



Kansas City, Missouri, Health Department,
Office of Epidemiology & Community Health Monitoring



Public Health
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Dengue Fever Virus in the Continental US

An outbreak of dengue fever virus, a mosquito-borne viral illness characterized by a flat red body rash, fatigue, nausea and joint aches, occurred in the Florida Keys late this summer-early fall, affecting both local residents and tourists.

This outbreak was unique for several reasons. First, nearly all dengue cases reported in the 48 continental states are acquired elsewhere by travelers or immigrants (*MMWR Morb Mortal Wkly Rep 2006;55: 700-702*). And, second, because contact between the *Aedes aegypti* mosquito vector and people is infrequent in the continental US, imported cases rarely result in secondary transmission. *Ae aegypti* is largely restricted to the southern and southwestern states. Imported cases of dengue are occasionally reported among Kansas City residents.

Historically, dengue has played a greater role in the US. A dengue-like illness was first noted in the New World as a major outbreak in Philadelphia in 1780, and similar episodes occurred in the US for more than 150 years. Dengue fever outbreaks were not uncommon along Atlantic and Gulf coast ports (*N Engl J Med 1971;285:1460-1469*). In 1922, the disease struck many major cities in the southern states, including an estimated 500,000 cases in Texas. The last outbreak was in Brownsville Tx in 1941 (*Bull WHO 1969;40:160-163*). Dengue was eradicated from the southern United States in 1945 and subse-

quently from most of the western hemisphere. All four dengue virus strains, however, have been able to reestablish themselves as country after country reduced or stopped control efforts for the *Ae aegypti* mosquito.

Dengue fever among US citizens, however, continues to occur among inhabitants of Puerto Rico, the US Virgin Islands, Samoa and Guam, which are endemic for the virus. A small dengue outbreak occurred in Hawaii in 2001. And, since 1981, as a consequence of dengue in Mexico, locally acquired cases of dengue have been occurred in southern Texas (*Emerg Infect Dis 2003;9:86-89*) resulting in a small outbreak during 2005 (*MMWR Morb Mortal Wkly Rep 2007;56:785-789*).

Dengue and dengue hemorrhagic fever have been a particular challenge in Puerto Rico, where outbreaks have been reported since 1915 and large island-wide epidemics have been documented since the late 1960s. The most recent island-wide epidemic occurred in 2007, when more than 10,000 cases were diagnosed (*Am J Trop Med Hyg. 2009;81:467-74*). In Puerto Rico, and most of the Caribbean Basin, *Ae aegypti* is abundant year-round. Dengue transmission in the Puerto Rico follows a seasonal pattern with the low transmission season beginning in March and lasting until June, and the high transmission running from August until November.

Late Preterm Births

The preterm (<37 weeks gestation) birth rate rose by more than 20% in the US between 1990 and 2006 (*Natl Vital Stat Rep 2008;57 #7*). Most of this increase was among infants born toward the end of the preterm pe-

riod, at 34 to 36 full weeks of pregnancy, or during the period known as "late preterm". On average, >900 late preterm babies are born everyday in the US (*NCHS Data Brief 2009; #24 November*). These infants are develop-

