

## Commentary

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**G**uidelines for screening and management of hypercholesterolemia have just been published by the Expert Panel of the National Cholesterol Education Program (NCEP).<sup>1</sup> The argument for incorporating screening and management by hypercholesterolemia into routine clinical practice is well reviewed there. The guidelines for the NCEP Expert Panel report indicate that a number of physician decisions are key to screening, diagnosis, and management of elevated blood cholesterol levels. These include deciding whether to order a blood cholesterol determination in an asymptomatic individual, to categorize particular levels as being potentially harmful, to confirm elevated blood cholesterol values, to pursue additional information about the cause of an identified elevation, and to develop for individuals with identified hypercholesterolemia a management plan that may include diet or drugs alone or in combination.

The preceding article in this issue of *The Journal* by Bell and Dippe<sup>2</sup> examines what cholesterol levels physicians identify as being undesirable and how patients so identified are subsequently managed. The practices of four attending physicians and 17 residents in an outpatient family medical center were examined. All patients who had cholesterol measurements performed in a six-month period in 1986 were identified. After exclusion of three individuals because of significant coexisting debilitating disease, 93 had cholesterol readings greater than 6.20 mmol/L (240 mg/dL). A patient's chart was felt to indicate that the physician had identified the blood cholesterol as being undesirably elevated if the chart included a note in the progress notes or in the problem list indicating hyperlipidemia or hypercholesterolemia. Levels of 6.20 mmol/L (240 mg/dL) and greater correspond to the high blood cholesterol category of the NCEP report. Consequently, the present study examines how individuals in the high blood cholesterol category of the NCEP guidelines are managed. I will attempt to place their findings in perspective in the context of current literature on physician screening and management practices and in the context of the new NCEP guidelines.

**What Age Groups Should Be Screened Routinely for Hypercholesterolemia?** Bell and Dippe examined screening and management practices for individuals aged 15 to 86 years. The current NCEP recommendations apply to adults aged 20 years and over. There is considerable disagreement regarding the benefits of screening in children and ado-

lescents, even when these individuals are members of high-risk families. Consequently, it may have been well to have excluded individuals aged 15 to 19 years from the study or to have reported findings in this age group separately. Furthermore, even though the guidelines were developed to apply to all adults uniformly, there remain some special considerations for young adults, aged 20 to 34 years, and older adults, aged over 60 years.

The currently recommended cutoff point of 6.20 mmol/L (240 mg/dL) for high blood cholesterol corresponds to the 75th percentile for individuals aged 35 to 60 years. (Borderline high levels are between 5.20 and 6.20 mmol/L (200 and 240 mg/dL).) The 75th percentile for individuals aged 20 to 35 years is somewhat lower. Some experts would use more stringent cutoff levels for individuals in the young adult group and less stringent guidelines for older adults. Total cholesterol alone loses its predictive value in populations over the age of 60 years, though low-density lipoprotein cholesterol (LDL-C) and high-density lipoprotein cholesterol, (HDL-C) remain good predictors of death from coronary heart disease.<sup>1</sup>

**What Percentage of the Population Has Been Screened Previously for Hypercholesterolemia?** Previous studies of screening practices indicate that only 5 to 22 percent of patient charts have blood cholesterol levels recorded.<sup>3-5</sup> In the present study, only 19 percent of patients with total cholesterol levels greater than 6.20 mmol/L (240 mg/dL) had previously been identified as being hypercholesterolemic by their physicians. Because the patient population included a number of patients with preexisting vascular disease who probably are more likely to be screened for hypercholesterolemia than asymptomatic individuals, it is likely that identification of hypercholesterolemia in asymptomatic individuals is even less frequent. In general, the authors' findings are consistent with studies of specifically examining screening practices.

**What Tests Do Physicians Use for Screening Purposes?** Belle and Dippe found that 22 percent of individuals with levels greater than 6.20 mmol/L (240 mg/dL) did have a lipid profile or high-density lipoprotein determination ordered within the period of chart audits. Presumably these lipid profiles were obtained as screening tests. In this regard, it should be emphasized that current guidelines recommend that a simple, random cholesterol level be used for screening purposes and more extensive

studies, such as a lipid profile, be used to guide subsequent management decisions.<sup>1</sup> Many of the lipid profiles may have been obtained in individuals previously identified as having hypercholesterolemia. In this case the test would not qualify as a screening test.

**With What Frequency Do Physicians Identify Given Blood Cholesterol Values as Being Undesirable?** Bell and Dippe found that 58 percent of individuals with serum cholesterol levels greater than 6.20 mmol/L (240 mg/dL) whose charts reflected that they had not previously been identified as having undesirable cholesterol levels were identified as having hypercholesterolemia. This percentage was calculated using the data presented in Table 1 of their paper. Within the group of individuals having cholesterol levels ranging from 6.20 to 6.70 mmol/L (240 to 259 mg/dL), 50 percent were newly identified by their physicians; in the 6.70 to 7.75 mmol/L (260 to 299 mg/dL) group, 62 percent were so identified; and in the group with levels greater than 7.75 mmol/L (300 mg/dL) 64 percent were so identified. Charts were audited six months subsequent to the period during which cholesterol levels were obtained; however, approximately 10 percent of the charts audited did not reflect a patient visit subsequent to the time the blood test was obtained. It is possible that the length of time between the measurement of blood cholesterol and the audit of the patient charts was insufficient, so that the findings incompletely reflect the aggressiveness with which these physicians identified and managed hypercholesterolemia. Nevertheless, these findings agree with findings in other studies.

