



Issue Brief

May 2011

Non-urgent Emergency Department Use in Shelby County, Tennessee, 2009

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August 2012

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Introduction

In the United States, the main function of hospital emergency departments (EDs) is to provide trauma and emergency services for “people in imminent danger of losing their lives or suffering permanent danger to their health” (Cunningham, 2011). Hospital EDs are also a critical element within a disaster response system to prepare for pandemics and bioterrorism and respond to the needs of victims when a public health emergency occurs. However, many people use hospital EDs for non-urgent medical problems that can be treated at a clinic or a doctor’s office. Today, many local hospital EDs have become a last-resort provider of primary care for people who cannot afford health care. Many other people who have insurance use EDs for non-urgent problems because of their belief that they can get high-quality care without waiting for an appointment. Excessive use of the emergency department for non-urgent care is a serious health system problem for several reasons.

First, it contributes to overcrowding and longer ED wait times and places financial and logistical burdens on the hospital that provides the service (Weinick, Billings, and Burstin, 2002; Baker and Baker, 1994). It has been reported in the medical literature that ED overcrowding compromises patient safety and adversely affects the ability of ED staff to provide a timely response (Cowan and Trezciak, 2005; Eckstein and Chan, 2004). Reducing the excessive use of hospital emergency departments, including for non-urgent medical problems, has been a major priority of recent national health care reforms.

Non-urgent ED visits deserve public attention for another reason: they raise serious questions about whether residents in a community have adequate access to quality primary care.

Research has shown that low-income individuals, as well as minority racial and ethnic groups, are less likely than persons of more substantial means to have a regular source of care and, as a result, more likely to use hospital emergency rooms for routine primary care. Others, though insured, may not be aware of the primary care available to them and end up in the hospital emergency room for serious medical problems because of their delay in seeking needed care.

Thus from the perspective of community health, hospital emergency departments can serve as a “window” on the quality and adequacy of a community’s primary care network. Local communities such as Shelby County, Tennessee, that have a large minority population and concentration of poverty can benefit from consistently tracking the trends of ED use for non-urgent purposes by local residents. The data gathered can provide health officials and decision makers valuable information to gauge the effectiveness and accessibility of the local primary care system that plays a vital role in keeping residents healthy and preventing unnecessary downstream ED visits and hospitalizations (Weinick, Billings, and Burstin, 2002; Richardson and Hwang, 2001).

What is a Non-urgent ED Visit?

Researchers have long recognized the difficulty in determining the “urgency” of hospital ED visits. In the clinical setting, the level of urgency of ED visits is usually determined by the level of immediacy in minutes or hours assigned by the triage staff upon a patient’s arrival at the hospital ED. For example, the National Center for Health Statistics (NCHS) of the U.S. Department of Health and Human Services recommends the following five levels of urgency for classifying ED visits: (1) immediate (treat in 0 minute), (2) emergent (needs to be seen within 15 minutes of arrival), (3) urgent (between 15-60 minutes), (4) semi-urgent (1-2 hours), and (5) non-urgent (2-24 hours). NCHS has for many years used this classification system for collecting and reporting ED visits data in its annual National Hospital Ambulatory Medical Care Survey (NHAMC) (McCaig and Nghi, 2002).

The NHAMC approach, though useful for triaging patients in a busy hospital ED, has limited usefulness for public health; it sheds little light on the linkage between ED use and the external health care environment in the broader community where people live. This is because the

NHAMC ED classification system and other similar systems are for clinical purposes. They are mostly based on an *a priori* assessment by the frontline triage staff without taking into account the lessons that can be learned about the patient's medical condition and the broader underlying predisposing and enabling factors closely associated with the patient's health.

