

Understanding the Sample Test Report



1. SVDx Absolute Risk Score

The SmartVascular Dx™ (SVDx) Absolute Risk Score quantifies endothelial/vascular damage and indicates the likelihood of Acute Coronary Syndrome (ACS), or Heart Attack, within 5 years.

In this example, the patient's SVDx Absolute Risk Score is elevated at 83.55%, meaning 83.55% of individuals with this score experienced an ACS within a 5-year time period. It also means that 16.45% did not.

The SVDx Absolute Risk Score is used to categorize the disease stage as Optimal, Moderate or Elevated. SVDx Absolute Risk Score ranges are directly linked to AHA/ACC guidelines.

2. Target Risk Score

The Target Risk Score is the ideal cardiac score based on the patient's age, sex, and risk factors.

3. Protein Biomarker and Clinical Risk Factors Graph

The protein biomarker graph illustrates the individual factors involved in the formation and progression of cardiac lesions and identifies which biomarkers contribute most to the SVDx Absolute Risk Score.

In addition to protein biomarkers, the graph incorporates key clinical risk factors, including age, sex, diabetes, and family history of myocardial infarction, to provide a comprehensive view of cardiovascular risk.

Bars above the zero line (red) represent factors that increase your risk of Acute Coronary Syndrome (ACS). Bars below the zero line (green) indicate factors that may help lower your risk, but are not standalone risk indicators. Each bar is expressed as a % event rate ratio (the percent increase or decrease in ACS risk relative to baseline) for that specific biomarker or risk factor. Because each factor is assessed individually, the percentages may sum to more than 100%.

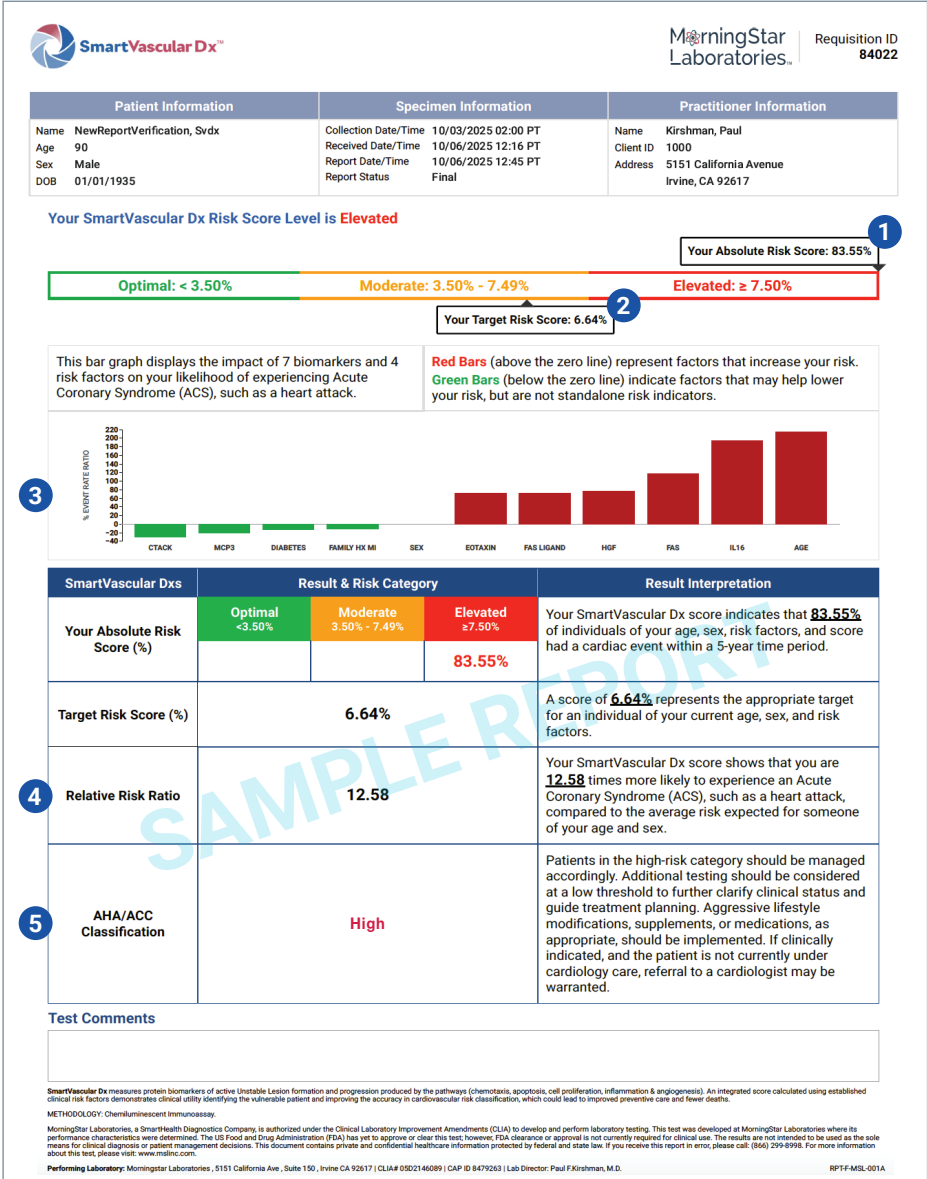
Reading the chart from right to left shows how each marker impacts endothelial/vascular health, from the most significant risk factors to those associated with risk reduction.

