CONNECTICUT
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Asthma and Asthma-Related Health Care for Children Enrolled in HUSKY A: CY 2004

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This report is the seventh annual report on asthma and asthma-related health care in HUSKY A (Medicaid managed care), issued by the Children's Health Council through 2004 and by Connecticut Voices for Children in 2005.[1] Results for calendar year 2004 are compared with findings for the prior six years. The purpose of ongoing monitoring is:

- To estimate the prevalence of asthma among children enrolled in HUSKY A;
- To describe asthma-related health care among children enrolled in HUSKY A; and
- To identify trends and factors associated with access to care.

METHODS

Study Population

Using HUSKY A enrollment data, children under 21 years of age who were continuously enrolled (any plan) between January 1 and December 31, 2004, were identified.[2]

Data

HUSKY A encounter data were searched for records corresponding to outpatient, inpatient and emergency care with a primary or secondary diagnosis of asthma (ICD-9-CM code 493.0-493.9) received during that one-year period. Encounter records were also searched for visits for conditions related to asthma.[3]

Measure of Prevalence

The prevalence of asthma, that is physician-diagnosed asthma recorded on an encounter record, was estimated by determining the percentage of all continuously enrolled children who received any care with a primary or secondary diagnosis of asthma during CY 2004. Since variability from year to year may be attributable at least in part to HUSKY enrollment dynamics, differences in access to health care, and changes in data quality, three-year rolling averages were calculated to generate more stable estimates of disease prevalence overall and for subgroups of interest. Unadjusted rates are reported. After adjusting for age, gender, primary language, residence and health plan, the likelihood of having had an asthma diagnosis was determined by race/ethnic group. Previous studies have shown that asthma prevalence estimates can vary considerably, depending on the data source.[4, 5]

Measures of Utilization

Asthma-related health care was described in terms of the number of visits for ambulatory care (average, range), percentage of children with more than one visit for asthma-related care, and percentages of children with emergency department visits and hospitalizations. After adjusting for age, gender, primary language, residence and health plan, the likelihood of having had an asthma diagnosis was determined by race/ethnic group.

Measure of Quality

One dimension of the quality of care was assessed by measuring the percentage of children who were seen for follow-up within 2 weeks of an emergency department visit or discharge from the hospital, as recommended by the National Heart, Lung and Blood Institute.[6] The percentage of children who were seen for ambulatory care follow-up for asthma or asthma-related diagnoses was determined by health plan for the first emergency visit or hospital discharge for each child with any emergency care or hospitalization.

Another dimension of the quality of asthma care was assessed in terms of the percentage of ambulatory care visits (office, clinic, and emergency room) for a primary diagnosis of asthma that took place in an emergency care setting ("ED reliance").[7] The severity of symptoms and the appropriateness of the visits could not be determined using these data.

Limitations of the Data

Prevalence estimates in this report are based on secondary analyses of readily available, uniformly coded encounter data corresponding to care received by children with asthma; however, the methods used to generate these estimates affect and limit interpretation of the results. First, prevalence estimates were based on the health care experiences of continuously enrolled children. Any significant changes in enrollment, access to care, and quality of care can affect prevalence estimates based on health services utilization. Second, the completeness and accuracy of the encounter data could not be assessed. What appear to be increases or decreases in prevalence and utilization over time may be due in part to changes in the quality of data submissions. Third, depending on the data source, prevalence estimates can vary significantly. Fourth, neither the severity of the condition nor the appropriateness of clinical care can be assessed using administrative data alone. Despite these limitations, this approach to tracking asthma prevalence and asthma-related health care utilization among children at increased risk is a useful adjunct to other surveillance efforts and program performance monitoring.[8]

RESULTS

Description of the Study Population

There were 170,937 children younger than 21 years continuously enrolled in HUSKY A in 2004. The sociodemographic and enrollment characteristics of these children are described in Table 1.

