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Asthma in Kentucky ~ *Hitting the Airways*

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Introduction

Asthma is one of the most common chronic diseases in the United States, affecting more than 20 million people.¹ It is a lung disease characterized by narrowing of the airways resulting in recurring episodes or attacks of wheezing, shortness of breath, chest tightness, and cough. The exact cause or causes of asthma are not yet known; however, there is no question that genetic and environmental factors can exacerbate symptoms and lead to an asthma episode or attack. Factors that can trigger an asthma attack include allergens (such as pet dander, dust mites, mold, pollen, and food allergies), secondhand tobacco smoke, exercise, strong odors and cold weather.

Asthma is not just a national problem. The disease impacts the lives of many thousands of Kentuckians. This article will describe asthma morbidity and mortality in Kentucky using data from health surveys, vital statistics, and hospitalizations. Also, information will be included on the efforts of the Kentucky Asthma Partnership. The article will conclude with a listing of available asthma resources.

Adult Asthma Prevalence

The prevalence of adult asthma is determined through questions on the Behavioral Risk Factor Surveillance System (BRFSS), an adult telephone survey co-sponsored by the Centers for Disease Control and Prevention and the Kentucky Department for Public Health. Asthma questions have been included on the survey every year since 2000. In that year, 7.8% of Kentuckians had asthma. In 2002, the most current data year, the prevalence increased to 9.5% or approximately 292,000 Kentuckians. Kentucky ranks second among the 50 states in the prevalence of adult asthma.²

In examining adult asthma prevalence by demographic groups, significant differences are found in education and household income (See Table 1). The asthma prevalence for Kentuckians with less than a high school education, 15.4%, is much higher than the prevalence for those with a high school education or greater, 8.2%.

The prevalence among those with a household income of less than \$35,000, 13.2%, is higher than the prevalence among those Kentuckians with income of \$35,000 or greater, 6.0%. Although the differences are not significant, the prevalence among females is 10.6%, compared to 8.4% among males, and the prevalence among African Americans is 14.2% compared to 9.3% among Whites.

Table 1

Asthma Prevalence by Demographic Groups Kentucky BRFSS 2002		
Demographic Groups	%	95% CI
Total	9.5	(8.5 - 10.7)
Gender		
Male	8.4	(6.8 - 10.2)
Female	10.6	(9.3 - 12.1)
Race		
White/Non Hispanic	9.3	(8.2 - 10.4)
African American/Non Hispanic	14.2	(8.3 - 23.3)
Age		
18-24	11.0	(7.0 - 17.0)
25-34	8.9	(6.8 - 11.7)
35-44	8.6	(6.6 - 11.1)
45-54	10.0	(8.0 - 12.4)
55-64	10.8	(8.5 - 13.6)
65+	8.5	(7.1 - 10.2)
Education*		
Less than High School	15.4	(12.5 - 18.2)
High School or Greater	8.2	(7.0 - 9.3)
Household Income*		
Less than \$35,000	13.2	(11.2 - 15.3)
\$35,000 or Greater	6.0	(4.6 - 7.4)

* Difference is significant at p<.05, Chi-Square

Data Source: Kentucky BRFSS, 2002

There is a statistically significant difference in asthma prevalence among certain risk factors and health conditions, such as obesity, general health status, poor physical health, poor mental health, and activity limitation (See Table 2). While the asthma prevalence among current smokers is 10.6% compared to 9.0% among non-smokers, the difference is not statistically significant. According to BRFSS data, Kentucky ranks number one in the nation in current smokers with a prevalence of 32.6%.

