

| | | | | | | |
|----------------|---------------------------------|--|--------------|-------------|-------------------------|--|
| Patient | Name: | | Provider: | | Accession No: | |
| | DOB: | | Gender: F | | Requisition No: | |
| | Patient ID: | | Fasting: Yes | | Report Date & Time: | |
| | ACC/AHA Risk Score: | | BMI: 23.9 | Account No: | Received Date & Time: | |
| | Patient Info: CVD, HYPERTENSION | | | | Collection Date & Time: | |

| Test Name | Optimal | Borderline | Increased Risk | Footnotes | Previous Results |
|-----------|---------|------------|----------------|-----------|------------------|
|-----------|---------|------------|----------------|-----------|------------------|

Lipid Tests






| | | | | | |
|-------------------|--------------|---------------|------------|--|--|
| Total Cholesterol | | | 257 | | |
| | <200 | 200-240 | >240 mg/dL | | |
| Direct LDL-C | | | 145 | | |
| | <70 | 70-100 | >100 mg/dL | | |
| HDL-C | 87 | | | | |
| | >60 | 50-60 | <50 mg/dL | | |
| Triglycerides | 83 | | | | |
| | <150 | 150-200 | >200 mg/dL | | |
| Non-HDL-C | | | 170 | | |
| | <100 | 100-130 | >130 mg/dL | | |
| ApoB | | 117 | | | |
| | <80 | 80-120 | >120 mg/dL | | |
| sdLDL-C | | 31 | | | |
| | <20 | 20-40 | >40 mg/dL | | |
| %sdLDL-C | | 21 | | | |
| | <20 | 20-30 | >30 % | | |
| VLDL-C | 25 | | | | |
| | <30 | 30-40 | >40 mg/dL | | |
| Lp(a) | | | 68 | | |
| | <30 | 30-50 | >50 mg/dL | | |
| ApoA-I | 208.6 | | | | |
| | >180 | 140-180 | <140 mg/dL | | |

Lipid Ratios

| | | | | | |
|-------------|-------------|----------------|-------|--|--|
| TC/HDL-C | | 3.0 | | | |
| | <3 | 3-5 | >5 | | |
| VLDL-C/TG | | 0.30 | | | |
| | <0.2 | 0.2-0.3 | >0.3 | | |
| ApoB/ApoA-I | | 0.56 | | | |
| | <0.5 | 0.5-0.7 | >0.7 | | |
| HDL-C/TG | 1.05 | | | | |
| | >0.5 | 0.25-0.5 | <0.25 | | |




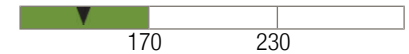

| Test Name | Optimal | Borderline | Increased Risk | HDL Particles | Footnotes | Previous Results |
|-----------|---------|------------|----------------|---------------|-----------|------------------|
|-----------|---------|------------|----------------|---------------|-----------|------------------|

Boston Heart HDL Map® Test^{1,6}

| | | | | | | |
|---------------|-------------|-------|-----------|---|--|--|
| α-1 | 85.9 | | | | | |
| | >45 | 35-45 | <35 mg/dL |  | | |
| α-2 | 74.8 | | | | | |
| | >65 | 55-65 | <55 mg/dL |  | | |
| α-3 | 19.9 | | | | | |
| | <20 | 20-25 | >25 mg/dL |  | | |
| α-4 | 16.3 | | | | | |
| | <20 | 20-25 | >25 mg/dL |  | | |
| preβ-1 | 9.9 | | | | | |
| | <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® Test¹

| Normalized Value (μmol x 100/mmol of Total Cholesterol) | Absolute Value (mg/L) | Normalized Value | Absolute Value | Footnotes |
|--|--|------------------|----------------|---------------|
| Production Markers: BORDERLINE | | | | |
| Lathosterol |  | 89 | 2.3 | 10 |
| Desmosterol |  | 39 | 1.0 | 10 |
| Absorption Markers: LOW | | | | |
| Beta-sitosterol |  | 47 | 1.3 | 10 |
| Campesterol |  | 83 | 2.2 | 10 |
| Cholesterol Balance Score (Production/Absorption) 1.2 | | | | |
| Over Absorber |  | | | Over Producer |

Interpretation: Elevated levels of Lathosterol 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.

