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## Does Differential Prophylactic Aspirin Use Contribute to Racial and Geographic Disparities in Stroke and Coronary Heart Disease (CHD)?

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## Abstract

**Context**—Aspirin use may reduce the risk of stroke and CHD. Differential use for vascular prophylaxis may contribute to racial and geographic disparities in stroke and CHD morbidity or mortality.

**Objective**—To assess the prevalence and predictors of aspirin use for primary prophylaxis of stroke in the general population free of clinically diagnosed stroke or CHD.

**Design and Setting**—Cross-sectional analysis of 16,908 participants ( age 45 or greater), from a population-based national cohort study (<u>RE</u>asons for <u>Geographic And Racial Differences in Stroke</u>) enrolled from February 2003-August 2006 with oversampling from the southeastern Stroke Belt and African Americans. Individuals with a prior stroke or CHD, or regular use of aspirin for pain relief were excluded from analyses.

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**Main Outcome Measures**—Aspirin use and reasons for use were assessed using a computerassisted telephone interview.

**Results**—Prophylactic aspirin use was substantially higher among whites (34.7%) than African Americans (27.2%; p < 0.0001). There was a higher prevalence of aspirin use for prophylaxis in the Stroke Belt (32.1%) than in the rest of the nation (30.8%; p=0.07). After adjustment for measures of socioeconomic status, the odds ratio of aspirin use in the rest of the nation compared to Stroke Belt was 0.90 (95% CI 0.84,0.97). There was a higher likelihood of prophylactic aspirin use among participants who were white, male, older, past cigarette smokers, or of higher socioeconomic status (higher income or education).

**Conclusions**—In this study, aspirin use to prevent stroke and CHD was higher among whites than African Americans, raising the possibility that differential aspirin use could contribute to the racial disparities in vascular disease mortality. Counter to our hypothesis, aspirin use was more common in the Stroke Belt than the rest of the country, so differential aspirin use in the Stroke Belt is unlikely to contribute to geographic disparities in stroke.

**Précis**—In this cross-sectional analysis of 16,908 participants, aspirin use was more common in the Stroke Belt than the rest of the country.

#### Keywords

Aspirin; Stroke; Stroke Belt; Geographic Disparities

## Introduction 2898

The reason(s) for the high stroke mortality in the "Stroke Belt" remains incompletely explained. The well-documented Stroke Belt region is associated with  $\sim 40\%$  to 50% higher stroke mortality than other regions. Recent reports identify at least 10 published hypotheses of the causes of the Stroke Belt, including SES differences, quality of health care, lifestyle, CVD risk factors and hypertension. Additionally, overall stroke mortality rates are 50% higher in African Americans compared to whites with a larger disparity at younger ages, but, the standard risk factors explain only about 30-40% of the racial difference.

There are few reported data on aspirin use by race and geographic region. As a result, we evaluated the use of aspirin taken for primary prophylaxis of stroke and CHD in the The <u>RE</u>asons for <u>G</u>eographic <u>And Racial D</u>ifferences in <u>S</u>troke (REGARDS) study. We postulated that differences between prophylactic aspirin use would be lower in the Stroke Belt than in other regions and in blacks compared to whites. We were also interested in patterns of use of prophylactic aspirin and differences across these geographic and racial populations.

## METHODS

#### Study Population

REGARDS is a national cohort of community dwelling individuals over age 45 years recruited with approximately equal representation of whites and blacks, men and women. Twenty percent of the sample was randomly selected from the "buckle" of the Stroke Belt (coastal plain region of North Carolina, South Carolina, and Georgia), 30% from the Stroke Belt states (remainder of North Carolina, South Carolina, and Georgia plus Alabama, Mississippi, Tennessee, Arkansas, and Louisiana), and the remaining 50% from the other 40 contiguous states. Individuals were identified from commercially available lists of residents, and recruited using an initial mailing followed by telephone contact. Between January 25, 2003 and September 19, 2006, 248,005 telephone numbers were called to recruit participants. Defined

according to standards recommended by Morton et al, (2006) the response rate was 44.7% (36,983/82,834), and the cooperation rate was 64.6% (36,983/57,253).

Demographic information and medical history were obtained by trained interviewers using a computer-assisted telephone interview (CATI). Consent was obtained verbally by telephone and subsequently in writing during a follow-up in-home visit. A brief physical exam including anthropometric and blood pressure measurements, blood samples, and an electrocardiogram was conducted in-person, 3-4 weeks after the telephone interview. Participants were followed by telephone at six-month intervals for surveillance of medical events including potential stroke events. The study methods were reviewed and approved by all involved Institutional Review Boards. Additional methodological details are provided elsewhere

As of August 31, 2006, REGARDS had enrolled and examined 24,271 participants. We excluded 4,186 participants self-reporting CHD (defined as any self-reported myocardial infarction/heart attack, coronary artery bypass surgery, coronary angioplasty with or without stenting, or evidence of myocardial infarction from ECG), 1659 self-reporting stroke, and 883 self reporting both stroke and CHD. In addition, we excluded an additional 624 participants who were using aspirin for pain relief, and 11 participants for whom we were unable to determine the indication for aspirin use. This resulted in an analysis cohort of 16,908 participants who were considered prophylactic aspirin users.

The primary independent variables were self-described race (or current residency in the "Stroke Belt"). Factors considered as potentially confounding the relation between region and race with aspirin use were grouped into demographic measures, measures of socio-economic status, and cardiovascular risk factors. Demographic factors included age (defined in 10-year strata starting with age 45) and gender. Measures of socio-economic status included family income and education (defined in strata see table 2). Cardiovascular risk factors included self-reported perceived health (on as 5-point scale from Poor to Excellent), hypertension (SBP>140 mmHg, or DBP > 90 mmHg, or self-reported use of antihypetensive medications), diabetes (fasting glucose > 126 mg/dL or non-fasting glucose > 200 mg/dL or self-reported use of diabetes medications), dyslipidemia (total cholesterol  $\geq$  240 mg/dL, low-density cholesterol  $\geq$  160 mg/dL, high density cholesterol  $\leq$  40 or self reported use of lipid lowering medications), smoking status (never, past, or current), and alcohol use (never, past, or current).