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Table 2

Asthma Prevalence by Risk Factor or Health Condition Kentucky BRFSS 2002		
Demographic Groups	%	95% CI
Total Asthma Prevalence	9.5	(8.5 - 10.7)
Smoking		
Current Smoker	10.6	(8.8 - 12.5)
Not a Current Smoker	9.0	(7.7 - 10.4)
Obesity (BMI \geq 30 kg/m ²)*		
Obese	11.7	(9.5 - 13.8)
Not Obese	8.8	(7.5 - 10.1)
General Health*		
Excellent, Very Good, Good	6.7	(5.5 - 7.9)
Fair or Poor	18.6	(16.1 - 21.2)
Number of Days of Poor Physical Health in Past 30 Days*		
Less than 14	7.9	(6.6 - 9.1)
14 or Greater	21.2	(17.7 - 24.7)
Number of Days of Poor Mental Health in Past 30 Days*		
Less than 14	8.3	(7.1 - 9.6)
14 or Greater	15.6	(12.8 - 18.4)
Activities Limited by Health Problem*		
Yes	17.8	(15.3 - 20.3)
No	7.3	(6.1 - 8.6)

* Difference is significant at $p < .05$, Chi-Square

Current Smoking = smoked 100 cigarettes and smoke every day or some days

Obesity = Body Mass Index(BMI) \geq 30 kg/m²

Data Source: Kentucky BRFSS 2002

Childhood Asthma Prevalence

Data on childhood asthma in Kentucky are limited; however, one survey used to estimate childhood asthma is the Kentucky Youth Tobacco Survey (YTS). According to this survey, in 2002 the prevalence of asthma among high school and middle school students was 9.8%.³ Exposure to secondhand smoke and the consumption of cigarettes both contribute to asthma in children, and the prevalence of smoking among Kentucky's youth is high. According to data from the 2003 Kentucky Youth Risk Behavior Survey (YRBS), 32.7% of the high school students surveyed had smoked cigarettes on one or more days in the past month and 18.4% had smoked cigarettes on 20 or more days in the past month. Among the 32 states participating in the YRBS, Kentucky has the highest prevalence in the nation for both of these smoking categories.⁴ In 2004, the Kentucky BRFSS is including questions pertaining to childhood asthma. Data from these questions will be used to provide added insight into prevalence of asthma among Kentucky's children.

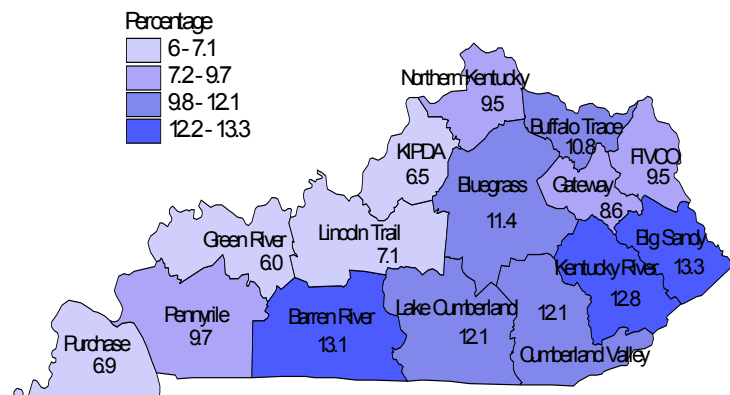
Geographic Distribution

Geographically, the prevalence of adult asthma is higher in southeastern Kentucky compared to other regions of the

state. The prevalence ranges from 6.0% in the Green River Area Development District (ADD) to 13.3% in the Big Sandy ADD (See Map 1).

Two metropolitan areas in Kentucky rank in the top 25 worst cities in America for people with asthma. The Asthma and Allergy Foundation of America compiled these rankings based on certain factors such as asthma prevalence, asthma mortality, air quality, smoking laws, number of asthma specialists per capita, and number of asthma related prescriptions. According to this study, the Louisville metropolitan area was the fifth worst city and the Lexington metropolitan area ranked 25th.⁵

