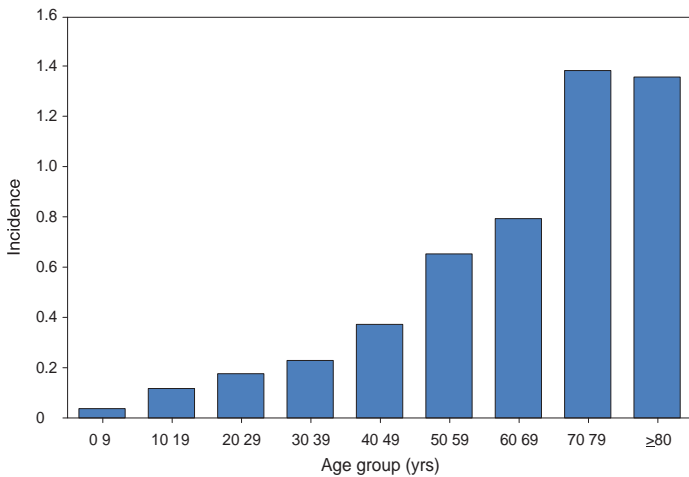
Of 507 reported cases of WNV disease among nonhuman mammals, 471 (93%) occurred in equines, and 36 (7%) occurred in other species (squirrels [27], canines [five], and unspecified species [four]). Equine cases were reported from 320 counties in 35 states and Puerto Rico; Texas reported 20% of all equine cases. The number of reported WNV-infected equines peaked in mid-August.

Mosquito Surveillance

A total of 8,215 mosquito pools† from 371 counties in 39 states, the District of Columbia, and Puerto Rico tested positive for WNV. Among the WNV-positive pools, 6,286 (77%) were made up of *Culex* mosquitoes thought to be the principal vectors of WNV transmission (e.g., *Cx. pipiens*, *Cx. quinquefasciatus*, *Cx. restuans*, *Cx. salinarius*, and *Cx. tarsalis*). Unidentified or other species

† A sample of mosquitoes (usually no more than 50) of the same species and sex, collected within a defined sampling area and period.

FIGURE 3. Incidence* of West Nile virus neuroinvasive disease, by age group — United States, 2007†



* Per 100,000 population.

† Includes meningitis, encephalitis, and acute flaccid paralysis.

of *Culex* mosquitoes made up 1,746 (21%) pools, and non-*Culex* species (e.g., *Aedes* spp., *Anopheles* spp., *Coquillettidia perturbans*, *Culiseta* spp., and *Uranotaenia sapphirina*) made up 106 (1%) pools. Data from 2007 included the first report of WNV infection in *Culex bahamensis*, which was collected in Puerto Rico. The number of reported WNV-infected mosquito pools peaked during mid-August.

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Editorial Note: In 2007, the reported incidence of WNND in the United States was 0.4 per 100,000 population. This incidence is similar to that reported in 2004 (0.4), 2005 (0.4), and 2006 (0.5), but substantially lower than the reported incidence for 2002 (1.0) and 2003 (1.0) (1,2). The relative stability in the number of reported WNND cases during the past 4 years likely represents endemic WNV transmission in the continental United States. However, because of variation in vectors, avian amplifying hosts, human activity, and environmental factors (e.g., temperature and rainfall), predicting future WNV transmission intensity is difficult (3,4).

Reported cases of WNND are thought to be the most accurate indicator of WNV activity in humans. WNND reporting is thought to be more complete because of substantial associated morbidity and mortality, whereas WNF likely is underdiagnosed and underreported. Serologic surveys indicate that approximately 20% of WNV infections result in WNF and 0.7% of WNV infections result in WNND (5). Based on these estimates, approximately 175,000 WNV infections and 35,000 WNF cases occurred in the United States

in 2007. Only 2,350 WNF cases were reported to ArboNET in 2007, representing <10% of the estimated number of WNF cases.

In 2007, evidence of WNV human disease again was detected in all geographic regions of the continental United States. Although the highest incidence of WNND continued to occur in the west-central United States (6), Idaho reported only 10 WNND cases in 2007, a 93% decrease from the 139 cases reported in 2006 (7). This illustrates the wide annual variability and focality of WNV transmission. Human WNV infection was identified for the first time in Puerto Rico in 2007 among three asymptomatic blood donors (8).