Notes Specimen: Acceptable

| | | | | | | | | |
|----------------|-------------|-----------|-----------------|-------------|--|-----------------|---------------------|--|
| Patient | Name: | | Provider | Provider: | | Specimen | Accession No: | |
| | Patient ID: | Gender: F | | Account No: | | | Report Date & Time: | |

| Test Name | Optimal | Borderline | Increased Risk | Footnotes | Previous Results |
|-----------|---------|------------|----------------|-----------|------------------|
|-----------|---------|------------|----------------|-----------|------------------|

Inflammation and Oxidation Tests

| | | | | | |
|-----------------------------------|------------|---------|------------------|--|--|
| hs-CRP | 0.3 | | | | |
| | <1.0 | 1.0-3.0 | >3.0 mg/L | | |
| LpPLA₂ Activity | 163 | | | | |
| | <180 | 180-224 | ≥225 nmol/min/mL | | |
| OxPL-apoB | | | 4.0 | | |
| | <2.0 | 2.0-3.0 | >3.0 nmol/L | | |

Interpretation: Elevated OxPL-apoB may indicate arterial wall inflammation, plaque instability and reduced endothelial function.

Consideration: Consider evaluating potential contributing CVD risk factors. Identify and treat underlying causes such as atherogenic lipoproteins and metabolic markers. If indicated, control blood pressure, encourage smoking cessation. For elevated OxPL-apoB, consider intensive statin therapy, low dose aspirin (especially with positive LPA genotype), and/or Vitamin E (in patients with type 2 diabetes and positive haptoglobin 2/2 genotype).

Metabolic Tests

| | | | | | |
|----------------------------|------------|----------------|-------------------|--|--|
| HbA1c | 5.5 | | | | |
| | <5.7 | 5.7-6.4 | >6.4 % | | |
| Glucose² | | 103 | | | |
| | 70-99 | 100-125 | <70 or >125 mg/dL | | |

Interpretation: BORDERLINE glucose indicates prediabetes as established by the ADA. Prediabetes is a major risk factor for metabolic syndrome and has been associated with increased risk of developing diabetes, hyperlipidemia, hypertension and CVD. **Based on the HbA1c value, the estimated Average Glucose (eAG) is 111 mg/dL which includes the non-fasting state.**

Consideration: Consider encouraging dietary modification supported by education and consider glucose lowering and/or insulin sensitizing medications. If indicated encourage smoking cessation, increased activity and control blood pressure.

| | | | | | | | | |
|----------------|-------------|-----------|-----------------|-------------|--|-----------------|---------------------|--|
| Patient | Name: | | Provider | Provider: | | Specimen | Accession No: | |
| | Patient ID: | Gender: F | | Account No: | | | Report Date & Time: | |

| Test Name | Optimal | Borderline | Increased Risk | Interpretation | Footnotes | Previous Results |
|-----------|---------|------------|----------------|----------------|-----------|------------------|
|-----------|---------|------------|----------------|----------------|-----------|------------------|

Boston Heart Fatty Acid Balance™ Test¹

| | | | | | | |
|---|-----------------|-------------------|---------------|--|--|--|
| 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 | 0.31 | | | Trans FA Index is OPTIMAL . | | |
| | <0.50 | 0.50-0.70 | >0.70 % | | | |
| Unsaturated/Saturated Ratio | | 2.16 | | 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 | | 3.35 | | Omega-3 FA Index is BORDERLINE . A lower Omega-3 FA index is associated with an increased risk for CVD. Eicosapentaenoic Acid (EPA) level is BORDERLINE . Increased EPA levels have been associated with lower risk of heart disease. Docosahexaenoic Acid (DHA) level is BORDERLINE . Increased DHA levels have been associated with a lower risk of heart disease. 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 | >50.0 | 20.0-50.0 | <20.0 µg/mL | | | |
| DHA | >100.0 | 60.0-100.0 | <60.0 µg/mL | | | |
| ALA | >30.0 | 14.0-30.0 | <14.0 µg/mL | 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. | | |
| EPA/AA Ratio | >0.17 | 0.07-0.17 | <0.07 | EPA/AA Ratio is BORDERLINE . Some authorities indicate that an EPA/AA ratio of >0.75 is optimal, usually only achieved with supplementation. | | |
| AA/EPA Ratio | <5.88 | 5.88-14.29 | >14.29 | AA/EPA Ratio is BORDERLINE . Some authorities indicate that an AA/EPA ratio of <1.33 is optimal, usually only achieved with supplementation. | | |
| | Low | Mid | High | | | |
| Monounsaturated Fatty Acid Index | 19.1 | | | 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 | | | 44.8 | | | |
| | <39.0 | 39.0-43.0 | >43.0 % | | | |
| Linoleic Acid (LA) | | 1125.6 | | | | |
| | <930.0 | 930.0-1150.0 | >1150.0 µg/mL | | | |
| Arachidonic Acid (AA) | | | 432.8 | | | |
| | <250.0 | 250.0-320.0 | >320.0 µg/mL | | | |
| Omega-3/Omega-6 Ratio | | 0.08 | | | | |
| | <0.07 | 0.07-0.10 | >0.10 | | | |

| | | | | | | |
|----------------|-------------|-----------|-----------------|-------------|-----------------|---------------------|
| Patient | Name: | Gender: F | Provider | Provider: | Specimen | Accession No: |
| | Patient ID: | | | Account No: | | Report Date & Time: |

| Test Name | Low | Normal | High | Footnotes | Previous Results |
|-----------|-----|--------|------|-----------|------------------|
|-----------|-----|--------|------|-----------|------------------|

