

PATTERN OF ADMISSIONS FOR AMBULATORY CARE SENSITIVE CONDITIONS: 2004–2007

Ambulatory care sensitive conditions (ACSC) are conditions where good outpatient care can prevent the need for hospitalization, and where primary healthcare can prevent complications or increased severity of diseases. The objective of this study was to quantify how many patients were hospitalized at the University of South Alabama Medical Center (USAMC) for ACSC during a four year period (2004–2007), thus providing an indication of the availability of primary healthcare in the area. We hypothesized that only small variations in the rates of hospitalization throughout that period would occur. The data used were taken from the discharge records at USAMC. It included the demographics of patients with ACSC. It also showed the risks of mortality, ICU days, and length of hospital stay for patients. Data were analyzed for patients in the hospital's immediate and greater service area. A downward trend in hospitalizations for ACSC from 2004 to 2007 was observed; however, this was parallel to a decline in the population in the immediate service area. Most frequent ACSC-causing hospitalization were congestive heart failure, diabetes and pneumonia. Between 13% to 22% of patients spent at least one day in the intensive care unit and the majority of patients spent one to two days in the hospital and sustained charges between \$3,000–\$10,000. Data on patients who should have received preventable care and the costs of their treatments will help emphasize the importance of having adequate access to primary care physicians in the area.

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BACKGROUND

Ambulatory care sensitive conditions (ACSC) are diseases such as diabetes, hypertension, asthma, and congestive heart failure, which require continued medical management, and may require hospitalization if not treated by a primary care physician. A primary care physician is the patient's first contact with the healthcare system and is responsible for recommending specialists, as needed. Primary care physicians are also responsible for health promotion, counseling, disease prevention, health maintenance, patient education, and diagnosis and treatment of acute and chronic illnesses in a variety of healthcare settings.¹ Many people, particularly minorities, have difficulty accessing primary care, leaving them with only tertiary care from hospitals as a source of healthcare.² The over-utilization of hospitals for conditions that could have been treated in primary care causes a number of non-ideal circumstances. First, hospital bills from tertiary care are far greater than those from primary care, and may not be affordable to the minorities requiring ongoing care.² Second, over-burdening of ER and hospital beds creates longer wait times and poor utilization of services. Last, patients do not get the education needed for disease management in tertiary care, causing patients to frequently revisit the hospital.^{3,4}

The inner core of the city of Mobile, as well as the city of Prichard, hosts a predominantly African American, low-income population with an estimated annual income of \$13,596.⁵ The area has been designated as

medically underserved. Approximately two thirds of Mobile county's African American population (67.3%) live in the underserved area and almost 30% of patients living in the deprived areas have less than a high school education.

The University of South Alabama Medical Center (USAMC) is a 130-bed tertiary care facility. It is the major source of acute care to the underserved population. Research on data taken from the USAMC revealed that in the year 2003, 32.9% of hospitalizations were for patients with ACSC.⁵ Franklin Primary Health Center and the Mobile County Health Department are the main primary care providers for the medically underserved area. Franklin Primary Health Center has 10 clinics located throughout the county. Mobile County Health Department has 9 locations.

It is well recognized that ongoing access to primary healthcare can prevent hospitalizations for ACSC.¹ The objective of this study was to quantify how many patients were hospitalized at USAMC for ACSC during a four-year period (2004–2007). We hypothesized that only small variations in the rates of hospitalization throughout that period would occur. Quantifying the number of patients hospitalized will provide an indication of the availability of primary healthcare in the area.

METHODS AND MATERIALS

Through descriptive research, we studied the characteristics of patients with ACSC at the USAMC within the years of 2004–2007. We used comput-

Table 1. Ambulatory care sensitive conditions causing hospitalizations at USA Medical Center, 2004–2007

	2004		2005		2006		2007	
	Number	%	Number	%	Number	%	Number	%
Total	784		704		702		625	
Congestive heart failure	207	26.4	191	27.13	253	36.04	181	29.00
Diabetes	169	21.6	156	22.16	154	21.94	113	18.08
Pneumonia	138	17.6	134	19.03	133	18.95	145	23.20
COPD	65	8.3	57	8.09	54	7.69	45	7.2
UTI	62	7.9	56	7.95	34	4.84	53	6.46
Asthma	42	5.4	40	5.68	24	3.42	34	5.44
Hypertension	38	4.8	27	3.84	23	3.28	29	4.64
Angina	35	4.5	16	2.27	20	2.85	16	2.56
Dehydration	24	3.1	18	2.56	0	0	0	0
Appendicitis	4	0.5	7	0.99	7	1.00	8	1.28
Acute lung edema	0	0.0	2	0.28	0	0	1	0.16

