

Kansas



**Trends in Kansas Hospitalization Rates for Asthma
by Age Group as a Function of Insurance Status
Kansas 2003-2008**

**Research
Summary**

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Our Vision – Healthy Kansans Living in Safe and Sustainable Environments

As the state's environmental protection and public health agency, KDHE promotes responsible choices to protect the health and environment for all Kansans. Through education, direct services, and the assessment of data and trends, coupled with policy development and enforcement, KDHE will improve health and quality of life. We prevent illness, injuries and foster a safe and sustainable environment for the people of Kansas.

Trends in Kansas Hospitalization Rates for Asthma by Age Group as a Function of Insurance Status, Kansas 2003-2008

Asthma is a chronic respiratory condition that can develop at any age and is characterized by repeated episodes of wheezing, breathlessness, tightness of the chest and coughing [1]. Hospitalizations for asthma are considered preventable as symptoms can be managed using environmental controls and medication. Despite advances in therapy, the morbidity, mortality and costs of asthma continue to increase. Furthermore, according to one estimate, “20 percent of asthmatic patients consume 80 percent of medical resources [2]. Most of the “high cost” asthmatic patients are those with “enhanced vulnerabilities to the disease and/or have greater barriers to effective management of asthma [3].” For example, children eligible for Medicaid “are among the most vulnerable to asthma and most likely to suffer poor outcomes [3].”

Asthma hospitalizations cost the U.S. economy \$14.7 billion in direct health care costs [4]. In Kansas, the direct costs available for calculation for hospitalizations alone from 2003-2008 averaged approximately \$12 million per year [5].

Analysis of hospital discharge data provides information regarding risk factors associated with the population(s) experiencing severe asthma in a community. Disease, age and income level have been shown to influence frequency of hospitalizations for asthma. Findings from the Kansas Asthma Burden Report in 2009, from the Kansas Department of Health and Environment showed that the highest hospitalization rates for asthma were among children, however, after the age of 15, hospitalization rates increase with increasing age as illustrated in Table 1 [6]:

Table 1. Hospital Discharge Statistics for Asthma in Kansas, 2003-2008.		
Age Group	Number	Rate per 10,000
Under 15	6,548	19.1
15 to 24	979	3.9
25 to 44	3,136	7.1
45 to 64	4,164	10.3
65 to 84	2,890	16.1
85 and over	608	17.4

Data Source: Kansas Department of Health and Environment (2003-2008), Kansas Information for Communities [7].

Data collected from the Canadian National Longitudinal Survey of Children and Youth (NLSCY) measured longitudinal health outcomes among children with asthma in years 1994/95 and 1996/97. Their findings concluded that having both asthma and living in low-income families significantly predicted hospitalizations and health service usage [8].

Other studies reported during the 1980s when hospital payment systems had constricted as the number of uninsured Americans grew, the probability of hospital

admissions through the emergency department for urgent medical conditions increased for both uninsured and Medicaid patients. Researchers concluded that primary medical access for these groups had deteriorated during the period when payment systems had constricted [9]. More recently, Fredrickson (2004) et al., found emergency room utilization was frequent among asthmatic children insured with Medicaid due to barriers to effective treatment in primary care and a lack of attention to preventive care [2]. The purpose of the current study is to review Kansas asthma hospitalization rates and trends across 2003-2008 by age group and to compare the effects of insurance status on hospital admission rates.