Map 1
Kentucky Asthma Prevalence by
Area Development District
BRFSS 2002



Asthma Mortality and Hospitalization

From 1996 to 2001, the age-adjusted asthma death rate ranged from a high of 1.8 per 100,000 population in 1997 to a low of 1.3 per 100,000 in 2000 and 2001. In 2001, asthma was responsible for 53 deaths in Kentucky. The age-adjusted rate was similar between males and females. However, the age-adjusted rate among African Americans, 4.2 per 100,000 population, was higher than the rate among Whites, 1.2 per 100,000 population (See Table 3).⁶ In 2002, asthma was the principal diagnosis in over 7,100 inpatient hospitalizations in Kentucky with an average charge per stay of \$6,053. Of those hospitalizations, approximately 38% were among those age 17 and younger (See Table 4).⁷

Kentucky Asthma Partnership

To create statewide coordination and leadership to make progress against asthma, representatives from the American Lung Association of Kentucky, the Kentucky Department for Public Health, the University of Kentucky,

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and the University of Louisville met to discuss current asthma control efforts in the Bluegrass. The Kentucky Asthma Partnership (KAP) was established with four key focus areas: *Data and Surveillance*; *Education*; *Treatment and Management*; and *Policy and Legislation*. Workgroups were created to address each focus area.

Activities of the *Data and Surveillance* workgroup include analysis of hospital discharge and emergency room visit data, and addition of the optional Adult and Child Asthma Modules to the 2004 BRFSS. Future activities include development of an asthma surveillance system, regular analysis and reporting of asthma data from the BRFSS, the YTS, the YRBS, hospital discharges, emergency room visits, and vital statistics.

The *Education* workgroup will develop an inventory of science-based asthma programs for schools, healthcare professionals, and communities. This workgroup will also plan an asthma awareness and resource campaign, which will include development of a website, public service announcements, newsletters, and videos.

The *Treatment and Management* workgroup will focus on promoting the use of the National Heart Lung and Blood Institute (NHLBI) Guidelines for the Diagnosis and Management of Asthma. The guidelines will be used to create toolkits and educational materials for healthcare providers to incorporate the Guidelines into every day treatment and management of persons with asthma. Additionally, the workgroup will focus on healthcare providers and developing written asthma management plans.

Recommendations for future activities of the *Policy and Legislation* workgroup include working with state and community stakeholders to assess their needs, developing specific policy or legislative initiatives, developing policies and standards in schools to improve indoor air quality, improving access to care, and exploring options for reimbursement for asthma educators.

The Kentucky Asthma Partnership has developed and released the document, *Asthma in Kentucky: Laying the Foundation for a Statewide Strategy*. This document describes the burden of asthma in Kentucky, provides information on current statewide activities for asthma education and awareness, and lists recommendations of the Kentucky Asthma Partnership workgroups for future steps to address the asthma burden in Kentucky. For a link to this document, see the resource listing on page 4.

Table 3

Total Asthma Deaths including the Crude and Age-Adjusted Mortality Rates Kentucky 2001			
Demographic Group	Number of Deaths	Crude Rate per 100,000	Age-Adjusted Rate per 100,000
Total	53	1.3	1.3
Gender			
Male	19	1.0	1.1
Female	34	1.6	1.5
Race			
White	43	1.2	1.2
African-American	10	3.4	4.2

Data Source: Kentucky Vital Statistics Death Files, 2001

Table 4

Kentucky Inpatient Asthma* Hospitalizations by Age Group, 2002		
Age Group	Total Number of Discharges	Charges, \$(mean)
<1	450 (6.3%)	4,344
1-17	2,274 (31.8%)	4,520
18-44	1,708 (23.9%)	6,110
45-64	1,626 (22.7%)	7,360
65-84	961 (13.4%)	7,943
85+	139 (1.9%)	7,617
Total	7,158 (100.0%)	6,053

*Asthma is the principal diagnosis.