Chemistry Tests

| | | | | | |
|-----------------|-------|-----------|-------------|--|--|
| BUN | 17.0 | | | | |
| | <3.0 | 3.0-25.0 | >25.0 mg/dL | | |
| Creatinine | 0.78 | | | | |
| | <0.51 | 0.51-0.95 | >0.95 mg/dL | | |
| Sodium | 139 | | | | |
| | <135 | 135-146 | >146 mmol/L | | |
| Potassium | 4.2 | | | | |
| | <3.5 | 3.5-5.3 | >5.3 mmol/L | | |
| Chloride | 103 | | | | |
| | <98 | 98-110 | >110 mmol/L | | |
| CO ₂ | 28 | | | | |
| | <20 | 20-31 | >31 mmol/L | | |
| Anion Gap | 8 | | | | |
| | <3 | 3-16 | >16 mmol/L | | |
| Total Protein | 6.4 | | | | |
| | <6.3 | 6.3-7.7 | >7.7 g/dL | | |
| Albumin | 4.4 | | | | |
| | <3.5 | 3.5-5.2 | >5.2 g/dL | | |
| Calcium | 9.8 | | | | |
| | <8.6 | 8.6-10.4 | >10.4 mg/dL | | |
| Total Bilirubin | 1.0 | | | | |
| | | 0.0-1.2 | >1.2 mg/dL | | |

| Test Name | Optimal | Borderline | Increased Risk | Footnotes | Previous Results |
|----------------------|---------|------------|-------------------|-----------|------------------|
| Uric Acid | 4.7 | | | | |
| | <6.0 | 6.0-10.0 | >10.0 mg/dL | | |
| Glucose ² | | 103 | | | |
| | 70-99 | 100-125 | <70 or >125 mg/dL | | |
| AST | 21 | | | | |
| | <40 | 40-120 | >120 U/L | | |
| ALT | 20 | | | | |
| | <40 | 40-120 | >120 U/L | | |
| Alkaline Phosphatase | 78 | | | | |
| | <130 | 130-200 | >200 U/L | | |

| Test Name | Optimal | Borderline | Increased Risk | Footnotes | Previous Results |
|-----------|---------|------------|----------------|-----------|------------------|
|-----------|---------|------------|----------------|-----------|------------------|

Other Kidney Tests

| BUN/Creatinine | 21.8 | | | | |
|----------------|------|-------|--------------------------------|-----------|------------------|
| | <=23 | | >23 | | |
| eGFR | 79 | | | | |
| | >60 | 30-60 | <30 mL/min/1.73 m ² | | |
| Test Name | Low | Mid | High | Footnotes | Previous Results |

Other Tests

| Vitamin D, 25-OH | | 70 | | | 9 |
|--------------------|---------|------------|----------------|-----------|------------------|
| | <30 | 30-100 | >100 ng/mL | | |
| Test Name | Optimal | Borderline | Increased Risk | Footnotes | Previous Results |
| CoQ10 ¹ | 2.00 | | | | |
| | >1.40 | 0.70-1.40 | <0.70 mg/L | | |
| Homocysteine | 7.7 | | | | |
| | <10 | 10-14 | >14 μmol/L | | |

| | | |
|-----------------|---------------------|-------------|
| Patient | Name: | Provider: |
| | Patient ID: | Account No: |
| | Gender: F | |
| Specimen | Accession No: | |
| | Report Date & Time: | |

Test Name (Most Recent)

Lipid Tests

| | |
|-------------------|-------|
| Total Cholesterol | 257 |
| Direct LDL-C | 145 |
| HDL-C | 87 |
| Triglycerides | 83 |
| Non-HDL-C | 170 |
| ApoB | 117 |
| sdLDL-C | 31 |
| %sdLDL-C | 21 |
| VLDL-C | 25 |
| Lp(a) | 68 |
| ApoA-I | 208.6 |

