

# Modifiable Determinants of Healthcare Utilization within the African-American Population

George Rust, MD, MPH; George E. Fryer Jr, MSW, PhD; Robert L. Phillips Jr, MD, MSPH; Elvan Daniels, MD; Harry Strothers, MD, MMM; and David Satcher, MD, PhD

Atlanta, Georgia and Washington, DC

**Background:** Significant health disparities directly affect the African-American population. Most previous studies of disparities in access to and utilization of healthcare have focused on black-white differences rather than focusing on "within-group" analysis of African Americans.

**Objective:** To tease out the differential effects of modifiable risk factors (such as health insurance, usual source of care, and poverty) from personal characteristics (age, gender, rural residence) on healthcare utilization within the African-American population.

**Methods:** Secondary data analysis of 3,462 records from African-American respondents to the 1999 Medical Expenditure Panel Survey (MEPS) Household File, a nationally representative survey of the civilian, noninstitutionalized U.S. population in 1999.

**Results:** We found significant variation in the number of office visits, outpatient clinic visits, hospital discharges, days hospitalized, and fills of prescribed medication among 3,462 African-American respondents who represent a U.S. population of 36,538,639 persons. Personal nonmodifiable characteristics such as age and gender were significantly related to healthcare utilization. Poverty and rural residence were also significantly correlated, but the strongest modifiable predictors of healthcare utilization for African-American persons in 1999 were whether or not individuals had health insurance and/or a usual source of care. Emergency department visits were the only form of care that showed remarkably little variation based on these modifiable risk factors.

**Conclusions:** The three modifiable factors of poverty, uninsurance, and having a primary care medical home have a dramatic effect on patterns of care for African-American patients and could be independently targeted for intervention.

**Key words:** healthcare ■ utilization ■ access ■ race ■ African Americans ■ disparities

© 2004. From the Morehouse School of Medicine, Atlanta, GA (Rust, deputy director, National Center for Primary Care and professor of Family Medicine; Daniels, research assistant professor and associate director for Community Oriented Primary Care, National Center for Primary Care; Strothers, associate professor and associate chair for education, Department of Family Medicine; and Satcher, director, National Center for Primary Care and professor of Community Health/Preventive Medicine) and Robert Graham Center for Policy Studies in Family Medicine & Primary Care, Washington, DC (Fryer, Jr; Phillips, Jr). Send correspondence and reprint requests for *J Natl Med Assoc*. 2004; 96:1169-1177 to: George Rust, Deputy Director, National Center for Primary Care and Professor of Family Medicine, Morehouse School of Medicine, 720 Westview Drive, Atlanta, GA 30310; phone: (404) 756-1236; fax: (404) 756-5767; e-mail: rustg@msm.edu

## INTRODUCTION

Racial and ethnic disparities in healthcare have been documented in numerous studies,<sup>1-7</sup> which have been summarized in national reports, such as the Institute of Medicine's *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care*<sup>8</sup> and various Kaiser Family Foundation reports on *Race, Ethnicity, and Medical Care*.<sup>9,10</sup> Some of the most rigorously documented studies have shown racial differences in the use of cardiovascular procedures for patients hospitalized with coronary heart disease,<sup>11,12</sup> but clinical and demographic factors still do not adequately explain why African Americans are significantly less likely to undergo revascularization procedures.<sup>9,13</sup>

Studies exploring disparities in cardiac procedures have traditionally been framed as studies of black-white differences, including racism as a cause of such disparities.<sup>14</sup> Far fewer studies have sought to assess the modifiable factors that drive disparities within the subgroup of African Americans. In other words, why do some African-American patients receive optimal care, while many others do not? Understanding "within-group" differences may better identify specific factors around which interventions could be designed to reduce health disparities in the African-American population. The Anderson and Aday model provides a conceptual framework for analyzing modifiable determinants of healthcare

utilization,<sup>15,16</sup> and this framework can be further informed by Williams' sociologic perspective on personal and contextual factors that uniquely influence health status among African Americans.<sup>17,18</sup>

Access to care through health insurance, especially Medicare, has been shown to have a significant impact on improving access to care and health outcomes in high disparity groups, such as the African-American population. Zuvekas et al. concluded from their own analyses of MEPS data that while health insurance did not by itself explain the persistent racial & ethnic disparities, it was a significant contributing factor.<sup>19</sup> However, the disparities literature has tended to lump modifiable risk factors with nonmodifiable demographic characteristics of the individual in explaining variations in the use of health services. For example, studies identify being "poor, black, and uninsured" as common risk factors for lower overall healthcare utilization and costs, without differentiating the impact of modifiable risk factors (uninsurance, medical home, etc.) on members of each racial-ethnic subgroup.<sup>20</sup> In this study, therefore, we have sought to understand the modifiable determinants of healthcare utilization within the African-American population in order to focus on intervention points that could improve health outcomes for this high-disparity population. We also assessed the impact of clustered factors among the healthcare disadvantaged (poor, uninsured, with no medical home) vs. the healthcare advantaged (non-poor, insured, with a medical home).

