KELLI C. DAVIS, MPH ■ MARY E. COGSWELL, DRPH ■ SEAN LEE
RICHARD ROTHENBERG, MD MPH ■ JEFFREY P. KOPLAN, MD MPH

Lipid Screening in a Managed Care Population

Ms. Davis, Mr. Lee, and Dr. Koplan are with the Prudential Center for Health Care Research, Atlanta. Ms. Davis is Director of Quality Improvement, Southeast Division, Mr. Lee is a Programmer, and Dr. Koplan is the President. At the time this study was conducted, Dr. Cogswell was a Senior Health Care Analyst with the Prudential Center for Health Care Research; she is currently an Epidemiologist with the Division of Nutrition and Physical Activity, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, Atlanta. Dr. Rothenberg is a Professor in the Department of Family and Preventive Medicine, Emory University School of Medicine, Atlanta.

SYNOPSIS

Objective. To determine the proportion of patients in a managed care setting who were screened and followed up for high blood cholesterol in accordance with the guidelines from the second report of the National Cholesterol Education Program-Adult Treatment Panel II.

Methods. The authors conducted a retrospective review of the medical records of 1004 health plan members ages 40-64 who had been continuously enrolled over a period of five years at one of three Prudential HealthCare sites.

Results. Eighty-four percent of patients in the study group had at least one total blood cholesterol level recorded in their medical records; a high density lipoprotein level was recorded for 67%. Cholesterol screening was highest among patients with a diagnosis of hypercholesterolemia (98%), hypertension (96%), or diabetes (94%) and among patients ages 60-64 (94%). Cholesterol screening did not vary by smoking status. More than 86% of those with a diagnosis of hypercholesterolemia were given dietary counseling, medication, or both.

Conclusions. Compliance with national guidelines in this setting exceeded the Year 2000 goals for lipid management and was comparable with compliance reported in other settings. Routine surveillance of prevention efforts can be a useful way to assess quality of medical care in managed care organizations.

Address correspondence to:
Dr. Koplan, Prudential Center for Health Care Research, 2859 Paces Ferry Rd., Suite 820, Atlanta GA 30339; tel. 770-801-7880; fax 770-437-6101; e-mail <jeffrey.koplan@prudential.com>.

Coronary heart disease is the leading cause of death in the United States.[1] Lowering elevated total cholesterol and low-density lipoprotein (LDL) levels can reduce the risk and progression of coronary heart disease.[2] As a result, the Year 2000 objectives for the nation include increasing to at least 75% the proportion of adults who have had their total cholesterol checked within the preceding five years and increasing to at least 75% the proportion of primary care providers who initiate diet and, if necessary, drug therapy in patients with elevated total cholesterol levels.[3]

The National Cholesterol Education Program (NCEP) guidelines, originally promulgated in 1987 and revised in 1993,[4] stress primary prevention through dietary education of the general public; identification and treatment by physicians of those with high blood cholesterol; and dietary therapy as the first approach to treatment. The 1993 guidelines differed from the earlier guidelines by emphasizing risk status for coronary heart disease as a guide to the type and intensity of cholesterol-lowering therapy; by giving greater importance to low levels of high-density lipoprotein (HDL) as a risk factor for coronary heart disease; and by putting greater emphasis on the importance of physical activity and weight loss as adjuncts to diet therapy in the treatment of high blood cholesterol.

NCEP continues to recommend routine screening for high blood cholesterol among all adults ages 20 and older, although some controversy persists with regard to the effectiveness of screening for high blood cholesterol among both younger and older adults.[5] Most professional organizations and government panels that make recommendations on cholesterol screening, however, agree on the value of periodic screening of men ages 35–64 and women ages 45–64.[6,7]

National data show that since the inception of the NCEP guidelines in 1987, the prevalence of high blood cholesterol levels has declined[8] while cholesterol awareness and reported screening rates have increased.[9] Data are limited, however, on primary care physicians' compliance with the 1993 guidelines for cholesterol detection and management.[8–10] The purpose of our study was to assess the extent to which these guidelines were being followed in a managed care practice setting.

METHOD

We conducted a retrospective medical record review at three program sites of Prudential HealthCare, a national managed care organization: South Florida; Jacksonville, Florida; and Atlanta, Georgia. We reviewed the records of members who were enrolled in either a health maintenance organization (HMO) or a point-of-service (POS) plan. The HMOs at two of the sites were run on the group model (in which health professionals are employed by group practices that have exclusive relationships with the plan), and one was an individual practice association, or IPA (in which health providers offer services to members through contractual arrangements with the plan). The POS plans were similar at the three sites. (A POS plan permits a member to receive services from a network of providers at reduced cost or from nonparticipating providers at a higher cost.)

