

# Family Physician Recognition and Treatment of Severe Hypercholesterolemia

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*Family physician recognition and treatment of severe hypercholesterolemia was determined in a residency program by chart audit. Two hundred seventeen clinic patients were identified as having cholesterol levels greater than 260 mg/dL. In only 47 percent of cases was the abnormality noted in the clinic record. Sixty-nine percent of the patients received no treatment, 29 percent were treated with diet, and 7 percent with drug therapy. Family physicians were much more likely to recognize and somewhat more likely to treat hypercholesterolemia if the level was greater than 305 mg/dL and, therefore, marked as abnormal on the laboratory report.*

*An educational program to improve physician management of hypercholesterolemia had no significant effect. Although further education using different teaching approaches may be helpful, the use of optimal rather than statistically "normal" cholesterol ranges by the laboratory may be a better way to improve physician performance.*

In 1984 the Lipid Research Clinics Coronary Prevention Trial (LRC-CPT) was published giving the most convincing evidence to date that lowering cholesterol levels decreases the incidence of heart disease and related deaths.<sup>1</sup> The National Institutes of Health (NIH) then sponsored a consensus development conference, and recommendations to lower blood cholesterol were published in the spring of 1985.<sup>2</sup> In this consensus statement, severe hypercholesterolemia was defined as greater than 260 mg/dL for adults aged 40 years and older. Intensive diet and drug treatment was recommended for this group.

The panel also recommended a national cholesterol education program for physicians. The results of a survey conducted in 1983 confirmed the need for such a program. Only 39 percent of physicians surveyed treated elevated cholesterol levels in their patients.<sup>3</sup> Twenty-five percent of the physicians initiated drug therapy only at levels above 400 mg/dL. Cardiologists

were generally more aggressive than family physicians in initiating both diet and drug therapy.

The purpose of this study was to determine the rate of recognition and treatment of severe hypercholesterolemia by physicians in an Army family practice residency program. The results of an education program for faculty and residents are discussed, and alternative methods of improving physician compliance with NIH recommendations are suggested.

## METHODS

The Eisenhower Army Medical Center laboratory includes blood cholesterol on its automated chemical screening panel of 20 tests. Normal cholesterol is defined by this laboratory as 140 to 270 mg/dL in patients aged under 40 years and 145 to 305 mg/dL in patients aged over 40 years.

Screening panels performed on Family Practice Clinic patients during August and September 1985 were reviewed. Charts were audited of those patients identified as having severe hypercholesterolemia, defined by the NIH as greater than 260 mg/dL. The number of problems and medications on the master problem list was noted. The entire chart was reviewed to determine whether hypercholesterolemia was an old or new problem and whether the problem had been recognized at any time. Any diet or drug treatment was noted as well as the patient's age and sex.

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In March 1986 approximately one half of the Department of Family Practice attended a lecture by a cardiologist on the recognition and treatment of hypercholesterolemia. Physicians who attended the lecture also received a practical booklet on cholesterol management.<sup>4</sup> Both the lecture and the booklet emphasized the difference between the optimal cholesterol level and normal values reported by the laboratory.

Screening panels were then reviewed for the two months following the educational effort. Charts were again audited for those Family Practice Clinic patients with cholesterol levels greater than 260 mg/dL.

## RESULTS

Over the total four-month period, 1,208 automated chemical screening panels were performed on Family Practice Clinic patients. Two hundred eighty-six, or 24 percent, had a cholesterol level in the high-risk range (greater than 260 mg/dL). The charts of 217 patients were audited. The charts of 69 patients were omitted because the chart could not be located, the patient had another abnormal cholesterol reading during the study period, or the patient was followed by the author.

Sixty-seven percent of the patients with hypercholesterolemia were women. The patients' mean age was  $56 \pm 11$  years. Most of the patients' problem lists contained several chronic medical problems requiring daily medications. The average patient had 4.6 medical problems listed and was taking 3.1 different medications. Hypercholesterolemia was included on the problem list in only 13 percent of the cases.

In 75 percent of the cases, the hypercholesterolemia was an old problem, documented in the chart by a prior cholesterol determination of greater than 260 mg/dL. Twenty-five percent of the charts had no prior cholesterol determinations or had levels less than 260 mg/dL in the past. Despite the chronicity of the cholesterol elevation in most patients, the abnormality was mentioned in the record in only 47 percent of the cases.

Even fewer patients received any treatment for their severe hypercholesterolemia. Twenty-nine percent of the patients were treated with diet, and 7 percent with drug therapy. Sixty-four percent of patients received no treatment at all.

