bostonheart diagnostics®

FINAL REPORT

Patient
Name: TAKHAR, SUKHJIT
DOB: 07.19.1972 Gender: M
Patient ID: 3933468 Fasting: Yes
ACC/AHA Risk Score: BMI: 32.1
Patient Info: HYPERTENSION

Provider
Provider: SUKHJIT TAKHAR MD
101 S San Mateo Dr Unit 311
San Mateo, CA 94401
Account No: 12751

Specimen
Accession No: C3220639
Requisition No:
Report Date & Time: 04.11.2025 11:52 AM
Received Date & Time: 04.05.2025 1:43 PM
Collection Date & Time: 04.04.2025 07:00 AM

Lipids and Apolipoproteins

Test Name	Optimal	Borderline	Increased Risk	Footnotes	Previous Results
Total Cholesterol	139				
	<200	200-240	>240 mg/dL		
Direct LDL-C	57				
	<100	100-160	>160 mg/dL		
HDL-C	65				
	>50	40-50	<40 mg/dL		
Triglycerides	82				
	<150	150-200	>200 mg/dL		
Non-HDL-C	74				
	<130	130-190	>190 mg/dL		
ApoB	55				
	<80	80-120	>120 mg/dL		
sdLDL-C	18				
	<25	25-49	>49 mg/dL		
VLDL-C	17				
	<30	30-40	>40 mg/dL		
Lp(a)	<15				
	<30	30-50	>50 mg/dL		
ApoA-I	166.1				
	>160	120-160	<120 mg/dL		

Lipid Ratios

TC/HDL-C	2.1				
	<4	4-6	>6		
VLDL-C/TG		0.21			
	<0.2	0.2-0.3	>0.3		
ApoB/ApoA-I	0.33				
	<0.6	0.6-0.9	>0.9		
HDL-C/TG	0.79				
	>0.5	0.25-0.5	<0.25		

Inflammation and Oxidation Tests

hs-CRP		1.1			
	<1.0	1.0-3.0	>3.0 mg/L		

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

Consideration: Consider evaluating potential contributing CVD risk factors. If indicated, control blood pressure, encourage smoking cessation and weight reduction.

Boston Heart HDL Map® Test[1,6]

Test Name	Optimal	Borderline	Increased Risk	HDL Particles	Footnotes	Previous Results
α-1	56.1					
	>35	25-35	<25 mg/dL			
α-2	70.1					
	>55	45-55	<45 mg/dL			
α-3	17.1					
	<20	20-25	>25 mg/dL			
α-4	16.4					
	<20	20-25	>25 mg/dL			
preβ–1	4.5					
	<20	20-25	>25 mg/dL			

Interpretation: This HDL map is **OPTIMAL** and is associated with a lower risk of CVD.

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: HIGH			
Lathosterol (85 – 125)	127	1.8	
Desmosterol (65 – 75)	117	1.6	
Absorption Markers: BORDERLINE			
Beta-sitosterol (115 – 155)	153	2.3	
Campesterol (170 – 230)	156	2.3	

Cholesterol Balance Score (Production/Absorption) **0.8**

Over Absorber (0.2 – 0.5 – 1.1) Over Producer

Interpretation: Increased amounts of Lathosterol, Desmosterol and Beta-sitosterol may indicate an increased cellular production and intestinal absorption of cholesterol.

Consideration: Consider lifestyle modification, statin and ezetimibe therapy if cholesterol lowering is indicated.

Notes
Specimen: Acceptable

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Patient		Provider		Specimen	
Name: TAKHAR, SUKHJIT		Provider: SUKHJIT TAKHAR MD		Accession No: C3220639	
Patient ID: 3933468	Gender: M	Account No: 12751		Report Date & Time: 04.11.2025 11:52 AM	

Metabolic Tests

Test Name	Optimal	Borderline	Increased Risk	Footnotes	Previous Results
HbA1c	5.4				
	<5.7	5.7-6.4	>6.4 %		
Glucose[2]	72				
	70-99	100-125	<70 or >125 mg/dL		

Interpretation: Based on the HbA1c value, the estimated Average Glucose (eAG) is 108 mg/dL which includes the non-fasting state.

Genetic Tests by Genotyping[1,4]

Test Name	Test Result	Interpretation	Footnotes
Reported Date: 04.09.25			
Statin Induced Myopathy (SLCO1B1)[7]	T/T	Normal statin transporter. Consider recommending standard doses of statins.	

