■ ORIGINAL RESEARCH & CONTRIBUTIONS

Reasons for Not Meeting Coronary Artery Disease Targets of Care in Ambulatory Practice

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Abstract

Introduction: Four targets of care: control of blood pressure, control of low-density lipoprotein cholesterol level, taking aspirin daily, and not using tobacco improve outcomes for patients with coronary artery disease (CAD). We sought to identify why, in a large multispecialty group, these targets were not being met in patients with CAD.

Methods: We thus conducted a retrospective review of patient records in the group practice's CAD registry, which is updated quarterly.

Results: Of a random selection of 14,973 patients in the CAD registry, 353 charts were consecutively reviewed until theoretic saturation was achieved—that is, until no new information was found. We could not find any evidence of CAD in 14 patients, and we considered that all four targets had been met for 169 patients. The most frequent reasons for not meeting all targets of care among the 170 remaining patients were 1) the patient was in for a visit and the care team failed to address an unmet target of care (n = 98), 2) the patient was asked to come back for follow-up care but did not (n = 28), and 3) the patient declined an intervention that was offered (n = 14). Blood pressure and low-density lipoprotein cholesterol levels were the targets that were most frequently out of range.

Conclusion: Giving the health care team access to tools with which they can identify the concurrent care needs of their patients could significantly increase the proportion of patients with CAD for whom care targets are met. Lists generated by these tools would also be significantly more accurate than lists generated from quarterly reports.

Introduction

Causing half a million deaths each year, coronary artery disease (CAD) is the leading cause of mortality in the US.[1] Close to 18 million Americans are thought to have the condition and, if hypertension is included, the prevalence is thought to be >81 million people in the US alone. Despite a decline in the rate of hospitalization for myocardial infarction that may be as great as 31%, these conditions continue to consume large quantities of health care resources.[2] The Centers for Disease Control and Prevention projects that costs related to heart disease will be >$500 billion in 2010, largely because of an expected 72 million office visits and nearly 7 million hospitalizations.[3] These statistics are driving policy makers and clinicians to search for more effective ways to manage heart disease.

In the past, heart-disease management strategies have focused on developing new diagnostic tools and therapeutic interventions for the treatment of acutely ill patients. However, numerous recent outcome studies have shown that these strategies produce only short-term health benefits while increasing the cost of health care.[4–7] Yet secondary prevention treatments for patients with heart disease have the potential to reduce subsequent mortality by as much as 75% to 90%.[8–10] One of the authors (TEK) has published calculations showing that meeting all targets of care for patients with stable heart disease could prevent or postpone nearly 25% of all US deaths among those who are 30 to 84 years of age.[11] With the current emphasis on value-driven care, coupled with a political environment that is emphasizing a change in the way that health care is delivered, primary and secondary disease-prevention strategies seem poised to dominate the future innovations of health care delivery. Several national and local institutions have set disease-reduction goals. For example, the American Heart Association has set a goal of improving the cardiovascular health of the entire American population by 20% as measured by the average change in four behaviors (never smoked or quit more than one year ago, body mass index less than 25 kg/m², physi-

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cal activity of at least 150 minutes each week, and four to five of the key components of a healthy diet consistent with current American Heart Association guideline recommendations) and three biometric measures (total cholesterol less than 200 mg/dl, blood pressure below 120/80 mm Hg, and fasting blood glucose less than 100 mg/dl).[12] The American Heart Association has also set a goal of reducing deaths by the same percentage by 2020.[12] These goals are consistent with the Healthy People 2020 national heart disease and stroke management goals.[13] To encourage better care at a regional level and to respond to the Healthcare Effectiveness Data and Information Set[14] (HEDIS) and to Minnesota HealthScores,[15] HealthPartners has begun to report performance on four targets of care for participating physicians who treat a significant number of patients who have CAD: blood pressure <140/90 mmHg, low-density lipoprotein (LDL) level <100 mg/dL, taking aspirin daily, and not using tobacco.[16–18] In 2006–2007, the average proportion of patients who met all four goals was only 37.5%, and no participating physicians met all four targets of care for more than 45% of HealthPartners members.

Data from another Medical Group suggests that significant improvements in performance on metrics of care require multicomponent interventions.[19] As the first step in a local initiative to improve outcomes for patients with CAD by improving the process of care, the goal of this project was to identify why patients cared for by HealthPartners Medical Group fail to achieve the four targets of care.

Methods

The research protocol was approved by the HealthPartners Research Foundation Institutional Review Board and assigned protocol number 09–007. HealthPartners maintains a register of patients with CAD ("the CAD register") who meet the following criteria:

- Insured by HealthPartners
- Being between the ages of 18 and 75 years
- Having had a hospitalization or clinic visit within the last two years, with at least one ICD-9-CM (International Statistical Classification of Diseases and Related Health Problems, ninth edition) diagnostic code in the range of 410.0 to 414.99 (a "CAD code"), or
- Having been prescribed nitrates within the last two years.

