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Cluster of Tick Paralysis Cases — Colorado, 2006

Tick paralysis is a rare disease characterized by acute, ascending, flaccid paralysis that is often confused with other acute neurologic disorders or diseases (e.g., Guillain-Barré syndrome or botulism). Tick paralysis is thought to be caused by a toxin in tick saliva; the paralysis usually resolves within 24 hours after tick removal. During May 26–31, 2006, the Colorado Department of Public Health and Environment received reports of four recent cases of tick paralysis. The four patients lived (or had visited someone) within 20 miles of each other in the mountains of north central Colorado. This report summarizes the four cases and emphasizes the need to increase awareness of tick paralysis among health-care providers and persons in tick-infested areas.

Case 1. On May 15, a girl aged 6 years from Weld County awoke with symptoms of bilateral lower extremity weakness. She attended school as usual but needed assistance from a friend to walk outside for recess, where she fell down and was unable to get up. Her mother took her to an outpatient clinic, and a neurology appointment was arranged for the next day. She awoke the next day with a tingling sensation in her hands and feet, an inability to sit or stand on her own, and difficulty swallowing. She was taken to a local emergency department (ED) and transferred to a regional children's hospital. A physical examination revealed ophthalmoplegia (i.e., paralysis of muscles controlling eye movement), dysarthria (i.e., slurred or abnormal speech), and areflexia (i.e., absence of neurologic reflexes); nerve conduction studies indicated decreased velocities. The girl was admitted to the intensive-care unit on May 16 with a presumed diagnosis of Guillain-Barré syndrome and subsequently required intubation. On the evening of May 17, a nurse who was bathing the girl found a tick along her hairline. Investigators later learned that the tick had been visible on magnetic resonance imaging of the girl's head earlier that day. The tick was removed immediately, and the girl's symptoms improved; she was discharged home 1 week later.

The tick was identified as a female *Dermacentor andersoni*. The girl often had visited her grandmother in the mountains in Larimer County and frequently hiked in the area. Seven days before symptom onset, the girl had visited her grandmother and played outside in the yard.

Case 2. On May 22, a man aged 86 years from the mountains in Larimer County began to have increased difficulty standing and transferring to and from his motorized scooter. The man was homebound as a result of chronic polyneuropathy and weakness from spinal stenosis. The next morning, his weakness worsened, and he was unable to walk or grasp objects. He called for emergency services and was admitted to the local hospital with a diagnosis of progressive worsening of his chronic neuropathy. Physical examination revealed normal cranial nerve function but generalized weakness; deep-tendon reflexes were absent. On the evening of May 23, a nurse who was changing the man's gown noticed a tick on his back. After tick removal, his symptoms improved during the next 4 days, and he was discharged home on May 27, although 2 weeks later he did not feel he had yet recovered to his baseline condition. The man did not report any recent travel or spending any time outdoors, with the exception of daily visits to his mailbox using his scooter. He owned a dog that was often outside, and he believed this was the likely source of the tick; the dog had no signs of tick paralysis.

Case 3. On May 22, a woman aged 78 years from the mountains in Grand County had generalized weakness and diffi-

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culty walking. During the next few days, her signs and symptoms progressed to facial weakness, slurred speech, decreased taste, and confusion. While the woman was preparing to go to the ED on May 25, her roommate noticed a tick on the back of the woman's neck below the hairline. Physical examination in the ED revealed normal cranial nerve function and no appreciable weakness, but the patient did have decreased deep-tendon reflexes. The ED physician removed the tick by cutting the surrounding tissue with a scalpel. The patient was discharged home to recover. The patient subsequently reported that within 24 hours her weakness, alteration in taste, and confusion were resolved; however, 3 weeks after discharge, she still became tired easily. The woman reported that she hiked or walked outside daily.

Case 4. A man aged 58 years from Larimer County with a history of chronic renal failure traveled to southern Texas on April 20. On April 24, he had a tingling sensation in his hands and perioral numbness. Three days later, he collapsed while trying to stand and was unable to get up. While helping him off the floor, his wife discovered a tick on the man's back. She removed the tick before transporting him to a local ED. He was transferred and admitted to an intensive-care unit but did not require intubation. Several hours later, he began to regain feeling in his hands and was able to walk with assistance. He was discharged home on May 5, but 6 weeks later he still reported residual subjective weakness. The patient reported that he frequently performed yard work and various outdoor recreational activities.

Reported by: *WJ Pape, K Gershman, MD, Colorado Dept of Public Health and Environment. WM Bamberg, MD, EIS Officer, CDC.*

Editorial Note: The four cases described in this report illustrate the importance of considering tick paralysis in the differential diagnosis of persons with ascending paralysis who live in or visit tick-endemic regions. Diagnosis is confirmed by finding a tick embedded in the skin and observing for signs of improvement after tick removal; no other test exists for confirming tick paralysis. Although rare, cases of tick paralysis have been identified worldwide; most cases in North America occur in the western regions of Canada and the United States. The species most often associated with tick paralysis in the United States and Canada are the Rocky Mountain wood tick (*D. andersoni*) and the American dog tick (*Dermacentor variabilis*); however, 43 tick species have been implicated in human disease around the world (1). Most North American cases of tick paralysis occur during April–June, when adult *Dermacentor* ticks emerge from hibernation and actively seek hosts (2).

Tick paralysis is thought to be caused by a toxin secreted in tick saliva during feeding that reduces motor neuron action potentials and the action of acetylcholine, depending on the

species of tick (1,3). Symptom onset usually occurs after 4–7 days of tick feeding. Ascending flaccid paralysis progresses over several hours or days; sensory loss does not usually occur, and pain is absent (4,5). Resolution of symptoms usually occurs within 24 hours of tick removal. When the tick is not removed, the mortality rate resulting from respiratory paralysis is approximately 10% (6,7).

Although tick paralysis is not a reportable disease in the state, the Colorado Department of Public Health and Environment receives, on average, a report of one case per year. The geographic and temporal clustering of cases described in this report is unusual. No explanation exists to account for this clustering; the risk for acquiring tick paralysis has been widespread in the western United States and Canada.

The cases described in this report also differ in other respects from previous reports. For example, the majority of patients have been children, particularly girls (2,7). However, in this cluster, only one patient was a child, and two patients were aged >70 years. The ticks removed from all four patients were on the neck or back; in previously reported tick paralysis cases, ticks were predominantly on the head and neck (7). Although outdoor exposure, such as hiking or camping in wooded areas, is usually associated with tick paralysis, one of the four patients was homebound with limited outdoor exposure.

Health-care workers discovered the ticks incidentally on two of the patients whose conditions had received alternative diagnoses. Health-care providers should consider a diagnosis of tick paralysis in any patient living in or visiting a tick-endemic area who has acute, symmetric paralysis and should perform a complete examination for ticks, particularly on the head, neck, and back. Ticks should be removed by grasping the tick close to the patient's skin with forceps and pulling with a steady, even pressure (8). Persons in tick-endemic areas should be educated regarding tick-borne diseases and should perform routine checks for ticks after possible exposures. Insect repellents should be applied to skin, and permethrin-containing acaricides should be sprayed on clothing to help prevent tick bites. Additional information regarding prevention of tick-borne diseases is available at <http://www.cdc.gov/ncidod/ticktips2005>.