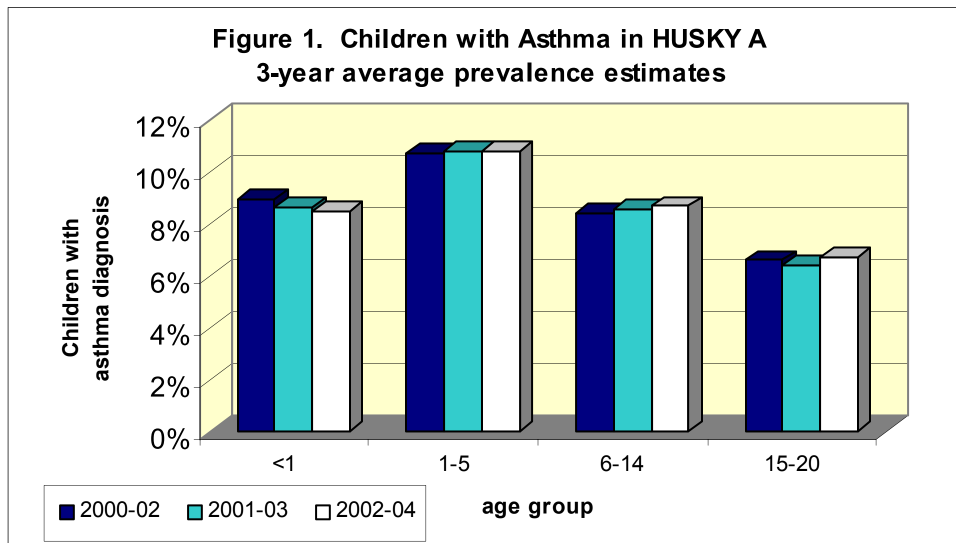
Estimated Prevalence of Pediatric Asthma

In 2004, 16,002 children (9.4%) received care with an asthma-related diagnosis (Table 2), essentially unchanged from 9.2% in CY 2003 (Table 3). The percentage of children with health care for a primary diagnosis of asthma was 8.6%. Since 1998, the 3- year average rate has been stable at around 9% (8.9% in 2002-2004) and varied with age (Figure 1).

Asthma prevalence in 2004 was associated with age, gender, race/ethnicity, health plan, and residence (Table 2). The prevalence of asthma was significantly higher among:

- Children age 1-5 years, compared with infants and older children;
- Boys, compared with girls;
- Hispanic children, compared with African-American children;

- African-American children compared with White children; and
- Children living in Bridgeport and Hartford, compared with those living in New Haven or other Connecticut towns.



After adjusting for age, gender, urban residence, primary language and health plan, African American and Hispanic children were significantly more likely than White children to have had asthma.[11]

Asthma-related Health Care Utilization

Asthma care is described in Table 4. In 2004, the average number of visits per child was 4.2 (range: 1-33), unchanged from the previous year. Nearly half of the children with asthma (46.25%) had more than one visit for ambulatory care (office or clinic visits, emergency care).

Of the children with asthma, 25 percent had at least one emergency room visit, increased over 2003; however, just 20% of them were seen in the ER more than once, compared with 29% in 2003. The percentage with emergency care was lower for children in BlueCare (21%) compared with children in CHNCT (31%) and Preferred One (33%). In 2004, 648 children (4.0% of those with asthma) were hospitalized at least once for asthma.

After adjusting for age, gender, urban residence, primary language and health plan, African American and Hispanic children were significantly more likely than White children to have had emergency care for asthma.[12] African American children were more likely to have been hospitalized.[13]

Follow-up after emergency care and hospitalization

Less than one in five children who had emergency care for asthma in 2004 received follow-up care within 2 weeks of the visit, as recommended (Table 5). This rate is essentially unchanged from the previous year overall (20%) or in any managed care plan. Children in BlueCare who were seen in the ER for treatment of asthma were more likely than children in Preferred One to have had ambulatory care follow-up. Follow-up after hospitalization for treatment of asthma (43%) was essentially unchanged from the previous year (40%) overall (40%) and in any managed care plan (Table 4). There were no differences between children of different

racial/ethnic groups in terms of low rates of follow-up within 2 weeks after an emergency visit (18% overall) or after having been hospitalized (43% overall).

ED reliance

Overall, 13.8% of ambulatory care visits for all children with asthma who had any emergency care took place in the emergency room (Table 6). This rate is lower than that reported for children with moderate to severe persistent asthma in Michigan's Medicaid program.[14] The rate varied by age. According to the researcher who first applied this measure to asthma, however, the measure is likely to produce highly variable rates and may not be reliable, so these results should be interpreted with caution.[15]

CONCLUSIONS

- Nine percent of children enrolled in HUSKY A in 2004 received health care for asthma.
- Persistent racial/ethnic disparities in asthma prevalence exist among children in HUSKY A.
- Few children who receive emergency care or are hospitalized for asthma receive timely follow-up care, as recommended in treatment guidelines.

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[1] Connecticut Voices for Children is a non-profit organization that conducts research and policy analysis on children's issues. This report on asthma was prepared under a contract between the Connecticut Department of Social Services and the Hartford Foundation for Public Giving for performance monitoring and with a grant from the Hartford Foundation to Connecticut Voices for the work. Performance monitoring in HUSKY A builds on work begun by the Children's Health Council, created in 1995 and charged with evaluating the impact of Medicaid managed care on children's health services. Connecticut Voices for Children contracts with MAXIMUS, Inc. for data management and data analysis. This report was prepared by Mary Alice Lee, Ph.D., Senior Policy Fellow. This report and earlier reports are available online at www.ctkidslink.org.