Finally, the prevalence of prophylactic aspirin use was also examined by quartile of the Framingham Coronary Disease Risk Score (FCDRS), which were used as summary indexes of the coronary disease and stroke risk factor burden (respectively) for each participant. These scores reflect the 10-year probability of CHD or stroke given the individual's demographic and risk factor profile. The FCDRS includes age, sex, systolic blood pressure, diastolic blood pressure, total cholesterol, high density cholesterol, diabetes and current cigarette smoking. The FSRS includes age, sex, history of heart disease, systolic blood pressure, use of anti-hypertensive medications, diabetes, current cigarette smoking, atrial fibrillation and left ventricular hypertrophy (LVH). LVH was defined by centrally adjudicated ECG using the Minnesota code. Atrial fibrillation was assessed by self-report or the study ECG.

**Statistical Analysis**—The primary goal of the analysis was assess racial and geographic variations in prophylactic aspirin use. The modeling approach was taken to first describe univariate differences (Table 1), and then describe associations in incremental models to allow the reader to assess the impact potential confounding variables on these associations. These models followed the logic of first adjusting for demographic factors that are inherent to the individual, with additional adjustment for socioeconomic status characteristics of the individual related to access to health care. There was then additional adjustment for prevalent risk factors reflecting the participants health status. The univariate correlates of prophylactic

aspirin use were assessed among the predictors described above using Chi-square testing (SAS 9.1, Cary, NC).

Logistic regression was employed to assess the multivariable association between participant characteristics and aspirin use in a set of incremental models, first considering demographic factors (age, race, sex, and region), then adding indices of SES (income and education), then perceived general health, and finally, self-reported CVD risk factors (hypertension, diabetes, dyslipidemia, cigarette smoking and alcohol use). The focus of these analyses was to address the question of differential elective aspirin use among generally healthy individuals for prevention of cardiovascular diseases. The very small number of regularly taking aspirin for pain relief (624 or 2.6% of participants) were deleted from the analysis because the conditions requiring treatment may themselves be associated with increased risk for incident cardiovascular disease (for example, rheumatoid arthritis or other inflammatory processes). Regional differences in these underlying diseases would confound the potential positive benefit of prophylactic aspirin use.

In an analysis limited to those using aspirin for prophylaxis only, logistic regression was employed to identify factors associated with the use of high (325mg) dose with low (80-175 mg) dose ASA. Finally, associations of the primary and confounding factors with joint prophylactic use of aspirin and other non-steroidal pain relievers were considered.

## RESULTS

Of the 16,908 participants included in the analysis, 5311 (31.5%) reported prophylactic aspirin use (see Table 1). Aspirin use was more common among whites (34.7%) than African Americans (27.2%,  $p \le 0.0001$ ). Residents of the Stroke Belt were slightly more likely to use aspirin for prophylaxis (32.1%) compared to 30.8% in other regions (P=0.07). Counter to our hypothesis, the incremental multivariable models predicting prophylactic aspirin use (Table 2) demonstrated that after adjustment for SES the odds of aspirin use in the Stroke Belt region were approximately 10% greater than the rest of the nation (p = 0.005). Further adjustment for other risk factors modestly mediated the magnitude of the association (OR changing from 0.90 to (0.93) and somewhat reduced the level of significance (from p= 0.0054 to 0.0476). The multivariable models also suggest higher prophylactic aspirin use among older participants, with those over 65 years having nearly a 3-fold higher odds of using aspirin than participants aged 45-54. Higher income and education, hypertension, diabetes, dyslipidemia, former smoking, and current alcohol use were also associated with greater odds of aspirin use. Other factors associated with higher use of prophylactic aspirin were male sex, older age, higher income or education, hypertension, diabetes, dyslipidemia, current alcohol use, past cigarette use, and high Framingham CHD or Stroke risk score. Prophylactic aspirin use did not differ by self-perceived health.

The demographic factor-adjusted odds ratio of aspirin use in black participants was 0.75, indicating they had a 25% lower odds of using aspirin than whites. While adjustment for SES measures partially attenuated this estimate, (odds increasing from 0.75 to 0.82), further adjustment for risk factors yielded an odds ratio of 0.71 (95% CI 0.65-0.77).

Of those using aspirin for prophylaxis, the majority (75%) took self-reported low dosages of 175 mg daily or less (see Table 3), While there was no geographic difference in the aspirin dose (p = 0.079), the use of 175 mg daily or less of aspirin was more common than the use of 325 mg daily or more in whites (77.3%) than African Americans (70.9%), and in women (79.1%) than men (71.1%). Use of low dose aspirin was also more common among those of a higher socio-economic status (higher income and more education), without diabetes, never smokers, current or never alcohol intake, and at higher coronary risk as indexed by the FCRS

and FSRS. Few participants used concomitant aspirin and NSAIDs (4.4%), If one wishes to put these data into some kind of theoretical clinical perspective, and one assumes the 20% reduction seen in meta-analyses is consistent between the races, our finding of a 34.7% use of aspirin in whites would be associated with a population reduction in stroke of 6.9% (0.20  $\times$  0.347), while the same reduction in African Americans would be 5.4% (0.20  $\times$  0.272), or a 1.5% difference in stroke risk between the groups. In the age-range included in REGARDS (age 45 and over), African Americans have a stroke incidence that is approximately 40% higher than whites (Kissela et al, 2004), and these results suggest that approximately 3.8% (1.5/40) of this excess incidence in African Americans is potentially attributable to the higher aspirin use among whites. These racial differences in rates of prophylactic aspirin use were relatively unaffected by covariate adjustment for potential confounding factors.