ArboNET integrates arboviral diagnostic testing and reporting to produce timely, actionable data that public health professionals use to tailor effective prevention and control messages at the local level. Continued surveillance is important in monitoring potential changes in WNV epidemiology and for providing early warning for local WNND outbreaks. In addition, ArboNET is well positioned to help identify and manage future introductions of exotic arboviruses. For example, cases of ill travelers entering the United States who are likely viremic with nonendemic arboviruses (e.g., dengue virus and chikungunya virus) are reported to ArboNET (9).

WNV vaccines are licensed for use in horses and are being evaluated currently in phase 2 human clinical trials (10). Because no WNV vaccine is available currently for use in humans, prevention depends on personal protective measures. Use of repellents containing DEET, picaridin, oil of lemon eucalyptus, or IR3535 provides effective protection against mosquitoes. Long-sleeved shirts, long pants, and socks provide barrier protection against mosquito bites, and many fabrics can be treated with permethrin to provide an additional level of protection. Avoiding outdoor exposure during dusk and dawn, when *Culex* mosquito species are more active, will decrease the likelihood of WNV exposure. Household measures, such as installing and repairing window screens and covering or draining water-holding containers to reduce mosquito breeding sites, can decrease further the risk for WNV exposure.

Additional information on effective prevention of WNV infection is available from CDC at <http://www.cdc.gov/ncidod/dvbid/westnile/index.htm>. An overview of current year WNV transmission activity is available at http://diseasemaps.usgs.gov/wnv_us_human.html.

Acknowledgments

This report is based, in part, on data provided by ArboNET surveillance coordinators in local and state health departments and ArboNET technical staff, Div of Vector-Borne Infectious Diseases, National Center for Zoonotic, Vector-Borne, and Enteric Diseases, CDC.

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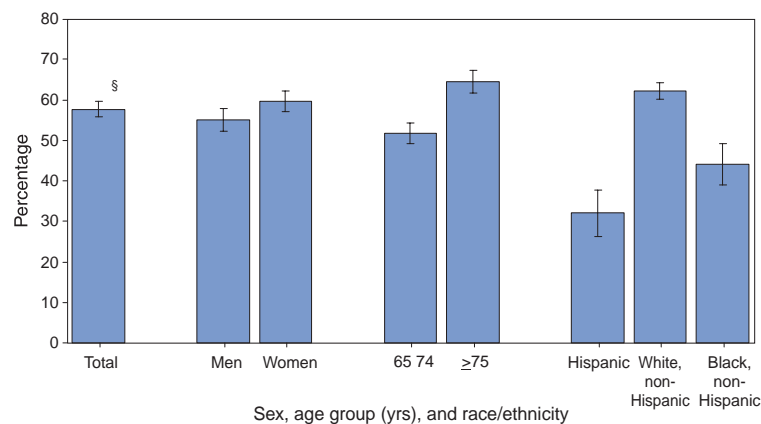
Erratum: Vol. 57, No. RR-4

In the *MMWR Recommendations and Reports* (Vol. 57, No. RR-4), “Prevention of Pertussis, Tetanus, and Diphtheria Among Pregnant and Postpartum Women and Their Infants: Recommendations of the Advisory Committee on Immunization Practices (ACIP),” an error occurred on page 4 in Table 1. For the vaccine ADACEL[®], the fimbriae component of the formulation was omitted; it should be 5 µg, followed by the “¶” footnote symbol.

QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

Percentage of Adults Aged ≥65 Years Who Ever Received a Pneumococcal Vaccination,* by Sex, Age Group, and Race/Ethnicity — National Health Interview Survey, United States, 2007†



* Based on response to the question, “Have you ever had a pneumonia shot? This shot is usually given only once or twice in a person’s lifetime and is different from the flu shot. It is also called the pneumococcal vaccine.”

† Estimates are based on household interviews of a sample of the civilian, noninstitutionalized U.S. population.

§ 95% confidence interval.

In 2007, approximately 58% of adults aged ≥65 years had ever received a pneumococcal vaccination. In this population, statistically significant differences by sex, age group, and race/ethnicity were observed. Women were more likely than men to have ever received a pneumococcal vaccination. Adults aged ≥75 years were more likely to have ever received a pneumococcal vaccination compared with adults aged 65–74 years. Non-Hispanic white adults aged ≥65 years were more likely than Hispanic and non-Hispanic black adults in that age group to have received the vaccination.

