Key Points

- In 2009, the prevalence of asthma increased to 7.7% among adults, 9.6% among all children, and 17.0% among black, non-Hispanic children.
- In 2008, approximately half of persons with asthma reported having had at least one asthma attack during the preceding 12 months.
- Medical expenses associated with asthma amounted to $3,259 per person per year during 2002–2007.
- Good control of asthma includes self-management training, appropriate use of inhaled corticosteroids to prevent symptoms and attacks, and avoidance of environmental allergens and irritants. However, only approximately one third of persons with asthma had been given an asthma action plan as recommended and approximately half had been advised to change their environment.
- More uninsured than insured persons with asthma reported not being able to buy prescription medications (40.3% versus 11.5%).

Japanese Encephalitis in Two Children—United States, 2010

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Japanese encephalitis virus (JEV) is the leading cause of vaccine-preventable encephalitis in Asia and the western Pacific. JEV is maintained in an enzootic cycle involving mosquitoes and amplifying vertebrate hosts, mainly pigs and wading birds. The virus is transmitted to humans primarily by Culex mosquitoes, which breed in flooded rice fields and pools of stagnant water and most often feed outdoors during the evening and night. JEV transmission occurs mainly in rural agricultural areas, but occasional human cases occur in urban areas. Japanese encephalitis (JE) in persons who have traveled or lived overseas is diagnosed infrequently in the United States, with only four cases identified from 1992 (when a JE vaccine was first licensed in the United States) to 2008. This report describes the only cases diagnosed in the United States and reported to CDC since then. The first was a fatal case in a U.S. child who had visited relatives in the Philippines. The other occurred in a refugee who became ill while traveling from Thailand to the United States and whose diagnosis was complicated by concurrent neurocytisencephalitis. JE should be considered in the differential diagnosis for any patient with an acute neurologic infection who recently has been in a JE-endemic country. Travelers to JE-endemic countries should be advised of the risk for JE and the importance of personal protective measures to prevent mosquito bites. JE vaccine should be considered for travelers who might be at greater risk based on the season, location, and duration of their visit and their planned activities.

Case Reports

Case 1

On July 18, 2010, a previously healthy girl aged 11 years was hospitalized in Nevada after 2 days of fever, headache, nau-
sea, vomiting, and neck pain. During June 21–July 12, she had visited the Philippines with four relatives and had received numerous mosquito bites. Two of the relatives were born in the Philippines; the patient and her parents (who did not accompany her on the trip) were born in the United States. The girl had no history of JE vaccination and neither she nor her travel companions sought pretravel health advice. The travelers spent most of their time in Metro Manila, staying with relatives in a screened house in a compound in urban Quezon City. They took day trips on four occasions to coastal and rural destinations within a few hours' drive of Manila. They also took a 2-night trip to a resort on an island where they slept in air-conditioned, screened accommodations. While at the resort, they walked on the beach one evening.

On admission, the patient had fever (103.0°F [39.4°C]) and a peripheral white blood cell (WBC) count of 23,400/mm³ (normal: 4,500–13,500/mm³). Cerebrospinal fluid (CSF) showed pleocytosis (403 WBCs/mm³ [normal: 0–5/mm³]) with 80% neutrophils and 11% lymphocytes, slightly elevated protein (50 mg/dL [normal: 5–40 mg/dL]), and normal glucose concentrations. Healing insect bites were noted on examination. Initial management included intravenous antibiotics for presumed bacterial meningitis. The patient was alert and ambulatory until the evening of July 19, when she became somnolent and developed focal motor seizures. A computed tomography scan showed perifocal edema of the cortical sulci. On July 20, she developed acute pulmonary edema, bradycardia, and hypotension and required mechanical ventilation. Her pupils became fixed and dilated and an electroencephalogram (EEG) showed slowing of cerebral activity. She developed ventriculitis and a cerebrospinal fluid (CSF) tap was ordered and the exam revealed a WBC count of 23,400/mm³ (normal: 0–5/mm³) with 87% neutrophils and 11% lymphocytes, slightly elevated protein (49 mg/dL), and normal glucose concentrations. The boy's neurologic symptoms resolved during his 24-day hospitalization. He completed a 21-day course of albendazole with corticosteroid taper for neurocysticercosis. On discharge, he was active, alert, and walking and talking normally.