[2] Performance monitoring is based on health care received by children continuously enrolled during a specified time period for the following reasons: 1) utilization can be reported in terms of the experience of actual children rather than averaged over "member-months" or varying periods of eligibility; 2) depending on the age groups under study, up to 80% of children ever enrolled during a one-year period were in fact enrolled for 12 months; 3) the HUSKY program and participating health plans are clearly accountable for care of these children; 4) utilization differences among continuously enrolled children are likely to occur among other children as well; and 5) results of performance monitoring can be expressed in simple and consistent terms that convey the actual experience of children in the program.

[3] Asthma-related diagnoses: bronchitis (ICD-9-CM codes 466, 480), bronchioloitis (466.1, 487.1, 491.8), allergies (495.4-495.9, 995.3, 995.2, 995.1, 477.0-477.9), viral and bacterial pneumonia (480.0-487.9, 483, 481, 482.2, 482.3, 482.9, 483, 485, 486) and chronic obstructive pulmonary disease (491, 492, 496).

[4] Buescher PA, Jones-Vessey K. Using Medicaid data to estimate state- and county-level prevalence of asthma among low-income children. Maternal and Child Health Journal, 1999; 3(4): 211-216.

[5] Children's Health Council. Asthma and asthma-related health care for Children in HUSKY A: FFY 2002. Hartford, CT: CHC, 2003. In 2002, HUSKY A pharmacy encounter records were searched for preferred primary therapies (2,139 prescription medications) and for any long-term therapies (3,166 prescription medications, including 2,139 preferred primary therapies), using medication lists developed by the National Committee for Quality Assurance for performance monitoring, (www.ncqa.org). The estimated prevalence based on encounter records for care and prescriptions for preferred primary therapies was 10.5%, compared with 8.1% using records for care alone. The estimated prevalence based on care and prescriptions for any long-term therapy was 17.9%.

[6] National Heart, Lung, and Blood Institute. Guidelines for diagnosis and management of asthma. Bethesda, MD: NHLBI, 1997.

[7] Dombkowski K, Lyon-Callo S, Wasilevich B. Assessing statewide asthma quality of care using Medicaid claims. Presentation at Asthma Regional Council of New England, October 29, 2004.

[8] Pearce N, Beasley R, Burgess C, Crane J. Asthma epidemiology: principles and methods. New York: Oxford University Press; 1998.
[9] In 2003, the time frame for the collection and analysis of HUSKY A data was changed from a fiscal year (FY, October 1 through September 30) to a calendar year (CY, January 1 through December 31). Performance monitoring is based on health care received by children continuously enrolled during a specified time period for the following reasons: 1) utilization can be reported in terms of the experience of actual children rather than averaged over "member-months" or varying periods of eligibility; 2) depending on the age groups under study, up to 80% of children ever enrolled during a one-year period were in fact enrolled for 12 months; 3) the HUSKY program and participating health plans are clearly accountable for care of these children; 4) utilization differences among continuously enrolled children are likely to occur among other children as well; and 5) results of performance monitoring can be expressed in simple and consistent terms that convey the actual experience of children in the program.
[10] National Heart, Lung, and Blood Institute. Guidelines for diagnosis and management of asthma. Bethesda, MD: NHLBI, 1997.
[11] $OR_{\text{Afircan-American:White}}$=1.18 (95% CI: 1.12, 1.23); $OR_{\text{Hispanic:White}}$=1.44 (95% CI: 1.38, 1.51)
[12] $OR_{\text{Afircan-American:White}}$=1.40 (95% CI: 1.26, 1.56); $OR_{\text{Hispanic:White}}$=1.33 (95% CI: 1.20, 1.47)
[13] $OR_{\text{Afircan-American:White}}$=1.58 (95% CI: 1.25, 2.00)
[14] Dombkowski K, Lyon-Callo S, Wasilevich B. Assessing statewide asthma quality of care using Medicaid claims. Presentation at Asthma Regional Council of New England, October 29, 2004.
[15] Dombkowski K. Personal communication.

