

Original Contribution

Health Care Utilization Data in Tennessee: Inpatient Discharges, 2005

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ABSTRACT

Data on the utilization of healthcare services are useful for assessing the health status of the general population and the delivery of hospital services in a state that is facing major health and healthcare challenges. They can assist health planning and health system reform efforts by allowing comparisons to other states and to national averages, by identifying patient groups with unusually high utilization rates, by tracking trends in utilization over time, and by demonstrating the effects of various healthcare reforms.

This report summarizes hospital inpatient discharge data for patients treated in Tennessee's non-federal, short-stay hospitals in 2005. The analysis focuses on the hospital utilization patterns of leading acute and chronic conditions for racial and gender groups.

METHODS

Tennessee law (Tennessee Code Annotated, Section 68-1-108) requires that every licensed hospital report all patient-level claims data found on the standard UB-92 form to the Tennessee Department of Health. The Division of Health Statistics in the Office of Policy Planning and Assessment of the Department of Health has established a Hospital Discharge Data System (HDDS) to collect, compile, and disseminate these data since 1997.¹ The data presented in this report are excerpts from the 2005 HDDS dataset.

The analysis includes inpatient discharge data from all community hospitals in Tennessee, defined as all non-federal short-stay hospitals including general medical and surgical hospitals, women's or OB/GYN hospitals, and pediatric hospitals.² Excluded are long-term care hospitals, psychiatric hospitals, rehabilitation hospitals, and other specialty hospitals. The data cover the period from Jan. 1-Dec. 31, 2005. Forty-four cases were excluded from the total count of inpatient discharges because of reported lengths of stay greater than 365 days.

The analysis uses data on patients' gender and racial and ethnic characteristics and principal diagnosis codes (PDCs). Diagnoses are coded in the *International Classification of Diseases*, 9th Revision, Clinical Modification (ICD-9-CM), and are grouped in accordance with published national hospital discharge data.³ Population-based utilization rates for leading PDC groups are computed using 2005 Census data for Tennessee.⁴ Comparative rates for the U.S. for 2005 are provided by the Centers for Disease Control and Prevention.⁵

RESULTS

In 2005, the 130 short-stay community hospitals in Tennessee reported a total of 785,900 inpatient discharges and 3,739,312 of total inpatient days of care. The inpatient discharge rate was 1,352.5 discharges per 10,000 population, a rate that was 15 percent higher than the average discharge rate for the United States (Table 2). The average length of stay (LOS) was 4.8 days, a rate identical to the U.S. average rate for 2005 (Table 1).

Discharge rates for the 10 leading PDCs are shown in Table 2. These diagnoses accounted for 52.5 percent of all discharges in 2005. Following the national pattern, heart diseases were the most common principal diagnosis code (PDC), followed by pneumonia. For both PDCs, Tennessee's discharge rates were 23 percent and 40 percent, respectively, higher than the corresponding national rates. Rates for the next two leading PDCs – cerebrovascular disease and surgical and medical complications – were 38 percent and 20 percent, respectively, higher than the corresponding national rates.

Table 1. Tennessee Inpatient Discharges, 2005.

	No. of Discharges	Percent	Avg. LOS:Tennessee	Avg. LOS: U. S.
All	785,900	100.0%	4.8	4.8
Sex				
Female	473,308	60.2%	4.5	4.5
Male	312,574	39.8%	5.1	5.2
Unknown	18	0.0%	3.2	

LOS = Length of Stay

Table 2. Hospital Inpatient Discharges with Most Common First-Listed Diagnoses, Per 10,000 Population, Tennessee and U.S., 2005.

First Listed Diagnosis (ICD-9)	Rate Per 10,000 Population		Tennessee as a % of U.S.
	Tennessee	U.S.	
All Conditions	1352.5	1174.4	115%
Heart disease	176.4	143.3	123%
Pneumonia	64.9	46.3	140%
Cerebrovascular disease	41.8	30.3	138%
Certain complications of surgical and medical care	35.0	29.2	120%
Malignant neoplasms	34.7	40.5	86%
Chronic bronchitis	31.3	19.3	162%
Fractures, all sites	30.6	34.2	90%
Osteoarthritis and allied disorders	28.1	25.8	109%
Septicemia	24.1	16.6	145%
Psychoses	23.3	59.2	39%

Note: The 10 leading first-listed diagnoses represented 52.5% of all discharges in 2005.

Among the next six PDCs, Tennesseans reported higher discharge rates than the nation as a whole for medical and surgical complications, chronic bronchitis, osteoarthritis and allied disorders, and septicemia. Rates in Tennessee were below the national rates, however, for malignant neoplasm (14 percent lower), fractures, and psychoses.

As in the nation as a whole, Tennessee reported substantial gender differences in inpatient discharge rates (Table 3). Women were responsible for 473,308 or 60.2 percent of the total inpatient discharges, while men accounted for the remaining 39.8 percent. In Tennessee, females comprised 51.2 percent of the total hospitalized population in 2005 while males comprised the remaining 48.8 percent. For all diagnoses com-

bined, women in Tennessee had a 45 percent higher hospitalization rate than men in 2005.

Among the individual common discharge diagnoses, females experienced a higher rate of hospitalization than males for eight of the 10 leading conditions. Men had higher rates of hospitalization for heart disease (18 percent) than women, and the rate of hospitalization for fractures at 30.6 per 10,000 population was the same for males and females in 2005.

