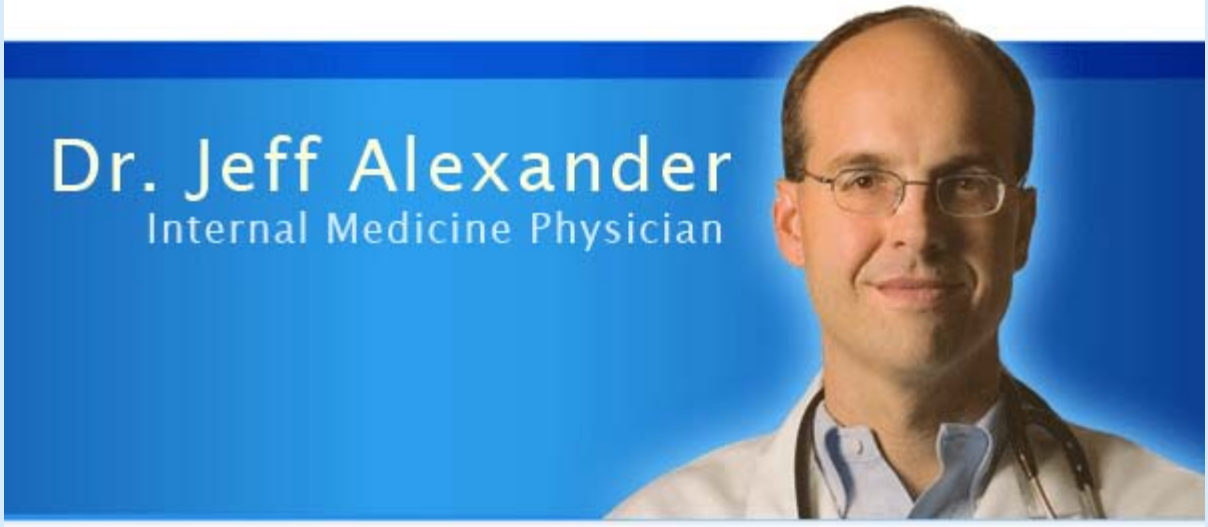

JANUARY 2O11 NEWSLETTER

Cholesterol Primary Prevention

As we go through a physical exam, a major emphasis is preventing heart disease and stroke. These two diseases have a major impact on healthcare costs and a patient's lifespan. They still rank as the number one cause of death in the United States. With the advent of better blood pressure therapy along with lipid therapy, we have made major improvements in these areas. Cholesterol (lipids) are the focus of this newsletter.

Treating cholesterol really comes in two stages, Primary Prevention and Secondary Prevention. In Primary Prevention, we are trying to prevent a first heart attack. There is good data to suggest that we can do this, and do it well. We need to look at many factors here including blood pressure, weight, family history, smoking, and cholesterol. Cholesterol goals here are less strict than those for secondary prevention, but none the less are a major point of emphasis. First what I would like to do is list some terms we use so that you can refer to them as you read.

1. Cholesterol- a steroid metabolite that is used in the construction of cell membranes and hormones, a critical component of our bodies. It is measured as a total of many different components (below) and the overall number is probably not as important as it was in the past because we can better measure the component particles.

2. LDL- the bad guy. This is the molecule everyone knows as the particle that we want to lower. It creates plaque in arteries and increases the risk of heart attack and stroke.

3. HDL- the good guy. This type of lipid has a protective effect on arteries and we want to drive this up as high as we can. Think of HDL as the particle that removes plaque or LDL from arteries.

4. Triglycerides- this particle is produced by the absorption of dietary fat. It may have some ability to cause plaque and is a secondary point of emphasis when treating cholesterol.

5. NON-HDL Cholesterol- This is the difference of Cholesterol (total measured) minus HDL. In the future this may become more of a risk predictor than LDL alone as it measures the total count of particles that create plaque.

6. Apolipoproteins.- These are special proteins found in all forms of cholesterol and

again will probably be a point of future emphasis. Apo B is contained in all of the plaque causing particles and Apo A in the plaque reducing particles. A recent European Trail found that Apo B levels were a more sensitive predictor of who was going to develop heart disease (better than Non-HDL and LDL).

Now that you are totally confused with medical terms, we should discuss primary prevention. When I do a physical, I will measure your cholesterol along with a breakdown of most of the above particles. An ideal LDL is 100 or less. Generally we do not get too excited with levels as high as 160, depending on the circumstances. If you have other risks for heart disease, (hypertension, obesity, smoking, family history) this all changes. In this case we will look at a risk calculator called the Framingham Score. This a simple measure of a few variables that will give us a good idea of your risk over the next ten years of having a heart attack. If your score is more than 20 percent we need to treat you, but if it is lower we can talk about it.