SOURCE: Heyman KM, Schiller JS, Barnes P. Early release of selected estimates based on data from the 2007 National Health Interview Survey. US Department of Health and Human Services, CDC, National Center for Health Statistics; 2008. Available at <http://www.cdc.gov/nchs/about/major/nhis/released200806.htm>.

TABLE I. Provisional cases of infrequently reported notifiable diseases (<1,000 cases reported during the preceding year) — United States, week ending June 28, 2008 (26th Week)*

Disease	Current week	Cum 2008	5-year weekly average†	Total cases reported for previous years					States reporting cases during current week (No.)
				2007	2006	2005	2004	2003	
Anthrax	—	—	—	1	1	—	—	—	
Botulism:									
foodborne	—	4	0	32	20	19	16	20	
infant	—	32	2	85	97	85	87	76	
other (wound & unspecified)	—	6	1	27	48	31	30	33	
Brucellosis	2	39	2	130	121	120	114	104	CA (2)
Chancroid	1	23	1	23	33	17	30	54	NY (1)
Cholera	—	—	0	7	9	8	6	2	
Cyclosporiasis§	4	45	10	92	137	543	160	75	FL (3), TN (1)
Diphtheria	—	—	—	—	—	—	—	1	
Domestic arboviral diseases§,¶:									
California serogroup	—	—	3	53	67	80	112	108	
eastern equine	—	—	0	4	8	21	6	14	
Powassan	—	—	0	7	1	1	1	—	
St. Louis	—	—	0	9	10	13	12	41	
western equine	—	—	—	—	—	—	—	—	
Ehrlichiosis/Anaplasmosis§,¶,¶¶:									
<i>Ehrlichia chaffeensis</i>	7	94	17	828	578	506	338	321	MD (3), VA (2), FL (1), AL (1)
<i>Ehrlichia ewingii</i>	—	—	—	—	—	—	—	—	
<i>Anaplasma phagocytophilum</i>	—	33	22	834	646	786	537	362	
undetermined	—	2	11	337	231	112	59	44	
<i>Haemophilus influenzae</i> ,††									
invasive disease (age <5 yrs):									
serotype b	—	17	0	23	29	9	19	32	
nonserotype b	—	89	3	197	175	135	135	117	
unknown serotype	2	115	3	181	179	217	177	227	MO (1), CO (1)
Hansen disease§	—	33	2	101	66	87	105	95	
Hantavirus pulmonary syndrome§	—	6	1	32	40	26	24	26	
Hemolytic uremic syndrome, postdiarrheal§	7	60	6	292	288	221	200	178	OH (1), MO (2), OK (1), CA (3)
Hepatitis C viral, acute	6	351	15	856	766	652	720	1,102	NY (1), OH (1), MI (1), VA (1), OK (1), CA (1)
HIV infection, pediatric (age <13 yrs)§§	—	—	4	—	—	380	436	504	
Influenza-associated pediatric mortality§,¶¶	2	87	1	70	43	45	—	N	KY (1), TX (1)
Listeriosis	7	237	17	808	884	896	753	696	OH (1), NC (1), TN (1), OK (3), CA (1)
Measles***	1	113	2	43	55	66	37	56	CA (1)
Meningococcal disease, invasive†††:									
A, C, Y, & W-135	3	154	5	323	318	297	—	—	NC (1), OK (1), WA (1)
serogroup B	—	87	4	166	193	156	—	—	
other serogroup	—	18	0	34	32	27	—	—	
unknown serogroup	9	361	11	553	651	765	—	—	OH (1), NC (2), SC (1), FL (1), AL (1), CA (3)
Mumps	2	236	20	799	6,584	314	258	231	NY (1), KS (1)
Novel influenza A virus infections	—	—	—	1	N	N	N	N	
Plague	—	1	0	7	17	8	3	1	
Poliomyelitis, paralytic	—	—	—	—	—	1	—	—	
Poliovirus infection, nonparalytic§	—	—	—	—	N	N	N	N	
Psittacosis§	—	4	0	12	21	16	12	12	
Q fever§,§§§ total:	—	46	3	171	169	136	70	71	
acute	—	42	—	—	—	—	—	—	
chronic	—	4	—	—	—	—	—	—	
Rabies, human	—	—	0	1	3	2	7	2	
Rubella¶¶¶	1	7	0	12	11	11	10	7	ND (1)
Rubella, congenital syndrome	—	—	—	—	1	1	—	1	
SARS-CoV§,****	—	—	—	—	—	—	—	8	

—: No reported cases. N: Not notifiable. Cum: Cumulative year-to-date counts.

