



# Community & Hospital Letter

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## Smoking during Pregnancy, Kansas City

**IN 2004**, 12.1% of Kansas City pregnant women smoked during their pregnancies. This level of self-reported smoking was 42% lower than just 10 years ago (Figure 1).

Fewer Kansas City women smoking during pregnancy is a positive health trend and mirrors what has been reported nationally. Preliminary 2004 data for the nation recorded a 12.2% smoking rate among pregnant women.

Nationally, among women who smoke between 18-25% stop smoking during pregnancy, but approximately 70% of these women resume smoking once the infant is delivered. Reports in the literature show that most women who were pregnancy smoking quitters did so in the first trimester and often prior to their first prenatal care visit. And, of those who continue to smoke, many women report decreasing the number of cigarettes smoked each day (*J Public Health Manag Pract* 2006; 12:68-76).

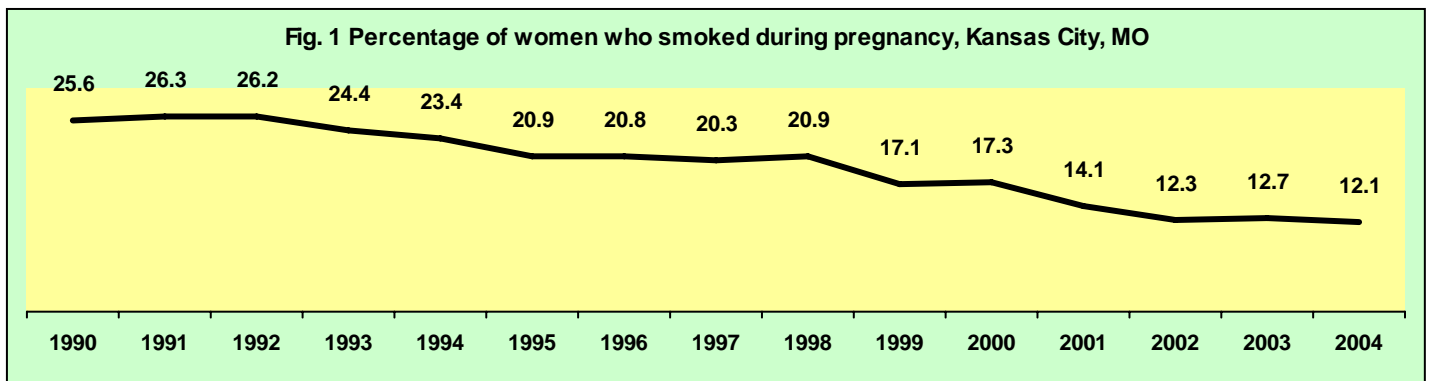
Women who smoke are at increased risk for a delay in becoming pregnant, for both primary and secondary infertility, and, once pregnant, for complications of pregnancy, premature births, low birth weight infants, stillbirths, and infant deaths. Recent reports suggest that congenital anomalies of fingers and toes, and febrile seizures also may be associated with smoking during pregnancy (*Plast Reconstr Surg* 2006; 117:301-308; *Pediatrics*

2005; 116:1089-1094).

The Kansas City Health Department possesses an electronic database on all births in the City going back to 1972, although smoking information was not collected in Missouri until 1978 (first state in nation to collect smoking data). Births to Kansas City women who delivered outside of the City also are included in the database. Using this rich resource to better the health of Kansas Citians is a priority for the Health Department. Therefore, because of the importance of smoking during pregnancy and because of gaps in knowledge concerning it, the Office of Epidemiology & Community Health Monitoring (OECHM), Children's Mercy Hospital, and Kansas City University of Medicine and Biosciences have partnered on a number of studies related to pregnancy smoking. Two studies were published in 2005 and others are in varying stages of analysis and report writing. A sampling of some of the information gleaned from those studies is presented below.

