

**TennCare**

**Inpatient Admissions  
Due To Diabetes:**

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

**External Quality Review Organization  
First Mental Health, Inc.**

**TennCare Inpatient Admissions Due To Diabetes:**

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

## **Introduction**

Diabetes is a chronic metabolic disorder that has an adverse affect on the human body's insulin mechanism, resulting in the inability to properly digest and utilize carbohydrates in food. There are approximately eight million Americans who have been diagnosed as having diabetes and it is projected that there are another eight million who have the disease but are undiagnosed. Type I diabetes is known as juvenile onset diabetes and usually is diagnosed during the first two decades of life. It is estimated that 800,000 Americans suffer from Type I diabetes. Persons who have Type I diabetes must take insulin daily to live. Type II diabetes, sometimes known as adult onset diabetes, develops in adults over 40 years of age. Approximately 40 % of people with Type II diabetes also require insulin in varying amounts to control the disease. Over seven million Americans are diagnosed Type II diabetics. Based on 1990 - 1992 statistics, approximately 625,000 people are diagnosed with diabetes (Type I and II) each year.

Diabetes is a very serious disease which can lead to many other medical complications, especially if left untreated. Diabetics are two to four times more likely to develop cardiovascular disease than people without diabetes. The risk of stroke is 2.5 times higher in diabetics. Diabetes is the leading cause of end-stage renal disease and of new cases of blindness among people 20 to 74 years of age. Sixty to seventy percent of diabetics have moderate to severe nerve damage. Diabetes is also the leading cause of new cases of blindness of adults 20 to 74 years of age. The average life expectancy of people with diabetes is 20 years less than people without diabetes. The U.S. government estimates that one out of every seven healthcare dollars is spent on diabetes or a complication of the disease.<sup>1</sup>

The primary treatment of diabetes is the control of blood glucose levels by way of glucose monitoring, exercise, and control of diet. Many patients require oral medications and/or insulin injections to maintain control of blood glucose levels. The treatment of diabetes is a continual process whereby the patient, the patient's family, and the patient's physician all play an important part in obtaining a positive outcome.

## **Study Purpose**

This study of diabetes was conducted to help examine the quality of treatment being provided to the TennCare population suffering from diabetes. The study is based on the premise that a diabetic who is visiting and working together with his/her medical provider on a regular basis will have better control over the disease, resulting in fewer inpatient hospital admissions due to diabetes and complications resulting from this disease.

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<sup>1</sup> Facts provided by American Association of Diabetes Educators, American Diabetes Association, Centers for Disease Control and Prevention, Juvenile Diabetes Foundation International, and the National Institute of Diabetes and Digestive and Kidney Diseases of the National Institutes of Health.

## **Method**

### 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 high degree of validity and significant improvement over time in the quality of the encounter data reported by the MCOs to TennCare. This report measured hospitalizations for diabetic conditions which met the definition of ambulatory care sensitive (ACS). Ambulatory care sensitive conditions are conditions sensitive to management in the ambulatory care setting, given timely and appropriate primary care. Without such care, hospitalization may result.

### Data Definitions

ACS diabetes is defined as being paid admissions to a hospital where the International Classification of Diseases - Clinical Modification (ICD-9-CM) diagnosis code was 250.0 through 250.09, 250.1 through 250.19, 250.2 through 250.29, 250.3 through 250.39, 250.8 through 250.89, or 250.9 - 250.99.

### Calculation of Rates

Population counts are not as meaningful for calculating rates when reporting on a Medicaid or Medicaid type population because members tend to move in and out of eligibility. A rate using member years has proven to be more appropriate when analyzing this type of data and, therefore, was used in calculating rates in this report. Member years were calculated by dividing the total number of eligible days for all members of the defined population by 365 (366 for the year of 1996 which was a leap year). The crude rate was then computed by dividing the number of admissions for the respective population by the number of member years to yield the number of admissions per member year. Rates presented in this report are admissions per 1000 member years (calculated crude rate multiplied by 1000). Crude rates were adjusted for the demographic variation in age and sex between reported populations.

### Analysis

Yearly age and sex adjusted rates of inpatient admissions due to diabetes per 1000 member years were calculated and compared. Overall rates for the 1995 and 1996 TennCare population are presented along with the 1993 Tennessee Medicaid population rate as a pre-TennCare reference. TennCare results were also broken down to show rates by MCO and community service area (CSA). Calculated rates are displayed in the following table and charts. Rates for 1995 and 1996 are based on all TennCare members

age 35 to 64. The 1993 Tennessee Medicaid rate was based on the Medicaid population age 36 to 64. The Medicaid program data used slightly different age groupings than those of TennCare, accounting for the slight difference in age. This difference should not cause any problems in using the 1993 value as a reference point in making comparisons. Data represented in the charts are also presented in table format in Appendix A.

