Gender Differences in Aspirin Use Among Adults with Coronary Heart Disease in the United States

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BACKGROUND: Aspirin reduces mortality for men and women with coronary heart disease (CHD). Previous research suggests women with acute coronary syndromes receive less aggressive care, including less frequent early administration of aspirin. The presence of gender differences in aspirin use for secondary prevention is less clear.

OBJECTIVE: To determine if a gender difference exists in the use of aspirin for secondary prevention among individuals with CHD.

DESIGN: We analyzed data from the nationally representative 2000–2002 Medical Expenditure Panel Surveys to determine the prevalence of regular aspirin use among men and women with CHD.

PARTICIPANTS: Participants, 1,869, 40 years and older who reported CHD or prior myocardial infarction.

RESULTS: Women were less likely than men to use aspirin regularly (62.4% vs 75.6%, $p < .001$) even after adjusting for demographic, socioeconomic and clinical characteristics (adjusted OR=0.62, 95% CI, 0.48–0.79). This difference narrowed but remained significant when the analysis was limited to those without self-reported contraindications to aspirin (79.8% vs 86.4%, $P = .002$, adjusted OR=0.68, 95% CI, 0.48–0.97). Women were more likely than men to report contraindications (20.5% vs 12.5%, $P < .001$). Differences in aspirin use were greater between women and men with private health insurance (61.8% vs 79.0%, $P<.001$, adjusted OR = 0.48, 95% CI, 0.35–0.67) than among those with public coverage (62.5% vs 70.7%, $P = .04$, adjusted OR = 0.74, 95% CI, 0.50–1.11) ($P < .001$ for gender–insurance interaction).

CONCLUSION: We found a gender difference in aspirin use among patients with CHD not fully explained by differences in patient characteristics or reported contraindications. These findings suggest a need for improved secondary prevention of cardiovascular events for women with CHD.

KEY WORDS: coronary heart disease; myocardial infarction; aspirin; secondary prevention; gender; insurance; health; medical expenditure panel survey.

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INTRODUCTION

Aspirin confers protection against myocardial infarction (MI), stroke, and other vascular events and reduces mortality for men and women with coronary heart disease (CHD).[1] Although the utility of aspirin for the primary prevention of vascular events in otherwise healthy women is unclear,[2–4] strong evidence supports the benefits of aspirin for women with CHD.[1,5] American College of Cardiology (ACC)/American Heart Association (AHA) guidelines therefore recommend daily aspirin for all patients with atherosclerotic cardiovascular disease unless contraindicated.[5,6]

Gender differences in the management of acute coronary syndromes, including the use of thrombolytics, angioplasty, beta-blockers, and aspirin, are well documented.[7–13] Given aspirin's clear benefits for both women and men with CHD, gender differences in its use that persist beyond the inpatient experience could additionally impact the health of women with CHD on a population level. However, less is known about gender differences in outpatient care of CHD in general,[14–17] and few studies have specifically assessed gender differences in aspirin use among men and women with CHD.[18,19]

Estimating aspirin use poses a special challenge. Aspirin's low cost, over-the-counter availability, and widely known benefits for patients with CHD distinguish it as a unique medication whose patterns of use are difficult to measure and may be less subject to mechanisms proposed to explain gender disparities in other medical treatments.[11,16,20] For example, differences in prescription drug coverage are less likely to affect aspirin use. Consequently, gender differences in aspirin use may not correspond to those demonstrated for other aspects of care for CHD.

Most studies addressing gender differences in the outpatient care of patients with CHD were limited to local populations or particular health systems[14,15,17,21,22] and others lacked outpatient measures of aspirin use.[7,12,21] Two studies utilized national data but relied on ambulatory visit documentation that may not accurately measure aspirin use, and these were estimated per visit reporting rates rather than population prevalences.[18,19] As a result, estimates of aspirin use vary widely, from 33%[19] to 83%[17] to 97%,[15] and the significance of gender differences in the general population of patients with CHD remains unclear.

