

Asthma in Missouri

Asthma is a chronic lung disease characterized by periods of wheezing, chest tightness, shortness of breath and coughing. Symptoms often occur or worsen at night or in the early morning. These symptom occurrences, often referred to as “asthma attacks,” are the result of inflammation and narrowing of the airways due to a variety of factors or “triggers.” While the specific cause of asthma is unknown, the triggers are well documented and described in the glossary along with other definitions and information on the data systems.

This fact sheet describes the asthma prevalence (i.e., number of people who self-report being diagnosed by a health professional and perceive they currently have asthma), morbidity in terms of emergency department visits and hospitalizations, and deaths in Missouri as well as evidence-supported strategies for improving asthma control.

Wide spread adoption of these disease management strategies could result in healthier and more productive lives for thousands of Missourians.

PREVALENCE

- In Missouri, 381,600 adults (8.5%) and 143,700 children under 17 years and younger (10.1%) were living with asthma in 2008.^{1,2}
- The adult and child asthma prevalence rates by region and the state are presented in Table 1 and Figure 1.
- Among adults, in 2008, the prevalence of current asthma was significantly higher among women (10.0%, 95% CI 8.3 - 11.7) than men (6.7%, 95% CI 5.3 - 8.1); however, among children 17 years of age and younger, asthma was more common among boys (12.0%, 95% CI 8.4 - 15.5) than girls (8.2%, 95% CI 5.4 - 11.0), even though the difference was not statistically significant.
- Current asthma was significantly higher among adults with less than a high school education (14.2%, 95% CI 10.3 - 18.0) compared to adults with education attainment beyond high school (6.8%, 95% CI 5.6 - 8.1) and among adults with household incomes less than \$15,000 (16.0%, 95% CI 12.0 - 20.0) compared to adults with household incomes at \$35,000- \$50,000 (8.5%, 95% CI 5.9 - 11.0).
- Among children and adults, current asthma is more common among African-Americans and other minorities than whites (Table 2).

TABLE 1. PREVALENCE OF CURRENT ASTHMA AMONG ADULTS, AGE 18 AND OLDER, AND CHILDREN, 17 AND YOUNGER, BY REGION, MISSOURI, 2008¹

Region	Adults Percent (95% CI)	Significantly Different than State	Children (Percent) (95% CI)	Significantly Different than State
Central	5.0 (3.2 - 6.7)	L	5.5 (1.7 - 9.3)	NS
Kansas City Metro	9.6 (7.2 - 12.0)	NS	10.5 (5.8 - 15.1)	NS
Northeast	10.7 (7.6 - 13.8)	NS	3.2 (0.5 - 5.9)	L
Northwest	10.7 (6.4 - 15.1)	NS	8.3 (3.6 - 13.0)	NS
St. Louis Metro	7.7 (5.4 - 10.0)	NS	14.0 (9.0 - 18.9)	NS
Southeast	8.8 (6.2 - 11.5)	NS	11.4 (5.3 - 17.5)	NS
Southwest	9.9 (7.0 - 12.8)	NS	5.3 (0.8 - 9.8)	NS
Missouri	8.5 (7.3 - 9.6)		10.1 (7.8 - 12.4)	

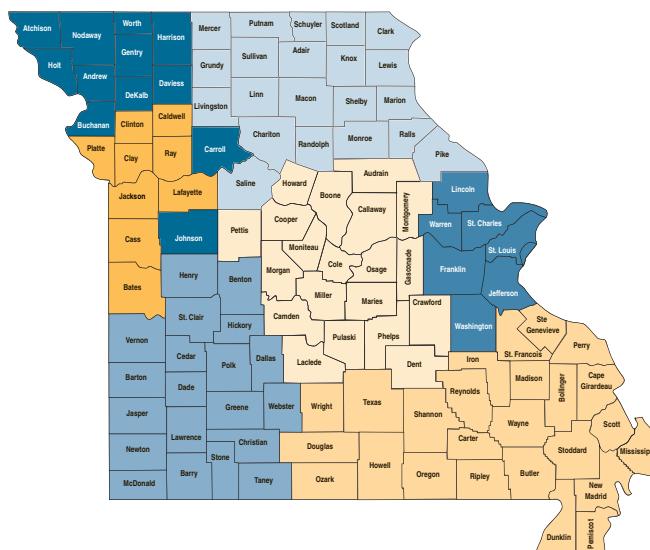
L = Regional rate is statistically significantly lower than the state rate
H = Regional rate is statistically significantly higher than the state rate
NS = Regional rate is not significantly different from the state rate

