bostonheart diagnostics®

FINAL REPORT

Patient
Name:
DOB:
Patient ID:
ACC/AHA Risk Score:
Patient Info:
Gender: M
Fasting: Yes
BMI:

Provider
Provider:
Account No:

Specimen
Accession No:
Requisition No:
Report Date & Time:
Received Date & Time:
Collection Date & Time:

Boston Heart CVMap

Test Name	Optimal	Borderline	Increased Risk	Footnotes	Previous Results
Lipid Tests					
Total Cholesterol		210			
	<200	200-240	>240 mg/dL		
Direct LDL-C	80				
	<100	100-160	>160 mg/dL		
HDL-C		47			
	>50	40-50	<40 mg/dL		
Triglycerides		151			
	<150	150-200	>200 mg/dL		
Non-HDL-C		163			
	<130	130-190	>190 mg/dL		
ApoB	79				
	<80	80-120	>120 mg/dL		
LDL-P[1]	1134			9	
	<1200	1200-1800	>1800 nmol/L		
HDL-P[1]		42.8			
	>44.0	34.0-44.0	<34.0 umol/L		
sdLDL-C	20				
	<25	25-49	>49 mg/dL		
%sdLDL-C		25			
	<20	20-30	>30 %		
VLDL-C			83		
	<30	30-40	>40 mg/dL		
Lp(a)		42			
	<30	30-50	>50 mg/dL		
Lipid Ratios					
TC/HDL-C		4.5			
	<4	4-6	>6		
VLDL-C/TG			0.55		
	<0.2	0.2-0.3	>0.3		
HDL-C/TG		0.31			
	>0.5	0.25-0.5	<0.25		

Boston Heart Cholesterol Balance® Test[1]

Normalized Value (µmol x 100/mmol of Total Cholesterol)
Absolute Value (mg/L)

	Normalized Value	Absolute Value	Footnotes
Production Markers: BORDERLINE			
Lathosterol (85 – 125)	100	2.1	10
Desmosterol (65 – 75)	96	2.0	10
Absorption Markers: LOW			
Beta-sitosterol (115 – 155)	67	1.5	10
Campesterol (170 – 230)	78	1.7	10
Cholesterol Balance Score (Production/Absorption)	1.4		10

Over Absorber (0.2 – 0.5 – 1.1) Over Producer

Interpretation: Elevated levels of Lathosterol and Desmosterol indicate an increased cellular production of cholesterol. Desmosterol accounts for a minor portion (20%) of overall cholesterol production.

Consideration: Consider lifestyle modification and statin therapy.

Test Name	Optimal	Borderline	Increased Risk	Footnotes	Previous Results
NMR Lipid Tests					
Small LDL-P[1]	304				
	<450	450-950	>950 nmol/L		
Large HDL-P[1]		11.0			
	>11.1	4.8-11.1	<4.8 umol/L		
Large VLDL-P[1]		2.1			
	<2.0	2.0-4.7	>4.7 nmol/L		

Test Name	Optimal	Borderline	Increased Risk	Footnotes	Previous Results
Inflammation and Oxidation Tests					
hs-CRP		1.0			
	<1.0	1.0-3.0	>3.0 mg/L		
$LpPLA_2$ Activity	175				
	<180	180-224	≥225 nmol/min/mL		

Interpretation: BORDERLINE hs-CRP may indicate inflammation and may be associated with increased CVD risk.

Consideration: Consider evaluating potential contributing CVD risk factors. Identify and treat underlying causes such as atherogenic lipoproteins. If indicated, control blood pressure, encourage smoking cessation and weight reduction.

Notes

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Longitudinal section for comparison purposes only. Refer to the previous reports for complete results.*

Test Name	11.30.2023 (Most Recent)
Lipid Tests	
Total Cholesterol	210
Direct LDL-C	80
HDL-C	47
Triglycerides	151
Non-HDL-C	163
ApoB	79
LDL-P[1]	1134
HDL-P[1]	42.8
sdLDL-C	20
%sdLDL-C	25
VLDL-C	83
Lp(a)	42
Lipid Ratios	
TC/HDL-C	4.5
VLDL-C/TG	0.55
HDL-C/TG	0.31
Boston Heart Cholesterol Balance® Test[1]	
Lathosterol	100
Desmosterol	96
Beta-sitosterol	67
Campesterol	78
NMR Lipid Tests	
Small LDL-P[1]	304
Large HDL-P[1]	11.0
Large VLDL-P[1]	2.1
Inflammation and Oxidation Tests	
hs-CRP	1.0
$LpPLA_2$ Activity	175

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Treatment Consideration Summary

The intended use of this report is to provide an aid in the physician's treatment decisions. This report is intended for a physician or other qualified health care provider. Please consult with your physician regarding any questions.

	Lifestyle and Dietary Modification	Statins	Fibrates	Omega-3 Fatty Acids	Aspirin	Soluble Fiber Supplements	Bile Acid Sequestrants
Lipids							
HDL-C	•	•	•	•			•
Triglycerides	•	•	•	•		•	
Non-HDL-C	•	•	•	•			•
Lp(a)					•		
Cholesterol Balance Test							
Production Markers	•	•					
Inflammation Tests							
hs-CRP	•	•		•			

Lifestyle and Dietary Modification

Therapeutic lifestyle change is the cornerstone for reducing risk for Cardiovascular Disease (CVD) and diabetes.

The following recommendations are based on the American Heart Association's dietary and lifestyle guidelines. Consume a dietary pattern that achieves ≤6% of calories from saturated fat and emphasizes intake of vegetables, fruits and whole grains; includes low-fat dairy products, poultry, fatty fish, legumes, non-tropical vegetable oils and nuts; and limits intake of refined grains, sweets, sugar-sweetened beverages and red meats. Eliminate foods high in trans fat.