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Ciguatera Fish Poisoning — Texas, 1998, and South Carolina, 2004

Ciguatera fish poisoning is characterized by gastrointestinal symptoms such as nausea, vomiting, and diarrhea and neurologic symptoms such as weakness, tingling, and pruritus (itching). The condition is caused by eating fish containing toxins produced by the dinoflagellate *Gambierdiscus toxicus*, a one-celled plantlike organism that grows on algae in tropical waters worldwide. Because these toxins are lipid soluble, they accumulate through the food chain as carnivorous fish consume contaminated herbivorous reef fish; toxin concentrations are highest in large, predatory fish such as barracuda, grouper, amberjack, snapper, and shark. Because fish caught in ciguatera-endemic areas are shipped nationwide, ciguatera fish poisoning can occur anywhere in the United States. This report describes ciguatera fish poisoning in four persons (two in 1998, two in 2004) who ate fish caught by recreational fishers in waters outside of ciguatera-endemic areas (e.g., the Caribbean Sea and the Atlantic and Gulf Coast waters off southern Florida). These cases underscore the need for physicians, regardless of whether they are in a ciguatera-endemic area, to consider ciguatera in patients who have gastrointestinal or neurologic symptoms after eating large, predatory fish.

South Carolina, 2004

Two cases of ciguatera fish poisoning, in a husband and wife, were reported to the South Carolina Department of Health and Environmental Control on August 10, 2004; the cases were associated with a barracuda caught approximately 60 miles southeast of Charleston, South Carolina, and are the first known cases caused by fish caught off South Carolina. Caribbean ciguatoxin was identified by high-performance liquid chromatography and mass spectrometry in a remaining portion of the barracuda fillet.

The husband, whose age was not known, had diarrhea and abdominal cramping approximately 5 hours after eating the fish. He then experienced weakness, tooth pain, and the feeling that his teeth were loose. He sought care from his family physician and recovered within a few days with no long-term effects; the treatment provided, if any, was unknown.

The wife, aged 36 years, experienced nausea, vomiting, severe abdominal pain, and diarrhea 2 hours after eating the fish. She then experienced a slowed heartbeat; hypotension; dizziness; severe, generalized pruritus; a reversal of hot and cold temperature sensations; and the feeling that the tops of her hands and feet were burning. She was hospitalized for 13 days; treatment included intravenous fluids, promethazine for nausea, gatifloxacin, and low doses of dopamine. Eighteen months after eating the barracuda, the patient reported that she still occasionally experienced slight tingling in her hands.

Texas, 1998

During January 2005–June 2006, CDC conducted a study of ciguatera fish poisoning among recreational fishers who fished from Texas Gulf Coast oil rigs. Various outreach materials were used to recruit sport fishers who became ill after eating a fish caught offshore in Texas; they were asked to call a toll-free number and complete a telephone survey detailing the symptoms and duration of their illness, the type and quantity of fish consumed, the location where they caught the fish, and details of their fishing practices.

Two cases of ciguatera fish poisoning were identified in attendees of a 1998 dinner party in Houston, Texas, where snapper and barracuda fillets, both caught from an oil-rig platform off the Texas Gulf Coast, were served. None of the fish was saved for laboratory testing, so whether only one or both fish species were ciguatoxic is unknown.

Within 4 hours of the meal, a woman aged 50 years had onset of generalized pruritus and severe gastrointestinal symptoms, including diarrhea, abdominal pain, nausea, and vomiting. The symptoms persisted into the following day; 24 hours after eating the contaminated fish, she began experiencing arm and leg weakness. Two days after the meal, she began to feel tingling in her arms and legs and around her mouth and had hot-cold temperature sensation reversal. Her illness persisted for several days (exact number of days is unknown). She visited her primary-care physician but did not receive any medication. She reported no long-term effects.

A man aged 56 years, a friend of the female patient, attended the same dinner party and became ill within 12 hours of eating the fish. He experienced muscle aches and stiffness, burning on urination, a metallic taste in his mouth, and hot-cold temperature sensation reversal. The patient also reported

that his penis was extremely sensitive, which caused occasional ejaculations; although this phenomenon is a neurologic symptom, it is not characteristic of ciguatera. Because the patient, who was a fisherman, knew the symptoms of ciguatera, he assumed that he had the condition and did not seek any medical treatment. He reported no long-term effects.

These are not the first documented cases of ciguatera caused by fish caught off the Texas coast (1); they provide additional evidence that ciguatoxic fish can be caught in Texas coastal waters, an area not typically associated with ciguatera fish poisoning. A recent study supports the hypothesis that oil-rig platforms can serve as sites for *G. toxicus* proliferation in the northwestern Gulf of Mexico (2).

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Editorial Note: Ciguatera fish poisoning generally begins with a gastrointestinal syndrome consisting of nausea, vomiting, diarrhea, and abdominal pain, with onset ranging from 2–30 hours after ingestion (3,4); however, symptoms most commonly begin within 2–6 hours. Within approximately 3 hours of eating contaminated fish, neurologic symptoms can occur, including profound weakness, paresthesias (tingling), severe pruritus, tooth pain or the feeling that teeth are loose, pain on urination, and blurred vision. Hot-cold temperature sensation reversal is characteristic although not always present. Ciguatera often is associated with signs of cardiovascular dysfunction, such as hypotension, bradycardia (slowed heartbeat), or arrhythmia (irregular heartbeat), which typically occur 1–3 days after eating contaminated fish (3). Complete recovery usually occurs within a few weeks, but neurologic symptoms can recur periodically. No diagnostic tests for ciguatera fish poisoning exist; diagnosis is based on the presence of characteristic symptoms in a patient with a recent history of fish ingestion. The diagnosis can be confirmed through laboratory testing (i.e., high-performance liquid chromatography and mass spectrometry) indicating the presence of ciguatoxin in fish samples saved from a meal; the level of ciguatoxin in fish that causes human illness varies. In addition, no proven screening test exists for detecting ciguatoxin in fish before they are distributed and eaten. Ciguatoxins are odorless, colorless, and tasteless and cannot be eliminated or reduced by cooking or freezing.

Ciguatera has a low mortality rate (<0.5%), although it is a substantial cause of morbidity in areas where ciguatera is

endemic (4,5). Ciguatera-endemic U.S. states and territories include Hawaii, Florida, Puerto Rico, Guam, the U.S. Virgin Islands, American Samoa, and the Commonwealth of Northern Mariana Islands; approximately five (Florida) to 70 (U.S. Virgin Islands) cases per 10,000 population are estimated to occur each year (5). Because of difficulties confirming cases and the absence of a reliable assay for human exposure, the number of cases reported to health departments is estimated at 2%–10% of the actual number of cases in the United States (4).

Potentially ciguatoxic fish such as barracuda and amberjack migrate seasonally; therefore, they can acquire the toxin in one region and transport it to another. Migration of barracuda from south Florida waters and the Caribbean to South Carolina waters has been documented by the South Carolina Department of Natural Resources cooperative Marine Game Fish Tagging Program (6), and migration of barracuda from Florida to Texas waters has been documented by Fish Trackers, Inc., a volunteer fish-tagging organization that catches, tags, and releases certain fish species (7).