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Provider: SUKHJIT TAKHAR MD
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Boston Heart Fatty Acid Balance™ Test[1]

Test Name	Optimal	Borderline	Increased Risk	Interpretation	Footnotes	Previous Results
Saturated Fatty Acid Index		**31.4**		Saturated FA Index is BORDERLINE. Higher levels of plasma saturated fatty acids are associated with an increased risk of CVD. Consider restricting dietary intake of saturated fat by choosing poultry without skin, fish, low fat dairy products, and lean cuts of meat, and replacing butter with plant based oils. Consider reducing endogenous (internal) production of saturated fat by losing weight if appropriate, limiting added sugars, refined starches, and alcohol.		
	<30.0	**30.0-33.0**	>33.0 %			
Trans Fatty Acid Index		**0.55**		Trans FA Index is BORDERLINE. Higher levels of plasma trans fatty acids are associated with an increased risk of CVD. Consider restricting dietary intake of fried foods, foods containing partially hydrogenated fats, shortening, or stick margarine, and replacing with plant based oils.		
	<0.50	**0.50-0.70**	>0.70 %			
Unsaturated/Saturated Ratio		**2.13**		Unsaturated/Saturated Ratio is BORDERLINE. A lower Unsaturated/Saturated Ratio Index is associated with a higher LDL-C and increased risk of CVD. Consider increasing intake of plant based fats from nuts, seeds, and their oils along with fatty fish and restricting intake of animal fats like red meat, fatty processed meats, and full fat dairy.		
	>2.25	**2.00–2.25**	<2.00			
Omega-3 Fatty Acid Index	**5.58**			Omega-3 FA Index is OPTIMAL. Eicosapentaenoic Acid (EPA) level is BORDERLINE. Increased EPA levels have been associated with lower risk of heart disease. Docosahexaenoic Acid (DHA) level is OPTIMAL. The Omega-3 FA Index is the amount of EPA and DHA divided by total fatty acids. Consider recommending consumption of at least 2-3 meals of oily fish such as salmon, sardines, herring, tuna, and mackerel weekly or a fish oil or EPA supplement.		
	>4.50	2.50-4.50	<2.50 %			
EPA		**49.7**				
	>50.0	**20.0-50.0**	<20.0 µg/mL			
DHA	**103.2**					
	>100.0	60.0-100.0	<60.0 µg/mL			
ALA		**24.1**		Alpha Linolenic Acid (ALA) level is BORDERLINE. Higher levels of ALA have been associated with a lower risk of CVD. Consider recommending increasing intake of walnuts, chia seeds, ground flaxseeds, or flaxseed oil.		
	>30.0	**14.0–30.0**	<14.0 µg/mL			
EPA/AA Ratio	**0.22**			EPA/AA Ratio is OPTIMAL. Some authorities indicate that an EPA/AA ratio of >0.75 is optimal, usually only achieved with supplementation.		
	>0.17	0.07-0.17	<0.07			
AA/EPA Ratio	**4.59**			AA/EPA Ratio is OPTIMAL. Some authorities indicate that an AA/EPA ratio of <1.33 is optimal, usually only achieved with supplementation.		
	<5.88	5.88-14.29	>14.29			
	Low	Mid	High			
Monounsaturated Fatty Acid Index			**23.7**	Values are reported according to the lowest, middle and highest thirds of our reference population. Dietary monounsaturated fats from plant sources reduce heart disease risk; however, blood levels of monounsaturated fats do not necessarily correlate closely with dietary intake. More data are needed on the complex effects of omega-6 fatty acids on cardiovascular risk.		
	<20.0	20.0-23.0	>23.0 %			
Omega-6 Fatty Acid Index	**37.2**					
	<39.0	39.0-43.0	>43.0 %			
Linoleic Acid (LA)	**756.5**					
	<930.0	930.0-1150.0	>1150.0 µg/mL			
Arachidonic Acid (AA)	**227.9**					
	<250.0	250.0-320.0	>320.0 µg/mL			
Omega-3/Omega-6 Ratio			**0.17**			
	<0.07	0.07-0.10	>0.10			

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Chemistry Tests

Test Name	Low	Normal	High	Footnotes	Previous Results
BUN		17.2			
	<3.0	3.0-25.0	>25.0 mg/dL		
Creatinine			1.18		
	<0.67	0.67-1.17	>1.17 mg/dL		
Sodium		142			
	<135	135-146	>146 mmol/L		
Potassium		4.0			
	<3.5	3.5-5.3	>5.3 mmol/L		
Chloride		101			
	<98	98-110	>110 mmol/L		
CO_2		29			
	<20	20-31	>31 mmol/L		
Anion Gap		12			
	<3	3-16	>16 mmol/L		
Total Protein		7.2			
	<6.3	6.3-7.7	>7.7 g/dL		
Albumin		4.4			
	<3.5	3.5-5.2	>5.2 g/dL		
Calcium		9.4			
	<8.6	8.6-10.4	>10.4 mg/dL		
Total Bilirubin		0.4			
		0.0–1.2	>1.2 mg/dL		