If indicated: control blood pressure, reduce weight, engage in smoking cessation and be physically active — work up to getting at least 30 minutes of a moderate intensity physical activity, at least 5 days per week.

- Elevated production markers indicate an increased cellular production of cholesterol which may be associated with obesity and metabolic syndrome. Therapeutic lifestyle changes focus on LDL-C reduction through weight loss and decreased intake of animal fat, refined carbohydrates, sweets and sugar-sweetened beverages.
- To increase HDL-C and to decrease non-HDL-C levels it is important to reduce saturated fat intake, refined carbohydrates, sugars and eliminate trans fats.
- To lower triglycerides reduce intake of simple carbohydrates and alcohol and if indicated reduce weight and increase physical activity. Triglycerides are utilized for fat storage or for energy. Elevated levels may increase CVD risk by altering lipoprotein metabolism by increasing the formation of small dense LDL particles and lowering levels of large HDL particles.

Statins

According to studies, statins have been shown to reduce cholesterol production, increase LDL clearance and lower the risk of CVD and its progression. Statins can lower CoQ10 levels.

Statins:
- may be effective in reducing cholesterol production and LDL cholesterol levels but also may increase absorption of cholesterol.
- may raise HDL-C by 5-10%; may lower non-HDL cholesterol; may decrease triglycerides by 10-50%. Triglycerides are utilized for fat storage or for energy. Elevated levels increase CVD risk and alter lipoprotein metabolism by increasing the formation of small dense LDL particles and lowering levels of large HDL particles.
- lowering CRP with statin therapy has been shown to lower CVD events. Elevated CRP may indicate inflammation and CVD risk.

Fibrates

For patients unable to tolerate statins consider fibrate therapy.

Fibrates:
- may lower triglycerides 23-54%; provide a modest increase in HDL-C by 5-15%; may lower non-HDL cholesterol.

Omega-3 Fatty Acids

Studies have shown that Omega-3 Fatty Acids are essential to heart health. Their benefits may include improved cholesterol balance, improved immune system function, reduced inflammation and reduced rates of heart disease.

Omega-3 Fatty Acids:
- may modestly increase HDL-C; may modestly decrease non-HDL-C; reduce plasma triglycerides by about 25-50% resulting primarily from the decline in hepatic very low density lipoprotein (VLDL- TG) production and secondarily from the increase in VLDL clearance.

Aspirin

Consider low dose aspirin after risk benefit analysis including contraindications and clinical correlation.

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Report Interpretation (continued)

Aspirin (continued)

Aspirin:
• according to studies may reduce the risk of clot associated with Lp(a) elevations.

Soluble Fiber Supplements

Soluble fiber works by decreasing cholesterol absorption in the gut by increasing LDL receptor expression in the liver. Consider a soluble fiber supplement such as guar gum, psyllium, pectin and glucomannan.

Bile Acid Sequestrants

Bile Acid Sequestrants (BAS), according to studies, bind bile acids in the intestine, causing more liver cholesterol to be converted to bile acids and decreasing availability of cholesterol to build bile acids. This process upregulates LDL receptors and increases LDL clearance.

Bile Acid Sequestrants:
• may increase HDL 3-5%; may lower non-HDL cholesterol.

Notes

Footnotes

The intended use of this report is to provide an aid in the physician's treatment decisions. This report is intended for a physician or other qualified health care provider. Please consult with your physician regarding any questions.

[1]This test was developed and its performance characteristics determined by Boston Heart Diagnostics. It has not been cleared or approved by the U.S. Food and Drug Administration (FDA). The FDA has determined that such clearance is not necessary. This test is used for clinical purposes. It should not be regarded as investigational or for research. Methods: HDL Map: Gel electrophoresis; Cholesterol Balance and Fatty Acid Balance: GC/MS; MPO: Immunoturbidometric; CoQ10: UPLC/UV; Adiponectin: Latex turbidimetric immunoassay; Aldosterone: Chemiluminescent immunoassay; LDL-P, HDL-P, LipoMap and Serum MetaboMap: NMR; TMAO: LC/MS/MS; Dried Blood Spot Testing.

[2]A fasting glucose level of >125 mg/dL indicates the presence of diabetes mellitus, and a fasting glucose level of <70 mg/dL indicates hypoglycemia.

[3]A test result in the low range is normal in a non-diabetic, but low if a patient has diabetes (consistent with diabetes).

[4]Genetic analysis is performed by real time Polymerase Chain Reaction (PCR) using TaqMan® probes. Amplified gene nucleotide sites: APOE - Apolipoprotein E, T471C rs429358, C609T rs7412; F5 - Coagulation Factor V, G1746A rs6025; F2 - Coagulation Factor 2, G20210A rs1799963; CYP2C19 (Clopidogrel response) -Cytochrome P450 2C19, G681A rs4244275, G636A rs4986893, C-806T rs12248560; SLCO1B1 (Statin Myopathy) - Solute Carrier Organic Anion Transporter Family, Member 1B1, T625C rs4149056. MTHFR – Methylenetetrahydrofolate reductase, C677T rs1801133, A1298C rs1801131. Limitations: Other rare mutations not detected by these assays may be present in some individuals. Recommendation: Genetic counseling with discussion of testing for other family members is recommended.

[9]Increased risk is relative to the lowest quartile

[10]Our Cholesterol Balance Test was modified on April 1, 2019. This modification has resulted in new reference ranges. Results reported prior to April 1, 2019 should not be compared with results from this date forward.

* Tests performed with alternative methodologies are not displayed for comparative purposes.

● = Critical Value, ⚠ = Alert Value, TNP = Test Not Performed, PEND = Test Result Pending, GSP = Glycated Serum Protein, ADA = American Diabetes Association