The number of oil rigs in Gulf Coast waters is increasing, providing new habitats for *Gambierdiscus* species and the reef fish that feed on them. In addition, the oil rigs are popular sport-fishing sites and are being considered for experimental fish farming and mariculture operations, increasing the likelihood that humans will be exposed to ciguatoxic fish. In the western Gulf of Mexico, these structures already are becoming habitats for hard coral reefs, which in turn provide a surface for algae growth (2).

The temperatures of the northern Caribbean and extreme southeastern Gulf of Mexico have been predicted to increase 4.5°F–6.3°F (2.5°C–3.5°C) during the twenty-first century, with greater temperature increases in higher latitudes (7). Higher temperatures favor *G. toxicus* growth (8) and are likely to alter fish migration patterns. Ciguatera outbreaks previously have been correlated with sea-surface temperature increases in the south Pacific Ocean (9) and Tahiti (10). These data suggest *G. toxicus* proliferation likely will continue and perhaps increase in the Gulf of Mexico (2) and along the southern Atlantic coastline.

Persons living in or traveling to ciguatera-endemic areas should adhere to the following general precautions: 1) avoid consuming large, predatory reef fish, especially barracuda; 2) avoid eating the head, viscera, or roe of any reef fish; and 3) avoid eating fish caught at sites known to be ciguatoxic. Physicians everywhere who treat patients with gastrointestinal or neurologic symptoms after eating large, predatory fish should consider a diagnosis of ciguatera.

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Youth Exposure to Alcohol Advertising on Radio — United States, June–August 2004

In the United States, more underage youth drink alcohol than smoke tobacco or use illicit drugs (1). Excessive alcohol consumption leads to many adverse health and social consequences and results in approximately 4,500 deaths among underage youth each year (1,2). Recent studies have emphasized the contribution of alcohol marketing to underage drinking and have demonstrated that a substantial proportion of alcohol advertising appears in media for which the audience composition is youth-oriented (i.e., composed disproportionately of persons aged 12–20 years) (3,4). To determine the proportion of radio advertisements that occurred on radio programs with audiences composed disproportionately of underage youth and the proportion of total youth exposure to alcohol advertising that occurs as a result of such advertising, researchers at the Center on Alcohol Marketing and Youth (Health Policy Institute, Georgetown University, District of Columbia) evaluated the placement of individual radio advertisements for the most advertised U.S. alcohol brands and the composition of audiences in the largest 104 markets in the United States. This report summarizes the results of that study, which indicate that alcohol advertising is common on radio programs which have disproportionately large youth audiences

and that this advertising accounts for a substantial proportion of all alcohol radio advertising heard by underage youth. These results further indicate that 1) the current voluntary standards limiting alcohol marketing to youth should be enforced and ultimately strengthened, and 2) ongoing monitoring of youth exposure to alcohol advertising should continue.

In this study, underage youth were defined as persons aged 12–20 years. Age 12 years is the youngest age at which exposure to radio advertising is tracked, and age 21 years is the minimum legal drinking age in all U.S. states. Radio programs based on three levels of youth audience composition were assessed. The first level was based on a market-specific proportionate standard in which the proportion of the audience aged 12–20 years exceeded its proportion in the general population of a given local market. The second level was based on a standard in which the proportion of youth aged 12–20 years exceeded 15% of the audience; this corresponds to the proportion of the U.S. population aged ≥ 12 years who are aged 12–20 years. This is also the threshold above which the National Research Council and Institute of Medicine (NRC/IOM) recommends that alcohol companies refrain from advertising. The third level was based on a standard in which the proportion of youth aged 12–20 years exceeded 30% of the audience; this threshold represents the level above which major alcohol companies have agreed not to advertise on radio and other media.

Overall, 238 unique radio advertisements for the 25 most advertised alcohol brands were catalogued by Video Monitoring Service (New York, New York). Nonproduct advertisements (e.g., advertisements promoting responsible drinking) were excluded from the analysis. Data on the frequency with which these advertisements appeared on individual radio programs in the top 104 media markets in the United States, which account for approximately 50% of the U.S. population (5), were obtained from Broadcast Verification Services (New York, New York). Advertising occurrences were identified for 24 of the 25 leading brands. To assess variability in advertising by metropolitan area, a subset of the advertisements in the sample from the 15 largest U.S. radio markets, which account for approximately one third of the U.S. population (5), were analyzed. Monitoring took place during June 15–August 5, 2004. This period was selected because this period typically has the highest spending for alcohol advertising (6), and 2004 was the most recent year for which data on advertising placement were available. Data on listener characteristics (e.g., audience composition by age, race/ethnicity, and sex) for the summer of 2003, the most recent comparable rating period for which data were available, were obtained from Arbitron Ratings (New York, New York). Advertisements that aired between midnight and

6:00 a.m., which accounted for 3% of all alcohol advertising placements, were excluded because Arbitron does not collect audience data for these hours.

Of the 67,404 alcohol advertisements assessed in the sample from all 104 markets, 32,800 (49%) were placed on programming for which the local audience was composed disproportionately of underage youth (i.e., the market-specific proportionate standard) (Table 1). In the 15 largest radio markets, 11,084 (48%) of 22,884 alcohol advertisements were placed on programming with disproportionately large youth audiences, ranging from 24% in Houston to 76% in Atlanta (Table 1).

Results based on a 15% threshold were similar to those based on the market-specific proportionate standard. For example, 52% of alcohol advertisements in all 104 markets and 49% of advertisements in the 15 largest markets aired on radio programs for which the youth audience composition was $>15\%$.

Of all advertisements in the 104 markets, 9,158 (14%) aired on programs for which youth represented $>30\%$ of listeners (Table 1). In 13 markets, approximately one half of advertisements were in programs that exceeded the 30% standard, whereas in 13 other markets, no advertising placements exceeded the 30% threshold. In the 15 largest radio markets, 2,948 (13%) of the advertisements aired on programs in which $>30\%$ of the audience was aged 12–20 years, ranging from 5% in Miami to 38% in Washington, D.C.

The proportion of alcohol advertising placed on radio programs with disproportionately large youth audiences also varied by brand. For 11 of 24 brands, approximately half of all their youth exposure resulted from placements that exceeded the 30% threshold, including five brands for which approximately three quarters of youth exposure resulted from these placements.*

Overall, 71% of total youth exposure to radio alcohol advertising was accounted for by advertisements on programs with disproportionately large youth audiences, and 32% of advertising exposure was accounted for by advertisements that aired on programs exceeding the 30% threshold (Table 2). In the 15 largest markets, the percentage of exposure coming from advertisements on programming with disproportionately large youth audiences ranged from 44% in San Francisco to 89% in Dallas, and the percentage of exposure from advertisements on programs for which $>30\%$ of the audience was youth ranged from 5% in Atlanta to 59% in Detroit.

Brand-specific exposure to radio advertising also varied by the sex and racial/ethnic composition of the audience. Compared with boys, underage girls had higher levels of exposure to 11 alcohol brands and in 41 of the 104 markets and less

*Data available at <http://www.camy.org>.