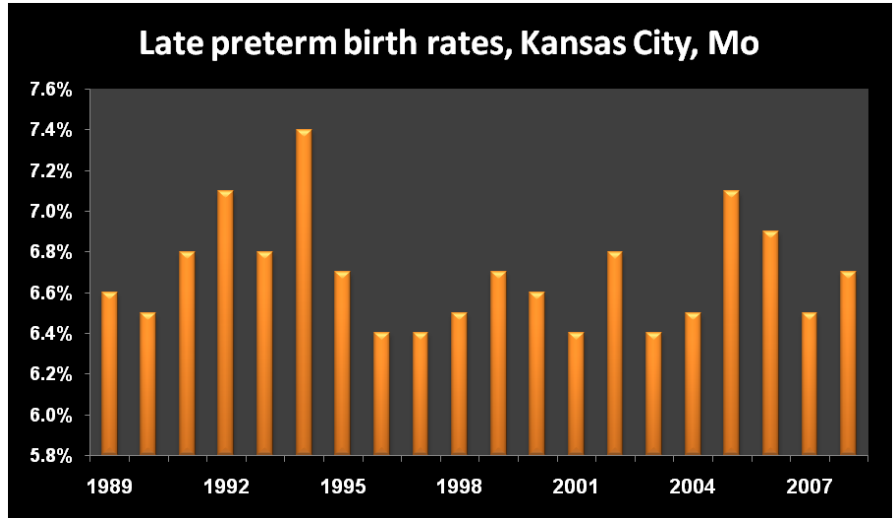
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mentally and physiologically immature and suffer more health complications and have higher death rates than infants born at term (*Pediatrics 2007;120:1390-1401*). If the late preterm birth rate nationally had remained at the 1990 level instead of rising to the 2006 level, >50,000 infants would not have been born preterm.

In Kansas City, the late preterm birth rate has remained remarkably stable since 1989, averaging 6.7% of all births.

Recent studies suggest that the increasing use of induction of labor and cesarean delivery at 34-36 weeks has influenced the upswing in the late preterm birth rate (*Clin Perinatol 2008;33:793-800*). The percentage of late preterm births for which labor was induced more than doubled over the 16 year period (7.5% to 17.3%) and the percent of late preterm births delivered by cesarean section also rose markedly (46%).

Increases in late preterm births occurred among mothers of all ages, and for non-Hispanic white and Hispanic

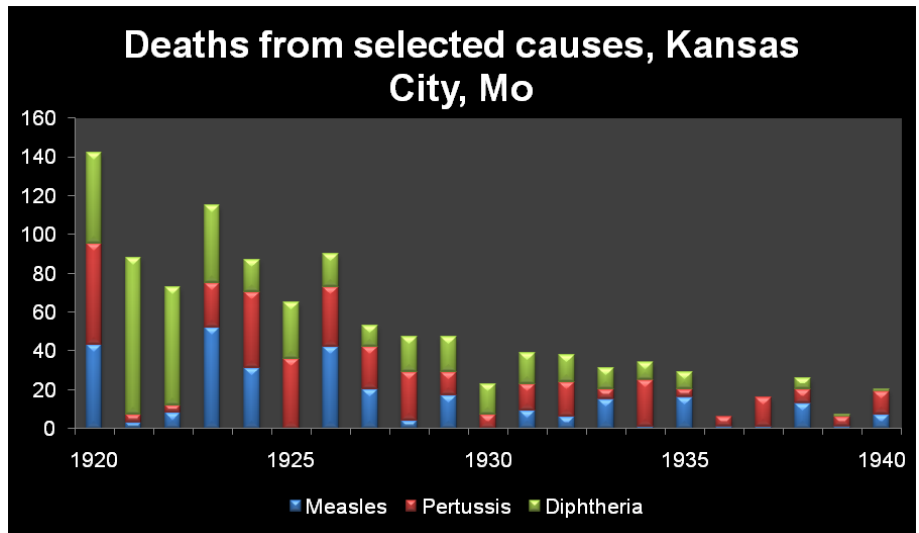


mothers. The rate for non-Hispanic black mothers declined during the 1990s, but has been on the rise since 2000. With the exception of the District of Columbia, late preterm birth rates rose in every state. Missouri's late preterm birth rate increased by 19% while Kansas' rate increased by 25%.

Why We Vaccinate Our Children

In today's society a significant number of parents decline to have their children vaccinated with the standard childhood vaccines. Many different reasons are given ranging from religious concerns to philosophical objections. Fear of autism has been one of the leading reasons in recent years, despite the medical evidence that there is no association between vaccination and the onset of autism.

Often what parental objectors lack is a historical perspective of the devastating effects some of these diseases had in terms of killing children. The accompanying graph shows recorded deaths from measles, pertussis (whooping cough) and diphtheria in Kansas City between 1920 and 1940. While a diphtheria toxoid vaccine was developed about 1921, it was not used



widely until the early 1930s. Similarly, a whole-cell pertussis vaccine was developed in the 1930s, but did not

gain wide use until the mid-1940s. A vaccine against measles was not licensed until 1963.

