MAYO CLINIC LABORATORIES

Test Definition: CHOL

Cholesterol, Total, Serum

Overview

Useful For
Evaluation of cardiovascular risk

Method Name
Colorimetric

NY State Available
Yes

Specimen

Specimen Type
Serum

Specimen Required
Collection Container/Tube:
Preferred: Serum gel
Acceptable: Red top
Submission Container/Tube: Plastic vial
Specimen Volume: 0.5 mL
Collection Instructions:
1. Serum gel tubes should be centrifuged within 2 hours of collection.
2. Red-top tubes should be centrifuged and the serum aliquoted into a plastic vial within 2 hours of collection.

Forms
If not ordering electronically, complete, print, and send 1 of the following forms with the specimen:
-Kidney Transplant Test Request
-Cardiovascular Test Request (T724)

Specimen Minimum Volume
0.25 mL

Reject Due To

Gross hemolysis	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum	Refrigerated (preferred)	7 days	
	Frozen	90 days	

Clinical & Interpretive

Clinical Information

Cholesterol is a lipid that is synthesized in most tissues and actively absorbed from the diet. There is a strong association between serum cholesterol concentrations and cardiovascular disease. Cholesterol is carried in the blood by lipoproteins. Some lipoproteins carry a stronger risk of cardiovascular disease while others are associated with reduced cardiovascular risk. Total cholesterol concentration includes the sum of all "good" and "bad" cholesterol. Therefore, total cholesterol is recommended to be interpreted in context of a lipid panel that includes high-density lipoprotein cholesterol and triglyceride measures.

Low levels of cholesterol can be seen in disorders that include hyperthyroidism, malabsorption, and deficiencies of apolipoproteins.

Reference Values

The National Lipid Association and the National Cholesterol Education Program have set the following guidelines for lipids in a context of cardiovascular disease for adults 18 years old and older:

TOTAL CHOLESTEROL
Desirable: <200 mg/dL
Borderline High: 200-239 mg/dL
High: > or =240 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 disease for children 2 to 17 years of age:

TOTAL CHOLESTEROL
Acceptable: <170 mg/dL
Borderline High: 170-199 mg/dL
High: > or =200 mg/dL

Reference values have not been established for patients who younger than 24 months of age.

Interpretation

The National Lipid Association and the National Cholesterol Education Program (NCEP) have set the following guidelines for total cholesterol:

Desirable: <200 mg/dL
Borderline High: 200 to 239 mg/dL
High: > or =240 mg/dL

The recommended clinical decision points of 200 mg/dL and 240 mg/dL total cholesterol correspond to the 50th percentile and 90th percentile of healthy U.S. adults, respectively.

Values in hyperthyroidism usually are in the lower normal range; malabsorption values may be below 100 mg/dL, while apolipoprotein B deficiency values usually are below 80 mg/dL.

Cautions

Result can be falsely decreased in patients with elevated levels of N-acetyl-p-benzoquinone imine (NAPQI, a metabolite of acetaminophen), N-acetylcysteine (NAC), and metamizole.

Clinical Reference

1. 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. doi: 10.1161/CIR.0000000000000625

2. 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

3. 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

Performance

Method Description

Cholesterol esters are cleaved by the action of cholesterol esterase to yield free cholesterol and fatty acids. Cholesterol oxidase then catalyzes the oxidation of cholesterol to cholest-4-en-3-one and hydrogen peroxide. In the presence of peroxidase, the hydrogen peroxide formed effects the oxidative coupling of phenol and 4-aminophenazone to form a red quinone-imine dye. The color intensity of the dye formed is directly proportional to the cholesterol concentration. It is determined by measuring the increase in absorbance.(Package insert: Cholesterol Gen2 Reagent. Roche Diagnostics; 09/2023)

PDF Report

No

Day(s) Performed

Monday through Sunday

Report Available

Same day/1 day

Specimen Retention Time

1 week

Performing Laboratory Location

Mayo Clinic Laboratories - Rochester Main Campus

Fees & Codes

Fees

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

Test Classification

This test has been cleared, approved, or is exempt by the US Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information

82465

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
CHOL	Cholesterol, Total, S	2093-3

Result ID	Test Result Name	Result LOINC® Value
CHOL	Cholesterol, Total, S	2093-3