### DISCUSSION

We hypothesized that use of aspirin might be lower in the stroke belt regions, and that this lower aspirin use could contribute to an increased stroke incidence in the stroke belt. Counter to our hypothesis, rather than finding a lower rate of aspirin use in the stroke belt, the use of aspirin was actually approximately 6-10% higher than in other regions compared to the stroke belt (unadjusted OR 0.94: 95% CI 0.88 -1.00, adjusted OR 0.90, 95% CI 0.84-0.97 - see Table 2). Aspirin use was more common among whites (34.7%) compared to African Americans  $(27.2\%, p \le 0.0001)$ , so that a larger proportion of whites might enjoy the protective benefits of aspirin for stroke and heart disease prevention. Thus, differential aspirin use could contribute to the known racial disparity in stroke mortality. Meta-analyses suggest that use of aspirin is associated with approximately a 20% reduction in the risk of stroke. Importantly, there are few published data that test the assumption of equal efficacy of aspirin in African American and white populations, a question that will be assessed as stroke events accrue in the REGARDS study. While it is illogical to discuss the proportion of the geographic excess of stroke that can be explained by the higher use of a protective treatment in the high-risk region, one could speculate on the impact of the lower aspirin use among African Americans on the racial disparity in stroke risk. If one assumes that African Americans are suffering approximately 52.5% higher stroke mortality than their white counterparts both among those using and not using aspirin, that the 27.2% prevalence of aspirin use estimated herein is representative nationally, and that aspirin is associated with 30% benefit, then the estimated racial difference in stroke risk is 40.0% (( $0.272 \times 1.525 \times (1 - 0.30)$ ) + ( $0.728 \times 1.525$ ) = 1.40) which is approximately the observed racial disparity. However, if the prevalence of aspirin use could be modified to the 34.7% in whites (an additional 7.5% of African Americans receive the 30% benefit of aspirin) and no other changes are made, then similar calculations result in an estimated racial disparity of 36.6%. Hence, one may speculate that the racial disparity of aspirin could reduce the racial disparity in stroke from 40.0% to 36.6%, and hence accounts for 8.6% ((40.0 - 36.6) / 40.0 = 0.086 or 8.6%) of the racial disparity in stroke.

Results of this study are similar to previous findings in smaller studies that investigated racial disparities in prevalence of aspirin use. Brown et al, using data collected from the Behavioral Risk Factor Surveillance System (BRFSS) reported a prevalence of aspirin use of 37.1% in whites and 28.6% in African Americans. The Third National Health and Nutrition Examination Survey (NHANES III) reported data on prevalence of aspirin use in patients with diabetes. Adults surveyed (n=1503) were considered to be regular aspirin users if they took aspirin  $\geq$ 15 times during the previous month. Among the participants that did not report history of CVD, 13% used aspirin regularly. Non-Hispanic whites were 2.5 times as likely to use aspirin regularly as non-Hispanic blacks, Mexican-Americans, or individuals of other races. The odds of regular aspirin use, which increased with age, were greater for individuals >40 years than for those 21 - 39 years of age. The NHANES data revealed no significant differences in regular aspirin use by sex, educational attainment, or family income. The REGARDS study findings

of greater aspirin use in males and in those with greater socioeconomic status may be a function of the greater variety of patients (patients with and without diabetes) and the greater sample size of REGARDS

One ARIC study analyzed data on aspirin use in a 2 week period from population based samples in four US communities. Results from the ARIC study support our findings of greater aspirin use for vascular prophylaxis in white, male, and higher stroke risk patients. In the ARIC study 30% of whites and 11% of blacks reported routine use of aspirin. In contrast to the findings in the REGARDS study, there was considerable variation in the prevalence of aspirin use among the four centers of the ARIC study, with Jackson Mississippi (a stroke belt state) having the lowest prevalence of aspirin use while Minneapolis (non-stroke belt state) having the highest prevalence. Also, in contrast to the current findings, in ARIC, there was an inverse relationship between self-perceived general health and aspirin use. These different findings may be attributed to a smaller sample size in ARIC and to the limited geographic area of participant residence, **or to temporal changes from 1996 to the data assessed in this study.** 

Rondondi and colleagues assessed aspirin use for primary prophylaxis of CHD in older adults in 2163 subjects. Similar to the findings in the REGARDS study, aspirin use was less frequent among black participants (13%) compared to white participants (20%). In contrast to REGARDS findings was the absence of a correlation between diabetes and increased prevalence of aspirin use. Data from the Rondondi study were collected in 1997-98 and 2002-2003. This may indicate a trend toward greater aspirin use in patients with diabetes. Apparently, the message to use aspirin in higher risk populations is being heard. Specifically, in our analysis, there was a 50-70% higher odds of aspirin use in those patients with hypertension, diabetes, or dyslipidemia after accounting for other factors. Also, there were increases in aspirin use across the quartiles of the Framingham heart disease and stroke risk scores.

Socio-economic status proved to be a confounder since there was clearly a lower likelihood of aspirin use among participants with lower socio-economic status (see discussion below), and there was lower socio-economic status in the Stroke Belt relative to the rest of the nation. As such, without adjustment for socio-economic status the magnitude of the lower rates of aspirin use in the rest of the nation relative to the Stroke Belt are underestimated (i.e., it is lower in the rest of the nation despite the rest of the nation having a higher socio-economic status).

The REGARDS study is subject to several limitations. Aspirin use and the presence of some risk factors were based on self report (**ie the risk factors taken by the CATI vs those that were laboratory results**). Also, aspirin use in the REGARDS study was determined by telephone interview. Individuals without telephones were excluded from selection into the study population. These individuals may be of lower socioeconomic status and therefore be less likely to be taking aspirin for vascular prophylaxis. This could have resulted in inflating the number of individuals in the population who are taking aspirin for prophylaxis. Further, we do not have data to address the issue of participants with aspirin contraindications such as allergy or intolerance, bleeding disorders, or anticoagulant therapy; we are assuming (as treating physicians do) that aspirin use by residents of a region or by members of a race will have an overall average benefit similar to those members of other regions and races. For example, that the average 30% reduction of risk shown for aspirin would be similar for general residents of the stroke belt as well as from other regions (and for African Americans as well as whites).

