/2010/document/html/volume1/14immunization.htm#_toc494510242. Information about the 2020 health objectives is available at http://healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicid=23.
†The 11 local areas separately sampled for the 2010 NIS included six areas that receive federal immunization grant funds and are included in the NIS sample every year (District of Columbia; Chicago, Illinois; New York, New York; Philadelphia County, Pennsylvania; Bexar County, Texas; and Houston, Texas) and three previously sampled areas (Los Angeles County, California; Dallas County, Texas; and El Paso County, Texas). Washington is split into eastern counties and western counties (a list of specific counties is available online at http://www.cdc.gov/vaccines/stats-surv/nis/faqs.htm). The territory of the U.S. Virgin Islands (including St. Croix, St. Thomas, St. John, and Water Island) was included in the 2010 NIS sample. Data from the U.S. Virgin Islands are excluded from national coverage estimates.
‡A description of the statistical methodology of NIS is available at http://www.cdc.gov/nchs/data/series/sr_02/sr02_138.pdf.
§The Council of American Survey Research Organization (CASRO) household response rate, calculated as the product of the resolution rate (percentage of the total telephone numbers called that were classified as either nonworking, nonresidential, or residential), screening completion rate (percentage of known households that were successfully screened for the presence of age-eligible children), and the interview completion rate (percentage of households with one or more age-eligible children that completed the household survey). Additional information is available at http://casro.org/codeofstandards.cfm.
‖Coverage for Hib vaccine for the primary series was based on receipt of ≥2 or ≥3 doses, depending on product type received. The Merck Hib vaccines require a 2-dose primary series with doses at ages 2 months and 4 months, and the Sanofi Pasteur Hib vaccines require a 3-dose primary series with doses at ages 2, 4, and 6 months. Coverage for the full series, which includes the primary series and a booster dose, was based on receipt of ≥3 or ≥4 doses, depending on product type received. Both Merck and Sanofi Pasteur Hib vaccines require a booster dose at ages 12-15 months.
¶Coverage for rotavirus vaccine was based on ≥2 or ≥3 doses, depending on product type received (≥2 doses for Rotarix [RV1], licensed in April 2008, and ≥3 doses for RotaTeq [RV5], licensed in February 2006).
#A figure depicting coverage with individual vaccines from the inception of NIS in 1994 through 2010 is available at http://www.cdc.gov/vaccines/stats-surv/nis/nis-2010-released.htm.
**Includes ≥4 doses of DTP/DT/DTaP, ≥3 doses of poliovirus vaccine, ≥1 dose of measles-containing vaccine, ≥3 doses of Hib vaccine, ≥3 doses of HepB, ≥1 dose of varicella vaccine, and ≥4 doses of PCV.
††Race was self-reported. Persons identified as white, black, Asian, or American Indian/Alaska Native are all non-Hispanic. Persons identified as Hispanic might be of any race. Children identified as multiracial selected more than one race category.
‡‡Poverty status categorizes income into 1) at or above the poverty level and 2) below the poverty level. Poverty level was based on 2009 U.S. Census poverty thresholds, available at http://www.census.gov/hhes/www/poverty.html.
#‡Additional information is available at http://www.cdc.gov/vaccines/programs/vfc/default.htm.
**§Participants were eligible for interview from the cellular-telephone sampling frame if their household was cellular-telephone-only (household with access to a cellular telephone but not a landline telephone) or cellular-telephone-mainly (household containing both a cellular telephone and a landline telephone, but reporting they are not at all likely or are somewhat unlikely to answer the landline telephone if it rang).
††* Additional information available at http://www.thecommunityguide.org/vaccines/universally/index.html.

Human Rabies From Exposure to a Vampire Bat in Mexico—Louisiana, 2010

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In August 2010, CDC confirmed a case of rabies in a migrant farm worker, aged 19 years, hospitalized in Louisiana with encephalitis. The man developed acute neurologic symptoms at the end of July, shortly after arriving in the United States from Michoacán, Mexico. Despite supportive care, his condition deteriorated, and he died on August 21. Antemortem diagnostic testing confirmed the diagnosis of rabies, and samples collected at autopsy were positive for a vampire bat rabies virus variant. The patient's mother reported that he had been bitten by a bat in July in Mexico but had not sought medical care. Postexposure prophylaxis (PEP) was offered to 27 of the patient's contacts in Louisiana and to 68 healthcare workers involved in his care. Although bats have become the primary source of human rabies in the United States, this is the first reported death from a vampire bat rabies virus variant in the United States. Clinicians caring for patients with acute progressive encephalitis should consider rabies in the differential diagnosis and implement early infection control measures.

Case Report

On July 29, 2010, a previously healthy male, aged 19 years, from Michoacán, Mexico, arrived at a sugarcane plantation in Louisiana. After 1 day of work in the fields, the patient sought medical attention on July 30 for generalized fatigue, left shoulder pain, and left hand numbness attributed to overexertion. The patient's symptoms continued, and he was evaluated at a local clinic and transferred to a referral hospital in New Orleans for further evaluation and management on August 3.

