

BEGIN YOUR JOURNEY TODAY!

Heart Health Made Easy: Master the Basics to Lower Blood Pressure & Cholesterol for a Longer, Healthier Life



Are you ready to make diet and lifestyle changes to lower cholesterol and blood pressure naturally and decrease or eliminate your dependence on medication?

In this program you will:

- Lay the groundwork for heart health
- Identify fats in your diet
- Shake the salt habit
- Boost omega 3 fatty acid
- Manage critical minerals
- Tackle triglycerides
- Increase dietary fiber intake
- And much more. . . .

You have just made a great investment in your health. Let me explain how this is going to work. Heart Health Made Easy – Master the Basics to Lower Blood Pressure and Cholesterol Naturally for a Longer, Healthier Life is set up as a lesson followed by an activity. The activities are included so you put concrete ideas and steps down on paper. When you write something down it is more likely to “stick”.

Print this program and keep within a 3 ring binder for easy reference. I recommend tackling no more than 1 LESSON PER WEEK! Change is hard. The slower you go, the more successful you will be. Give yourself time to implement what you learn.

Are you feeling like you are back in school? Don't worry, if all you needed was the information you could find that anywhere. This program gives you step-by-step guidance as you make the necessary changes to prevent and reduce your heart disease risk. The practical implementation of healthy habits is not always easy and requires focusing on one area at a time. If you try to fix everything at once you are setting yourself up for failure.

All the best,



Lisa Nelson RD

Disclaimer:

The information in the program is intended to be used for educational purposes and is intended to support not replace the professional medical advice you receive from your doctor. You should always consult with your physician before starting a fitness regimen, adding supplements to your diet regimen, or any making other changes that can affect your medications or treatment plan. This is not a program used to diagnose or treat any condition.

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Lesson 1: Understand Your Risk for Heart Disease

Heart Disease Risk Factors

Let's start by laying the groundwork for where you are and where you need to be in relation to cholesterol.

How the heart works

Here is quick overview of how the heart works. The example that follows is from the American Heart Association. Picture the furnace in your home. It has ducts that run to the kitchen, living room, bedrooms, and bathrooms to keep your home warm. Now, picture what happens when a piece of furniture blocks one of the heat ducts. No heat enters the room. And if the furnace fails

The furnace represents your heart and the heating ducts your blood vessels. There are two types of vessels - arteries and veins. Arteries carry blood away from the heart and veins carry blood back to the heart. There are approximately 60,000 miles of vessels running throughout your body, from your little toe to the tips of your ears. The heart is responsible for pushing blood through all these vessel miles. Your heart is about the size of your fist and beats anywhere from 60-120 times a minute depending on your activity level. A blood cell makes a round trip through your body every 60 seconds. The heart pumps all 5 quarts of blood throughout your body 500 times a day.

What I'm trying to get across is that the heart works hard. If you do not give it the care it needs, it will stop working earlier than you might like.

Heart disease, which includes the hardening of the artery walls (arteriosclerosis) and the build up of plaque and cholesterol on the artery walls (atherosclerosis), makes the heart's job more difficult. This hardening and plaque buildup is directly connected to your blood cholesterol levels. Heart Disease is currently the number one killer in the United

States. High total cholesterol is just one risk factor for developing heart disease. There are risk factors you can control and ones you cannot.

Risk factors you **cannot** control:

Increasing age

The majority of the people who die from heart disease are over 65 years-old. As you age, arteries harden and become less elastic. Risk for high blood pressure rises significantly for men in their mid-40's. Women's risk rises after menopause (~55 years-old).

Gender

Men have a greater risk of dying from heart disease (heart attack) than women. This is linked to the protective influence of the female hormone estrogen.

Women who take oral birth control pills or are pregnant have increased risk of developing high blood pressure.

Family History

If close blood relatives have/had heart disease your risk is greater.

Ethnicity

African Americans have an increased risk over Caucasians. This is related to high blood pressure being more prevalent in African Americans. Also, Mexican Americans and Native Americans tend to be more susceptible to heart disease.

If you have any one or more of the risk factors you cannot change, it is that much more important to focus on the ones you can.

Risk factors you **can** change:

Smoking

You have double to quadruple the risk of developing heart disease if you smoke. If you are a nonsmoker, but exposed to second hand smoke your risk is also elevated, but not to the degree as the smoker.

Tobacco chemicals damage the lining of artery walls. This damage promotes the narrowing of artery walls.

The combination of cigarette smoking and oral contraception can substantially increase risk for women.

High blood cholesterol

High blood cholesterol levels lead to arteriosclerosis and atherosclerosis (heart disease).