Low birthweight is the risk factor most closely associated with neonatal death; thus improvements in infant birthweight in Kansas City can contribute substantially to reductions in the infant mortality rate (*Maternal Child Health J* 2005; 9:199-205). In addition, there is evidence

Fig. 1 Percentage of women who smoked during pregnancy, Kansas City, MO



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that low birthweights can influence the number of deaths in children 1-7 years old, and possibly up to 8 years of age (Health Stat Quarterly 2004; 24:30-37). Therefore, one of the Kansas City studies examined term-gestation low birthweight babies and health compromising behaviors (smoking, alcohol, drugs) by pregnant women (Obstet Gynecol 2005; 105:543-550). It was found that smoking alone or in combination with alcohol and/or drug use by the mother was associated with term gestation delivery of low birthweight babies. Cigarette smoking was the major predictor of term low birthweight deliveries, and its growth restricting effect was especially pronounced when smoking was combined with alcohol consumption. When the analysis was repeated looking at preterm births the findings were similar, namely the combination of smoking and alcohol consumption during pregnancy increased the risk of having a preterm birth.

Another Kansas City study found that among women who continued to smoke during pregnancy, that there was a shift from moderate/heavy smoking (10+ cigarettes per day which is a half a pack or more) to light smoking (1-9 cigarettes per day) (Am J Health Behav 2005; 29:456-461). Comparing smoking behaviors, as listed on birth certificates, from 1993-1997 and from 1998-2002, the percent of women reporting light smoking increased from 39% to 49%, while reported moderate/heavy smoking decreased 10%. The study concluded that this shift to light smoking suggested a decrease in self-reporting of smoking thus creating a dilemma in setting public health policy based on such reports.

Two studies that are being prepared for submission to journals involved smoking behaviors during successive pregnancies. While it has been reported that the risk for continued pregnancy smoking is higher among women who have had previous pregnancies than among first time pregnant women, there is little information on the pregnancy smoking quit rates between successive pregnancies for individual women. Therefore, OECHM and its partners examined both the rate of quitting and the rate of starting smoking during subsequent pregnancies using data reported on birth certificates. All Kansas City women who had their first pregnancy between 1994 and 2002 resulting in the birth of only a single child, and who had a least one additional pregnancy through 2003 that also resulted in the birth of a single child were included in

these studies.

Among women who smoked during their first pregnancy, the overall pregnancy smoking quit rate was 20.5% for their 2<sup>nd</sup> pregnancy. However, there were significant differences between the women who had only 2 pregnancies and those who had 3-5 pregnancies. For those that only had 2 pregnancies, the quit rate was 24.9% versus 0.8% at 2<sup>nd</sup> pregnancy for women with 3+ pregnancies. Among this latter group, the overall quit rate was 5.3% for any pregnancy. This study concluded that if a woman smokes during her first and second pregnancies, she will most likely continue to smoke during subsequent pregnancies. The second pregnancy is the more likely time to affect smoking cessation among women who smoked during their first pregnancy; however, success will be dependent upon the risk factors and characteristics of the woman. Light smokers who had only two pregnancies and who were not a Medicaid recipient were more likely to quit pregnancy smoking by the 2<sup>nd</sup> pregnancy than women who were moderate/heavy smokers and a Medicaid recipient

As opposed to 20.5% of smokers electing not to smoke during their 2<sup>nd</sup> pregnancy, it was found that 4.8% of non-smokers during 1<sup>st</sup> pregnancy subsequently smoked during their 2<sup>nd</sup> pregnancy. Alcohol use was the most reliable predictor for 2<sup>nd</sup> pregnancy smoking among women who did not smoke during their 1<sup>st</sup> pregnancy. The study concluded that strategies to decrease pregnancy smoking initiation should target alcohol use especially among low socioeconomic, single, and black women on Medicaid.

A more preliminary study is looking at whether there are cumulative or residual risks for delivery of small for gestational age babies as the result of smoking during pregnancy. In other words, should more impetus be provided to prevent current pregnancy smoking to reduce the risk of small for gestational age birth or does the cumulative smoking history over successive pregnancies play a more significant role.

As these and future studies are concluded, their findings may influence both public health policy and clinical practice in the community, and possibly nationally, with regards to women smoking during pregnancy.

