The 4 Most Important (but Ignored) Blood Tests for Your Heart

1. **Omega-3 Index**
2. **CRP (C-Reactive Protein)**
3. **Insulin**
4. **Triglyceride/HDL ratio**

Omega-3 index

The omega-3 index is defined as the amount of EPA plus DHA in red blood cell (RBC) membranes expressed as the percent of total RBC membrane fatty acids. The EPA + DHA content of RBCs correlates with that of cardiac muscle cells, and several observational studies indicate that a lower omega-3 index is associated with an increased risk of coronary heart disease (CHD) mortality. It is therefore proposed that the omega-3 index be used as a biomarker for cardiovascular disease risk, with proposed zones as below:

Acceptable Omega-3 Levels:

- Lower risk = 8% or higher
- Medium risk = 4 to 8%
- Higher risk = under 4%

The real gems in the results may be the level of Omega-6 Arachidonic Acid (AA/EPA ratio) in your cell membranes and your Omega-6 to 3 ratio.

It is easy to boost your Omega-3 index quickly by eating fish or taking fish oil supplements. But the equally important job of decreasing Omega-6 is a very slow process and requires eliminating vegetable seed oils and reducing nuts, seeds and poultry.

You can get your Omega-3 index measured at Eternal Clinic & Wellness, Rxidence Compounding located at Puchong, Selangor (03-80711800), Pure Health Pharmacy located at Bukit Mertajam, Penang and Sunrise Homecare Pharmacy located Bayan Lepas, Penang.

2. CRP (C-Reactive Protein)

C-Reactive Protein is an indicator of inflammation. CRP is released from the liver in response to inflammation.

Why you should care: it is a good predictor of future cardiac events in people who are currently healthy. C-Reactive Protein and relative risk of first heart attack. People with the highest CRP have a 4-fold increased risk for heart attacks.

We didn't know the predictive ability of CRP until 1997. CRP does not point to the presence of a specific disease, but inflammation is closely tied to several diseases.

Chronic inflammation of cardiac tissues and endothelium are hallmarks of poor heart health. The scar tissue from this inflammation is one of the early drivers of plaque build up.

People with high CRP are up to 4 times more likely to have cardiac events and at 4 to 6 times greater risk of developing diabetes.

It's actually a much better predictor of heart health and stroke than LDL 'bad' Cholesterol.

Acceptable CRP Levels:

• Lower risk: less than 1.0 mg/L
• Average risk: 1.0 to 3.0 mg/L
• Higher risk: above 3.0 mg/L
• Above 10 mg/mL usually indicates acute inflammation

It's important to order the High-sensitivity CRP or hs-CRP test. The regular CRP test measures down to 3 mg/L whereas hs-CRP measures down to 0.3 mg/L, allowing you to detect low levels of chronic inflammation.

There are no drugs approved for lowering CRP, but some statins lower it. Several other Rx drugs lower it too, but all have significant side effects.

High CRP is a bright neon sign over your head saying 'Time for lifestyle change.'

Diet and lifestyle factors like exercise, eating an anti-inflammatory diet (Zone, Paleo etc.), healing your gut, lowering sugar/Omega-6 can lower CRP. Using all the techniques above, I managed to get my CRP down from almost 4 to under 0.3.*

Talk to your doctor about adding this test to your panel and techniques for lowering it.

3. Insulin

Insulin is the hormone that manages your blood sugar levels and your fat metabolism.

Insulin spikes and falls based on what you eat.

Your blood has very little capacity to contain sugar. So, if you drink a glass of soda or orange juice, you've consumed *way more* sugar than what your body was built for. Excess blood sugar can give you a mild case of coma or death. To keep you from going into coma, your pancreas cranks out insulin.

Insulin then lowers your blood sugar back to safe levels. The down side? The sugar gets packed away as fat. Every time you drink a glass of orange juice, your body shifts silently to 'Defcon 5' and back without you knowing it.

Why you should care: 8 out of 10 people with heart attacks also have high insulin. High insulin is a hallmark of metabolic syndrome.