The SVDx algorithm integrates all biomarkers and clinical risk factors, weighing each relative to the others, to generate a single score that represents your absolute 5-year risk of ACS. Because the test evaluates multiple biological pathways and directly measures endothelial/vascular damage, it is particularly useful when a patient has an elevated SVDx score despite normal lipid values (cholesterol, LDL, triglycerides).

4. Relative Risk Ratio

This ratio represents the "Relative Risk" as opposed to the "Absolute Risk". Relative Risk is useful in determining how much more likely a heart attack will happen to a patient compared to their Target Risk Score. The gap methodology uses both the SVDx Absolute Risk Score and the Target Risk Score.

In this example, the patient's SVDx Score indicates a 12.58-fold higher likelihood of experiencing an ACS compared to the average risk expected for an individual of the same age, sex, and risk profile. The Relative Risk Ratio is calculated by dividing the SVDx Absolute Risk Score by the Target Risk Score. (Note: A moderate Target Risk Score reflects the normal rise in ACS risk associated with aging.)



5. AHA/ACC Guidelines Classification

This risk classification conforms to AHA/ACC guidelines for low-risk, intermediate-risk, or high-risk categories.

Using the SVDx Absolute Risk Score to Treat According to AHA/ACC Clinical Guidelines

→ Optimal (Low-Risk) <3.50%

Patients in the low-risk category are in the desired range. Reviewing good nutrition and exercise habits and identifying any areas of concern like infections, oral hygiene, autoimmune disease, medication use associated with increased risk like nonsteroidal anti-inflammatory drugs, stress, rising BMI, family history or other concerns will dictate if additional recommendations are necessary.

→ Moderate (Intermediate-Risk) 3.50-7.49%

Patients in the intermediate-risk category are generally early in disease progression. Often times, simple lifestyle modifications can bring the results of these individuals back into the optimal range.

→ Elevated (High-Risk) ≥7.50%

Patients in the high-risk category should be managed accordingly. Additional testing should be considered at a low threshold to further clarify clinical status and guide treatment planning. Aggressive lifestyle modifications, supplements, or medications, as appropriate, should be implemented. If clinically indicated, and the patient is not currently under cardiology care, referral to a cardiologist may be warranted. Case studies have shown that some patients with high-risk results who have not acted on the information provided by the SmartVascular Dx test experienced heart attacks weeks or months later.

SmartVascular Dx™

With repeat testing, a graph will track the patient's progress and trends as treatment and lifestyle modifications take effect. This provides an added reference for both physicians and patients. In the example shown, the patient's values have increased compared to the initial report. For first-time tests, the graph will be blank.