# Potpourri

**IMPROVEMENTS IN THE OVERALL HEALTH** of Americans has stalled in the last 5 years as more people became obese and fewer quit smoking, according to the 2005 America's Health Ranking report ([www.unitedhealthfoundation.org](http://www.unitedhealthfoundation.org)). According to that report, 23.1% of Americans are now considered obese, more than twice the level in 1990. And, the number of people who are moribundly obese (grade III obesity, body mass indexes  $\geq 40$ ) is increasing a much faster rate than obesity in general (Arch Intern Med 2003; 163:2146-2148).

Besides the health problems associated with obesity, there are the financial costs to society and employers. It consumes 9.1% of the annual medical expenditures in the US (Health Aff – web exclusive, 5/14/03:219-226). Further, obese individuals (body mass indexes  $\geq 30$ ) have, on average, 36% more in medical expenditures than do persons of normal weight (body mass indexes of 18.5-25) (Health Aff 2002; 21:245-253).

Costs to employers attributable to employees being overweight or obese range from \$175 per year for an overweight male to \$2,485 per year for a grade II (body mass index 35-39.9) obese female (Am J Health Promotion 2005; 20:45-51). The cost for obesity (excluding overweight) at a firm with 1,000 employees is estimated to be \$285,000 per year, with 30% of the costs being due to increased absenteeism. Grade III obese individuals comprise only about 3% of the working population, but account for 21% of the obesity costs to employers.

**DEATHS RESULTING FROM** eating meat products derived from cattle with bovine spongiform encephalopathy (BSE) totaled 153 in the United Kingdom as of the end of 2005 ([www.eurosurveillance.org](http://www.eurosurveillance.org)). In addition to these variant Creutzfeldt-Jakob (vCJD) deaths, 6 patients remained alive. Despite early dire predictions of thousands of deaths, the vCJD outbreak in the UK peaked in 2000 and has been declining annually. However, the UK is not the only country recording vCJD deaths. To date, 15 deaths have been reported in France, 4 in Ireland, 2 in the US, and 1 each in Canada, Italy, Japan, the Netherlands, Portugal, Saudi Arabia and Spain. A few of these deaths directly link back to exposures in the UK. It is im-

portant to note that all vCJD cases have had a particular genetic variation at codon 129 of their prion protein genes (homozygous for methionine). It is not known if persons with other genetic variations at this codon are susceptible or not. There is a heterozygous patient who is believed to have preclinical vCJD after a blood transfusion from a donor who subsequently developed vCJD.

While many would like to believe that BSE and vCJD are going away based on the UK data, new cases of BSE in cattle continue to be recognized around the world. Canada recently reported its 4<sup>th</sup> cow with BSE in Alberta (USA Today 1/24/06, 5D). The only BSE infected cow in the US came from Alberta. Therefore, both veterinary and medical vigilance for these manifestations of the disease must remain high.

**THE EMERGENCE OF** chronic wasting disease (CWD) of deer and elk in an increasingly wide geographic area and the interspecies transmission of bovine spongiform encephalopathy (BSE) to humans in the form of variant Creutzfeldt Jakob disease (vCJD) have raised concerns about the zoonotic potential of CWD. Since meat consumption is the most likely means of exposure, it is of considerable importance to determine whether skeletal muscle of diseased cervids contains prion infectivity. A new study has revealed the presence of infectious prions in skeletal muscles of CWD-infected deer demonstrating that humans consuming or handling meat from CWD-infected deer are at risk to prion exposure (Science DOI: 10.1126/science.1122864).

**FOUR OF THE NATION'S** top 10 chicken producers have announced in January that they will no longer use antibiotics in chicken feed for growth promotion. Tyson Foods, Gold Kist, Perdue Farms and Foster Farms collectively produce 38% of the broiler chickens in this country, with Tyson being the nation's largest chicken producer. It is estimated the four companies most recently were using 2-2.5 million pounds of antibiotics each year for growth promotion, and had been phasing out antibiotics for several years as they developed hardier breeds and improved animal husbandry.

