

# **Pediatric Asthma Inpatient Admissions and ER Visits:**

## **A Report of Regional and Managed Care Organization Variation**

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### **Pediatric Asthma Inpatient Admissions and ER Visits: A Report of Regional and Managed Care Organization Variation**

Approximately one out of every 20 people in the United States are diagnosed with asthma; almost half of these individuals are children. According to the Centers for Disease Control, the 1990 through 1992 prevalence rate for children under the age of 18 years was 61.2 per 1000 children. A chronic respiratory disorder, asthma is characterized by temporary constriction of the airways resulting in breathing difficulty. Asthma attacks are experienced by the patient as shortness of breath, wheezing, coughing, and tightness in the chest. During flare-ups, sufferers of asthma are subjected to limitation of activity, and sometimes hospitalization is necessary. Preventive measures can be employed, however, to reduce the frequency and severity of attacks. Timely and appropriate primary care is vital to the management of pediatric asthma. Given such care, inpatient admissions and visits to the emergency room for individuals with asthma can be minimized.

This study uses encounter data to evaluate TennCare, managed care organization (MCO), and regional performance in the prevention of inpatient admissions and ER visits of asthmatic children. Rates of inpatient admissions and ER visits for children between the ages of 0 and 20 are presented by MCO and by community service area (CSA).

#### Methodology

##### Definitions

*Asthma:* Individuals diagnosed with asthma are those with a record with an ICD-9-CM diagnosis code of 493 through 493.99.

*Inpatient Admissions:* The number of unduplicated paid UB92 records with a bill type of 111, 121, 114, or 124.

*ER Visits:* The number of unduplicated paid records with either a revenue code of 450 or a CPT-4 code between 99281 and 99285.

## Data

All data presented in this study were derived from TennCare eligibility and encounter data. Each managed care organization is required to provide the state with information concerning every service delivered to a TennCare recipient. This information is collected and stored in the form of encounter records. Comparisons of encounter data with corroborative sources demonstrate a significant improvement in the quality of the encounter data reported by the MCOs to TennCare. The process of assessing the degree to which the MCOs and providers consistently and accurately report encounter information is ongoing.

## Calculation of Rates

Counts of inpatient admissions and ER visits were obtained from databases containing encounter records of TennCare members. Data were collected for both 1995 and 1996.

Population counts are not meaningful for calculating rates with a Medicaid population, because members tend to move in and out of eligibility. Member year is a measure which has proven more appropriate. Member year was calculated for each measure by dividing the total number of eligible days for all TennCare members under the age of 21 by 365 (366 for 1996 which was a leap year). The rate for each measure was then calculated by dividing the number of services by the number of member years. Rates are presented as per 1000 member years between the ages of 0 and 20.

Rates are presented within the report as charts for each of the measures. Data are also presented in tabular form in Appendix A.

## Normative Data

Normative data were obtained for the purposes of comparing both the TennCare population as a whole and each of the MCOs and CSAs to 1993 Tennessee Medicaid.

## Results

### Inpatient Admissions

Figure 1 shows the rate of inpatient admissions for asthmatic children by managed care organization. The overall TennCare rate is improving over time; 1996 performance was lower than that in 1995, which was lower than 1993 Tennessee Medicaid. This pattern was the same for six of the MCOs. Phoenix, PHP, and Prudential displayed 1996 rates higher than those of 1995, while Vanderbilt, TLC, and TennSource did not outperform Medicaid.

John Deere displayed the most dramatic change from 1995 to 1996, to produce the lowest rate in 1996. Other MCOs with low rates in 1996 were Blue Cross / Blue Shield and Phoenix. Phoenix had the lowest rate of 1995, followed by Prudential and PHP. PHP's rate increased

significantly in 1996, with only Vanderbilt and TLC having higher rates. Vanderbilt and TLC, along with TennSource, also had high rates in 1995.

