Response of Patients and Physicians to Mass Screening for Coronary Risk Factors

By Wilbert S. Aronow, M.D., William H. Allen, M.D., and Dominic De Cristofaro, M.D.

SUMMARY
Questionnaires were sent to 1,817 adults screened twice for coronary risk factors 10 to 11 months apart and to their physicians. Physician questionnaires returned on 1,764 persons indicated that 359 (20.4%) of the total group and 227 of 1,191 persons (19.1%) with one or more abnormal risk factors during the first screen did not return for follow-up care. Only persons with one or more risk factors were given advice or medication. When the 227 patients that did not return for follow-up are removed from the group with one or more risk factors, the 239 patients who received advice or treatment comprise 24.8% of those who could have been treated. Of the total 1,764 patients, 13.5% received treatment or advice.

Questionnaires returned by 1,396 persons who received follow-up care by their physicians confirmed that only those who had one or more risk factors received advice or treatment. Results of the patient questionnaires show that 223 persons received advice or treatment (23.2% of all with risk factors who returned for follow-up; 16.0% of the 1,396 persons). Furthermore, of 116 persons prescribed medication for risk factor control, 60 (51.7%) were not taking this medication. Of 208 persons given advice for reduction of risk factors, 162 (78.9%) were not following this advice. These data indicate physician indifference and patient apathy to reduction of coronary risk factors in asymptomatic individuals.

A SENSIBLE APPROACH to solving the problem of coronary heart disease is the identification and elimination or reduction of risk factors which predispose persons to develop coronary heart disease. At the same time, many individuals are unaware they have coronary risk factors or are not being treated for control of these risk factors. This paper reports data obtained from questionnaires mailed to asymptomatic adults screened for coronary risk factors and to their physicians to evaluate the response of the persons screened and of their physicians to the information obtained from the screens.

Materials and Methods
We evaluated the prevalence of one or more coronary risk factors in 2,524 asymptomatic adults screened in Long Beach, California and in 1,817 of these 2,524 persons screened a second time 10 to 11 months later. The coronary risk factors evaluated during both screens were fasting serum cholesterol, fasting serum triglyceride, blood pressure, smoking, fasting blood sugar, and body weight. The results of the individual tests were sent to the persons screened and to the physician of their choice. The adults screened and their physicians were notified that we considered as abnormal coronary risk factors the following: a fasting serum cholesterol greater than 250 mg%, a fasting serum triglyceride equal to or greater than 150 mg%, a blood pressure greater than 140/90 mm Hg, smoking, a fasting blood sugar greater than 120 mg%, and weight greater than or equal to 20% above the desirable body weight.

The 2,524 persons screened were advised to return to their private physician for follow-up care. This was advised to all persons because we planned to obtain follow-up data on them from their physicians and to evaluate the attitude of the physicians toward reduction of coronary risk factors, or improvement in normal individuals. Ten to 11 months later, the 2,524 participants were invited to be rescreened. After 1,817 adults were screened twice, questionnaires were mailed out to these persons and to their physicians to evaluate the response of the individuals screened and of their physicians to the information obtained from these screens. If a questionnaire was not returned by a person screened twice or by a physician, a second questionnaire, and if necessary, a third questionnaire was sent. In addition, questionnaires were mailed to the 707 persons who did not return for a second screen to evaluate why they did not return for this second screen (table 1).

Results
The prevalence of one or more coronary risk factors in the 1,817 adults who returned for a second screen was 67.0% during the first screen and 69.5 during the second screen; the difference was not significant. Chi-square analyses indicated no significant difference in prevalence of any of the six risk factors between the 707 persons who did not return for the second screen and the 1,817 persons who participated in both screens.

Of 1,817 physician questionnaires, 1,764 (97.1%)
Table 1

Reasons Given by 508 Persons for Not Returning for a Second Screen

<table>
<thead>
<tr>
<th>Reasons</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death</td>
<td>2</td>
<td>0.4</td>
</tr>
<tr>
<td>Under treatment for atherosclerotic diseases</td>
<td>12</td>
<td>2.4</td>
</tr>
<tr>
<td>Moved out of the area</td>
<td>143</td>
<td>28.1</td>
</tr>
<tr>
<td>Normal tests</td>
<td>107</td>
<td>21.1</td>
</tr>
<tr>
<td>No time to be rescreened</td>
<td>101</td>
<td>19.9</td>
</tr>
<tr>
<td>Did not care to be rescreened</td>
<td>44</td>
<td>8.6</td>
</tr>
<tr>
<td>Personal physician did not feel screen was important</td>
<td>99</td>
<td>19.5</td>
</tr>
</tbody>
</table>