*ICD-9-CM Diagnosis Codes 493, 493.0, 493.00-493.02, 493.1, 493.10-493.12, 493.20-493.22, 493.9, 493.90-493.92

Data Source: Kentucky Inpatient Data, Healthcare Cost and Utilization Project, 2002

Conclusion

In Kentucky 9.5% of adults have asthma, and the prevalence is increasing. The percentage of middle and high school students with asthma is very similar at 9.8%. Asthma was the principal diagnosis in over 7,100 hospitalizations in 2002 and listed as a cause of over 50 deaths in 2001. Even for less severe cases, asthma considerably affects the quality of life for many thousands of Kentuckians. The Kentucky Asthma Partnership is currently working towards the goals of increasing the awareness of asthma risk factors and improving treatment options for those Kentuckians with asthma. For more information about the Kentucky Asthma Partnership as well as asthma related data, services, and treatments, please see the resource listing on page 4.

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Asthma in Kentucky ~ *Hitting the Airways* (continued)**Resources**

American Lung Association of Kentucky:

<http://www.kylung.org/>

Provides information on asthma-related programs and activities, including the Certified Asthma Educator Workshop, asthma camps, and tools and resources for schools.

Asthma in Kentucky: Laying the Foundation for a Statewide Strategy: <http://www.kylung.org/asthmainky.pdf>

Describes the burden of asthma in Kentucky, provides information on current statewide activities for asthma education and awareness, and lists recommendations for future steps to address asthma in Kentucky.

CDC's National Asthma Control Program:

<http://www.cdc.gov/nceh/airpollution/asthma/default.htm>

Provides links to information on asthma, data and surveillance, interventions, legislation and policy, and other state asthma programs.

National Asthma Education and Prevention Program:

<http://www.nhlbi.nih.gov/about/naepp/index.htm>

Provides resources in conjunction with major medical associations, voluntary health organizations, and community programs to educate patients, healthcare professionals, and the public. Developed the Guidelines for the Diagnosis and Management of Asthma. (<http://www.nhlbi.nih.gov/guidelines/asthma/index.htm>).

American Academy of Allergy Asthma and Immunology:

<http://www.aaaai.org/professionals.stm>

Provides resources for asthma treatment, medication, education, and environmental management.

Environmental Protection Agency:

<http://www.epa.gov/ebtpages/humahealthasthma.html>

Provides information on asthma, indoor air quality, and mitigating asthma triggers in the home.

Kentucky Environmental Quality Commission:

<http://www.eqc.ky.gov/>

Provides information on a variety of environmental issues in communities across the state.

Kentucky Division for Air Quality: <http://www.air.ky.gov/>

Provides information about indoor and outdoor air quality issues.

References

1. Centers for Disease Control and Prevention (CDC). Behavioral Risk Factor Surveillance System Survey Data. Atlanta, Georgia: US Department of Health and Human Services, Centers for Disease Control and Prevention, 2001.
2. Centers for Disease Control and Prevention (CDC) and Kentucky Department for Public Health. *Kentucky Behavioral Risk Factor Surveillance System Survey Data, 2000-2002*. Asthma prevalence is defined as a "Yes" response to the following two questions: "Have you ever been told by a doctor, nurse or other health professional that you had asthma?" and "Do you still have asthma?"
3. Wood TA, Gresham KL. Kentucky Youth Tobacco Survey 2002. Tobacco Use Prevention and Cessation Program, Chronic Disease Prevention and Control Branch, Kentucky Department for Public Health, Cabinet for Health and Family Services.
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5. Asthma and Allergy Foundation of America. <http://www.aafa.org>
6. Kentucky Death Certificate Files, 1996-2001. Surveillance and Health Data Branch. Kentucky Department for Public Health. Cabinet for Health and Family Services.
7. HCUPnet, Healthcare Cost and Utilization Project. Agency for Healthcare Research and Quality, Rockville, MD. <http://www.ahrq.gov/hcupnet>

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**Cases of Selected Reportable Diseases and Motor Vehicle Injury Deaths in Kentucky
YTD Through June for Each Year**

