The Connection Between Diabetes and Heart Disease

Diabetes, high cholesterol (hyperlipidemia), high blood pressure (hypertension), and obesity all can lead to an increased occurrence of coronary artery disease (CAD). Eighty percent of patients with diabetes are obese. Obesity also contributes to high levels of cholesterol for people with diabetes.

People with diabetes have a two-to-fourfold higher risk for having cardiovascular events than nondiabetics. Up to one half of type 2 diabetics have coronary heart disease (CHD). People with diabetes are recognized as having coronary event risks comparable to individuals with established CHD.

For men between the ages of 35 and 64, diabetes mellitus increases the risk of congestive heart failure by 4 times. For women between the same ages, it increases by 8 times.

Tested by: **Alere Cholestech LDX® System**

NAME: _____

DATE: _____

FASTING:

☐ YES (No food or drink, except water, in last 9–12 hours.)

☐ NO (Fasting is required for accurate LDL values and affects interpretation of triglyceride and glucose values.)

MY RESULTS:		DESIRABLE RESULTS[1]: mg/dL	mmol/L
Total Cholesterol	_____	**TC** < 200	< 5.17
HDL	_____	**HDL** > 40	> 1.03
Triglycerides	_____	**TRG** < 150	< 1.69
LDL	_____	**LDL** < 130	< 3.36
non-HDL	_____	**non-HDL** < 160	< 4.14
TC/HDL Ratio	_____	**TC/HDL** 4.5 or less	
Glucose	_____	**GLU**[2] < 100	< 5.6
hsCRP	_____	< 3 mg/L[3]	
ALT	_____	Male 10-40 U/L	Female 7-35 U/L
AST	_____	15-40 U/L	13-35 U/L
Blood Pressure	_____	< 120 / 80 mmHg[4]	

[1]Based on NCEP ATP III
[2]Based on ADA
[3]Based on CDC/AHA
[4]Based on JNC7

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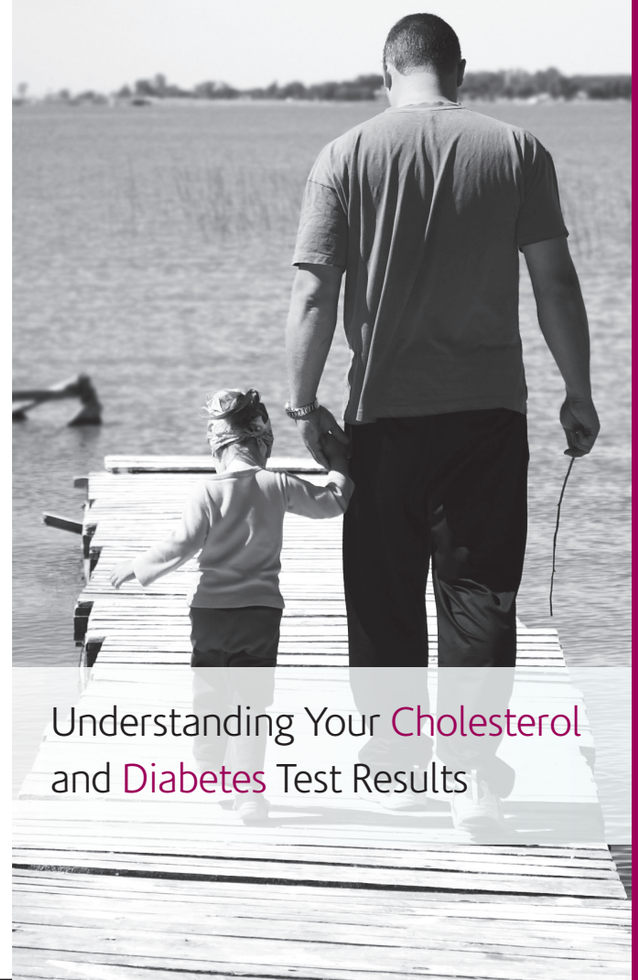
Are You at Risk?



Understanding Your Cholesterol and Diabetes Test Results

What Puts You at Risk for Coronary Heart Disease?

Risk Factors You Can't Do Anything About:

- Family History of Premature Coronary Heart Disease
- Age

Risk Factors You CAN Do Something About:

Your healthcare professional can provide advice and possible preventive treatment for many of the following risk factors.

- High LDL (Above 130 mg/dL) "Bad" Cholesterol
- Low HDL (Less than 40 mg/dL) "Good" Cholesterol
- High hsCRP (Above 3 mg/L)*
- High Blood Pressure (Above 140/90 mmHg)
- High Blood Glucose (Diabetes)
- Overweight
- Smoking
- Inactivity and Lack of Exercise
- High-Stress Environment

**Based on CDC/AHA*

Read this brochure for a detailed explanation of test results, terminology, and levels of risk.