Table 1. Children in HUSKY A, 2004: Description of the sample

		Total[a]		BlueCare		CHNCT		HealthNet		Preferred One		Plan Changers	
Total		170,937		67,171	39.3%	27,275	16.0%	50,245	29.4%	11,201	6.6%	15,045	8.8%
Age													
	<1	1,406	0.8%	503	0.7%	265	1.0%	347	0.7%	87	0.8%	204	1.4%
	1- 5	50,916	29.8%	20,207	30.1%	8,120	29.8%	14,428	28.7%	3,311	29.6%	4,850	32.2%
	6-14	84,150	49.2%	33,086	49.3%	13,145	48.2%	25,135	50.0%	5,637	50.3%	7,147	47.5%
	15-20	34,465	20.2%	13,375	19.9%	5,745	21.1%	10,335	20.6%	2,166	19.3%	2,844	18.9%
	Total	170,937		67,171		27,275		50,245		11,201		15,045	
Gender													
	Unknown	207		72		34		60		8		33	
	Female	85,126	49.8%	33,181	49.4%	13,800	50.6%	24,971	49.7%	5,633	50.3%	7,541	50.1%
	Male	85,604	50.1%	33,918	50.5%	13,441	49.3%	25,214	50.2%	5,560	49.6%	7,471	49.7%
	Total	170,937		67,171		27,275		50,245		11,201		15,045	
Race/ethnicity													
	African-American	44,144	25.8%	15,953	23.7%	7,609	27.9%	11,499	22.9%	4,104	36.6%	4,979	33.1%
	White	64,566	37.8%	26,948	40.1%	4,830	17.7%	25,599	50.9%	3,149	28.1%	4,040	26.9%
	Hispanic	58,048	34.0%	22,537	33.6%	14,230	52.2%	11,701	23.3%	3,770	33.7%	5,810	38.6%
	Other	4,179	2.4%	1,733	2.6%	606	2.2%	1,446	2.9%	178	1.6%	216	1.4%
	Total	170,937		67,171		27,275		50,245		11,201		15,045	
Language													
	English	150,457	88.0%	58,572	87.2%	22,817	83.7%	45,999	91.5%	10,122	90.4%	12,947	86.1%
	Other	1,043	0.6%	443	0.7%	186	0.7%	290	0.6%	57	0.5%	67	0.4%
	Spanish	12,722	7.4%	5,403	8.0%	3,473	12.7%	1,796	3.6%	677	6.0%	1,373	9.1%
	Unknown	6,715		2,753		799		2,160		345		658	
	Total	170,937		67,171		27,275		50,245		11,201		15,045	
Residence													
	Bridgeport	17,105	10.0%	2,039	3.0%	3,271	12.0%	7,160	14.3%	2,889	25.8%	1,746	11.6%
	Hartford	20,758	12.1%	13,057	19.4%	2,407	8.8%	1,934	3.8%	948	8.5%	2,412	16.0%
	New Haven	16,111	9.4%	3,731	5.6%	6,775	24.8%	1,890	3.8%	1,280	11.4%	2,435	16.2%
	Other	116,963	68.4%	48,344	72.0%	14,822	54.3%	39,261	78.1%	6,084	54.3%	8,452	56.2%
	Total	170,937		67,171		27,275		50,245		11,201		15,045	

[a] Children under 21 who were continuously enrolled in HUSKY A between January 1 and December 31, 2004.