Use of antibiotics for growth promotion began in the 1950s and with the rise of concentrated animal production facilities, low-level antibiotics helped compensate for crowded, stressful and sometimes unsanitary conditions. This made chicken the cheapest meat available. In recent years, there has been growing concern that this practice was contributing to antibiotic resistance in various bacteria that can infect humans. Of course, it did not hurt that major purchasers of chicken meat, such as McDonald's, began telling suppliers that they would not buy product from chickens raised on sub-therapeutic antibiotics. According to the US Department of Agriculture, 86.7 lbs of chicken per capita were consumed in 2005 compared to just 28 lbs in 1960.

**ANTIVIRAL THERAPY** is available against influenza A viruses in the form of the M2 ion channel inhibitors amantadine and rimantadine and against type A and B influenza viruses through the use of the neuraminidase inhibitors oseltamivir (Tamiflu®) and zanamivir (Relenza®). Resistance to amantadine and rimantadine, unfortunately, is increasing. According to the Centers for Disease Control and Prevention (CDC) the global prevalence of adamantane-resistant influenza viruses showed a significant increase over the past 3 years (from 1.9% to 12.3%). In the US, the frequency of drug resistance increased from 1.9% in 2004 to 14.5% during the first 6 months of the 2004–05 influenza season. Therefore, in mid-January CDC recommended that amantadine and rimantadine no longer be prescribed during this flu season.

The H5N1 avian influenza virus circulating in Asia is resistant to the adamantane drugs and the world is staking its hopes on Tamiflu® effectiveness to treat patients infected by this virus. Unfortunately, there are several reports of resistance to this drug in H5N1 infected individuals. Meanwhile, early reports suggest that the H5N1 virus found in Turkey may be susceptible to the adamantane drugs. [Relenza® is not considered a viable treatment for H5N1 as it is inhaled and does not provide therapeutic levels outside of the respiratory tract; although it may be used prophylactically to prevent infection.]

There is considerable debate as to whether any of these antivirals are of benefit in the treatment or prevention of life threatening disease (New Engl J Med 2006; 353:2535-2537). A recent report recommended that the adamantanes not be used (New Engl J Med 2006; 353:2559-2569). Further, the report recommended that

the neuraminidase inhibitors should not be used in seasonal influenza control and used only in a serious epidemic or pandemic alongside other public health measures.

**NO ONE WHO WATCHED** the heartbreaking television coverage of New Orleans residents returning to their homes after Hurricane Katrina will ever forget the pictures of mold inside the houses. Often the people or commentators spoke about the health risks posed by mold. But is inhalational mold toxicity fact or fiction?

If you believe everything you read on the internet, then inhalational mold toxicity is definitely a problem with a plethora of web sites to “support” that position. This, in turn, has led to a general acceptance that indoor molds can lead to inhalational mold toxicity in humans. But, again, is this fact or fiction?

Three mold related mechanisms of human disease are recognized: immunologic sensitization, infectious disease, and mycotoxicosis via ingestion. Epidemiologic evidence would argue that a 4<sup>th</sup> category of symptoms, which is best described as a transient aeroirritant symptom complex, be added. While this 4<sup>th</sup> category is controversial, nonspecific aeroirritant symptoms are believed to arise from aerosolized fungal constituents. However, critical reviews of the data have not found any scientific support to establish inhalational mold toxic effects as a viable mechanism of human disease (Ann Allergy Asthma Immunol 2005; 95:215-216).

A clinical review of inhalational mold toxicity looked at 25 worker's compensation cases and at 25 civil litigation cases and concluded that in every case there were alternative medical and/or psychiatric explanations for the claimed illnesses (Ann Allergy Asthma Immunol 2005; 95:239-246). The authors further concluded that toxic mold syndrome represents the furtive evolution of aeroirritation from a transient to permanent symptom complex in persons with a psychogenic predisposition. Further, the core symptoms of toxic mold syndrome and their gradual transition to chronic symptoms related to nonspecific environmental fragrances and irritants appear to mimic what has been observed with other pseudodiagnostic categories, such as sick building syndrome and idiopathic chemical intolerance.