Published in final edited form as:

Med Care. 2016 December ; 54(12): 1098–1104. doi:10.1097/MLR.0000000000000584.

Preventive Services Use among African American and Latino Adult Caregivers in South Los Angeles

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Abstract

Background—The burden of informal caregiving is significant and well-documented, yet the evidence is mixed as to whether being a caregiver presents an additional barrier to receiving recommended preventive care.

Objectives—To determine whether (1) caregivers compared to non-caregivers were less likely to receive preventive health services; and (2) higher intensity caregivers were less likely to receive preventive health services than lower intensity caregivers.

Research Design, Subjects, and Measures—Data were from a telephone survey of Latino and African American adults 50 years or older in South Los Angeles (n=702). Outcomes were flu vaccination, pneumococcal vaccination, and colorectal cancer screening. Logistic regression models adjusted for predisposing, enabling, and need factors according to the Andersen Model of Access to Health Care for Low-Income Populations.

Results—Caregiver type (e.g., adult child, non-related) was associated with varying odds of receiving a preventive service. Caregivers had lower odds than non-caregivers of receiving preventive services although odds of receiving a flu vaccination improved slightly for caregivers of persons with memory loss compared to other caregivers. More weekly caregiving hours was associated with higher odds of receiving flu vaccination (AOR 1.1, 95% CI=1.0, 1.1) or colorectal cancer screening (AOR 1.1, 95% CI=1.0, 1.1). Caregivers and non-caregivers age 65 and older or with chronic conditions were more likely to receive vaccinations.

Conclusions—Preventive service use was influenced by characteristics of the caregiving situation. An opportunity may exist to leverage care recipients' ongoing contact with health care providers to increase caregivers' own access to preventive services.

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Conflict of Interest: The authors do not have financial or other kind of personal conflict with this paper. The views expressed in the paper are those of the authors and do not necessarily reflect the views of the Patient-Centered Outcomes Research Institute or the National Institutes of Health.

Keywords

access to care; preventive services; African American; Hispanic health; caregiving

Introduction

Los Angeles County is the most diverse and populous county in the United States,¹ with Latinos and African Americans collectively comprising 58% of the total population.² Of the estimated 6.2 million caregivers in California,³ 1.2 million reside in Los Angeles County.⁴ Informal caregiving refers to assistance to individuals who are either temporarily or permanently unable to function independently. This assistance involves a range of activities from helping with personal hygiene and providing emotional support to managing finances and medications. In South Los Angeles, an estimated 105,000 African American and Latino adults provide such assistance to another adult family member or friend with a long-term illness or disability.⁴

Caregiving is challenging, stressful and can erode caregivers' physical, psychological and financial resources.^{5,6} The negative health consequences of caregiving have been well-documented, and this body of research suggests that caregiving might be especially challenging for older racial/ethnic minority adults. Older caregiving adults compared to younger caregiving adults are more likely to have their own health problems,⁷⁻⁹ be sole unpaid caregivers,¹⁰ and report a high degree of physical strain.¹¹ Among older minority caregivers, national studies show that Latinos tend to be in higher intensity caregiving situations, and spend more hours per week giving care compared to non-Latino white caregivers.^{5,11} African American caregivers are more likely than white caregivers to face financial challenges and to manage multiple tasks while fulfilling their caregiving responsibilities.^{12,13}

Preventive clinical services are important in chronic disease management and in reducing healthcare costs. Influenza and pneumonia are the two vaccine-preventable diseases with the highest mortality rates in the U.S. general population, with the highest rates for adults age 45 and older.¹⁴ Colorectal cancer has high rates of mortality and morbidity for men and women, and screening is recommended for all adults 50 years and older. Research has shown that racial/ethnic minority adults are less likely to receive these services compared to their same age white adult counterparts.^{15,16} Older minority adults in South Los Angeles may be particularly disadvantaged because this geographic area has documented barriers to health care services. South Los Angeles residents are predominantly Latino and African American, with higher rates of diabetes mellitus, hypertension, human immunodeficiency virus infection, and mortality from treatable conditions such as stroke and heart disease, compared to national averages.¹⁷

Evidence is mixed on whether being a caregiver presents an additional barrier to health-promoting behaviors, including receiving recommended preventive care. Some research has found that caregivers compared to non-caregivers engaged in fewer health-promoting self-care behaviors, including seeing their primary care providers in the last year,^{3,18-21} while other findings have shown that caregivers were no less likely to reduce their health

practices.^{20,21,22} However, these studies did not include significant numbers of minority respondents or did not report results separately for them.

