

# Reducing Disparities by Improving Access to and Use of Preventive Care

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## ABSTRACT

*Substantial disparities continue to exist in access to health care and in the quality of care received. This study was designed to examine the factors that influence access to and use of preventive care. This study uses logistic and multiple regression analyses to examine influenza vaccination and physician visits. This study includes unique factors such as risky health behavior and general health condition in addition to socio-demographic factors and health insurance. Individuals who do not smoke are 59% more likely to have had a flu shot than those who do. Of those having insurance of any type, individuals with private health insurance are most likely to report having received a flu shot within the last 12 months. Enrolling disadvantaged populations in programs modeled on preventive care may improve access and increase the ability of these groups to benefit from a “medical home.”*

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## Background

Access to health care continues to be a major concern for many Americans. Recent health policy debates over universal health care underscore its importance. Earlier studies examining usual source of care and insurance status, suggested that better health care access enhances the chances of receiving needed care (Starfield & Shi, 2004), prevents unnecessary hospitalizations (Sara, Solotaforr, Oster, & Bindman, 2007), and improves health status. More recently, studies have focused on the “medical home” (Starfield & Shi, 2004) as a key to providing better access to needed services. In the study described herein, factors that influence access to and use of primary care, specifically, the use of preventive care were examined. The influenza immunization (i.e., the “flu shot”) was used as the preventive indicator.

### *Influenza Immunization*

Influenza is a highly contagious disease that can lead to serious complications and death. According to the U.S. Centers for Disease Control and Prevention, between 5% and 20% of Americans acquire influenza each year; 200,000 are hospitalized and 36,000 die as a result of complications (CDC, 2009). However, influenza can be prevented with annual immunizations (Chen, Fox, Cantrell, Stockdale, Kagawa-Singer, 2007). Factors contributing to lower rates of immunizations among different races and ethnicities include low perceptions of susceptibility (Chen et al, 2007), feared side effects of the immunization (Schneider, Cleary, Zaslavsky, & Epstein, 2001), and limited access to health care.

### *Healthcare Access*

Access is a term used for a broad set of concerns that center on the degree to which individuals and

groups are able to obtain needed services from the health care system. The Institute of Medicine’s Committee on Monitoring Access to Personal Health Care Services developed a definition that also considered health outcomes. Based on their considerations, the committee defined access as the timely use of personal health services to achieve the best possible outcomes (IOM, 1993). A large body of literature has been published on access to health care services. The Institute of Medicine (IOM) tried to develop criteria for measuring access to care. It developed a checklist of indicators which included: the opportunity for patients to schedule appointments; consideration of patients’ culture, background, socioeconomic status and living circumstances; and acceptance of patients without regard to race, religion, or ethnicity (IOM, 1994). In a more recent report (1996), the IOM further specified each component. Accessibility of health care services was defined by ease of approach and elimination of geographic, administration, financial, cultural, and language barriers. Health care services are defined as services provided by health care professionals directly or under their direction for the purpose of promoting, maintaining, or restoring health. A review of additional studies showed that access has been measured using multiple factors including, financial resources, i.e. health insurance (Penchansky & Fox, 1970; Poole & Weisman, 2000); usual sources of medical care (Moy, Bartman, Clancy, & Cornelius, 1998); geographic area, number of facilities, and physicians (Franks, Clancy, & Nuttig, 1997).

Specific indicators have been developed for measuring primary care access. Franks, et al

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measured primary care access using the proportion of patients who are black, the proportion of patients with Medicaid insurance, and the percentage of physicians practicing in rural areas (on the assumption that better access would attract population groups who generally had poorer access.) (Franks, et al, 1997; Franks & Clancy, 1997).

Saffran, et al (1998) developed an instrument known as the Primary Care Assessment Survey (PCAS). On this scale they evaluated primary care access by financial and organizational indicators such as the amount of money paid for visits and ease of getting appointments when sick (Saffran et al, 1998). Access to health care is an issue that has caught the attention of health care providers, policy formulators, and policy analysts with particular emphasis on access to primary care, which affords all people a viable portal into the health care system (Clancy & Cooper, 1998; LeCook, 2007). It has become a central concern for health policy formulation and reform, especially in planning for the future of health care delivery in the United States.

#### *Primary Care*

Primary care has been defined in various ways, often using one or more categories to describe what primary care is or who provides it. Some authorities describe primary care as that level of the health service system that provides entry into the system for all new needs and problems, provides person focused (not disease-oriented) care over time provides care for all but very uncommon or unusual conditions, and coordinates or integrates care provided elsewhere or by others (Starfield, 1998).

