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Published in:
Journal of the American College of Cardiology

DOI:
10.1016/j.jacc.2012.11.058

Publication date:
2013

Document Version
Publisher's PDF, also known as Version of record

Journal of the American College of Cardiology
© 2013 by the American College of Cardiology Foundation
Published by Elsevier Inc.

Vol. 61, No. 10, 2013
ISSN 0735-1097/$36.00
http://dx.doi.org/10.1016/j.jacc.2012.11.058

Health Policy

Treatment Differences by Health Insurance Among Outpatients With Coronary Artery Disease

Insights From the National Cardiovascular Data Registry

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Objectives This study examined the association between insurance status and physicians' adherence with providing evidence-based treatments for coronary artery disease (CAD).

Methods Within the PINNACLE (Practice Innovation and Clinical Excellence) registry of the NCDR (National Cardiovascular Data Registry), the authors identified 60,814 outpatients with CAD from 30 U.S. practices. Hierarchical modified Poisson regression models with practice site as a random effect were used to study the association between health insurance (no insurance, public, or private health insurance) and 5 CAD quality measures.

Results Of 60,814 patients, 5716 patients (9.4%) were uninsured and 11,962 patients (19.7%) had public insurance, whereas 43,136 (70.9%) were privately insured. After accounting for exclusions, uninsured patients with CAD were 9%, 12%, and 6% less likely to receive treatment with a beta-blocker, an angiotensin-converting enzyme inhibitor/angiotensin II receptor blocker (ACE-I/ARB), and lipid-lowering therapy, respectively, than privately insured patients, and patients with public insurance were 9% less likely to be prescribed ACE-I/ARB therapy. Most differences by insurance status were attenuated after adjusting for the site providing care. For example, whereas uninsured patients with left ventricular dysfunction and CAD were less likely to receive ACE-I/ARB therapy (unadjusted RR: 0.88; 95% CI: 0.84 to 0.93), this difference was eliminated after adjustment for site (adjusted RR: 0.95; 95% CI: 0.88 to 1.03; p = 0.18).

Conclusions Within this national outpatient cardiac registry, uninsured patients were less likely to receive evidence-based medications for CAD. These disparities were explained by the site providing care. Efforts to reduce treatment differences by insurance status among cardiac outpatients may additionally need to focus on improving the rates of evidence-based treatment at sites with high proportions of uninsured patients. (J Am Coll Cardiol 2013;61:1069–75) © 2013 by the American College of Cardiology Foundation

Patients without healthcare insurance have worse health outcomes (1–3). Uninsured patients are less likely to receive primary prevention screening and care and may present with more advanced stages of chronic disease (4–7). It is also possible that uninsured patients may be less likely to receive evidence-based treatments for chronic disease despite having access to care. Whether differences in treatment by insurance

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Abbreviations and Acronyms

ACC = American College of Cardiology

ACE-I/ARB = angiotensin-converting enzyme inhibitor/angiotensin II receptor blocker

CAD = coronary artery disease

LVSD = left ventricular systolic dysfunction

MI = myocardial infarction

NCDR = National Cardiovascular Data Registry

PCI = percutaneous coronary intervention

PINNACLE = Practice Innovation and Clinical Excellence program

status exist among patients with access to care, and the extent to which these differences are explained by the site providing care, have not been well studied.

Coronary artery disease (CAD) would be the ideal condition in which to examine these questions. CAD is a prevalent and burdensome disease, and there is compelling evidence for the use of secondary prevention in this population (8,9). Secondary prevention includes antiplatelet and lipid-lowering agents in CAD patients, beta-blocker therapy in patients with a history of myocardial infarction (MI), angiotensin-converting enzyme inhibitors (ACE-Is) or angiotensin II receptor blockers (ARBs) in MI patients with left ventricular systolic dysfunction (LVSD) and/or diabetes, and thienopyridine therapy in patients with recent percutaneous coronary intervention (PCI) with a drug-eluting stent (10–12).