The Andersen Model of Access to Health Care for Low-Income Populations²³ has been widely used to explain individuals' use of health services. It posits that an individual's health services use is influenced by 1) predisposing factors that exist before illness is detected or perceived; 2) enabling factors that facilitate or create access barriers to health service use; and 3) perceived or objectively evaluated need for services.

This study tested the associations between caregiver status and preventive health services use among a sample of Latino and African American caregivers, controlling for predisposing, enabling, and need factors. Three preventive services were examined: flu vaccination, pneumococcal vaccination, and colorectal cancer screening. Two hypotheses, based on the caregiving literature and the Andersen model, were developed and tested:

1. Controlling for other factors, caregivers compared to non-caregivers in South Los Angeles would be less likely to receive preventive health services (H1); and,
2. Controlling for other factors, higher caregiving intensity would be associated with lower odds of receiving preventive health services (H2).

Methods

Data Source

Data were collected in 2008–2009 via telephone survey, as part of a community-based participatory research project designed to address the healthcare needs of middle-aged and older racial/ethnic South Los Angeles residents.²⁴ Households were randomly selected from all listed household phone numbers from all available sources that were most likely to be within twenty South Los Angeles zip codes that the Los Angeles County Department of Health Services defined as Service Planning Area 6. Individuals 50 years or older were randomly selected within households and invited to participate if they identified as African American or Latino. Interviews were conducted in English or Spanish based on respondent preference. The survey was completed by 708 respondents, representing a 63% response rate. For this study, five paid caregivers were excluded from analysis because we believed their caregiving motivations, decisions, and behaviors would likely be qualitatively different from unpaid caregivers. One additional respondent was excluded who declined to state a relationship to the care recipient. The RAND Corporation, UCLA, and UCSF Institutional Review Boards approved the study protocol.

Outcome Measures

Three self-reported measures of preventive services were examined: 1) flu shot in the past 12 months (yes/no); 2) ever had a pneumococcal vaccination (yes/no); and, 3) sigmoidoscopy or colonoscopy in the past 5 years (yes/no). Pneumococcal vaccination was measured for respondents who were 65 years or older, or had a clinical indication, specifically diabetes, chronic lung disease, or asthma.²⁵ See Appendix 1 for survey questions.

Andersen Model Measures

Race/ethnicity and age were used as measures of predisposing factors. Language of interview was not included due to collinearity with race/ethnicity: Latino respondents overwhelmingly completed the survey in Spanish, and African American respondents exclusively in English. Insurance status and poverty (based on 2008 federal poverty level guidelines²⁶) were used as measures of enabling factors. Need was measured by the presence of chronic conditions, specifically whether respondents reported being previously diagnosed with diabetes, hypertension, or heart disease.

Caregiver Status and Characteristics

Respondents who indicated that they "...provide[d] regular care or help to another adult who is aging or has a long-term illness or disability...during the past month" were classified as caregivers. Caregivers were then asked about their relationship to the care recipient (e.g., daughter/son, sibling, spouse). Using these two questions we created a caregiver status variable with five categories: non-caregiver, spousal caregiver, adult child caregiver, other related caregiver, and non-related caregiver. Caregivers were also asked about: the number of adults cared for; whether they lived with the care recipient; hours of care provided weekly; care recipient memory loss; and whether the care recipient required assistance with two or more of the following activities: transportation, eating, toileting, bathing, dressing, or taking medication. The hours of care provided weekly and caring for someone with dementia or requiring significant assistance with activities of daily living are caregiving intensity measures previously associated with caregiver burden or strain.²⁷⁻³⁰ We therefore hypothesized caregiving intensity as a stressor that competed with caregivers' time for self-care activities and health-seeking behaviors. We created a caregiving intensity variable with 4 categories: non-caregiver; care recipient without memory loss requiring assistance with no more than 1 activity; care recipient without memory loss requiring assistance with 2 or more activities; and care recipient with memory loss. Because weekly caregiving hours were zero for non-caregivers and right skewed for caregivers, they were normalized using the square root. Survey questions for caregiver status and characteristics are detailed in the Appendix.