Optimal: Annually

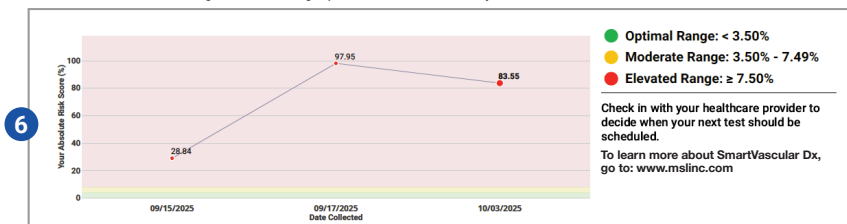
Moderate: 6 months

Elevated: 3 to 4 months as clinically indicated

MorningStar
Laboratories, Inc.Requisition ID
84022

Patient Information		Specimen Information		Practitioner Information	
Name	NewReportVerification, Svdx	Collection Date/Time	10/03/2025 02:00 PT	Name	Kirshman, Paul
Age	90	Received Date/Time	10/06/2025 12:16 PT	Client ID	1000
Sex	Male	Report Date/Time	10/06/2025 12:45 PT	Address	5151 California Avenue
DOB	01/01/1935	Report Status	Final		Irvine, CA 92617

This graph represents the patient's progress and percentage of risks as time progresses. This relies on clinicians and ordering physicians to provide accurate, up-to-date family history of myocardial infarction and diabetes status based on the patient's annual wellness check records such as HbA1c testing which is no longer performed in our laboratory.



The SmartVascular Dx (SVDx) Score provides a comprehensive assessment of endothelial (blood vessel lining) health and helps identify the risk of a serious cardiac event, such as heart attack, unstable angina, or associated arterial conditions within the next 5 years.

Our proprietary algorithm combines 7 critical protein biomarkers with key risk factors: age, sex, diabetes, and family history of cardiovascular disease to assess your risk for heart disease. The test detects early signs of vascular inflammation, blood vessel damage, and plaque buildup, often before symptoms appear.

SVDx analyzes

- IL-16: triggers blood vessel repair
- CTACK, Eotaxin, MCP-3: triggers body's immune response to vascular injury
- FAS, FAS Ligand, HGF: linked to plaque formation, disease progression and potential plaque rupture that can lead to a cardiac event

This data-driven algorithm supports early detection, risk stratification and personalized treatment planning.

SmartVascular Dx measures protein biomarkers of active Unstable Lesion formation and progression produced by the pathways (chemotaxis, apoptosis, cell proliferation, inflammation & angiogenesis). An integrated score calculated using established clinical risk factors demonstrates clinical utility identifying the vulnerable patient and improving the accuracy in cardiovascular risk classification, which could lead to improved preventive care and fewer deaths.

METHODOLOGY: Chemiluminescent Immunoassay

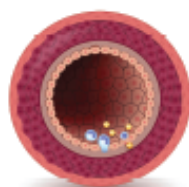
MorningStar Laboratories, a SmartHealth Diagnostics Company, is authorized under the Clinical Laboratory Improvement Amendments (CLIA) to develop and perform laboratory testing. This test was developed at MorningStar Laboratories where its performance characteristics were determined. The US Food and Drug Administration (FDA) has yet to approve or clear this test; however, FDA clearance or approval is not currently required for clinical use. The results are not intended to be used as the sole basis for clinical diagnosis or patient management decisions. This document contains private and confidential healthcare information protected by federal and state law; if you receive this report in error, please call: (866) 299-4998. For more information about this test, please visit: www.msllinc.com

Performing Laboratory: Morningstar Laboratories, 5151 California Ave., Suite 150, Irvine CA 92617 | CLIA # 05D2146089 | CAP ID 8478262 | Lab Director: Paul E. Kirschman, M.D.

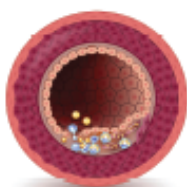
POT-MSI-001A

A diagram showing a cross-section of a blood vessel. The central lumen is dark red. It is surrounded by a thick, multi-layered wall. The innermost layer is the intima, followed by the media (thick and fibrous), and the outermost layer is the adventitia (thin and fibrous).