Understanding Your Test Results

A **Lipid Profile** is a detailed measure of the fats in your blood. It consists of measuring your total cholesterol, HDL cholesterol, and triglycerides and calculating your LDL and non-HDL cholesterol.

Cholesterol is one of several components that form your lipid profile. **Total Cholesterol (TC)** is a measure of the total amount of both "good" and "bad" cholesterol in your blood at a given time.

TC is measured in milligrams per deciliter (mg/dL). A TC of less than 200 mg/dL is desirable.

The "good" cholesterol is called **High Density Lipoprotein cholesterol (HDL)**. It removes excess cholesterol from your arteries and moves it to the liver for further processing or to be eliminated from the body.

The higher your **HDL**, the better. An HDL of 60 mg/dL or higher is beneficial and considered a negative risk factor. An HDL of 40 mg/dL or lower is considered a risk factor for heart disease.

A **TC/HDL Ratio** is total cholesterol divided by HDL cholesterol. Some healthcare professionals may use this ratio to assess risk for developing heart disease — lower ratios are associated with lower risk.

Triglycerides (TRG) are composed of fatty acids and glycerol. Like cholesterol, they circulate in your blood, but are stored in body fat and used when the body needs extra energy. While your triglyceride level can be significantly affected by how recently you've eaten, total cholesterol and HDL are only slightly affected.

After eating, your **triglyceride** level increases significantly. If your body processes the fat efficiently, the level of triglycerides will decrease naturally. Your fasting triglyceride level should be below 150 mg/dL. If you were not fasting and your triglyceride level is 200 mg/dL or higher, you should have a follow-up fasting measurement.

The "bad" cholesterol is called **Low Density Lipoprotein cholesterol (LDL)**. It contributes to the buildup of fat deposits in your arteries (atherosclerosis), which can cause decreased blood flow and heart attack.

About 65% of the cholesterol in your blood is **LDL**. An LDL of less than 130 mg/dL is desirable. If you have a personal history of coronary heart disease or diabetes, or if you have multiple risk factors, your LDL should be below 100 mg/dL. Some healthcare professionals might recommend that your LDL should be below 70 mg/dL.

Non-HDL cholesterol (non-HDL) is another, broader measure of "bad" cholesterol than LDL. Non-HDL includes all the cholesterol that contributes to atherosclerosis.

The ideal **non-HDL** for you is 30 mg/dL higher than the LDL recommended for you by your healthcare professional.

Your healthcare professional will carefully examine the test results of your lipid profile to fully assess your risk for coronary heart disease.

Glucose (GLU) is a measure of the sugar level in your blood. Glucose is the basic fuel for the cells in your body, but if there is too much in your blood, it can lead to many serious health problems. Fasting glucose levels should be below 100 mg/dL. If you were not fasting and your glucose level is 200 mg/dL or higher, you should have a follow-up fasting measurement.

Other Important Tests:

High sensitivity C-Reactive Protein (hsCRP) measurement is useful as an aid in the detection and evaluation of infection, tissue injury, inflammatory disorders and associated diseases. It can help your physician predict cardiovascular outcomes independently of other conventional markers of risk.*

Alanine Aminotransferase (ALT) and **Aspartate Aminotransferase (AST)** are enzymes that are measured to determine the function of your liver. A normal ALT range is 10–40 U/L (units per liter) in males and 7–35 U/L in females. A normal AST range is 15–40 U/L in males and 13–35 U/L in females. Your ALT and AST levels will need to be monitored if you are on certain drugs to lower cholesterol, to control diabetes, or to treat various other diseases.

*Increases in CRP are nonspecific and should be interpreted in the context of a complete clinical evaluation. If elevated values are observed in an apparently healthy individual, the test should be repeated in order to help rule out a recent response to undetected infection or tissue injury.

Periodic Testing Helps You Manage Cholesterol Levels and Diabetes

National Cholesterol Education Program (NCEP) Guidelines

NCEP Guidelines recommend regular cholesterol screening with a lipid profile for all adults, as well as for children in families with cardiovascular risk factors.

Periodic lipid testing will determine whether you have met your goals or need more intensive treatment. NCEP Guidelines recommend that you test your lipids every 6 weeks until your goals are met and every 4–6 months thereafter.

American Diabetes Association (ADA) Recommendations

The ADA recommends screening to detect diabetes.

Your blood sugar levels should be checked regularly to test for diabetes if you have any of these risk factors:

- Overweight
- Physically inactive
- High blood pressure
- Prediabetes
- 45 years or older
- Family history of diabetes
- History of heart disease
- Other diabetes risk factors
- Low HDL cholesterol and/or high triglycerides
- High-risk race/ethnicity: African American, Latino, Native American, Asian American, Pacific Islander