Statistical Analyses

Univariate and bivariate analyses were performed for all variables. Differences between caregivers and non-caregivers were evaluated using χ^2 tests. Data on poverty were missing for 13% of respondents; missing values were less than four percent for all other variables. Missing poverty values were imputed based on race/ethnicity and age. To account for non-response, survey weights at the zip code level were created from 2000 U.S. Census data on race/ethnicity, poverty, and age. Survey-weighted multivariate logistic regression models were constructed to estimate the impact of caregiver status and type on receipt of each of the three preventive health services (H1). Each model was then adjusted for the Andersen model measures described above. Models were also constructed to estimate the impact of caregiving intensity (ADL assistance needed by recipient, recipient memory loss, and weekly hours) on receiving each preventive service (H2) and then adjusted for the same Andersen model measures as H1. Analyses were performed using Stata MP Version 11.2 (College Station, TX, USA).

Results

Of 702 respondents in this study, 143 (20%) were caregivers (Table 1). Among caregivers, 28 were spouses, 61 were adult children caring for parents (hereafter ‘adult child(ren)’), and 54 had other relationship types including cousins, siblings, friends or other non-paid individuals. Caregivers were more likely than non-caregivers to be female ($p=0.01$), between 50 and 64 years old ($p=0.00$), and have higher incomes ($p=0.00$). Among caregivers, 49% reported providing more than 20 hours of caregiving per week, and spousal and adult child caregivers were more likely than other caregiver types to have been living with care recipients. Caregivers had a lower rate of flu vaccination than non-caregivers ($p=0.01$), but similar rates of colorectal cancer screening or pneumococcal vaccination.

In the multivariate analyses examining H1, adult child caregivers compared to non-caregivers had lower odds of having received a flu vaccination in the past 12 months (AOR 0.6, 95% CI=0.4, 0.7), even after controlling for predisposing, enabling and need factors (Table 2). However, other related caregivers compared to non-caregivers were more likely to have ever received a pneumococcal vaccination (AOR 1.8, 95% CI=1.1, 2.8), and non-related caregivers were more likely to have had colorectal cancer screening in the past 5 years (AOR 1.7, 95% CI=1.1, 2.9), after controlling for Andersen model measures. Across all models, respondents who were age 65 and older or had at least one chronic condition had higher odds of receiving preventive services. Respondents with incomes under 100% of federal poverty had lower odds of having received a pneumococcal vaccination or colorectal cancer screening. African American respondents compared to Latino respondents had 40% lower odds of receiving a flu shot, but 60% higher odds of having had colorectal cancer screening.

In the multivariate analyses examining H2, caregivers for recipients without memory loss had substantially lower odds than non-caregivers of receiving a flu vaccination or colorectal cancer screening, even after controlling for Andersen model measures (Table 3). Caring for a recipient with memory loss was associated with lower odds of receiving flu vaccination (AOR 0.6, 95% CI=0.4, 0.9) but not of having received colorectal cancer screening (AOR 0.8, 95% CI=0.5, 1.2). Providing more hours of care per week was associated with higher odds of receiving a flu vaccination (AOR 1.1, 95% CI=1.0, 1.1) or having received colorectal cancer screening (AOR 1.1, 95% CI=1.0, 1.1). The odds of receiving pneumonia vaccination were not significantly associated with caregiving intensity. Predisposing, enabling and need factors had similar impact patterns as in the analyses for H1.

Discussion

This study analyzed data from a unique survey of South Los Angeles residents to examine the impact of caregiver status and intensity on preventive health service use by Latinos and African Americans aged 50 and older. We used the Andersen Model of Access to Health Care for Low-Income Populations to adjust for predisposing, enabling, and need factors that could also influence respondents’ use of preventive services.

Hypothesis 1 was partially supported: caregiver type had differential effects on caregivers' health-seeking behaviors. Adult child caregivers compared to non-caregivers were less likely to have received a flu shot, whereas other related and non-related caregivers were actually more likely to have received pneumococcal vaccine or colorectal cancer screening, respectively. Other related and non-related caregivers were less likely to have lived with care recipients, perhaps allowing greater opportunity to engage in self-care behaviors compared to spousal or adult child caregivers.

Overall, caregivers were less likely than non-caregivers to receive preventive services. However, contrary to Hypothesis 2, greater caregiving intensity appeared to be associated with slightly higher odds of receiving preventive services. For all three services, adjusted odds ratios were larger for caregivers of recipients with memory loss than for caregivers whose recipients only required help with daily activities, and were greater than 1.0 for increasing hours of caregiving (although not all odds ratios were statistically significant). This suggests that higher caregiving intensity may actually mitigate a negative impact of caregiving status on the receipt of preventive services. One potential explanation for this unexpected finding is that higher intensity caregivers were caring for recipients with medically-intensive needs that required regular contact with clinical providers. That is, compared to low intensity caregivers, higher intensity caregivers may have improved access to clinicians and public health programs.³¹ These findings may contribute to explaining the mixed previous evidence regarding preventive service use among caregivers.