COPD: chronic obstructive pulmonary disease, UTI: urinary tract infection

erized discharge records as the data source. Data were sorted using Statistical Analysis System software (SAS). The variables studied were: demographic characteristics, diagnoses, length of hospital stay, number of ICU days, risks of mortality, and the charges given to patients. We analyzed results for all patients coming to USAMC (greater service area) and for those living in the immediate service area, that is, the medically underserved area surrounding the hospital (zip codes: 36602, -03, -04, -05, -06, -07, -10, -12, and -17). Underlying changes in the population living in the underserved area were estimated by comparison of census

2000 population figures and 2007 population estimates for the same zip codes, provided by Nielsen Claritas.⁶

RESULTS

For the four-year period within the greater and immediate USAMC service area, a downward trend was evident in the number of hospitalizations for ACSC. However, there was also a downward trend in the population of the immediate service area, with an estimated net decrease of 8.6% of the population between 2000 and 2007. Tables 1 and 2 show the number and proportion of

hospitalizations for specific ACSC for each year between 2004 and 2007. Congestive heart failure, diabetes and pneumonia appear consistently as the three most frequent causes of hospitalizations for ACSC, with a slight increase in the proportion of patients hospitalized for pneumonia in the year 2007.

The majority of patients hospitalized with ACSC were African American, both for the greater service area (67% to 73%) and the immediate service area (85% to 92%). In the years of 2004 and 2005, 49% patients were male. Over the next couple of years the number of males increased (57% in 2006 and 56% in 2007). The

Table 2. Ambulatory care sensitive conditions causing hospitalizations at USA Medical Center. Immediate service area, 2004–2007

	2004		2005		2006		2007	
	Number	%	Number	%	Number	%	Number	%
Total	490		417		445		380	
Congestive heart failure	144	29.39	125	29.69	182	40.90	127	33.42
Diabetes	112	22.86	92	21.85	87	19.6	63	16.58
Pneumonia	75	15.31	78	18.53	86	19.3	86	22.63
COPD	43	8.78	34	8.08	33	7.42	28	7.36
UTI	43	8.78	24	5.70	19	4.27	32	8.42
Asthma	26	5.31	29	6.89	15	3.37	21	5.53
Hypertension	25	5.10	15	3.56	11	2.47	12	3.16
Angina	19	3.88	9	2.14	11	2.47	7	1.84
Appendicitis	3	0.61	1	0.24	1	0.22	3	0.79
Acute lung edema	0	0	2	0.48	0	0	1	0.26
Dehydration	0	0	8	1.90	0	0	0	0

COPD: chronic obstructive pulmonary disease, UTI: urinary tract infection

majority of patients were between the ages of 35 and 65 years old.

While most patients had low to moderate risks of mortality on admission, 13% to 22% of patients with ACSC spent at least one day in the intensive care unit (ICU). Most patients spent 1–2 days hospitalized, but 26% to 37% spent 3 to 5 days in the hospital. The typical amount charged for patients with ACSC was between \$3,000–\$10,000. However, between 20% to 30% of patients paid > \$10,000 in hospitalization bills.

DISCUSSION

The downward trend in hospitalizations for ACSC is encouraging in that it may reflect improved access to primary healthcare in the area. However, this downward trend may be explained because the population in the area was declining. It is necessary to continue monitoring the trend in ACSC hospitalizations along with the change in population. Continued monitoring will provide a more definitive picture of

whether the decreased number of hospitalizations can be attributed to better primary healthcare.

Our data indicate that there are considerable expenses to the healthcare system and to the patients from tertiary care that could have been prevented. Over the years, an increasing number of African Americans with a very low income received hospital care that was not affordable.³ At the national level, it has been estimated that a modest 5% decrease in hospitalizations for ACSC could result in \$1.3 billion savings from inpatient costs.⁷ The results presented here reveal the importance of access to primary health care for patients with chronic diseases.

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