High blood pressure

This causes the heart to have to work that much harder. Chronic elevated workloads cause the heart to thicken and become stiff.

Physical activity

Inactive people tend to have higher heart rates. A higher heart rate means the heart must pump harder, exerting more force on artery walls. Also, a sedentary lifestyle is linked to excess weight. Regular physical activity helps prevent heart disease. The more vigorous the activity, the greater the benefit.

Excess weight

Excess weight also gives the heart more work. Not only does the blood have to travel further to supply all your body tissues, but more blood is required to do so.

If a lot of your excess fat lies around your waist (apple shape versus pear shape), your risk is higher. As the volume of blood in circulation increases, the pressure on artery walls increases. Being overweight or obese also raises blood pressure, cholesterol, and triglyceride levels, while lowering HDL cholesterol levels. Losing as little as 10 pounds can have a positive impact on your risk for heart disease.

Diabetes

Approximately 75% percent of individuals with diabetes die from some form of heart disease.

Stress

It is common for someone with high stress levels to turn to food or cigarettes to cope, which links us back to heart disease.

Alcohol

Alcohol is linked to elevated blood pressure, obesity, and heart disease.

Activity - Circle your heart disease risk factors:

Over the age of 65	Smoker	Sedentary
Male	High Cholesterol	Overweight/Obese
Family History	High Blood Pressure	Diabetic
Stressed	Excess alcohol	Ethnicity

Of those risk factors, which ones can you change?

Additional Materials:

I recommend you take a moment to review the following materials. I've provided information on both cholesterol and blood pressure. Even if you only struggle with one of these areas, I encourage you to become familiar with both for preventive purposes.

Guide to Understanding Your Cholesterol Levels

Review Appendix A to understand lipid profiles, triglycerides, LDL cholesterol, HDL cholesterol, ratios and risk scores.

Guide to Understanding Your Blood Pressure

Review Appendix B to understand systolic versus diastolic blood pressure classification, heart rate versus blood pressure, causes of high blood pressure, symptoms, the effect of high blood pressure on your body, blood pressure monitoring, and four lifestyle factors that impact blood pressure.

Intro to New Cardiology

Review Appendix 3 to understand the labs cutting edge cardiologists monitor to assess heart disease risk. By incorporating eight additional lab results into your heart health assessment, you'll have a better picture of your heart disease risk to determine the changes you must make.

Lesson 2: Balance Your Fats to Promote Heart Health

Altering the fats in your diet will allow you to lower blood pressure, lower total cholesterol and LDL cholesterol, as well as raise HDL and improve your Cholesterol:HDL ratio to reduce heart disease risk.

Fats

Fats are essential for energy, cell growth, body temperature regulation, organ protection, nutrients, and hormones. The problem is that people eat way more fat than they need.

There are three main types of fat - saturated, unsaturated (mono and poly), and trans fats. They differ in their chemical structure (double bonds) and physical properties. For example, saturated and trans fats tend to be solid at room temperature (stick of butter) versus unsaturated fats which tend to be liquid at room temperature (vegetable oil).

All types of fat provide 9 calories/gram. You get the same number of calories from eating unsaturated fat as you do saturated fat. The difference is the affect each type of fat has on our body.

Let's start with saturated fats.

Saturated Fats

Saturated fat is associated with increased blood cholesterol levels. Many foods high in saturated fat are also high in cholesterol.

Saturated fat intake should be limited to less than 7% of your total daily calories. *(Update: The American Heart Association recommends saturated fat intake be reduced to 5 to 6 percent of total daily calories to lower cholesterol levels. This new recommendation even came out amongst all the media surrounding saturated fat not being linked to heart disease. For the purposes of this program, I'm going to leave the goal for you at 7%.)*

Sources - meat, milk, cheese, ice cream, butter, lard, shortening, hydrogenated vegetable fat, palm oil, and coconut oil

Unsaturated Fats

There are different types of unsaturated fats - monounsaturated and polyunsaturated. The difference between a monounsaturated fat and a polyunsaturated fat is the number of double bonds in the carbon chain. Monounsaturated fats have one double bond, while polyunsaturated fats have multiple double bonds. Probably a little more biochemistry than you want! Suffice it to say, both help lower cholesterol levels.

Monounsaturated fats

Monounsaturated fats can have health benefits if eaten in moderation. You should use these fats in place of saturated fats. Making this switch will help lower LDL cholesterol levels. Monounsaturated fats usually contain vitamin E. Vitamin E is an antioxidant that helps reduce body cell damage/inflammation.

Sources - olive oil, canola oil, peanut oil, sunflower oil, sesame oil, avocados, peanut butter, nuts, and seeds.

