

Elizabeth Boham MD - Cholesterol is not the cause of Heart Disease

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Heart Disease is much more complex - it's not just cholesterol

66% of people with heart attacks have diabetes or pre-diabetes

88% of Americans are metabolically unhealthy - 50% of Americans have pre-diabetes or diabetes. 75% of Americans are overweight

Waist to Hip ratio = waist measurement belly button divided by hip measurement ie. widest part - for men a ratio of .90 or less is considered to be healthy or safe, For Women a ratio of .89 or less is considered to be healthy or safe

Our belly fat is the big indicator - it is more inflammatory - it produces adipose cytokines - Inflammation and oxidative stress are what cause heart disease.

HS CRP (ideal level is <1) is the blood marker for cardiac inflammation. It is an important marker for tracking inflammation in the body. *(Do not get this test done if you are recovering from an accident or surgery or injury or flu - this causes inflammation levels to go up as part of the healing process in the body)*

Inflammation and Oxidative stress are the big underlying issues.

Oxidized LDL is what causes cholesterol to become a big problem in heart disease. Oxidized LDL (*racid cholesterol*) is a very important number to look at - is it lifestyle, ie. Smoking, exposure to pollutants and heavy metals, the health of your gut microbiome, gingivitis, low anti-oxidant status from a poor diet that contributes to it.

Inflammation can cause a rupture of plaque on the artery.

Statin drugs probably work because they lower inflammation more than lowering cholesterol but they are loaded with side effects.

Lifestyle affects the particle size. Small LDL the problematic cholesterol particle is caused by diet. Carbohydrates = Starch + Sugar. Metabolic syndrome (High Cholesterol, High Triglycerides, Insulin Resistance + High Blood Pressure). SAD diet - The standard American diet contributes to this syndrome and to insulin resistance - this results in this unhealthy pattern - insulin resistance is the driver of these cardiovascular problems.

Genetic high cholesterol - cholesterol in the 300's can be an issue but looking at the entire picture is important in seeing how problematic the high cholesterol numbers are.

The size of the LDL - LDL particle size is very important - for example: You can have a cholesterol of 150 and have either 5,000 small particle LDL or 500 light fluffy LDL - this is what can make a huge difference in your cardiovascular risk. Golf balls (small particle LDL) or beach balls (light fluffy LDL) - if you get hit by a golf ball it hurts a lot more than getting hit with a beach ball - illustrating the damage inflicted on your arteries

HDL - (optimal number should be above 60) and the ratio of LDL to HDL should be 4 and below - meaning that HDL numbers should be at least 25% of the total - 33% or better. would be really good.

Fasting Insulin (Ideal level is 5 mU/mL) is such an important test to get run.

And a **Blood Sugar of (less than) <86 mg/dL is ideal**

HbA1C (Hemoglobin A1C (less than) <5.7 is ideal) an important marker for how your blood sugar levels have been for the last 3 months

Insulin resistance - the **Triglyceride to HDL ratio 1:1 is ideal**: An example: 70 triglyceride 70 HDL. Meaning equal Triglycerides to HDL numbers - if it is over 2 - twice the triglycerides over HDL this number is pointing to a problem of pre-diabetes.

Triglycerides (ideal level 70) are made in the liver from refined carbohydrates - sugar, refined flours, alcohol, fruit juice. Omega -3's lower triglycerides. Example of a bad situation - total cholesterol is 150 - triglyceride is 300, HDL is 29 = 10:1 (10x the Triglyceride to HDL) a scary scenario this means that there is a highly inflammatory process going on
High Blood Pressure is often caused by insulin resistance

Particle size testing the 3D way to look at cholesterol - ask your doctor for one of these tests:

NMR Lipoprofile blood test - Lab Corp

Measures: LDL Particle Number, LDL Cholesterol, HDL Cholesterol, Triglycerides, Total Cholesterol, HDL Particle Number, Small LDL Particle Number, LDL size. Calculation for Insulin Resistance Score.

NMR - pattern A (good) or pattern B (bad - too many small LDL)

Particle size testing small particle size should be under 1,000 (2,000) is bad

Total LDL should be < 90

Cardio IQ - Quest

Measures: Total Cholesterol, Triglycerides, HDL, LDL and Cholesterol/HDL ratio, LDL Particle Number, LDL Peak Size, LDL Pattern, HDL Large, LDL Small, LDL Medium, Apolipoprotein B, Lipoprotein (a), HS CRP, LP PLA2 (PLAC)

Another test that can be run to see how much plaque is on your arteries:

Calcium score - Coronary CT Scan - it looks at the calcium deposits in the coronary arteries - this is also called an Agatston score - it is an independent marker for the risk of cardiac events. The results of the scan make it possible to estimate the risk of of a heart attack or stroke in the next 5 - 10 years. Ideal ages to be tested are women between 35 - 70 and men between 40 - 60.

Some other notes.

Hormones are made from cholesterol and your nervous system - cholesterol is good - it just needs to be the right type.

People have a different response according to their genetics - some people thrive on a high saturated fat diet and it lowers cholesterol and triglycerides other people on this kind of diet causes cholesterol to skyrocket.

Proteins - especially plant proteins with with sterols found in beans and nuts and fibers -
Mark Hyman likes Natural Factors - PGX is a fiber product made by Natural Factors - it is great for your microbiome and stimulating beneficial bifido bacteria.

An Omega-3 index - Ideal level >8% - measures the amount of Omega-3 fats in your blood. This can lower the risk of cardiovascular disease and inflammation.