Some Andersen model factors consistently predicted preventive services use, in the expected direction. Caregivers and non-caregivers with one or more chronic conditions were more likely to receive flu or pneumonia vaccinations. This is consistent with prior research that greater disease burden was associated with higher rates of immunization among Medicare beneficiaries.³² Respondents age 50–64 were substantially less likely to receive any of the three preventive services. This pre-retirement age range falls within the large Baby Boom birth cohort between 1946 and 1964. Baby Boomers have often been termed a “sandwich generation” caught between simultaneously caring for aging parents while rearing minor children.^{33–35} These respondents' lower odds of receiving preventive services may reflect multiple competing demands on their time, including employment and being a sandwich caregiver. The relatively smaller negative impact of age on vaccinations compared to cancer screening may reflect expanding retail pharmacy or clinic access to vaccinations. Being under the Federal poverty level was associated with lower odds of receiving a pneumococcal vaccination or colorectal cancer screening.

Interestingly, the impacts of other predisposing and enabling factors were less consistent across different preventive services. Being uninsured was associated with lower odds of receiving a flu shot or colorectal cancer screening; but uninsured respondents were more likely to have received a pneumococcal vaccination. African Americans compared to Latinos were less likely to have received a flu shot but more likely to have been screened for colorectal cancer. This last difference may be related to retail access to flu shots as mentioned above, whereas colorectal cancer screening may be related to longer-term relationships with clinical providers.

This study of preventive health service use is one of the few that has targeted low-income, racial/ethnic minority adults. Our results of self-reported receipt of preventive services are broadly comparable to statewide averages, as measured by the California Health Interview Survey. Fifty percent of California adults 50 years and older in 2009 had a flu shot within 12 months, compared to 49% of respondents in our study.³⁶ Pneumococcal vaccination among California's 50 and older population was lower (37%) than in our sample (44%); however, the statewide average was not restricted to only those with a clinical indication as was in our study.³⁷ Compliance with colorectal cancer screening guidelines in 2009 was substantially higher for the state's 50 and older population than in our sample (68% versus 53%).³⁸ This difference may in part be due to measurement differences. The statewide average was based on broader compliance guidelines than those in our study; the guidelines included Fecal Occult Blood Test in past years and colonoscopy in past 10 years whereas ours did not.

Some limitations of this study should be acknowledged. The targeted area of Los Angeles County experienced the closure of a major public hospital prior to data collection, which may have affected some respondents' access to health care services. The random sampling of households with listed phone numbers may have inadvertently oversampled individuals who were available at home and under-sampled those without landlines. We used validated measures³⁹ developed specifically for the Los Angeles population to address these methodological challenges and mitigate these biases. Finally, this study examined only three preventive services. Future research may more clearly delineate the causal mechanisms that link caregiving behaviors and predisposing and enabling factors to the use of preventive health services.

Acknowledgments

This research was supported by the RWJF Clinical Scholars Program at UCLA, UCSF Center for Aging in Diverse Communities under NIH/NIA grant P30AG015272, the UCLA Claude Pepper Older Americans Independence Center (OAIC), the UCLA Resource Center for Minority Aging Research/Center for Health Improvement of Minority Elderly under NIH/NIA Grant P30AG021684, and by the NIH/NIA Grant 1K01AG033122-01A1.

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Appendices

APPENDIX

Survey Questions for Preventive Care and Caregiver Status and Characteristics

Preventive Care Measures	Questions
Had flu shot in past 12 months (yes vs. no)	"During the past 12 months, have you had a flu shot?"
Ever had a pneumococcal vaccine (yes vs. no)	"Have you ever had a pneumonia shot?"
Ever had a sigmoidoscopy or colonoscopy (yes vs. no)	"Have you ever had a colonoscopy or sigmoidoscopy?" If yes, "How long ago did you have your most recent exam?"
Caregiver Status	Questions
Caregiver status (yes vs. no)	"Some people may provide regular care or help to another adult who is aging or has a long-term illness or disability. This person you are providing care to may be someone who lives with you or lives somewhere else. During the past month, did you provide any such care or assistance to an adult who is aging or has a long-term illness or disability?"
Relationship of Caregiver Spouse (ref) Parent/child Other relative Other non-paid caregiver	"Thinking about the person that you spend the most time providing care for, what is your relationship to this person?"
Caregiving Intensity	Questions
Number of adults cared for (1, 2, 3 or more)	"How many adults did you provide this care for?"