Accordingly, this study examined the association between insurance status and physicians' adherence with providing evidence-based treatments within the PINNACLE (Practice Innovation and Clinical Excellence) registry of the NCDR (National Cardiovascular Data Registry). This recently developed prospective, U.S. outpatient cardiac registry provides a unique opportunity to examine the quality of outpatient cardiac care in contemporary practices in the United States. This study examined whether differences in medication treatment by insurance status exist in CAD patients, and the extent to which these differences are explained by the site providing care. The analyses were focused on long-term medication treatments that are performance measures or key indicators of CAD care quality. Based on prior studies (13–15), it was hypothesized that: 1) there is a gradient in care quality, with publicly insured patients less likely to receive evidence-based care for CAD than privately insured patients, and with uninsured patients having the lowest rate of compliance with these therapies; and 2) much of the treatment difference by insurance status is due to the site at which patients receive their care. If differences by insurance status exist and are provider based, the findings from this study may provide important insights into improving the quality of cardiovascular care for patients without insurance.

Methods

Participants and Study Design

The NCDR PINNACLE Registry (previously known as the Improving Continuous Cardiac Care [IC^3] program), is sponsored by the American College of Cardiology (ACC) and is the first national outpatient cardiac registry in the United States (16,17). Details on the PINNACLE Registry have been described previously (16). Briefly, this U.S. quality-improvement registry prospectively collects data on cardiac disease from outpatient practices, with a focus on performance measures for the 4 most common cardiovascular conditions: CAD, hypertension, heart failure, and atrial fibrillation. Each quarter, practices are provided reports of treatment rates for a series of cardiac performance measures (16). Both academic and private practices are encouraged to participate, and physicians or representatives from each practice are required to complete a series of educational training sessions on data collection, system requirements, and report interpretation prior to data submission. To ensure data quality, routine data checks are performed by both the ACC and the primary analytic center, the Mid America Heart Institute (Kansas City, Missouri).

This study evaluated data from 136,204 patients with obstructive CAD from 30 practices that were enrolled in the PINNACLE Registry from January 1, 2009, through December 31, 2009. Site characteristics are provided in Online Table 1. *CAD* was defined as a history of MI or coronary revascularization with PCI or coronary artery bypass surgery. Patients' characteristics and treatment data were included only from the baseline enrollment visit to avoid over-representation of patients with multiple visits. Because the primary endpoint was the association between insurance status and quality of cardiovascular care indicators, and because most patients age 65 years or older are covered by Medicare, the analyses were restricted to data from those patients under 65 years of age in PINNACLE (75,310 excluded). A total of 80 patients did not have information on health insurance available and were additionally excluded. The final study cohort comprised 60,814 patients.

Health Insurance and Study Outcomes

Health insurance status was documented from the practices' medical records and categorized as private, public, or no insurance. *Private health insurance* included either fee-for-service or health maintenance organization plans, while *public health insurance* included Medicare, Medicaid, Indian Health Service, and Veterans Administration/Military Health Care. Patients with both private and public types of health insurance were classified as having private insurance.

Five *quality-of-care indicators for CAD care* were evaluated. These indicators included the following ACC Foundation/American Heart Association/American Medical Association–Physician Consortium for Performance Improvement performance measures related to medication use in CAD patients: use of antiplatelet and lipid-lowering therapy in

submissions but do not have authority to change any aspect of a manuscript. All other authors have reported that they have no relationships relevant to the contents of this paper to disclose.

Manuscript received August 9, 2012; revised manuscript received November 8, 2012, accepted November 12, 2012.

patients with CAD; beta-blocker therapy in patients with a history of MI; and ACE-I/ARB therapy in patients with LVSD and/or diabetes (18). In addition, the study examined ongoing treatment with thienopyridine therapy (i.e., clopidogrel) in patients with a drug-eluting stent after PCI in the previous year (Online Table 2) (10). For each of these 5 measures, medication treatment rates by insurance status were determined.

Treatment rates for a given performance measure were calculated by dividing the number of patients prescribed a medication for a given quality indicator by the number of patients eligible to receive that medication. Patients were considered *eligible* if they met the established inclusion criteria for that measure and did not have a medical (e.g., a high risk for bleeding for antiplatelet or thienopyridine therapy or medication allergy) or a personal (e.g., a patient's preferences) contraindication for that measure. Because eligibility requirements for the 5 indicators differed, a patient could be excluded from analyses of some indicators but included in others.

