



Lipid Fact Sheet

Lipids

“Lipid” is a medical term used to describe fats in the bloodstream, more commonly referred to as cholesterol and triglycerides. Lipids are stored in the body to serve as a source of fuel and they play an important role in the structure of cells.¹ Blood is made up primarily of water, and just like oil and water, blood and lipids do not mix. In order to move through the bloodstream lipids have to combine with proteins to form lipoproteins.²

Lipid Profiles

A lipid profile is a group of blood tests conducted by a healthcare provider to calculate the levels of various lipids in a patient’s blood. A common lipid profile measures concentrations of low-density lipoprotein (LDL or LDL-C also known as “bad” cholesterol), high-density lipoprotein (HDL or HDL-C also known as “good” cholesterol), triglycerides and total cholesterol (the sum of LDL and HDL in the blood).³ In order to achieve accurate readings patients should fast for a minimum of nine to 12 hours before having blood drawn.⁴ Physicians look at the results of a lipid profile, as well as other risk factors, to help determine a patient’s risk for developing cardiovascular disease. They then determine what types of treatment options are best for the individual patient.

LDL Cholesterol

Excess amounts of LDL cholesterol circulating in the blood contribute to the build-up of atherosclerotic plaque, which over time clogs the arteries and limits blood flow to the heart and brain.⁵ Clogged arteries impede blood flow and can increase the risk of heart attack or stroke. Studies have shown lowering patients’ LDL reduces their risk of cardiovascular disease. The chart below outlines the National Cholesterol Education Program’s classifications for LDL levels.⁶

LDL Cholesterol Levels	Classification
Less than 100 mg/dL	Optimal
100 to 129 mg/dL	Near optimal/Above optimal
130 to 159 mg/dL	Borderline high
160 to 189 mg/dL	High
190 mg/dL and above	Very high

HDL Cholesterol

HDL helps clear excess LDL cholesterol from the arteries and transport it to the liver to be removed from the body. Low levels of HDL have been linked to increased risk for cardiovascular disease, while high levels of HDL seem to protect against heart disease.⁷ The chart below outlines the National Cholesterol Education Program’s classifications for HDL levels.⁸

HDL Cholesterol levels	Classification
Less than 40 mg/dL	Low
60 mg/dL and above	High

Triglycerides

Triglycerides are a type of fat found in the blood that are both produced by the body and ingested in the food you eat.⁹ When you eat a meal high in calories your body converts some of it to glucose to be used immediately as a source of energy, but most of the calories are converted to triglycerides and stored for use as energy at a later time.¹⁰ High levels of triglycerides are common in people who are obese, who have diabetes or who have low HDL levels. Elevated triglycerides are increasingly viewed as an independent risk factor for cardiovascular risk.¹¹ The chart below outlines the National Cholesterol Education Program's classifications for triglycerides levels.¹²

Triglyceride Level	Classification
Less than 150 mg/dL	Normal
150 to 199 mg/dL	Borderline-high
200 to 499 mg/dL	High
500 mg/dL	Very high

Treating Lipid Abnormalities

The first treatment option for any patient with dyslipidemia (abnormal lipid levels) should be lifestyle changes.¹³ This includes reducing consumption of foods that are high in calories and sugar, regular physical activity, weight loss, reduced alcohol consumption and smoking cessation. For some patients these lifestyle changes alone will be enough to improve lipid levels and reduce cardiovascular risk.

When lifestyle changes aren't enough, the National Lipid Association and National Cholesterol Education Program's pharmacological approaches, outlined below, describe prescription options to improve lipid levels. For patients who are unable to achieve target lipid levels with monotherapy, a combination of medications may be needed.¹⁴ Even if medication is used, attention to diet and lifestyle is still an important part of risk reducing therapy.

- **Elevated LDL:** Statins are the treatment for patients who have LDL levels that put them at risk for cardiovascular disease.¹⁵ Statins work by reabsorbing plaque buildup in the arteries and blocking the production of cholesterol in the liver.¹⁶ Other medications, such as ezetimibe or colesvelam HCl, prevent cholesterol from being absorbed into the bloodstream.
- **Low HDL:** Niacin is an effective medication to raise HDL levels. Counseling is often needed to help patients deal with the common side effects of flushing and itching, which may improve with continued use.¹⁷ Fibrates are also prescribed to increase HDL.¹⁸
- **Elevated Triglycerides:** Fibrates are an effective therapeutic treatment option for lowering triglycerides.¹⁹ Fibrates decrease the body's production of triglycerides while at the same time removing excess triglycerides circulating in the body.²⁰ In addition to fibrates, prescriptive formulations of niacin and Omega-3 fatty acids are also prescribed to treat high triglycerides.