TABLE 1. Number and percentage of radio alcohol advertisements, by underage youth* audience composition and market — United States, June–August 2004

Market	Total no. of advertisements	% of local market population aged 12–20 yrs	No. and % of advertisements placed in programming that exceeded youth audience composition threshold†					
			> proportion than local population		>15%		>30%	
			No.	(%)	No.	(%)	No.	(%)
New York	3,190	14.4%	1,402	(44)	1,333	(42)	412	(13)
Los Angeles	1,881	16.8%	945	(50)	995	(53)	231	(12)
Chicago	2,214	15.8%	1,138	(51)	1,275	(58)	366	(17)
San Francisco	1,367	13.8%	453	(33)	411	(30)	78	(6)
Dallas	1,059	16.9%	691	(65)	721	(68)	207	(20)
Philadelphia	1,980	15.5%	1,135	(57)	1,135	(57)	190	(10)
Houston	1,510	17.9%	366	(24)	405	(27)	168	(11)
Washington, D.C.	1,143	14.5%	792	(69)	792	(69)	432	(38)
Boston	2,460	14.1%	1,346	(55)	1,304	(53)	150	(6)
Detroit	1,068	15.1%	303	(28)	303	(28)	278	(26)
Atlanta	765	16.1%	585	(76)	604	(79)	43	(6)
Miami	1,719	14.6%	709	(41)	709	(41)	82	(5)
Seattle	425	15.3%	302	(71)	302	(71)	87	(20)
Phoenix	654	16.4%	313	(48)	313	(48)	85	(13)
Minneapolis/St. Paul	1,449	16.6%	604	(42)	604	(42)	139	(10)
Total (15 largest markets)	22,884	15.5%	11,084	(48)	11,206	(49)	2,948	(13)
Total (104 markets)	67,404	15.7%	32,800	(49)	34,803	(52)	9,158	(14)

* Aged 12–20 years.

† The > proportion than local population programs were those in which the proportion of the audience aged 12–20 years was greater than the proportion of those aged 12–20 years in the general population of the local market. >15% programs were those in which >15% of listeners were aged 12–20 years. >30% programs were those in which >30% of listeners were aged 12–20 years.

exposure to 13 brands and in 63 markets. Compared with all youth, black youth had greater exposure to radio alcohol advertising in 25 of the 104 markets and less in 79 markets, and Hispanic youth were exposed to more alcohol advertising in 13 markets and less in 91 markets.

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Editorial Note: The findings in this report indicate that approximately half of alcohol advertising on radio aired during programs in which the audience was youth-oriented (i.e., composed disproportionately of persons aged 12–20 years). Furthermore, advertisements on such programs accounted for nearly three quarters of all youth exposure to alcohol advertising. Were advertising eliminated from programs that exceeded the more permissive current voluntary standard used by the alcoholic beverage industry, which stipulates that a program's audience be <30% youth aged 12–20 years, total youth exposure to alcohol advertising would decrease by approximately one third.

Longitudinal studies have determined that increased exposure to alcohol advertising is associated with an increase in underage drinking (3,4). Furthermore, persons aged 12–19 years listen to the radio more than they use the Internet or

read magazines for pleasure (7), underscoring the importance of radio as a medium for exposure to advertising. Overexposure of youth to alcohol marketing in other media (e.g., television and magazines) also has been well documented (8).

The amount of alcohol advertising placed in programming that exceeded the 30% threshold has decreased since the summer of 2003, when analysis of a similar sample found that 28% (versus 14% in this report) of advertisements exceeded that threshold and accounted for 53% (versus 32% in this report) of all youth advertising exposure (9). This reduction occurred, in part, because in 2003, the Beer Institute and Distilled Spirits Council joined the Wine Institute in adopting a 30% youth threshold for advertising placement; their previous voluntary threshold had been 50%. The change from 2003 to 2004 suggests that companies selling alcohol can change their advertising placement policies and that these changes have an impact on the exposure of youth to alcohol advertising.

The findings in this report are subject to at least two limitations. First, the findings are based on youth exposure to only the most heavily advertised alcohol products and apply only to media markets and periods for which relevant data were assessed. Second, audience data from the summer of 2003 might not accurately represent the audience composition in the summer of 2004. However, marketing professionals rely

TABLE 2. Proportion of radio alcohol advertising exposures to underage youth* attributed to advertisements placed in programming that exceeded selected thresholds for underage youth audience composition, by market — United States, June–August 2004

Market	Total no. of youth advertising exposures (x 1,000)	Proportion of youth advertising exposures in programs exceeding youth composition thresholds†		
		> proportion than local population	>15%	>30%
New York	33,906.2	70	67	39
Los Angeles	15,778.7	76	77	34
Chicago	12,078.3	73	78	38
San Francisco	2,684.5	44	40	11
Dallas	4,875.4	89	90	36
Philadelphia	7,859.7	73	73	30
Houston	4,016.6	49	52	36
Washington, D.C.	4,387.5	87	87	34
Boston	5,123.8	69	67	20
Detroit	4,500.1	63	63	59
Atlanta	3,360.8	83	85	5
Miami	3,602.0	56	56	7
Seattle	1,380.5	86	86	43
Phoenix	1,775.7	70	70	13
Minneapolis/St. Paul	4,261.4	72	72	22
Total (15 largest markets)	109,591.2	71	71	33
Total (104 markets)	161,980.0	71	72	32

* Aged 12–20 years.

† The > proportion than local population programs were those in which the proportion of the audience aged 12–20 years was greater than the proportion of those aged 12–20 years in the general population of the local market. >15% programs were those in which >15% of the listeners were aged 12–20 years. >30% programs were those in which >30% of the listeners were aged 12–20 years.

on data from the preceding year to plan their upcoming advertising campaigns; thus, these data were comparable to what was available to marketing professionals who made decisions about where to air their alcohol advertisements in the summer of 2004.

NRC/IOM recognizes that reducing exposure to alcohol marketing among youth is a key strategy to combat the ongoing problem of underage drinking. Specifically, they have recommended immediate adoption of a 25% threshold for youth audience composition for placement of alcohol advertisements, with an eventual movement toward a 15% threshold. The findings in this report also support the use of this 15% threshold to define youth-oriented media for the purpose of conducting public health surveillance for alcohol advertising, because the total local market composition of youth aged 12–20 years for the top 104 media markets was approximately 15% and because the proportion of alcohol advertising on radio using a market-specific proportionate standard (49%) was similar to the proportion using a 15% threshold (52%). NRC/IOM has also recommended that the federal govern-

ment monitor the exposure of youth to alcohol advertising and report the results annually (1). Ongoing, independent surveillance of advertising practices in the alcoholic beverage industry will be necessary to ensure compliance with advertising standards and will be useful for assessing additional interventions to reduce exposure to alcohol advertising among underage youth.

Acknowledgments

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Human Plague — Four States, 2006

On August 25, this report was posted as an MMWR Dispatch on the MMWR website (<http://www.cdc.gov/mmwr>).

Plague is a zoonotic disease caused by the bacterium *Yersinia pestis*. In 2006, a total of 13 human plague cases have been reported among residents of four states: New Mexico (seven cases), Colorado (three cases), California (two cases), and Texas (one case). This is the largest number of cases reported in a single year in the United States since 1994. Dates of illness onset ranged from February 16 to August 14; two (15%) cases were fatal. The median age of patients was 43 years (range: 13–79 years); eight (62%) patients were female. Five (38%) patients had primary septicemic plague, and the remaining eight (62%) had bubonic plague. Two (15%) patients developed secondary plague pneumonia, leading to administration of antibiotic prophylaxis to their health-care providers. This report summarizes six of the 13 cases, highlighting the severity and

diverse clinical presentations of plague and underscoring the need for prompt diagnosis and treatment when plague is suspected.