## METHODS

### Data Source

Data for the U.S. civilian, noninstitutionalized population were taken from the 1999 Medical Expenditure Panel Survey (MEPS) sponsored by the Agency for Healthcare Research and Quality (AHRQ).<sup>21</sup> MEPS is a nationally representative survey of a sample of households drawn from previous National Health Interview Survey (NHIS) participants. Data in 1999 were collected for 23,565 persons by computer-assisted personal interviews.

In this study, household component records describing the sociodemographics, health insurance coverage, and healthcare utilization of survey participants were analyzed. MEPS records are weighted for the calculation of national estimates, usually with relatively small standard errors. Race is recorded as one of five categories in the MEPS records. African Americans were substantially oversampled in the 1999 survey. We analyzed data from all 3,462 all-civilian, noninstitutionalized African-American respondents to the survey, representing a U.S. African-American population of 36,538,639.

## Study Variables

Dependent variables related to our research question consisted of measures of utilization in the various healthcare settings and for medications, including the following five variables:

- 1) Visits to physician's office (or other health professional provider's office).
- 2) Visits to hospital outpatient departments (hospital-based clinics).
- 3) Inpatient hospitalizations—discharges and nights in hospital.
- 4) Visits to emergency departments (EDs).
- 5) Prescribed medications—fills.

Self-reported health status and self-reported mental health status (two variables) were also assessed as dependent variables but are not measures of healthcare utilization.

Predictor variables used in the analysis were:

- 1) Age—four groups; children (under 18 years of age), adults 18–44, 45–64, and the elderly (over 64 years of age).
- 2) Sex—female or male.
- 3) Residence—resident of a Metropolitan Statistical Area (MSA) county or a resident of a non-MSA county. Small samples of African Americans in some regions precluded using census region in the model.
- 4) Household income—reported family income divided by the federal poverty level based on family size and composition, with the resulting percentages grouped into five categories (<100% of federal poverty level, 100–124% of federal poverty level, 125–199% of federal poverty level, 200–399% of federal poverty level, and >400% of federal poverty level).
- 5) Health insurance—three groups: private insurance; public insurance only (Medicare, Medicaid and dual-eligibles); and no insurance, without regard for adequacy of coverage.
- 6) Usual source of care—response to the question: "Is there a particular doctor's office, clinic, health center, or other place that you go if you are sick or need advice about your health?"

## Analytical Strategy

Descriptive analyses were first performed estimating services received in each care setting and utilization of prescribed medicines. Comparisons on these measures were made across categories of the predictor variables enumerated above for African Americans (Table 1). We then evaluated potential predictor variables for inclusion in multivariate analyses. Bivariate tests indicated strong associations between each of the predictor variables and measures of healthcare utilization in at least one setting. We also tested the associations with and with-

out children and the elderly in the analysis, and found similar patterns. Therefore, all of the listed variables were used in separate logistic and linear regressions to model healthcare use by the setting in which the service was received. Logistic regression was performed to model whether or not an individual had received care at least once for each of the settings and for receipt of at least one prescribed medication fill. Adjusted odds ratios for whether or not a service was received were calculated for each predictor variable (Table 2), because of the potential for skewing of data by the large numbers of persons

**Table 1. Mean Annual Healthcare Utilization for African Americans by Demographic Characteristics and Modifiable Factors (Insurance Status and Usual Source of Care), 1999**

