



# Community & Hospital Letter

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## Diabetes, Kansas City, Missouri

**DIABETES IS A SERIOUS**, costly, and increasingly common chronic disease that can cause devastating complications, including heart disease, kidney failure, leg and foot amputations, and blindness, as well as resulting in disability and death. Disability affects 20-50% of the diabetic population. Early detection and improved delivery of care, and better self-management are key strategies for preventing much of the burden of diabetes. Type 2 diabetes (formerly considered adult onset diabetes) is now being diagnosed more frequently among children and adolescents. This type of diabetes is linked to two modifiable risk factors: obesity and physical inactivity.

According to the National Center for Health Statistics, in 2002, more than 13 million Americans (6.5% of the non-institutionalized population) had diabetes and about 5 million others probably are undiagnosed. This was an increase of 27% for the diagnosed cases since 1997 when 5.1% of the population was reported to have diabetes. Each year, an estimated 12,000-24,000 people become blind because of diabetic eye disease. In addition, nearly 43,000 people with diabetes begin treatment for kidney failure each year, and 82,000 undergo diabetes related lower extremity amputations. It is estimated that 33% of Americans born in 2000 will develop diabetes during their lifetime. Further, it has been estimated that the direct and indirect cost of diabetes in the US was \$132 billion in 2002. Currently in the US, the number of persons 40 to 74 years of age who are considered prediabetic based on their impaired fasting glucose (IFG) levels is 19.8 million, a number that is projected to change to 37.3 million following the adoption of revised guidelines for IFG.

Since 1988, Missouri has observed a 29% increase in residents diagnosed with diabetes. About 7% of adults have diabetes, although about a third of these individuals are estimated not to know it. Further, 13.2% of blacks are diabetic compared to a rate of 8.3% nationally for blacks.

According to the 2003 Behavioral Risk Factor Surveillance System (BFRSS) data, 10.3% of Kansas City residents reported that a physician had diagnosed them as having diabetes, compared to regional prevalence rate of 7.5% and a statewide rate of 7.1%. For all residents of Clay and Platte counties the rate was 4.7 compared to 8.1% for all residents of Jackson County. A 2004 telephone survey commissioned by the Kansas City Health Department had 13.1% of respondents report that they were diabetic.

The number of deaths in Missouri from diabetes increased 38% between 1993 and 2003. Between 1999 and 2003, 7,794 Missourians died from diabetes for an age-adjusted death rate of 25.9 per 100,000 residents. While 84% of the deaths occurred among whites, their age-adjusted death rate was less than half that for blacks, 23.8 and 51.5, respectively.

In Kansas City, during this same time period, the age-adjusted death rates due to diabetes remained stable between 29 and 33 deaths/100,000 population. While these rates are well below the Yr 2010 Objectives for the Nation of 45 deaths/100,000 population, they have increased from the 21-25 deaths/100,000 observed between 1990 and 1995. The death rate for blacks increased 25% between 1994-1998 and 1999-2003, while it decreased 9% for whites. In 2003, diabetes was 5<sup>th</sup> leading cause of death among Kansas City residents with 133 persons dying. It was the 8<sup>th</sup> leading cause of death among whites, 4<sup>th</sup> leading cause for blacks, and 2<sup>nd</sup> leading cause among Hispanics. The average age at death was 69.2 years of age. Almost one-third of deaths due to diabetes were considered premature as the individuals died before the age of 65 y old (Table 1).

Diabetes has been ranked among the 10 leading causes of death in the US since 1932. However, mortality statistics alone clearly understate the impact of diabetes. Because people die of the complications of diabetes rather than

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the disease itself, diabetes is underreported as the underlying or even contributing cause of death. It is estimated that diabetes is listed on the death certificates of less than half of the decedents who actually had diabetes. The leading causes of death for persons with diabetes are heart disease (55%), diabetes (13%), cancers (13%), cerebrovascular disease (10%), and pneumonia/influenza (4%). The risk of cardiovascular disease mortality is 2 to 4 times that of persons without diabetes.

The Kansas City Health Department conducted an analysis of causes of death associated with heart disease, cancer, and stroke for 2001-2003 (*Community & Hospital Letter* 257):1-2, 2005). Death certificates list four causes of death: the immediate cause, the cause leading to the immediate cause of death, the next antecedent cause of death, and the underlying cause of death. The analysis only looked at the first three causes. For deaths due to heart disease, diabetes was listed on the death certificate as the cause leading to the immediate cause of death 11.7% of the time. Similarly for deaths due to stroke diabetes was listed 6.9% of the time. For individuals whose immediate cause and cause leading to the immediate cause were both listed as cancer, diabetes was listed as the next antecedent cause of death 4.2% of the time.