Therefore, to more clearly define population-level differences in aspirin use between women and men with CHD and to investigate patient characteristics that may contribute to or modify such differences, we used data from a nationally representative survey to compare self-reported aspirin use by gender in adults with CHD.

SUBJECTS AND METHODS

Data Source

We analyzed data from the 2000, 2001, and 2002 Medical Expenditure Panel Survey (MEPS), a survey sponsored by the Agency for Healthcare Research and Quality and the National Center for Health Statistics. MEPS is designed to provide nationally representative estimates of health care use, expenditures, sources of payment, and insurance coverage.[23,24] Starting in 2000, condition-specific questions were included to assess whether care is consistent with practice guidelines.[25] Each panel of respondents is drawn from the previous year's National Health Interview Survey, and respondents are repeatedly interviewed in person 5 times over a 2 1/2-year period using computer-assisted personal interviewing technology. Response rates for the three survey years varied between 64.7% and 66.3%.[23] The MEPS survey design is complex, involving multistage sampling and producing stratified and clustered data. Information is provided to account for the complex survey design, including weights to adjust for nonresponse and disproportionate sampling. Each year of data provides a representative sample of the U.S. civilian noninstitutionalized population. MEPS has been used previously to study various issues relating to women's health, gender disparities, and cardiovascular disease.[26–28] Because this study used publicly available anonymous data, the Institutional Review Board of Brigham and Women's Hospital deemed it exempt from review.

Study Population

Our study cohort included participants 40 years of age or older at the time of the survey who reported a diagnosis of coronary heart disease (CHD) or a previous heart attack or myocardial infarction (MI). Individuals with missing values for demographic or clinical variables were excluded.

Study Variables

Aspirin use and covariates were ascertained from self-reports. Participants or their proxies were asked two questions to determine the presence of CHD: "Have you ever been told by a doctor or other health professional that you had [coronary heart disease]," or "[a heart attack, also called myocardial infarction or MI]?" Those who replied yes to either of these questions were asked, "Do you take aspirin everyday or every other day?" Respondents with MI or CHD who did not report regular aspirin use were asked, "Do you have a health problem or condition that makes taking aspirin unsafe?" Those who reported such a contraindication were specifically asked "Is that problem stomach-related or something else?" Neither the dose nor the duration of aspirin use was determined, and specific contraindications were not characterized beyond whether they were "stomach-related."

Demographic and socioeconomic covariates included age (at the time of the interview), gender, health insurance status (private insurance, public with no private insurance, or uninsured), education (< high school education, high school graduate, or >high school education), poverty category (income 0–124%, 125–199%, 200–399%, or 400+% of local poverty level adjusted for family size), and census region (South, Midwest, West, and Northeast). Race and ethnicity were categorized as non-Hispanic white, non-Hispanic black, Hispanic, or other, using responses to two questions about race (white, black, or other) and ethnicity (Hispanic or non-Hispanic).

Presence of other medical problems including asthma, diabetes, and hypertension, was also determined by self-report of diagnoses. Finally, measures of preventive counseling and regular healthcare access were adapted from three questions: "Has a doctor or other health professional ever advised you to…[exercise more]"; "…[eat fewer high fat or high cholesterol foods]"; and "About how long has it been since your blood pressure was checked by a doctor, nurse or other health professional?" A dichotomous variable (blood pressure checked within the last year) was created from the answer to the last of these questions. Year of participation (2000, 2001, or 2002) did not significantly predict aspirin use ($P = .50$) and is not included in the analysis.

Statistical Analysis

All demographic, socioeconomic, and clinical characteristics were compared by gender using X^2 tests for categorical variables.