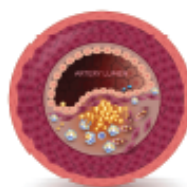
Normal Artery



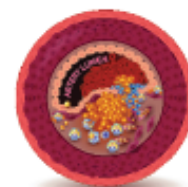
Endothelial Injury



Cell Proliferation



Angiogenesis



Cell Adhesion, Platelet Aggregation & Apoptosis

Goals for Patient Therapy

80% of cardiac disease is due to controllable lifestyle factors. These six pillars of prevention are key focus points for lifestyle modification and can have an impact on even maximally treated patients.


Nutrition/
Diet


Physical
Activity


Smoking/
Substance
Cessation


Mental
Wellness

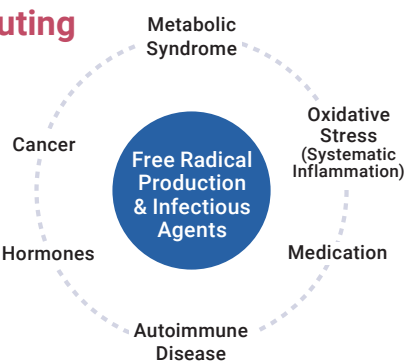

Adherence
to prescribed
medication


Sleep

Patients with normal lipid levels and a healthy lifestyle, but have an elevated SVDx test profile

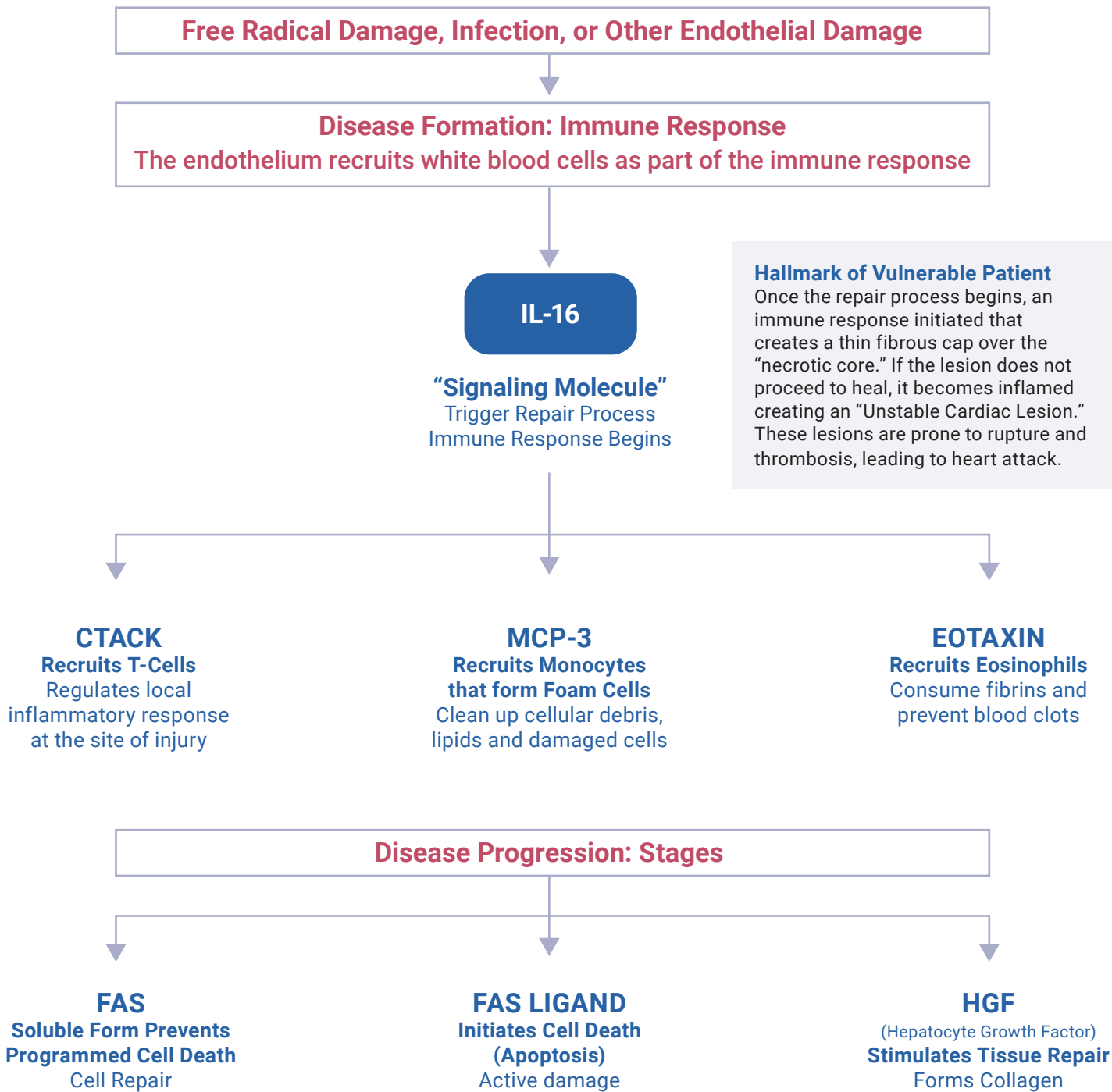
These individuals are still at risk and can go on to have ACS. These patients should undergo further evaluation to assess overall risk and disease progression. The AHA/ACC guidelines recommend that if an individual follows recommendations for a healthy lifestyle but is still at high-risk, medication and further studies should be considered if the clinical situation warrants.