The length of stay for men was slightly higher than that of women in Tennessee as well as in the United States. The data in Table 1 exclude 18 patient records with missing gender information.

Table 4 reports racial differences in inpatient discharge in 2005. For all conditions, black and white Tennesseans experi-

enced similar rates of inpatient hospitalization, while Hispanics reported a substantially lower rate than either group. Whites led in the rate of inpatient hospitalization in most of the common diagnoses, while Blacks led in surgical and medical complications and septicemia. The discharge rates for Asians and other smaller racial groups such as American Indians, Alaska Natives and Pacific Islanders are not reported because the sample sizes are too small to be reliable.

DISCUSSION

This brief report presents data describing utilization patterns of inpatient care in Tennessee's non-federal short-stay hospitals in 2005. The leading diagnoses analyzed, such as heart diseases, pneumonia, cerebrovascular disease, neoplasms, and chron-

Table 3. Hospital Inpatient Discharges with Most Common First-Listed Diagnoses, Per 10,000 Population by Sex, Tennessee and U.S., 2005.

First Listed Diagnosis (ICD-9)	Male		Female	
	Tennessee	U.S.	Tennessee	U.S.
All Conditions	1101.4	959.0	1592.2	1382.2
Heart disease	191.7	153.3	161.9	133.7
Pneumonia	60.3	44.9	69.2	47.7
Cerebrovascular disease	39.1	28.9	44.4	31.7
Certain complications of surgical and medical care	33.6	28.4	36.4	30.0
Malignant neoplasms	33.9	40.0	35.5	41.0
Chronic bronchitis	27.6	18.0	34.7	20.5
Fractures, all sites	30.6	30.0	30.6	38.2
Osteoarthritis and allied disorders	20.9	20.1	35.0	31.2
Septicemia	21.8	16.6	26.3	16.6
Psychoses	20.4	57.4	26.0	60.9

Table 4. Hospital Inpatient Discharges with Most Common First-Listed Diagnoses, Per 10,000 Population by Race/Ethnicity, 2005.

First Listed Diagnosis (ICD-9)	Race / Ethnicity			Total
	White	Black	Hispanic	
All Conditions	1372.2	1375.1	794.3	1352.5
Heart disease	186.1	160.8	24.9	176.4
Pneumonia	70.9	46.9	24.2	64.9
Cerebrovascular disease	43.3	41.8	5.5	41.8
Certain complications of surgical and medical care	35.3	40.4	7.6	35.0
Malignant neoplasms	36.0	33.6	9.2	34.7
Chronic bronchitis	36.6	13.5	2.1	31.3
Fractures, all sites	32.7	21.6	17.6	30.6
Osteoarthritis and allied disorders	31.9	16.2	1.8	28.1
Septicemia	24.2	27.3	5.7	24.1
Psychoses	26.0	13.8	5.6	23.3

Note: The rates for other smaller racial categories are not reported because the sample sizes are too small to be reliable.

ic diseases, reflect the major illnesses and diseases that affect the health of the state's general population.

The highlights of the results for 2005 are:

- Tennesseans have a 15 percent higher average discharge rate than the United States population as a whole (1,352.5 vs 1,174.4 per 10,000).
- The average length of stay of 4.8 days was, however, similar to that of the U.S. as a whole.
- Heart disease was the most common discharge diagnosis among all racial and gender groups in Tennessee.
- Tennessee exceeded the national average in the number of discharges in seven of the 10 most common first-listed discharge diagnoses. However, Tennessee had somewhat lower discharge rates than the corresponding national average rates for malignant neoplasms, fractures, and psychoses.
- Women in Tennessee, as in the entire U.S., experienced a higher overall rate of hospitalization compared to males and higher rates in every major diagnostic category except heart disease.
- Overall discharge rates were similar for white and black populations in Tennessee, although Hispanics had a lower rate of hospitalization.

- The causes of hospitalization varied by race. Blacks reported higher discharge rates than whites for two of the 10 leading discharge conditions – surgical and medical complications – while whites reported more discharges for the remaining eight most common conditions.

The patient-level hospital discharge data used in this analysis contain information on a wide range of variables including primary and secondary diagnoses, utilization of services, comorbidity conditions, procedures performed, and hospital charges. Regular analysis and reporting of these data can be used for public health surveillance and evaluation and for improving the efficiency and productivity of the health delivery system. ■

References:

1. Tennessee Department of Health: Tennessee Hospital Discharge Data System. Nashville, Tennessee: Tennessee Department of Health, Health Statistics and Research, Nov 2002. Available at <http://www2.state.tn.us/health/statistics/PdfFiles/HDDS.pdf>.
2. National Center for Health Statistics: NCHS Definitions – Hospital. Available at <http://www.cdc.gov/nchs/datawh/nchsdefs/hospital.htm>.
3. DeFrances CJ, Hall MJ: 2005 National Hospital Discharge Survey. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Jul 12, 2007. Available at <http://www.cdc.gov/nchs/data/ad/ad385.pdf>.
4. U.S. Census Bureau: American Community Survey Profile 2005. Available at

http://factfinder.census.gov/servlet/DCGeoSelectServlet?ds_name=ACS_2005_EST_G00.

5. Centers for Disease Control and Prevention: Behavioral Risk Factor Surveillance System. Available at <http://www.cdc.gov/BRFSS/>.

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