The effectiveness of these vaccines is best illustrated the fact that, according to the Centers for Disease Control and Prevention's Wonder system, between 1999 and

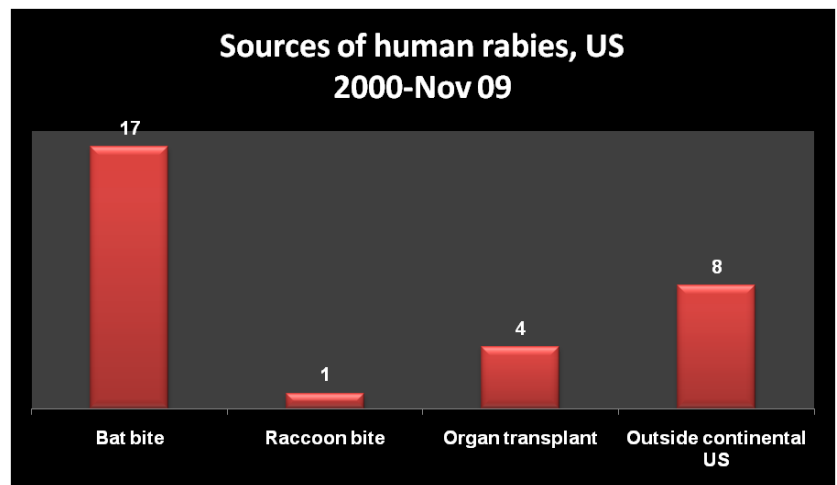
2004, the US recorded only 81 deaths from pertussis and 7 deaths from diphtheria; there were no deaths from measles. All the pertussis deaths occurred among children <5 years of age, with 96% of these children being <1 y of age. In contrast, all 7 diphtheria deaths were among adults ≥ 45 y old.

Human Rabies, 2009

Three cases of human rabies have been reported to the Centers for Disease Control and Prevention (CDC) thus far in 2009. Two of these infections appear to have been contracted in the US and one in India. Both of the US cases were associated with bat bites, while the imported case was the result of a dog bite.

In 2008, there were two human cases of rabies in the US, one acquired in Missouri (*MMWR Morb Mortal Wkly Rep* 2009;58:1207-1209) and the other was contracted in Mexico (*J Am Vet Med Ass* 2009;235:676-689). Of the 30 human rabies cases reported since 2000, a little over a quarter were contracted outside of the continental US and 57% of those contracted in the US were from bat bites. Only one individual, in 2004, survived her infection (*N Engl J Med* 2005;352:2508-2514).

As of 11/14/09, Missouri had recorded 64 rabid animals (49 bats, 14 skunks, 1 cat) while Kansas recorded 72 rabid



animals (5 bats, 54 skunks, 1 bobcat, 1 raccoon, 1 fox, 1 coyote, 1 cat, 4 dogs, 1 cow, 1 horse). Of the Missouri rabid animals both Jackson and Cass counties recorded a single rabid bat. On the Kansas side of the state line, 2 rabid bats were found in Johnson county and a rabid dog in Wyandotte county.

Potpourri

THE US INTERNATIONAL ranking in infant mortality fell from 12th in world in 1960 to 23rd in 1990 to 29th in 2004 and 30th in 2005. After decades of decline, the US infant mortality rate did not decline significantly from 2000 to 2005 (*NCHS Data Brief #23, Nov 2009*).

The US compares favorably with Europe in the survival of infants born preterm. Infant mortality rates for preterm infants are lower in the US than in most European countries. However, infant mortality rates for term infants are generally higher in the US than in European countries.

Still, the main cause of the US' high infant mortality rate when compared with Europe is the very high percentage of preterm births in the US. Prematurity is leading cause of infant mortality in this country as it is in Kansas City.

