THE CONNECTION BETWEEN DIABETES, HEART DISEASE, AND STROKE

Diabetes greatly increases the risk of heart disease and stroke. People with diabetes often have multiple risk factors for cardiovascular disease, including abnormal lipid levels (dyslipidemia), high blood pressure (hypertension), and obesity. Physical inactivity and smoking also increase risk.

These are also risk factors for people without diabetes, but having diabetes increases the risk of being hospitalized for, or dying from, heart attack or stroke nearly two times compared with people that do not have diabetes.[1] Cardiovascular disease is the primary cause of death and disability for people with diabetes.[2]

Knowing whether or not you have diabetes–or are at risk for it—is important in assessing your risk for heart disease and stroke.

Tested by: Cholestech LDX System

DETAILS

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.)

TOTAL CHOLESTEROL _____

HDL _____

TRIGLYCERIDES _____

LDL _____

NON-HDL _____

TC/HDL RATIO _____

GLUCOSE _____

CONTACT YOUR LOCAL ABBOTT REPRESENTATIVE TODAY OR VISIT ABBOTT.COM/POCT

1. Centers for Disease Control and Prevention
2. American Heart Association
3. American Heart Association/American College of Cardiology
4. American Diabetes Association

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ARE YOU AT RISK?

Understanding your cholesterol and glucose test results

WHAT PUTS YOU AT RISK FOR HEART DISEASE AND STROKE?

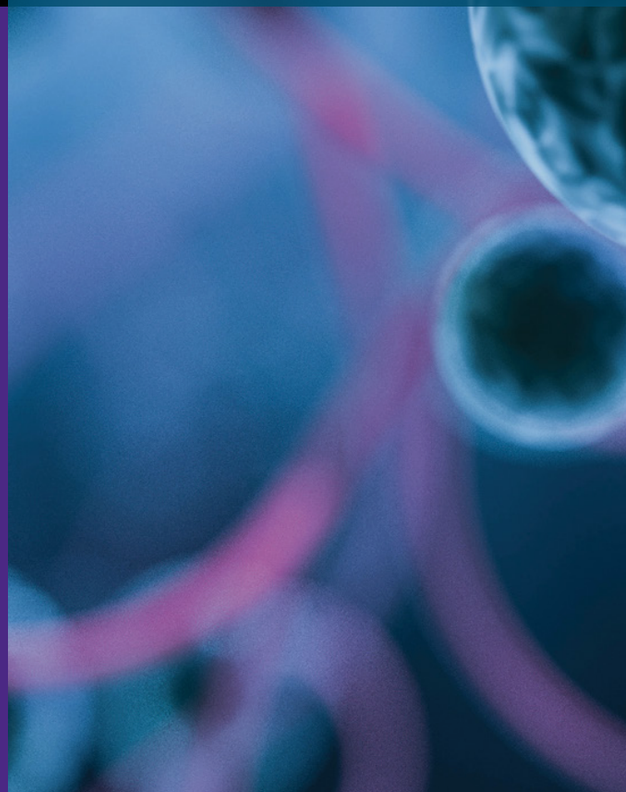
RISK FACTORS YOU CAN'T DO ANYTHING ABOUT

- Family history of premature heart disease or stroke
- Age
- Gender
- Race

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 "bad" cholesterol
- Low HDL "good" cholesterol
- High blood pressure
- High blood glucose (diabetes)
- Overweight or obese
- Smoking
- Inactivity and lack of exercise
- High-stress environment



Understanding Your Test Results

LIPID PROFILE

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).

HDL

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. A higher HDL is beneficial and considered a negative risk factor. A lower HDL is considered a risk factor for heart disease and stroke.

TC/HDL

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

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.

LDL

The "bad" cholesterol is called Low Density Lipoprotein cholesterol (LDL). It contributes to the buildup of fat deposits in your arteries (atherosclerosis), which can lead to heart disease and stroke.

If you have a personal history of coronary heart disease, stroke, or diabetes, or if you have increased risk, a healthcare professional may recommend that you lower your LDL.

NON-LDL

Non-HDL cholesterol (non-HDL) is another, broader measure of "bad" cholesterol than LDL. Non-HDL includes all the cholesterol that contributes to atherosclerosis. Some healthcare professionals may look at your non-HDL when assessing your risk for heart disease and stroke.