Preventive Care Measures	Questions
Lives with person (yes vs. no)	"Thinking about the person that you spend the most time providing care for, does this person live with you?"
Hours of caregiving per week (continuous)	"On average, how many hours do you spend helping this person in a typical week?"
Caring for someone with memory loss vs. other caregiver needs (yes vs. no)	"Does this person have a problem with memory loss or have a disorder like Alzheimer's disease?"
Caring for someone who needs help with IADLs vs. other caregiver needs (yes vs. no)	"Is this person dependent on you for providing assistance with two or more of the following activities: transportation, eating, toileting, bathing, dressing, or taking medication?"

Table 1
Percentages of Self-Reported Caregiver Characteristics and Demographic and Clinical Measures by Caregiver Status

	Overall N=702	Non- Caregivers n=559	Caregivers n=143	Spouse n=28	Adult Child n=61	Other Related n=31	Non- related n=23	P- value
Main Independent Variables								
Caregiver Characteristics								
Provides care for more than 1 person	-	-	16	0	18	16	30	-
Lives with person	-	-	52	89	57	39	13	-
Cares for person with memory loss	-	-	37	46	41	32	22	-
Helps with 2 or more basic daily activities	-	-	62	68	67	48	61	-
Predisposing Factors								
Age (years)								
Age under 65	49	47	56	32	67	58	52	0.00
Gender								
Male	38	39	34	29	38	35	30	0.01
Race/Ethnicity								
African American	59	59	59	54	66	55	57	0.82
Enabling Factors								
Insurance Status								
Uninsured	10	11	9	7	7	7	17	0.06
Poverty								
Under 100% of federal poverty level	47	49	40	52	29	48	43	0.00
Need Factors								
Chronic Disease	72	71	74	82	70	65	87	0.14
Main Outcome Variables								
Preventive Services Use								
Had a flu vaccination in past 12 months	49	50	44	50	37	48	52	0.01
Ever had a pneumococcal vaccination	44	43	47	45	40	63	47	0.08
Had a colorectal cancer screening in past 5 years	53	53	53	54	49	58	57	0.84

Note: Values are based on unweighted data. Caregivers and non-caregivers were compared using χ^2 significance tests. Pneumococcal vaccination is reported for respondents age 65 and older or with diabetes or chronic lung disease.

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Table 2

Odds Ratios and 95% Confidence Intervals of Receipt of Preventive Services among Racial/Ethnic Minority Older Adults

	Unadjusted OR			Adjusted OR		
	Had flu shot in past 12 months	Ever had pneumococcal vaccine	Had a colorectal cancer screening in past 5 years	Had flu shot in past 12 months	Ever had pneumococcal vaccine	Had a colorectal cancer screening in past 5 years
Main Independent Variables						
Relationship of Caregiver						
Non-caregiver (ref)	1.0	1.0	1.0	1.0	1.0	1.0
Spousal caregiver	1.0 (0.7, 1.5)	1.3 (0.8, 2.1)	1.2 (0.8, 1.7)	0.9 (0.6, 1.4)	1.2 (0.7, 1.9)	0.9 (0.6, 1.5)
Adult child caregiver	0.6 (0.4, 0.7)	0.8 (0.6, 1.1)	0.9 (0.7, 1.1)	0.6 (0.4, 0.7)	0.9 (0.6, 1.2)	0.8 (0.6, 1.1)
Other related caregiver	0.9 (0.6, 1.3)	1.4 (0.9, 2.3)	1.1 (0.7, 1.5)	0.9 (0.6, 1.3)	1.8 (1.1, 2.8)	1.1 (0.8, 1.6)
Non-related caregiver	0.8 (0.6, 1.3)	1.3 (0.8, 2.1)	1.5 (1.0, 2.3)	0.8 (0.5, 1.2)	1.4 (0.7, 2.7)	1.7 (1.1, 2.9)
Predisposing Factors						
Age						
Under 65 vs. over (ref)	-	-	-	0.6 (0.5, 0.7)	0.3 (0.2, 0.3)	0.5 (0.4, 0.6)
Sex						
Male vs. female (ref)	-	-	-	1.2 (1.0, 1.4)	1.0 (0.8, 1.3)	0.7 (0.6, 0.8)
Race/Ethnicity						
African American vs. Latino (ref)	-	-	-	0.6 (0.5, 0.7)	1.2 (0.9, 1.5)	1.6 (1.4, 1.9)
Enabling Factors						
Insurance						
Uninsured vs. insured (ref)	-	-	-	0.6 (0.5, 0.8)	2.1 (1.3, 3.2)	0.2 (0.2, 0.3)
Under 100% of federal poverty level vs. over (ref)	-	-	-	1.2 (1.0, 1.4)	0.8 (0.7, 1.0)	0.7 (0.6, 0.8)
Need Factors						
Presence of chronic condition(s) vs. none (ref)	-	-	-	2.2 (1.8, 2.6)	1.8 (1.4, 2.4)	1.1 (0.9, 1.3)