We used enrollment files to identify members ages 40–64 who were continuously enrolled in the health plan for at least five years during the six-year period between January 1, 1988, and December 31, 1993. From this group, we chose a random sample of 1270 enrollees using Statistical Analysis Software.® The sample size was based on the ability to detect a cholesterol screening proportion of 50% with 90% confidence (*alpha* error 0.10 and *beta* error 0.20).

We looked for medical record entries from the designated primary care provider (family physician or internist) or from any provider who had recently generated a claim or encounter record and whose specialty was such that they may have ordered a cholesterol screening (for example, cardiologists). A total of 266 (20.9%) of the people in the random sample were excluded from the analysis because we could not locate their medical records for the full six-year period under study. The final sample comprised 1004 people who had each had at least one outpatient visit during the interval. There were no significant differences in age or sex distribution between the 1004 people included in and the 266 people excluded from the sample.

Nurse reviewers used a standard instrument to capture clinical and therapeutic data from visit records and laboratory records—age; sex; dates and values of the most recent total cholesterol level, HDL level, and fasting LDL level; coronary heart disease diagnosis as indicated by a recorded diagnosis of angina, coronary artery disease, or myocardial infarction; recorded diagnosis of hypercholesterolemia (defined, in keeping with NCEP guidelines, as a total cholesterol level equal to or greater than 240 milligrams per deciliter [mg/dl]); height; weight; reports of dietary counseling, physical activity counseling, and weight loss counseling; and medications prescribed.

The criterion for dietary counseling was documentation of a physician's or other health professional's counseling about diet or a referral for dietary counseling. Similarly, the criterion for physical activity counseling was

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documentation of a physician's or other health care professional's counseling to increase physical activity or referral to a physical activity or exercise program. Weight loss counseling was defined similarly. We would have liked to assess the appropriateness of referrals for weight counseling; however, this was difficult to determine because almost half (47%) of the people were missing documentation of height.

The reviewers also extracted information on coronary heart disease risk factors corresponding to those cited by NCEP[4]: male age 45 or older; female age 55 or older; family history of premature coronary heart disease (history of a heart attack or sudden death before 55 in the father or other first-degree male relative or before 65 in the mother or other first-degree female relative); current cigarette smoker; hypertension diagnosis or currently taking antihypertensive medication; diagnosis of diabetes mellitus.

We created an index to relate the presence or absence of these risk factors to screening practices. The index categories were as follows: (*a*) presence of two or more risk factors; (*b*) fewer than two risk factors; and (*c*) risk factors unknown.

Differences in proportions and distributions were tested using the chi-square test. We stratified analysis of the associations by site and examined differences in the crude and adjusted associations.[11] Because there were no significant differences in the strength and direction of associations by site between coronary heart disease risk factors and cholesterol screening practices or between crude and adjusted associations (controlling for site using the Mantel-Haenszel procedure), analyses are reported for the total sample rather than by site.

RESULTS

Of the 1004 patients, 844 (84%) had at least one total blood cholesterol level recorded in their chart within a six-year period (Table 1). The mean cholesterol level of these 844 patients was 215 milligrams per deciliter (mg/dl) (standard deviation [SD] = 42 mg/dl), and 25% had a total cholesterol level equal to or greater than 240 mg/dl. In addition, 674 patients (67%) were screened for HDL during the six-year period, 18% of whom had an HDL level lower than 35 mg/dl. A slightly higher proportion of patients was screened in the HMO setting (86%) than in the POS setting (81%, $P = 0.03$).

There was no difference between men and women in screening rates (Table 1). Screening for both total cholesterol and HDL varied by age group ($P = 0.001$); the lowest proportion occurred in the 40–44 year age group (77%) and the highest in the 60–64 group (94%). Nearly all patients with a diagnosis of hypercholesterolemia (98%), hypertension (96%), or diabetes (94%) were screened for total blood cholesterol. There were no differences in screening rates by smoking status or by coronary heart disease diagnosis, but those with two or more risk factors for coronary heart disease were more likely to be screened than those with no risk factors (95% versus 86%, $P = 0.001$).

We also documented fasting LDL levels for 462 (46%) of the 1004 patients; all were taken at the same time as ($n = 429$) or following up on ($n = 33$) the total cholesterol measurement.

Of those with a recorded diagnosis of hypercholesterolemia ($n = 210$), 25% were treated with dietary counseling and medication, 57% were treated with dietary counseling alone, 5% were treated with medication only, and 14% had no documentation of either treatment (data not shown). In addition, 56% of the 210 people with a diagnosis of hypercholesterolemia received counseling or referral for physical activity compared with 25% of the 794 patients without a diagnosis of hypercholesterolemia. Documentation of both dietary and physical activity counseling was noted for 52% of those with hypercholesterolemia.