Nationally, in 2001, individuals with diabetes made 26.9 million visits to their physicians and 2.6 million visits to emergency departments due to their disease. Between 1995-1996 and 1999-2000, the number of physician visits with any diagnosis of diabetes increased 35% among per-

sons 45-54 years of age and 43% among persons 55-64 years old. A little over one half million persons were hospitalized, with an average length of stay of 4.9 days. Among persons receiving home health care, 7.9% were diabetic and among persons in nursing homes, 17.2% were diabetic.

During 2002, in Kansas City, diabetes was 9<sup>th</sup> leading cause of emergency department visits overall and for whites and Hispanics. It was the 7<sup>th</sup> leading cause of emergency department visits for blacks. Diabetes was the 6<sup>th</sup> leading cause of hospitalizations overall. It was the 8<sup>th</sup> leading cause for whites, 4<sup>th</sup> leading cause for blacks, and 5<sup>th</sup> leading cause for Hispanics.

In January and in December 2004, the Kansas City Quality Improvement Consortium released report cards on care of diabetic patients in the Kansas City metropolitan area. While blood sugar levels are being controlled, the frequency of testing for cholesterol and blood sugar levels, eye examinations and urine tests for kidney damage were below that reported nationally for privately insured and Medicaid patients. Among the top performing physicians, 90% of patients received the necessary tests and only 7% of patients had poorly controlled blood sugar levels.

While the data above suggests that most diabetics under a physician's care have their blood sugar levels under control, a study released in May 2005 by the American Association of Clinical Endocrinologists (AACE) reported that

TABLE 1. Deaths from diabetes among Kansas City, Missouri, residents, 2000-2004

Characteristic	Deaths from diabetes			Premature deaths by age groups (years)			
	Total		Premature	0-34	35-44	45-54	55-64
Male	299	109	36.5%	2.3%	4.0%	10.7%	19.4%
Female	326	95	29.1%	1.5%	3.4%	9.2%	15.0%
Race/ethnicity							
White	293	85	29.0%	1.0%	3.1%	8.5%	16.4%
Black	293	106	36.2%	3.1%	4.1%	11.3%	17.7%
Hispanic	33	11	33.3%	0.0%	6.1%	12.1%	15.2%
Total*	625	204	32.6%	1.9%	3.7%	9.9%	17.1%

\* Includes all races/ethnicities

66.2% of Missourians and 67.0% of Kansans who have type 2 diabetes do not have their blood sugar levels controlled ([www.aace.com](http://www.aace.com)). The findings revealed that two out of three Americans (67.0%) with type 2 diabetes analyzed in a study did not reach the AACE-recommended target blood sugar goal in 2003 and 2004.

Visual impairment and blindness are associated with diabetes. The Centers for Disease Control and Prevention analyzed data collected from the 2002 National Health Interview Study in order to characterize the prevalence of eye disease among persons with and without diabetes and who were  $\geq 50$  years old. The prevalence of visual impairment (23%), cataracts (31.8%), and glaucoma (8%) were higher among persons with diabetes. Among diabetics, the prevalence of visual impairment was higher among women and higher among those with less than high school education. The prevalence of cataracts and macular degeneration (2.8%) were higher among persons  $\geq 65$  years old than among those 50-64 years of age and among non-Hispanic whites, while glaucoma prevalence was higher among persons  $\geq 65$  years old and among groups other than non-Hispanic whites. There were no differences in prevalence for diabetic retinopathy (10.2%). There is no readily available Kansas City specific

data regarding eye conditions among diabetics other than only about 35% of diabetics receiving medical management of their condition receive an annual eye examination.

Most adults and a growing number of children have type 2 diabetes, which is strongly linked to poor diet, inactivity and being overweight. Obesity in persons with diabetes is associated with poorer control of blood glucose levels, blood pressure, and cholesterol, placing persons with diabetes at higher risk for both cardiovascular and microvascular disease. The National Health and Nutrition Examination Survey data for 1999-2002, found that most adults with diagnosed diabetes were overweight or obese. The prevalence of overweight or obesity was 85.2%, and the prevalence of obesity was 54.8%. Consequently, the goal of reducing cardiovascular disease and diabetes through behavioral and environmental changes has become the focus of the Kansas City Chronic Disease Coalition (KC-CDC, [www.mo-pca.org/kccdc](http://www.mo-pca.org/kccdc)). KC-CDC targets 11 zip codes in the City's urban core (64105, 64106, 64108, 64109, 64110, 64124, 64127, 64128, 64130, 64131, and 64132). These encompass most of the zip codes with highest premature death rates from diabetes.

## Potpourri

**ARE CATS ALLERGIC** to humans? Veterinarians in Scotland studying allergies in cats have found that irritants such as cigarette smoke, dusty homes and human dandruff can increase inflammation in feline lungs and worsen asthma in cats. They are also studying whether *Mycoplasma* is involved in feline asthma (Vet Record 157:492, 2005). About 1 in 200 cats suffer from asthma with pedigree oriental breeds such as Siamese cats being more prone to the disease.