Category/ Item	Number	Percent	Office Visits	Hosp Outpt. Clinic Visits	ED Visits	Hospital Discharges	Hospital Bed-Days	Rx Fills + Refills
<i>Age Group</i>								
Under 18	11,937,112	33.1	1.58	0.08	0.15	0.03	0.10	1.38
18-44	14,773,451	40.9	2.19	0.31	0.19	0.09	0.28	3.32
45-64	6,522,838	18.1	3.82	0.59	0.20	0.12	0.72	12.07
65+	2,872,592	8.0	6.77	1.07	0.22	0.23	1.30	21.81
P value**			<0.01	<0.01	0.18	<0.01	<0.01	<0.01
<i>Sex</i>								
Male	16,987,105	46.5	2.24	0.27	0.16	0.06	0.40	4.41
Female	19,551,534	53.5	2.96	0.41	0.20	0.12	0.48	6.81
P value**			<0.01	0.13	0.03	<0.01	0.43	<0.01
<i>MSA vs. non-MSA (Urban-rural)</i>								
MSA	31,833,017	88.2	2.60	0.35	0.17	0.08	0.31	5.41
Non-MSA	4,272,976	11.8	2.96	0.31	0.25	0.15	0.93	8.13
P value**			0.25	0.78	0.02	<0.01	0.01	0.01
<i>Family income as % fed. poverty level</i>								
Poor	8,799,737	24.1	2.78	0.43	0.24	0.13	0.67	7.19
Near poor	2,328,651	6.4	1.78	0.22	0.17	0.08	0.42	5.40
Low Income	6,393,948	17.5	2.37	0.34	0.19	0.08	0.38	5.02
Middle Income	10,643,391	29.1	2.88	0.24	0.17	0.09	0.50	5.57
High Income	8,372,911	22.9	2.60	0.42	0.13	0.06	0.20	4.87
P value**			0.02	0.28	0.03	0.09	<0.01	0.10
<i>Health Insurance Coverage</i>								
Any private	21,240,269	58.1	2.61	0.33	0.15	0.07	0.31	4.93
Public only	9,999,210	27.4	3.44	0.51	0.27	0.16	0.88	9.37
Uninsured	5,299,199	14.5	1.16	0.08	0.15	0.04	0.17	1.83
P value**			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<i>Has Usual Source of Care?</i>								
Yes	28,389,137	20.0	3.08	0.41	0.19	0.10	0.44	6.89
No	7,089,761	80.0	1.08	0.13	0.15	0.04	0.13	1.55
P value**			<0.01	<0.01	0.14	<0.01	<0.01	<0.01
<i>Total African-American Population in MEPS*</i>								
	36,538,639	100.0	2.63	0.34	0.18	0.09	0.45	5.69

\* This represents the number of individuals in the U.S. African-American population, a number generated by applying statistical weights to raw survey data. Due to missing data on some items, totals for some categories may be less than 36,538,639; \*\* derived from ANOVA F values

who had zero events (zero hospital admissions or emergency visits, for example). Linear regression was done to model the actual quantity of services and medication fills received. Its beta coefficients are straightforward measures of the strength of the effect of predictor variables on healthcare utilization (Table 3). Analyses were done with SUDAAN to adjust variance estimates due to MEPS survey design complexity, particularly the substantial oversampling of certain population groups.

Finally, we also assessed the clustered effect of certain predictor variables, identifying individuals at the extremes of being advantaged or disadvantaged with regard to healthcare (Table 4). Members of the healthcare-disadvantaged group have family income below the poverty level, no health insurance, and no usual source of care. The healthcare advantaged group has family income above 400% of poverty, health insurance, and a usual source of care.

## RESULTS

There was valid data for 3,462 African-American respondents to the survey, representing a U.S. African-American population of 36,538,639 civilian, noninstitutionalized persons. Respondents had a median age of 30.0 years. Differences in self-reported health status and mental health status were not striking, but showed a predictable decline in health status with age, and worse health status associated with rural residence and with being publicly insured (Medicare or Medicaid). African-American individuals living in rural areas were also a bit more likely to be older (median age 31.0 years for non-MSA and 29.0 years for MSA). We also found that the "near poor", who may not qualify for Medicaid nor be able to afford private insurance, had worse health status than either the poor or any other income group.