Logistic regression was used to estimate unadjusted and adjusted odds ratios for aspirin use. Because effect estimates were not appreciably altered by the inclusion of the 3 indicators of preventive counseling and health care access, these variables were removed from the final multiple logistic regression model. This allowed 9 participants who lacked data for these three variables to be included in the final adjusted analyses. Age was included as both a continuous and categorical (< 65, 65–74, and >74 years old) variable. As results were similar, only results based on age as a categorical variable are presented. Because MEPS lacks other measures of clinical appropriateness of aspirin use to validate self-reported contraindications, we conducted adjusted analyses for both the full cohort and the subgroup excluding those reporting a contraindication to aspirin.

All two-way interactions with gender were analyzed. A statistically significant two-way interaction was found only between type of insurance coverage and the effect of gender on aspirin use ($P < .001$). The analysis was stratified accordingly by insurance coverage. Because previous studies have suggested that younger women may be especially likely to receive less intensive care after an MI,[21] and because Medicare eligibility modifies the distinction between private and public insurance for adults 65 or older, the adjusted analysis was further stratified by a dichotomous age variable (< 65 and ≥ 65 years old). A three-way interaction assessed between gender, insurance status, and this age indicator was significant ($P < .05$). Only 3 participants, 65 years or older, were uninsured, so results from this group are not reported.

All analyses were conducted with SAS 9.01 (SAS Institute, Cary, NC) and SUDAAN release 8.0 (Research Triangle Institute, Research Triangle Park, NC) statistical software to account for the complex survey design.

RESULTS

The 2000–2002 MEPS included 25,486 participants, 40 years of age or older, 1,938 (7.6%) of whom reported either a previous MI (1303, 5.1%) or CHD alone (635, 2.5%). Of those, 69 (3.6%) were excluded from the analysis because of missing data. There were no statistically significant observed differences between those included and those excluded because of missing data (all $P > .10$). Overall, 1,869 participants were included in the analysis.

Findings from descriptive comparisons by gender are summarized by Table 1. The prevalence of regular aspirin use was 70.5% in the study cohort, and 84.0% among those without a contraindication to taking aspirin. In both unadjusted and adjusted comparisons, women were significantly less likely than men to take aspirin (62.4% vs 75.6%, $P < .001$, adjusted OR = 0.62, 95% CI, 0.48–0.79) as shown in Table 2. This difference persisted when the analysis was limited to the 84.4% of participants without reported contraindications to aspirin (79.8% vs 86.4%, $p = .002$, adjusted OR = 0.68, 95% CI, 0.48–0.97), but the absolute unadjusted gender difference narrowed from 13.2% to 6.6%. Among those without reported contraindications, both older and younger participants were significantly less likely to take aspirin than adults age 65–74; Hispanic adults were less likely than non-Hispanic whites to be regular aspirin users; and participants who reported a previous myocardial infarction or hypertension were more likely to take aspirin regularly. Also notable was a strong stepwise relationship between higher income and greater aspirin use.

Participants who reported that a health care provider had advised them to eat a healthier diet were more likely to take aspirin (75.0% vs 59.9%, $P < .001$; adjusted OR = 1.42, 95% CI, 1.06–1.90), as were those counseled to exercise more (74.9% vs 58.0% $P < .001$; adjusted OR = 1.72, 95% CI, 1.27–2.33), or whose health care provider had checked their blood pressure in the past year (70.9% vs 54.6%, $P = .04$; adjusted OR = 2.03, 95% CI, 0.99–4.14). However, including these variables in the regression model did not appreciably alter estimates, and there were no significant two-way interactions involving these covariates.

Differences in aspirin use between women and men were greatest among those with private health insurance ($p < .001$ for a gender-insurance status interaction) (Table 3). Among those with private insurance, women reported aspirin use less frequently than men. In contrast, women and men with public insurance reported aspirin use with similar frequency after adjusting for confounding characteristics. Compared to a similar prevalence of aspirin use among women with private (62.5%) and public coverage (61.8%), men with private coverage reported regular aspirin use with greater frequency (79.0%) than men with public insurance (70.7%). Results for the uninsured were difficult to interpret because of small sample size (n=87), and therefore, are not reported. Inclusion of the three variables reflecting regular preventive care did not diminish this variation in gender differences by insurance status.

