What is it about cholesterol?

We hear so much about high cholesterol through the media, from our physicians, and the dangers associated with it. But what does it all mean?

First it is important to understand that we need cholesterol. It is the foundation of many vital substances that our bodies require for good health and wellbeing. Cholesterol is made from fat and a steroid, and is made in the body, mainly by the liver, and of course we take it in from the food we eat. Important hormones such as estrogen and testosterone (the main sex hormones) are made from cholesterol, as are other hormones.

Secondly, it is important to know that the level of cholesterol in your body is a genetically determined factor. If you have the genes for high cholesterol, your cholesterol will be high also. It is not what you eat that makes cholesterol a problem for you, it is what your parents gave you when they donated the genes with which you were made.

There are a group of people living between France and Spain called Basques whose diet is excessively high in animal fat, and obesity is very common within this group, yet their levels of cholesterol and the conditions that derive from high cholesterol are much less than in non-Basque populations, this provides support for the genetic predisposition to high cholesterol rather than a dietary one.

I have in my practice patients who are very over weight, yet the measurements of their cholesterol are within normal limits. I have patients who are normal or underweight whose cholesterol levels are high.

When your cholesterol levels are measured, there should be not only the total amount of cholesterol in your test, but also a breakdown of how the cholesterol is distributed. There are four measurements that are important to measure; these are Total Cholesterol, LDL (low density lipoprotein) HDL (high density lipoprotein) and triglycerides.

Low density lipoprotein is otherwise known as “bad cholesterol” because it is the stuff that causes your arteries to become narrowed by the buildup of a substance called plaque. It is this narrowing of the arteries that causes a decrease in blood flow to them and is a major cause of heart attacks and strokes. This process can be slow and insidious, or sudden which is when a piece of plaque breaks off and travels down an artery until it matches the diameter of the artery causing a complete and sudden blockage of the circulation. Because the diameter of the coronary arteries, those that provide blood to your heart muscle, and the cerebral arteries, those that supply your brain, are very small relatively, to start with, it doesn’t take much to block them causing a sudden heart attack or stroke.

A further test related to LDL is the measurement of the size of the LDL particles. These are divided into type A and type B. Type A particles are believed to be innocent of plaque formation and they are the large sized LDL particles, so it is beneficial to have a preponderance of type A particles. Type B particles are small and are believed to be detrimental to your arteries and are the ones that cause the buildup of plaque. The test that determines the relative preponderance of type B particles is called the Apo-Lipoprotein B 100 test and is an important contributor to your health related risk history.

HDL (high density lipoprotein) sometimes called good cholesterol, has the property of removing plaque from your arteries, so it is beneficial to have lots of HDL in your system. However, a high level of HDL doesn't guarantee that you will be safe from heart attacks and strokes and the other conditions associated with damage to your arteries if you have high LDL levels. These will need to be lowered to gie you the protection that you need.

Triglycerides are substances that normally provide energy to your body, and come from the food that you eat and are made in your body also. Normal levels of triglycerides are not associated with disease, but abnormal levels, just like high cholesterol levels, contribute to the buildup of plaque in the body. Plants store excess food as starch, but not being a plant your body stores excess food as fat, and it is the triglyceride level that determines the buildup of fat in your body.

There is an association between high triglycerides and diabetes, so if you are found to have high triglycerides, you should also be followed for the development of diabetes.

You have your blood tests for cholesterol, and your physician will discuss some ways of reducing those high levels if you have inherited the gene that gives you high LDL levels.

The first line of treatment is usually dietary. Your physician or dietician will suggest that you reduce those substances that contribute to high levels of cholesterol. If you are overweight, measured by your BMI which is the relationship between your height and weight, the ideal being 25 or less, you will be advised to lose weight. The most effective way to lose weight is to cut back on animal fats which are high in LDL, and alcohol which is a sugar related substance. Smokers will be advised to cut out smoking as it contributes to the damage to your arteries by reducing the amount of oxygen available and increasing the amount of carbon monoxide which is toxic to your arteries. You will need to have further blood tests to determine how effective your diet has been. This is usually provided after three months. If you have successfully reduced your LDL to within a normal range, and if the dietary restrictions have not become unacceptable to your lifestyle, you will need to continue the diet for the rest of your life with annual blood tests to follow the issue.

If you have been unsuccessful in reducing the levels, you have two major options from which to choose. Regardless of your choices, you will still need to be careful diet wise as medication is not an alternative to diet, it is an add on.

The choices are between Vitamin B3 (niacin) and pharmaceuticals. There are three main groups of drugs that are available these are Statins, which are good at lowering your LDL, Resins which absorb cholesterol from the system, and Fibrates that lower LDL and raise HDL. Then there is an add on drug called ezetimide which blocks the absorption of cholesterol from the intestine.

The best all round treatment for elevated LDL and Triglycerides and raising HDL is Niacin, vitamin B3. There are several kinds of B3, one of which is totally useless for the treatment of high cholesterol that one is called "Non-Flushing Niacin". This form prevents you from having the most annoying effect of taking B3 and that is a flushing sensation in which your skin can feel like it is on fire to a greater or lesser amount. The most effective way of preventing the flushing effect, unless you have an allergy to aspirin is

to take a baby aspirin, 81 mgms a half hour prior to taking your B3. The usual dosing I recommend is to start with 100 mgm of Niacin daily increasing it as you tolerate the flushing by increments of 100 mg until you reach 1000 mg. at which time you should be retested to determine the levels of cholesterol. Some people require 3000 mg to effectively improve their cholesterol profile. You should not take the long acting version of Niacin as this may be bad for your liver.

The drug therapy is invariably started with the use of a statin, of which “Crestor” and “Lipitor” are currently the most common in usage in North America. These drugs are primarily aimed at reducing your levels of LDL but do help to increase your level of HDL. The drugs are both effective in their aim and dosing will depend on just how effective they are. You will need to have regular blood tests for your cholesterol levels in order for proper dosing, and also will need a test called CK to ensure there is no muscle damage, one of the side effects of the statins is damage to your muscles. This is most frequently at such a microscopic level as to be un-noticeable. However, muscle pains do occur and need to be addressed, Co-Enzyme Q10 often stops the muscle pain, but in severe cases, a condition called rhabdomyocitis can occur and this requires you to stop taking the statin. Fibrates are not in the same category as statins, and are effective in the treatment of high cholesterol, and are competitors in the pharmaceutical industry for a place in the treatment of high cholesterol. The addition of ezetimide to either group of drugs may just add the fine tuning required for good levels of cholesterol.

Lifestyle changes remain the first line of attack on reducing LDL and elevating HDL. Regular exercise is an effective way of increasing the HDL portion of your cholesterol, smoking cessation, reduction in alcohol intake, and of course dietary restriction of animal fats are lifelong changes that you will need to make for improved health protection against heart attacks, strokes, kidney disease, and narrowing of the arteries throughout your body.