The pattern of healthcare utilization for African-American persons by demographic and other characteristics in 1999 is depicted in Table 1. Variations are seen by age group and gender. Elderly and

**Table 2. Adjusted Odds Ratios for Predictors of Healthcare Utilization (yes/no for each item) among African Americans, 1999 (with 95% Confidence Intervals)**

Category/Item	Office Visits	Hosp Outpt.	Clinic Visits	ED Visits	Hospital Discharges	Rx Fills + Refills
<i>Age Group</i>						
Under 18	0.20 (0.13, 0.30)	0.16 (0.10, 0.24)	0.81 (0.55, 1.18)	0.81 (0.09, 0.30)	0.09 (0.06, 0.14)	
18-44	0.23 (0.16, 0.35)	0.49 (0.32, 0.73)	1.19 (0.81, 1.76)	0.80 (0.47, 1.38)	0.17 (0.11, 0.27)	
45-64	0.47 (0.31, 0.71)	0.86 (0.56, 1.30)	1.15 (0.73, 1.80)	0.96 (0.54, 1.72)	0.35 (0.22, 0.54)	
65+	1.00	1.00	1.00	1.00	1.00	1.00
<i>Sex</i>						
Male	0.65 (0.54, 0.77)	0.76 (0.60, 0.96)	0.91 (0.73, 1.14)	0.50 (0.36, 0.70)	0.70 (0.59, 0.83)	
Female	1.00	1.00	1.00	1.00	1.00	1.00
<i>MSA vs. non-MSA</i>						
MSA	0.92 (0.67, 1.26)	0.91 (0.59, 1.42)	0.78 (0.55, 1.09)	0.63 (0.45, 0.87)	0.79 (0.61, 1.03)	
Non-MSA	1.00	1.00	1.00	1.00	1.00	1.00
<i>Income/Poverty Status</i>						
Poor	0.82 (0.51, 1.34)	1.39 (0.80, 2.41)	1.63 (1.02, 2.61)	1.38 (0.75, 2.54)	0.93 (0.62, 1.38)	
Near Poor	0.50 (0.27, 0.93)	0.76 (0.39, 1.47)	1.10 (0.58, 2.08)	0.98 (0.50, 1.94)	0.68 (0.41, 1.12)	
Low Income	0.76 (0.53, 1.11)	0.92 (0.56, 1.52)	1.39 (0.85, 2.28)	1.09 (0.61, 1.96)	0.90 (0.67, 1.22)	
Middle Income	0.83 (0.57, 1.21)	1.00 (0.66, 1.51)	1.42 (0.97, 2.08)	1.40 (0.86, 2.26)	0.76 (0.55, 1.05)	
High Income	1.00	1.00	1.00	1.00	1.00	1.00
<i>Health Insurance</i>						
Any Private	3.64 (2.79, 4.75)	1.82 (1.08, 3.09)	1.28 (0.82, 1.99)	1.36 (0.72, 2.58)	2.57 (1.97, 3.35)	
Public Only	4.13 (2.80, 6.09)	2.07 (1.27, 3.36)	1.99 (1.23, 3.23)	3.06 (1.61, 5.81)	2.96 (2.09, 4.20)	
Uninsured	1.00	1.00	1.00	1.00	1.00	1.00
<i>Usual source of care?</i>						
Yes	4.47 (3.37, 5.92)	3.99 (2.02, 7.87)	1.00 (0.69, 1.44)	1.91 (1.12, 3.27)	2.73 (2.01, 3.70)	
No	1.00	1.00	1.00	1.00	1.00	1.00

female African-American persons used more health-care in all settings and received more medications during the year than did younger and male African Americans. With the exception of hospital outpatient departments, African Americans living in rural (non-MSA) areas were more frequent users of care in all settings, with rural residents spending three times as many days in the hospital as MSA residents. This may reflect the greater proportion of African-American elders remaining in rural areas. After controlling for age, gender, and insurance status, rural residence was not a significant factor related to healthcare utilization of any service except hospitalization. The poorest group used services most often in every setting other than providers' offices, but the near-poor, who are less likely to qualify for Medicaid, had lower utilization.

In the 1999 MEPS sample, 14.5% of African Americans were uninsured, and 20% had no usual source of care. Health insurance status is strongly related to healthcare utilization. African Americans who were uninsured trailed both insured categories for all settings of care other than the emergency room. Those with only public health insurance were much greater consumers of healthcare, reflecting higher utilization by the elderly (Medicare/Medicaid) and by the poor (Medicaid). For example, those with public health insurance obtained prescription medication at a rate five times higher than did the uninsured. This pattern of higher utilization for the insured vs. the uninsured (in all settings except the emergency room) held true as well for the subgroup of nonelderly adults (i.e., when children and the elderly were excluded).

African Americans with a usual source of care also used outpatient visits, inpatient hospital bed-days, and prescription drugs two-to-four times more often than those without such an arrangement. Having a usual source of care did not significantly affect ED visits, which were much more strongly associated with insurance status.