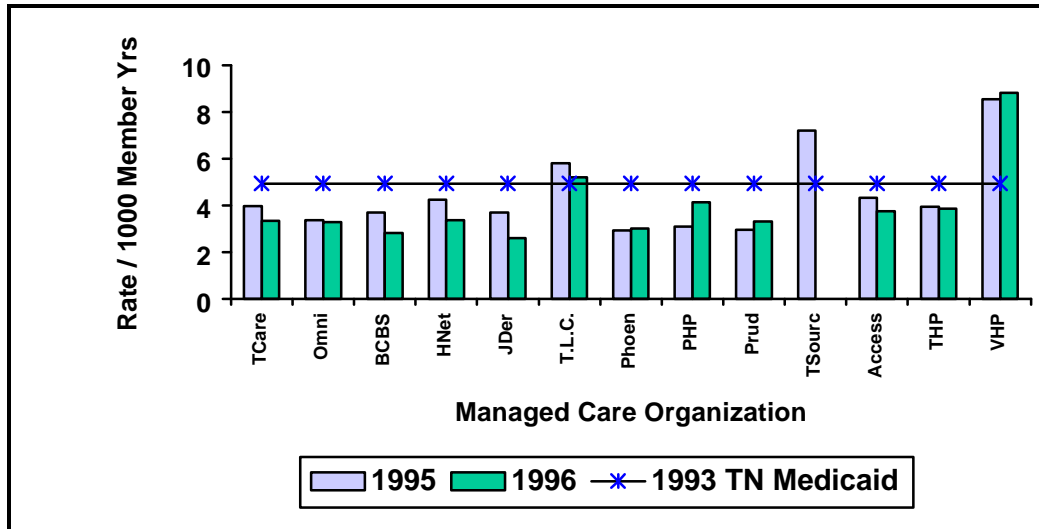


Figure 1: Rate of Inpatient Admissions per 1000 Member Years Between the Ages of 0 and 20 with Diagnosis of Asthma by Managed Care Organization<sup>1</sup>

Figure 2 displays the inpatient admission rate by community service area. Only Knox CSA in 1995 exceeded the 1993 Tennessee Medicaid rate. The rates in three CSAs (South Central, Southwest, and Shelby) did not decrease from 1995 to 1996. The rate was static for Shelby CSA and increased marginally for Southwest CSA.

The biggest change from 1995 to 1996 occurred in the East CSA, which dropped from 4.39 to 2.74 admissions per 1000 member years. The Southwest and Northeast CSAs had the lowest rates during 1995 and 1996, with the Southwest the lowest in 1995 and the Northeast the lowest in 1996. Knox CSA had the highest rates both years. Hamilton and Davidson CSAs also had high rates in 1995, as did Davidson and South Central CSAs in 1996.

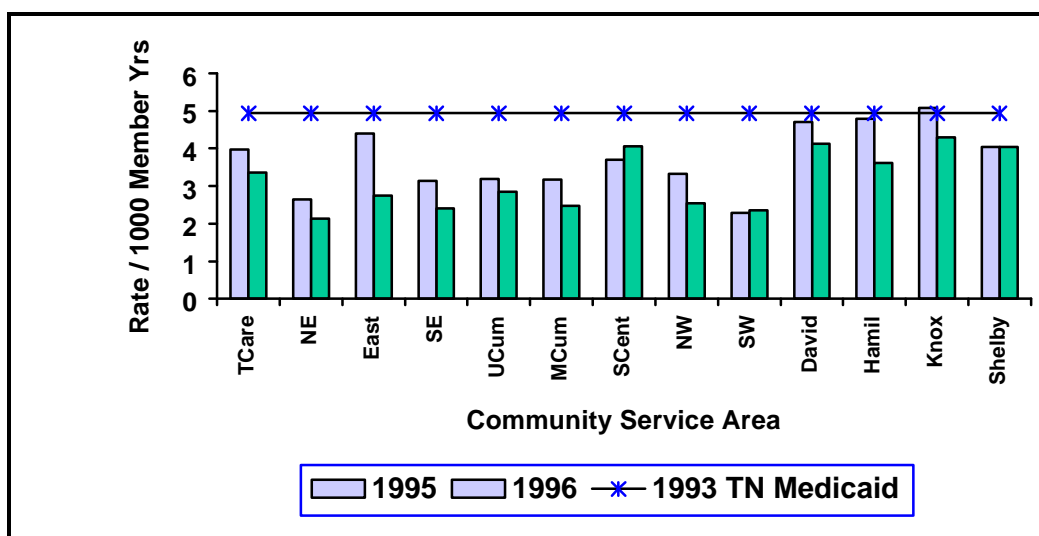


Figure 2: Rate of Inpatient Admissions per 1000 Member Years Between the Ages of 0 and 20

<sup>1</sup> The 1993 Tennessee Medicaid rate is per 1000 member years between the ages of 0 and 19.

ER Visits

Figure 3 displays the rate of ER visits for children diagnosed with asthma by managed care organization. As with inpatient admissions, the overall TennCare rate is improving over time. There was a tremendous drop in 1995 from 1993 Tennessee Medicaid. Both the overall TennCare and MCO rates were below that of Medicaid. The TennCare rate also decreased slightly from 1995 to 1996, from 13.8 to 13.3 visits per 1000 member years. Five MCOs decreased as well (HealthNet, John Deere, Phoenix, TennSource, and Access Med Plus), but seven of the MCOs increased in 1996.