For research and public policy discussion, the diagnostically-based and empirically-verified NYU ED Algorithm designed by J. D. Billings and his colleagues is by far the most commonly used program (Center for Health and Public Service Research). In addition to the information analyzed on the severity of ED visits, the NYU ED Algorithm has the added advantage of empirically linking the admitting diagnoses to the role of the primary care physician and the capacity of the community health system in which the patient lives (Weinick, Billings, and Burstin, 2002). We applied this NYU software program to Tennessee outpatient discharge data for 2009 to identify and analyze ED visits for this report.

The NYU ED Algorithm and How It Works

The NYU ED Algorithm was developed by an expert panel of ED and primary care physicians and was based on the detailed medical records of 6,000 ED patients. Based on the information abstracted from the full patient records, the NYU researchers used their Algorithm to place ED visits that did not result in an admission into the following nine categories::

1. **Non-emergent** – The patient's initial complaint, presenting symptoms, vital signs, medical history, and age indicated that immediate medical care was not required within 12 hours.
2. **Emergent/Primary Care Treatable** – Based on information in the record, treatment was required within 12 hours, but care could have been provided effectively and safely in a primary care setting. The complaint did not require continuous observation, and no procedures were performed or resources used that are not available in a primary care setting (e.g., CAT scan or certain lab tests).
3. **Emergent, ED Care Needed , Preventable/Avoidable** – Emergency department care was required based on the complaint or procedures performed/resources used, but the emergent nature of the condition was potentially preventable/avoidable if timely and effective ambulatory care had been received during the episode of illness (e.g., flare-ups of asthma, diabetes, congestive heart failure, etc.).

4. **Emergent, ED Care Needed, Not Preventable/Avoidable** – Emergency department care was required and ambulatory care treatment could not have prevented the condition (e.g., trauma, appendicitis, myocardial infarction, etc.).
5. **Injury** – Injury was the principal diagnosis.
6. **Mental Health** – Mental health condition was the principal diagnosis.
7. **Alcohol Related** – Alcohol-related condition was the principal diagnosis.
8. **Drug Related** – Drug-related condition was the principal diagnosis.
9. **Unclassified** – Conditions that could not be classified due to insufficient sample sizes available to the expert panel.

Following the instructions of the NYU ED Algorithm (McCaig and Nghi, 2002) and the example of a New Jersey non-urgent ED report (DeLia, 2006), the following ED definitions were used in this report:

- ED visits falling into categories 1 and 2 are defined as **“non-urgent,”** meaning that they are potentially unnecessary. Examples of reasons for non-urgent or potentially unnecessary ED visits include sore throat and back problems.
- ED visits falling into categories 1 through 3 are defined as **“primary care sensitive”** because they are sensitive to (or modifiable by) the effective delivery of primary care outside the hospital. In other words, they are **“potentially avoidable”** by the delivery of effective primary care and can serve as an indicator of problems with access to primary care within a patient subgroup or in a local area.
- ED visits falling into category 4 are the least likely to be prevented with access to primary care or other medical interventions. They can be considered **“urgent,” “unpreventable,”** or **“necessary.”**
- ED visits falling into categories 5 – 9 are injury, mental health, or drug related and not the focus of this study.

Findings

Table 1 presents an overview of ED visits made in 2009 by residents of Tennessee and Shelby County, Tennessee. Notice that for simplicity, the original NYU categories 5 – 9 have been combined into one single category under the heading of “Unclassified and Other.”

ED Classification		Shelby County		Tennessee	
		ED Visits	% of Total	ED Visits	% of Total
a.	Non-urgent (NYU Categories 1 and 2)	176,933	52.1%	1,323,683	56.0%
b.	Emergent/ED Care Needed/ Preventable/Avoidable (NYU Category 3)	17,454	5.1%	108,580	4.6%
c.	Primary Care Sensitive ED Visits (a+b)	194,387	57.3%	1,432,263	60.6%
d.	Emergent/ED Care Needed/Not Preventable/Avoidable (NYU Category 4)	30,470	9.0%	231,943	9.8%
e.	Unclassified and Other*	114,431	33.7%	698,817	29.6%
Total ED Visits (a+b+d+e)		339,288	100.0%	2,363,023	100.0%

* The "Other" category includes ED visits for injury, mental health, alcohol and drug-related diagnoses.