Primary care has been viewed as a key to progressing toward the *Healthy People 2010* goals. The issue of the distribution and use of primary care is a concern from multiple standpoints. Most importantly, a number of changes in the arrangement of the delivery and financing of care within the Medicaid and Medicare programs could be detrimental to the use of primary care by the medically vulnerable (LeCook, 2007). Further research is needed since it is widely believed that the appropriate use of primary care results in the early diagnosis of illness, improves future health status (Starfield, 1998), lowers the future use of therapeutic procedures, and ultimately, reduces cost (Franks, Nuttig, & Clancy, 1993).

#### *The Behavioral Model of Health Care Use*

The present study is based on Andersen's behavioral model which relates utilization behavior to a set of factors that predispose an individual to use services and a set of enabling factors which enable or impede use (Andersen, 1968; Andersen 1995). A major goal of the behavioral model was to provide measures of access to medical care (Andersen &

Newman, 1973; Aday, 1993). However, this behavioral model becomes more complex as a health policy measure. Relative to the model, potential access is simply defined as the presence of enabling resources. Increased resources provide the means for increased likelihood that use will take place. Realized access is the actual use of services (Evans & Stoddard, 1990). This model was revised to include the health care system and consumer satisfaction and health outcomes (AHRQ, 2004).

#### *The Behavioral Model and Primary Care*

Prior research suggests that the poor and uninsured not only experience a poorer health status and are at greater risk than other members of society, but also are least able to finance the use of health care services (Evans & Stoddard, 1990). This is also supported by other findings (Kaiser Foundation, 1999; AHRQ, 2004). If the poor and uninsured use fewer units of service and are less likely than others to have access to primary care, then the distribution of primary care services may be compromised (Broyles, Narine, Brandt, & Biard-Holmes, 2000); Brandon, Greenberg, Schoeps, Shull & Tingle, 2003). The model suggests that the likelihood of using services in general increases with an improvement in access such as having a usual source of care. Therefore, it might be expected that this would hold with respect to the use of primary care, i.e., those who have a usual source of care would use more primary care services and therefore, be more likely to receive preventive services.

The current study examines having received a flu shot as an indicator of the use of preventive services. (Figure 1). The predisposing factors consist of socio-demographic attributes such as race, gender and age. The enabling factors that may impede or facilitate the use of service include income, insurance status and availability or access to service. This study includes race, income, and insurance status. This study also includes a variable to assess lifestyle risks - use of tobacco, which is believed to contribute to the onset of cancer, cardiovascular disease, or stroke. It is also assumed that those who use tobacco are more likely to use more primary care.

#### **Methods**

This study uses secondary data analysis to evaluate variables collected from the third round of the Community Tracking Study (CTS) Household Survey. The CTS Survey, sponsored by the Robert Wood Johnson Foundation, is a national study designed to track changes in the health care system and the effects of these changes on care delivery and on individuals. Sixty sites (51 metropolitan areas and 9 nonmetropolitan areas) were randomly selected to form the core of the CTS Survey and to be

representative of the nation as a whole. The Household Survey (ICPSR 2524 and 3199) was administered to households in the 60 CTS sites and to a supplemental national sample of households. Respondents provided information about household composition and demographic characteristics, health insurance coverage, use of health services, unmet health care needs, out-of-pocket expenses for health care, usual source of care, patient trust and satisfaction, last visit to a medical provider, health status and presence of chronic health conditions, health risk behavior such as smoking, employment, earnings, and income. The methodology of the CTS surveys are extensively documented (ISCPH).

#### *Data Analysis*

Access to primary care and use of preventive services were examined in two separate analyses. In the first analysis, a logistic regression was used to evaluate the use of preventive care. Having had a flu shot was used as the outcome variable. The variables used in the analysis were gender, race, age, income, insurance status, general health condition, and health risk. The three types of private health insurance – private insurance from job, private insurance bought directly, and private insurance from other source were consolidated into one category. All variables were checked for distribution and recoded as needed for the analysis. A bivariate analysis was conducted prior to the logistic regression. The bivariate analysis showed one moderate correlation between the outcome variable (flu shot) and age. Among the independent variables there was a moderate correlation between the insurance types. These correlations were expected and were within an acceptable range which ruled out serious multicollinearity.

The behavioral model was also used as a basis for selecting the variables to analyze primary care access. The number of physician visits was used as the outcome variable in a multiple regression analysis. The independent variables were general health condition, visits for a health problem, routine preventive care visits, private health insurance, Medicaid, and being uninsured. Socioeconomic variables race, age, and income were also added to the model. Prior to this analysis, variables were checked for normality and recoded as necessary. Prior to the multivariate analysis, variables were analyzed using a bivariate analysis. The bivariate analysis revealed only one moderate correlation between the number of physician visits and routine preventive care. There was no significant multicollinearity between independent variables; however, there was a moderate correlation between private health insurance and income. An analysis was conducted for outliers, but they were not

excluded because of the large number of observations. All analyses were performed using SAS (version 9.1).