Methods

Community hospital discharge data were analyzed from the Kansas Hospital Association 2003-2008 [3]. Medicare 2003-2008 payment estimates were based on national Medicare payment averages supplied by Ingenix for Medicare [10]. Medicaid 2005-2006 payment/reimbursement estimates were derived from data provided by the Centers for Medicare and Medicaid Services via the Kansas Health Policy Authority [11]. Medicaid reimbursement estimates of payments for hospitalizations of children, adults and older adults for years 2003 and 2004 are estimates based on the Consumer Price Index (CPI) for medical care from 2005 data and years 2007 and 2008 are projections based on the CPI for medical care from 2006 data. Medicaid data for years 2005 and 2006 were records based on the Kansas federal-state funding partnership including benefit plans for the HCBS Frail Elderly, Medically Needy, Title XIX, Title XIX Presumptive Eligibility, Qualified Medicare Beneficiary and Sixth Omnibus Bill Reconciliation Act (SOBRA). Private insurance payment estimates for 2003 - 2005 and 2007 are from the Kansas Health Insurance Information System (KHIIS) data provided by the Kansas Insurance Department [12]. The 2006 and 2008 private insurance allowed amount estimates for payments of hospitalizations for children, adults and older adults are projections based on the Consumer Price Index (CPI) for medical care from 2005 and 2007, respectively [13]. Payments for the uninsured categories are based on average charges of hospitalizations obtained from HCUPnet: Agency for Healthcare Research and Quality for the state of Kansas [14]. Mean charges in 2008 for the uninsured categories were derived from the CPI for medical care from 2007 charges from HCUPnet. The asthma record case definition is defined as those records with a primary diagnosis code using the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM)= 493.

Emergency admissions are defined as those admitted to the hospital after being seen for asthma in the emergency room, while non-emergency admissions include all other types of admissions. Hospitalization rates per 1,000 are calculated by dividing the frequency of asthma hospitalizations by the total number of hospitalizations multiplied by 1,000 within each pay source, i.e., Medicaid, Medicare, private insurance and uninsured, for each year and within groups of analysis, i.e., hospitalizations of children, adults and older adults. Relative rates are calculated by dividing the average rate of primary payers Medicaid, uninsured and Medicare (numerator) by the average rate of Private insurance (denominator). Payers that have higher average hospitalization rates

than private insurance have a relative rate greater than 1.0, while those payers with average hospitalization rates lower than private insurance will have relative rates less than 1.0. Statistical significance is determined at the 95 percent level of confidence. For this report, children are considered to be 17 years of age and younger, while the adult groups are 18-64 years of age and age 65 years and above. Finally, insurance status has been used as a proxy measure for socioeconomic status (SES) in numerous studies [15,16,17]. Frequent SES indices of interest i.e., education, occupation and income are not always available in the data, but do affect access to health insurance [18]. Therefore, hospitalizations for individuals paid by Medicare, Medicaid or for those who are uninsured are considered a proxy measure for those of lower SES and hospitalizations paid by private insurance are considered a proxy measure for individuals of higher SES with the financial means necessary to afford insurance [17, 19].

Results

Hospitalizations by Insurance Status

In the U.S., asthma hospitalizations have been relatively stable or decreasing slightly during the study period when viewed by primary pay source. Medicaid recipients have the highest rate followed closely by the uninsured across most years, and the privately insured have higher rates of hospitalizations for asthma than Medicare recipients (see Figure 1) [14].

In Kansas, the trends in hospitalizations from 2003-2008 for people among all pay sources are relatively stable or declining slightly, with Medicaid and uninsured hospitalizations having the highest rates followed by private insurance and Medicare rates across the study period (Figure 2) [3]. Rates of asthma hospitalizations are lower in Kansas than the U.S. for all pay sources and years.

