Test Definition: CVRMP

Cardiovascular Risk Marker Panel, S

Overview

Useful For

Assessment for risk of developing cardiovascular disease, major adverse cardiovascular events, or ischemic cerebrovascular events

Profile Information

Test ID	Reporting Name	Available Separately	Always Performed
NOHDL	Non-HDL Cholesterol	No	Yes
CALDL	Calculated LDL	No	Yes
HDCDC	HDL Cholesterol, CDC, S	Yes, (order HDCH)	Yes
TCCDC	Cholesterol, Total, CDC, S	Yes, (order CHOL)	Yes
TGCD1	Triglycerides, Total, CDC, S	Yes, (order TRIG)	Yes
CVINT	Interpretation	No	Yes
LIPA	Lipoprotein (a), S	Yes	Yes
HSCRP	C-Reactive Protein, High Sens, S	Yes	Yes

Special Instructions

- Lipids and Lipoproteins in Blood Plasma (Serum)

Method Name

LIPA, HSCRP: Automated Turbidimetric Immunoassay

TCCDC, TGCD1, HDCDC, NOHDL, CALDL: Selective Precipitation/Enzymatic Colorimetry/Friedewald Equation

NY State Available

Yes

Specimen

Specimen Type

Serum

Specimen Required

Patient Preparation:

1. Patients must be fasting for at least 12 to 14 hours.

2. Patient must not consume any alcohol for 24 hours before the specimen is drawn.

Container/Tube: Serum gel

Specimen Volume:2.5 mL

Forms

If not ordering electronically, complete, print, and send a Cardiovascular Test Request Form (T724) with the specimen.

Specimen Minimum Volume

1.25 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	Reject
Gross icterus	Reject

Specimen Stability Information

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

Clinical and Interpretive

Clinical Information

Cardiovascular disease is the number 1 cause of death in the United States with an estimated 1.5 million heart attacks and 0.5 million strokes occurring annually. Many of these events occur in individuals who have no prior symptoms. Standard risk factors, including age, smoking status, hypertension, diabetes, cholesterol, and HDL cholesterol, predict only about 65% of individuals who will go on to have a cardiovascular event. Therefore, identification of patients with residual risk is important to target lifestyle and pharmaceutical intervention to those at higher risk of future events.

Many additional risk markers have been identified for cardiovascular disease but few have emerged as independent risk markers. Two of these additional risk markers, high-sensitivity C-reactive protein (hsCRP) and lipoprotein (a) (Lp[a]), are clearly shown to be independently associated with increased risk of future cardiovascular events. Several recent guidelines have suggested that clinicians utilize hsCRP and Lp(a) in selected persons to augment risk classification, guide intensity of risk-reduction therapy and modulate clinical judgment when making therapeutic decision.(1-3) Prospective studies assessing these risk factors individually have determined them to be independently associated with increased risk for the development of ischemic events.

Guidelines recommend measurement of additional risk markers in individuals who are at intermediate risk for developing cardiovascular disease, those with early atherosclerosis without explanation by abnormalities of traditional risk factors, and those with a strong family history of cardiovascular disease without the presence of traditional risk factors.

Reference Values

Reference values apply to fasting specimens only.

Age	2-17 years	>18 years
Non-HDL Cholesterol (mg/dL)	** Acceptable: <120 Borderline high: 120-144 High: > or =145	* Desirable: <130 mg/dL Above Desirable: 130-159 mg/dL Borderline high: 160-189 mg/dL High: 190-219 mg/dL Very high: > or =220 mg/dL
LDL Cholesterol (mg/dL)	** Acceptable: <110 Borderline high: 110-129 High: > or =130	*** Desirable: <100 Above Desirable: 100-129 Borderline high: 130-159 High: 160-189 Very high: > or =190
HDL Cholesterol (mg/dL)	** Low: <40 Borderline low: 40-45 Acceptable: > 45	*** Males: > or =40 Females: > or =50
Total Cholesterol (mg/dL)	** Acceptable: <170 Borderline high: 170-199 High: > or =200	* Desirable: < 200 Borderline high: 200 - 239 High: > or = 240

LIPOPROTEIN (a) (mg/dL)		< or =30 mg/dL Values >30 mg/dL may suggest increased risk of coronary heart disease.	< or =30 mg/dL Values >30 mg/dL may suggest increased risk of coronary heart disease.
C-REACTIVE PROTEIN HIGH SENSITIVITY		* Lower risk: <2.0 mg/L Higher risk: >=2.0 mg/L Acute inflammation: >10.0 mg/L	* Lower risk: <2.0 mg/L Higher risk: >=2.0 mg/L Acute inflammation: >10.0 mg/L
Age	2-9 years	10-17 years	>18 years
Triglycerides (mg/dL)	** Acceptable: <75 Borderline high: 75-99 High: > or =100	** Acceptable: <90 Borderline high: 90-129 High: > or =130	* Normal: <150 Borderline high: 150-199 High: 200-499 Very high: > or =500

*National Lipid Association 2014

**Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents

***National Cholesterol Education Program (NCEP)

Interpretation

Specific interpretations are provided based on lipid results according to Mayo Clinic care process models. Mayo Clinic has adopted the National Lipid Association classifications, which are included as reference values on Mayo Clinic and Mayo Clinic Laboratories reports (see Reference Values).

More aggressive treatment strategies may be pursued in patients determined to be at increased risk.

See Lipids and Lipoproteins in Blood Plasma (Serum) in Special Instructions.

Cautions

Lipid values should be considered in the context of clinical presentation. Additional risk factors include cigarette smoking, hypertension, age and personal or family history of cardiovascular disease.

