James L. Holly, M.D.

Diets and Cardiovascular Disease
By James L. Holly, MD
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Occasionally, an article published in a scientific journal has such important and practical information that it is worthwhile summarizing. Such is an article published by the *Journal of the American College of Cardiology* (Vol. 45, No. 9, 2005). Titled "Diets and Cardiovascular Disease: An Evidence-Based Assessment," this article was published in the *Journal's* "State-of-the-Art Paper" series. This makes it particularly valuable as it is a summary statement of what we currently know and are confident of from a scientific point of view. Dr. Laurence Sperling of Emory University is the principle investigator in the study.

Evidenced-Based Studies – Randomized-Controlled Studies

The concept of "evidenced-based" may be new to those who do not regularly read medical literature. It essentially refers to the results of studies which are conducted with a "randomized controlled" design. This means that the study is designed to examine an idea or a hypothesis about how a treatment or therapy will affect a disease process and/or a person's health. Too often, treatment plans have been based on clinician's experience without being subjected to critical examination.

A randomized controlled study is one in which:

1. There are two groups, one treatment group and one control group. The treatment group receives the treatment under investigation, and the control group receives either no treatment or some standard default treatment.
2. Patients are randomly assigned to all groups.

Randomized controlled trials are the standard method of answering questions about the effectiveness of different therapies. If you have a therapy question, first look for a randomized controlled trial, and only go on to look for other types of studies if you don't find one.

Double-Blind Study

A double blind study is one in which neither the patient nor the physician knows whether the patient is receiving the treatment of interest or the control treatment. For example, studies of treatments that consist essentially of taking pills are very easy to do double blind - the patient takes one of two pills of identical size, shape, and color, and neither the patient nor the physician needs to know which is which.

A double blind study is the most rigorous clinical research design because, in addition to the randomization of subjects which reduces the risk of bias, it can eliminate the placebo effect which is a further challenge to the validity of a study.

Cohort Studies

A Cohort Study is a study in which patients who presently have a certain condition and/or receive a particular treatment are followed over time and compared with another group who are not affected by the condition under investigation. For instance, since a randomized controlled study to test the effect of smoking on health would be unethical, a reasonable alternative would be a study that identifies two groups, a group of people who smoke and a group of people who do not, and follows them forward through time to see what health problems they develop.

Cohort studies are not as reliable as randomized controlled studies, since the two groups may differ in ways other than in the variable under study. For example, if the subjects who smoke tend to have less money than the non-smokers, and thus have less access to health care, that would exaggerate the difference between the two groups.

The main problem with cohort studies, however, is that they can end up taking a very long time, since the researchers have to wait for the conditions of interest to develop. Physicians are, of course, anxious to have meaningful results as soon as possible, but another disadvantage with long studies is that things tend to change over the course of the study. People die, move away, or develop other conditions, new and promising treatments arise, and so

Case Control Studies

Case control studies are studies in which patients who already have a certain condition are compared with people who do not. For example: a study on which lung cancer patients are asked how much they smoked in the past and the answers are compared with a sample of the general population would be a case control study.

Case control studies are less reliable than either randomized controlled studies or cohort studies. Just because there is a statistical relationship between two conditions does not mean that one condition actually caused the other. For instance, lung cancer rates are higher for people without a college education (who tend to smoke more), but that does not mean that someone can reduce his or her cancer risk just by getting a college education.

Diet and Cardiovascular Disease

This is why the above mentioned article is so valuable. It summarizes for us the current state of knowledge about the relationship between diet and heart and artery disease based upon sound scientific evidence.

Five diets are examined:

1. Low-carbohydrate diet
2. Low glycemic index diets
3. Very-low-fat diets
4. The Mediterranean Diet
5. DASH Diet

Low-carbohydrate Diets

Dr. Atkins' popularized this diet which was first characterized by William Banting in the 1860s. These diets recommend limiting complex and simple sugars forcing the body to use fat for energy. The metabolism of fats produces ketones which will cause the body to lose water and will decrease the appetite. These diets will result in weight loss but are usually not sustained over a long period of time. There are four popular low-carb diets currently being touted:

- The Atkins' Diet (68% fat, 27% protein, 5% carbohydrates
- Protein Power (54% fat, 26% protein, 16% carbohydrates)
- The Zone Diet (30% fat, 40% protein, 30% carbohydrates)

Four randomized, controlled clinical trials have compared low-carbohydrate diets with low-fat diets. The result showed that the low-carbohydrate diets:

- Had an average of 8.8 to 13.2 pounds greater weight loss at six months.
- At one year there was no significant weight difference between the two groups.
- Showed a greater increase in HDL (good cholesterol) and decrease in triglycerides which was independent of weight.
- Had a greater reduction of calories.
- Showed improvement in insulin sensitivity which will decrease the risk of diabetes if maintained.

The following problems were found with extreme low carbohydrate diets:

- The high protein diet affected the calcium balance in the body which could lead to kidney and liver complications.
- The increased fat could lead to heart and artery disease because of the high saturated fat and cholesterol and the decrease in fruits, vegetables and grains.

