



# Community & Hospital Letter

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## How Many Dog Bites in Kansas City?

**WHEN PEOPLE THINK** about animal control the first vision that often pops into their heads is the image of the dogcatcher depicted in cartoons and old movies. What these people fail to realize is the critical role animal control activities play in the community. For example, in Kansas City, the Animal Control division of the Neighborhood and Community Services Department serves both a governmental public health function and a governmental animal welfare function. The public health function consists of preventing trauma injuries and the transmission of zoonotic diseases, notably rabies. This function relies on animal licensure and rabies vaccination, control of stray dog and cat populations, protection of the community from vicious or dangerous animals, and impoundment, observation, or testing for rabies of animals that bite humans. Although historically grounded in rabies control and dealing with dogs and cats, the variety of animals and zoonotic disease issues continues to expand as exotic pet species and numbers become more common and as the interactions of people with wild animals increase.

Over the decades the incidence of rabies in dogs and cats, both nationally and locally, has declined to the point where such cases are rare entities in Kansas City. The last dog with rabies was prior to 1955, while the last rabid cat was in 1980. In the Kansas City bi-state metropolitan area, there has only been 1 rabid cat (Wyandotte County) since 1994. However, rabies in bats and skunks are frequently reported in the metropolitan area (Kansas City has recorded 10 rabid bats since 1996, the most recent one in November 2005). Consequently, unvaccinated dogs and cats in the metropolitan area can be exposed to rabid wild animals and potentially then infect humans or other animals. The last recorded human case of rabies in Kansas City was in 1933 following a dog bite.

Rabies virus, on occasion, has been transmitted to humans via organ and tissue transplants and by aerosols.

However, well over 99% of the time, infection results from the penetration of the teeth of a rabid animal into the skin of person. Consequently, prevention of dog bites in a community results in both a reduction in trauma injuries from these animals as well as the risk for the victim of contracting rabies.

But how many dog bites actually occur in Kansas City? The answer is that nobody really knows.

It is estimated nationally that only 17-18% of persons bitten by a dog actually seek medical treatment. And, in Kansas City, physicians are required by law to notify Animal Control when they treat any animal bite injury. But reporting of animal bite injuries by physicians does not always occur. Therefore, the Office of Epidemiology & Community Health Monitoring of the Kansas City Health Department, assisted Animal Control in trying to determine the extent of underreporting of dog bites (*Missouri Medicine* 2005; 102:565-568).

Using hospital discharge records only for Kansas City residents during 1998 to 2002, it was determined that there was an annual average of 157 emergency department visits and 4.3 hospitalizations per 100,000 population. These rates translate into 693 dog bite injuries seen in emergency departments and 19 persons being hospitalized as a result of dog bites each year. During the same time period, Animal Control received an annual average of 100 dog bite reports per 100,000 population. This would suggest that at a minimum 36% of dog bites treated in emergency departments are not reported to Animal Control. This number is undoubtedly higher since not all victims of dog bite reported to Animal Control actually went to an emergency department for medical care.

If an assumption is made that persons seeking medical care for a dog bite injury only went to emergency departments for care, and that those individuals represented the

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17-18 percent of dog bite victims who sought medical care, a rough approximation of about 4,000 dog bites per year among Kansas City residents can be calculated. This would then translate to only 10-11% of all dog bites actually being reported to Animal Control.

What these numbers clearly reflect are deficiencies in monitoring the magnitude of dog bite injuries in the community. If Animal Control is not aware of a dog bite injury, the staff cannot determine the rabies vaccination status of the offending animal, cannot determine the appropriate disposition for the animal, and cannot deter-

mine whether the animal has a history of biting and needs to be treated as a vicious animal. As a result, bite victims may be started on antirabies treatment unnecessarily and/or still have to contend with a potentially dangerous dog when they return home.

Dog owners are often reluctant to admit their animal bit someone because they fear legal liabilities whether from lawsuits, increased home owner insurance premiums, or summons issued by Animal Control. According to the Insurance Information Institute, dog bites account for about 25% of all homeowners' claims each year.

## Dental Health Indicators

**MOUTH AND THROAT DISEASES**, from cavities to cancer, cause pain and disability for millions of Americans. This fact is disturbing because almost all oral diseases can be prevented.

Tooth decay is significant problem for both children and adults. Among children 2-11 years old examined by the National Health and Nutrition Examination Survey (NHANES), 41% have dental caries in their primary teeth (MMWR 2005; 54:SS-3). Forty-two percent of children and adolescents 6-19 years old and approximately 90% of adults had dental caries in their permanent teeth. Low income children were disproportionately affected with about 1/3 having untreated decay, which can lead to pain, dysfunction, absence from school, underweight, and poor appearance. The NHANES data for 1999-2002 found no change in the prevalence of dental caries in the primary teeth of children 2-11 years old compared to the data for 1988-1994. However, there was a reduction in caries of the permanent teeth of up to 10% for persons 6-19 years old and up to 6% among dentate adults  $\geq 20$  years of age.