Physical examination at the referral hospital revealed hyperesthesia of the left shoulder, weakness of the left hand, generalized areflexia, and drooping of the left upper eyelid. A lumbar puncture produced cerebrospinal fluid (CSF) with a mildly elevated white blood cell count of 8 cells/mm^3 (normal: 0-5 cells/mm^3) with 67% lymphocytes and 12% neutrophils, a normal glucose, and no organisms on staining. The patient was admitted to the intensive-care unit for suspected Miller-Fisher variant of acute inflammatory demyelinating polyneuropathy (also referred to as Guillain-Barré syndrome), with viral encephalitis and early meningitis among the alternative diagnoses considered.

The next day, the patient developed a fever of 101.1°F (38.4°C) and signs of respiratory distress that prompted elective intubation. Computerized tomography and magnetic resonance imaging of the head revealed only a developing sinusitis. During the next several days, the patient became gradually less responsive to external stimuli, developed fixed and dilated pupils, and began having episodes of bradycardia and hypothermia. Further evaluation included a repeat lumbar puncture revealing an elevation of the white blood cell count to 87 cells/mm^3 with 97% lymphocytes and an elevated protein of 233 mg/dL (normal: 15-45 mg/dL). An electroencephalogram was consistent with encephalitis. Bacterial, viral, and fungal cultures of blood and CSF were negative. Additionally, laboratory tests for human immunodeficiency virus, syphilis, herpes simplex virus, arboviruses, Lyme disease, and autoimmune neuropathies all were negative.

Although no history of animal exposures was known at that time, a diagnosis of rabies was suspected based on the clinical history and available data. The Louisiana Office of Public Health was informed of the potential

What is already known on this topic?

Rabies virus causes an acute progressive viral encephalitis that is almost always fatal if postexposure prophylaxis is not administered before the onset of signs or symptoms.

What is added by this report?

In August 2010, a man aged 19 years died of rabies in Louisiana after being bitten by a vampire bat in his home in Michoacán, Mexico; this case represents the first reported human death from a vampire bat rabies virus variant in the United States.

What are the implications for public health practice?

Public health officials should increase awareness of the risk for rabies after bat and other wildlife exposures. Furthermore, clinicians caring for patients with acute progressive encephalitis should consider rabies in the differential diagnosis and implement early infection control measures.

case of rabies, and infection control precautions were instituted on August 13, the 11th hospital day. On August 20, rabies virus—specific immunoglobulin G and immunoglobulin M detected in the patient's CSF and serum confirmed the diagnosis of rabies. After discussion with the family about the patient's prognosis and a subsequent electroencephalogram showing severe cortical impairment, the patient was extubated on August 21 in accordance with the family's wishes and died shortly thereafter. Rabies virus antigen was detected in postmortem brain tissues collected on August 22, and antigenic typing determined the variant to be a vampire bat rabies virus variant, which was subsequently confirmed by nucleic acid amplification and sequencing.

Public Health Investigation

Public health authorities in Louisiana and Mexico interviewed the patient's family members, friends, and coworkers to identify potential rabies virus exposures. The patient's mother stated that the patient was bitten by a vampire bat on the heel of his left foot while he was sleeping. The bite occurred on July 15 in his home state of Michoacán, Mexico, 10 days before his departure for the United States. He did not seek medical attention for this bite and had no history of vaccination against rabies. No other exposures to bats, dogs, or other mammals were identified.

Mexican health authorities identified five close contacts of the patient in his home state of Michoacán but determined that none of these contacts had exposures requiring PEP. However, animals in this area were frequently observed with bites from vampire bats, and officials conducted a vaccination campaign of cats and dogs in the local community. In addition, officials attempted to reduce the local vampire bat population by capturing 120 vampire bats and applying a warfarin-containing jelly to their backs. After being released, the bats and their roostmates ingest the anticoagulant through communal grooming. Diagnostic rabies testing performed on one of the captured bats was negative.

The Louisiana Office of Public Health with the assistance of hospital infection control staff interviewed clinic, hospital, and prehospital health-care providers to determine risks for exposure and provide PEP recommendations. Additionally, migrant workers who either accompanied the patient from Mexico or lived and worked with him in Louisiana were interviewed, and exposed contacts were offered PEP. In total, 95 of 204 (46.5%) patient contacts received PEP. Of these, 27 were coworkers who reported sharing a drinking vessel with the patient, and 68 were health-care workers with various exposures. To date, no known human contacts of this patient have developed rabies.

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CDC Editorial Note: This case represents the first report of human rabies in the United States associated with a vampire bat rabies virus variant and highlights the growing importance of bats in public health. Bat rabies virus variants have been associated with the majority of indigenously acquired human rabies cases in the United States for approximately 2 decades. Similarly, vampire bats have become the leading cause of human rabies in Latin America during the last decade.[1] This further highlights the importance of a global perspective for human rabies prevention and the changing epizootiology of rabies. Since 2000, eight (25%) of the 32 human rabies cases reported in the United States (including the case described in this report) were acquired from exposures abroad. Of these, two cases originated in Mexico and were the only imported cases not associated with a canine rabies virus variant; this finding might reflect improved control of canine rabies in Mexico. International coordination among public health officials remains a crucial component in investigating cases of infectious diseases and improving prevention and control efforts.