Results of seven separate regression procedures for utilization in each setting and prescribed medications are portrayed in Table 3. It illustrates the unique contribution of each predictor characteristic and healthcare arrangement. Controlling for the effects of all other predictors, several factors were significantly associated with each utilization measure, and the overall model was significant in predicting utilization ( $p < 0.01$ ). Although poverty was a significant factor for some types of utilization, age, health insurance status, and having a usual source of care were the most important predictors of utilization for African-American persons in 1999.

Table 4 depicts a comparison of two groups with very different capacities to obtain needed health-

care. Members of the disadvantaged group have family income below the poverty level, no health insurance, and no usual source of care. In the U.S. population, this represents over a half million (527,474) "healthcare disadvantaged" persons, or 1.4% of our entire sample. The advantaged group has family income above 400% of poverty, health insurance, and a usual source of care. This is actually a much larger group, representing more than six million (6,169,181) African Americans (17.1% of the study population) in 1999. These data should be interpreted with caution due to the small number of MEPS participants in each subgroup.

Utilization in all settings except the emergency room was dramatically greater for African Americans with the necessary financial means and arrangements to obtain care. There was also an interesting relationship between hospitalizations and ED visits. The most-disadvantaged African-American patients had only one hospital admission for every 10 ED visits, but insured, middle- and upper-income African-American patients with a usual source of care had a hospitalization for every two ED visits. Focusing on the impact of insurance status among adult patients age 18–64, the uninsured had 3.6 ED visits per hospital admission, while the insured were hospitalized once for every 1.7 ED visits.

## DISCUSSION

These data suggest that within each age-gender subgroup, whether or not an individual has health insurance and a source of usual care is the most important modifiable factors driving use of needed health services within the African-American population. Poverty is also a significant and modifiable factor. Combining the three factors of health insurance, adequate income, and having a primary care medical home was a powerful predictor of the use of specific health services that could improve health outcomes within the African-American population.<sup>22</sup> For example, use of doctor's office visits was four times higher among African-American patients who were "health-advantaged" (i.e., individuals with all three factors present—insured, nonpoor persons with a defined medical home) compared with the "health disadvantaged".

These disparities in healthcare utilization are important, because ultimately they drive specific racial disparities in health status and health outcomes. For example, African-American patients are significantly less likely than whites to receive influenza vaccine,<sup>23</sup> more likely to report barriers to obtaining mammography,<sup>24</sup> more likely to be diagnosed with late-stage cancer, and more likely to die from cancer.<sup>25</sup> Regardless of race or ethnicity, women participating in routine mammography

screening had earlier-stage disease by five-to-13 percentage points.”<sup>26</sup>

In previous studies, the modifiable risk factors of having health insurance and having a usual source of care strongly and independently predicted use of essential preventive services.<sup>27</sup> Selvin et al. found that having a medical home was “the most important predictor” of cancer screening use for all racial-ethnic groups.<sup>28</sup> In one study, in which each patient had not only a usual source of care but also an ongoing relationship with his/her own family physician, there were *no racial differences* in the provision of screening services, and African Americans were actually slightly more likely than whites to receive preventive counseling with regard to health behaviors!<sup>29</sup> Unfor-

tunately, the usual source of care for African-American individuals is less likely to be in settings that offer continuity of care with a personal physician and more likely to be in hospital outpatient departments or EDs.<sup>30,31</sup>

To some extent, the issues may also be quite different for each minority group. For example, in analyzing data from nationally representative surveys conducted in 1996–1997 and 1998–1999, Hargraves found that more than 80% of the difference between Hispanic and white, non-Hispanic respondents was due to differences in measured characteristics (e.g., insurance coverage, income, and available safety net services), but that these factors did *not* sufficiently explain the black–white differences.<sup>32</sup> For the Hispanic population,

**Table 3. Multivariate Analysis—Regression Coefficients and P Values for Predictors of Healthcare Utilization among African Americans, 1999**