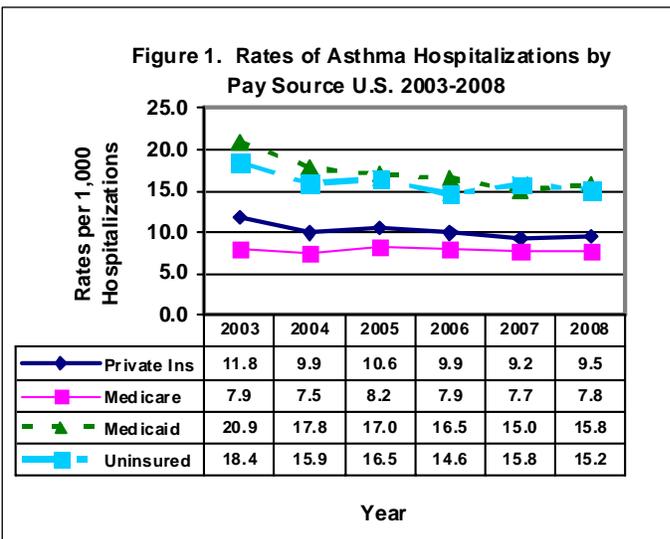


Table 2 shows that among all Kansans hospitalized for Asthma, Medicaid recipients are 1.57 times and the uninsured 1.43 times more likely to be hospitalized for asthma than private insurance carriers, while individuals receiving Medicare were less likely to be hospitalized, i.e., 0.60 on average than those with private insurance.

Hospital admission rates for children, show Medicaid recipients were 1.34 times more likely to be admitted to the hospital than children with private insurance. Medicare rates were excluded from this analysis due to lack of statistical reliability. Lower income adults ages 18-64 years receiving Medicaid, Medicare or those who are uninsured have significantly higher rates of admissions to the hospital on average across the study period than those with higher incomes who have private insurance.

Uninsured admissions are 1.87 times more likely than those privately paid, while Medicare recipients were 1.76 times more likely and Medicaid recipients 1.30 times more likely to be admitted to the hospital for asthma than those with private insurance. In the case of older adults, Medicaid paid hospitalizations are 2.79 times more likely than private insurance paid hospitalizations.

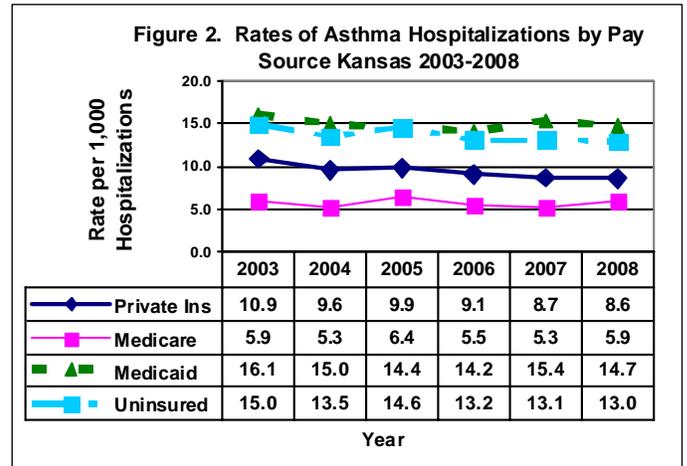


Table 2. Asthma Hospitalization Average Rates, Relative Rates and Confidence Intervals by Pay Source and Within Age Groups Kansas, 2003-2008.

Pay Source	Rate per 1,000	95% Confidence Interval		Differences Between Pay Sources	
		Lower Limit	Upper Limit	Significance	Relative Rate
All					
Private Insurance	9.5	9.28	9.72		1.00
Medicare	5.7	5.54	5.86	S	.60
Medicaid	14.9	14.46	15.34	S	1.57
Uninsured	13.6	12.90	14.30	S	1.43
Children					
Private Insurance	16.53	16.00	17.10		1.00
Medicare	*	*	*		N/A
Medicaid	22.21	21.40	23.02	S	1.34
Uninsured	17.13	15.44	18.82	NS	1.04
Insufficient Data*					
Adults 18-64 Years					
Private Insurance	7.05	6.82	7.28		1.00
Medicare	12.44	11.79	1.09	S	1.76
Medicaid	9.20	8.73	9.67	S	1.30
Uninsured	13.22	12.43	14.01	S	1.87
Older Adults 65+					
Private Insurance	3.93	3.32	4.55		1.00
Medicare	4.65	4.49	4.81	NS	1.18
Medicaid	10.96	7.63	15.24	S	2.79
Uninsured	3.95	2.07	6.10	NS	1.01

When comparing emergency and non-emergency admissions to the hospital, children with private insurance have significantly lower rates of emergency admissions than non-emergency admissions (Table 3). The rates of Medicaid paid admissions did not differ significantly between emergency and non-emergency hospital admissions of children, however, the average rate of emergency admissions paid by Medicaid are higher than both uninsured and private insurance paid emergency admissions.

