TABLE 58–1 National Cholesterol Education Program Recommendations for Treatment of Dyslipidemia

Patient's Cardiovascular Disease Status	Diet Therapy		Drug Therapy		Goal of Therapy (mg/dL)
	Total Cholesterol (mg/dL)	LDL Cholesterol (mg/dL)	Total Cholesterol (mg/dL)	LDL Cholesterol (mg/dL)	
No or one risk factor	240	160	275	190	LDL <160
More than two risk factors	200	130	240	160	LDL <130
Has cardiovascular disease	160	100	200	130	LDL <100

LDL, low-density lipoprotein.

- Start a low-fat diet. A Step I diet contains no more than 30% of calories from fat, less than 10% of calories from saturated fats (eg, meat, dairy products), and less than 300 mg of cholesterol per day. A Step II diet contains no more than 30% of calories from fat, less than 7% of calories from saturated fat, and less than 200 mg of cholesterol per day. The Step II diet is more stringent and may be used initially in clients with more severe dyslipidemia, cardiovascular disease, or diabetes mellitus. It can decrease LDL cholesterol levels by 8% to 15%. Diets with more stringent fat restrictions than the Step II diet are not recommended because they produce little additional reduction in LDL cholesterol, they raise serum triglyceride levels, and they lower HDL cholesterol concentrations.
- Use the "Mediterranean diet," which includes moderate amounts of monounsaturated fats (eg, canola and olive oils) and polyunsaturated fats (eg, safflower, corn, cottonseed, sesame, soybean, sunflower oils), to also decrease risks of cardiovascular disease.
- Increase dietary intake of soluble fiber (eg, psyllium preparations, oat bran, pectin, fruits and vegetables). This diet lowers serum LDL cholesterol by 5% to 10%.
- Dietary supplements (eg, Cholestin) and cholesterol-lowering margarines (eg, Benecol and Take Control) can help reduce cholesterol levels. These products are considered to be foods, not drugs, and are costly.
- Start a weight reduction diet if the client is overweight or obese. Weight loss can increase HDL and decrease LDL.
- Emphasize regular aerobic exercise (usually 30 minutes at least three times weekly). This increases blood levels of HDL.
- If the client smokes, assist to develop a cessation plan. In addition to numerous other benefits, HDL levels are higher in nonsmokers.
- If the client is postmenopausal, hormone replacement therapy can raise HDL and lower LDL.
- If the client has elevated serum triglycerides, initial management includes efforts to achieve desirable body weight, ingest low amounts of saturated fat and cholesterol, exercise regularly, stop smoking, and reduce alcohol intake, if indicated. The goal is to reduce serum triglyceride levels to 200 mg/dL or less.
- Unless lipid levels are severely elevated, a minimum of 6 months of intensive diet therapy and lifestyle modification should be undertaken before drug therapy is considered. It is essential that diet therapy continue as the benefits of diet and drug therapy are additive.

DRUG THERAPY OF DYSLIPIDEMIA

Dyslipidemic drugs are used to decrease blood lipids, to prevent or delay the development of atherosclerotic plaque, promote the regression of existing atherosclerotic plaque, and reduce morbidity and mortality from cardiovascular disease. Clinical data suggest that drug therapy may be efficacious even for those with mild to moderate elevations of LDL cholesterol. The drugs act by altering the production, metabolism, or removal of lipids and lipoproteins. Drug therapy is recommended when approximately 6 months of dietary and other lifestyle changes fail to decrease dyslipidemia to an acceptable level. It is also recommended for clients with signs and symptoms of coronary heart disease, a strong family history of coronary heart disease or dyslipidemia, or other risk factors for atherosclerotic vascular disease (eg, hypertension, diabetes mellitus, cigarette smoking). Although several dyslipidemic drugs are available, none is effective in all types of dyslipidemia. Categories of drugs are described in this section; individual drugs are listed in Drugs at a Glance: Dyslipidemic Agents.

The **HMG-CoA reductase inhibitors** or statins (eg, **lovastatin**) inhibit an enzyme (hydroxymethylglutaryl-coenzyme A reductase) required for hepatic synthesis of cholesterol. By decreasing production of cholesterol, these drugs decrease total serum cholesterol, LDL cholesterol, VLDL cholesterol, and triglycerides. They reduce LDL cholesterol within 2 weeks and reach maximal effects in approximately 4 to 6 weeks. HDL cholesterol levels remain unchanged or may increase.

Overall, these drugs are useful in treating most of the major types of dyslipidemia and are the most widely used dyslipidemics. Studies indicate that these drugs can reduce the blood levels of C-reactive protein (CRP) that is associated with severe arterial inflammation that leads to heart attacks and strokes. The incidence of coronary artery disease is reduced by 25% to 60% and the risk of death from any cause by approximately 30%. They also reduce the risk of angina pectoris and peripheral arterial disease as well as the need for angioplasty and coronary artery grafting to increase or restore blood flow to the myocardium.