As shown in Figure 1, gender differences in aspirin use were greater among younger adults ($P = .04$ for gender–age interaction) when age was dichotomized as younger than 65 versus 65 or older. The modifying effect of insurance status on gender differences in aspirin use significantly differed by age ($P = .047$ for three-way gender–insurance–age interaction). The difference in aspirin use reported by privately insured men and women was more pronounced for those under 65 (59.3% vs 82.5%, $P < .001$, adjusted OR = 0.29, 95% CI, 0.17–0.48), than for older participants (63.0% vs 76.2%, $P = .002$, adjusted OR = 0.62, 95% CI, 0.41–0.95). In contrast, gender differences in aspirin use among publicly insured participants were not significant for either age group.

Table 1. Descriptive Statistics by Gender[a]

	Men	Percentage (%)	Women	Percentage (%)	P value[b]
	N		N		
Total	1,098		771		
Age, years					
<65	464	43.0	253	30.0	<0.001
65–74	335	29.8	213	28.6	
>75	299	27.3	305	41.4	
Race/ethnicity					
Non-Hispanic White	849	84.9	529	79.6	<0.001
Non-Hispanic Black	114	6.9	150	13.0	
Hispanic	105	5.2	71	4.2	
Other	30	3.1	21	3.2	
Insurance					
Private	686	65.6	373	54.0	<0.001
Public	361	30.5	362	42.4	
Uninsured	51	3.9	36	3.6	
Percent of federal poverty level					
>400%	398	38.7	145	21.8	<0.001
200–399%	333	31.5	181	25.5	
125–199%	166	15.4	169	23.0	
0–124%	201	14.5	276	29.7	
Education level					
<HS education	359	27.9	362	42.9	<0.001
High school graduate	325	32.2	255	34.7	
>HS education	414	40.0	154	22.4	
Census region					
Northeast	174	17.4	127	18.9	0.17
Midwest	254	22.5	190	26.0	
South	475	42.2	334	39.3	
West	195	17.9	120	15.7	
Diabetes mellitus	301	25.8	272	32.4	0.01
Asthma	111	9.5	161	19.3	<0.001
Prior Myocardial Infarction	759	69.5	498	64.9	0.04
Hypertension	768	69.5	612	77.6	0.001
Advised to exercise more[c]	807	72.7	509	65.7	0.003
Advised to restrict high fat foods[c]	852	76.7	554	71.4	0.05
Blood pressure checked in past year[c]	1,060	96.5	762	98.8	0.01

[a]*Unweighted sample sizes are presented, but percentages were calculated using provided analytic weights. Because of rounding, percentages may not total 100.*

[b]*Significance tests were performed with a X^2 test and were adjusted for survey design.*

[c]*Nine participants were excluded from analysis of at least one of the three variables reflecting health care access because of missing data.*