Other Patient Characteristics

The PINNACLE Registry collects from patients' medical records information on a number of other patient characteristics, including demographics (age, sex, and race, which was categorized as white, black, or other) and comorbidities, including hypercholesterolemia, hypertension, peripheral arterial disease, diabetes mellitus, history of CAD, history of unstable or stable angina, chronic heart failure, atrial fibrillation, history of stroke or transient ischemic attack, history of systemic embolism, and obesity (body mass index, $\geq$30 kg/m^2). In addition, information on tobacco use (current, former, or never) and vital signs (blood pressure and heart rate) was collected.

Statistical Analysis

Patients' characteristics were compared by insurance status (no insurance, public insurance, or private insurance) using analyses of variance for continuous variables and chi-square tests for categorical variables, as appropriate. Rates of medication treatment for the 5 quality-of-care indicators for CAD were compared by insurance status using chi-square tests.

Separate modified Poisson regression models were constructed to examine the association of insurance status with each of the 5 quality-of-care indicators for CAD. A series of unadjusted models was constructed first, followed by hierarchical models with site as a random effect. In each model, the rate of treatment was the dependent variable and insurance status was the independent variable, with private insurance as the reference category. The unadjusted and adjusted estimates of effect for insurance status were compared between each of the performance outcomes. The adjusted models were adjusted for site only: 1) to evaluate the extent to which associations between health insurance status and treatment of CAD were explained by variations in performance at the site at which patients received care; and 2) because other attributes of patients should not influence the decision to treat, as patients with contraindications were excluded.

All analyses were performed using SAS version 9.2 (SAS Institute Inc., Cary, North Carolina), with all tests being 2-sided and a p value $<$0.05 considered to be statistically significant.

Results

Of 60,814 patients, 5,716 (9.4%) patients were uninsured and 11,962 (19.7%) patients had public insurance, whereas 43,136 (70.9%) were privately insured. Compared with patients having either public or private insurance, uninsured patients were younger and were more frequently female. Uninsured patients were more likely to present with a history of chronic heart failure but also had fewer comorbidities (including hypercholesterolemia, hypertension, peripheral arterial disease, diabetes mellitus, CAD, stable angina, stroke, and atrial fibrillation) (Table 1).

Treatment rates for the 5 quality-of-care indicators are presented in Table 2. Treatment rates for the overall population ranged from 70.6% to 94.6%, with the lowest rate (70.6%) noted for thienopyridine therapy in patients who underwent PCI with DES in the previous year, and the highest rate (94.6%) noted for the use of lipid-lowering drugs in patients with CAD. Uninsured patients were less likely to receive beta-blocker therapy after MI compared to those who had private health insurance (73.3% vs. 80.5%; unadjusted RR: 0.91; 95% CI: 0.87 to 0.95; p $<$ 0.001) (Tables 2 and 3). Similarly, they were less likely to be treated with lipid-lowering drugs (89.3% vs. 94.9%; unadjusted RR: 0.94; 95% CI: 0.92 to 0.96; p $<$ 0.001), and patients with LVSD and/or diabetes were less likely to be prescribed ACE-I/ARB therapy (66.7% vs. 75.5%; unadjusted RR: 0.88; 95% CI: 0.84 to 0.93; p $<$ 0.001). There were no differences in treatment rates between uninsured patients and those with private insurance for antiplatelet and thienopyridine therapy. In contrast, there were no meaningful differences in treatment rates between patients with public and private insurance except for ACE-I/ARB therapy in patients with LVSD and/or diabetes (69.1% for public insurance vs. 75.5% for private insurance; unadjusted RR: 0.91; 95% CI: 0.89 to 0.94; p $<$ 0.001).

