The American Heart Association estimates that 70 million adults in the United States have total cholesterol levels >200 mg/dL, and at least 40% of these individuals have cholesterol levels in excess of 240 mg/dL.1 Based on low-density lipoprotein cholesterol (LDL-C) targets recommended in Adult Treatment Panel III (ATP III), an estimated 12.7 million Americans are eligible for drug therapy but are currently not receiving it.2 This number reflects the increased emphasis in the new guidelines for treating not only patients with established coronary heart disease (CHD) but also patients who are at increased risk for CHD, including those with diabetes or 2 or more major risk factors. In addition, ATP III identifies significantly lower LDL-C target goals for all patients and includes treatment recommendations for conditions that predispose patients to higher risk, such as the metabolic syndrome. The net result of the new guidelines is that pharmacists and other health care professionals are challenged to implement systems that target the appropriate patients, identify therapies capable of achieving LDL-C target goals, and ensure that patients adhere to their therapeutic regimen so they can reap the CHD risk-reduction benefits of lipid-modification therapy.

Unmet Needs: Underdiagnosis

The National Cholesterol Education Program (NCEP) ATP III guidelines3 increase to more than 65 million the number of adult Americans eligible for lipid-modifying therapy. This results from an increased emphasis on CHD risk assessment, identification of CHD risk equivalents, and new, lower LDL-C treatment thresholds. However, despite an increased awareness of the relationship between dyslipidemia and CHD risk, lipid disorders are significantly underdiagnosed in the United States. Data from the Lipid Treatment Assessment Project (L-TAP) illustrates the extent of the underdiagnosis of lipid disorders.3 This study identified that 50% of all patients do not have their cholesterol assessed when they visit the office of their primary care physician. Similarly, a survey of the cholesterol management practices of U.S. physicians indicated that only 1 in 12 physicians routinely provide cholesterol screening to patients who may be at risk.4

ATP III advocates a 9-step process to determine CHD risk and the need for lipid-modification therapy in patients. Screening is recommended when the patient reaches 20 years of age and every 5 years thereafter, with measurement of a fasting LDL-C and lipid panel, followed by a physical evaluation to determine the presence or absence of CHD and CHD risk equivalents such as diabetes, peripheral arterial disease, abdominal aortic aneurism, or symptomatic carotid artery disease. The presence of the major risk factors should then be identified to determine the Framingham risk score. Major risk factors for CHD include cigarette smoking, hypertension, low high-density lipoprotein cholesterol (HDL-C), family history of premature CHD, and age. The Framingham risk score provides an estimation of the 10-year risk of experiencing a CHD-related event. Patients with CHD or CHD risk equivalents have a
>20% chance of experiencing a CHD event in the next 10 years and are considered at highest risk. Patients at moderate risk have a 10-year event risk of 10% to 20%, while those at lowest risk have a <10% chance of experiencing an event in 10 years. Thus, the usefulness of the Framingham risk score is 2-fold: the measure identifies patients who require lipid modification, and it provides a guide to LDL-C treatment thresholds and targets.

Detection of CHD risk is also enhanced in ATP III by the inclusion of type 2 diabetes as a CHD risk equivalent (ATP II classified this condition as a risk factor). In addition, ATP III identifies the metabolic syndrome as a condition potentially requiring treatment and advocates new treatment thresholds for triglycerides and HDL-C. By identifying type 2 diabetes as a CHD risk equivalent, patients with this condition are considered at the same 10-year risk as those with clinically evident CHD. Diabetics are now clearly candidates for aggressive lipid-lowering therapy. The metabolic syndrome, which impacts more than 70 million Americans, is also recognized as a potential contributor to CHD risk. This condition is characterized by obesity, hypertension, dyslipidemia, and type 2 diabetes. ATP III considers elevated triglycerides and decreased HDL-C as contributory to the CHD disease process, and both are now included as targets of therapy.

Unmet Needs: Undertreatment

A diagnosis of lipid disorder does not guarantee treatment, and <45% of patients who qualify for therapy receive treatment and >70% of patients who initiate lipid-lowering therapy persist with it for more than a year. Receiving therapy does not necessarily mean a patient will receive the full risk-reducing benefits of the regimen as more than 75% of patients who do receive therapy fail to reach their NCEP target LDL-C goal. Data collected in the primary care setting indicated that only 9% of dyslipidemic patients with ≥2 CHD risk factors achieved their ATP II target level (Table 1). Even less encouraging is the number of patients with CHD who receive therapy. Fonarow and colleagues studied the medication records of 138,000 patients hospitalized for an acute myocardial infarction and noted that only 31.7% of patients were receiving lipid-lowering therapy at the time of discharge.