Polyunsaturated fats

Like monounsaturated fats, polyunsaturated fats will have a positive impact on your health when used in place of saturated fats. By making this switch you will lower total cholesterol levels and reduce your risk for heart disease. Polyunsaturated fats provide essential fats that the body is unable to produce itself - omega 3 and omega 6 fatty acids. These essential fatty acids are needed for healthy cell development.

Sources - soybean oil, corn oil, safflower oil, salmon, mackerel, herring, trout, nuts, and seeds.

Activity - Fat Inventory

I have set up two columns. From each column, select foods that you eat on a regular basis (once a week or more).

Column 1

Bacon

Pork ribs

Pork sausage

Prime ribs

Beef ribs

Ground beef

Chicken - dark meat w/ skin

Whole milk, 2% milk

Sweetened condensed milk

Heavy whipping cream

Sour Cream

Cheese

Whole egg

Butter, Lard, Shortening

Palm oil, Coconut oil

Danish, Croissant

Ice Cream

Pastry, Pie Crust

Fast Food

Column 2

Turkey bacon, Canadian bacon

Pork loin

Turkey sausage

Beef rounds (eye of round, top round)

Beef loins (tenderloin, sirloin)

Beans, legumes

Chicken - light meat, no skin

1% milk, fat free milk

Fat free evaporated milk

Light whipping cream

Reduced fat or fat free sour cream, low fat plain yogurt

Reduced fat or fat free cheese

Egg whites, Egg substitute

Margarine, Cooking Spray

Canola oil, Olive oil

Whole grain bagel

Frozen yogurt, Sherbet

Graham cracker crust

Column 1 contains foods high in cholesterol and saturated fat. Column 2 contains healthy alternatives.

This does not mean you can *never* eat the foods in Column 1. They just need to be limited and saved for special occasions only.

Do most of your choices fall in column 2 or column 1?

What changes will you make today? (i.e. switch from 2% milk to 1% milk or switch from ice cream to frozen yogurt)

1.

2.

3.

What changes will you make next week?

1.

2.

3.

Trans Fats

This is a fat you want to avoid. Trans fats raise LDL cholesterol levels and lower HDL cholesterol. Consuming trans fats increases your heart disease risk. Daily trans fat intake should be less than 1% of your total calorie intake.

Trans fats are created during a process called hydrogenation (addition of hydrogen molecules to a monounsaturated or polyunsaturated fatty acid to make it more saturated). Hydrogenated products are desirable because oils take on a semi-solid form, have a longer shelf life, improve flavor maintenance and textural properties of foods. Companies like trans fats because they are easy to use, inexpensive, and long lasting. Hydrogenation procedures are changing so the production of trans fatty acids does not occur; however, the majority of our trans fat intake comes from processed snack foods.

Sources - chips, cookies, crackers, vegetable shortening, commercial baked goods, French fries, fried chicken, doughnuts, pastries, pie crusts, biscuits, pizza dough, and stick margarines.

Look at the Nutrition Fact Panel on products. If you see the words "partially hydrogenated vegetable oils" in the ingredient list, then the product contains trans fats. As of January 2006, companies are required to list trans fat content on the nutrition fact panel.

Trans fats do occur naturally in some meat and dairy products (beef, lamb, butterfat). It is unknown if naturally occurring trans fats have the same effect on cholesterol levels as manufactured trans fats.

Butter versus Margarine

First of all, both are fats. Therefore, the number of calories in 1 tsp of butter is equal to the number of calories in 1 tsp of margarine. The difference is the type of fat they each contain. Butter consists of saturated fat. As I discussed above, saturated fat increases your cholesterol levels. Margarine is made of hydrogenated vegetable oils. Vegetable oils are unsaturated and better for us. The key word to make note of is "hydrogenated". To make the oils solid, hydrogen is added resulting in the trans fatty acid byproduct we just discussed. These trans fatty acids have given margarine a bad rap, because they are just as bad (if not worse) for our cholesterol levels as saturated fat.

Read labels when you are shopping.

Select margarine with "no trans fats", even better opt for a "light" margarine with "no trans fats".

However, if we add into the equation the health benefits of consuming a diet low in processed foods...butter is less processed than margarine. From this perspective, butter is the better choice.

So what is the solution?

A few years ago, I would have told you margarine, but at this point in time I lean more towards butter. Select the one you prefer and use it in moderation.

Guide to Reading Food Labels:

How to Make Heart Healthy Choices

Review Appendix D on reading food labels and learn how to make heart healthy choices when shopping. After you've reviewed the information on reading food labels continue to the activity below.