Figure 1 displays the relationship between a practice's proportion of uninsured patients and the practice's compliance rate with 2 performance measures: beta-blocker therapy after MI and ACE-I/ARB therapy in patients with CAD and LVSD. There was a notable inverse relationship between the 2 rates, suggesting that the lower rate of treatment in uninsured patients may be influenced by the practice at which they received care. To account for this, in hierarchical models adjusting for site only, differences in treatment by insurance status were largely attenuated. After adjustment, uninsured patients had similar rates of treatment with beta-blocker therapy (adjusted RR: 0.97; 95% CI: 0.93 to 1.01; p = 0.14), lipid-lowering therapy (adjusted RR: 0.98; 95% CI: 0.95 to 1.00; p = 0.08), and

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Table 1 Baseline Characteristics, by Healthcare Insurance Status*

Characteristic		Insurance Status			p Value
		No Insurance (n = 5,716 [9.4%])	Public (n = 11,962 [19.7%])	Private (n = 43,136 [70.9%])	
Age, yrs	52.2 ± 10.0	49.6 ± 11.2	52.3 ± 10.1	52.5 ± 9.7	<0.001
Female	27,296 (45.1)	2,755 (48.5)	5,820 (48.8)	18,721 (43.6)	<0.001
Race*					
White	22,674 (81.9)	2,213 (83.5)	3,763 (73.0)	16,698 (83.9)	<0.001
Black/African American	4,672 (16.9)	399 (15.1)	1,334 (25.9)	2,939 (14.8)	<0.001
Hispanic	509 (1.0)	59 (1.2)	98 (0.9)	352 (1.0)	0.14
Asian	287 (1.0)	27 (1.0)	43 (0.8)	217 (1.1)	0.27
Native American/Native Alaskan	99 (0.4)	10 (0.4)	17 (0.3)	72 (0.4)	0.93
Native Hawaiian/Pacific Islander	57 (0.2)	8 (0.3)	8 (0.2)	41 (0.2)	0.40
Insurance payer type					
Medicare (fee for service)	8,174 (13.4)	0	5,137 (42.9)	3,037 (7.0)	<0.001
Medicaid	4,586 (7.5)	0	3,836 (32.1)	750 (1.7)	<0.001
State-specific plan (non-Medicaid)	3,323 (5.5)	0	3,249 (27.2)	74 (0.2)	<0.001
Military health care	1,270 (2.1)	0	1,100 (9.2)	170 (0.4)	<0.001
Medicare (managed care)	611 (1.0)	0	534 (4.5)	77 (0.2)	<0.001
Indian Health Service	18 (<0.1)	0	4 (<0.1)	14 (<0.1)	0.39
Comorbidities					
Hypertension	40,322 (66.3)	3,437 (60.1)	7,752 (64.8)	29,133 (67.5)	<0.001
Hypercholesterolemia	33,658 (55.3)	3,005 (52.6)	5,873 (49.1)	24,780 (57.4)	<0.001
Coronary artery disease	25,268 (41.5)	2,417 (42.3)	5,049 (42.2)	17,802 (41.3)	0.09
Diabetes mellitus	11,716 (19.3)	994 (17.4)	3,162 (26.4)	7,560 (17.5)	<0.001
Atrial fibrillation/flutter	5,950 (9.8)	502 (8.8)	1,069 (8.9)	4,379 (10.2)	<0.001
Chronic heart failure	5,425 (8.9)	631 (11.0)	1,289 (10.8)	3,505 (8.1)	<0.001
Stable angina	2,212 (3.6)	160 (2.8)	425 (3.6)	1,627 (3.8)	<0.001
Peripheral arterial disease	1,781 (2.9)	137 (2.4)	567 (4.7)	1,077 (2.5)	<0.001
Stroke/TIA	1,357 (2.2)	110 (1.9)	368 (3.1)	879 (2.0)	<0.001
Unstable angina	570 (0.9)	52 (0.9)	126 (1.1)	392 (0.9)	0.34
Systemic embolism	180 (0.3)	21 (0.4)	33 (0.3)	126 (0.3)	0.56
Tobacco use					<0.001
Never	26,938 (50.8)	2,576 (50.9)	4,235 (44.4)	20,127 (52.4)	
Former	16,423 (31.0)	1,494 (29.5)	2,801 (29.3)	12,128 (31.6)	
Current	9,679 (18.2)	992 (19.6)	2,513 (26.3)	6,174 (16.1)	
Blood pressure, mm Hg					
Systolic	126.9 ± 18.2	126.0 ± 19.1	127.2 ± 19.2	126.9 ± 17.8	<0.001
Diastolic	78.5 ± 11.1	78.5 ± 11.8	78.2 ± 11.5	78.6 ± 10.9	0.002

Values are mean ± SD or n (%). *Among the 29,630 patients with available data on race.
TIA = transient ischemic attack.