Case 1. On February 17, a man aged 39 years from Travis County, Texas, was hospitalized with a 1-day history of high fever, delirium, nausea, and vomiting. Although lymphadenopathy was not detected on the initial examination, a prominent axillary bubo was noted later. Blood cultures yielded *Y. pestis*. The patient recovered after treatment with multiple antibiotics, including gentamicin, doxycycline, ciprofloxacin, and levofloxacin. Before his illness, the patient had hunted rabbits in Lea County, New Mexico, and skinned the rabbit carcasses. Cultures from one of the carcasses yielded *Y. pestis* that was indistinguishable from the clinical isolates when subtyped by pulsed-field gel electrophoresis (PFGE).

Case 2. On April 17, a woman aged 28 years received the first diagnosis of plague in Los Angeles County, California, since 1984. The woman was hospitalized with fever, septic shock, and a painful right axillary swelling; blood cultures grew *Y. pestis*. She responded to treatment with gentamicin and levofloxacin. Although symptoms were compatible with bubonic plague, the diagnosis had not been suspected because the patient did not report traveling outside her urban Los Angeles neighborhood. Later, health-care providers learned that the patient had handled raw meat from a rabbit that had been killed in Kern County, California, and transported to her home. An environmental investigation in Kern County revealed evidence of die-off among jackrabbits and cottontails; rabbit carcasses collected in the area yielded *Y. pestis*. PFGE patterns of isolates from the patient and rabbits were indistinguishable. A total of 16 medical contacts and family members and friends who had visited the patient's residence received antibiotic prophylaxis.

Case 3. On May 17, a woman aged 54 years from Bernalillo County, New Mexico, went to a local urgent care center with a 4-day history of fever, severe abdominal pain, and bloody stools. No lymphadenopathy was noted. While being evaluated, the patient began vomiting blood and experienced acute respiratory distress. She was transferred to a regional hospital but died within a few hours of arrival. Blood and lung cultures obtained at autopsy yielded *Y. pestis*; however, no histologic evidence of plague pneumonia was discovered. One of the patient's dogs and a rock squirrel (*Spermophilus variegatus*) that had been trapped by investigators on her property had serologic evidence of past infection with *Y. pestis*.

Case 4. On May 25, a man aged 45 years from Santa Fe County, New Mexico, went to a hospital emergency

department with a 3-day history of nausea, vomiting, and fever to 104°F (40°C). Initial chest radiographs revealed right lower lobe infiltrates; he was admitted with a diagnosis of pneumonia. The patient was treated with gentamicin but was not placed in respiratory isolation. On hospital day 1, the patient required intubation for respiratory distress. On hospital day 2, blood cultures drawn at admission yielded *Y. pestis*. The patient remained on mechanical ventilation for 4 weeks and eventually recovered. At least 37 hospital workers who had contact with the patient before he was intubated received postexposure prophylaxis with doxycycline. Both of the patient's dogs had serologic evidence of past *Y. pestis* infection. *Y. pestis* was isolated from fleas (*Anomiopsyllus nudatus*) combed from a woodrat (*Neotoma micropus*) that was trapped by investigators on the patient's property.

Case 5. On July 9, a man aged 30 years from La Plata County, Colorado, went to a hospital emergency department with a 3-day history of fever, nausea, vomiting, and right inguinal lymphadenopathy. He was discharged home without treatment. Three days later, the man returned and was hospitalized with sepsis and bilateral pulmonary infiltrates. Plague was considered immediately, and the patient was placed in respiratory isolation. He was treated with gentamicin and recovered. Five hospital workers were administered doxycycline prophylaxis because of exposures before respiratory isolation had been initiated. Cultures of blood and a lymph node aspirate grew *Y. pestis*. One of the patient's dogs had serologic evidence of past *Y. pestis* infection. *Y. pestis* was recovered from fleas of two species (*Aetheca wagneri* and *Pulex simulans*) collected near the patient's home. A plague epizootic had been noted in the area, and four other human plague cases have been reported from La Plata County since July 2005.

Case 6. On July 18, a woman aged 43 years from Torrance County, New Mexico, went to a local clinic with a 1-day history of vomiting, diarrhea, abdominal pain, and fever. The patient reported a recent dog bite and was treated for presumed cellulitis. The next day, the woman returned to the clinic because of worsening symptoms and pain in the left side of her groin. She was transported by ambulance to the emergency department, where inguinal lymphadenopathy was noted and plague was suspected. She was admitted to the hospital, placed in the intensive care unit, and administered gentamicin and doxycycline. *Y. pestis* was isolated from blood cultures. Despite treatment, she died on July 22. Animals trapped on the patient's property, including four mice (*Peromyscus* spp.) and five rock squirrels, did not have laboratory evidence of infection with *Y. pestis*.

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Editorial Note: The natural reservoir of plague is wild rodents. Human infection usually is acquired through the bites of infected rodent fleas and has an incubation period of 1–6 days (1). Plague also can be contracted from handling infected animals, especially rodents, lagomorphs (e.g., rabbits or hares), and domestic cats, or through close contact with patients with pneumonic plague. However, person-to-person transmission is extremely rare; the last such transmission in the United States was reported in 1925. During 1990–2005, a total of 107 cases of plague were reported in the United States (CDC, unpublished data, 2006), a median of seven cases per year. The increased plague activity in 2006 is consistent with the predicted relationship between climate and the frequency of human plague in the southwestern United States. Two consecutive February–March periods with high precipitation and an intervening cool summer predicts increased cases of plague the next summer; this effect is thought to lead to increased reproduction and survival rates among rodents and fleas (2).

The principal forms of plague are bubonic, septicemic, and pneumonic (3). All of these forms can be accompanied by fever and systemic manifestations of gram-negative sepsis. Bubonic plague is distinguished by the presence of a bubo (i.e., one or more enlarged, tender, regional lymph nodes). Patients with septicemic plague often have prominent gastrointestinal symptoms, including nausea, vomiting, diarrhea, and abdominal pain (4), and patients with pneumonic plague have dyspnea, chest pain, and a cough that can produce bloody sputum. During 1990–2005, a total of 81 (76%) of 107 plague cases in the United States were classified as primary bubonic plague, 19 (18%) as primary septicemic plague, and five (5%) as primary pneumonic plague; two (2%) were not classified (CDC, unpublished data, 2006). Eleven (10%) cases were fatal. In 2006, five (38%) of the 13 patients had primary septi-

cemic plague, underscoring the need for clinicians to consider this diagnosis in patients who do not have an obvious bubo. Septicemic and pneumonic plague progress rapidly and are usually fatal without prompt treatment; bubonic plague has a mortality rate of 50%–60% if untreated.