TABLE 2. PREVALENCE OF CURRENT ASTHMA AMONG ADULTS AND CHILDREN BY RACE, MISSOURI, 2008

Race	Adult Percent (95% CI)	Children Percent (95% CI)
African-American	9.3 (5.8 - 12.8)	21.8* (11.6 - 32.1)
Other Minorities	13.6 (8.6 - 18.7)	10.6 (2.8 - 18.4)
White	8.1 (6.8 - 9.3)	8.5 (6.2 - 10.7)

*Significantly higher rate compared to white rate.

FIGURE 1. MISSOURI BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM SEVEN REGIONS



ASTHMA EMERGENCY DEPARTMENT VISITS

- The age-adjusted asthma emergency department (ED) visit rate was 5.2 per 1,000 people in 2008.³
- The highest rates were in Kansas City Metro and St. Louis Metro regions with the other five regions lower than the state average (Table 3).
- Children under 15 years of age accounted for 38.0 percent of all asthma ED visits with the highest asthma ED visit rate for children ages 1 to 4 (14.1 per 1,000 people).
- African-Americans were five times more likely to visit the ED due to asthma as whites (16.5 versus 3.3 per 1,000 people, respectively).
- ED visit rates were higher among females than males when all races were combined (5.6 versus 4.8 per 1,000 people).

ASTHMA HOSPITALIZATIONS

- The age-adjusted asthma hospitalization rate was 13.9 per 10,000 people in 2008 (Table 3).³
- The highest rates were in St. Louis Metro and Kansas City Metro with three of the four other regions' rates lower than the state (Table 1).
- Children younger than age 15 accounted for 32.2 percent of all Missouri hospitalizations for asthma with the highest hospitalization rate for children ages 1 to 4 (39.5 per 10,000 people).
- African-Americans in Missouri were 4.6 times more likely to be hospitalized due to asthma than whites
- Females had significantly more hospitalizations for asthma than males when all ages and races were combined (16.2 versus 11.2 per 10,000 people).
- Asthma led to 25,275 days of hospital care in 2008 with an average length of stay of three days.
- Charges for asthma hospitalizations totaled \$96 million.

QUICK FACTS:

- Over one-half million (1 in 11) Missourians have asthma
- In Missouri in 2008:
 - 29,695 asthma emergency department visits
 - 8,239 asthma hospitalizations
 - Hospitalization charges totaled \$96 million
 - 77 asthma deaths
 - Home-based interventions that address multiple triggers and include several components have been found to improve health outcomes for children and adolescents with asthma.

TABLE 3. ASTHMA EMERGENCY DEPARTMENT VISIT AND HOSPITALIZATION RATES BY REGION, MISSOURI, 2008

Region	Emergency Department Rates per 1,000 Persons	Significantly Different than State	Hospitalization Rates per 10,000 Persons	Significantly Different than State
Central	3.7 (3.5 - 3.8)	L	10.4 (9.7 - 11.2)	L
Kansas City Metro	6.1 (6.0 - 6.3)	H	15.3 (14.6 - 16.1)	H
Northeast	3.4 (3.2 - 3.6)	L	11.4 (10.1 - 12.9)	L
Northwest	3.9 (3.6 - 4.1)	L	14.0 (12.5 - 15.5)	NS
St. Louis Metro	6.5 (6.4 - 6.6)	H	17.3 (16.8 - 17.9)	H
Southeast	3.3 (3.1 - 3.5)	L	12.8 (11.9 - 13.8)	NS
Southwest	4.4 (4.3 - 4.6)	L	8.1 (7.5 - 8.7)	L
Missouri	5.2 (5.2 - 5.3)		13.9 (13.6 - 14.2)	

L = Regional rate is statistically significantly lower than the state rate

H = Regional rate is statistically significantly higher than the state rate

NS = Regional rate is not significantly different from the state rate

Note: Emergency department and hospitalization rates have been age-adjusted using the U.S. 2000 standard population and are reported by patient residence.



