Hospital Discharge Data, 2003

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Potentially Avoidable Hospitalizations in Tennessee, 2003

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In health care and elsewhere, it is difficult to improve what cannot be measured. To measure the quality of ambulatory care, researchers have recently focused on hospitalizations that can potentially be avoided.[1,2,3] These are inpatient admissions for certain conditions, called Ambulatory Care Sensitive Conditions (ACSCs), that can be prevented when clinicians deliver timely and effective outpatient treatment to individuals who actively participate in their own care, follow a healthy life style, and engage in responsible personal behavior.[4] Nationally, nearly five million inpatient admissions to U.S. hospitals in 2000 involved treatment for one or more of these ACSCs, resulting in a total cost of more than $26.5 billion.[5] High rates of hospitalizations for these conditions thus suggest resources wasted as well as opportunities for improving health system efficiency with timely and effective delivery of the less expensive primary care.

This report is an analysis of Tennessee hospitalization records for potentially avoidable admissions for 2003. It is an update of a previous report by the Methodist LeBonheur Center for Healthcare Economics based on hospital discharge data for 2002.[6,7] It adds major improvement by using the revised definitions of ACSCs released in 2006 by the Agency for Healthcare Research and Quality (AHRQ).[8] This updated version of ACSC definitions as described in the AHRQ's new Prevention Quality Indicators (PQIs) has moved two pediatric conditions, pediatric asthma and pediatric gastroenteritis, to a new and separate set of quality indicators for the pediatric population and the resulting 14 PQIs for adult populations now include:

PQI No.	Prevention Quality Indicators
1.	Diabetes short-term complications
2.	Perforated appendix
3.	Diabetes long-term complications
5.	Chronic obstructive pulmonary disease
7.	Hypertension
8.	Congestive heart failure
9.	Low birth weight
10.	Dehydration
11.	Bacterial pneumonia
12.	Urinary track infection
13.	Angina admission without procedure
14.	Uncontrolled diabetes
15.	Adult asthma
16.	Low-extremity amputation among patients with diabetes

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Method: Tennessee law (Tennessee Code Annotated (TCA), Section 68-1-108) requires that every licensed hospital report all claims data found on the 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 patient-level discharge information since 1997.[9] The data presented in this report contain excerpts from the 2003 HDDS dataset. For better comparability, the data used are only from acute-care general hospitals, including general medical and surgical hospitals, women's or OB/GYN hospitals, and pediatric hospitals. Excluded are long-term care hospitals, psychiatric hospitals, rehabilitation hospitals, and other specialty hospitals. The data cover the period from January 1, 2003, through December 31, 2003.

A critical first step in the analysis of the prevalence of potentially avoidable hospitalizations involves the identification of diseases or conditions for which timely and effective primary care can prevent the need for hospitalization. Lists of preventable admissions have been determined and reported by panels of experts.[1-3] In the early 1990s, the Agency for Healthcare Quality (AHRQ) asked researchers from the Evidence-Based Practice Center at the University of California San Francisco and Stanford University to review the literature and use validation tests to determine a narrow set of inpatient admissions with ACSC conditions. The results of a decade-long work were reported in a 2004 AHRQ publication under the Prevention Quality Indicators (PQIs) Project.[4]

For this report, we used the revised ACSC definitions as reported in the February 2006 revision of the AHRQ Publication, *AHRQ Quality Indicators – Guide to Prevention Quality Indicators: Hospital Admissions for Ambulatory Sensitive Conditions,* Version 3.0a. This publication, together with its sister publication, *AHRQ Quality Indicators - Prevention Quality Indicators: Technical Specifications* Version 3.0b, provides a comprehensive review of the origins, background, and technical specifications of the AHRQ Prevention Quality Indicators Project.

Results: In 2003, a total of 125,245 ACSC hospitalizations occurred in Tennessee (Table 1), representing about 15% of all inpatient discharges at acute-care hospitals across the State. The leading ACSC was bacterial pneumonia, accounting for 29,637 (24% of total) potentially avoidable hospitalizations in 2003. This was followed by congestive heart failure (29,096 or 23.7% of total) and chronic obstructive pulmonary disease (18,613 or 15% of total). Across most ACSCs, Tennesseans experienced a higher rate of potentially avoidable hospitalizations than did the U.S., with Tennessee exceeding the U.S. by a large margin in congestive heart failure, hypertension, chronic obstructive pulmonary disease, bacterial pneumonia, and low birth weight. In contrast, the U.S. had higher rates in 2003 in diabetes with long-term complications, angina without procedure, adult asthma, and perforated appendix.

Compared to the 2002 data, the 2003 data show a broad based decline of hospitalization rates in most ACSCs as shown in Table 1. These include congestive heart failure (610.7 vs. 511.4 per 100,000 adult population), bacterial pneumonia (562.0 vs. 520.9 per 100,000 adult population), adult asthma (117.3 vs. 107.2 per 100,000 adult population), hypertension (64.7 vs. 51.7 per 100,000 adult population), dehydration (195.1 vs. 142.0 per 100,000 adult population), angina without procedure (53.9 vs. 37.3 per 100,000 adult population), and perforated appendix (36.5 vs. 24.1 per 100

admissions for appendicitis). The rate of low birth weight hospitalizations experienced a negligibly small decline from 8.0 per 100 live births to 7.8 between 2002 and 2003.

Table 1. Potentially Avoidable Hospitalizations in 2003, Tennessee and U.S.