Findings from this study suggest there is an opportunity for decreasing stroke rates through education of patients and health care providers on the importance of aspirin in stroke

prevention, with an emphasis on increasing aspirin use in African American, female, or lower socioeconomic status patients.

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### References

- Antithrombotic Trialists' Collaboration. Collaborative meta-analysis of randomized trials of antiplatelet therapy for the prevention of death, myocardial infarction and stroke in high risk patients. BMJ 2002;324:71–86. [PubMed: 11786451]2002
- Berger JS, Roncaglioni MC, Avanzini F, Pangrazz Ii, Tognoni G, Brown DL. Aspirin for the Primary Prevention of Cardiovascular Events in Women and Men Sex-Specific Meta-analysis of Randomized Controlled Trials. JAMA 2006;295:306–313. [PubMed: 16418466]
- Ballantyne CM, Hoogeveen RC, Bang H, Coresh J, Folsom AR, Chambless LE, Myerson M, Wu KK, Sharrett AR, Boewinkle E. Lipoprotein-Associated Phospholipase A<sub>2</sub>, High-Sensitivity C-Reactive Protein, and Risk for Incident Ischemic Stroke in Middle-aged Men and Women in the Atherosclerosis Risk in Communities (ARIC) Study. Arch Intern Med 2005;165:2479–2484. [PubMed: 16314544] 2005
- Campbell CL, Smyth S, Montalescot G, Steinhubl SR. Aspirin Doses for prevention of cardiovascular disease; A systematic review. JAMA 2007;297:1018–1024.2007
- D'Agostino RB, Wolf PA, Belanger AJ, Kannel WB. Stroke risk profile: adjustment for antihypertensive medication. The Framingham Study. Stroke 1994;25(1):40–43. [PubMed: 8266381]1994
- D'Agostino S, Grundy S, Sullivan LM, Wilson P, the CHD Risk Prediction Group. Validation of the Framingham Coronary Heart Disease Prediction Scores: Results of a Multiple Ethnic Groups Investigation. JAMA 2001;286(2):180–187. [PubMed: 11448281]2001
- Howard VJ, Cushman M, Pulley LV, et al. The Reasons for Geographic and Racial Differences in Stroke (REGARDS) Study: Objectives and desigh. Neuroepidemiology 2005;26:135–143. [PubMed: 15990444]2005
- Kissela B, Schneider A, Kleindorfer D, Khoury J, Miller R, Alwell K, Woo D, Szaflarski J, Gebel J, Moomaw C, Pancioli A, Jauch E, Shukla R, Broderick J. Stroke in a biracial population: the excess burden of stroke among blacks. Stroke 2004;35:426–431. [PubMed: 14757893]2004
- Morton LM, Cahill J, Hartge P. Reporting participation in epidemiologic studies: A survey of practice. Am J Epidemiol 2006;163:197–203. [PubMed: 16339049]2006
- Ridker PM, Cushman M, Stampfer MJ, et al. Inflammation, aspirin and the risk of cardiovascular disease in apparently healthy en. NEJM 1997;336:973–979. [PubMed: 9077376]1997
- Rodondi N, Vittinghoff E, Cornuz J, Butler J, Ding J, Satterfield S, Newman AB, Harris TB, Hulley SB, Bauer DC, Health, Aging, and body composition study research group. Aspirin use for the primary prevention of coronary heart disease in older adults. Am J Med Nov;2005 119(11):1288. [PubMed: 16271917]2005
- Rolka DB, Fagot-Campagna A, Narayan KM. Aspirin use among adults with diabetes: estimates from the Third National Health and Nutrition Examination Survey. Diabetes Care 2001;24(2):197–201. [PubMed: 11213865]2001

- Shahar E, Folsom AR, Romm FJ, Bisgard KM, Metcalf PA, Crum L, McGovern PG, Hutchinson RG, Heiss G. Patterns of aspirin use in middle-aged adults: The atherosclerosis risk in communities (ARIC) study. Am Heart J May;1996 131(5):915–922. [PubMed: 8615310]1996
- Weisman SM, Graham D. Evaluation of the benefits and risks of low-dose aspirin in the secondary prevention of cardiovascular and cerebrovascular events. Arch Intern Med 2002;162:2197–2202. [PubMed: 12390062]2002
- Wilson PWF, D'Agostino RB, Levy D, Belanger AM, Silbershatz H, Kannel WB. Prediction of Coronary Heart Disease Using Risk Factor Categories. Circulation 1998;97(18):1837–1847. [PubMed: 9603539]1998
- Wolf PA, D'Agostino RB, Belanger AJ, Kannel WB. Probability of stroke: a risk profile from the Framingham Study. Stroke 1991;22(3):312–318. [PubMed: 2003301]1991