#### **Results**

This study was based on 59,725 individuals who responded to CTS household survey 2524 and 3199. Individuals were included who responded to variables of interest which included having received a flu shot within the last 12 months and the number of physician visits within the last 12 months. Covariates in the analysis included general health condition, risk behaviors (i.e. smoking) and insurance status. The sample was 47% male and 53% female. The racial characteristics were representative of national population demographics with 77% white, 12.06% black, and 10.05% other. Other socio-demographic characteristics are found in Table 1.

The first analysis examined using preventive care which in this study was received a flu shot. Individuals were asked “Have you received a flu shot within the last 12 months?” The analysis also included age and general health status variables. The results of the logistic regression analysis in Table 2 shows that those who report their health status as good to excellent are 31% less likely to have had a flu shot than those who report fair or poor health status. Those who are less than 50 years of age are 79% less likely than those 50 years of age or older. However, individuals who do not smoke are 59% more likely to have had a flu shot. The effectiveness of health care utilization increases when those who are at greatest risk use more primary care than those who are exposed to lower risk. Alternatively, it has been theorized that those who do not use tobacco are more likely to engage in healthy behaviors and are more likely to use primary care.

As indicated by the negative coefficient, the logistic analysis indicates that financial constraints are significant impediments to the use of primary care. Those whose income is greater than \$15,000 per year are 12% more likely to have had a flu shot. Furthermore, those who have insurance are 320% more likely to have had a flu shot than those without insurance. Also, those who have Medicaid show a greater likelihood of having had a flu shot than those without insurance.

Race and sex show interesting results in this analysis. Individuals of other races were 37% more likely than African-Americans to have a flu shot. In addition, males were 16% less likely than females to have had a flu shot.

The results of the multiple regression analysis shows that general health condition, visits for a health problem, routine preventive care visits, private health

**Table 1. Characteristics of the Study Population**

Total Observations	59,725
<i>Predisposing Characteristics</i>	
Gender	
Male	46.56%
Female	53.44%
Race	
White	77.17%
Black	12.06%
Other	10.05%
Age	
0 - 17	15.87%
18 - 34	25.15%
35 - 50	27.12%
51 - 64	17.60%
65 +	13.65%
<i>Enabling Characteristics</i>	
Income	
<15,000	12.72%
15 – 30,000	17.44%
30 – 45,000	15.78%
>45,000	54.06%
Insurance Type	
Private Health Insurance	66.82%
Medicaid	6.19%
Uninsured	10.82%
Routine Preventive Care	39.47%
<i>Preventive Service Use</i>	
Number of Dr.'s Visits	
0	20.37%
1	15.58%
2	16.41%
3-4	21.66%
5-6	13.02%
7+	12.96%
Had Flu Shot	23.18%
<i>Need Characteristics</i>	
General Health Condition	
Excellent – Good (1-3)	86.52%
Fair – Poor (4-5)	13.48%
Smoker	20.56%

insurance, Medicaid, and being uninsured are significant predictors of the number of physician visits. (Table 3) The number of physician visits is used as an indicator of access to care. As expected, individuals with greater numbers of physician visits are more likely to receive routine preventive care.

### Discussion

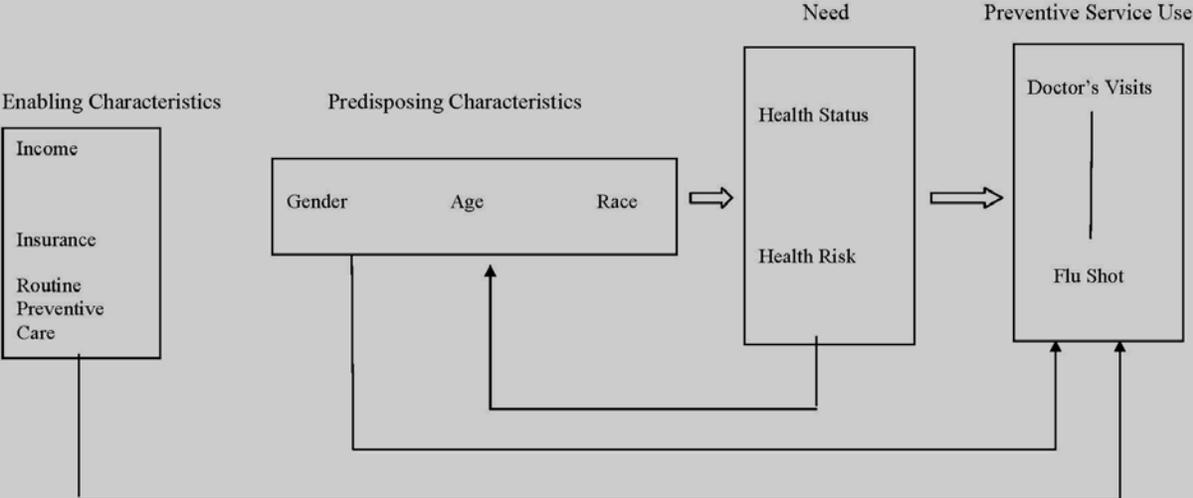
These results provide evidence that the relationship between access and use of preventive care is similar to studies of other health services.