A diet high in sugar and refined carbohydrates will keep your insulin levels high. This leads to weight gain, high triglycerides, low HDL and small/dense variety of LDL cholesterol.

In people prone to the problem, a diet that's consistently high in insulin-elevating sugars and carbs will lead to insulin resistance. Insulin resistance is a condition where the body 'gives up' and stops responding to higher and higher levels of insulin produced by the pancreas.

Like CRP, high post-prandial (after a meal) insulin levels can predict your likelihood of developing insulin resistance, pre-diabetes and diabetes. It's easier to get your fasting insulin measured and that's very useful too.

Measuring your fasting insulin along with your regular lipid panel is easy and your doctor ought to test it.

Acceptable Fasting Insulin Levels: Aim for 4 uIU/ml or lower. The average American is above 8.

Reducing sugar, juice, soda, grains and refined carb consumption is the best way to prevent high insulin levels. The diabetes drug metformin can reduce it. And, yes, exercise has a positive impact.

The good news: if you're still young and/or undamaged from years of unlimited carb-feasting, going on a restricted diet like the paleo diet may drop your insulin levels quickly. In a pig study, Paleo diet dropped insulin in as little as 10 days. A few people I know fit the description, so thought I'd share. Your mileage, obviously, will widely vary.

Low-carb diets have also been shown to bring high insulin under control.

I was able to drop my sky-high insulin level down to the normal range by going on a low-carb, high-veggie paleo type diet with daily exercise. If I go on vacation and eat gelato or flan every day (*Pshaw – who would do such a thing?!*), my insulin (and love handles) return. Quickly. And then I look like this guy.

4. Triglyceride (TG)/HDL Ratio

Ok – this is not an actual test. Your regular lipid panel already has your Triglyceride (TG) and HDL numbers.

By dividing the Triglyceride number by the HDL you get a ratio that is very informative.

Why you should care: People with the highest TG/HDL levels are 16 times more likely to suffer a heart attack.

Triglyceride to HDL ratio is a reliable predictor of heart attacks. People with the highest levels are 16-times more likely to suffer heart attacks than those with the lowest.

Calculating this ratio is a simple trick to measure your risk for insulin resistance, metabolic syndrome, pre-diabetes, LDL particle size and, of course, poor heart health.

High triglyceride and low HDL levels are independently good at predicting atherosclerosis. When you combine these two readily available data points, you are looking into your future with a telescope.

Small dense LDL particles are more dangerous than large ones. Measuring LDL particle density is somewhat expensive, but your TG/HDL ratio is also a poor man's LDL density predictor. If your ratio is above 3.8, you have an 80% chance of having the more dangerous small, dense LDL. And with a ratio of less than 3.8, you have 80% likelihood of having the large, less dangerous LDL.

Acceptable TG/HDL Levels:

If your TG/HDL ratio is less than 1, you are at lower risk.
1 to 3 represents medium risk.
3 or higher may mean that you are at high risk and insulin resistant.

This ratio cuts through the confusion about 'cholesterol numbers.'

We've only known about this since the turn of the century, so most doctors and lab tests don't focus on it, even though it may be the strongest predictor of heart attack on your lipid panel.

Is it hard to get this ratio down? Yes. Mine was a sky-high 17 a few years ago. I got it down to 2.5. I've written about my struggles and eventual success in getting my triglyceride levels down, here and here. Simply put, it involves reducing or cutting out sugar, sodas, juices, fruits and grains.

Drugs like Lovaza can help reduce triglyceride. So can Metformin.

A low-fat, high whole-grain diet will almost certainly not work. In fact, that's what got my ratio up to 17.

Smoking, trans fats, Omega-6 fats and fructose can all decrease HDL.

Low-carb diets are more effective than low-fat diet at getting this ratio down.

Raising HDL is harder and slower – increasing exercise, not sitting a lot, increasing healthy fats all help. Advanced HDL-boosting techniques like ketogenic diets and intermittent fasting can also help, but it will require the assistance of a professional nutritionist.

Besides these four measures, homocysteine, apoB, ferritin, coronary calcium score, and oxLDL are also good predictors of heart health. More on those another day.