## Table 1 Distribution of Risk Factors by Prophylactic Aspirin Use

			taking aspiri	n for prophyla
	sample szie		taking aspirin	P value
	sampt set	No.	%	1 value
11	16908	5331	31.5	
Region				0.0696
Other regions	7968 8928	2457	30.8 32.1	
Stroke Belt	8928	2869	32.1	
lace		2202	215	< 0.0001
White Black	9755 7148	3383 1947	34.7 27.2	
	7110	1917	27.2	
Gender Male	7366	7777	27.0	< 0.0001
Female	7366 9539	2727 2604	37.0 27.3	
				0.0001
Age group 45-54	1908	324	17.0	< 0.0001
55-64	7104	2090	29.4	
65-74 75 84	5416	1999	36.9	
75-84 85+	2214 257	829 88	37.4 34.2	
001	201	00	54.2	
ncome	2992	904	27.0	< 0.0001
<\$20K \$20K-\$34K	2883 4005	804 1199	27.9 29.9	
\$35K-74K	5252	1695	32.3	
\$75+	2747	997	36.3	
ears of education				< 0.0001
< high school	1952	569	29.1	
high school	4315	1297	30.1	
Some College College+	4569 6060	1363 2100	29.8 34.7	
-				
Perceived health Excellent	3142	955	30.4	0.5163
Very good	5579	1764	31.6	
Good	5739	1842	32.1	
Fair	2045	638	31.2	
Poor	369	122	33.1	
ypertension				< 0.0001
No	7731	1954	25.3	
Yes	9081	3347	36.9	
Diabetes				< 0.0001
No Yes	13226 3064	3949 1230	29.9 40.1	
Tes	5004	1230	40.1	
Dyslipidemia				< 0.0001
No Yes	7446 8826	1908 3273	25.6 37.1	
	8820	5275	57.1	
moke status	7950	2260	20.1	< 0.0001
Never Past	7852 6640	2360 2341	30.1 35.3	
Current	2349	609	25.9	
lcohol use				< 0.0001
Never	5024	1476	29.4	.0.0001
Past	2843	857	30.1	
Current	9041	2998	33.2	
raminghamCardiacRiskScore				< 0.0001
<q1< td=""><td>4030</td><td>987</td><td>24.5</td><td></td></q1<>	4030	987	24.5	
Q1-Median Median-Q3	4029 4029	1301 1421	32.3 35.3	
Q3 or higher	4030	1418	35.2	

			taking aspiri	n for prophylaxis
			taking aspirin	Develop
	sample szie —	No.	%	P value
FraminghamStrokeRiskScore				< 0.0001
<q1< td=""><td>2461</td><td>450</td><td>18.3</td><td></td></q1<>	2461	450	18.3	
Q1-Median	2462	724	29.4	
Median-Q3	2463	858	34.8	
Q3 or higher	2461	955	38.8	

These cross-sectional associations are described in a national cohort (with oversampling of the southeastern "stroke belt") of African American and white participants evaluated between January 2003 and August 2006.

PA Author Manuscript	Table 2 Iultivariable Models Predicting Prophylactic Aspirin Use
NIH-PA Author Manuscript	Multivariable Model

**NIH-PA** Author Manuscript

		DF (16	F (16885 cases)			DF+SES	DF+SES (14858 cases)			DF+SES+CD+RF (14007 cases)	+RF (14007 c	ases)
	OR	95%	95% CI	P value	OR	95%	95% CI	P value	OR	95%	95% CI	P value
Region Other regions vs Stroke Belt	0.94	0.88	1.00	0.0536	0.90	0.84	0.97	0.0054	0.93	0.86	1.00	0.0476
Race Black vs White	0.75	0.70	0.80	<.0001	0.82	0.76	0.88	<.0001	0.71	0.65	0.77	<.0001
Gender Female vs Male	0.67	0.63	0.72	<.0001	0.71	0.66	0.77	<.0001	0.75	0.69	0.81	<.0001
Age group 55-64 vs 45-54 65-74 vs 45-54 75-84 vs 45-54 83+ vs 45-54	1.96 2.74 2.50	1.72 2.40 2.40 1.88	2.23 3.13 3.32 3.33	0.1732 <.0001 <.0001 0.0729	2.01 2.97 3.11 2.95	1.75 2.58 2.64 2.15	2.31 3.43 3.66 4.05	0.0128 <.0001 <.0001 0.0186	1.81 2.53 2.63 2.85	1.57 2.18 2.21 2.04	2.09 2.94 3.12 3.99	0.0098 <.0001 <.0001 0.0069
Income \$20K-\$34K vs <\$20K \$35K-74K vs <\$20K \$75+ vs <\$20K					1.02 1.15 1.44	0.91 1.03 1.26	1.14 1.29 1.66	0.0004 0.7166 <.0001	1.04 1.18 1.53	0.93 1.05 1.32	1.17 1.34 1.78	0.0005 0.8087 <.0001
Years of education high school vs < high school Some College vs <high school</high 					1.01 0.99	0.88 0.86	1.15 1.13	0.5552 0.2337	1.02 1.04	0.90 0.90	1.17 1.20	0.2592 0.6220
College+ vs< high school					1.11	0.97	1.28	0.0111	1.19	1.02	1.37	0.0011
Perceived health Fair vs Excellent Good vs Excellent Poor vs Excellent Very good vs Excellent									1.10 1.06 1.09 1.00	0.95 0.95 0.83 0.90	1.27 1.19 1.44 1.12	0.4037 0.8014 0.7126 0.2661
Hypertension Yes vs No									1.72	1.59	1.86	<.0001
Diabetes Yes vs No									1.52	1.38	1.67	<.0001
Dislipidemia Yes vs No									1.49	1.38	1.61	<.0001
Smoke status Past vs Never Current vs Never									$1.08 \\ 0.86$	$ \begin{array}{c} 1.00 \\ 0.77 \end{array} $	$ \begin{array}{c} 1.18 \\ 0.98 \end{array} $	0.0003 0.0014
Past vs Never Current vs Never									0.98 1.13	$0.87 \\ 1.03$	1.11 1.25	0.1329 0.0011
DF= demographic factors; SES = socioeconomic	S = socioeco	nomic status	; CD = cardia	status; CD = cardiac disease, RF = risk factor	= risk factor							

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These cross-sectional associations are described in a national cohort (with oversampling of the southeastern "stroke belt") of African American and white participants evaluated between January 2003 and August 2006.