Table 2

Physician Questionnaire Data for 1,191 Patients Screened Twice with One or More Coronary Risk Factors

<table>
<thead>
<tr>
<th>Data</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No follow-up</td>
<td>227</td>
<td>19.1</td>
</tr>
<tr>
<td>Physician unaware of results of first screen</td>
<td>7</td>
<td>0.6</td>
</tr>
<tr>
<td>Physician interpreted the data from the first screen to reveal essentially no risk factor abnormalities</td>
<td>380</td>
<td>31.9</td>
</tr>
<tr>
<td>Physician interpreted the data from the first screen to reveal mild risk factor abnormalities not requiring any therapy</td>
<td>398</td>
<td>28.4</td>
</tr>
<tr>
<td>Physician prescribed advice alone regarding reduction of abnormal risk factors such as cessation of smoking, weight reduction, low cholesterol diet, etc.</td>
<td>115</td>
<td>9.6</td>
</tr>
<tr>
<td>Physician prescribed advice plus medication for reduction of abnormal risk factors</td>
<td>97</td>
<td>8.1</td>
</tr>
<tr>
<td>Physician prescribed medication alone for reduction of abnormal risk factors</td>
<td>27</td>
<td>2.3</td>
</tr>
</tbody>
</table>

Of 116 persons prescribed medication for control of risk factors, 60 (51.7%) indicated they were not taking this medication. Of the 208 individuals given advice for reduction of risk factors, 162 (78.9%) stated they were not following this advice.

Discussion

Hypercholesterolemia, hypertriglyceridemia, hypertension, cigarette smoking, diabetes mellitus, and marked obesity have been considered major risk factors which predispose persons to develop coronary heart disease. Although the evidence on the effectiveness of such drugs as antihypertensive agents, hypolipidemic drugs, and antidiabetic agents in preventing development of coronary artery disease is not definitive, the Inter-Society Commission for Heart Disease Resources recommended changes in diet to prevent or control hyperlipidemia, obesity, hypertension, and diabetes mellitus, elimination of cigarette smoking, and pharmacologic control of elevated blood pressure.

Haskell and associates reported rather disappointing results following a multi-media campaign conducted in Gilroy, California, in approximately 500 men and women: while the relative body weight dropped 1.0% and cigarette consumption fell 9.0%, the serum cholesterol rose 0.6 mg% and the serum triglyceride increased 5.5 mg%. The systolic blood pressure decreased 2.7 mm Hg. Following a multi-media campaign combined with personal intensive instruction of high risk individuals conducted in Watsonville, California, the same authors report decreases in serum cholesterol of 2.5 mg% and serum triglyceride of 4.9 mg%. The systolic blood pressure fell 1.6 mm Hg, the relative body weight decreased 1.1%, and the daily consumption of cigarettes fell 31%. Eighty-seven subjects in Watsonville, California, were further treated with a three-month behavior modification protocol. Their mean serum cholesterol decreased 11.4 mg%, their mean systolic blood...
pressure decreased 9.5 mm Hg, and their mean relative body weight decreased 5%.

We recommended to all of the persons we screened that they return to their physician for follow-up care and advice regarding control of coronary risk factors. Despite this recommendation, questionnaire data indicated that 20.4% of 1,764 patients screened twice and 19.1% of 1,191 patients screened twice with one or more risk factors during their first screen did not return to their private physician for follow-up care.

Moreover, although one or more coronary risk factors were present in 67.5% of the 1,764 individuals screened twice during the first screen, questionnaire data answered by the physicians and by the patients indicated that less than 25% of that group that returned to their physician for follow-up care were prescribed advice or medication for reduction of coronary risk factors. None of the patients whose screening tests were normal were encouraged to lower the levels of any of the factors measured. In addition, only 21.1% of those given specific instructions for reduction of coronary risk factors stated they were following this advice, and of the 116 persons prescribed medication for control of coronary risk factors, only 56 persons (48.3%) stated they were taking this medication. These data indicate both physician indifference to and patient apathy in asymptomatic individuals.

While there is no evidence that following advice on diet or smoking or adhering to a drug therapy will prevent the development of heart disease in these patients, available data incriminating multiple risk factors in the pathogenesis of coronary heart disease strongly indicate more than chance association with such risk factors. We feel that the medical profession has the responsibility of better educating physicians and the public. Clearly, the importance of reducing the prevalence of coronary risk factors and of improving the intensity of risk factors has not been recognized as an imperative to action. In our opinion, better approaches must be developed to emphasize the seriousness of the problem and to help individuals improve their chances of avoiding heart disease.

Acknowledgment

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