ASTHMA DEATHS

- The age-adjusted asthma death rate was 1.2 per 100,000 people in 2008.³
- In 2008, 77 people died with asthma as the underlying cause. Four of these deaths were children younger than age 15.
- The mortality rate was highest among individuals 65 years of age and older at 4.5 per 100,000 people.
- Women had a slightly higher rate than men (1.4 versus 0.9 per 100,000 people), but the difference was not statistically significant.
- Significantly more African-Americans died of asthma than whites, 3.6 versus 0.9 per 100,000 people; however, there has been a significant decline in asthma deaths for African-American, white and all groups combined over the past two decades (Figure 2).

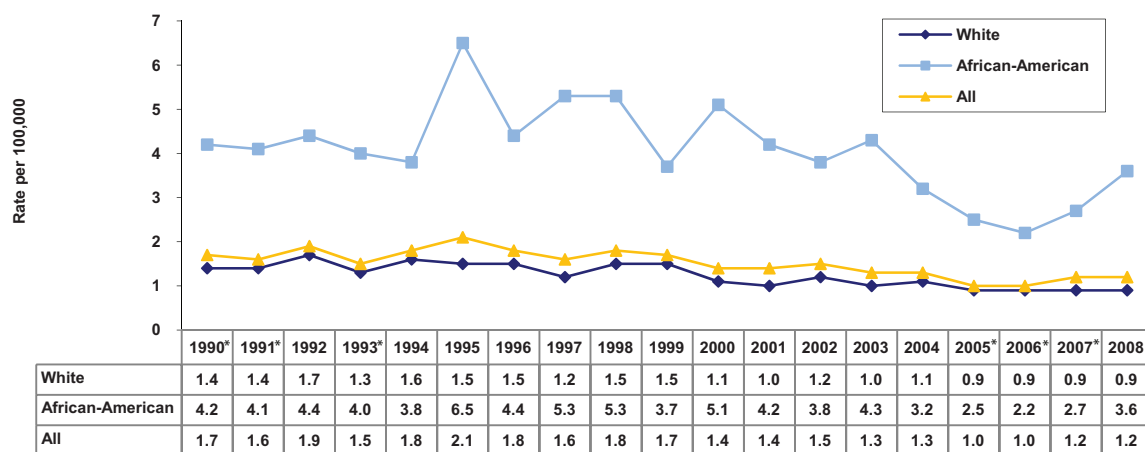
STRATEGIES

- Since the specific cause of asthma remains unknown, long-term management and control includes four components.
 - Assessment of severity and monitoring of control — assess severity to initiate treatment, evaluate control for continuation of therapy with stepwise treatment based on age-specific recommendations.
 - Self-management (proper inhalation technique, taking daily control medication and early symptom recognition) and professional education are important components in the control of asthma.
 - Control exposure to triggers.

- Medication and appropriate delivery service — treatment of intermittent asthma often requires only short-acting medication (beta₂-agonist) for symptom control; however, the preferred treatment for persistent asthma includes inhaled corticosteroids with correct use of medication delivery devices.⁴
- The Task Force on Community Preventive Services recommends the use of home-based multi-trigger, multi-component interventions with an environmental focus for children and adolescents with asthma based on the effectiveness in improving overall quality of life (i.e., reduced symptoms) and productivity such as reduced school days missed.⁵
- Identification and treatment of other existing health conditions such as sinusitis, obesity, gastroesophageal reflux disease and obstructive sleep apnea may improve the overall control of asthma and lessen requirements for asthma medication.
- Regular visits with a health care professional are recommended for asthma control assessment, goal-setting, written action plans and self-care education.



FIGURE 2. AGE-ADJUSTED ASTHMA MORTALITY RATES BY RACE, MISSOURI, 1990-2008



Age-adjustment using U.S. 2000 standard population.

*African-American numerator less than 20, rate is unstable.

GLOSSARY*

Asthma: A chronic, inflammatory disease of the airways of the lungs. This swelling causes the airways to narrow. There is also an increase in mucus further narrowing the airways of the lungs making it difficult to breathe.

Age-adjusted rate: Adjusted for the varying age distributions among population groups to permit comparisons. Rates are usually age-adjusted to the 2000 U.S. Standard Population

Behavioral Risk Factor Surveillance System (BRFSS): Random-digit-dialed cross-sectional telephone survey. Conducted by the Centers for Disease Control and Prevention (CDC), state health departments, universities and other agencies. Generates U.S. and state-specific information about health risk behaviors, clinical preventive services, disease prevalence, health care access, and other health related issues. BRFSS surveys the adult (18 years of age and older) civilian non-institutionalized population annually. <http://www.dhss.mo.gov/brfss>

Chronic Disease: A disease that lasts for years. A chronic disease like asthma has no cure, but can be controlled.