ACE-I/ARB therapy (adjusted RR: 0.95; 95% CI: 0.88 to 1.03; p = 0.18) (Table 3). Differences in ACE-I/ARB therapy in patients with public insurance were also attenuated but not eliminated (adjusted RR: 0.95; 95% CI: 0.92 to 0.98; p = 0.003). Finally, the results of the analyses were essentially unchanged when public insur-

Table 2 Overview of Treatment Rates for CAD Quality-of-Care Indicators, by Healthcare Insurance Status*

Quality-of-Care Indicator	Overall Population (n = 60,814)	No Insurance (n = 5,902 [9.1%])	Public Insurance (n = 13,419 [20.7%])	Private Insurance (n = 45,418 [70.1%])
Beta-blocker after MI	6,418/8,032 (79.9)	661/902 (73.3)	1,156/1,418 (81.5)	4,601/5,712 (80.5)
ACE-I/ARB in CAD with LVSD and/or diabetes‡	6,293/8,612 (73.1)	468/702 (66.7)	1,602/2,320 (69.1)	4,223/5,590 (75.5)
Lipid-lowering drug in CAD	21,376/22,607 (94.6)	1,811/2,029 (89.3)	4,311/4,499 (95.8)	15,254/16,079 (94.9)
Antiplatelet agent in CAD†	18,966/20,866 (90.9)	1,256/1,380 (91.0)	4,332/4,834 (89.6)	13,378/14,652 (91.3)
Thienopyridine agent in PCI patients with DES	1,357/1,922 (70.6)	82/117 (70.1)	193/262 (73.7)	1,082/1,543 (70.1)

Values are n/N (%). *Treatment rates related to CAD medications (18) and the prescription of a thienopyridine in patients who underwent PCI with DES in the previous year (10). †May include aspirin, a thienopyridine, or a combination of aspirin and dipyridamole. ‡Defined as left ventricular ejection fraction ≤40%.
ACE-I/ARB = angiotensin-converting enzyme inhibitor/angiotensin II receptor blocker; CAD = coronary artery disease; DES = drug-eluting stent(s); LVSD = left ventricular systolic dysfunction; MI = myocardial infarction; PCI = percutaneous coronary intervention.

Table 3 Association Between Insurance Status and Treatment Rates for CAD Quality-of-Care Indicators*

Quality Indicator	Unadjusted		Adjustment for Site	
	RR (95% CI)	p Value	RR (95% CI)	p Value
Beta-blocker therapy after MI				
No insurance	0.91 (0.87–0.95)	<0.0001	0.97 (0.93–1.01)	0.14
Public insurance	1.01 (0.98–1.04)	0.40	1.02 (0.98–1.05)	0.33
ACE-I/ARB therapy in CAD with LVSD and/or diabetes†				
No insurance	0.88 (0.84–0.93)	<0.0001	0.95 (0.88–1.03)	0.18
Public insurance	0.91 (0.89–0.94)	<0.0001	0.95 (0.92–0.98)	0.003
Lipid-lowering drugs in CAD				
No insurance	0.94 (0.92–0.96)	<0.0001	0.98 (0.95–1.00)	0.08
Public insurance	1.01 (1.00–1.02)	0.006	1.00 (0.99–1.01)	0.61
Antiplatelet therapy in CAD‡				
No insurance	1.00 (0.98–1.01)	0.72	0.99 (0.96–1.01)	0.35
Public insurance	0.98 (0.97–0.99)	<0.0001	0.98 (0.96–1.00)	0.07
Thienopyridine therapy in PCI patients with DES				
No insurance	1.00 (0.88–1.13)	0.99	0.97 (0.85–1.10)	0.64
Public insurance	1.05 (0.97–1.14)	0.22	1.04 (0.98–1.10)	0.19

*Including the 4 American College of Cardiology Foundation/American Heart Association/American Medical Association–Physician Consortium for Performance Improvement performance measures related to CAD medications (18) and the prescription of thienopyridine in patients who underwent PCI with DES in the previous year (10). The unadjusted association between insurance status and treatment rates for the quality indicator is represented (relative risk [RR], 95% confidence interval [CI]), as well as the effect of the sequential adjustments for site variability. Private insurance is the reference group for all quality indicators. †LVSD denotes left ventricular ejection fraction ≤40%. ‡Antiplatelet therapy may include aspirin, thienopyridine, or combination of aspirin and dipyridamole.