Dental sealants are highly effective in preventing caries that occur on the surfaces of teeth that have pits and fissures. Fully retained sealants are 100% effective and according to the *Guide to Community Preventive Services* sealants decrease tooth decay 60% on the chewing surfaces of posterior teeth for at least 5 years after application. Among children and adolescents in the NHANES survey, 32% had received dental sealants; this is below the 50% target of the national Yr 2010 objective.

On average, dentate adults  $\geq 20$  years of age have approximately 24 teeth (full dentition = 28 teeth), with decreasing numbers of teeth being retained with advancing age: 26.6 teeth for 20-39 year olds, 23.9 teeth for 40-59 year olds, and 19.4 teeth among adults  $\geq 60$  years old. Persons who report never having smoked had more teeth (24.7) than former smokers (24) and current smokers (22). On average adults retained one more tooth than what was reported in the earlier NHANES survey data.

Interestingly, almost 66% of people with four normal wisdom teeth show signs of periodontal disease in their 20s, and in many the periodontal disease is progressive, according to the American Association of Oral and Maxillofacial Surgeons ([www.internalmedicineneeds.com](http://www.internalmedicineneeds.com) 10/15/05). It was estimated that only 20-25% of persons can retain their wisdom teeth without periodontal disease.

Despite this increase in tooth retention, tooth loss remains a problem among older adults. Twenty-four point nine percent of adults  $>60$  y of age had lost all of their teeth (edentulism); primarily because of tooth decay and advanced gum disease; a 6% decline from the 1988-1994 NHANES data. Among smokers the prevalence of edentulism was 14.4% compared to 7.9% for former smokers and 4.5% among those who never smoked. In Missouri during 2002, the age-adjusted percentage of persons  $\geq 65$  years old who have most of their natural teeth (loss of 5 or fewer teeth) was 44.6%, while 26.4% had lost all their natural teeth (MMWR 2003; 52:1226-1229).

The 1999-2002 NHANES survey noted a 9% increase in enamel fluorosis among children and adolescents compared to data from 1986-1987. Enamel fluorosis is a hypomineralization of enamel that is related to fluoride ingestion during periods of tooth development by young children. Although the use of fluoride in various modalities has been important in the prevention and control of dental caries, it also introduces the risk for enamel fluorosis. Historically, a low prevalence of the milder forms of fluorosis has been accepted as a reasonable and minor consequence balanced against the substantial protection against dental caries from the use of fluoridated drinking water and foods, beverages, and oral care products that contain fluoride.

In 2004, Americans made about 500 million visits to dentists and an estimated \$78 billion was spent on dental services. Yet, 3.7 million children 2-17 y of age (6%) had unmet dental needs because their families could not afford dental care (National Center for Health Statistics, Vital Health Stat 2005; 10: issue 223). Nineteen percent of uninsured children have unmet dental needs compared with 3% of children with private insurance and 7% of children with Medicaid. Hispanic children are twice as likely as white children to have had no dental contact for more than 2 years.

The National Oral Health Surveillance System reported that 60.6% of Missourians visited a dentist or dental clinic within the past year, 62.0% had their teeth cleaned within the past year, 33.8% of persons 65+ y of age had lost all of their teeth, 23.0% of 3<sup>rd</sup> grade students had untreated tooth decay, and that 14.0% of 3<sup>rd</sup> grade students had one or more sealants on their permanent 1<sup>st</sup> molar teeth ([www.cdc.gov/nohss](http://www.cdc.gov/nohss)). Also, 82.0% of Missourians using public water systems are receiving fluoridated water.

The 2004 Health Assessment Survey commissioned by the Kansas City Health Department found that 60% of respondents had dental health insurance. Of those with dental insurance, 67% had it through their employer, 25%

through a governmental program, and for 8% it was self-purchased. Of all respondent households, 55% had all members covered and 45% had either no one covered or had a portion of the household not covered, usually adults.

Among the Kansas City survey respondents, 75% reported having had a dental check-up in the prior 2 years while 2% reported never having dental check ups. In addition, 33% of respondent households did not have their teeth cleaned on a regular basis. Of those that did have their teeth cleaned, 90% were seen at a dental office, 4% at the University of Missouri's School of Dentistry, 5% at community health centers, and 0.6% at other venues. Seventy-six percent of respondents reported usually or always brushing their teeth at least twice a day.