Glycemic Index (GI) Diets

The glycemic index is a measure of the blood sugar response to the eating of a particular carbodydrate. For more on this index go to www.jameslhollymd.com and access the "Nutrition" section under Your Life Your Health. This journal article states, "A high-GI diet has been proposed to incrase hunger and elevate free faty acid levels, leading to an increased risk of obesity, diabetes and cardiovascular diseasse.

Glycemic Index Diets are:

- South Beach Diet
- Sugar Busters
- Zone Diet

The longest study related to the glycemic index last for three months and showed a 20.7 pound weigh loss for those on a low GI diet as opposed to those on a high GI diet who had a 9.9 pound weight loss. No studies have yet shown that low-GI diets prevent CVD. While there is suggestive evidence that a low GI diet may prevent or delay diabetes, the American Diabetes Association has not yet recommended the glycemic index to diabetes patients because it is considered too complicated. For instance, the GI can change by how a food is prepared and different types of the same food as in rice.

Very-low-fat Diets

These diets allow less than 15% of total calories from fat and include variations of vegetarian diets. The American Heart Association scientific statement conclude there were little long-term weight loss benefits from a very low fat diet, there is evidence that his diet can impact cardiovascular risk.

The Pritikin diet recommends less than 10% of calories from fat. The Pritikin diet does reduce cholesterol and triglycerides. Very low fat diet and intense life-style changes have significant results in terms or reducing risk factors and cardiac event rates. The article currently under review states, "very low fat diets may be unnecessary if other life-style (changes) like exercise, smoking cessation and stress management are (undertaken)."

Mediterranean Diet

The current study affirms, "Multiple randomized, controlled trials have demonstrated the benefits of the Mediterranean Diet on secondary prevention of cardiovascular disease." "Secondary prevention" refers to the prevention of future events such as heart attacks once a person has already had a heart attack. (for more information on the Mediterranean Diet see www.jameslhollymd.com under Your Life Your Health) This diet is characterized by:

- An abundance of plant food (fruit, vegetables, breads, cereals, potatoes, beans, nuts, and seeds)
- Minimally processed, seasonally fresh, locally grown foods;
- Desserts comprised typically of fresh fruit daily and occasional sweets containing refined sugars or honey;
- Olive oil (high in polyunsaturated fat) as the principal source of fat;
- Daily dairy products (mainly cheese and yogurt) in low to moderate amounts;
- Fish and poultry in low to moderate amounts;
- Up to four eggs weekly;
- Red meat rarely; and

- Wine in low to moderate amounts with meals.

The article under review states, “A Mediterranean-style diet has demonstrated greater weight reduction compared with control diets in randomized, controlled trials, the most impressive benefits of the diet are related to cardiovascular illness and death. No one aspect of the Mediterranean Diet explains these benefits, but much has focused on the omega-3 polyunsaturated fatty acids such as that found in fatty fish like salmon, mackerel, herring, and trout. A form of omega-3 oil derived from plants -- alpha-linolenic acid (ALA) -- is found in nuts, canola (rapeseed) oil, flaxseed, flaxseed oil, and soybean oil. Alpha-linolenic acid can be converted to EPA and DHA, which are thought be cardioprotective.”

“There is consistent basic science and clinical trial evidence for the cardioprotective effects of the Mediterranean Diet, particularly in secondary prevention of acute and fatal heart attacks. Patients on a Mediterranean diet have been shown to:

- lose more weight,
- have lower C-reactive protein levels,
- have less insulin resistance,
- have lower total cholesterol and triglyceride and
- higher HDL levels, and
- have a decreased prevalence of the metabolic syndrome

Three dietary strategies are effective in preventing CHD:

- substituting non-hydrogenated unsaturated fats for saturated and trans-fats;
- increasing consumption of omega-3 fatty acids; and
- consuming more fruits, vegetables, nuts, and whole grains, while avoiding refined grain products.

Dietary Approaches to Stop Hypertension (DASH)

This diet is similar to the Mediterranean-type diet and has been show to lower blood pressure. SETMA provides the DASH diet to all patients with hypertension, pre-hypertension, cardiovascular disease and/or diabetes.

Summary of the Diets

1) Low-Carbohydrate Diet

    - Short-term weight loss
    - Long-term effects on CVD unknown
    - Guide to initiate decreased energy intake

2) Glycemic Index and Diet

- Unproven effects on CVD
- Guide to decreased consumption of energy-dense carbohydrates and initiate weight loss\

3) Very-Low-Fat Diet

    - Possible decrease in cardiac events
    - Concerns about universal applicability and sustainability

4) Mediterranean Diet

    - Secondary prevention
    - Prevention of sudden cardiac death
    - Healthy overall approach to dieting
    - Long-term sustainability

5) DASH

    - Decreased hypertension
    - Similar to Mediterranean Diet

We are what we eat. And, your heart can be helped or hurt by what you choose to eat. Remember, it is your life and it is your health.