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		# of taking	Ó	Dose (percent)	onley T
			80-175mg	325m	anun 1
-		5242	75.0	25.0	
0	Other regions	2416	74.8	25.2	1005
S	Stroke Belt	2821	75.1	24.9	C00/.0
M	White	3347	77.3	22.7	1000 0
B	Black	1894	70.9	29.1	1000.0>
M	Male	2682	71.1	28.9	
Ľ	Female	2560	79.1	20.9	<0.0001
77	45-54	222	74.2	25.8	
Ň	55-64	2052	73.5	296	
	65 74	1076	1.77	0.00	0 0665
	00-/4 75 04	0/61 200	1.11	6.77	C000.0
	-04	100	/4.0	4.02	
×	*00+ *00+	1 84	1.60	31.0	
V	<\$20K	/88	08.8	31.2	
Š	\$20K-\$34K	1175	75.0	25.0	0000
\$	\$35K-74K	1683	75.0	25.0	1000.0>
<i>S</i>	\$75+	983	78.2	21.8	
	I T HS	551	67.7	32.3	
	SH	1265	74.6	255	
Years of Education	Some College	1340	C 77	25.5	<0.0001
		2000	14:4	0.02	
	ollege+	C/07	1.1.1	C.22	T
Ĩ	Excellent	944	6.17	22.1	
	Very good	1736	76.3	23.7	-
Perceived Health G	Good	1814	73.6	26.4	0.0074
F	Fair	621	72.5	27.5	
P.	Poor	117	66.7	33.3	
	No	1921	76.2	23.8	1001 0
Hypertension	Yes	3291	74.3	25.7	0.1231
	No	3893	75.8	24.3	
Diabetes	Vec	1201	77.3		0.0150
	No	1881	0.21	75.0	
Dyslipidemia		1001	0.01	0.52	0.8538
	r es	2220	70.0	7.07	
	INEVEL	6707	7.0/	0.12	
Smoking Status	Past	2292	74.0	26.1	<0.0001
	Current	600	66.2	33.8	
Z	Never	1447	76.0	24.1	
Alcohol Use P:	Past	837	70.5	29.5	0.0046
	Current	2958	75.8	24.2	
	<01	0272	80.5	19.6	
	01 Madian	1788	C.00 2.87	717	
Framingham Coronary Risk Score		1400	10.0	740	< 0.0001
	Median-U5	1400	1.5.4	24.0	
0	Q3 or higher	1377	67.3	32.8	
⊽́	<01	446	80.3	19.7	
	01-Median	714	80.4	19.6	
Framingham Stroke Risk Function	Median-03	849		21.8	0.6046
		100		0.12	
	O3 or higher	927	78.3	21.7	