**Results**

Table 1 shows that inpatient admissions due to diabetes per 1000 member years have dropped in each successive year displayed.

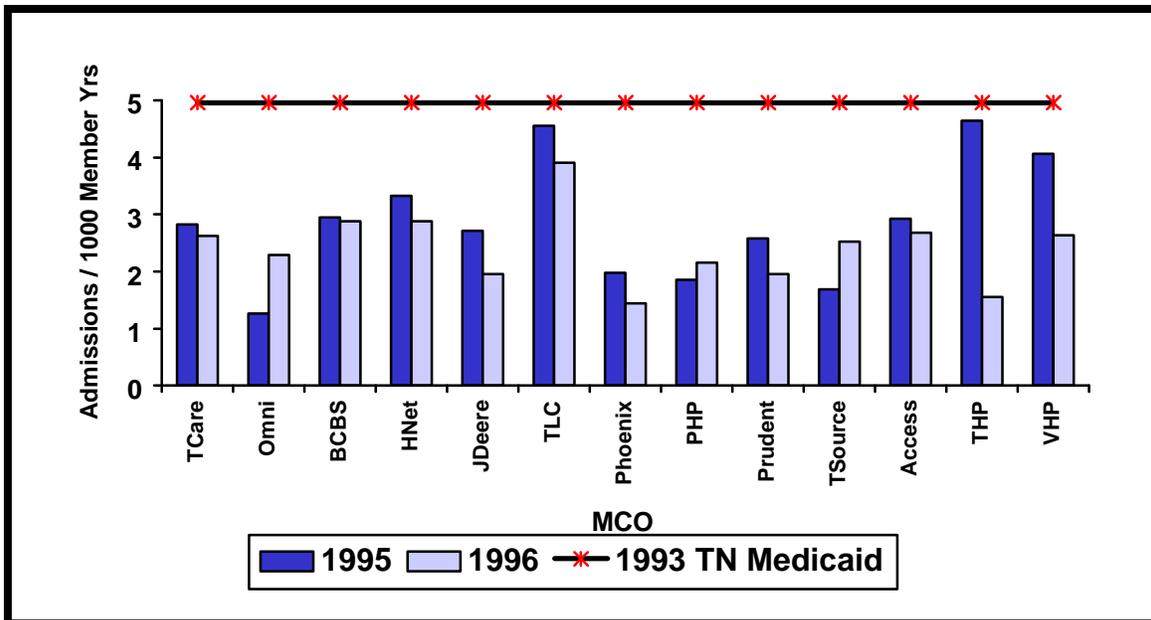
**Table 1  
Inpatient Admissions Due to Diabetes Per 1000 Member Years**

	<b>1993 Medicaid</b>	<b>1995 TennCare</b>	<b>1996 TennCare</b>
Diabetes Inpatient Admissions Per 1000 Member Years	4.96	2.83	2.63