However, there were a few interesting differences. Similar to other studies those who report poor health are more likely to report having had a flu shot within the last 12 months. Poor health status can represent the possibility of a condition that requires clinical evaluation. Those who are 50 years of age or older are 79% more likely to report having a flu shot than those who are younger than 50 years old. This finding supports the hypothesis that those who are older are more likely to access primary care and receive preventive care. However, the analysis of health risks shows a different pattern of use. Individuals who do not smoke are 59% more likely to have had a flu shot. It was expected that individuals who exhibit more risky health behavior would have poorer health and use more primary care. One explanation for this finding is that those who exhibit risky health behavior place less value on health and are less likely to seek out preventive care. As indicated by previous studies financial constraints are significant impediments to accessing care. Those whose income is greater than \$15,000 per year are more likely to have had a flu shot than those with low incomes. Also, individuals who have any type of insurance are more likely to have had a flu shot than those without insurance with those having private health insurance being most likely to have had a flu shot in the last 12 months.

Race and sex have interesting results in this analysis. African-Americans are least likely of all races to have had a flu shot. This finding supports the earlier hypothesis that African-Americans either feel that they are not at risk or they may fear the side-effects of the vaccine. In addition, males were 16% less likely than females to have had a flu shot. The results of the multiple regression analysis shows that, as predicted, individuals with greater numbers of physician visits are more likely to receive routine preventive care (i.e., a flu shot).

The findings that describe use among the poor and uninsured are also consistent and troubling. Health statistics show that the poor and uninsured have high rates of disease and disability however as shown by this study, they are the least likely to have access to primary care or use preventive care. Recent changes to health care policy in the United States should reduce the number of people who are uninsured which may increase the use of primary care. It is possible that the adoption of one or several policy options may help bring about improvements in the delivery of primary care and preventive services. Creating a 'medical home' by enrolling disadvantaged populations in programs modeled on preventive care may improve access and the ability of these groups to use primary care. Another approach is the integration of educational programs and

Figure 1 – Use of Preventive Services



**Table 2. Odds of Receiving a Flu Shot Based on Health Status, Health Risk, Enabling, and Predisposing Factors**

Variable	Beta	Wald $\chi^2$	Odds Ratio	Confidence Intervals	
				Lower	Upper
<i>Health Status</i>					
Age	1.56	4712.79*	.21	.20	.22
General Health Condition	-0.37	161.22*	.69	.65	.73
<i>Health risk</i>					
Smoker	0.46	352.39*	1.59	1.51	1.66
<i>Enabling</i>					
Income	-0.13	14.79*	.88	.82	.94
Uninsured	1.17	497.94*	3.22		
Medicaid	0.41	63.70*	1.51		
Private Health Insurance	0.20	55.28*	1.22	1.16	1.29
<i>Predisposing</i>					
Race (African-American)	0.32	75.12*	1.38	1.28	1.48
Sex	-0.18	69.43*	.84	.80	.87

\* Significant at  $p < .0001$

**Table 3. Multivariate Regression Results for Physician Visits in the Prior 12 Months**

	$\beta$	Lower CI	Upper CI
<i>Predisposing Characteristics</i>			
Gender	0.08**	0.26	0.31
Age	0.01*	0.02	0.08
Race			
White	0.01	0.08	-0.17
Black	-0.05**	-0.37	-0.10
Other	-0.05*	-0.40	-0.31
<i>Enabling Characteristics</i>			
Income	0.02	0.02	0.04
Insurance Type			
Private Health Insurance			
Medicaid	0.04**	0.26	0.30
Uninsured	-0.13**	0.01	0.02
Routine Preventive Care	0.38*	0.36	0.39
<i>Need Characteristics</i>			
Health Problem	0.12*	0.02	0.03
General Health Condition	0.23*	0.36	0.39

Significant at  $p < .001^*$ ,  $p < .0001^{**}$

services at primary care centers, and possibly targeting specific areas and providing these services in mobile clinics. This may promote the use of primary care by those who do not seek routine preventive primary care and disadvantaged groups who experience greater barriers to health care access. When combined, the adoption of these policy options may be the starting point for an integrated approach to redressing inequities in access to and use of primary care.

There are limitations of this study that should be noted. Although the data provided a nationally representative sample of the United States population, the number of questions providing information on preventive services was limited. This study included flu shots as the preventive measure to capture a gender neutral measure of preventive care. An additional limitation of this study is that although there was a moderate correlation between physician visits and receiving routine preventive care, there are other options available for receiving flu vaccinations besides through a physician's office.

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