The register is updated quarterly.

In the first quarter of 2009, one of two authors (JCS or TEK) reviewed the medical records of randomly selected patients who were in the CAD register at the time of the most recent available update—the end of the third quarter of 2008. To be selected for review, the patient also was required to have had at least one visit to a HealthPartners Medical Group primary care clinic during 2008 and to have not met one or more of the following criteria of optimal health as defined in the HealthPartners 2007 Clinical Indicators Report[17]:

- Systolic blood pressure <140 mm Hg and diastolic blood pressure <90 mm Hg
- LDL cholesterol level measured in the preceding year
- LDL cholesterol level <100 mg/dL when measured
- Taking aspirin daily
- Not using tobacco.

To be considered met, a target of care had to be documented.

Each reviewing physician (TEK and JCS) was given a list of patients and one target of care for which the patient had out-of-range values at the end of the third quarter of 2008.

Only one target was identified for each patient. Consecutive records were reviewed until theoretical saturation was achieved. Theoretical saturation is the point at which no new information is gained from further collection of data.[20] In this particular case, theoretical saturation was considered to be achieved when review of 30 consecutive records did not identify a new reason for a patient not meeting the targets of care. The number 30 was selected because it approaches the normal distribution and because if a reason is not found in 30 charts, it is unlikely to contribute to more than 3% to 5% of failures. A total of 353 records were reviewed.

Results

At of the end of the third quarter of 2008, HealthPartners had 30,415 current members who had received a CAD code since January 1, 2000; 14,973 members were in the CAD register (Figure 1). The age of members in the register ranged from 19 to 77 years (mean, 61.4 years; standard deviation [SD], 9.4 years), and 67% were men. A total of 15,442 current members who had a CAD code were not in the register—93 because they were <18 years old, 9011 because they were >75 years old, and 6338 because they neither had a visit with a CAD code within two years nor were they prescribed nitrates in the same period.

The age of the patients who were randomly selected for review ranged from 31 to 77 years (mean, 62.9 years; SD, 8.9 years), and 65% were men. Although 170 patients were confirmed to have CAD but did not meet all four targets of care, the reviewing physicians could find no evidence of CAD in the records of 14 patients and considered that 169 patients met the targets of care at the time of review. More than

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half (n = 98) of the 170 patients who were confirmed to have CAD but did not meet all targets of care did not meet criteria because the out-of-range target had not been addressed at the time that they were seen by a primary care physician (Table 1). About 15% of the patients were asked to come back for follow-up care but did not, and <10% of the patients declined intervention. Other reasons for failure to meet the targets of care occurred less frequently.

Blood pressure (n = 43) and LDL cholesterol level (n = 55) were the targets of care that were most frequently out of control. Failure to take aspirin was the reason that the patient did not achieve all targets of care in only 17 cases, and 26 patients continued to use tobacco.

Discussion

The record-review data presented in this report document that the most common reasons HealthPartners Medical Group patients do not achieve CAD targets of care are simple: 1) most frequently, their needs are overlooked by the care team when the patient is in the office; 2) the patient has failed to return for a visit; and 3) the patient declined an intervention that was offered to them. These observations suggest that giving care teams access to timely data about the patients they treat could contribute to the elimination of 80% to 90% of the reasons for failure to meet the targets of care. The same reporting tools that could be used to prepare for patient visits could let the care

teams benchmark their own performance to identify opportunities to improve care through process-improvement initiatives.

The data on which these conclusions are based have several limitations. Only one failure was examined for cause for each patient. Therefore, the proportion of patients with multiple failures cannot be calculated from these data. The data are from one multispecialty group practice; the causes of failure in other group practices may be different. About half of the patients who have CAD are not in the CAD register, so it is possible that patients in the CAD register are not representative of patients who are not in the CAD register. The hypotheses generated in this study will be verified only when redesigned care systems reduce failure rates by addressing the reasons for failure documented in this study.