In all cases, patients need to consult with a physician in order to determine the appropriate therapy and achieve their lipid targets.

1 MedicineNet.com. Definition of Lipid. Available at: <http://www.medterms.com/script/main/art.asp?articlekey=4168>. Accessed April 10, 2006

2 National Heart Lung and Blood Institute. High Blood Cholesterol. Available at: http://www.nhlbi.nih.gov/health/dci/Diseases/Hbc/HBC_WhatIs.html. Accessed April 10, 2006

3 American Heart Association. Get Your Cholesterol Checked. Available at: <http://www.americanheart.org/presenter.jhtml?identifier=541>. Accessed April 5, 2006

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- ⁴ National Heart Lung and Blood Institute. High Blood Cholesterol. Available at: http://www.nhlbi.nih.gov/health/dci/Diseases/Hbc/HBC_WhatIs.html. Accessed April 10, 2006
 - ⁵ American Heart Association. What's The Difference Between LDL and HDL Cholesterol?. Available at: <http://www.americanheart.org/presenter.jhtml?identifier=180>. Accessed April 5, 2006.
 - ⁶ ATP III Quick Guidelines At-A-Glance Quick Desk Reference Guide. <http://www.nhlbi.nih.gov/guidelines/cholesterol/atglance.pdf>. Accessed April 6, 2006
 - ⁷ National Heart, Lung, and Blood Institute. High Blood Cholesterol Available at: http://www.nhlbi.nih.gov/health/dci/Diseases/Hbc/HBC_WhatIs.htmlhttp://www.nhlbi.nih.gov/health/dci/Diseases/Hbc/HBC_WhatIs.html. Accessed April 10, 2006
 - ⁸ ATP III Quick Guidelines At-A-Glance Quick Desk Reference Guide. <http://www.nhlbi.nih.gov/guidelines/cholesterol/atglance.pdf>. Accessed April 6, 2006
 - ⁹ American Heart Association. What's The Difference Between LDL and HDL Cholesterol?. Available at: <http://www.americanheart.org/presenter.jhtml?identifier=180>. Accessed April 5, 2006.
 - ¹⁰ Mayo Clinic. High Triglyceride Levels, How Do You Lower Them?. Available at: <http://www.mayoclinic.com/health/heart-disease/AN00252>. Accessed April 5, 2006
 - ¹¹ Cullen, Paul, MD. Evidence That Triglycerides Are an Independent Coronary Heart Disease Risk Factor. *The American Journal of Cardiology*. 2000; 86:943-949
 - ¹² ATP III Quick Guidelines At-A-Glance Quick Desk Reference Guide. <http://www.nhlbi.nih.gov/guidelines/cholesterol/atglance.pdf>. Accessed April 6, 2006
 - ¹³ Ibid.
 - ¹⁴ ATP III Quick Guidelines At-A-Glance Quick Desk Reference Guide. <http://www.nhlbi.nih.gov/guidelines/cholesterol/atglance.pdf>. Accessed April 6, 2006
 - ¹⁵ Stone, Neil J. MD; Blum, B. Conrad MD. Management of Lipids in Clinical Practice, 5th edition. West Islip, NY: Professional Communications, p. 15; 2005
 - ¹⁶ Mayo Clinic. Cholesterol, Treatments. Available at: <http://www.mayoclinic.com/health/high-blood-cholesterol/DS00178/DSECTION=7>. Accessed April 5, 2006
 - ¹⁷ Stone, Neil J. MD; Blum, B. Conrad MD. Management of Lipids in Clinical Practice, 5th edition. West Islip, NY: Professional Communications, p. 293-295; 2005
 - ¹⁸ National Heart Lung and Blood Institute. High Blood Cholesterol. Available at: http://www.nhlbi.nih.gov/health/dci/Diseases/Hbc/HBC_all.html. Accessed April 10, 2006
 - ¹⁹ Stone, Neil J. MD; Blum, B. Conrad MD. Management of Lipids in Clinical Practice, 5th edition. West Islip, NY: Professional Communications, p. 299-300; 2005
 - ²⁰ Mayo Clinic. Cholesterol, Treatments. Available at: <http://www.mayoclinic.com/health/high-blood-cholesterol/DS00178/DSECTION=7>. Accessed April 5, 2006