Table 2. Regular Aspirin Use by Socioeconomic and Clinical Characteristics

Characteristics		All Participants	All Participants	Participants without contraindication to aspirin
		Unadjusted	Adjusted[a]	Adjusted
		Percentage (%)	OR (95% CI)[b]	OR (95% CI)
Gender	Women	62.4	0.62 (0.48–0.79)	0.68 (0.48–0.97)
	Men	75.6	1.00	1.00
Age, years	<65	71.4	0.91 (0.67–1.24)	0.57 (0.37–0.86)
	65–74	74.3	1.00	1.00
	>75	65.9	0.74 (0.54–1.01)	0.58 (0.38–0.88)
Race/ethnicity	Non-Hispanic Black	67.3	0.82 (0.58–1.18)	0.66 (0.41–1.07)
	Hispanic	63.8	0.85 (0.55–1.32)	0.56 (0.33–0.95)
	Other	56.1	0.52 (0.29–0.92)	0.30 (0.15–0.58)
	Non-Hispanic White	71.9	1.00	1.00
Insurance	Uninsured	61.3	0.72 (0.41–1.28)	0.55 (0.29–1.05)
	Public	66.8	0.97 (0.73–1.28)	0.96 (0.64–1.42)
	Private	73.1	1.00	1.00
Percent of federal poverty level	>400%	76.5	1.80 (1.24–2.62)	2.85 (1.68–4.86)
	200%-399%	74.4	1.70 (1.19–2.43)	1.94 (1.21–3.12)
	125%-199%	66.2	1.31 (0.91–1.88)	1.60 (0.98–2.61)
	0-124%	59.0	1.00	1.00
Education level	<High school education	67.4	0.93 (0.67–1.29)	1.04 (0.67–1.62)
	High school graduate	68.9	0.82 (0.60–1.12)	0.82 (0.55–1.23)
	>High school education	75.1	1.00	1.00
Census region	Northeast	73.9	1.40 (0.91–2.15)	1.41 (0.81–2.43)
	Midwest	71.5	1.24 (0.83–1.85)	1.27 (0.76–2.10)
	South	69.5	1.08 (0.74–1.58)	1.41 (0.88–2.26)
	West	67.6	1.00	1.00
Diabetes mellitus	Yes	72.1	1.15 (0.87–1.52)	1.45 (0.97–2.16)
	No	69.8	1.00	1.00
Asthma	Yes	61.2	0.72 (0.52–1.00)	0.78 (0.52–1.18)
	No	71.9	1.00	1.00
Prior Myocardial Infarction	Yes	71.3	1.16 (0.91–1.50)	1.38 (1.00–1.91)
	No	68.6	1.00	1.00
Hypertension	Yes	72.1	1.50 (1.16–1.95)	2.08 (1.48–2.93)
	No	66.1	1.00	1.00

[a]*The adjusted multivariate model included gender, insurance status, percent of federal poverty level, education level, race/ethnicity, age, diabetes mellitus, asthma, prior myocardial infarction, hypertension, and census region. All results have been adjusted for the complex design of the survey and analytic weights.*
[b]*OR=odds ratio, CI=confidence interval.*

Table 3. Regular Aspirin Use by Gender, Stratified by Insurance Status

	N	Unadjusted Percentage (%)	Unadjusted OR (95% CI)[a]	Adjusted OR[b] (95% CI)
All participants				
Women	771	62.4	0.54 (0.42–0.68)	0.62 (0.48–0.79)
Men	1,098	75.6		
Private insurance				
Women	361	61.8	0.43 (0.32–0.59)	0.48 (0.35–0.67)
Men	686	79.0		
Public insurance				
Women	362	62.5	0.69 (0.48–1.00)	0.74 (0.50–1.11)
Men	361	70.7		

Prevalence of aspirin use for men and women, by insurance status, in the complete study cohort. Univariate and multivariate odds ratios (± 95% confidence intervals) for aspirin use are presented, with men as the referent group. Results for uninsured participants are not presented because of the small sample size (n=87).
[a]*OR=odds ratio, CI=confidence interval.*
[b]*The adjusted multivariate model included percent of federal poverty level, education level, race/ethnicity, age, diabetes mellitus, asthma, prior myocardial infarction, hypertension, and census region. All results have been adjusted for the complex design of the survey and analytic weights.*