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Jample NA         Neither         Asplirin allone         NSAIDS allone           16838         53.8         27.3         9.7           8956         57.8         27.3         9.7           9726         54.6         29.2         10.1           9726         54.6         29.2         10.1           9726         54.6         29.2         10.1           7127         64.5         32.9         10.1           7312         54.6         29.2         11.1           9726         51.5         32.0         11.1           9731         54.8         32.0         11.1           956         61.3         32.0         11.1           1902         71.5         14.7         11.1           2403         54.1         32.0         9.4           1902         71.5         12.7         11.2           2403         54.1         31.0         9.5           1912         61.7         25.3         10.4           192         54.1         31.0         9.5           2199         61.7         25.3         9.6           2133         54.1         27.2         10.6	
$ \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	Both
Otheresions         7950         59.9         76.8         79.3         90.1           Mute         97.26         57.8         27.3         0.1           Mute         97.26         54.6         29.2         6.3         32.9         0.1           Mute         97.26         54.6         29.2         6.3         27.6         11.9           Mute         75.44         9000         71.5         14.7         11.1           55.41         2503         54.3         22.0         0.1           55.41         2503         54.3         22.0         0.1           55.41         2504         61.7         25.6         11.9           55.41         2504         61.7         25.6         11.1           55.41         2504         61.7         25.5         11.1           55.41         2504         61.7         25.5         11.1           55.42         25.44         20.8         27.4         11.1           55.45         25.4         25.1         25.6         9.1           55.45         57.4         25.1         25.6         9.1           55.45         57.4         27.4         17.0<	9.7 4.4
Struck Belt         Strock         57.3         27.3         60.1           Hule         71.27         6.4.6         29.2         0.01           Hule         71.27         6.4.6         29.2         0.01           Hule         71.27         6.4.6         29.2         0.01           Hule         95.4.6         71.27         6.4.8         20.2         0.01           Fenale         95.6.4         70.03         54.4         20.0         1.1.5           65.4.4         50.03         54.4         20.0         1.1.5         1.1.5           65.4.4         50.03         54.4         20.0         9.1.8         1.1.5           65.4.4         50.03         54.4         20.0         2.2.5         9.1.1           65.4.4         50.04         55.5         32.0         9.1.1         1.1.5           65.4.4         50.04         55.4         50.0         25.5         9.1.1           65.4.4         50.04         50.0         25.5         9.1.1         1.1.5           65.4.4         50.04         50.0         25.3         50.1         1.1.5           65.4.4         50.04         50.1         25.3 <td< td=""><td>4.0</td></td<>	4.0
While         9726         54.6         29.2         10.7           Malke         7.47         64.5         24.2         6.7           Female         9508         60.7         24.6         9.1           Female         9508         60.7         24.6         11.9           Female         9508         60.7         24.6         11.1           Female         9508         60.7         24.6         11.1           Female         9508         60.7         24.8         14.7         111.1           Female         9508         61.7         24.8         14.7         111.1           Female         9508         61.7         25.5         32.0         9.1           S54.         2199         54.1         23.0         9.4         11.1           Fest         2199         57.9         25.7         9.4         9.1           S54.         219.4         57.9         25.6         9.1         9.4           S54.         219.4         57.9         25.7         9.4         9.4           S54.         219.4         57.1         25.6         9.4         9.4           S54.         210.4	10.1 4.8 0.0041
Mate         7127         64.5         24.2         8.3           Auth         95.08         60.7         22.6         11.5           Female         97.08         60.7         22.6         11.5           45.54         1002         71.5         14.7         11.1           45.54         1002         71.5         24.8         11.5           45.54         1002         51.2         23.0         11.5           55.54         2196         55.2         32.0         9.1           55.44         2196         55.2         32.0         9.1           55.4         2190         55.5         32.0         9.1           55.4         2192         55.5         32.0         9.1           55.4         2192         55.5         32.0         9.1           55.4         2192         55.5         32.0         9.1           55.4         213         51.1         21.3         51.1         51.1           55.4         51.1         21.3         51.1         21.2         9.1           55.4         51.1         51.1         21.1         9.1         25.1           55.4         5	5.4
Male         7347         56.3         32.9         6.7           af S-14         900         0.7         2.5.6         11.1           55.64         1902         7.1.8         14.7         11.1           55.64         1902         5.4.8         200         54.4         11.1           55.64         1902         5.4.8         200         54.4         20.0         11.1           55.74         256         61.3         3.2.0         9.1         11.1           55.74         256         61.3         3.2.0         9.1         11.1           55.74         256         61.3         3.2.0         9.1         11.1           55.74         259.4         61.0         255         9.1         9.1           55.64         27.9         57.1         3.10         9.1         9.1           55.64         27.4         27.3         3.10         9.2         9.1           55.64         27.4         27.3         3.10         9.2         9.1           55.64         57.1         27.2         57.3         9.1         9.2           610         57.2         57.3         27.4         27.4	8.3 3.1 <0.0001
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	6.7 4.1
