

Cholesterol, Low-Density Lipoprotein (LDL), Calculated, Serum

### Overview

### **Useful For**

Calculation of low-density lipoprotein cholesterol using total cholesterol, non-high-density lipoprotein (HDL) cholesterol, HDL cholesterol, and triglyceride concentrations

Managing atherosclerotic cardiovascular disease risk

#### Method Name

Only orderable as part of a profile. For more information see LPSC1 / Lipid Panel, Serum

#### Calculation

### NY State Available

Yes

### Specimen

Specimen Type Serum

#### **Specimen Required**

Only orderable as part of a profile. For more information see LPSC1 / Lipid Panel, Serum

### Reject Due To

Gross	Reject
hemolysis	

### **Specimen Stability Information**

Specimen Type	Temperature	Time	Special Container
Serum	Refrigerated (preferred)	7 days	
	Frozen	30 days	

### **Clinical & Interpretive**

# **Clinical Information**



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Lipoprotein cholesterol measurements are essential in managing risk for atherosclerotic cardiovascular disease (ASCVD). Atherosclerosis is defined by a buildup of plaque within arterial walls. ASCVD includes coronary heart disease, strokes, and peripheral artery disease. ASCVD develops over decades and is often asymptomatic until the patient experiences a life-threatening event such as a heart attack, stroke, or aneurysm.

Low-density lipoprotein cholesterol (LDL-C) is the primary lipoprotein responsible for atherogenic plaque. Very low-density lipoprotein cholesterol (VLDL-C) is also atherogenic and the combination of LDL-C and VLDL-C is called non-high-density lipoprotein (HDL) cholesterol. Serum LDL-C and non-HDL cholesterol are directly associated with risk for ASCVD and often referred to as "bad" cholesterol. HDL-C is often referred to as "good" cholesterol because HDL-C concentrations are inversely related to ASCVD risk.

Adjusted LDL-C calculations, like the Sampson/NIH equation, are endorsed by multiple guidelines as being more accurate when triglycerides are greater than 150 mg/dL and/or LDL-C is less than 70 mg/dL.

### **Reference Values**

Only orderable as part of a profile. For more information see LPSC1 / Lipid Panel, Serum

The National Lipid Association and the National Cholesterol Education Program have set the following guidelines for lipids in a context of cardiovascular risk for adults 18 years old and older: LDL CHOLESTEROL Desirable: <100 mg/dL Above Desirable: 100-129 mg/dL Borderline High: 130-159 mg/dL High: 160-189 mg/dL Very High: > or =190 mg/dL

The Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents has set the following guidelines for lipids in a context of cardiovascular risk for children 2 to 17 years old:

LDL CHOLESTEROL Acceptable: <110 mg/dL Borderline High: 110-129 mg/dL High: > or =130 mg/dL Reference values have not been established for patients who are younger than 24 months of age.

### Interpretation

Maintaining desirable concentrations of lipids lowers atherosclerotic cardiovascular disease risk. Establishing appropriate treatment strategies and lipid goals require that blood lipid values be considered in context with other risk factors including, age, sex, smoking status, and medical history of hypertension, diabetes, and cardiovascular disease.

Low-density lipoprotein cholesterol results of 190 mg/dL or above in adults (> or =160 mg/dL in children) are severely elevated and may indicate familial hypercholesterolemia.

### Cautions

Calculated low-density lipoprotein cholesterol (LDL-C) is not applicable when triglyceride level is above 800 mg/dL.



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Consider repeat measurement of LDL-C prior to initiating or changing lipid therapy.

### **Clinical Reference**

 Grundy SM, Stone NJ, Bailey AL, et al: 2018 AHA/ACC/AACVPR/AAPA/ABC/ACPM/ADA/AGS/APhA/ASPC/NLA/PCNA Guideline on the Management of Blood Cholesterol: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Circulation. 2019 Jun 18;139(25):e1082-e1143
Jacobson TA, Ito MK, Maki KC, et al: National Lipid Association recommendations for patient-centered management of dyslipidemia: Part 1-executive summary. J Clin Lipidol. 2014;8(5):473-488. doi: 10.1016/j.jacl.2014.07.007
Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents; National Heart, Lung, and Blood Institute. Expert panel on integrated guidelines for cardiovascular health and risk reduction in children and adolescents: summary report. Pediatrics. 2011 Dec;128 Suppl 5(Suppl 5):S213-S256. doi: 10.1542/peds.2009-2107C

4. Sampson M, Ling C, Sun Q, et al: A new equation for calculation of low-density lipoprotein cholesterol in patients with normolipidemia and/or hypertriglyceridemia. JAMA Cardiol. 2020 May 1;5(5):540-548

# Performance

### Method Description

The low-density lipoprotein (LDL) cholesterol concentration is calculated from total cholesterol (TC), triglyceride (TG), and high-density lipoprotein cholesterol (HDLc) concentrations, according to the following formula by National Institutes of Health.

LDL =

ТС	_ HDLc _ (	TG +	TG*nonHDLc	_ TG(2)	) - 9.44
0.948	0.971	8.56	2140	16,100	

nonHDLc = Non-HDL cholesterol = TC – HDLc

This calculation is performed in the laboratory information system, SCC Soft.

### **PDF Report**

No

### Day(s) Performed Monday through Saturday

### **Report Available**

1 day

# Specimen Retention Time

1 week

# **Performing Laboratory Location**



Cholesterol, Low-Density Lipoprotein (LDL), Calculated, Serum

Rochester

# Fees & Codes

### Fees

- Authorized users can sign in to <u>Test Prices</u> for detailed fee information.
- Clients without access to Test Prices can contact <u>Customer Service</u> 24 hours a day, seven days a week.
- Prospective clients should contact their account representative. For assistance, contact Customer Service.

### **Test Classification**

Not Applicable

### LOINC<sup>®</sup> Information

Test ID	Test Order Name	Order LOINC <sup>®</sup> Value
CLDL1	Cholesterol, LDL, Calculated, S	No LOINC Needed

Result ID	Test Result Name	Result LOINC <sup>®</sup> Value
CLDL1	Cholesterol, LDL, Calculated, S	13457-7