Category/Item	Office Visits		Hosp Outpt. Clinic Visits		ED Visits		Hospital Discharges		Rx Fills + Refills	
	Beta	p-value	Beta	p-value	Beta	p-value	Beta	p-value	Beta	p-value
<i>Overall Model</i>		<b>&lt;0.01</b>		<b>&lt;0.01</b>		<b>&lt;0.01</b>		<b>&lt;0.01</b>		<b>&lt;0.01</b>
<i>Age Group</i>		<b>&lt;0.01</b>		<b>&lt;0.01</b>		0.03		<b>&lt;0.01</b>		<b>&lt;0.01</b>
Under 18	-4.93	<0.01	-0.96	<0.01	-0.03	0.35	-1.13	<0.01	-19.63	<0.01
18-44	-3.74	<0.01	-0.60	0.04	0.04	0.35	-0.71	0.04	-15.65	<0.01
45-64	-2.41	<0.01	-0.37	0.22	0.05	0.32	-0.30	0.41	-7.47	<0.01
65+	0.00		0.00		0.00		0.00		0.00	
(Reference Group)										
<i>Sex</i>		<b>0.25</b>		<b>0.51</b>		<b>0.14</b>		<b>0.48</b>		<b>0.04</b>
Male	-0.30	0.25	-0.06	0.51	-0.03	0.14	0.09	0.48	-0.88	0.04
Female	0.00		0.00		0.00		0.00		0.00	
(Reference Group)										
<i>MSA vs. non-MSA</i>		<b>0.47</b>		<b>0.56</b>		<b>0.05</b>		<b>0.01</b>		<b>0.03</b>
MSA	-0.20	0.47	0.07	0.56	-0.07	0.05	-0.56	0.01	-1.91	0.03
Non-MSA	0.00		0.00		0.00		0.00		0.00	
(Reference Group)										
<i>Income/Poverty</i>		<b>0.02</b>		<b>0.37</b>		<b>0.28</b>		<b>&lt;0.01</b>		<b>0.01</b>
Poor	0.36	0.40	0.08	0.78	0.07	0.08	0.35	0.03	2.88	<0.01
Near Poor	-0.36	0.09	-0.14	0.52	0.02	0.72	0.23	0.20	0.82	0.40
Low Income	0.03	0.92	0.00	0.99	0.05	0.21	0.16	0.12	0.97	0.12
Middle Income	0.44	0.25	-0.14	0.23	0.04	0.12	0.31	<0.01	1.18	0.02
High Income	0.00		0.00		0.00		0.00		0.00	
(Reference Group)										
<i>Health Insurance</i>		<b>0.01</b>		<b>&lt;0.01</b>		<b>&lt;0.01</b>		<b>0.01</b>		<b>&lt;0.01</b>
Any Private	1.03	0.02	0.23	0.07	0.02	0.71	0.18	0.04	2.32	<0.01
Public Only	1.56	<0.01	0.35	0.02	0.13	<0.01	0.51	<0.01	4.79	<0.01
Uninsured	0.00		0.00		0.00		0.00		0.00	
(Reference Group)										
<i>Usual source of care?</i>		<b>&lt;0.01</b>		<b>&lt;0.01</b>		<b>0.31</b>		<b>&lt;0.01</b>		<b>&lt;0.01</b>
Yes	1.69	<0.01	0.24	0.41	0.03	0.31	0.28	<0.01	4.11	<0.01
No	0.00		0.00		0.00		0.00		0.00	
(Reference Group)										

primary language (Spanish-speaking vs. English-speaking) is also a significant predictor of use of physician visits, flu vaccination, or mental health services.<sup>33</sup>

Race, poverty, and having health insurance and/or a usual source of care have also been correlated with hospitalization for ambulatory care sensitive conditions. National Hospital Ambulatory Medical Care Survey (NHAMCS) data also showed that follow-up arrangements for African-American patients were less likely to result in ongoing primary care.<sup>33,34</sup> Previous studies have also shown significant racial-ethnic differences in the use of medication related to specific high-disparity conditions, such as hypertension, asthma, diabetes, depression, schizophrenia, hyperlipidemia, and HIV/AIDS.<sup>35-41</sup> Inadequate treatment of any one or more of these conditions has the potential to drive disparate rates of disability and death in the African-American population. In our study, use of prescription drugs was significantly lower among the uninsured and lowest among the health-disadvantaged. This could reflect either lower rates of care for acute and chronic conditions (fewer initial prescriptions) or lower prescription refill rates, or both.