* Incidence data for reporting years 2007 and 2008 are provisional, whereas data for 2003, 2004, 2005, and 2006 are finalized.

† Calculated by summing the incidence counts for the current week, the 2 weeks preceding the current week, and the 2 weeks following the current week, for a total of 5 preceding years. Additional information is available at <http://www.cdc.gov/epo/dphsi/phs/files/5yearweeklyaverage.pdf>.

§ Not notifiable in all states. Data from states where the condition is not notifiable are excluded from this table, except in 2007 and 2008 for the domestic arboviral diseases and influenza-associated pediatric mortality, and in 2003 for SARS-CoV. Reporting exceptions are available at <http://www.cdc.gov/epo/dphsi/phs/infdis.htm>.

¶ Includes both neuroinvasive and nonneuroinvasive. Updated weekly from reports to the Division of Vector-Borne Infectious Diseases, National Center for Zoonotic, Vector-Borne, and Enteric Diseases (ArboNET Surveillance). Data for West Nile virus are available in Table II.

¶¶ The names of the reporting categories changed in 2008 as a result of revisions to the case definitions. Cases reported prior to 2008 were reported in the categories: Ehrlichiosis, human monocytic (analogous to *E. chaffeensis*); Ehrlichiosis, human granulocytic (analogous to *Anaplasma phagocytophilum*), and Ehrlichiosis, unspecified, or other agent (which included cases unable to be clearly placed in other categories, as well as possible cases of *E. ewingii*).

†† Data for *H. influenzae* (all ages, all serotypes) are available in Table II.

§§ Updated monthly from reports to the Division of HIV/AIDS Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. Implementation of HIV reporting influences the number of cases reported. Updates of pediatric HIV data have been temporarily suspended until upgrading of the national HIV/AIDS surveillance data management system is completed. Data for HIV/AIDS, when available, are displayed in Table IV, which appears quarterly.

¶¶¶ Updated weekly from reports to the Influenza Division, National Center for Immunization and Respiratory Diseases. Eighty-five cases occurring during the 2007–08 influenza season have been reported.

*** The one measles case reported for the current week was imported.

††† Data for meningococcal disease (all serogroups) are available in Table II.

§§§ In 2008, Q fever acute and chronic reporting categories were recognized as a result of revisions to the Q fever case definition. Prior to that time, case counts were not differentiated with respect to acute and chronic Q fever cases.

¶¶¶¶ The one rubella case reported for the current week was unknown.

**** Updated weekly from reports to the Division of Viral and Rickettsial Diseases, National Center for Zoonotic, Vector-Borne, and Enteric Diseases.

TABLE I. (Continued) Provisional cases of infrequently reported notifiable diseases (<1,000 cases reported during the preceding year) — United States, week ending June 28, 2008 (26th Week)*

Disease	Current week	Cum 2008	5-year weekly average†	Total cases reported for previous years					States reporting cases during current week (No.)
				2007	2006	2005	2004	2003	
Smallpox§	—	—	—	—	—	—	—	—	
Streptococcal toxic-shock syndrome§	2	80	2	132	125	129	132	161	CT (2)
Syphilis, congenital (age <1 yr)	—	84	8	427	349	329	353	413	
Tetanus	—	2	1	27	41	27	34	20	
Toxic-shock syndrome (staphylococcal)§	3	31	2	92	101	90	95	133	CA (3)
Trichinellosis	—	4	0	5	15	16	5	6	
Tularemia	1	23	5	137	95	154	134	129	OR (1)
Typhoid fever	3	173	7	434	353	324	322	356	WA (1), CA (2)
Vancomycin-intermediate <i>Staphylococcus aureus</i> §	—	4	0	28	6	2	—	N	
Vancomycin-resistant <i>Staphylococcus aureus</i> §	—	—	—	2	1	3	1	N	
Vibriosis (noncholera <i>Vibrio</i> species infections)§	7	85	3	421	N	N	N	N	MD (1), VA (2), FL (4)
Yellow fever	—	—	—	—	—	—	—	—	