If you have 2 or more risk factors, I will encourage you to a goal of 100 or less on the LDL score. This also holds true for people with a Framingham Score of greater than 20%. If you have one risk factor and an elevated Framingham Score, I will also encourage aggressive lipid reduction. If you have only on risk factor or none, a healthy lifestyle is all that is needed depending on your LDL and HDL.

I do get concerned if the HDL is on the low side (less than 45 in men—55 in women) and if Triglycerides are higher than 200. Generally a low HDL is a big risk and can frequently be seen with high Triglycerides. This pattern is frequently seen in people who will go on to develop diabetes. There are also genetic subsets of people who have low HDL cholesterol. Aggressive lifestyle changes are the best point of attack for primary prevention. Niacin is a drug that raises HDL and others are currently in development. It causes flushing and truly does not have primary prevention data. It does however; show the ability to reduce plaque in arteries. The class of drugs called the Fibrates, will lower triglycerides, and may have some HDL raising effects. Again there is no data on primary prevention, but some for secondary.

I also may recommend several tests that will help to sort out your risk level. As many of you know, I am a big fan of the cardiac calcium score. This quick simple cat scan of your heart will detect if you have old (hard) plaque. If present, you automatically will be treated as a secondary prevention case. If it is not present, it does not mean you do not have plaque, as there can be soft (newly laid down) plaque that is not seen. Ultimately a negative score translates to a low risk of future myocardial infarction. I am careful about recommending a coronary CTA(cat scan with dye) due to the radiation exposure, and will defer these decisions to a cardiologist.

Cardio-CRP is a blood test that measures inflammation in arteries and is a marker of risk. A recent study (JUPITER) of people with an LDL of 130 or less with elevated CRP showed a reduction in events if the drug Crestor was given. If I am on the fence to treat you an elevated Cardio CRP may push us one way or the other.

Other emerging risk markers are the Carotid Intimal Thickness test (CIMT). This measure of thickness of an artery in the neck is used as a measure of vascular disease in many studies. It is starting to become available to the general public, but the accuracy and reproducibility of the test are dubious. I encourage waiting on this until we know who is performing and reading the studies.

As mentioned above, the Apo B and NON HDL cholesterol levels are probably the future of risk assessment. For now the government has no great standards to guide physicians, so

you have to be careful in how you use these. In people with strong family histories and normal cholesterol, these could be helpful. Advanced lipid profiles such as the NMR and VAP also fall into this category.

Treatment

Treatment consists initially of adopting a healthy lifestyle. Losing weight and exercising is a great place to start. Eating a diet lower in saturated fats and cholesterol is a key. The Mediterranean Diet (rich in whole grains, legumes, and polyunsaturated fats) is a great diet. Ultimately, it is best to choose a diet that you will be able to stick with. Eating a healthy diet and lowering cholesterol only helps if you stick with it. A healthy diet along with exercise is a great way to increase the HDL which is a protective molecule.

The main drug used in primary prevention is the Statin. Numerous studies have shown a 20-30% reduction in the risk of heart attack over 10 years with these drugs. Drugs such as Pravastatin, Crestor, Lipitor, and Zocor all have proven track records of safety. There are a few side effects and liver functions should be checked routinely. Many people worry about muscle aches with these drugs, but this is a rare problem and resolves with stopping the medication.

Statins work through many mechanisms, but primarily by lowering the LDL cholesterol. Some also raise the HDL, but this is only a mild increase. They also exert effects that stabilize plaque in arteries and keep it from rupturing. These, pleiotropic effects, are a major reason that we want some statin in everyone who has known heart disease (secondary prevention). Heart attacks and strokes occur when plaque breaks and a clot forms. Statins make this event less likely.

Aspirin at a dose of 81mg daily is also recommended to help prevent vascular disease. In men, it is noted that this reduces the risk of first heart attack and in women, first stroke. There is no doubt that all patients with known heart disease need to take an aspirin daily. There is also recent data out of Europe showing that aspirin taken daily for greater than five years also reduces the risk of many forms of cancer (adenocarcinoma).

You can make a major difference in your lifespan with simple changes. It is much better to be working on primary prevention rather than secondary. We will discuss secondary prevention in the next newsletter.