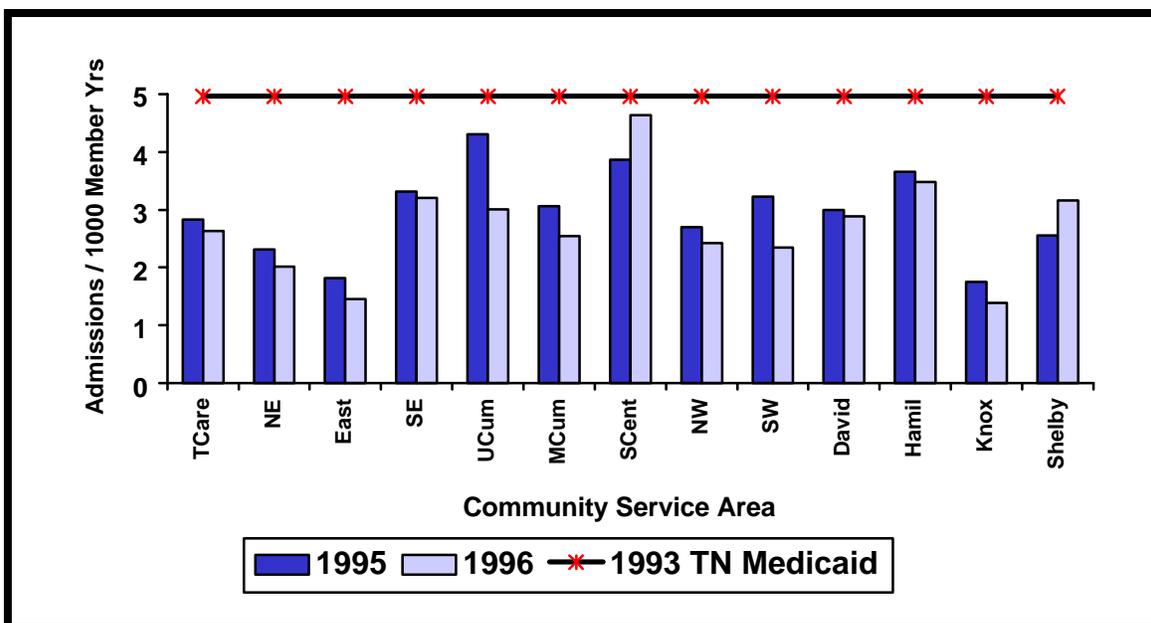
Chart 1 shows inpatient admission rates by MCO. Nine of the twelve MCOs show a decrease in the rate of inpatient admissions due to diabetes. Only Omni, PHP, and TennesSource displayed an increase when comparing 1996 to 1995. TLC had the second highest rate in 1995 (4.56 admissions per 1000 member years) and the highest rate in 1996 (3.96 admissions per 1000 member years). THP had the highest rate in 1995 (4.65 admissions per 1000 member years) and the second lowest rate in 1996 (1.55 admissions per 1000 member years). Phoenix, at 1.44 admissions per 1000 member years, had the lowest rate in 1996. All 1995 and 1996 MCO yearly results were below the 1993 Medicaid rate of 4.96 admissions per 1000 member years.

Chart 2 shows inpatient admission rates by CSA. Ten of Tennessee’s twelve CSAs showed a decrease in 1996 from 1995 results. The South Central and Shelby CSAs displayed an increase in admission rate in 1996 from 1995 values. The Upper Cumberland CSA showed the highest rate for 1995 (4.30 admissions per 1000 member

**Chart 1  
Diabetes Inpatient Admissions Per 1000 Member Years  
by Managed Care Organization**



**Chart 2**  
**Diabetes Inpatient Admissions Per 1000 Member Years**  
**by Community Service Area**



years) and the South Central CSA displayed the highest rate for 1996 (4.63 admissions per 1000 member years). The Knox CSA had the lowest admission rate for both 1995 and 1996. Again, all yearly rates were below the 1993 Medicaid rate of 4.96 admissions per 1000 member years.

## **Discussion**

This report reviewed trends in hospital admissions for diabetes under the TennCare program. This measure is felt to be an indicator of performance in the delivery of preventive services and effective outpatient care. Significant improvement was noted from 1993 under the traditional fee for service Medicaid program to 1995 under TennCare, a managed care delivery delivery system. Additional improvement was noted from 1995 to 1996. Age and sex have been taken into account in this comparison of rates. However, other demographic factors and characteristics unique to a specific population could be contributing to the differences in rates between MCOs and CSAs. Specifically, 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 adults with diabetes. The rates presented represent the admission rate with respect to the entire TennCare population ages 35 to 64, not just those with the diagnosis of diabetes. Further analysis will be required to determine this potential impact.

## **APPENDIX A**

### **Chart 1 Data**

**Diabetes Inpatient Admissions Per 1000 Member Years  
by Managed Care Organization**

	<b>1995</b>	<b>1996</b>
<b>TennCare</b>	2.83	2.63
Omni	1.26	2.29
Blue Cross / Blue Shield	2.95	2.88
HealthNet	3.33	2.88
John Deere	2.71	1.96
TLC	4.56	3.91
Phoenix	1.98	1.44
PHP	1.85	2.16
Prudential	2.58	1.96
TennSource	1.69	2.52
Access Med Plus	2.93	2.68
THP	4.65	1.55
Vanderbilt	4.07	2.64

**Chart 2 Data  
Diabetes Inpatient Admissions Per 1000 Member Years  
by Community Service Area**

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	<b>1995</b>	<b>1996</b>
<b>TennCare</b>	2.83	2.63
Northeast	2.31	2.02
East	1.82	1.46
Southeast	3.31	3.20
Upper Cumberland	4.30	3.01
Middle Cumberland	3.06	2.54
South Central	3.86	4.63
Northwest	2.70	2.42
Southwest	3.23	2.35
Davidson	3.00	2.88
Hamilton	3.65	3.48
Knox	1.75	1.39
Shelby	2.56	3.16