**FUNGI IN BED PILLOWS** may exacerbate asthma, with feather pillows having fewer species of fungi than synthetic pillows (Allergy, advanced online publication 10/14/05). While 50 species of fungi were found overall, the typical pillow harbored a substantial load of *Aspergillus fumigatus*, a frequent cause of life-threatening pneumonia in the immunocompromised, as well as other

fungi. Synthetic pillows had an average of 10 identifiable species of fungi, while feather pillows contained an average of 7.8 species. The synthetic pillows had, on average, 1.5 times the level of *A. fumigatus* than did feather pillows. *A. fumigatus* contains 18 known allergens and poses problems for persons with asthma or sinusitis. Since people spend about a third of their life sleeping, the presence of all the fungi species in pillows may have clinical implications for persons with respiratory diseases. A plastic or tightly woven pillow cover may reduce exposure to the fungi.

**HUMAN PARAINFLUENZA 1** virus is responsible for common respiratory infections such as pneumonia and bronchiolitis. And, a 5 city survey of office settings by researchers from the University of Arizona found the virus was most common on desktops. The light switch was the

least contaminated site. Conference rooms were found to have far less virus present on surfaces than cubicles.

**AN INVASIVE ASIAN MOSQUITO** species capable of transmitting West Nile virus has been found in Eureka, MO (J Vector Ecol, in press, 2005). *Ochlerotatus japonicus*, although previously known in the eastern US, had not been recognized this far west.

**ANIMALS KILLED** 1,943 people in the US between 1991 and 2001 (Wilderness Environ Med 16:67, 2005). Venomous animal encounters were responsible for 39% of the fatalities, with hornets, bees and wasps responsible for 60.9% of the fatalities. Dogs accounted for the largest percentage (17.6%) of fatalities caused by non-venomous animals. Nearly 3 men died for every woman killed by an animal and whites accounted for 91% of the fatalities. Forty-five percent of the deaths occurred in southern states and nearly 25% in the Midwest.

**FALL TURKEY HUNTERS** had the highest rate of hunting related shooting incidents in Pennsylvania between 1987 and 1999 (J Trauma 58:582, 2005). However, the fatality rate was highest for deer hunters. Both injuries and deaths were very low among bird hunters.

**FORTY PERCENT** of Americans admit to eating raw cookie dough when baking despite the fact that eating homemade cookie dough made with eggs can lead to serious illness from *Salmonella* poisoning. Cookie dough eating is particularly prevalent in the Midwest where 45% of survey respondents admitted eating raw cookie dough, as well as among those <30 y old, of which 54% were cookie dough eaters ([www.ift.org](http://www.ift.org)).

**THE COST OF** containing a single case of measles is approximately \$142,500, according to the Iowa Department of Public Health (Pediatrics 116(1):e1, 2005).

**OUTBREAKS OF** *Escherichia coli* O157:H7 have been

declining in the US (Emerg Infect Dis 11:603, 2005). Between 1982 and 2002, 52% of the 350 outbreaks reported to the Centers for Disease Control and Prevention (CDC) were foodborne. Fourteen percent involved person-to-person transmission, 9% were waterborne, 3% involved animal contact, and <1% were laboratory related.

The animal contact outbreaks have led to many venues, including state fairs, eliminating popular petting zoo attractions due to insurance issues and the potential liability for *E coli* O157:H7 cases among patrons. The bacteria are transient inhabitants of the gastrointestinal tract of livestock and other animals and can contaminate the animals environment with subsequent transmission to humans (JAVMA 221:1122, 2002). CDC has published a list of general recommendations to prevent transmission animal diseases in public settings (MMWR 54:RR-4, 2005).

**BOTH BOYS AND GIRLS** who reported a desire to look like celebrities in magazines were significantly more likely to use potentially unhealthy supplements to enhance their physiques (Pediatrics 116:214, 2005). Eight percent of girls and 12% of boys reported using supplements to enhance appearance or strength. Boys who read men's magazines were significantly more likely to use supplements such as protein powder or creatine at least weekly. Girls trying to look like female celebrities were significantly more likely to use putatively appearance-enhancing supplements, regardless of efforts to lose or gain weight.

**CAN A PARASITE** cause its host to kill itself? Apparently the answer is yes, provided the host is a grasshopper. The young hairworm, *Spinochordodes tellinii*, develops inside of grasshoppers until it becomes time for the worm to transform into an aquatic adult. At this point it somehow persuades the grasshopper to commit suicide by jumping into water. This then allows the adult worm to emerge into the water (Proc Royal Soc B, DOI: 10.1098/rspb.2005.3213). This is just another example of how parasites can influence host behavior to the benefit of parasite and the detriment of the host. *Toxoplasma gondii*, for example, causes infected rats to become less wary of cats because the parasite needs to complete its life cycle in a cat and the rat then becomes the vehicle for infecting the cat by getting itself eaten.