Only 1% of the 2,700 dentists in Missouri are enrolled in Medicaid and the Missouri Children Health Insurance Program. This low percentage results in a shortage in the Kansas City region of dentists willing to accept children on MC+/Medicaid. In 2003, Citizens for Missouri's Children released a report, *Dental Care Counts, Decay in the Heartland: A Crisis for Kansas City Children*. According to that report, only 15% of dentists in the region would accept children with this type of insurance. This translated into 1 dentist for every 923 children enrolled in MC+/Medicaid. As a result, less than one-third of eligible children are screened for dental problems. The report also stated that the health care maintenance organizations the State of Missouri contracts with also have low dental screening rates. Statewide, Missouri is failing to meet to minimal federal Medicaid obligations for dental screenings.

Kansas City is fortunate to have the only dental school in the state located in the community on the campus of the University of Missouri.

Oral cancers also pose a threat to the health of adults with about 28,000 cases of mouth and throat cancers being diagnosed each year. Nearly 7,200 people die annually

## Green Tobacco Sickness

**TOBACCO PRODUCTION** in Missouri generated nearly 5.5 million dollars in 2003. Platte County accounted for 63% of Missouri's total production with Bu-

chanan County contributing another 18%. The two counties produced with 2.3 million lbs of tobacco that year.

What many people do not realize is tobacco workers are at risk for green tobacco sickness (GTS), an unique occupational poisoning associated with tobacco farming (Public Health Rep 2005; 120:602-605). It occurs when workers absorb nicotine through the skin as they come into contact with moisture on the leaves of the mature tobacco plant. Moisture on the leaves from dew or rain may contain as much as 9 mg of dissolved nicotine per 100 mL of dew, roughly equivalent to the nicotine content of 6 cigarettes. On a humid day, the average field worker may be exposed to as much as 600 mL of dew. GTS is characterized largely by nausea, vomiting, headache, muscle weakness, and dizziness. The disease can occur in adults, adolescents and children. It is rarely life threatening.

Of the tasks involved in tobacco production, two in particular raise a worker's risk for GST: topping and harvesting. "Topping" involves removing the flower from the growing plant to encourage greater root growth, leaf weight, and nicotine content at harvest. To "top" workers

walk through rows of tobacco plants and snap off flowers by hand, thus bringing the worker into almost constant contact with tobacco leaves as they perform this task.

Exposure to mature tobacco varies by the type of tobacco being grown. Flue-cured tobacco is harvested one leaf at a time as the leaves ripen. Over a 6-8 week period, 3-10 such leaf collections are made for each field. Picked leaves often are held between the worker's free arm and chest until no more can be carried.

Burley tobacco is harvested as a whole stalk and requires workers to grasp the stalks of large (6-8 ft) plants as they cut them at the base. The stalks are then placed on field stakes to dry upside down for about 3 days before being moved to a barn for air curing.

While impermeable protective clothing may protect a worker from absorbing nicotine, this could result in heat exhaustion and dehydration in regions with high heat and humidity.

## Potpourri

**AT LEAST** 45 persons in Claremore OK recently underwent rabies post-exposure prophylaxis after drinking unpasteurized milk from a dairy herd in which one cow was diagnosed as rabid. There is no record of anyone contracting rabies by drinking raw milk. (*Pasteurization temperatures will inactivate rabies virus, therefore, drinking pasteurized milk does not constitute a rabies exposure.*)

**CLINICAL CASES** of West Nile virus infection in humans were higher in 2005 than in 2004, approximately 2,750 vs 2,359. Part of the rise has been attributed to standing water left by hurricanes Katrina and Rita. West Nile cases were 24% higher in the Gulf Coast states affected by these storms.

In the Kansas City metropolitan area, there were 8 reported cases: 1 in Clay County, 3 in Jackson County (including 1 in Kansas City), 3 in Johnson County, and 1 in Wyandotte County.

**NEW YORK CITY** now requires that laboratories electronically forward the results of blood-sugar tests, which

will then be analyzed to identify diabetics having trouble controlling their disease. These individuals will then receive a letter or phone call from their physician prodding them to take their medication, come in more frequently for checkups, or change their diet.

Diabetes is the 4th leading cause of death in New York City, but people who aggressively monitor their condition are less likely to develop fatal or debilitating symptoms, including blindness, kidney failure and heart problems.

**VERTICAL TRANSMISSION** of hepatitis C virus from mother-to-child occurs twice as often among girls than boys (J Infect Dis 2005; 192:1872-1879).

**THIRTY-TWO PERCENT** of Americans harbor *Staphylococcus aureus* and 0.8% carry MRSA in their noses (J Infect Dis 2006; 193:172-179).

**Healthy People, Healthy Communities**