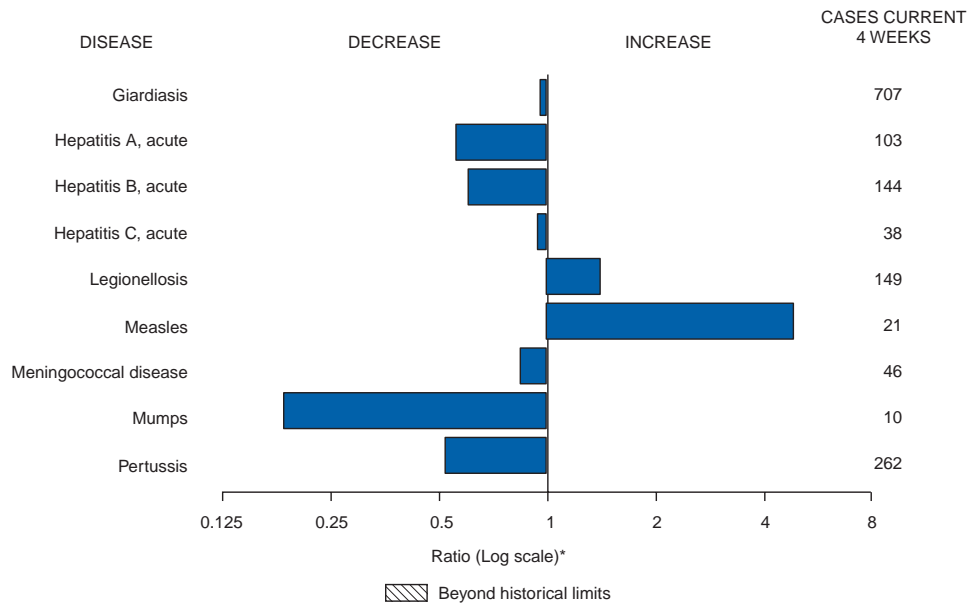
—: No reported cases. N: Not notifiable. Cum: Cumulative year-to-date counts.

* Incidence data for reporting years 2007 and 2008 are provisional, whereas data for 2003, 2004, 2005, and 2006 are finalized.

† Calculated by summing the incidence counts for the current week, the 2 weeks preceding the current week, and the 2 weeks following the current week, for a total of 5 preceding years. Additional information is available at <http://www.cdc.gov/epo/dphsi/phs/files/5yearweeklyaverage.pdf>.

§ Not notifiable in all states. Data from states where the condition is not notifiable are excluded from this table, except in 2007 and 2008 for the domestic arboviral diseases and influenza-associated pediatric mortality, and in 2003 for SARS-CoV. Reporting exceptions are available at <http://www.cdc.gov/epo/dphsi/phs/infdis.htm>.

FIGURE I. Selected notifiable disease reports, United States, comparison of provisional 4-week totals June 28, 2008, with historical data



* Ratio of current 4-week total to mean of 15 4-week totals (from previous, comparable, and subsequent 4-week periods for the past 5 years). The point where the hatched area begins is based on the mean and two standard deviations of these 4-week totals.

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TABLE II. (Continued) Provisional cases of selected notifiable diseases, United States, weeks ending June 28, 2008, and June 30, 2007 (26th Week)*