ASSESSING RISK

A healthcare professional can use the results of your lipid profile testing to assess your risk for heart disease or stroke. To do this, your individual test results are combined with information on any other risk factors you may have. An online calculator or mobile application, such as the ASCVD Risk Estimator from the AHA/ACC, can be used for this purpose.

GLUCOSE

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.

Periodic testing helps you identify your risk for heart disease and stroke and manage cholesterol levels and diabetes.

Guidelines & Recommendations

AMERICAN HEART ASSOCIATION (AHA) AND AMERICAN COLLEGE OF CARDIOLOGY (ACC) GUIDELINES

AHA/ACC Guidelines recommend regular risk assessment with a lipid profile for all adults. Periodic lipid testing will determine whether you have met your goals or need more intensive treatment. AHA/ACC Guidelines recommend that if you are being treated to lower your LDL you test your lipids every 4–12 weeks until your anticipated treatment response is met and every 3–12 months thereafter.

AMERICAN DIABETES ASSOCIATION (ADA) RECOMMENDATIONS

The ADA recommends assessing your risk of diabetes. Your blood sugar levels should be checked regularly to test for diabetes if you have any of these risk factors:

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

Lipid profile and glucose, reference values

Lipid values are interpreted according to clinical practice guidelines or recommendations that are subject to change over time. Interpretive information for all lipid values is not contained in a single guideline. The following information was compiled from recent guidelines or recommendations of the American College of Cardiology, American Heart Association, and National Lipid Association.

ANALYTE	mg/dL	mmol/L	CLASSIFICATION
TC	170	4.40	Optimal
HDL	50	1.29	Optimal
	<40 (men)	<1.03	Low
	<50 (women)	<1.29	Low
TRG	<150	<1.69	Normal
	150-199	1.69 – 2.25	Borderline high
	200-499	2.26 – 5.64	High
	≥500	≥5.65	Very high
LDL	<100	<2.59	Desirable
	100 – 129	2.59 – 3.34	Above desirable
	130 – 159	3.36 – 4.11	Borderline high
	160 – 189	4.14 – 4.89	High
	≥190	≥4.91	Very high
Non-HDL	<130	<3.36	Desirable
	130 – 159	3.36 – 4.11	Above desirable
	160 – 189	4.14 – 4.89	Borderline high
	190 – 219	4.91 – 5.66	High
	≥220	≥5.69	Very high

TC/HDL Ratio

Clinical practice guidelines do not comment on use of the ratio of total to HDL cholesterol. Various authors have suggested that the TC/HDL ratio is the strongest lipid risk factor and can be a useful summary of coronary heart disease risk. A ratio of 4.5 or less is desirable. A ratio of greater than 6.0 suggests a high risk of coronary heart disease.

Glucose

The American Diabetes Association has identified categories of increased risk for diabetes based upon glucose:

- Fasting plasma glucose (FPG) 100 -125 mg/dL (5.6 -6.9 mmol/L); impaired fasting glucose
- 2-hr plasma glucose in the 75-g oral glucose tolerance test (OGTT) 140 -199 mg/dL (7.8 -11.0 mmol/L); impaired glucose tolerance

For these tests, risk is continuous, extending below the lower limit of the range and becoming disproportionately greater at higher ends of the range.

The American Diabetes Association has criteria for the diagnosis of diabetes mellitus based upon glucose:[17]

- FPG ≥126 mg/dL (7.0 mmol/L). Fasting is defined as no caloric intake for at least 8 hr.
- 2-h plasma glucose ≥200 mg/dL (11.1 mmol/L) during an OGTT. The test should be performed as described by the World Health Organization, using a glucose load containing the equivalent of 75 g anhydrous glucose dissolved in water.
- In a patient with classic symptoms of hyperglycemia or hyperglycemic crisis, a random plasma glucose ≥200 mg/dL (11.1 mmol/L).

In the absence of unequivocal hyperglycemia, diagnosis should be confirmed by repeat testing. **When screening for diabetes, any abnormal glucose result should be referred to a physician for further follow-up.**