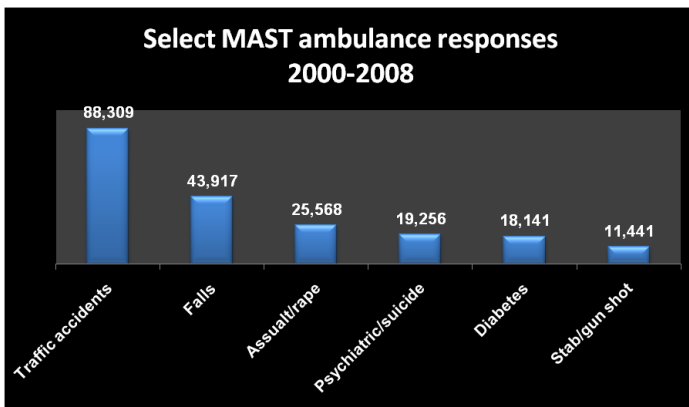
In 2005, Sweden had the 2nd lowest infant mortality rate worldwide behind Singapore. If the US had Sweden's distribution of births by gestational age, nearly 8,000 infant deaths would be averted each year and the US infant mortality rate would be one-third lower.

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NEARLY A THIRD of all deaths (32%) in the US during 2007 occurred in a hospital (*H-CUP Stat Brief #82, Nov 2009*). In Kansas City, during 2007, 41% of the 3,698 resident deaths occurred in a hospital, 26% in nursing homes, and the balance in other locations.

The H-CUP study report found that the inpatient death rate was only 1.9%, but those hospital stays ending in death accounted for 5.2% (\$20 billion) of all hospital costs. On average, a hospital stay resulting in death cost 2.8 times that of a hospital stay where the person was discharged alive. Based on principal diagnoses, the highest inpatient death rates were from septicemia and respiratory failure (17.3% each), aspiration pneumonitis (12.7%), and cancer of bronchus/lung (11.4%).

SELECT REASONS FOR SERVICE responses by the Metropolitan Ambulance Services Trust (MAST) from 2000 through 2008 are shown below.



MARRIED INDIVIDUALS TEND TO be heavier than those who are unmarried, particularly men. Also, individuals in different ethnic groups vary in their involvement in marriage and in their body weights. A recently published study using National Health and Nutrition Examination Survey (NHANES) data found that compared to married men in the same ethnic category, white di-

vorced men, black never-married men, and all Hispanic men, except for widowers, had lower odds of being overweight (*Obesity 2009;17:2223-2231*). Compared to married women of the same ethnic category, white women's weights did not significantly differ by marital status, black separated women had greater odds of being overweight, and Hispanic never-married women had lower odds of being overweight.

SUPPLEMENT # 1– ADULT OBESITY to the *Community Health Assessment 2009* report was released by the Kansas City Health Department in late November. The report was based on data collected by the Missouri Department of Health and Senior Services' 2005-2008 Behavioral Risk Factor Surveillance System (BRFSS) .

Residents of the Jackson02 Health Zone (defined by zip codes 64109, 64120, 64123, 64124, 64125, 64126, 64127, and 64128) had the highest rate of obesity among the BRFSS respondents, the highest percent of respondents with median family incomes <\$20,000, and the highest percent of respondents reporting poor or fair health. Respondents from Jackson02 also reported the lowest physical activity levels and the lowest daily consumption rates for ≥ 5 daily servings of fruits and vegetables. While 18.4% of Kansas City's population lives in Jackson02, the Health Zone has only 13% of the fast food/convenience store outlets in the City—these are generally considered unhealthy food outlets.

Citywide, 12% of BRFSS respondents reported they had been diagnosed with either prediabetes or diabetes. Individuals who were obese were at a highly significant risk of being diagnosed with these conditions compared to non-obese individuals. Similarly, obese respondents were at a highly significant risk of experiencing joint pain or swelling in the prior month, a higher risk of having activity limitations, and more likely to have been told by their physician to lose weight to alleviate their symptoms than non-obese respondents.

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