Adults age 18-64 years who receive Medicaid, and those who are uninsured have significantly higher rates of emergency admissions to the hospital than non-emergency admissions, while there was no difference in emergency and non-emergency admissions for those with private insurance. Additionally, the uninsured, Medicare and Medicaid recipients had higher emergency admission rates than those with private insurance. Finally, there are no significant differences in emergency admissions and non-emergency admissions to the hospital within pay source for individuals age 65 years and older

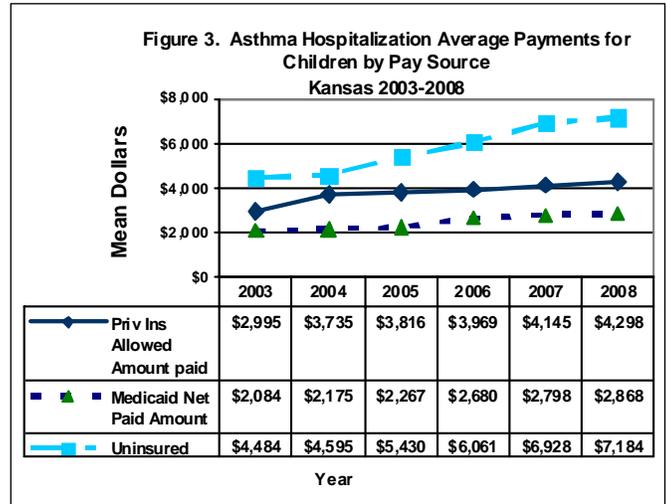
Table 3. Comparison of Significant Differences Between Average Rate of Hospitalizations for Asthma Via Emergency and Non-emergency Conditions by Pay Source and Within Age Groups in Kansas, 2003-2008.

Pay Source	Average Rate of Emergency Admissions per 1,000 Hospitalizations	Average Rate of Non-emergency Admissions per 1,000 Hospitalizations	Differences Between Emergency and Non-emergency Admissions Significance
Children			
Private Insurance	5.33	11.75	S
Medicare	*	*	N/A
Medicaid	10.95	11.26	NS
Uninsured	7.65	9.39	NS
Insufficient Data*			
Adults 18-64 Years			
Private Insurance	5.51	3.55	NS
Medicare	6.59	5.84	NS
Medicaid	5.64	3.53	S
Uninsured	9.19	4.03	S
Older Adults 65+			
Private Insurance	2.13	1.90	NS
Medicare	2.21	2.44	NS
Medicaid	6.58	4.38	NS
Uninsured	2.47	1.48	NS

Payments for Children Hospitalized for Asthma

Figure 3 shows available direct payment data for children hospitalized for asthma for years 2003-2008 in Kansas. The average allowed payments for asthma

hospitalizations of children is highest for those who are uninsured followed by those with private insurance. Payments by the uninsured are based on average charges since there is no price negotiating entity such as a private insurance company or the government to providers [20]. Children on Medicaid had the lowest payments across the study period. The average payments for hospitalizations of children admitted for asthma are increasing for all three pay sources.



Payments for Adults Hospitalized for Asthma

Figure 4 shows the average payments for hospitalizations of adults between ages 18 to 64 years. Hospitalization payments are increasing for private insurance, Medicaid and the uninsured, while Medicare payments are relatively stable across the study period. Private insurance payments are higher than both Medicare and Medicaid, while uninsured hospitalization payments are highest across the study period.