Lipid Ratios

| | |
|-------------|------|
| TC/HDL-C | 3.0 |
| VLDL-C/TG | 0.30 |
| ApoB/ApoA-I | 0.56 |
| HDL-C/TG | 1.05 |

Boston Heart HDL Map® Test^{1,6}

| | |
|--------|------|
| α-1 | 85.9 |
| α-2 | 74.8 |
| α-3 | 19.9 |
| α-4 | 16.3 |
| preβ-1 | 9.9 |

Boston Heart Cholesterol Balance® Test¹

| | |
|-----------------|----|
| Lathosterol | 89 |
| Desmosterol | 39 |
| Beta-sitosterol | 47 |
| Campesterol | 83 |

Inflammation and Oxidation Tests

| | |
|-----------------------------|-----|
| hs-CRP | 0.3 |
| LpPLA ₂ Activity | 163 |
| OxPL-apoB | 4.0 |

Metabolic Tests

| | |
|----------------------|-----|
| HbA1c | 5.5 |
| Glucose ² | 103 |

Test Name (Most Recent)

Boston Heart Fatty Acid Balance™ Test¹

| | |
|----------------------------------|--------|
| Saturated Fatty Acid Index | 31.4 |
| Trans Fatty Acid Index | 0.31 |
| Unsaturated/Saturated Ratio | 2.16 |
| Omega-3 Fatty Acid Index | 3.35 |
| EPA | 30.8 |
| DHA | 89.6 |
| ALA | 15.1 |
| EPA/AA Ratio | 0.07 |
| AA/EPA Ratio | 14.07 |
| Monounsaturated Fatty Acid Index | 19.1 |
| Omega-6 Fatty Acid Index | 44.8 |
| Linoleic Acid (LA) | 1125.6 |
| Arachidonic Acid (AA) | 432.8 |
| Omega-3/Omega-6 Ratio | 0.08 |

Chemistry Tests

| | |
|----------------------|------|
| BUN | 17.0 |
| Creatinine | 0.78 |
| Sodium | 139 |
| Potassium | 4.2 |
| Chloride | 103 |
| CO ₂ | 28 |
| Anion Gap | 8 |
| Total Protein | 6.4 |
| Albumin | 4.4 |
| Calcium | 9.8 |
| Total Bilirubin | 1.0 |
| Uric Acid | 4.7 |
| Glucose ² | 103 |
| AST | 21 |
| ALT | 20 |
| Alkaline Phosphatase | 78 |

Other Kidney Tests

| | |
|----------------|------|
| BUN/Creatinine | 21.8 |
| eGFR | 79 |

| | | |
|-----------------|---------------------|-----------|
| Patient | Name: | |
| | Patient ID: | Gender: F |
| Provider | Provider: | |
| | Account No: | |
| Specimen | Accession No: | |
| | Report Date & Time: | |

Test Name (Most Recent)

Other Tests

| | |
|--------------------|-------------|
| Vitamin D, 25-OH | 70 |
| Homocysteine | 7.7 |
| CoQ10 ¹ | 2.00 |

| | | | | | |
|----------------|-------------|-----------------|-------------|-----------------|---------------------|
| Patient | Name: | Provider | Provider: | Specimen | Accession No: |
| | Patient ID: | | Account No: | | Report Date & Time: |
| | Gender: F | | | | |

Report Interpretation (continued)

Fibrates (continued)

Fibrates:

- may modestly lower LDL-C by 20-31%; may lower non-HDL cholesterol.
- may lower ApoB; may modestly reduce small dense LDL.

PCSK9 Inhibitors

Consider PCSK9 inhibitors in high risk patients with familial hypercholesteremia and/or CVD that cannot reach LDL-C goal by lifestyle modification and combination therapy. According to studies, these agents lower LDL-C by about 60%.

Glucose Lowering and/or Insulin Sensitizing Medications

Insulin sensitizers increase glucose uptake in muscle cells and adipocytes. Glucose stabilizing medications have been shown to help to lower blood sugar.

- Glucose lowering and insulin sensitizing medications may lower glucose.

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 decrease non-HDL-C.
- may lower small dense LDL-C.

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.

Aspirin

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

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.

- Soluble fiber may lower blood glucose.

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 lower ApoB up to 12%; may lower LDL-C up to 20%; may lower non-HDL cholesterol.
- may modestly decrease blood glucose.

Notes

| | | | | | | | | |
|----------------|-------------|-----------|-----------------|-------------|--|-----------------|---------------------|--|
| Patient | Name: | | Provider | Provider: | | Specimen | Accession No: | |
| | Patient ID: | Gender: F | | Account No: | | | Report Date & Time: | |

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.

¹This 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.

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

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

⁴Genetic 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; SLC01B1 (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.

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

⁹Biotin concentrations of up to 600 ng/mL in patient serum have been shown to have no impact on assay results.

¹⁰Our 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

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