Abbreviations as in Table 2.

ance was subclassified as Medicare and non-Medicare public insurance (e.g., Veterans Administration, Medicaid) (Online Tables 3 and 4).

Discussion

In this large national outpatient registry, treatment rates with evidence-based medications in CAD patients differed by insurance status. Uninsured patients were less likely to have been treated with lipid-lowering therapy for CAD, beta-blockers after MI, and ACE-I/ARB therapy in those with LVSD and/or diabetes. In contrast, patients with public health insurance generally had rates of treatment similar to those with private health insurance. Notably, most of these differences were eliminated after adjusting for the site at which patients received care, which suggests that treatment differences at the patient level were largely explained by lower rates of medication treatment at sites with higher proportions of uninsured patients. These findings indicate that existing disparities by insurance status in the treatment of patients with evidence-based medications for CAD are likely to persist unless targeted interventions are developed to improve the quality of care at practices with large numbers of uninsured patients.

Although prior studies have reported on the underuse of medications for primary cardiovascular disease prevention (4,19–21) and poor adherence to evidence-based secondary prevention therapies (22), this large national study examined differences in rates of treatment with evidence-based therapies for CAD patients by health insurance coverage. Such differences in treatment rates are important to identify, as the evidence for optimal secondary prevention in CAD has been established through a number of randomized clinical trials and summarized as both clinical practice guidelines and performance measures (8,9). Although prior research has found that uninsured patients are treated less aggressively than are insured patients during hospital stays for MI (23), these findings document that treatment disparities exist in the outpatient setting as well. Until recently, gaps in the care of outpatients had been difficult to evaluate, as large registry studies of outpatient cardiac care had not been possible. With the emergence of the NCDR PINNACLE Registry, uninsured patients were found less likely to be treated with certain medications unrelated to antiplatelet therapy known to reduce morbidity and mortality in those with CAD (12,24–26).

Lower rates of treatment with evidence-based medications for CAD in uninsured patients reflect not only poor care but also cost-inefficient care. Providing free coverage of evidence-based treatment (antiplatelet therapy, beta-blocker therapy, lipid-lowering drugs, ACE-I/ARB agents) after an MI is associated with improved survival and lower rates of acute coronary syndromes in low-income patients (22). Among Medicare beneficiaries, providing full coverage for combination pharmacotherapy after an MI was associated with greater functional life expectancy and lower resource use (27), while other work has reported similar findings on free coverage of ACE-Is among patients with diabetes (28). More recently, in a randomized clinical trial, patients with MI randomized to free coverage of their cardiovascular medications had lower rates of total major vascular events and revascularization procedures (29).

Given the high risk for cardiovascular events in patients with a history of obstructive CAD, the develop-

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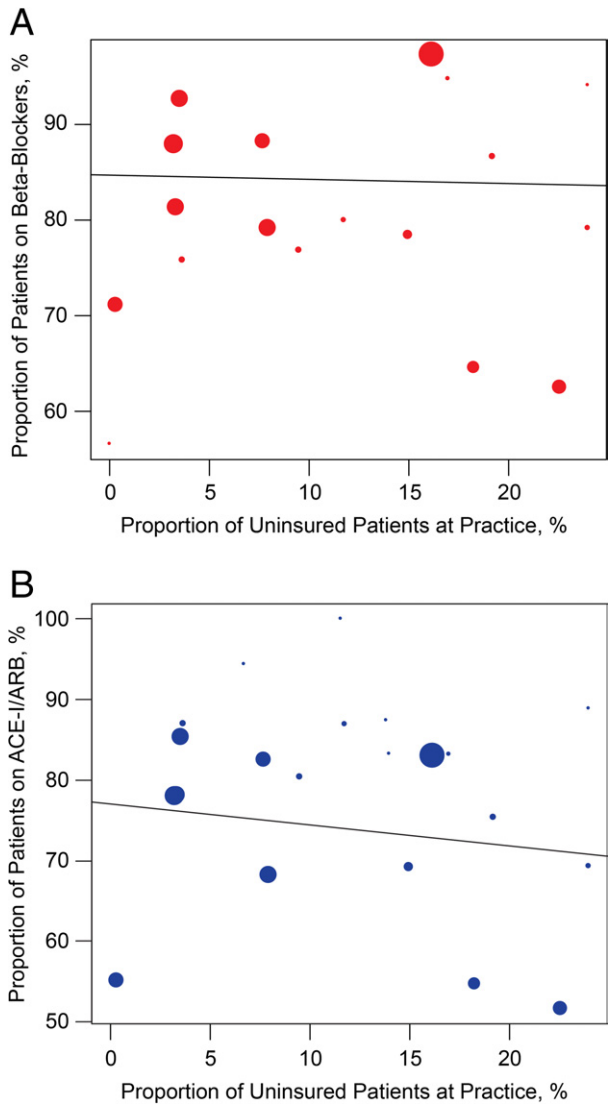