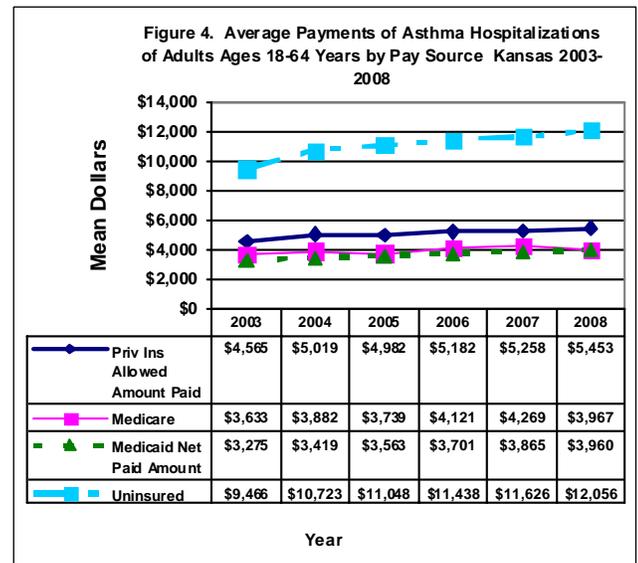
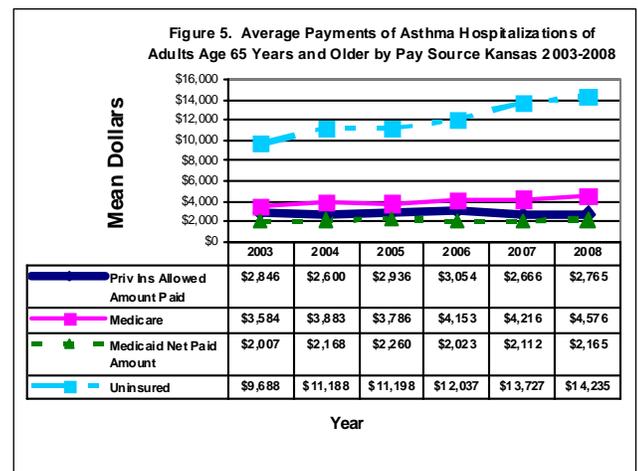


Figure 5 shows the mean payments for the three major pay sources are relatively stable for older adults hospitalized for asthma (Figure 5). The uninsured have the highest average payments from 2003-2008. During the study period, it appears that rising uninsured hospitalization charges were approximately double the payments of the other pay sources. Medicare payments were higher than private insurance and Medicaid for older individuals admitted to the hospital for asthma.



Study Limitations

Kansas hospitalization rates were based on hospitalizations for asthma from community hospital discharge data only; therefore, private, specialty or Veteran's Administration hospitalizations are not represented. Private insurance pay rates and payment estimates are derived from claims data from the top 20 Kansas private health insurers only; thus not all private insurance carriers are represented. In addition, the Employee Retirement Income Security Act (ERISA) data are not included in the private insurance data collection. Finally, direct hospitalization payment estimates presented here are conservative, since there are many other expenses associated with asthma hospitalizations, treatment and care. For example, professional charges and/or payments connected with hospitalization, in addition to hospital outpatient services, emergency department visits, prescribed medications and indirect payments are not included.

Conclusions

Patients with private insurance are less likely to be hospitalized for asthma. Additional findings include:

- Kansas' total rates of asthma hospitalizations mirror the national trend.
- Trends in Kansas hospitalizations for asthma by pay source are relatively stable across the study period.
- Medicaid and the uninsured have higher rates of hospitalizations than those paid by private insurance and Medicare.
- Medicaid recipients had the highest rate of emergency admissions on average in all three age groups.
- Children and older adults receiving Medicaid had the highest rate of non-emergency admissions.
- For adults 18-64 years of age, the uninsured, Medicare and Medicaid paid hospitalization relative rates were higher compared to the private insurance paid rate.
- Payments for hospitalizations for asthma during the study period were relatively stable for adults for private insurance, Medicare and Medicaid, however payments increased for private insurance and Medicaid for children's hospitalizations for asthma.
- Uninsured charges for hospitalizations are higher than payments from private insurance, Medicaid or Medicare and are increasing both nationally and in Kansas.