These studies suggest that dyslipidemic patients at all risk levels are not receiving optimal therapy or are being prescribed therapy inconsistent with their CHD risk. This perspective is supported by the observation that high doses of drugs and combination therapies of lipid-modifying drugs are not being used. Data from numerous outcome trials indicate that aggressive lipid lowering in the context of a tightly monitored clinical trial setting can result in a predictable reduction of CHD events. In many clinical settings, lipid-lowering therapy is not properly titrated and progress toward lipid goals is poorly monitored. Consequently, patients risk the possibility of forfeiting the significant risk-reduction benefits inherent with aggressive lipid treatment. Therefore, a more aggressive approach to LDL-C reduction is required.

### Table 1

<table>
<thead>
<tr>
<th>CHD Risk Level</th>
<th>Percentage of Patients Achieving LDL-C Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low (0-1 risk factor)</td>
<td>68</td>
</tr>
<tr>
<td>High (&gt;2 risk factors)</td>
<td>37</td>
</tr>
<tr>
<td>CHD patients</td>
<td>18</td>
</tr>
<tr>
<td>TOTAL</td>
<td>37</td>
</tr>
</tbody>
</table>


The Challenge of Reaching ATP III Goals

Achieving target cholesterol goals results in favorable clinical and economic outcomes. Data from landmark clinical trials involving both primary and secondary prevention have demonstrated that lipid modification to treatment goals results in significant reductions in morbidity and mortality as well as a reduced need for clinical procedures. Data from these trials suggest that for every 1% reduction in LDL-C, there is a 1% decrease in CHD-related mortality. Pharmaceutical analyses have demonstrated that statins are the treatment of choice and that lipid reduction with these agents results in cost-effective outcomes. However, to achieve optimal clinical and economic effectiveness, managed care organizations must adopt programs designed to reduce overall CHD risk by achieving LDL-C targets and addressing other independent risk factors.

There are many challenges to the implementation of the ATP III guidelines, including overcoming the gap between awareness of the guidelines and the actual practice of achieving LDL-C goals. The L-TAP study noted that 64% of primary care physicians indicated that cholesterol reduction had a great impact on reducing CHD risk, and 36% thought it had only a moderate effect. In addition, 63% of primary care physicians indicated that they follow NCEP lipid treatment guidelines “quite a bit,” 31% stated they followed the guidelines “somewhat,” and 2% did not follow the guidelines at all. Despite the awareness of primary care physicians of the NCEP guidelines, a significant number of their patients failed to reach LDL-C goals. This discrepancy may be caused by the fact that physicians used inappropriately low doses of drugs, used drugs with limited effectiveness, failed to choose the correct drug for a specific lipid disorder, and failed to consider tolerability and/or side effect profiles of the drug.

With their historical emphasis on prevention, managed care organizations are in a strong position to implement CHD risk reduction through pharmacologic and nonpharmacologic therapies, including dietary modification, weight loss, regular physical activity, and drug therapy if indicated. Although nonpharmacologic interventions have frequently been maligned as an ineffective or inefficient way to alter the lipid profile, the L-TAP study suggests that lifestyle advice provided by health care professionals and patient compliance with this advice were independent predictors.
of success in reaching LDL-C goals. These results underscore the influence of health care professionals on patient behaviors and suggest that even a minimal amount of education and encouragement can have a favorable impact on CHD risk reduction.

**Summary and Conclusion**

Achieving ATP III goals is a step-by-step process involving risk assessment, designing and implementing the appropriate therapy, monitoring and adjusting the therapy as required, and encouraging patient adherence to the prescribed interventions. The health care providers and their patients share the responsibility for treatment and management of lipid disorders. Patient involvement is essential to achieve target goals and reduce risk. Managed care organizations are strongly positioned to implement the ATP III guidelines by instituting disease management and outcome programs designed to treat eligible patients, achieve LDL-C target goals, and reduce overall CHD risk.

**DISCLOSURES**

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**REFERENCES**