The only healthcare utilization rates that did not show a significant difference between the insured and uninsured or even between the most-advantaged and most-disadvantaged African Americans was the use of the ED, the one form of access to care that is mandated by federal law. The Emergency Medical Treatment and Active Labor Act (EMTALA) makes medical emergency visits (including obstetrical patients in active labor) the only form of healthcare in America in which patients must be at least seen, evaluated, and stabilized regardless of insurance or ability to pay. By this legislation, the ED becomes the *de facto* safety net for low-income, uninsured patients with no primary care medical home.<sup>42</sup> The fact that there were no differences in ED visit rates between advantaged and disadvantaged African-American persons is an interesting "within-group" finding in itself, because one would expect the disadvantaged group to have a greater burden of disease and healthcare needs, and therefore a higher emergency visit rate. In fact, previous NHAMCS studies have found significant black-white differences in ED utilization rates (71% higher for African-American

**Table 4. Healthcare Utilization in 1999 for Healthcare-Disadvantaged\* African Americans vs. Healthcare-Advantaged\*\* African Americans**

	Mean	SE Mean	P Value
<i>Office-Based Provider Visits</i>			<.001
Disadvantaged*	0.37	0.17	
Advantaged**	3.12	0.27	
<i>Outpatient Debt Provider Visits</i>			=0.002
Disadvantaged	0.00	0.00	
Advantaged	0.46	0.15	
<i>Emergency Room Visits</i>			=0.496
Disadvantaged	0.10	0.04	
Advantaged	0.13	0.02	
<i>Hospital Discharges</i>			=0.010
Disadvantaged	0.01	0.01	
Advantaged	0.07	0.01	
<i>Nights in Hospital</i>			=0.214
Disadvantaged	0.07	0.07	
Advantaged	0.17	0.04	
<i>Home Health Provider Days</i>			=0.182
Disadvantaged	0.00	0.00	
Advantaged	1.12	0.84	
<i>Prescription Meds Including Refills</i>			<0.001
Disadvantaged	0.93	0.70	
Advantaged	6.05	0.50	

\* Family income below poverty level, no health insurance, no usual source of care.  
 \*\* Family income above 400% poverty level, health insurance, a usual source of care.

than for white persons). While the visit rate for elderly African Americans increased by 59% in just seven years (from 1992 to 1997), the visit rate for elderly whites did not change.<sup>43</sup>

However, in spite of an equal rate of reported ED visits in our study between advantaged and disadvantaged African Americans, the ratio of hospital admissions to ED visits was dramatically lower for low-income, uninsured individuals with no usual source of care (one admission for every 10 ED visits) than for insured, upper-income, individuals with a medical home (one admission for every two ED visits). A cross-sectional study of 29,237 admissions to 100 U.S. hospitals in 1993 and 1994 found that uninsured patients were sicker than the insured but had shorter lengths of stay and poorer health outcomes, suggesting that the uninsured might not be receiving necessary care.<sup>44</sup> The ED visit to hospital admission ratios in our data cannot be explained by suggesting that disadvantaged African-American patients are using the ED inappropriately or for nonurgent conditions, because the disadvantaged are visiting the ED at precisely the same rate as are the advantaged patients.

One source of variation might be the hospitals visited by disadvantaged patients. Analysis of 1999 data from the NHAMCS suggested significant variation among hospital EDs in the percent of patients admitted to the hospital.<sup>45</sup> Another possibility is that advantaged (especially insured) patients are being admitted to the hospital with a lower threshold of clinical severity than are the disadvantaged, because there are significant financial incentives for hospitals not to admit uninsured, low-income patients. Hospitals may seek alternatives to hospital admission (prolonged ED observation, or stabilization and discharge) especially for the uninsured, in order to avoid absorbing the cost of an indigent hospitalization.

One potential weakness of our study is the relatively small proportion of individuals within the African-American population who meet all three criteria for being health-disadvantaged. This is an important point in itself, which is that many articles present the African-American population as being almost exclusively disadvantaged. Confounding a person's race with potentially changeable risk factors (i.e., listing "poor, black, and uninsured" in the same breath) is not only counterproductive but also inaccurate. However, multivariate analysis suggests that each of our three "disadvantaged" criteria contribute independently to the variation in use of healthcare services within the African-American population. While poverty is a fundamental root cause, these data also suggest that significant reductions in disparities might be achieved with focused interventions to achieve universal health insurance coverage and universal access to a primary care medical home.

## CONCLUSIONS

The three modifiable factors of poverty, uninsurance, and having a primary care medical home have a dramatic effect on patterns of care for African-American patients. Targeted interventions, such as provision of health insurance, poverty reduction, and eliminating barriers to having a primary care medical home, could reduce or eliminate disparities in use of preventive and primary care services (and other needed healthcare) for the African-American population.

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