In the United States, nearly all fatal plague cases are associated with delays in diagnosis and treatment. In its early stages, plague is treatable with appropriate antibiotics. Health-care providers should consider a diagnosis of plague in persons who 1) have unexplained fever, suspected sepsis, or pneumonia with or without lymphadenopathy or a classic bubo, and 2) live in or have traveled to a plague-endemic region (e.g., the western United States) (3). When plague is suspected, appropriate antibiotic treatment should be initiated immediately and not delayed for laboratory confirmation. Drugs effective against plague include streptomycin and the tetracyclines. Although not approved by the Food and Drug Administration (FDA) for treatment of plague, gentamicin is more readily available than streptomycin and has been used successfully (5). Fluoroquinolones are used empirically to treat critically ill patients and have demonstrated activity against *Y. pestis* but are not FDA approved for this indication (6).

The majority of exposures to plague occur in the peridomestic environment (3); free-roaming pets that bring infected rodent fleas into the home have been suspected as a potential source of human infections. Persons residing in areas where plague is endemic should keep their dogs and cats free of fleas through regular use of flea treatments and by keeping them indoors. Year-round rodent control should be conducted, including rodent proofing of structures and eliminating food sources (e.g., pet food or garbage) and harborage (e.g., piles of wood or debris) in the peridomestic environment. Persons who participate in outdoor recreational activities, particularly rabbit hunting (7), in areas of epizootic plague activity also are at risk for plague. Personal protective measures include using insect repellents, wearing protective clothing, and avoiding sick or dead animals. In areas of epizootic plague activity, public health officials should treat rodent habitats with insecticides and should educate the public regarding plague prevention and control. Health-care providers and veterinarians should be educated regarding the manifestations and diagnosis of plague. Antibiotic prophylaxis might be indicated for close contacts (who come within 2 m) of patients with plague pneumonia (5). Appropriate respiratory droplet precautions should be taken when treating patients with suspected plague who have evidence of respiratory involvement (8).

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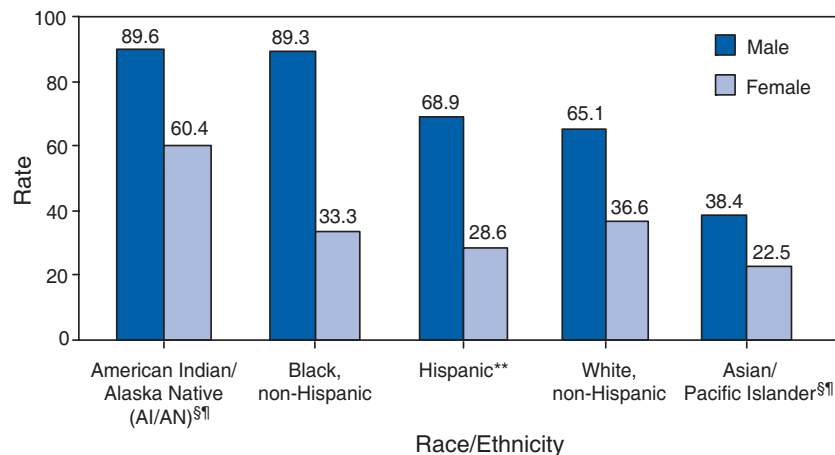
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QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

Adolescent* Death Rates,† by Race/Ethnicity and Sex — United States, 2001–2003



* Aged 15–17 years.

† Average annual rate per 100,000 population.

§ Includes persons of Hispanic origin.

¶ Death rates are known to be underestimated.

** Might be of any race.

During 2001–2003, AI/AN and non-Hispanic black male adolescents had higher average annual death rates than males in other racial/ethnic populations. Among female adolescents, AI/ANs had a higher death rate than any other population. In each racial/ethnic population, males had higher adolescent death rates than females.

SOURCES: National Vital Statistics System, 2001–2003 mortality files; Health Data for All Ages, available at http://www.cdc.gov/nchs/health_data_for_all_ages.htm.

TABLE I. Provisional cases of infrequently reported notifiable diseases (<1,000 cases reported during the preceding year) — United States, week ending August 26, 2006 (34th Week)*

Disease	Current week	Cum 2006	5-year weekly average†	Total cases reported for previous years					States reporting cases during current week (No.)
				2005	2004	2003	2002	2001	
Anthrax	—	1	—	—	—	—	2	23	
Botulism:									
foodborne	—	3	1	19	16	20	28	39	
infant	1	52	2	90	87	76	69	97	OH (1)
other (wound & unspecified)	4	41	1	33	30	33	21	19	MD (1), CA (3)
Brucellosis	2	67	2	122	114	104	125	136	TX (1), CA (1)
Chancroid	1	19	1	17	30	54	67	38	TX (1)
Cholera	—	5	0	8	5	2	2	3	
Cyclosporiasis§	2	81	4	734	171	75	156	147	GA (2)
Diphtheria	—	—	0	—	—	1	1	2	
Domestic arboviral diseases§¶:									
California serogroup	—	5	7	78	112	108	164	128	
eastern equine	—	1	1	21	6	14	10	9	
Powassan	—	—	0	1	1	—	1	N	
St. Louis	—	2	4	10	12	41	28	79	
western equine	—	—	—	—	—	—	—	—	
Ehrlichiosis§:									
human granulocytic	5	205	15	790	537	362	511	261	NY (3), NE (1), MD (1)
human monocytic	6	219	10	522	338	321	216	142	OH (1), NC (4), GA (1)
human (other & unspecified)	5	58	2	122	59	44	23	6	OK (5)
<i>Haemophilus influenzae</i> **,									
invasive disease (age <5 yrs):									
serotype b	1	5	0	9	19	32	34	—	NY (1)
nonserotype b	2	57	3	135	135	117	144	—	RI (1), MN (1)
unknown serotype	—	135	3	217	177	227	153	—	
Hansen disease§	—	42	1	88	105	95	96	79	
Hantavirus pulmonary syndrome§	—	21	0	29	24	26	19	8	
Hemolytic uremic syndrome, postdiarrheal§	5	112	6	221	200	178	216	202	ME (1), OH (1), GA (1), TN (1), CO (1)
Hepatitis C viral, acute	4	501	34	771	713	1,102	1,835	3,976	CT (2), NY (1), FL (1)
HIV infection, pediatric (age <13 yrs)§,††	—	52	3	380	436	504	420	543	
Influenza-associated pediatric mortality§,§§,¶¶	—	41	0	49	—	N	N	N	
Listeriosis	10	375	20	892	753	696	665	613	NY (3), PA (1), OH (1), MD (2), VA (1), GA (1), FL (1)
Measles	—***	31	1	66	37	56	44	116	
Meningococcal disease,††† invasive:									
A, C, Y, & W-135	—	145	3	297	—	—	—	—	
serogroup B	—	97	1	157	—	—	—	—	
other serogroup	—	13	0	27	—	—	—	—	
Mumps	20	5,554	5	314	258	231	270	266	NY (1), IA (2), KS (8), FL (2), TN (3), AZ (2), CA (2)
Plague	—	7	0	8	3	1	2	2	
Poliomyelitis, paralytic	—	—	—	1	—	—	—	—	
Psittacosis§	1	13	0	19	12	12	18	25	FL (1)
Q fever§	3	94	1	139	70	71	61	26	FL (1), AR (1), CA (1)
Rabies, human	—	1	0	2	7	2	3	1	
Rubella	—	6	0	11	10	7	18	23	
Rubella, congenital syndrome	—	1	—	1	—	1	1	3	
SARS-CoV§,§§	—	—	—	—	—	8	N	N	
Smallpox§	—	—	—	—	—	—	—	—	
Streptococcal toxic-shock syndrome§	—	73	1	129	132	161	118	77	
<i>Streptococcus pneumoniae</i> §									
invasive disease (age <5 yrs)	9	718	6	1,257	1,162	845	513	498	MN (4), MD (1), DC (1), OK (1), TX (1), CO (1)
Syphilis, congenital (age <1 yr)	—	165	7	361	353	413	412	441	
Tetanus	—	15	1	27	34	20	25	37	
Toxic-shock syndrome (other than streptococcal)§	1	60	2	96	95	133	109	127	CO (1)
Trichinellosis	—	9	0	19	5	6	14	22	
Tularemia§	1	52	4	154	134	129	90	129	NM (1)
Typhoid fever	4	171	9	324	322	356	321	368	OH (2), CO (1), CA (1)
Vancomycin-intermediate <i>Staphylococcus aureus</i> §	—	2	—	2	—	N	N	N	
Vancomycin-resistant <i>Staphylococcus aureus</i> §	—	—	—	3	1	N	N	N	
Yellow fever	—	—	—	—	—	—	1	—	