The incubation period of 15 days observed in this report is shorter than the median of 85 days seen in other cases of human rabies reported in the United States.[2] The incubation period for rabies associated with vampire bats might be shorter than that of other rabies virus variants, as suggested by one case series reporting an average incubation period of 22 days.[3] Alternatively, the patient might have experienced an earlier exposure that went unrecognized or unreported. A second unidentified exposure resulting in infection also would explain the upper extremity symptoms observed given that symptoms often occur at the site of viral entry.

Health-care providers should recognize a history of travel to or immigration from a country with enzootic ra-

bies as a risk factor and consider rabies in the differential of any case of acute progressive encephalitis. International travelers to areas with enzootic canine rabies should be counseled about the risk for exposure to rabies virus, educated in animal bite prevention techniques, including not touching or feeding any animals, and instructed to seek medical evaluation if an exposure to a suspected rabid animal occurs.[4] Preexposure vaccination may be recommended if traveling to areas with limited access to appropriate medical care.[4,5] Appropriate infection control practices can decrease the risk for virus transmission in suspected or confirmed cases of human rabies. In such cases, caregivers should wear gowns, goggles, masks, and gloves, particularly during intubation and suctioning.[5] If rabies is confirmed, a standardized risk assessment of patient contacts with strict application of the exposure definitions detailed by the Advisory Committee on Immunization Practices (ACIP) in combination with educational outreach might minimize unnecessary PEP in those who do not meet criteria.[5] Active participation of public health officials and close supervision of hospital infection control staff during this process are recommended.

Although vampire bats currently are found only in Latin America, research suggests that the range of these bats might be expanding as a result of changes in climate.[6] Expansion of vampire bats into the United States likely would lead to increased bat exposures to both humans and animals (including domestic livestock and wildlife species) and substantially alter rabies virus dynamics and ecology in the southern United States. In addition to rabies and other lyssaviruses, accumulating evidence implicates bats as reservoirs and potential vectors of a number of emerging infectious diseases.[7] These discoveries raise further questions about the health risks to human populations with direct or indirect contact with bats, particularly given the high disease severity and fatality rates associated with these zoonoses. Further research should be directed toward better defining the nature and magnitude of the risks to human health posed by bats.

To mitigate the known risk for rabies, public education should increase awareness of the risk for rabies transmitted from bats and encourage avoidance of contact with bats and wildlife in general. Although commonly practiced, the elimination of vampire bats to prevent human or animal rabies remains controversial. Any potential human exposure to a bat should be investigated thoroughly to determine whether PEP is indicated, and bats involved in exposures should be safely collected and submitted for rabies testing when possible.[5]

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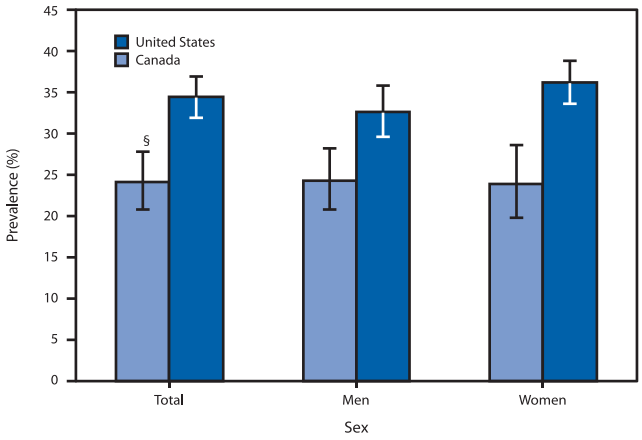
QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

Prevalence of Obesity* Among Persons Aged 20–79 Years, by Sex — Canada, 2007–2009, and United States, 2007–2008†



* Defined as body mass index (weight [kg] / height [m^2]) ≥30.0. Both U.S. and Canadian estimates were age-standardized by the direct method to the 2000 U.S. Census population using age groups 20–39, 40–59, and 60–79 years. Pregnant women were excluded.
† Based on data from standardized physical examinations conducted as part of the 2007–2008 National Health and Nutrition Examination Survey and the 2007–2009 Canadian Health Measures Survey.
§ 95% confidence interval.

Based on the most recent comparable data available, the prevalence of obesity among U.S. adults (34.4%) aged 20–79 years was greater than for Canadian adults (24.1%). The prevalence of obesity among U.S. men (32.6%) was greater than for Canadian men (24.3%), and the prevalence among U.S. women (36.2%) was greater than for Canadian women (23.9%).

Source: Shields M, Carroll MD, Ogden CL. Adult obesity prevalence in Canada and the United States. NCHS data brief, no. 56. Hyattsville, MD: US Department of Health and Human Services, CDC, National Center for Health Statistics; 2011. Available at http://www.cdc.gov/nchs/data/databriefs/db56.htm.