The selection cascade provides information about why the reporting process must be tailored to the needs of the clinical care teams. Because the main purpose of the CAD register is to report performance to HEDIS and Minnesota Health-Scores,[14,15] performance is reported only for patients who are ≤75 years old and have had a CAD code assigned to one of their encounters within the preceding two years. Additionally, the register is updated only quarterly. Although the selection criteria and quarterly updates are appropriate for performance reporting, they miss older patients who are being actively treated by their clinical care teams, and the data generated from the register are frequently outdated at the time of a clinical encounter. Both of these problems, and the annoyance that data that are outdated or inaccurate, could be avoided by giving care teams access to real-time analysis
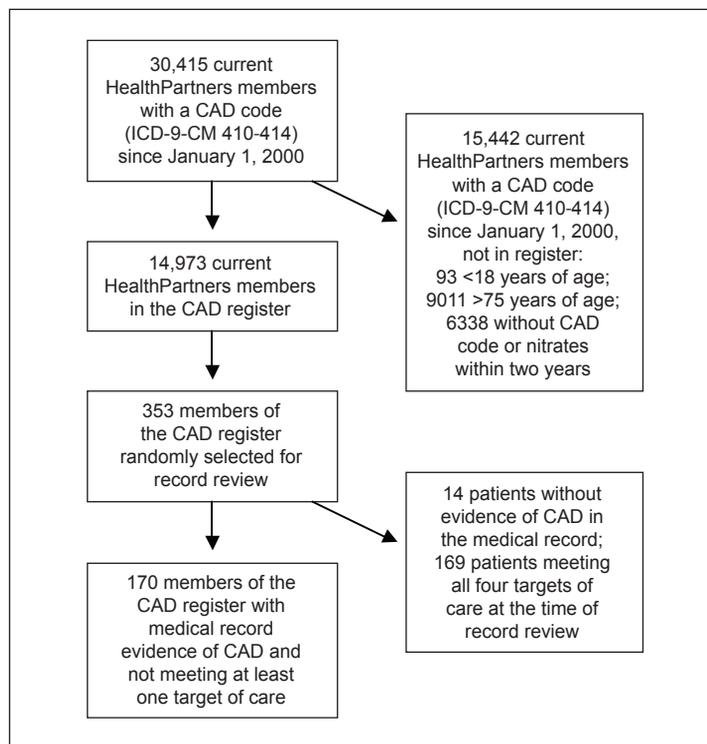

Figure 1. The cascade from current HealthPartners members with at least one coronary artery disease (CAD) code since January 1, 2000, to the 170 randomly selected members with medical record evidence of CAD and not meeting at least one target of care.

ICD-9-CM = International Statistical Classification of Diseases and Related Health Problems, ninth edition.

Table 1. Reasons the targets of care were not achieved (n)						
Reason target not achieved	Number of times each target of care was not achieved, by reason					
	BP controlled	**LDL cholesterol measured**	**LDL cholesterol <100 mg/dL**	**Taking aspirin daily**	**No tobacco**	**Total**
The patient was in for a visit, but the care team failed to address a need	29	10	28	14	17	98
The patient was asked to come back but did not	5	12	9	1	1	28
The patient was offered an intervention but declined	1	—	6	—	7	14
The clinician changed a medication in response to an out-of-range value; the target was not due for reevaluation	6	—	4	—	—	10
The patient was not invited back for follow-up treatment	1	4	4	—	—	9
Aggressive goals were not appropriate for the patient because of a comorbid condition	—	1	—	—	—	1
The physician who ordered the test failed to follow-up	—	—	1	—	—	1
The patient was intolerant of statins	—	—	1	—	—	1
All other reasons	1	2	2	2	1	8
Total	43	29	55	17	26	170

BP = blood pressure; LDL = low-density lipoprotein.

and reporting tools. However, caution would have to be exercised if the data were to be used for other than self-evaluation because of the problem of small numbers leading to numeric instability and a multicomponent index having an achievable performance value that is significantly <100%.

Despite the fact that changing the way in which care is delivered can improve outcomes, changing care processes can be a challenge.[21] Health care institutions, like many other organizations, can be slow in adopting effective practices even when irrefutable evidence of their effectiveness exists. For example, Griffith et al[22] found that close to 75% of hospitals analyzed in their study had no significant change or trend toward adopting proven measures over a period of five years. They concluded that hospital performance is often below benchmark possibilities and suggested that operational changes must be adopted if meaningful improvements in quality are to be experienced.

Evidence from other sectors supports our hypothesis that simple user-friendly tools—in this case software that allows care teams to gen-

erate real-time, tailored reports from the medical record—will increase the proportion of patients who meet their health care goals. For example, Gawande[23] has observed that the adoption of checklists in complex industries such as airplane manufacturing and finance has reduced both errors and inefficiencies. He also cited his own experience in surgery, where brief checklists have reduced deaths and complications by more than one-third at hospitals around the world.

Although other interventions such as public reporting of performance and pay for performance are also components of a comprehensive menu of interventions to improve patient care, the data presented here and elsewhere suggest that tools that primary care clinicians can use to generate patient-treatment reports that are tailored to their own needs also belong on the menu.[24–26] Even though such systems may not generate large behavioral changes among providers without additional stimuli such as public reporting of performance or pay for performance,[27] the Agency for Healthcare and Research and Quality has concluded that re-

minder systems have shown strong evidence in improving the quality of care.[28] The increased availability of an electronic medical record and collaboration among health care institutions present an opportunity to change the benchmark of acceptable care. ❖

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