

Laboratory Tests

hs C-Reactive Protein (hs-CRP)

A protein that is present in the body. The protein level increases in the presence of inflammation.

Relationship to Heart Disease:

Several studies reveal that an increased level of hs-CRP increases risk for heart attacks, stroke & peripheral vascular disease. Plaques in our arteries contain inflammatory cells. A heart attack is often caused from plaque rupture. Plaque rupture occurs when there are high numbers of inflammatory cells. Therefore, high levels of hs-CRP suggest instability of existing plaque.

What causes elevated hs-CRP levels?

Potential sources of chronic inflammation include:

Periodontal disease, Hypertension, Diabetes mellitus, Smoking, Obesity, Bacteria (chlamydia pneumoniae, Helicobacter pylori), Virus (herpes virus)

What reduces hs-CRP levels?

Both aspirin and statin medications have been shown to reduce hs-CRP levels. Other actions necessary to help reduce hs-CRP levels include:

Abstaining from smoking, Maintaining an ideal weight, Maintaining control of diabetes mellitus, Maintaining control of hypertension, Completing regular exercise, Improved dental health, Improved cholesterol control

Lipoprotein (a)

Lipoprotein(a), which is pronounced "little a" is a LDL particle with a protein called apolipoprotein(a) attached to it. It is not a part of the routine lipid profile.

Relationship to Heart Disease:

Both Lipoprotein(a) and LDL are rich in cholesterol and contribute to heart disease. Several studies demonstrate, patients with higher levels of Lp(a) had a 60% increased risk of coronary heart disease (CHD) compared to those with low levels.

It does this, most likely, by promoting atherosclerosis and increasing the tendency to form blood clots.

What causes elevated Lp(a) levels?

Hereditary and ethnic background are the most important factors (accounts for 80-90% of the variability in levels). African-Americans, for example, tend to have higher levels (2-3X higher) than Caucasians (reason is unknown).

Measurement:

There are 2 ways to measure Lp(a). The optimal level depends on which type of measurement is used.

Lp(a)-C (cholesterol content): Goal is less than 10

** Lp(a) (particle mass): Goal is less than 30

**This is the measurement used in St. Luke's Lab

What reduces Lp(a)?

Niacin IR (over the counter) or Niaspan (prescription Niacin)

For women: estrogen or Evista,

Importance of Lp(a) decreases as the LDL is decreased.

Laboratory Tests (continued)

Fibrinogen

A protein in the blood that is essential to forming blood clots.

When we cut ourselves, an almost instantaneous cascade of events occurs and causes the blood to clot in order to prevent excessive bleeding. Fibrinogen is essential in this process. Unfortunately, not all blood clots are “good” clots. Spontaneously, unnecessary clots can form in coronary arteries stopping the flow of blood and triggering a sudden heart attack.

Relationship to Heart Disease:

Studies indicate people with increased levels of fibrinogen have 2 times the risk for developing heart disease compared to those with lower levels of fibrinogen.

What causes elevated Fibrinogen levels?

Increased stress, physical inactivity, metabolic syndrome (↑ Triglycerides, ↓ HDL, ↑ blood pressure, ↑ weight), cigarette smoking, diabetes, obesity, chronic infection, rheumatic disease, cold weather, increased levels of Plasminogen Activator Inhibitor-1

Plasminogen Activator Inhibitor -1 (PAI-1) slows down the “clot removing” process in the body. The more PAI-1 circulating in the bloodstream the more difficult it is for the body to dissolve clots. People with diabetes and metabolic syndrome have increased levels of PAI-1.

What reduces Fibrinogen?

Smoking cessation, maintaining ideal weight, regular exercise, aspirin, fish oil, niacin

25 OH Vitamin D

Blood test that measures the amount of Vitamin D in your body.

Relationship to Heart Disease:

Low levels of Vitamin D have been associated with increased risk of heart disease. Framingham Heart Study reported 62% higher risk of a cardiovascular event in participants with low levels of Vitamin D compared to those with higher levels.

What reduces Vitamin D levels?

Lack of sun exposure, pigmented skin that prevents penetration of the sun’s rays and inadequate dietary intake of Vitamin D enriched foods (nonfat milk, salmon, mackerel, sardines and cod liver oil)

TSH (Thyroid Stimulating Hormone) Free T4 (Serum Thyroxine)

Ninety percent of people with diagnosed hypothyroidism have increased cholesterol or triglycerides increasing their risk for heart disease. Studies have shown a direct correlation between the treatment of thyroid disease and the lowering of cholesterol.

Creatinine /eGFR (estimated Glomerular Filtration Rate)

Blood tests to assess kidney function. Kidney disease increases risk for having heart and blood vessel disease.

Potassium

An electrolyte which may be elevated in the setting of kidney disease.

CPK (creatine phosphokinase)

An enzyme found mainly in the blood stream if muscle damage occurs.