Figure 1 **Uninsured Patients by Practice and Adherence to Quality-of-Care Indicators**

Relationship between a practice's proportion of uninsured patients and its prescription rate of **(A)** beta-blocker therapy after myocardial infarction and **(B)** ACE-I/ARB therapy in coronary artery disease with left ventricular systolic dysfunction. ACE-I = angiotensin-converting enzyme inhibitor; ARB = angiotensin II receptor blocker.

ment of mechanisms to ensure that uninsured patients have access to care and medication treatment would improve the quality of overall care without necessarily increasing overall treatment costs. For instance, directing uninsured CAD patients to prescription-assistance programs may help to facilitate their access to evidence-based medications. Improving providers' awareness about patients' ability to afford care, and promoting the existence of such programs, will be important factors in ensuring that patients have access to them (30).

Many patients in the United States currently do not have adequate outpatient follow-up for CAD (31). It is well-documented that uninsured individuals have many unmet healthcare needs and experience substantial cost barriers to seeking care (6,32). In addition, patients may also be woefully underinsured. These are patients who, despite having healthcare insurance, may avoid or delay needed health care due to the perceived high costs associated with accessing care (e.g., high copayments and insurance deductibles) (33). This study did not document difficulties with access to care (e.g., underinsurance) but reported on treatment differences by insurance status among those with access to care. Therefore, these findings are likely an underrepresentation of the real challenges associated with access to high-quality outpatient care among the uninsured and underinsured.

Study limitations. Treatment rates among practices participating in the PINNACLE Registry may differ from those outside of PINNACLE; therefore, the findings may not be generalizable to all U.S. practices. Because patient exclusions from each performance measure were assigned by practices themselves, some of these assignments may have been inaccurate. If such misclassifications were differential at the practice level, some of the observed disparities in medication treatment may have been attributable to differences in coding for medication exceptions. The results presented in this study are not generalizable to patients age 65 years or older who are covered by Medicare. Detailed information on the degree of coverage for patients, including pharmaceutical coverage, was unavailable, which may have further explained the variation in prescription rates. Although this analysis was based on physicians' prescription of medication treatments, treatment adherence, which has also been documented in prior studies to differ by insurance status (34,35), was not examined.

Conclusions

Uninsured patients with CAD were less likely to receive treatment with evidence-based medications, such as lipid-lowering therapy, beta-blocker therapy after MI, and ACE-I/ARB therapy in patients with LVSD and/or diabetes. These treatment differences by insurance status were mainly explained by the site at which patients received care. To reduce existing treatment disparities by insurance status in the outpatient setting, efforts to expand insurance access should be pursued, and quality-of-care interventions will need to target practices with high proportions of uninsured patients in order to optimize access to evidence-based CAD treatment for all CAD patients.

Acknowledgments

The efforts and cooperation of the cardiology practices currently enrolled in PINNACLE are greatly appreciated by the authors and by the ACC PINNACLE Work Group.

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Key Words: cardiovascular ■ disparities ■ outpatient care ■ quality of care.

APPENDIX

For details on the study sites, quality-of-care indicators, and more detailed analysis for quality-of-care indicators by types of insurance, please see the supplementary tables in the online version of this article.