TLC, PHP, and Prudential had the lowest rates in 1995, while three entirely different MCOs (HealthNet, TennSource, and Phoenix) were the lowest performers in 1996. TLC had the most dramatic change from 1995 to become the MCO with the highest rate of admissions in 1996. Vanderbilt and Omni also had high rates in 1996; TennSource, Phoenix, and Access Med Plus were the highest in 1995.

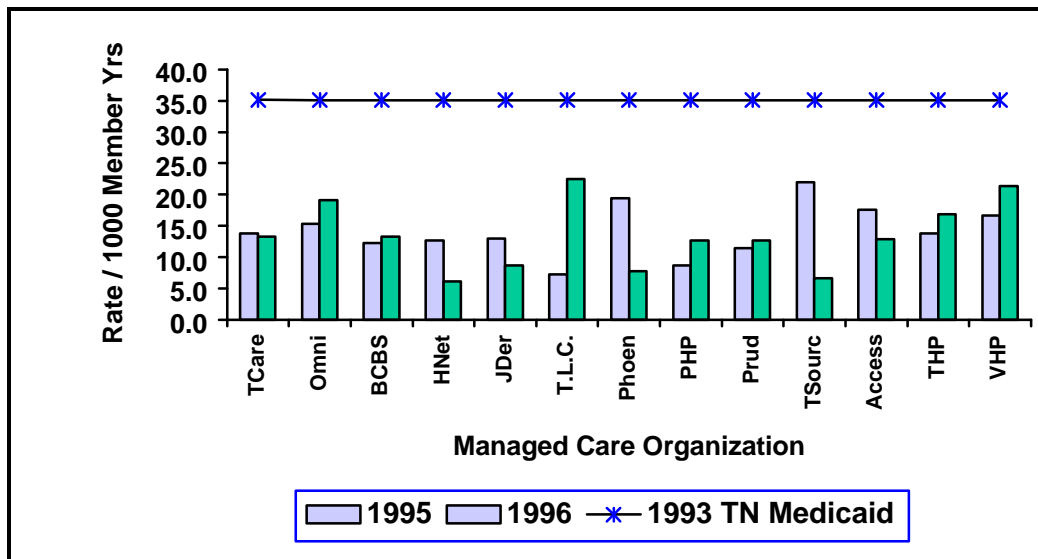


Figure 3: Rate of ER Visits per 1000 Member Years Between the Ages of 0 and 20 with Diagnosis of Asthma by Managed Care Organization

With respect to CSA, like the MCOs, all CSAs were below 1993 Tennessee Medicaid. Eight CSAs decreased from 1995 to 1996, with the Knox, Shelby, and Northwest CSAs increasing in 1996. Performance in 1996 was virtually identical to 1995 for the Southwest CSA. The East and Southeast CSAs had low rates for both 1995 and 1996. Only the South Central CSA was lower in 1996. The Hamilton, Knox, and Shelby CSAs had the highest rates for both 1995 and 1996.

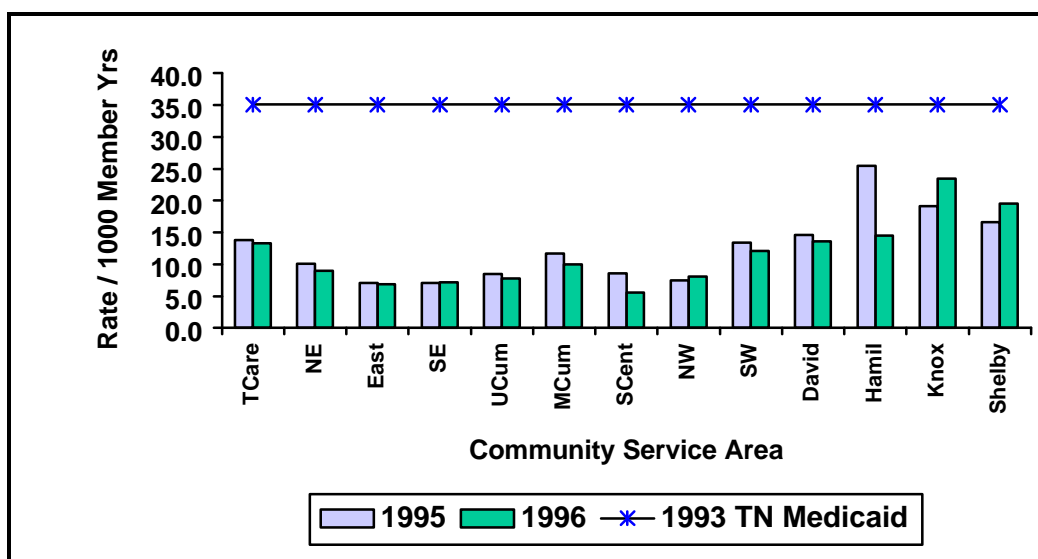


Figure 4: Rate of ER Visits per 1000 Member Years Between the Ages of 0 and 20 with Diagnosis of Asthma by Community Service Area