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. 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 Sep-Oct;8(5):473-488

2. Perk J, DeBacker G, Gohlke H, et al: European Guidelines on cardiovascular disease prevention in clinical practice. Eur Heart J 2012;33:1635-1701

3. Goff DC, Lloyd-Jones DM, Gennett G, et al: 2013 ACC/AHA Guideline on the Assessment of Cardiovascular Risk. Circulation 2014;129:S49-S73

4. 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. Pediatrics 2011;128;S213-S256

5. Ridker PM, Rifai N, Rose L, et al: Comparison of C-reactive protein and low-density lipoprotein cholesterol levels in the prediction of first cardiovascular events. N Engl J Med 2002 Nov 14;347(20):1557-1565

6. Ridker PM, Danielson E, Fonseca FA, et al: Reduction in C-reactive protein and LDL cholesterol and cardiovascular event rates after initiation of rosuvastatin: a prospective study of the JUPITER trial. Lancet 2009;373:1175Ã¢â‚¬â€œ1182

Performance

Method Description

Non-HDL Cholesterol:

The non-HDL cholesterol is calculated from serum cholesterol and high-density cholesterol.

Non-HDL=Cholesterol - HDL.(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 Sep-Oct;8[5]:473-488)

Low-Density Lipoprotein (LDL) Cholesterol:

The LDL cholesterol is calculated from serum cholesterol, serum triglycerides, and high-density cholesterol according to the following formula by Friedewald, et al.(Friedewald WT, Levy RI, Fredrickson DS: Estimation of the concentration of low-density lipoprotein cholesterol in plasma, without use of the preparative ultracentrifuge. Clin Chem 1972 June;18[6]:499-502)

LDL=Cholesterol - HDL - (Triglycerides/5)

HDL Cholesterol:

HDL cholesterol is performed by selective precipitation and enzymatic/colorimetric method. In the presence of certain polyanions and certain divalent cations in carefully controlled concentrations, the chylomicrons, very low-density lipoproteins (VLDLs), LDLs, and lipoprotein (a) (Lp[a]) form precipitates, while the HDL remains in solution. Treating a sample of serum with carefully measured amounts of polyanionic (dextran sulfate or heparin) and divalent cationic (calcium or manganese) reagents followed by the measurement of cholesterol in the resulting supernatant fluid provides an accurate determination of the serum concentration of HDL cholesterol. The method is referenced to the

Center of Disease Control standardized method.(Package insert: HDL Cholesterol Precipitating Reagent Set [Dextran Sulfate], Pointe Scientific, Canton, MI; package insert: Roche Cholesterol Reagent, Roche Diagnostics Corp, Indianapolis)

Cholesterol:

Cholesterol is measured by an automated enzymatic method. The reagents include cholesterol ester hydrolase, cholesterol oxidase, and a coupled colorimetric end-point chemistry system. The method is referenced to the Centers of Disease Control standardized method.(Package insert: Roche Cholesterol Reagent, Roche Diagnostics Corp, Indianapolis)

Triglycerides:

Serum triglycerides are measured by an automated enzymatic method. The chemistry includes hydrolysis of the triglycerides and phosphorylation of the resulting glycerol. The method is referenced to the Center of Disease Control standardized method.(Package insert: Roche Triglyceride Reagent, Roche Diagnostics Corp, Indianapolis)

Lipoprotein (a) Lp(a):

Serum Lp(a) test uses an automated turbidimetric immunoassay method. Serum is first incubated with a polymeric enhancer. Following initial incubation and measurement of specimen blank, undiluted antiserum specific to human Lp(a) is added. The specimen solution is mixed and insoluble antigen-antibody complexes begin to form. The complexes that form produce turbidity in the mixture and increase the amount of light scatter. The decrease in percent transmittance of light is measured and is proportional to the amount of Lp(a) in the specimen.(Package insert: Roche Tina-quant Lipoprotein (a), Roche Diagnostics Corp, Indianapolis)

C-Reactive Protein (CRP):

The quantitative determination of high sensitivity CRP (hs-CRP) is achieved by latex particle-enhanced immunoturbidimetric assay. Latex particles coated with antihuman CRP antibodies aggregate in the presence of serum CRP, forming immune complexes. The formed immune complexes cause increased turbidity, which is proportional to the concentration of CRP in the serum. The sample hs-CRP concentration is determined by comparison to hs-CRP standards of known concentration.(Package insert: Roche Cardiac C-Reactive Protein [Latex] High Sensitive, Roche Diagnostics Corp, Indianapolis)

PDF Report

No

Day(s) and Time(s) Test Performed

Monday through Friday; Continuously

Analytic Time

Same day/1 day

Maximum Laboratory Time

2 days

Specimen Retention Time

7 days

Performing Laboratory Location

Rochester

Fees and 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 Regional Manager. For assistance, contact Customer Service.

CPT Code Information

80061-Lipid panel (includes: HDL [CPT Code 83718], total cholesterol [CPT Code 82465], and triglycerides [CPT Code 84478])

83695-Lipoprotein (a)

86141-C-reactive protein; high sensitivity (hsCRP)

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
CVRMP	Cardiovascular Risk Marker Panel, S	In Process

Result ID	Test Result Name	Result LOINC Value
NOHDL	Non-HDL Cholesterol	43396-1
CVINT	Interpretation	59462-2
TCCDC	Cholesterol, Total, CDC, S	2093-3
TGCD1	Triglycerides, Total, CDC, S	2571-8
HDCDC	HDL Cholesterol, CDC, S	2085-9
HSCRP	C-Reactive Protein, High Sens, S	30522-7
LIPA	Lipoprotein (a), S	10835-7
CALDL	Calculated LDL	13457-7