



HDL Function Panel with HDLfx pCAD Score (HDLfx Test)

CPT Code **82172 x5***

Order Code **37812**

Specimen Type **Serum**

Tube Type **Gel-barrier tube (SST, Tiger Top)**

The HDLfx test evaluates:

- HDL function
- Risk of coronary artery disease (CAD) by the pCAD score

Importance of HDL function:

- More informative for cardiovascular disease (CVD) risk than HDL-C levels
- Identifies risk for presence of atherosclerosis and cardiovascular events

Description

HDL cholesterol particles are considered to be cardioprotective because of their anti-atherogenic properties, which include increasing reverse cholesterol transport, promoting endothelial nitric oxide production, and anti-inflammatory and antithrombotic effects.¹⁻³ Low HDL-C, a component of metabolic syndrome, is predictive of cardiovascular risk, but clinical trials have shown therapeutically increased HDL-C levels do not reduce rates of cardiovascular events.⁴⁻⁶ These findings led to an understanding that the physiological impact of HDL may be dependent on its functionality, more so than low or high HDL-C levels.^{7,8} The importance of HDL function to CVD is highlighted by findings that patients who have the highest cholesterol efflux capacity (CEC), a marker of HDL function, have a 67% reduction in cardiovascular risk compared to the lowest quartile CEC.⁹

The HDLfx test enables high-throughput and rapid assessment of HDL function.¹⁰ It measures 5 proteins bound to apoA1-associated lipoprotein particles (AALPs) that are used to calculate the HDLfx pCAD score, which correlates with traditional measures of CEC.¹¹ The HDLfx pCAD score is also clinically validated to predict CAD risk.¹²

Clinical Use

Through assessment of HDL function, the HDLfx test provides additional information about CVD risk. A better understanding of HDL function will add clinical value to the assessment of HDL-C and provide additional insight into CVD risk that is not evident with HDL-C levels alone. The HDLfx test is appropriate for patients who have 1 or more risk factors for the development of CVD.

Clinical Significance

HDLfx Test Subcomponents [‡]	Clinical Significance
AALP ApoA-1	Decreased serum levels are associated with CHD ¹³
AALP ApoC-1	Decreased levels in HDL particles of patients with CHD ¹⁴
AALP ApoC-2	Elevated serum levels in patients with CHD ¹⁵
AALP ApoC-3	Elevated levels in HDL particles of patients with CAD ¹⁶
AALP ApoC-4	Elevated levels in HDL particles of patients with CAD ¹⁷

The HDLfx pCAD score is calculated from subcomponents of the HDLfx test and has been validated in clinical studies to identify:

- Patients with CAD, independent of conventional CV risk factors¹²
- Female patients with increased risk of myocardial infarction within 1 to 2 years¹¹
- Increased risk of cardiovascular death among those with CAD over a 4-year follow-up¹²

RELATIVE RISK

HDLfx pCAD Score

≤0.90
Low

>0.90
High

Based on a population of patients diagnosed with CAD (defined as having a coronary lesion consistent with 50% blockage or more; N=149) and a study control group of healthy individuals without CAD (N=69), a pCAD score greater than 0.90 indicates high risk for having atherosclerosis with a clinical sensitivity of 76% and clinical specificity of 75%. Case and control samples were selected from the Fairbanks Institute for Healthy Communities biobank cardiovascular disease study with analysis performed by Cleveland HeartLab.

Treatment Considerations[§]

These treatment considerations are for educational purposes only. Specific treatment plans should be provided and reviewed by the treating practitioner. Therapies that improve CEC or levels of subcomponents of the HDLfx test may improve the HDLfx pCAD score and CAD risk, but further studies are needed to confirm. Most therapies do not directly target CEC, and findings may be confounded by other medications, patient characteristics, or the CEC evaluation test used.

✓ Treatment considerations for CEC

- AALP ApoA-1 therapeutics improve CEC¹⁸
- Niacin has minimal effects on CEC¹⁸
- Fibrates may increase CEC¹⁸
- Statins minimally affect or decrease CEC¹⁸
- Diet and exercise may improve CEC, but more investigation is needed¹⁸
- Omega-3 fatty acids may improve CEC^{19,20}

**The CPT codes provided are based on AMA guidelines and are for informational purposes only. CPT coding is the sole responsibility of the billing party. Please direct any questions regarding coding to the payer being billed.*

‡ Panel components may be ordered separately: AALP Apolipoprotein A1 order code 37838; AALP Apolipoprotein C1 order code 37864; AALP Apolipoprotein C2 order code 37865; AALP Apolipoprotein C3 order code 37866; AALP Apolipoprotein C4 order code 37867.

§ The treatment considerations are provided for informational purposes only and are not intended as medical advice. A physician's test selection and interpretation, diagnosis, and patient management decisions should be based on his/her education, clinical expertise, and assessment of the patient.

References

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