In a recent study of individuals identified during a population-based screening to have a blood cholesterol level over 5.70 mmol/L (220 mg/dL) who subsequently saw a physician, 57 percent reported that their physicians did not measure their cholesterol level again, and 54 percent received no advice from their physicians. Regardless of age, 71 percent of individuals with cholesterol levels between 5.70 and 6.70 mmol/L (220 and 260 mg/dL) who did receive advice were advised to do nothing and not worry.<sup>6</sup>

**When Physicians Identify an Individual as Having Hypercholesterolemia, What Effort Is Made to Confirm the Diagnosis and to Rule Out Secondary Causes?** While Bell and Dippe did not specifically examine these practices, the NCEP report<sup>1</sup> provides guidelines in this area. Hypercholesterolemia is confirmed by the average of two readings (or three if there is a greater than 3.35 mmol/L [130 mg/dL] disparity between the first two readings), and that the average is used to guide subsequent evaluation plans. Once identified, LDL levels are used to guide management decisions. Secondary causes are excluded by history, physical examination, and appropriate laboratory tests, which may

include urinalysis, complete blood cell count, and determinations of serum thyroid-stimulating hormone, glucose, alkaline phosphatase, and albumin. Secondary causes of hypercholesterolemia include diabetes mellitus, hypothyroidism, obstructive liver disease, nephrotic syndrome, dysproteinemias, and drugs, including sex hormones and antihypertensive agents.

**The Physician's Recommendations Regarding Treatment.** Management decisions are based on LDL values, not total cholesterol values, and at least two LDL values should be obtained, if possible. The majority of patients with identified hypercholesterolemia should be placed on at least a six-month trial of dietary modification. Every effort should be made to lower the blood cholesterol to the desired value with diet alone. Pharmacologic management is reserved for those who do not sufficiently lower their blood cholesterol in response to dietary modifications and rarely is used as initial treatment in individuals with very high cholesterol levels, ie, greater than 7.75 mmol/L (300 mg/dL).

In examining management decisions, the authors found that, overall, 46 percent of all individuals with total cholesterol values above 6.20 mmol/L (240 mg/dL) were managed with diet and 6 percent of patients with medications, though these treatment groups were not mutually exclusive. It appears, therefore, that at least 48 percent of individuals were not counseled regarding diet or drug treatment. Presumably a higher percentage of those identified as having hypercholesterolemia were counseled. It would be of interest to have seen how individuals not diagnosed previously as having hypercholesterolemia were initially managed. Few studies exist that have directly examined physician management of individuals with identified hypercholesterolemia. A survey of physicians in Massachusetts found that the majority of physicians provide dietary information to patients rather than rely on other health professionals. Forty-seven percent of physicians reported routinely asking patients about their diet habits. In general, however, the minority of physicians believe avoidance of dietary fat and cholesterol is important to the average patient. Only 35 percent of all physicians reported they were very prepared to counsel patients with regard to dietary habits.<sup>7</sup>

**In Summary.** Physicians' screening and management practices are at odds with the recommendations of the NCEP Expert Panel. What are the barriers to increased screening and management in accordance with the guidelines? No studies have directly addressed this issue for hypercholesterolemia. Earlier studies, however, have identified a number of barriers to changing physician practice patterns: discrepancies among expert recommendations; lack of provider knowledge of disease, risk factor tests, intervention strategies, and indications for

referral; negative attitudes regarding preventive care; physician misperceptions of what the patient knows and wants to know and of patient values and intentions; lack of appropriate cues to act; inadequate perceptions of effective practice patterns; restrictions on funding and reimbursement; unavailability and lack of support staff; poor coordination with other community resources; high costs relative to rewards of the behavior to the physician; and lack of follow-up to ensure patient compliance and reinforce provider behavior.<sup>7-9</sup> It is hoped the NCEP guidelines will help to remove several of these barriers. The two factors associated with physicians' interest in learning more about a specific area are a belief in the importance of changing behavior in that area and confidence in their ability to help patients make successful changes.<sup>4-7</sup>

Future studies of physician screening and management practices might focus on a number of areas not addressed in the present study: (1) management of individuals with normal or borderline elevations, (2) the extent to which family physicians are successful in identifying families rather than just individuals at risk, (3) the degree to which other risk factors are assessed in those individuals screened, (4) the aggressiveness with which physicians pursue dietary treatment of hypercholesterolemia, (5) the degree to which the clinical evaluation, including history, physical examination, and laboratory study, recommendations are pursued, (6) how individuals under treatment are followed, (7) the role of the dietician, and (8) the aggressiveness of management of younger individuals and older adults.

The situation in 1988 with regard to screening and management of hypercholesterolemia is similar to the situation in 1972, when hypertension had been identified clearly as a major health hazard and effective forms of treatment were available, yet only the minority of individuals with hypertension had been identified and were under adequate treatment. There is a clear need for iden-

tifying and removing barriers to screening and management practices and a need for continued monitoring of practice and changes in practice. The National Institutes of Health has encompassed these needs within the Physicians' Role in Lipid Lowering initiative. The above study by Bell and Dippe has gone far in describing the ways in which patients with elevated blood cholesterol are currently managed.

## References

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