A coinfected was suspected because the boy's clinical presentation was unusual for neurocysticercosis. CSF collected on July 17 (day 6 of illness) showed JEV-specific IgM and neutralizing antibodies. JEV neutralizing antibody titers increased more than fourfold between acute (day 3) and convalescent (day 19) serum samples. Cysticercosis serology on a serum sample was negative. CSF, blood, and urine bacterial cultures, CSF cryptococcal antigen testing, a malarial smear, and human immunodeficiency virus serology, and respiratory viral testing on a nasopharyngeal aspirate also were negative.

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What is already known on the topic?

Japanese encephalitis (JE) is a mosquito-borne disease that occurs in Asia and the western Pacific. Cases among persons who have traveled or lived overseas are diagnosed infrequently in the United States.

What is added by this report?

Two JE cases were reported to CDC in 2010, one fatal case in a child who had visited relatives in the Philippines and the other in a refugee child from Thailand who recovered.

What are the implications for public health practice?

Health-care providers should advise travelers of the risk of JE virus infection and the importance of personal protective measures to prevent mosquito bites, and JE vaccine should be considered for some travelers who will be in a high-risk setting. JE should be considered in the differential diagnosis for any patient with an acute neurologic syndrome returning from a JE-endemic country. Nonetheless, JEV transmission in the Philippines is clearly evident; the case in this report is the sixth travel-associated case reported worldwide since 1986 in a person from a nonendemic country traveling to the Philippines. Therefore, lack of reported cases in the local population should not be assumed to indicate absence of disease.

Concomitant JEV infection and neurocysticercosis is well-recognized in JE-endemic countries. Neurocysticercosis is caused by the larval stage of the pork tapeworm, Taenia solium. Humans are the host for the adult T. solium tapeworm, and neurocysticercosis is acquired by ingesting eggs excreted by an intestinal tapeworm carrier. Neurocysticercosis increases the risk for JE neuroinvasive disease and might cause higher JE mortality rates. With co-infection, JE-related neuroimaging abnormalities tend to be more prominent on the side of the brain where the most cysts, or the solitary cyst, are located. Thalamic changes on the same side as the cyst and suggestive of JE were noted in the boy (case 2) in this report. Negative cysticercosis serology, as occurred in this patient, is not uncommon with single cysts.

Case 1 of travel-associated JE occurred in a person of Asian origin (as did three of the most recent JE cases in U.S. travelers) who was visiting relatives in the Philippines. Travelers returning to their country of origin to visit friends and relatives are typically at greater risk than most tourists for travel-related infections but infrequently seek pretravel health advice. This limits their opportunity to receive information and counseling on ways to reduce their risk for acquiring diseases during travel. Such risks might be reduced through targeted outreach to educate travelers who will be visiting friends and relatives about potential health risks and prevention methods, including immunizations.

The Advisory Committee on Immunization Practices recommends that all travelers to JE-endemic countries be informed of the risks for JE and use personal protective measures to reduce the risk for mosquito bites. JE vaccine is recommended for some travelers who will be in a high-risk area, based on season, location, duration, and activities. Two JE vaccines are licensed in the United States. In 2009, an inactivated Vero cell culture-derived JE vaccine (JE-VC) was approved for use in adults aged ≥17 years. An inactivated mouse brain-derived vaccine (JE-MB) has been licensed since 1992 for use in adults and children aged ≥1 year. However, JE-MB is no longer being produced and remaining doses will expire by May 2011. One pediatric clinical trial with JE-VC has been completed, but the vaccine currently is not licensed for use in U.S. children. Additional pediatric clinical trials are in progress in the Philippines and in non-JE-endemic countries, including five study sites in the United States. Other JE vaccines are manufactured and available for pediatric use in Asia but are not licensed in the United States. Federal agencies and the manufacturer are discussing additional options for making JE-VC available for pediatric use in the United States. If a patient who recently has been in a JE-endemic country presents with an acute neurologic syndrome (e.g., encephalitis, meningitis, or acute flaccid paralysis), clinicians should consider the diagnosis of JE. Health-care providers should contact their state or local health department or CDC’s Division of Vector-Borne Diseases (telephone: 970-221-6400) for assistance with JEV diagnostic testing.

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