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

* Incidence data for reporting years 2005 and 2006 are provisional, whereas data for 2001, 2002, 2003, and 2004 are finalized.

† Calculated by summing the incidence counts for the current week, the two weeks preceding the current week, and the two 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.

¶ Includes both neuroinvasive and non-neuroinvasive. Updated weekly from reports to the Division of Vector-Borne Infectious Diseases, National Center for Zoonotic, Vector-Borne, and Enteric Diseases (proposed) (ArboNET Surveillance).

** 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, Viral Hepatitis, STDs, and Tuberculosis Prevention (proposed). Implementation of HIV reporting influences the number of cases reported. Data for HIV/AIDS are available in Table IV quarterly.

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

¶¶ A total of 46 cases were reported since the beginning of the 2005-06 flu season (October 2, 2005 [week 40]).

*** No measles cases were reported for the current week.

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

TABLE II. (Continued) Provisional cases of selected notifiable diseases, United States, weeks ending August 26, 2006, and August 27, 2005 (34th Week)*

Reporting area	Lyme disease					Malaria				
	Current week	Previous 52 weeks		Cum 2006	Cum 2005	Current week	Previous 52 weeks		Cum 2006	Cum 2005
		Med	Max				Med	Max		
United States	317	248	2,153	9,886	14,870	18	24	125	759	898
New England	114	37	780	1,758	2,643	—	1	11	40	46
Connecticut	99	8	753	1,318	376	—	0	5	10	10
Maine†	—	2	8	54	189	—	0	1	3	4
Massachusetts	—	2	62	33	1,895	—	0	3	18	25
New Hampshire	15	5	41	311	132	—	0	3	8	4
Rhode Island	—	0	5	—	25	—	0	8	—	2
Vermont†	—	1	8	42	26	—	0	1	1	1
Mid. Atlantic	177	151	1,176	5,682	8,668	1	4	13	119	245
New Jersey	—	23	123	1,101	2,869	—	1	3	28	62
New York (Upstate)	154	76	1,150	2,508	2,288	1	1	11	21	30
New York City	—	1	18	10	293	—	1	2	8	127
Pennsylvania	23	41	203	2,063	3,218	—	1	3	24	26
E.N. Central	—	13	89	795	1,438	1	2	7	73	101
Illinois	—	0	3	—	112	—	1	5	26	56
Indiana	—	0	3	11	23	—	0	3	7	3
Michigan	—	1	7	30	37	—	0	2	13	17
Ohio	—	1	5	28	37	1	0	3	20	15
Wisconsin	—	10	85	726	1,229	—	0	3	7	10
W.N. Central	1	9	98	302	412	—	0	32	30	34
Iowa	1	1	7	52	74	—	0	1	1	5
Kansas	—	0	2	3	3	—	0	2	5	4
Minnesota	—	6	96	231	324	—	0	30	14	11
Missouri	—	0	3	8	9	—	0	2	5	13
Nebraska†	—	0	2	7	—	—	0	2	3	1
North Dakota	—	0	3	—	—	—	0	1	1	—
South Dakota	—	0	1	1	2	—	0	1	1	—
S. Atlantic	15	30	96	1,104	1,553	9	7	15	226	196
Delaware	1	8	27	340	508	—	0	1	5	3
District of Columbia	4	0	7	31	7	—	0	2	3	7
Florida	1	1	5	28	21	4	1	6	43	33
Georgia	—	0	1	1	5	—	1	6	58	38
Maryland†	—	16	52	519	820	2	1	5	50	70
North Carolina	2	0	5	21	35	1	0	8	18	21
South Carolina†	—	0	3	7	11	—	0	2	7	5
Virginia†	5	3	25	150	139	2	1	9	40	18
West Virginia	2	0	44	7	7	—	0	2	2	1
E.S. Central	3	0	4	11	19	—	0	3	19	20
Alabama†	1	0	1	4	—	—	0	2	8	4
Kentucky	—	0	2	2	3	—	0	2	3	5
Mississippi	—	0	0	—	—	—	0	1	3	—
Tennessee†	2	0	4	5	16	—	0	2	5	11
W.S. Central	1	0	3	10	61	2	2	31	51	73
Arkansas	—	0	1	—	4	—	0	1	1	5
Louisiana	—	0	0	—	3	—	0	1	1	2
Oklahoma	—	0	0	—	—	1	0	6	7	3
Texas†	1	0	3	10	54	1	1	29	42	63
Mountain	1	0	4	13	13	3	1	9	41	37
Arizona	—	0	4	3	2	—	0	9	15	6
Colorado	—	0	1	2	—	—	0	2	9	20
Idaho†	1	0	1	2	1	—	0	0	—	—
Montana	—	0	0	—	—	1	0	1	2	—
Nevada†	—	0	1	1	3	—	0	1	1	2
New Mexico†	—	0	1	—	2	—	0	1	1	3
Utah	—	0	1	5	2	2	0	2	13	5
Wyoming	—	0	0	—	3	—	0	1	—	1
Pacific	5	4	22	211	63	2	4	13	160	146
Alaska	—	0	1	2	4	1	0	4	21	3
California	5	4	21	199	38	1	3	10	109	109
Hawaii	N	0	0	N	N	—	0	2	4	14
Oregon†	—	0	2	7	17	—	0	2	8	7
Washington	—	0	3	3	4	—	0	5	18	13
American Samoa	U	0	0	U	U	U	0	0	U	U
C.N.M.I.	U	0	0	U	U	U	0	0	U	U
Guam	—	0	0	—	—	—	0	0	—	—
Puerto Rico	N	0	0	N	N	—	0	1	—	3
U.S. Virgin Islands	—	0	0	—	—	—	0	0	—	—

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 2005 and 2006 are provisional.