Disease	2004	2003	5-yr Median
AIDS	116	74	116
Chlamydia	2649	4103	4103
Gonorrhea	1148	1718	1677
Syphilis (Primary & Secondary)	24	21	24
Group A Streptococcus	44	30	19
Meningococcal Infections	3	8	9
<i>Haemophilus influenzae</i> , invasive	3	2	3
Hepatitis A	11	15	26
Hepatitis B	25	40	30
E.coli O157H7	14	10	14
Salmonella	146	155	149
Shigella	36	58	66
Tuberculosis	51	59	59
Animal Rabies	12	20	12
Motor Vehicle Injury Deaths	460	424	379

Disease	2004 YTD	Total in 2003
Diphtheria	0	0
Measles	0	0
Mumps	0	0
Pertussis	11	53
Polio	0	0
Rubella	0	0
<i>Streptococcus pneumoniae</i>	19	31
Tetanus	2	0

Disease	2004 YTD	Total in 2003
Rocky Mountain Spotted Fever	0	3
Lyme Disease	11	17
Ehrlichiosis	0	5
Tularemia	0	2
Arboviral Encephalitis	0	14
Malaria	1	11

New Rabies Law

The most recent legislative session amended Senate Bill 133 to make it illegal to use gunshot as a method of euthanasia in animal control facilities. Further examination of the amendment reveals that it totally revamps the state animal control and rabies laws that have been in effect since 1954. The new law will go into effect July 13, 2004. Animal licensing will now be a county level function rather than a state administered function and further information on this subject should come from animal control professionals. By far the most important change is the new **requirement for rabies vaccination of cats and ferrets** in addition to dogs. Some of the relevant changes are as follows:

1. **All dogs, cats, and ferrets will be vaccinated by 4 months of age** and receive boosters according to vaccine labeling. That means, regardless of age, all animals are required to receive a booster one year after their primary vaccination. Further boosters are given at the interval required by the label according to the type of vaccine used (1 or 3-year allowable.)
2. **Any person with feral cats on his premises shall make a reasonable effort to capture or vaccinate the cats.**
3. All animal bites are required to be reported to the LHD within 12 hours **unless the health department is closed; if closed, the bite will be reported on the next working day of the health department.**
4. **The owner of any animal quarantined or tested will be responsible for all associated expenses.**
5. **An owner who destroys or disposes of an animal that has bitten a human, and the animal cannot be tested, is responsible for expenses related to postexposure treatment.**

If you have questions regarding the new law or other questions regarding appropriate use of rabies vaccines in humans or other animals please contact Michael Auslander, DVM, MSPH, State Public Health Veterinarian at (502)564-3418 or mike.auslander@ky.gov.

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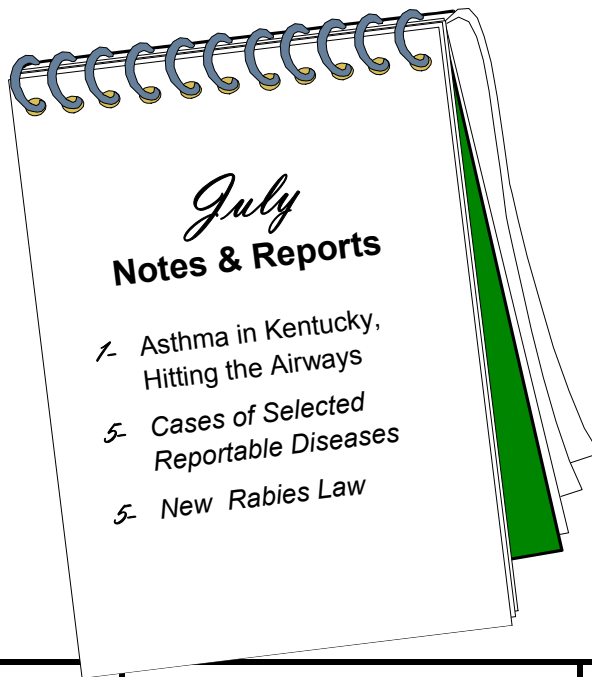
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