Test Name	Optimal	Borderline	Increased Risk	Footnotes	Previous Results
Glucose[2]	72				
	70-99	100-125	<70 or >125 mg/dL		
AST		49			
	<40	40-120	>120 U/L		
ALT		57			
	<40	40-120	>120 U/L		
Alkaline Phosphatase	103				
	<130	130-200	>200 U/L		

Other Kidney Tests

Test Name	Optimal	Borderline	Increased Risk	Footnotes	Previous Results
BUN/Creatinine	14.6				
	<=23		>23		
eGFR	74				
	>60	30-60	<30 mL/min/1.73 m²		

Other Tests

Test Name	Optimal	Borderline	Increased Risk	Footnotes	Previous Results
CoQ10[1]		0.94			
	>1.40	0.70-1.40	<0.70 mg/L		

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Test Name	04.11.2025 (Most Recent)
Lipids and Apolipoproteins	
Total Cholesterol	139
Direct LDL-C	57
HDL-C	65
Triglycerides	82
Non-HDL-C	74
ApoB	55
sdLDL-C	18
VLDL-C	17
Lp(a)	<15
ApoA-I	166.1
Lipid Ratios	
TC/HDL-C	2.1
VLDL-C/TG	0.21
ApoB/ApoA-I	0.33
HDL-C/TG	0.79
Boston Heart HDL Map® Test[1,6]	
α-1	56.1
α-2	70.1
α-3	17.1
α-4	16.4
preβ–1	4.5
Boston Heart Cholesterol Balance® Test[1]	
Lathosterol	127
Desmosterol	117
Beta-sitosterol	153
Campesterol	156
Inflammation and Oxidation Tests	
hs-CRP	1.1
Metabolic Tests	
HbA1c	5.4
Glucose[2]	72

Test Name	04.11.2025 (Most Recent)
Boston Heart Fatty Acid Balance™ Test[1]	
Saturated Fatty Acid Index	31.4
Trans Fatty Acid Index	0.55
Unsaturated/Saturated Ratio	2.13
Omega-3 Fatty Acid Index	5.58
EPA	49.7
DHA	103.2
ALA	24.1
EPA/AA Ratio	0.22
AA/EPA Ratio	4.59
Monounsaturated Fatty Acid Index	23.7
Omega-6 Fatty Acid Index	37.2
Linoleic Acid (LA)	756.5
Arachidonic Acid (AA)	227.9
Omega-3/Omega-6 Ratio	0.17
Chemistry Tests	
BUN	17.2
Creatinine	1.18
Sodium	142
Potassium	4.0
Chloride	101
CO_2	29
Anion Gap	12
Total Protein	7.2
Albumin	4.4
Calcium	9.4
Total Bilirubin	0.4
Glucose[2]	72
AST	49
ALT	57
Alkaline Phosphatase	103
Other Kidney Tests	
BUN/Creatinine	14.6
eGFR	74

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Test Name	04.11.2025 (Most Recent)
Other Tests	
CoQ10[1]	0.94

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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	Omega-3 Fatty Acids	CoQ10
Inflammation Tests				
hs-CRP	•	•	•	
Fatty Acid Balance Test				
Unsat/Sat Ratio	•		•	
EPA	•		•	
Other Tests				
CoQ10				•

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.

- To improve Fatty Acid Balance results refer to the dietary changes provided in the Fatty Acid Balance interpretation section of this report.
- Consider visiting mybostonheart.com to create a Personalized Nutrition and Life Plan to help you achieve your lifestyle and dietary modification goals.

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:
- lowering CRP with statin therapy has been shown to lower CVD events. Elevated CRP may indicate inflammation and CVD risk.

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:

To improve Fatty Acid Balance results focus on the dietary changes provided in the Fatty Acid Balance interpretation section of this report. Consuming 1-2 grams of concentrated fish oil daily or 1800 mg of EPA per day has been shown to decrease heart disease morbidity and mortality.

CoQ10

CoQ10 is a fat soluble, vitamin-like substance produced by the body that assists in the production of energy-producing ATP within cells and is important for muscle function. Statins and other medications may lower CoQ10 levels which has been associated with muscle pain. CoQ10 supplementation along with standard heart failure therapy is associated with a reduction of symptoms and major adverse cardiovascular events in patients with congestive heart failure.

Notes

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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.

[6]Test performed at 200 Crossing Boulevard, Framingham, MA 01702. CLIA#: 22D2100622. NYSDOH: 9021.

[7]Other significant risk factors for statin induced myopathy include age > 65 years, female gender, diabetes, physical activity, creatinine levels > 1.0 mg/dL, hypothyroidism, and use of calcium channel blockers and amiodarone.

* 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