DISCUSSION

The overall proportion of people screened for elevated cholesterol levels—84% of a sample of managed care enrollees during a six-year period—exceeds the Year 2000

Table. Screening rates for total blood cholesterol and high density lipoprotein (HDL) cholesterol by sample characteristics, three managed care sites, 1988–1993 (*N* = 1004)

Characteristic	Number	Total cholesterol			HDL cholesterol		
		Number screened	Percent screened	P	Number screened	Percent screened	P
Site							
A	465	391	84.1	0.001	278	59.8	0.001
B	354	282	79.7	—	244	68.9	—
C	185	171	92.4	—	152	82.2	—
Sex							
Male	493	417	84.6	NS	345	69.9	NS
Female	499	423	84.8	—	327	65.5	—
Unknown	12	4	33.3	—	2	16.7	—
Age group (years)							
40–44	294	225	76.5	0.001	168	57.1	0.001
45–49	270	221	81.9	—	173	64.1	—
50–54	204	180	88.2	—	149	73.0	—
55–59	143	131	91.6	—	112	78.3	—
60–64	93	87	93.6	—	72	77.4	—
Current smoker							
Yes	222	203	91.4	NS	159	71.6	NS
No	659	582	88.3	—	467	70.9	—
Unknown	123	59	47.9	—	48	39.0	—
Hypertension diagnosis							
Yes	276	264	95.7	0.001	216	78.3	0.001
No	684	565	82.6	—	451	65.9	—
Unknown	44	15	34.1	—	7	15.9	—
Diabetes diagnosis							
Yes	68	64	94.1	NS	55	80.9	0.038
No	878	757	86.2	—	605	68.9	—
Unknown	58	23	39.7	—	14	24.1	—
Family history of coronary heart disease							
Yes	158	150	94.9	0.007	123	77.9	NS
No	680	595	87.5	—	479	70.4	—
Unknown	166	99	69.6	—	72	43.4	—
Hypercholesterolemia							
Yes	210	207	98.6	0.001	184	87.6	0.001
No	728	602	82.7	—	467	64.2	—
Unknown	66	35	53.0	—	23	34.9	—
Coronary heart disease							
Yes	46	43	93.5	NS	37	0.4	NS
No	908	785	86.5	—	629	69.3	—
Unknown	50	16	32.0	—	8	16.0	—
Two or more risk factors for coronary heart disease in people without heart disease (n = 908)[a]							
Yes	256	242	94.5	0.001	199	77.7	0.006
No	480	411	85.6	—	327	68.1	—
Unknown	172	132	76.7	—	103	59.9	—
Total sample	1004	844	84.1	—	674	67.1	—

NOTE: Probabilities were calculated using chi-square tests, with "unknown" categories excluded from the analyses. (When "unknown" categories were included, all chi-square tests were statistically significant at the P = 0.001 level.)

[a] Risk factors for those without diagnosed coronary heart disease include: ages 55 and older for females and ages 45 and older for males; current smoker; diagnosis of hypertension; diagnosis of diabetes; family history of premature coronary heart disease. (Low HDL was not included because of the strong correlation between low HDL and screening for HDL and total cholesterol.)

NS = not significant

objective of 75%[4] and is comparable to that previously reported in a general internal medicine practice.[12] Detailed results are also similar to those in general medical settings: physicians were more likely to screen older people,[12–14] and screening frequency did not differ by smoking status.[15] In addition, 86% of patients with a diagnosis of hypercholesterolemia were treated with dietary counseling, cholesterol lowering agents, or both, again exceeding the Year 2000 objective of 75%[3] and the results reported in a previous study.[16]

Although the results from this study on one preventive intervention cannot be generalized to other managed care settings, some features of managed care organizations foster the systematic adoption of preventive measures. These features include an underlying philosophy emphasizing prevention and the development of practice guidelines for providers. In principle, shared goals and resources between managed care organizations, medical providers, and public health agencies can also promote routine surveillance of prevention activities in managed care organizations.

We found that access to patient data was less than perfect, however, which could be a source of error in our estimates. We were unable to locate the records of 20% of members selected to be in the sample; in the unlikely event that the entire excluded group had been unscreened, the overall screening proportion in our study would have been 67% instead of 84%.

Because the medical records did not document sociodemographic characteristics such as income or educational level, did not routinely document height, and did not include information on a number of health behaviors, we were unable to assess screening biases of physicians or the impact of weight-for-height lipid management. The exact nature of the intervention, for example in the case of dietary counseling or physical activity counseling, was not clear from the record alone, and there was undoubtedly variation in what kind of counseling physicians actually provided to patients. In addition, counseling is likely to be under-reported in medical records.

Our findings suggest that a majority of Prudential HealthCare's contracted physicians participate in lipid management. This type of surveillance permits medical directors to provide feedback to clinicians and to suggest areas for improvement—greater attention to people at the younger end of the recommended age spectrum; greater concentration on those with multiple risks, especially smoking; and better documentation of cholesterol-lowering interventions.

The approach described here is a technique for rapid, ongoing assessment of the quality of care in health care organizations. Future directions include evaluation of outreach efforts to measure and manage cholesterol levels in health plan members who are not seen by medical providers.

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