References

1. American Lung Association Lung disease Data (2008), unpublished data from the National Hospital Discharge Data provided to National Center for Health Statistics.
2. Smith, D. H., Malone, D. C., Lawson, K. A., et al., (1997). A national estimate of the economic costs of asthma. *American Journal of Respiratory Critical Care Medicine*, 156, 787-793.
3. Fredrickson, D. D., Molgaard, C. A., Dismuke, S. E., Schukman, J. S. and Walling, A. (2004). Understanding frequent emergency room use by Medicaid-insured children with asthma: A combined quantitative and qualitative study. *Journal of the American Board of Family Practice*, 17, 2, 96-100.
4. U.S. Department of Health and Human Services, National Institutes of Health (2007). National Heart, Lung and Blood Institute Chart-book on Cardiovascular, Lung and Blood Diseases.
5. Kansas Hospital Association, (2003-2008). Kansas Community Hospital Discharge Data.
6. Kansas Department of Health and Environment (2009), Kansas Asthma Burden Report.
7. Kansas Department of Health and Environment (2003-2008), Kansas Information for Communities.
8. To, T., Dell, S., Tassoudj, M. and Wang, C. (2009). Health outcomes in low-income children with current asthma in Canada. *Chronic Disease Canada*, 29, 2, 49-55.
9. Ahern, M., and McCoy, H. V. (1992). Emergency room admissions: Changes during the financial tightening of the 1980s. *Inquiry: A Journal of Medical Care Organization, Provision and Financing*, 29,1, pp 67-79.
10. IngineX (2003-2008), National Medicare payment averages.
11. Centers for Medicare and Medicaid Services via permission of the Kansas Health Policy Authority (2005-2006), Kansas Medicaid data.
12. Kansas Insurance Department (2003-2005, 2007). Kansas Health Insurance Information System (KHIIS).
13. U.S. Department of Labor, Bureau of Labor Statistics (2003-2007). Consumer Price Index, Medical Care. [Http://data.bls.gov](http://data.bls.gov), accessed July, 2009.
14. Agency for Healthcare Research and Quality (2003-2007), [National and State Statistics on Hospital Stays by Payer - Medicare, Medicaid, Private, Uninsured](http://nationalandstatestatistics.onhospitalstaysbypayer-medicare-medicaid-private-uninsured) Data [Http://hcupnet.ahrq.gov/](http://hcupnet.ahrq.gov/).
15. Schechter, M. S., Shelton, B. J., Margolis, P. A. and Fitzsimmons, S. C. (2001). The association of socioeconomic status with outcomes in cystic fibrosis patients in the United States. *American Journal of Critical Care Medicine*, 163, 6, 1331-1337.
16. Braaten, T., Weiderpass, E., Lund, E. (2009). Socioeconomic differences in cancer survival: The Norwegian women and cancer study. *BMC Public Health*, 9, 178.
17. Marcin, J. P., Schembri, M. S., He, J., and Romano, P. S. (2003). A population based analysis of socioeconomic status and insurance status and their relationship with pediatric trauma hospitalization and mortality rates. *American Journal of Public Health*, 93, 3, 465-466.
18. Weitz, T. A., Freund, K. M., Wright, L. (2001). Identifying and caring for underserved populations: Experience of the national centers of excellence in women's health. *Journal of Women's Health & Gender-Based Medicine*, 10, 10, 937-952.
19. Obst, T. E., Nauenberg, E., Buck, G. M. (2001). Maternal health insurance coverage as a determinant of obstetrical anesthesia care. *Journal of Health Care for the Poor and Underserved*, 12, 2, 177-191.
20. Miller, A. (2008). Medicaid payments vs. medical costs: Raises a 'start' toward a fix. *The Atlanta Journal-Constitution*.