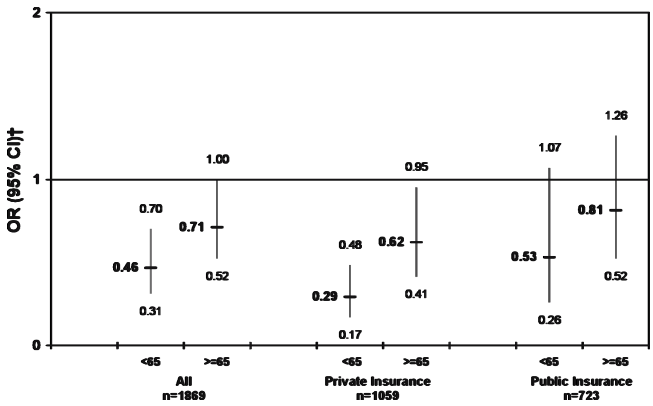

Figure 1. Gender differences in regular aspirin use stratified by age and health insurance status, adjusted model*. Odds ratios for aspirin use in the complete cohort by gender, stratified by insurance status (men are the referent group). Results for uninsured participants are not presented because of small sample sizes (*n*= 84 and *n*=3 for those < 65 and ≥ 65 years old, respectively).
***The adjusted multivariate model included gender, percent of federal poverty level, education level, race/ethnicity, diabetes mellitus, asthma, prior myocardial infarction, hypertension, and census region. Results have been adjusted for the complex design of the survey and analytic weights.**
†OR = odds ratio, CI = confidence interval.

Overall, 15.6% of the participants reported a contraindication to aspirin use. Those with asthma reported a greater prevalence of aspirin contraindications (21.6% vs 14.7%, $P = .02$). Older participants tended to be more likely to report a contraindication, although this finding was not statistically significant (12.6% for <65, 16.6% for 65–74, 18.2% for >74 years old, $P = .08$). Women were more likely than men to report a contraindication (20.5% vs 12.5%, $P < .001$). This was not attributable to the age difference between genders. Both women under 65 years old (19.4% vs 9.6%, $P = .005$) and those 65 years or older (21.0% vs 14.7%, $P = .01$) reported medical contraindications more often than men with CHD. The higher prevalence of asthma among women did not explain the difference, either. While aspirin contraindications were equally common for women and men with asthma (22.5% vs 20.5%, $P = .77$), women had a higher prevalence of contraindications (20.1% vs 11.6%, $P < .001$) among those without asthma. No other covariates were significantly associated with aspirin contraindications.

Approximately half (52.8%) of participants not taking aspirin reported a medical contraindication to its use. This figure was similar for women and men (54.6% vs 51.0%, $P = .45$) and both genders were equally likely to attribute a reported contraindication to 'stomach problems' (33.2% vs 28.1%, $P = .38$).

DISCUSSION

In this nationally representative study, we found that women with CHD were significantly less likely than men to take aspirin regularly despite its clear indication. Our findings suggest that gender differences previously demonstrated in the treatment of acute coronary syndromes are also present in the chronic management of CHD and are significant at a population level. Extrapolation from findings of previous studies to the United States population is limited because of the specific populations studied and the methods used to assess aspirin use. Our study, therefore, offers more robust national estimates than studies that were limited to prescription data, hospital or ambulatory care of patients, localized geographic regions, or particular health systems.[7,12,14,15,17–19,21,22]

The gender difference in aspirin use remained significant after adjustment for numerous patient characteristics and self-reported contraindications. Our findings are, therefore, suggestive of an underlying disparity in the quality of care received by men and women with CHD. Underuse of aspirin would put women with CHD at an increased risk of preventable cardiovascular events and death. In conjunction with dissimilar acute treatment and possible sex-related biological differences, this gender difference in aspirin use for secondary prevention may help to explain why younger women have poorer outcomes than men in the first few years after an MI.[21,29–32]

While characterization of factors contributing to this potential disparity remains an area for future research, we did find that gender differences in aspirin use were most pronounced among younger men and women with private health insurance coverage and that women were more likely to report contraindications to aspirin use.

The high rate of aspirin use among non-elderly privately insured men may be attributable to unmeasured characteristics of working-age men, to gender differences in insurance benefits, or to features of private health plans such as mandatory reporting on standardized performance measures that may augment secondary prevention in the ambulatory care of men with CHD. Alternatively, men are more likely to receive ambulatory specialty cardiology care after an MI,[33] and private plans may facilitate such referrals with greater ease and frequency.