The major points of Table 1 are:

- In 2009, a total of more than 2.3 million ED visits were made by Tennessee residents and close to 340,000 of them were made by residents of Shelby County, Tennessee.
- For Tennessee, 56.0% of all ED visits were non-urgent, while Shelby County's non-urgent ED visits as a percentage of all ED visits was lower at 52.1%.
- In 2009, 60.6% of Tennessee's total ED visits were primary care sensitive and, therefore, potentially avoidable. In comparison, 57.3% of ED visits in Shelby County were primary care sensitive.
- Tennessee and Shelby County had 9.8% and 9.0%, respectively, of ED visits that were emergent, required ED services, and were not preventable by primary care.

Next, the volumes of non-urgent and primary-care-sensitive ED visits for Shelby County and Tennessee as a whole by gender and age breakdown are examined, and the data are presented in Table 2.

Gender and Age	Shelby County		Tennessee	
	ED Visits	% of Total	ED Visits	% of Total
Male	64,379	36.4%	504,049	38.1%
Female	112,552	63.6%	819,598	61.9%
Unknown	2	0.0%	36	0.0%
Total	176,933	100.0%	1,323,683	100.0%
Children 0-17	51,292	29.0%	347,373	26.2%
Young Adults 18-39	73,464	41.5%	537,446	40.6%
Adults 40-64	41,806	23.6%	329,048	24.9%
Seniors 65 and Older	10,371	5.9%	109,816	8.3%
Total	176,933	100.0%	1,323,683	100.0%

The major points of the gender and age breakdown data are as follows:

- In Shelby County, as well as in the state as a whole, a majority of non-urgent ED visits were made by females, accounting for more than 60.0% of total ED visits in 2009.
- The pattern of the age distribution of non-urgent ED visits in Shelby County was similar to that shown for the state as a whole, with young adults 18 to 39 years of age accounting for over 40.0% of total non-urgent ED visits.
- Senior residents, aged 65 or older, were less likely to visit hospital emergency departments for non-urgent problems than were the younger residents, and this was true for both Shelby County and Tennessee as a whole.

Table 3 presents similar age and gender data for primary-care-sensitive ED visits. For 2009, the gender and age variations of primary-care-sensitive ED visits shown in Table 3 appeared similar to those for non-urgent ED visits presented in Table 2.

Gender and Age	Shelby County		Tennessee	
	ED Visits	% of Total	ED Visits	% of Total
Male	72,290	37.2%	551,794	38.5%
Female	122,094	62.8%	880,430	61.5%
Unknown	3	0.0%	39	0.0%
Total	194,387	100.0%	1,432,263	100.0%
Children 0-17	58,518	30.1%	377,322	26.3%
Young Adults 18-39	78,258	40.3%	565,404	39.5%
Adults 40-64	45,880	23.6%	360,823	25.2%
Seniors 65 and Older	11,731	6.0%	128,714	9.0%
Total	194,387	100.0%	1,432,263	100.0%

Does Shelby County have excessive levels of ED visits? To answer this question, the number of ED visits was converted into rates per 1,000 population for Shelby County and Tennessee. The comparison data are presented in Table 4.

ED Category	Shelby County	Tennessee	Shelby Co. vs. Tennessee
Non-urgent ED Visits	192	210	91%
Primary-Care-Sensitive ED Visits	211	227	93%
Total ED Visits	369	422	87%

Compared to Tennessee residents, Shelby County residents as a whole did not seem to have an excessively high level of ED visits based on the data for 2009 because:

- The rate of non-urgent ED visits per 1,000 population for Shelby County was 91.0% of that of Tennessee.
- The rate of primary-care-sensitive ED visits per 1,000 population for Shelby County was 93.0% of that of Tennessee.
- Finally, the rate of overall ED visits per 1,000 population for Shelby County was 87.0% of that of Tennessee.