Reporting area	Streptococcal disease, invasive, group A					<i>Streptococcus pneumoniae</i> , invasive disease, nondrug resistant† Age <5 years				
	Current week	Previous 52 weeks		Cum 2008	Cum 2007	Current week	Previous 52 weeks		Cum 2008	Cum 2007
		Med	Max				Med	Max		
United States	49	99	258	3,182	3,245	8	35	166	935	1,004
New England	—	6	31	207	255	—	2	14	41	82
Connecticut	—	0	28	71	70	—	0	11	—	11
Maine§	—	0	3	16	18	—	0	1	1	1
Massachusetts	—	2	7	83	130	—	1	5	30	54
New Hampshire	—	0	2	16	20	—	0	1	7	8
Rhode Island§	—	0	6	12	2	—	0	1	2	6
Vermont§	—	0	2	9	15	—	0	1	1	2
Mid. Atlantic	9	16	43	656	641	—	4	19	115	185
New Jersey	—	3	9	101	120	—	1	6	21	37
New York (Upstate)	5	6	18	228	191	—	2	14	61	61
New York City	—	3	10	116	159	—	1	12	33	87
Pennsylvania	4	5	16	211	171	N	0	0	N	N
E.N. Central	10	17	59	655	667	—	6	23	188	184
Illinois	—	5	16	175	203	—	1	6	43	45
Indiana	—	2	11	87	69	—	0	14	23	11
Michigan	—	3	10	85	140	—	1	5	42	54
Ohio	5	4	15	187	163	—	1	5	35	37
Wisconsin	5	1	38	121	92	—	1	9	45	37
W.N. Central	—	5	39	256	218	1	2	16	79	54
Iowa	—	0	0	—	—	—	0	0	—	—
Kansas	—	0	6	33	24	—	0	3	13	—
Minnesota	—	0	35	116	107	—	0	13	28	33
Missouri	—	2	10	62	56	—	1	2	23	15
Nebraska§	—	0	3	24	15	1	0	3	6	5
North Dakota	—	0	5	9	10	—	0	2	4	1
South Dakota	—	0	2	12	6	—	0	1	5	—
S. Atlantic	14	21	51	626	742	3	6	13	147	172
Delaware	—	0	2	6	5	—	0	0	—	—
District of Columbia	—	0	2	12	15	—	0	1	1	2
Florida	3	6	11	148	170	2	1	4	41	36
Georgia	4	4	10	127	148	1	1	5	10	39
Maryland§	1	4	9	113	130	—	1	5	37	42
North Carolina	3	3	22	86	94	N	0	0	N	N
South Carolina§	—	1	5	35	71	—	1	4	29	20
Virginia§	3	3	12	80	91	—	0	6	24	29
West Virginia	—	0	3	19	18	—	0	1	5	4
E.S. Central	1	4	13	103	118	—	2	11	62	53
Alabama§	N	0	0	N	N	N	0	0	N	N
Kentucky	—	1	3	20	30	N	0	0	N	N
Mississippi	N	0	0	N	N	—	0	3	15	4
Tennessee§	1	3	13	83	88	—	2	9	47	49
W.S. Central	8	8	84	257	185	4	5	66	142	135
Arkansas§	—	0	2	4	15	—	0	2	5	9
Louisiana	—	0	1	3	13	—	0	2	2	24
Oklahoma	3	1	19	68	43	1	1	7	46	30
Texas§	5	5	64	182	114	3	3	58	89	72
Mountain	6	11	22	349	343	—	5	12	151	130
Arizona	4	4	9	126	127	—	2	8	77	64
Colorado	1	3	8	98	88	—	1	4	41	31
Idaho§	1	0	2	11	6	—	0	1	3	2
Montana§	N	0	0	N	N	—	0	1	2	—
Nevada§	—	0	2	6	3	N	0	0	N	N
New Mexico§	—	2	7	66	61	—	0	3	13	27
Utah	—	1	5	37	53	—	0	4	14	6
Wyoming§	—	0	2	5	5	—	0	1	1	—
Pacific	1	3	10	73	76	—	0	2	10	9
Alaska	—	0	3	20	15	N	0	0	N	N
California	—	0	0	—	—	N	0	0	N	N
Hawaii	1	2	10	53	61	—	0	2	10	9
Oregon§	N	0	0	N	N	N	0	0	N	N
Washington	N	0	0	N	N	N	0	0	N	N
American Samoa	8	0	12	30	4	N	0	0	N	N
C.N.M.I.	—	—	—	—	—	—	—	—	—	—
Guam	—	0	3	—	5	—	0	0	—	—
Puerto Rico	N	0	0	N	N	N	0	0	N	N
U.S. Virgin Islands	—	0	0	—	—	N	0	0	N	N

C.N.M.I.: Commonwealth of Northern Mariana Islands.

U: Unavailable. —: No reported cases. N: Not notifiable. Cum: Cumulative year-to-date counts. Med: Median. Max: Maximum.

* Incidence data for reporting years 2007 and 2008 are provisional.

† Includes cases of invasive pneumococcal disease, in children aged <5 years, caused by *S. pneumoniae*, which is susceptible or for which susceptibility testing is not available (NNDSS event code 11717).

§ Contains data reported through the National Electronic Disease Surveillance System (NEDSS).

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