Table 2. Children in HUSKY A with Asthma, 2004

		Total[a]		BlueCare		CHNCT		HealthNet		Preferred One		Plan Changers	
Total		16,002	9.4%	5,634	8.4%	2,949	10.8%	4,713	9.4%	1,016	9.1%	1,690	11.2%
Age													
	<1	122	8.7%	46	9.1%	27	10.2%	25	7.2%	4	4.6%	20	9.8%
	1- 5	5,748	11.3%	2,176	10.8%	1,003	12.4%	1,552	10.8%	388	11.7%	629	13.0%
	6-14	7,708	9.2%	2,641	8.0%	1,439	10.9%	2,373	9.4%	484	8.6%	771	10.8%
	15-20	2,424	7.0%	771	5.8%	480	8.4%	763	7.4%	140	6.5%	270	9.5%
	Total	16,002		5,634		2,949		4,713		1,016		1,690	
Gender													
	Unknown	28	13.5%	9	12.5%	5	14.7%	6	10.0%	0	0.0%	8	24.2%
	Female	7,125	8.4%	2,475	7.5%	1,332	9.7%	2,118	8.5%	454	8.1%	746	9.9%
	Male	8,849	10.3%	3,150	9.3%	1,612	12.0%	2,589	10.3%	562	10.1%	936	12.5%
	Total	16,002		5,634		2,949		4,713		1,016		1,690	
Race/ethnicity													
	African-American	4,027	9.1%	1,301	8.2%	713	9.4%	1,130	9.8%	403	9.8%	480	9.6%
	White	5,073	7.9%	2,007	7.4%	391	8.1%	2,081	8.1%	188	6.0%	406	10.0%
	Hispanic	6,600	11.4%	2,207	9.8%	1,816	12.8%	1,391	11.9%	410	10.9%	776	13.4%
	Other	302	7.2%	119	6.9%	29	4.8%	111	7.7%	15	8.4%	28	13.0%
	Total	16,002		5,634		2,949		4,713		1,016		1,690	
Language													
	English	13,795	9.2%	4,828	8.2%	2,379	10.4%	4,264	9.3%	909	9.0%	1,415	10.9%
	Other	95	9.1%	43	9.7%	17	9.1%	28	9.7%	1	1.8%	6	9.0%
	Spanish	1,526	12.0%	550	10.2%	470	13.5%	228	12.7%	85	12.6%	193	14.1%
	Unknown	586	8.7%	213	7.7%	83	10.4%	193	8.9%	21	6.1%	76	11.6%
	Total	16,002	9.4%	5,634		2,949		4,713		1,016		1,690	
Residence													
	Bridgeport	1,890	11.0%	139	6.8%	432	13.2%	786	11.0%	325	11.2%	208	11.9%
	Hartford	2,132	10.3%	1,208	9.3%	289	12.0%	227	11.7%	122	12.9%	286	11.9%
	New Haven	1,406	8.7%	307	8.2%	637	9.4%	167	8.8%	89	7.0%	206	8.5%
	Other	10,574	9.0%	3,980	8.2%	1,591	10.7%	3,533	9.0%	480	7.9%	990	11.7%
	Total	16,002	9.4%	5,634		2,949		4,713		1,016		1,690	

[a] Children with primary or secondary diagnosis of asthma (ICD-9-CM code 493) on encounter records for care in 2004.

Table 3. Comparison of 2003 and 2004 Prevalence Estimates

	CY 2004 n=170,937		CY 2003 n=163,615	
	N	**%**	**N**	**%**
Total Children with Asthma	16,002	9.4%	15,014	9.2%
Age				
<1	122	8.7%	52	7.2%
1-5	5,748	11.3%	5,473	11.1%
6-14	7,708	9.2%	7,251	8.9%
15-20	2,424	7.0%	2,238	6.9%
Gender				
Female	28	13.5%	6,596	8.1%
Male	7,125	8.4%	8,352	10.2%
Race/ethnicity				
African American	4,027	9.1% *	3,720	8.6%
Hispanic	5,073	7.9%	6,347	11.4%
White	6,600	11.4%	4,694	7.7%
Other groups	302	7.2%	253	6.8%
Language				
English	13,795	9.2%	13,455	9.0%
Spanish	1,526	12.0%	1,407	11.8%
Other languages	95	9.1%	85	8.3%
Residence				
Bridgeport	1,890	11.0%	1,834	11.1%
Hartford	2,132	10.3% *	1,998	9.5%
New Haven	1,406	8.7%	1,433	8.9%
Other towns	10,574	9.0%	9,749	8.9%
Health Plan				
BlueCare	5,634	8.4%	5,222	8.2%
CHNCT	2,949	10.8%	2,801	10.4%
Health Net	4,713	9.4%	4,859	9.3%
Preferred One	1,016	9.1% *	586	7.7%
Changed plans	1,690	11.2%	1,480	11.2%

*** Indicates significant difference (p<.05) between prevalence estimates for CY 2003 and CY 2004.**

Table 4. Asthma-related health care utilization

	FY2004	CY2003
Number of ambulatory care visits (average)	4.2	4.2
Children with more than one visit	46.3%	48.6%
Children with asthma who:		
Had at least one emergency visit	32.5%	23.6%
Were hospitalized	4.6%	4.4%

* Children with primary or secondary diagnosis of asthma (ICD-9-CM code 493) on encounter records for care in 2004.

Table 5. Follow-up After ER Visit or Hospitalization for Asthma

	Seen within 2 weeks[a]	
	After ER visit	**After hospital discharge**
Total	18.4%	43.2%
Health Plan		
BlueCare	21.6%	52.1%
CHN	17.8%	45.6%
HealthNet	17.1%	36.3%
Preferred One	13.3%	32.7%
Changed plans	18.4%	34.7%

[a]Ambulatory care visit for asthma or related diagnosis
Note: Rates for follow-up were unchanged from CY2003.

Table 6. Emergency Care

	ED reliance Number of ED visits / (number of ED visits + number of office or clinic visits)
	Percent
Total	13.8%
Age (years):	
<1	18.5%
1-5	14.9%
6-14	11.5%
15-20	18.7%