Were there significant differences in non-urgent and primary-care-sensitive ED visits among the major racial and ethnic population subgroups in Shelby County, Tennessee? The relevant data for this question are presented in Table 5 for Shelby County, as well as for the state as a whole.

Race and Ethnicity	Shelby County		Tennessee		Shelby Co. vs.
	ED Visits	Per 1,000	ED Visits	Per 1,000	
	<u>Non-urgent ED Visits</u>				
White	28,583	80	703,274	148	54%
Black	130,779	272	286,068	269	101%
Hispanic	4,134	77	13,684	46	167%
Asian	568	26	2,311	24	105%
Native American/Alaskan Native	68	74	401	64	116%
Unknown or Missing Data	12,801		317,945		
Total	176,933	192	1,323,683	210	91%
	<u>Primary-Care-Sensitive ED Visits</u>				
White	31,102	88	762,089	161	55%
Black	144,125	299	313,026	294	102%
Hispanic	4,515	85	14,959	51	167%
Asian	622	28	2,500	26	106%
Native American/Alaskan Native	81	88	449	71	123%
Unknown or Missing Data	13,942		339,240		
Total	194,387	211	1,432,263	227	93%

The major points of Table 5 are:

- Significant racial and ethnic variations in non-urgent and primary-care-sensitive ED visits existed in Tennessee, with black Tennessee residents having the highest non-urgent and primary-care-sensitive ED visits per 1,000 population and Asian residents the lowest.

- Even greater racial and ethnic variations existed in Shelby County, Tennessee, with black Shelby County residents having rates of non-urgent and primary-care-sensitive ED visits per 1,000 population more than three times those of white Shelby County residents.
- When Shelby County is compared with the state as a whole, white Shelby County residents had significantly lower non-urgent and primary-care-sensitive ED visits per 1,000 population in 2009 than did whites in the state as a whole.
- But, black Shelby residents, in contrast, had slightly higher rates of both non-urgent and primary-care-sensitive ED visits per 1,000 population than did blacks in the state as a whole.
- Hispanic, Asian, and Native American Shelby County residents also had higher non-urgent and primary-care-sensitive ED visit rates than those groups in the state as a whole. But, the population size of these smaller racial and ethnic groups is too small to produce reliable population rates of non-urgent and primary-care-sensitive ED visits.

How much did ED visits made by Shelby County residents cost in 2009? The financial data for ED services, expressed in 2012 dollars, are presented in Table 6.

Table 6 - Hospital Charges and Reimbursements by Third-Party Payers in Shelby County, Tennessee, 2009¹

Third-Party Payer	No. of ED Visits	Avg. Hospital Charges	Estimated Avg. Amount Reimbursed	Total Hospital Charges	Estimated Total Reimbursement
Non-urgent ED Visits					
Private/Commercial	37,563	\$2,695	\$1,078	\$101,236,767	\$40,494,707
Medicare	18,162	\$3,256	\$593	\$59,136,922	\$10,762,920
TennCare	83,863	\$1,670	\$489	\$140,072,156	\$41,041,142
Self Pay/Charity/Uninsured	37,345	\$2,286	\$169	\$85,376,846	\$6,317,887
Other ²	22,412	\$2,181	\$654	\$48,871,935	\$14,661,581
Total	176,933	\$2,181	\$557	\$385,822,691	\$98,616,655
Primary Care Sensitive ED Visits					
Private/Commercial	40,688	\$2,731	\$1,092	\$111,120,476	\$44,448,191
Medicare	20,461	\$3,383	\$616	\$69,211,759	\$12,596,540
TennCare	92,890	\$1,785	\$523	\$165,844,226	\$48,592,358
Self Pay/Charity/Uninsured	40,348	\$2,375	\$176	\$95,825,195	\$7,091,064
Other ²	24,623	\$2,274	\$682	\$55,988,092	\$16,796,428
Total	194,387	\$2,562	\$666	\$497,989,749	\$129,524,581

¹Hospital charges and reimbursements (amounts paid) are expressed in 2012 dollars.