Examples of contributing risk factors that can influence SVDx score and ACS



Examples of Contributing Risk Factors that can Induce Endothelial Injury and Inflammation Influencing SVDx Score and ACS

Metabolic Syndrome	Cholesterol Insulin Resistance Weight Gain BMI >30 Blood Pressure	Visceral Fat High Triglycerides Diabetes Low HDL
Oxidative Stress (Systemic Inflammation) Imbalance Between Free Radicals & Antioxidants	Diet (Processed Food, Sugar, Trans Fats, Refined Carbs, Deep Fried Food, etc.) Gut Health (Microbiome) Vitamin Deficiency/Malnutrition Antioxidant Deficiency Pollution/UV Rays Viral Infection Bacterial Infection Periodontal Disease	Physical Stress Sleep Apnea Smoking/COPD Lack of Exercise Excessive Exercise Mental Stress Depression Anxiety Shift Work (Sleep Disturbances/Lack of Sleep)
Medications	Long Term Drug Therapy Polypharmacy Substance Abuse (Opioids and Alcohol)	Proton Pump Inhibitors Psychoactive Drugs (Antidepressants, Bipolar Meds, etc.)
Autoimmune Disease	Psoriasis Lupus Rheumatoid Arthritis	Multiple Sclerosis IBD/IBS
Hormones	Thyroid Hormone Imbalance	Menopause
Cancer	Cancer Diagnosis Cancer Drugs	Chemotherapy



Common Causes of Inaccurate and/or Falsely Elevated SVDx Results:

1. Inaccurate and/or inconsistent SVDx Score:

Ensure accurate information is recorded for age, sex, diabetes status and family history of myocardial infarction as these affect the SVDx Score calculation and have an impact on repeat testing. Inconsistencies here will cause results to be incorrect, making the results either artificially higher or lower.

2. Falsely elevated and inaccurate SVDx results:

- >1000 mg Biotin (>10,000 mcg). Requires 72-hrs washout for accurate results.
- Stem-cell transplant within the last 6 months will cause inaccurate results.
- Blood was drawn after chelation will cause falsely elevated results. Blood must be drawn before chelation.
- Sample sat too long or not long enough before being spun will cause falsely elevated results. Spin between 30 and 90 minutes after draw.
- Sample must be refrigerated at 2°C to 8°C after being spun and before shipping to ensure accurate results.

3. Unreportable results due to interference substance:

Human anti-mouse antibodies (HAMA). HAMA reactivity has been reported to occur in some individuals without known exposure to murine IgG. Such responses may be due to polyclonal rheumatoid factors, heterophilic antibodies, dietary, or other exposure. Will be unreportable due to interference.