

# HDL2b

CPT Code **83701**  
Order Code **1342**  
LCD-CGS **L36139**

NCD **190.23**  
Sample Type **Serum**  
Tube Type **Tiger Top**



## Reduced HDL2b levels are associated with:

- Elevated triglyceride levels
- Insulin resistance
- Increased body mass index (BMI)

## HDL2b levels may be increased by:

- Aerobic exercise
- Moderate alcohol consumption
- Fish oil

## Description

High-density lipoprotein (HDL) cholesterol, like low-density lipoprotein (LDL) cholesterol, can be divided into several subfractions, based on density, size and protein composition. The HDL2 subfraction (HDL2a, HDL2b) consists of larger, more buoyant particles while particles in the HDL3 subfraction (HDL3a, HDL3b, HDL3c) are smaller and denser. The largest and most buoyant HDL particle is HDL2b.

One primary function of HDL particles is to promote reverse cholesterol transport, or the movement of cholesterol from the tissues to the liver for excretion. HDL is first formed in the liver as the smaller HDL3 particles. Once released, HDL3 particles travel in the blood, where they receive cholesterol by various enzymatic events, eventually resulting in the formation of HDL2b particles. Assessment of HDL2b particles may provide a more powerful measure of cardiovascular risk than other HDL2 or HDL3 subfractions, individually or combined<sup>1</sup>.

## Clinical Indication

The HDL2b test may be used for individuals at risk of diabetes or cardiovascular disease, those with cardiovascular disease or those with low total HDL levels or high triglyceride levels.

## Clinical Significance

- Elevated total cholesterol and low HDL cholesterol levels, as well as high triglyceride levels, are associated with low HDL2b levels<sup>1-4</sup>.
- Reduced HDL2b levels have been associated with insulin resistance<sup>5</sup>.
- Women tend to have higher levels of HDL2b than men, and HDL2b levels tend to decrease as a person's BMI increases<sup>6</sup>.
- HDL2b levels may be significantly increased by a combination of caloric restriction and high-intensity exercise<sup>7</sup>.

## Testing Frequency

HDL2b testing is determined by an individual's medical history, but may be performed semi-annually or annually as necessary. If the initial test result is abnormal, then follow-up testing may be performed within 3-6 months following treatment.

## Sample Type

The HDL2b test should be performed on a serum sample.

## Commercial Insurance or Medicare Coverage

Coverage guidelines, also known as NDC (National Coverage Determination) or LCD (Local Coverage Determination) have been established or posted by CMS (Medicare & Medicaid). Guidelines should be reviewed for coverage and limitations. Limited information has been provided by the majority of the larger carriers (Aetna, United Healthcare, Cigna, Blues).

## Understanding Medical Necessity

The following ICD-10 codes for HDL2b listed below, and in the Cleveland HeartLab Practitioner Guide, are provided as a convenience for the ordering physician. Additional diagnostic codes can be referenced on the CMS website or guidelines specified by insurance carriers. The ordering physician should report the diagnosis code that best describes the reason for performing the test.

Diagnosis	Diagnosis Code
Pure Hypercholesterolemia, Unspecified	E78.00
Familial Hypercholesterolemia	E78.01
Pure Hyperglyceridemia	E78.1
Mixed Hyperlipidemia	E78.2
Other Hyperlipidemia	E78.4
Hyperlipidemia, Unspecified	E78.5
Essential (primary) Hypertension	I10
Weakness	R53.1
Other Malaise	R53.81
Other Fatigue	R53.83

## REFERENCE RANGE

HDL2b  
(%)

### WOMEN

>28  
Low

18 - 28  
Moderate

<18  
High

### MEN

>26  
Low

18 - 26  
Moderate

<18  
High

## Treatment Considerations

*These treatment considerations are for educational purposes only. Specific treatment plans should be provided and reviewed by the treating practitioner.*

### ✓ Assess HDL-C levels.

- Assess coenzyme Q10 (CoQ10) levels as evidence suggests that low apolipoprotein A1 (ApoA1) and/or high-density lipoprotein-cholesterol (HDL-C) levels are associated with low CoQ10 levels<sup>9</sup>.

### ✓ Assess risk for pre-diabetes/diabetes.

### ✓ Assess smoking habits.

*NOTE: Smoking cessation is essential as individuals who smoke are at increased risk of heart disease and blood clots.*

### ✓ Assess triglyceride levels.

- If triglyceride levels are not at goal, first consider fasting status at time of blood draw, risk of pre-diabetes/diabetes, alcohol intake, thyroid status, renal function, smoking status, or pregnancy.
- If the aforementioned have been addressed and triglycerides remain high, consider fenofibrate, omega-3 fatty acids, niacin, statins, or combination therapy if not contraindicated.

### ✓ Assess the presence of coronary artery disease (CAD) with imaging techniques such as carotid intima-media thickness (CIMT) testing or coronary artery calcium (CAC) scoring.

- Consider aspirin therapy if not contraindicated.
- Consider clopidogrel if history of CAD (i.e., myocardial infarction or revascularization) and/or a history of cerebrovascular disease (i.e., transient ischemic attack or stroke).

### ✓ Assess lifestyle habits.

- Consider diet/exercise/weight reduction efforts if appropriate.

## References

1. Johansson J et al. High density lipoproteins and coronary atherosclerosis. A strong inverse relation with the largest particles is confined to normotriglyceridemic patients. *Arterioscler Thromb.* 1991; 11: 174-182.
2. Yang Y et al. Relationship between plasma lipid concentrations and HDL subclasses. *Clin Chim Acta.* 2005; 354: 49-58.
3. Tian L et al. Characteristics of high-density lipoprotein subclasses distribution for subjects with desirable total cholesterol levels. *Lipids in Health and Disease.* 2011; 10: 64-72.
4. Jia L et al. Alterations of high-density lipoprotein subclasses in hypercholesterolemia and combined hyperlipidemia. *Int J Cardiol.* 2007; 120: 331-337.
5. Tilly-Kiesi M et al. Hyperinsulinemia and insulin resistance are associated with multiple abnormalities of lipoprotein subclasses in glucose-tolerant relatives of NIDDM patients. *J Lipid Res.* 1996; 37: 1569-1578.
6. Williams PT et al. Associations of age, adiposity, alcohol intake, menstrual status, and estrogen therapy with high-density lipoprotein subclasses. *Arterioscler Thromb.* 1993; 13: 1654-1661.
7. Williams PT et al. Effects of low-fat diet, calorie restriction, and running on lipoprotein subfraction concentrations in moderately overweight men. *Metabolism.* 1994; 43: 655-663.
8. Toyama K. et al. Rosuvastatin combined with regular exercise preserves coenzyme Q10 levels associated with a significant increase in high-density lipoprotein cholesterol in patients with coronary artery disease. *Atherosclerosis.* 2001; 217: 158-164.