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

TABLE II. (Continued) Provisional cases of selected notifiable diseases, United States, weeks ending August 26, 2006, and August 27, 2005 (34th Week)*

Reporting area	West Nile virus disease [†]									
	Neuroinvasive					Non-neuroinvasive				
	Current week	Previous 52 weeks		Cum 2006	Cum 2005	Current week	Previous 52 weeks		Cum 2006	Cum 2005
		Med	Max				Med	Max		
United States	—	1	122	236	734	—	0	151	332	1,077
New England	—	0	3	—	2	—	0	2	1	—
Connecticut	—	0	2	—	2	—	0	1	1	—
Maine [§]	—	0	0	—	—	—	0	0	—	—
Massachusetts	—	0	3	—	—	—	0	1	—	—
New Hampshire	—	0	0	—	—	—	0	0	—	—
Rhode Island	—	0	1	—	—	—	0	0	—	—
Vermont [§]	—	0	0	—	—	—	0	0	—	—
Mid. Atlantic	—	0	10	5	20	—	0	4	1	11
New Jersey	—	0	1	—	—	—	0	2	—	—
New York (Upstate)	—	0	7	—	8	—	0	2	—	1
New York City	—	0	2	1	3	—	0	0	—	3
Pennsylvania	—	0	3	4	9	—	0	2	1	7
E.N. Central	—	0	37	7	134	—	0	18	2	70
Illinois	—	0	17	5	83	—	0	16	1	61
Indiana	—	0	2	1	5	—	0	1	—	—
Michigan	—	0	14	1	15	—	0	3	—	3
Ohio	—	0	9	—	27	—	0	4	—	5
Wisconsin	—	0	3	—	4	—	0	2	1	1
W.N. Central	—	0	15	43	103	—	0	58	76	326
Iowa	—	0	3	3	6	—	0	4	4	8
Kansas	—	0	3	—	5	—	0	1	1	N
Minnesota	—	0	5	14	10	—	0	6	13	17
Missouri	—	0	4	5	8	—	0	3	1	7
Nebraska [§]	—	0	6	4	33	—	0	17	4	82
North Dakota	—	0	2	1	12	—	0	15	23	60
South Dakota	—	0	5	16	29	—	0	22	30	152
S. Atlantic	—	0	6	—	12	—	0	3	—	15
Delaware	—	0	0	—	1	—	0	0	—	—
District of Columbia	—	0	1	—	—	—	0	1	—	—
Florida	—	0	2	—	7	—	0	0	—	11
Georgia	—	0	3	—	1	—	0	3	—	2
Maryland [§]	—	0	2	—	1	—	0	0	—	1
North Carolina	—	0	1	—	1	—	0	1	—	1
South Carolina [§]	—	0	1	—	1	—	0	0	—	—
Virginia [§]	—	0	0	—	—	—	0	1	—	—
West Virginia	—	0	0	—	—	N	0	0	N	N
E.S. Central	—	0	10	24	27	—	0	5	7	15
Alabama [§]	—	0	1	—	3	—	0	2	—	1
Kentucky	—	0	1	—	1	—	0	0	—	—
Mississippi	—	0	9	24	15	—	0	5	7	13
Tennessee [§]	—	0	3	—	8	—	0	1	—	1
W.S. Central	—	0	25	78	154	—	0	15	15	96
Arkansas	—	0	2	4	8	—	0	2	—	10
Louisiana	—	0	8	11	74	—	0	5	6	38
Oklahoma	—	0	6	4	3	—	0	3	—	2
Texas [§]	—	0	16	59	69	—	0	9	9	46
Mountain	—	0	21	64	61	—	0	57	180	135
Arizona	—	0	8	2	15	—	0	8	2	23
Colorado	—	0	5	10	6	—	0	14	31	59
Idaho [§]	—	0	5	13	3	—	0	36	102	6
Montana	—	0	1	1	7	—	0	3	1	14
Nevada [§]	—	0	8	21	7	—	0	8	30	13
New Mexico [§]	—	0	2	—	12	—	0	4	—	7
Utah	—	0	6	16	10	—	0	8	11	10
Wyoming	—	0	2	1	1	—	0	2	3	3
Pacific	—	0	29	15	221	—	0	44	50	409
Alaska	—	0	0	—	—	—	0	0	—	—
California	—	0	28	14	221	—	0	44	44	403
Hawaii	—	0	0	—	—	—	0	0	—	—
Oregon [§]	—	0	1	1	—	—	0	2	6	6
Washington	—	0	0	—	—	—	0	0	—	—
American Samoa	U	0	0	U	U	U	0	0	U	U
C.N.M.I.	U	0	0	U	U	U	0	0	U	U
Guam	—	0	0	—	—	—	0	0	—	—
Puerto Rico	—	0	0	—	—	—	0	0	—	—
U.S. Virgin Islands	—	0	0	—	—	—	0	0	—	—

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

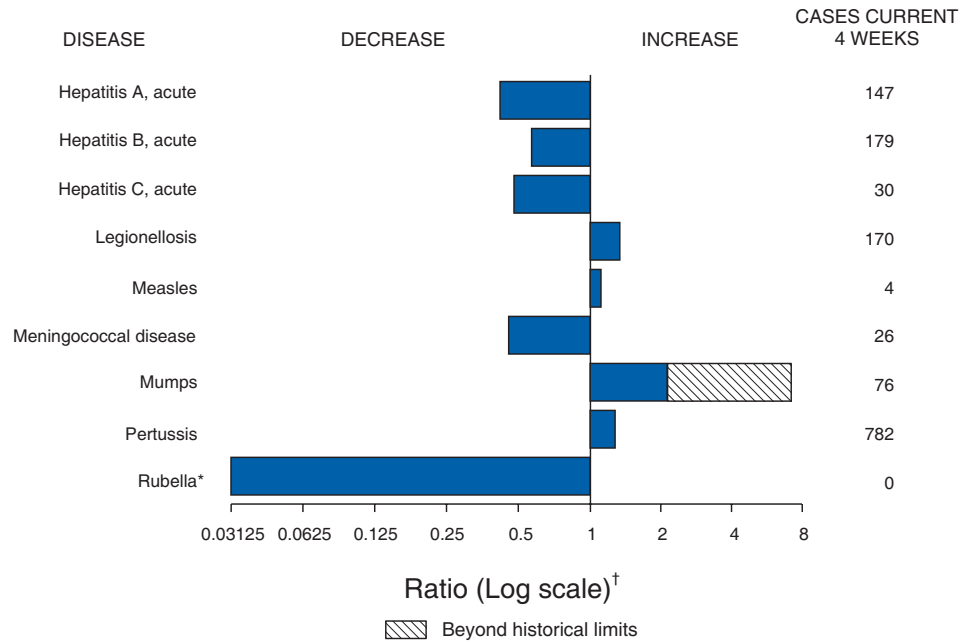
U: Unavailable. —: No reported cases. N: Not notifiable. Cum: Cumulative year-to-date counts. Med: Median. Max: Maximum.

* Incidence data for reporting years 2005 and 2006 are provisional.

† Updated weekly from reports to the Division of Vector-Borne Infectious Diseases, National Center for Zoonotic, Vector-Borne, and Enteric Diseases (proposed) (ArboNET Surveillance).

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

FIGURE I. Selected notifiable disease reports, United States, comparison of provisional 4-week totals August 26, 2006, with historical data



* No rubella cases were reported for the current 4-week period yielding a ratio for week 34 of zero (0).
 † 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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