²The "Other" category includes Jail Inmates, Federal Workers' Insurance, Workers' Compensation, and TriCare, etc.

The major points of Table 6 are as follows:

- Hospitals that provided ED services in Shelby County, Tennessee, billed patients and their third-party payers more than \$385 million for “non-urgent” ED visits in 2009. When emergent, primary care needed, preventable/avoidable ED visits were added, the total bill for “primary-care-sensitive” ED visits was close to \$498 million in 2009.
- Hospitals do not get their charges fully reimbursed. In 2009, they received from patients and third-party payers close to \$130 million for providing hospital ED care that was primary care sensitive and potentially avoidable.
- Among the major third-party payers, TennCare was billed the largest amount of total charges for reimbursement and paid more in total reimbursements than any other third-party payer.
- However, on a per-visit basis, Medicare had the higher per-visit charges, on average, while private/commercial insurers paid more generously than any other third-party insurers on a per-visit basis.
- It is a myth that only insured patients use hospital EDs for non-urgent and primary-care-sensitive medical problems. In Shelby County, Tennessee, insured patients actually were responsible for close to 80.0% of all of the non-urgent and primary-care-sensitive ED visits in 2009. Uninsured patients, while representing about 15.0% of the total county population, were responsible for about 20.0% of the total non-urgent and primary-care-sensitive ED visits.

What Does All This Mean to Shelby County, Tennessee?

Potentially avoidable ED use is a health care quality issue. A direct impact of non-urgent and primary-care-sensitive ED visits is that they contribute to ED overcrowding and reduce physician response time in a crowded hospital ED. This is also a symptom of many underlying trends in the health care system of a local community, including the capacity constraints of local hospitals, lack of access to primary care due to patients’ inability to pay or lack of insurance coverage, and personal-care-seeking behaviors. When patients use hospital EDs for routine care that can be delivered more efficiently and economically in a community clinic or doctor’s office, the quality of the health care system suffers. This is due in part to poor communication and coordination between hospital EDs and physicians’ offices (Carrier, Yee, and Holzwart, 2011). The sharing of information and the coordination of activities between these two critical segments of the local health care system are still the exception in most local communities and not the rule at the present time.

Both insured and uninsured patients make non-urgent and potentially avoidable hospital ED visits. It is a myth that only uninsured patients use EDs for non-urgent medical problems. Our results show that in Shelby County, Tennessee, both insured and uninsured residents alike frequently visited hospital EDs for non-urgent and primary-care-treatable medical problems. These potentially avoidable ED visits add millions of extra dollars to the health care costs that must be paid by insurance companies, employers, and taxpayers.

Millions of dollars can be saved without compromising the quality of care. Our finding of as much as \$130 million worth of ED visits that were potentially avoidable suggests another weakness in our health care system—that scarce health care resources have not been put to their best use because of the fragmentation of our delivery system and an under-utilization of community-based primary care. It also suggests that opportunities exist to save millions of dollars without compromising the quality of care by strengthening the primary care system and by improving communication and care coordination between hospitals and community primary care providers.

Substantial racial and ethnic variations exist in non-urgent use of hospital EDs. Another major finding of this report is that the rate of non-urgent and primary-care-sensitive ED visits per 1,000 population in Shelby County was not extraordinarily high; it was about 91.0% - 93.0% of that found for the state as a whole. However, these statistics for the overall general population mask the substantial differences in the patterns of racial and ethnic variations between Shelby County and the state. Among the major racial and ethnic population groups in 2009, for example, black Shelby County residents had about the same population rates of non-urgent and primary-care-sensitive ED visits as those experienced by blacks in the state as a whole. The lower rates of potentially avoidable ED visits reported for all Shelby County residents were primarily the result of the much lower white rates when compared to the white rates for the state as a whole.

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