Confidence Intervals: A range of values, calculated from the sample observations, that include the true value. For prevalence, the 95 percent CI will include the true rate 95 percent of the time, if the samples and calculations are repeated many times. The end points of the CI are called the Confidence Limits.

Control: Comprised of two parts - reduced impairment (prevent chronic symptoms, require infrequent use of short-acting relief medication, maintain normal lung function and activity levels, and meet expectations of and satisfaction with asthma care) and reduced risk (prevent recurrent attacks, minimize the need for emergency department visits or hospitalizations, prevent loss of lung function, or for children, prevent reduced lung growth and provide medication with optimal benefits and minimal or no adverse effects.

Delivery Devices: Equipment or dispensers that help get medication to the lungs.

Inhalation Technique: Proper way and speed to breathe in medication to maximize delivery to the lungs and benefit.

Missouri Information for Community Assessment: Missouri Information for Community Assessment. A public, web-based, interactive data portal developed and maintained by the Missouri Department of Health and Senior Services, Bureau of Health Informatics, <http://www.dhss.mo.gov/MICA>

Morbidity: Refers to illness, disability or poor health due to any cause.

Mortality Rate: Number of deaths in a specified population, over a specified time period in a specified geographic area.

Prevalence: Number of existing cases of a disease during a certain time period in a specified population.

Triggers: Things that can bring on symptoms of asthma. Triggers are different for different people. Common asthma triggers

include: cigarette smoke, cats, mold, mildew, dust mites, roaches or ragweed. Other common triggers are colds and flu, exercise, strong emotions, cold air, beer, wine, change in weather and some medication.

Wheeze: Difficulty breathing causing a whistling sound; often associated with chest tightness.

*The definitions are based on a combination of resources including the Centers for Disease Control and Prevention online glossary⁶, the Asthma Glossary⁷, other Missouri Department of Health and Senior Services source documents and staff descriptions.

RESOURCES

Missouri Asthma Prevention and Control Program <http://www.dhss.mo.gov/asthma> and <http://www.astmahere.org>

Asthma and Allergy Foundation of America <http://aafa.org>

Prescription Assistance Programs 1.888.477.2669 or http://www.pparx.org/en/prescription_assistance_programs

REFERENCES

¹Missouri Department of Health and Senior Services. Missouri Behavioral Risk Factor Surveillance System, 2007.

²U.S. Census Bureau, Population Estimates Program. Retrieved September 15, 2010 from <http://factfinder.census.gov>

³Missouri Department of Health and Senior Services, Section of Epidemiology for Public Health Practice, Bureau of Health Informatics. Missouri Information for Community Assessment (MICA). Retrieved September 15, 2010. from <http://www.dhss.mo.gov/MICA>

⁴National Heart, Lung, and Blood Institute, National Asthma Education and Prevention Program Expert Panel Report 3 (2007). *Guidelines for the diagnosis and management of asthma*. U.S. Department of Health and Human Services, National Institutes of Health. Retrieved October 20, 2010, from www.nhlbi.nih.gov/guidelines/asthma/asthgdln.pdf

⁵The Task Force on Community Preventive Services. (2010). Asthma control: home-based multi-trigger, multicomponent intervention. *Guide to Community Preventive Services*. Retrieved June 1, 2010 from <http://www.thecommunityguide.org/asthma/multicomponent.html>

⁶Centers for Disease Control and Prevention. Glossary. Retrieved April 15, 2010, from http://www.cdc.gov/cancer/npcr/uscs/data/00_glossary_include.htm#C

⁷Rodriguez, J, Valderrama, Y, Surkan, P, Rudd, R, & Daltroy, L. (2004). *Asthma glossary: keywords in plain language*. Boston, MA: Harvard School of Public Health. Retrieved November 1, 2010, from <http://www.hsph.harvard.edu/healthliteracy/files/asthmaglossary.pdf>

Missouri Department of Health and Senior Services
Missouri Asthma Prevention and Control Program
E-mail: info@dhss.mo.gov Website: [dhss.mo.gov/asthma](http://www.dhss.mo.gov/asthma)
AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER
Services provided on a nondiscriminatory basis.