45-54         1902         71.5         14.7         11.5           55-64         50.89         59.4         24.8         11.1           65.44         5.44         5.3         32.0         11.1           65.44         5.43         5.0         5.2         32.0         8.1           55.44         5.43         5.0         5.2         32.0         8.1           55.44         5.43         5.0         5.2         32.0         8.1           55.4         2199         55.2         32.0         8.1         11.1           55.4         2199         55.2         32.0         9.3         10.4           50.1         25.3         32.0         24.3         9.6         9.1           5754         27.3         54.1         21.0         25.3         9.1           5754         27.3         54.1         21.0         25.3         9.1           555K-74K         57.3         54.1         27.2         10.4         31.0           555K-74K         57.3         57.1         27.2         9.6         7.3           555K-74K         57.3         57.2         27.2         9.10.0	4.7
55-64         7089         59.4         24.8         11.1 $65-74$ $54.03$ $54.8$ $32.0$ $8.3$ $75.84$ $203$ $54.8$ $32.0$ $8.3$ $75.84$ $2399$ $61.7$ $32.9$ $8.3$ $75.84$ $2394$ $61.0$ $23.9$ $9.1$ $85+$ $2394$ $61.0$ $25.5$ $9.1$ $850k-534k$ $3394$ $61.0$ $25.5$ $9.1$ $850k-534k$ $3394$ $61.0$ $25.5$ $9.1$ $850k-534k$ $2394$ $61.0$ $25.5$ $9.1$ $850k-574k$ $2734$ $57.1$ $31.0$ $9.5$ $875k-74k$ $31.3$ $92.5$ $27.4$ $17.0$ $876$ $92.1$ $27.4$	11.5 2.3
65.74 $5403$ $54.8$ $32.0$ $8.3$ $7.84$ $2199$ $55.2$ $32.5$ $7.4$ $8.81$ $2256$ $61.7$ $23.9$ $0.1$ $8.52$ $52.5$ $32.5$ $0.1$ $32.5$ $8.50K.334K$ $3394$ $61.0$ $25.5$ $0.1$ $855K.74K$ $5242$ $57.9$ $23.0$ $0.1$ $855K.74K$ $5242$ $57.9$ $25.5$ $9.1$ $855K.74K$ $5342$ $57.9$ $25.5$ $9.1$ $855K.74K$ $5342$ $57.9$ $25.5$ $9.7$ $855K.74K$ $5346$ $52.1$ $25.3$ $10.6$ $8566$ $59.7$ $25.7$ $10.6$ $12.6$ $866$ $25.3$ $25.7$ $25.7$ $10.6$ $866$ $25.3$ $25.7$ $25.7$ $10.6$ $866$ $59.7$ $27.2$ $27.2$ $10.6$ $866$ $50.6$ $57.3$	11.1 4.6
75.84 $2199$ $55.2$ $32.5$ $1.4$ $85+$ $256$ $61.3$ $32.0$ $1.4$ $85+$ $256$ $61.3$ $32.0$ $1.04$ $855K-74K$ $2294$ $61.0$ $25.5$ $91.04$ $855K-74K$ $5242$ $57.9$ $28.0$ $9.4$ $855K-74K$ $52.3$ $50.1$ $31.0$ $9.4$ $857-7$ $62.3$ $50.1$ $31.0$ $9.4$ $8560$ $55.2$ $55.2$ $25.3$ $10.6$ $500$ $57.3$ $57.4$ $27.4$ $27.4$ $500$ $57.3$ $57.4$ $27.4$ $10.0$ $500$ $50.1$ $27.4$	6
$85+$ $256$ $61.3$ $32.0$ $4.3$ $\ll 20 \mathrm{K}$ $887$ $61.7$ $23.9$ $61.7$ $23.9$ $10.4$ $\$ 20 \mathrm{K} \cdot 334\mathrm{K}$ $534.1$ $53.9$ $51.0$ $25.5$ $9.1$ $\$ 52 \mathrm{K} \cdot 34 \mathrm{K}$ $534.1$ $51.0$ $25.5$ $9.1$ $9.1$ $\$ 55 \mathrm{K} \cdot 3242$ $57.1$ $27.3$ $57.1$ $31.0$ $9.5$ $\$ 75.2$ $1942$ $62.3$ $54.1$ $31.0$ $9.4$ $\$ 75.2$ $57.3$ $57.3$ $57.3$ $57.3$ $9.6$ $$569$ $59.7$ $27.2$ $26.7$ $7.3$ $$500$ $57.3$ $27.2$ $10.0$ $$500$ $57.3$ $27.2$ $9.6$ $$500$ $57.3$ $57.2$ $9.6$ $$500$ $7.35$ $27.2$ $9.6$ $$500$ $7.35$ $27.2$ $9.2$ $$500$ $7.35$ $9.6$ $9.6$ $$500$	4 5.0
$< 520K$ $2872$ $61.7$ $23.9$ $10.4$ $$ $50K \cdot 534K$ $3994$ $61.0$ $25.5$ $91$ $$ $50K \cdot 534K$ $3994$ $61.0$ $25.5$ $91$ $$ $50K \cdot 534K$ $2739$ $51.0$ $25.6$ $9.1$ $$ $716$ $2739$ $57.1$ $31.0$ $9.5$ $$ $716$ $2739$ $57.4$ $25.1$ $9.7$ $$ $566$ $59.7$ $25.6$ $25.7$ $9.4$ $$ $569$ $59.7$ $27.2$ $26.0$ $9.7$ $$ $720$ $$730$ $$567$ $25.6$ $9.1$ $$ $004$ $$560$ $$57.7$ $$27.2$ $$10.6$ $$ $004$ $$56.0$ $$27.2$ $$27.4$ $$10.6$ $$ $000$ $$730$ $$57.2$ $$27.4$ $$10.0$ $$ $000$ $$730$ $$26.3$ $$10.0$ $$26.7$ $$ $000$ $$730$ $$27.2$ $$10.0$ $$27.6$ $$ $ $000$	4.3 2.3
\$20K-\$34K         3994         61.0 $25.5$ 9.1           \$55K-74K         5242         57.9         28.0         9.8           \$55K-74K         5242         57.9         28.0         9.4           \$55K-74K         5242         57.9         28.0         9.4           \$575+         2733         54.1         21.0         9.5           \$575         57.1         25.3         10.6           \$50me College         455.4         59.6         25.3         10.6           \$50me College         455.4         59.6         25.3         10.6           \$50me College         455.4         59.6         25.3         10.6           \$50me College         45.4         56.0         29.8         7.3           \$569         59.7         27.4         17.0           \$57         733         27.4         17.0           \$56         51.9         57.4         17.0           \$56         51.9         27.4         17.0           \$56         51.9         27.4         17.0           \$56         51.9         35.0         7.3           \$56         51.9         35.0         5	
\$35K-74K $5242$ $57.9$ $28.0$ $9.8$ $$35K-74K$ $2739$ $54.1$ $31.0$ $9.5$ $$57.+$ $2739$ $54.1$ $31.0$ $9.5$ $$57.+$ $2739$ $54.1$ $31.0$ $9.5$ $$57.+$ $2739$ $56.0$ $25.3$ $0.7$ $$50me$ $4534$ $56.0$ $25.3$ $0.7$ $$5720$ $55.2$ $25.7$ $7.3$ $$Very good$ $5720$ $57.4$ $27.2$ $17.0$ $$Very good$ $5720$ $55.2$ $27.4$ $27.4$ $17.0$ $$Very good$ $5720$ $55.2$ $27.4$ $27.4$ $17.0$ $$Very good$ $5720$ $55.2$ $27.4$ $27.4$ $17.0$ $$Very good$ $7716$ $64.9$ $57.4$ $27.4$ $17.0$ $$Very good$ $7138$ $60.1$ $27.2$ $10.0$ $10.0$ $$Very good$ $7335$ $51.9$	1 4.4
\$75+ $2739$ $54.1$ $31.0$ $9.5$ $dhigh$ school         1942 $62.4$ $25.1$ $8.4$ $high$ school         1942 $62.4$ $25.3$ $9.7$ $Some$ College $4554$ $59.6$ $25.3$ $9.7$ $Some$ College $64.8$ $56.0$ $29.8$ $9.4$ $College+$ $6048$ $56.0$ $29.8$ $9.4$ $Togod$ $5720$ $57.4$ $27.7$ $7.7$ $Verv good$ $5720$ $57.4$ $27.7$ $7.7$ $Vor         77.4 27.7 8.6 10.6 No 716 54.9 27.2 10.0 No 71389 60.1 27.2 10.0 No 71389 60.1 27.4 17.0 No 71389 60.1 27.2 10.00 No 7425 64.3 27.2 10.00 No Yes 31.3$	
$\langle high school$ 194262.425.18.4high school430260.226.09.7Some College455459.625.310.6Some College455450.125.310.6Excellent313862.327.78.6Excellent556957.427.78.6Fair313864.927.78.6Poor55657.427.210.5Fair36550.127.417.0No771664.927.29.6No771664.927.29.6No771664.927.29.6No771664.927.29.6No73353.731.39.6No738353.731.79.6No74653.631.39.6No738353.731.79.25No78353.731.79.25No73325.610.0No74454.630.2Never53.353.731.7No7425.410.0No74454.630.2No74427.427.4No74427.427.4No7410.1No7427.4No7427.4No7427.4No77No77No77No <td< td=""><td></td></td<>	
high school $4302$ $60.2$ $26.0$ $9.7$ Some College $4554$ $59.6$ $25.3$ $0.6$ Some College+ $6048$ $56.0$ $29.8$ $9.4$ Excellent $3138$ $62.3$ $26.7$ $7.3$ Very good $5720$ $57.4$ $27.7$ $8.6$ Good $5720$ $57.4$ $27.7$ $8.6$ Port $3655$ $50.1$ $27.4$ $10.6$ Fair $3655$ $50.1$ $27.4$ $9.8$ No $7716$ $64.9$ $22.2$ $9.8$ Yes $9046$ $53.6$ $21.7$ $9.8$ No $7716$ $64.9$ $22.2$ $9.6$ No $7116$ $64.9$ $22.2$ $9.6$ No $71389$ $60.1$ $27.4$ $9.6$ No $71389$ $60.1$ $25.6$ $9.02$ No $7392$ $31.3$ $9.6$ $7.9$ No $71425$ $51.9$ $25.4$ $9.02$ No $7332$ $53.7$ $31.7$ $9.02$ No $7425$ $61.9$ $25.4$ $8.7$ No $733$ $59.9$ $25.4$ $8.7$ Never $53.3$ $59.9$ $26.3$ $9.02$ Past $2833$ $59.9$ $26.3$ $10.1$ Never $57.1$ $27.2$ $10.1$ Never $20.4$ $63.4$ $27.2$ $10.7$ No $70.4$ $57.1$ $26.3$ $10.1$ No $70.4$ $57.3$ $26.3$ $10.1$	
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