Physician recognition and treatment was then determined for patients with cholesterol levels marked as abnormal on the laboratory report (greater than 305 mg/dL) (Table 1). Physicians were much more likely to recognize hypercholesterolemia when the cholesterol value was outside the normal range on the laboratory report ( $P < .001$ ). Physicians were also more likely to treat patients with cholesterol levels greater than 305 mg/dL, but the difference was not statistically significant.

The mean cholesterol level that was not recognized or treated was 293 mg/dL, a value within the normal

TABLE 1. PHYSICIAN RECOGNITION OF SEVERE HYPERCHOLESTEROLEMIA ( $P < .001$ )

Cholesterol Level	Recognized No. (%)
$\leq 305$ mg/dL	58 (39)
$> 305$ mg/dL	44 (65)
Total	102 (47)

range of the laboratory. The average cholesterol level that was recognized or treated was outside the normal range at 309 mg/dL ( $P < .01$ ).

The educational program had no significant effect on physician recognition and treatment of hypercholesterolemia. Before the program, the faculty members were more likely than the residents to recognize and treat patients with elevated cholesterol levels ( $P < .02$ ). After the program the residents' performance improved slightly, while the faculty's worsened, thereby eliminating the difference noted initially. The performance of department members who attended the lecture and received the booklet was no better or worse than that of members who did not.

## DISCUSSION

Conclusive evidence became available in 1984 that a reduction in elevated cholesterol levels results in a decrease in the risk of heart attacks caused by coronary artery disease. Physicians are now encouraged to treat aggressively those patients with moderate and severe hypercholesterolemia. As this study demonstrates, large numbers of people have cholesterol levels in this range. More than 200 patients with severe hypercholesterolemia were identified in the Eisenhower Family Practice Clinic in a four-month period. Many more patients have cholesterol levels in the moderate risk range of greater than 240 mg/dL. Hypercholesterolemia is indeed a frequent finding with significant effects on patient morbidity and mortality.

Unfortunately, physician recognition and treatment of even severe hypercholesterolemia is poor. Only 47 percent of cases were recognized by family physicians in this study. Treatment was offered to only 36 percent of patients with severe hypercholesterolemia. These results are particularly discouraging from a residency program where physicians should be aware of recent medical recommendations.

Physicians obviously need further education on hypercholesterolemia and its management. The American Academy of Family Physicians contributed to the education of its members by sending each of them a copy of the excellent booklet *Cholesterol Counts*.<sup>4</sup> The National Heart, Lung, and Blood Institute (NHLBI) is planning a major educational program that will be simi-

lar to that used in past years to encourage hypertension recognition and treatment.<sup>5</sup>

This study, however, indicates that education alone may not significantly improve physician recognition of hypercholesterolemia. The normal range of cholesterol defined and reported by the laboratory had a marked effect on whether physicians recognized a level as abnormal. Physicians were more likely to recognize and treat elevated cholesterol levels when the laboratory indicated the abnormality on its report. Apparently, physicians reviewing automated chemical screening panels with 20 test results notice primarily those results marked with an asterisk as abnormal.

The Eisenhower hospital laboratory is only one of many that designates cholesterol readings of more than 300 mg/dL as normal.<sup>6</sup> These so-called normal values reflect a statistical rather than an ideal range of cholesterol levels. Fortunately, the NHLBI has recognized this problem and formed a panel to attempt to develop a solution.<sup>3</sup> Until laboratory reports reflect the optimal cholesterol range, many physicians will continue to

ignore cholesterol levels that are clearly associated with an increased risk for coronary artery disease.

#### References

1. Lipid Research Clinics Program: The Lipid Research Clinics Coronary Primary Prevention Trial results. I. Reduction in incidence of coronary heart disease. II. The relationship of reduction in incidence of coronary heart disease to cholesterol lowering. *JAMA* 1984; 251:351-374
2. Consensus conference: Lowering blood cholesterol to prevent heart disease. *JAMA* 1985; 253:2080-2086
3. Lenfant C: New national cholesterol education program. *Cardiovasc Med*, November 1985, pp 39-40
4. Cholesterol Counts: Steps for Lowering Your Patient's Blood Cholesterol. National Institutes of Health (Bethesda, Md), DHHS publication No. (NIH) 85-2699. Government Printing Office, 1985
5. Hulley SB, Martin MJ: Health policy for treating hyperlipidemia: Analogy with hypertension and prospects for the next decade. *Am J Cardiol* 1986; 57:3H-6H
6. McManus BM: Defining coronary risks in a reference range for total cholesterol and lipoprotein values: A problem yet to be solved. *Am J Cardiol* 1985; 56:12J-13J