A higher prevalence, real or perceived, of adverse effects or contraindications to aspirin among women could also explain our findings.[35,36] Unexpectedly, women were more likely than men to report contraindications to aspirin use, and limiting the analysis to those without a contraindication to aspirin use narrowed the absolute gender gap. Gender was a stronger predictor of reported contraindications than age. This higher prevalence of contraindications to aspirin among women is puzzling. There is no clear gender difference in the prevalence of peptic ulcer disease or in mortality secondary to its complications.[37,38] Aspirin use increases the risk of bleeding similarly for both men and women.[3,4,39,40] Women were more likely to report asthma, which can constitute a contraindication to aspirin use,[41,42] but even women without asthma were more likely to report a contraindication than their male counterparts. Other adverse effects such as easy bruising, hematuria, and epistaxis rarely prevent aspirin use.[43,44]

Gender differences in aspirin use could also be explained by uncertainty and related biases among treating physicians. For example, providers may generalize the unclear efficacy of aspirin in primary prevention for women at low risk of vascular events to women with known CHD.[2–4,34]

This study has several limitations. The low response rate for this survey (65%) may be attributable to the long duration of the survey or to the restriction of participants to the previous year's National Health Interview Survey (NHIS) sample (there is only a 75–80% initial response of these participants to the MEPS survey). Our findings could represent a differential response by gender or aspirin use. Sample weights are designed to account for, but cannot guarantee the absence of, nonresponse bias.

Data were ascertained by self-report and our results could potentially be explained by reporting biases, such as over-reporting of CHD among women or aspirin use among men. While some data suggest that women may be less accurate in reporting a history of MI or cardiac disease,[45] other studies have found no such difference or have reported higher accuracy among women.[46,47] No significant gender differences have been demonstrated in studies of the accuracy of self-reports of other chronic diseases.[48–51]

Although the breadth of data in MEPS allowed for adjustment for many patient characteristics, we were unable to independently assess the clinical appropriateness of aspirin use, medication adherence, or patient preferences as potential explanations for our findings. Specifically, data on contraindications to aspirin use were limited, and the validity of self-reported contraindications could not be confirmed. As a result, we could not distinguish real contraindications indicative of appropriate nonuse from perceived contraindications suggestive of a need for greater patient education.

The contribution of non-adherence to recommended treatment to the observed gender difference could not be studied with the available data. Several recent papers have found that women with CHD are less likely to continue evidence-based therapies prescribed at discharge.[17,52] However, the reasons for lower persistence were not investigated in these studies, and poorer adherence is only one potential explanation. Further-

more, many studies of adherence to prescribed treatments, generally, have demonstrated that gender has no relationship to adherence.[53–55]

In addition, because of the observational cross-sectional study design, we could not adjust for unobserved differences between men and women with CHD. There were significant gender differences in many of our measured covariates, and unmeasured variables could confound or explain our findings. Potential unmeasured confounders include the use of other antiplatelet agents or anticoagulants and health behaviors such as tobacco use. In addition, we were unable to assess differences in access and quality of care beyond the receipt of basic counseling and routine blood pressure monitoring. Concomitant differences observed in the receipt of specialty referrals or other recommended elements of care for CHD, for example, would bolster an argument that our findings reflect a true gender disparity. Therefore, while our findings are consistent with the provision of inferior care to women with CHD in the United States and suggest possible explanations for this deficit, further research is needed to address the limitations of this study and to elucidate modifiable factors of care to guide interventions.

Our findings demonstrate a difference in aspirin use between women and men with CHD, contribute to growing evidence of inferior care for women with CHD, suggest an additional explanation for poorer observed outcomes among women, and have important policy implications. Women are not receiving the full benefits of secondary prevention, and as a result, may be at greater risk for cardiovascular events and premature death. Thus, distinct benefits to the health of women with CHD may be realized through greater use of a very low-cost medication. Although further investigation is needed to better define the underlying causes of lower aspirin use among women, its remedy may require a multifaceted approach including patient and physician education, enhanced measurement and quality improvement initiatives by providers, health plans, and public insurance programs, and focused interventions at the point of care.

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