PQI No.	ACS Condition	No. of Discharges[1]	Rate per 100,000 Population	
			Tennessee	U.S.
1	Diabetes short-term complications	3,245	57.0	51.1
2	Perforated appendix[2]	1,111	24.1	30.6
3	Diabetes long-term complications	5,989	105.3	115.4
5	Chronic obstructive pulmonary disease	18,613	327.2	244.2
7	Hypertension	2,942	51.7	45.1
8	Congestive heart failure	29,096	511.4	468.4
9	Low birth weight[3]	6,167	7.8	5.8
10	Dehydration	8,081	142.0	127.7
11	Bacterial pneumonia	29,637	520.9	420.7
12	Urinary tract infection	10,740	188.8	170.2
13	Angina without procedure	2,123	37.3	45.9
14	Uncontrolled diabetes	1,400	24.6	21.0
15	Adult asthma	6,099	107.2	125.1
16	Lower-extremity amputation among patients with diabetes	2	0.0	36.6
	Total[4]	125,245	2,073.5	1,871.4

[1] Includes 119,078 adult cases and 6,167 low birth weight births.

[2] Perforated Appendix rate calculated for each 100 admissions for appendicitis.

[3] Low Birth Weight rate calculated for each 100 births.

[4] The rate per 100,000 population excludes Perforated Appendix and Low Birth Weight because they are calculated for 100 at-risk population

Female patients were responsible for 73,434 hospitalizations for ACSCs, while males were responsible for the remaining 51,809. With male and female patients admitted for an ACSC representing 16.9% and 15.6% of the respective total discharges of the 2 gender groups, there appeared to be little gender difference in ACSC hospitalizations as a percentage of total hospitalizations in Tennessee in 2003.

Table 2. Discharges for ACSCs by Gender

Gender	All Discharges	ACSC Discharges	Percent ACSC of Total
Female	469,741	73,434	15.6%
Male	307,365	51,809	16.9%
Unknown	14	2	14.3%
Total	777,120	125,245	16.1%

Table 3 summarizes ACSC hospitalizations by race. In 2003, Black and White Tennesseans reported 127,685 and 612,020 inpatient hospitalizations, respectively, for all conditions. Black patients appeared to have a slightly higher rate of ACSC hospitalizations than White patients, while Hispanics and other small racial groups, such as Asians, Native Americans, and Pacific Islanders, exhibited much lower rates than either the White or Black population subgroup.

Table 3. Discharges for ACSCs by Race, 2003

Race	All Discharges	ACSC Discharges	Percent ACSCs of Total
White	612,020	99,086	16.2%
Black	127,685	22,147	17.3%
Hispanic	8,776	696	7.9%
Other	14,348	2,037	14.2%
Unknown	14,291	1,279	8.9%
Total	777,120	125,245	16.1%

Table 4 reports ACSC hospitalizations by major payer group. There appeared to be substantial inter-group differences in the proportion of potentially avoidable hospitalizations in 2003. Medicare led the proportion of ACSC hospitalizations, with 23.8% of its inpatient discharges being potentially preventable. In comparison, only 12.3% of hospitalizations paid by TennCare (Tennessee's managed-care Medicaid program) were for ACSCs while the percentage for Commercial and BlueCross BlueShield plans were only 8.7%.

Table 4. Discharge for ACSCs by Payer Group. 2003

Payer	All Discharges	ACSC Discharges	Percent ACSCs of Total
Medicare	335,199	79,810	23.8%
TennCare	149,327	18,298	12.3%
Commercial and BC/BS	242,100	21,053	8.7%
Self Insured/Self Pay	27,156	3,807	14.0%
Other	1,566	183	11.7%
Unknown	21,772	2,094	9.6%
Total	777,120	125,245	16.1%

The Self Insured/Self Pay category includes mostly patients who reported that they had no insurance coverage at the time of admission and, therefore, can be considered as uninsured. About 14.0% of Self Insured/Self Pay patients' hospitalizations were for ACSCs. Finally, the "Other" category, which includes Champus (military) and Workers Compensation, reported a rate of hospitalizations for ACSC conditions of 11.7%, lower than the state average of about 16.1%.

Discussion. In Tennessee, admissions for ACSC conditions comprised 16.1% of hospitalizations for all conditions in 2003, practically the same percentage as in 2002. There appeared to be little gender difference in the percentage of ACSCs, and the same can also be said about the Black and White population subgroups. However, Medicare exhibited a much higher proportion of ACSC hospitalizations than the state average because of the aged population it serves, while TennCare accounted for a proportionately smaller share of ACSCs. The other insurance categories reported still lower percentages of ACSCs than the two major public-sector insurance programs.

Hospitalizations for ACSCs have been referred to as potentially avoidable hospitalizations. They are believed to be a reliable indicator of the access to and quality of the ambulatory care system that serves the general population. Thus, the higher prevalence of ACSCs in Tennessee adds urgency for improving the adequacy and quality of the primary care system that serves the general population. Similarly, the reported high rates of ACSCs among the Medicare population deserve further scrutiny by both federal authorities and state and local health care decision makers. The elimination of even a portion of these expensive hospitalizations should free substantial resources for other health care services and can even reduce the pressure on health care costs in a state that is struggling with many health care challenges.

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For additional Tennessee Hospital Discharge Statistics, visit the Web site of the Methodist LeBonheur Center for Healthcare Economics at:
http://healthecon.memphis.edu/

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