Note: Statistically significant comparisons are noted in bold. Pneumococcal vaccination is reported for respondents age 65 and older or with diabetes or chronic lung disease.

Odds Ratios and 95% Confidence Intervals of Effect of Caregiving Intensity on Receipt of Preventive Services among Racial/Ethnic Minority Older Adults

Table 3

	Unadjusted OR			Adjusted OR		
	Had flu shot in past 12 months	Ever had pneumococcal vaccination	Had a colorectal cancer screening in past 5 years	Had flu shot in past 12 months	Ever had pneumococcal vaccine	Had a colorectal cancer screening in past 5 years
Caregiving Intensity						
Memory loss & ADL caregiving						
Non-caregiver (ref)	1.0	1.0	1.0	1.0	1.0	1.0
Recipient without memory loss needing help with 1 or no activities	0.4 (0.3, 0.6)	0.7 (0.4, 1.1)	0.7 (0.5, 0.9)	0.5 (0.3, 0.7)	0.7 (0.4, 1.3)	0.6 (0.4, 0.9)
Recipient without memory loss needing help with 2 or more activities	0.6 (0.4, 0.9)	0.6 (0.4, 1.1)	0.6 (0.4, 0.9)	0.5 (0.4, 0.8)	0.8 (0.4, 1.4)	0.6 (0.4, 1.0)
Recipient with memory loss	0.6 (0.4, 0.9)	1.0 (0.6, 1.7)	0.9 (0.6, 1.3)	0.6 (0.4, 0.9)	1.2 (.7, 1.9)	0.8 (0.5, 1.2)
Weekly hours of caregiving (square root)	1.1 (1.0, 1.1)	1.0 (1.0, 1.1)	1.1 (1.0, 1.1)	1.1 (1.0, 1.1)	1.0 (1.0, 1.1)	1.1 (1.0, 1.1)
Predisposing Factors						
Age						
Under 65 vs. over (ref)	-	-	-	0.6 (0.5, 0.7)	0.3 (0.2, 0.3)	0.6 (0.5, 0.7)
Sex						
Male vs. female (ref)	-	-	-	1.2 (1.0, 1.4)	1.0(0.8, 1.3)	0.7 (0.6, 0.8)
Race/Ethnicity						
African American vs. Latino (ref)	-	-	-	0.6 (0.5, 0.7)	1.1 (0.9, 1.4)	1.7 (1.4, 2.0)
Enabling Factors						
Insurance						
Uninsured vs. insured (ref)	-	-	-	0.6 (0.5, 0.8)	2.5 (1.6, 3.8)	0.2 (0.2, 0.3)
Under 100% of federal poverty level vs. over (ref)	-	-	-	1.1 (1.0, 1.3)	0.8 (0.6, 0.9)	0.7 (0.6, 0.8)
Need Factors						

Unadjusted OR				Adjusted OR			
Had flu shot in past 12 months	Ever had pneumococcal vaccination	Had a colorectal cancer screening in past 5 years	Had a colorectal cancer screening in past 5 years	Had flu shot in past 12 months	Ever had pneumococcal vaccine	Had a colorectal cancer screening in past 5 years	Had a colorectal cancer screening in past 5 years
Presence of chronic condition vs. none (ref)	-	-	-	2.3 (1.9, 2.7)	1.9 (1.4, 2.5)	1.2 (1.0, 1.4)	1.2 (1.0, 1.4)

Note: Statistically significant comparisons are noted in bold. Pneumococcal vaccination is reported for respondents age 65 and older or with diabetes or chronic lung disease. Weekly caregiving hours were normalized using a square root transformation.