### Discussion

This report reviewed two measures, inpatient admissions and ER visits for individuals under the age of 21 diagnosed with asthma. These measures are felt to be indicators of performance in the delivery of preventive services and effective outpatient care for this population. Both measures demonstrate improvement over time, both from 1993 Tennessee Medicaid to 1995 TennCare and 1996 TennCare from 1995.

ER visits for asthmatic children dropped more precipitously than that of inpatient admissions. This reflects a previously demonstrated decline in ER visits for the overall TennCare population from that seen under the prior Medicaid system. This suggests that the TennCare program is emphasizing the importance of preventive services in favor of reliance on the emergency room for routine care.

An analysis of MCO rates reveals individual MCO performance relative to overall TennCare and the other MCOs is fairly comparable across the two measures, although there is considerable variation. CSA performance is somewhat more consistent, with the urban areas of Davidson, Hamilton, Knox and Shelby having relatively higher rates across the two measures. Further investigation is necessary in order to determine why this may be occurring.

It is important to note that higher or lower rates for an individual MCO or CSA may be due to that MCO or CSA having a disproportionate number of children with asthma. The rates presented represent the admission and ER visit rates with respect to the entire TennCare population under the age of 21, not just those with a diagnosis of asthma. Additional research will be required to determine this potential impact.

This report suggests that primary care is being utilized by TennCare patients in the management of pediatric asthma. Consequently, inpatient admissions and ER visits for children suffering from asthma have decreased over time. It will be necessary to evaluate data from subsequent years to determine if this trend will continue over time.



Appendix A

Table 1: Rate of Inpatient Admissions per 1000 Member Years Between the Ages of 0 and 20 with Diagnosis of Asthma by Managed Care Organization

	<b>1995</b>	<b>1996</b>
<b>TennCare</b>	3.97	3.35
Omni	3.37	3.28
Blue Cross / Blue Shield	3.69	2.83
HealthNet	4.24	3.37
John Deere	3.69	2.61
TLC	5.81	5.20
Phoenix	2.93	3.03
PHP	3.10	4.13
Prudential	2.96	3.31
TennSource	7.21	0.00
Access Med Plus	4.32	3.75
THP	3.94	3.87
Vanderbilt	8.54	8.82

Table 2: Rate of Inpatient Admissions per 1000 Member Years Between the Ages of 0 and 20 with Diagnosis of Asthma by Community Service Area

	<b>1995</b>	<b>1996</b>
<b>TennCare</b>	3.97	3.35
Northeast	2.65	2.13
East	4.39	2.74
Southeast	3.14	2.41
Upper Cumberland	3.19	2.84
Middle Cumberland	3.17	2.48
South Central	3.69	4.06
Northwest	3.33	2.54
Southwest	2.29	2.35
Davidson	4.70	4.12
Hamilton	4.79	3.62
Knox	5.07	4.29
Shelby	4.03	4.04

Table 3: Rate of ER Visits per 1000 Member Years Between the Ages of 0 and 20 with Diagnosis of Asthma by Managed Care Organization

	<b>1995</b>	<b>1996</b>
<b>TennCare</b>	13.8	13.3
Omni	15.3	19.1
Blue Cross / Blue Shield	12.3	13.3
HealthNet	12.7	6.1
John Deere	13.0	8.7
TLC	7.2	22.5
Phoenix	19.4	7.8
PHP	8.7	12.7
Prudential	11.4	12.7
TennSource	22.0	6.6
Access Med Plus	17.6	12.9
THP	13.8	16.9
Vanderbilt	16.7	21.4

Table 4: Rate of ER Visits per 1000 Member Years Between the Ages of 0 and 20 with Diagnosis of Asthma by Community Service Area

	<b>1995</b>	<b>1996</b>
<b>TennCare</b>	13.8	13.3
Northeast	10.1	9.0
East	7.1	6.9
Southeast	7.1	7.2
Upper Cumberland	8.5	7.8
Middle Cumberland	11.7	10.0
South Central	8.6	5.6
Northwest	7.5	8.1
Southwest	13.4	12.1
Davidson	14.6	13.6
Hamilton	25.5	14.5
Knox	19.1	23.4
Shelby	16.6	19.5