Activity:

Okay, you need to get up and move to your kitchen. Grab your margarine/butter, fats you typically use to cook (i.e. Crisco) and foods you commonly snack on, such as crackers, chips, packaged cookies, etc. For each item, look at the food label. Does it contain trans fat? If so, what will you replace it with? Refer to the columns provided previously.

***Promote Heart Health with
Lean Meat Selections:***
Reduce Heart Disease Naturally

Before continuing, review Appendix E on selecting lean meats. After reviewing this material, continue to the activity below.

Activity

Let's look specifically at the meat choices you make.

Chicken

Which cut of chicken do you usually select?

Is it the leanest option?

Do you usually remove the skin from poultry?

If not, will you start?

Pork

Which cut of pork do you typically choose?

Is it the leanest option?

Do you need to make a change?

Beef

Do you usually select "loins" and/or "rounds" when purchasing or ordering steak?

If not, when will you start selecting leaner cuts?

When you purchase ground beef how lean is the beef? 86%? 93%? 96%?

Fish

When it comes to fish, almost all choices will be heart healthy. The more fish the better. However, some types of fish contain more heart healthy omega 3 fatty acids than others.

Of the six types of fish listed, how many do you consume regularly?

Do you eat fish at least twice a week?

If not, what will you do to increase your intake? Tuna salad for lunch, shrimp cocktail for an appetizer, salmon for dinner?

How to Make Healthy Choices When Dining Out: Reduce Heart Disease Naturally

Limiting yourself to eat meals at home only is not realistic. You need to learn how to make healthy choices when you eat restaurant meals. Review Appendix F to learn how to make healthy choices when dining out.

After you've reviewed How to Make Healthy Choices When Dining Out answer the questions in the activity below.

Activity

What restaurants do you typically dine at?

Do the restaurants indicate heart healthy or low fat options on the menu? If not, do you want to research other restaurant options or alter foods at your favorite restaurants to be heart healthy?

Do you usually order fries or chips with your meals? Are you ready to switch to a side salad or baked potato?

Do you order appetizers? Do you need to? Does your meal fill you up without the appetizer?

Does your restaurant of choice automatically serve bread or chips and salsa? Are you ready to decline or will you be able to exercise will power and stop after one slice?

Do you frequently order pastas or dishes served with rice? Are the pasta and rice whole grain? Be sure to ask next time if whole grain pasta is an option.

Do you think you're doing great because you opt for Subway or a similar sandwich shop? Well, you're on the right track, but are you adding dressing to your sandwich? Remember select mustard over mayonnaise from here on out or request it be added sparingly.

Don't forget the liquid calories. What do you order to drink when you dine out? High sugar sodas or high calorie alcoholic beverages? Consider a switch to water, unsweetened tea, or diet sodas.

Do you frequently order dessert? Consider splitting a dessert with a friend and select the lower calorie options.

Go back and review the terms to avoid and the terms to look for on a menu. Remember to avoid cream and cheese sauces when dining out. Select tomato based sauces and foods described as steamed, grilled, and fresh.

Lesson 3: How to Cut Back on Sodium to Decrease Blood Pressure

Sodium

Sodium is a mineral and it is vital for health. Sodium maintains fluid balance, which is why it plays a key role in blood pressure control.

There is a direct relationship between sodium intake and blood pressure. Reducing sodium to 2.4 grams sodium (6 g salt) daily is linked with decreased blood pressure levels.

About 10-15% of the American population is sodium sensitive. This means that high sodium intake contributes to hypertension. How do you know if you are sodium sensitive? You don't. The best bet is to play it safe and reduce your sodium intake.

If you are African American, above the age of 65, diagnosed with high blood pressure, or diagnosed with diabetes you are more sensitive to changes in your sodium intake. If you fall in one of these categories, reducing sodium will have more significant results.

Sodium Intake

A typical U.S. diet means a high sodium diet. The average American consumes 6-18 grams of salt daily (about 3 teaspoons). The body only needs 200 mg daily. That is **30 times** less than what American's typically consume.

To be heart healthy, sodium intake should be reduced to less than 2300 mg (1 teaspoon/2.3 grams) daily.

Sources

Sodium is found naturally in food, but most sodium we consume has been added for food preservation and preparation. The most common form of sodium is **salt**.

Here is a guide for the amount of sodium in salt and baking soda:

¼ teaspoon salt = 600 mg sodium

½ teaspoon salt = 1200 mg sodium

¾ teaspoon salt = 1800 mg sodium

1 teaspoon salt = 2300 mg sodium

1 teaspoon baking soda = 1000 mg sodium

75% of the typical American diet comes from processed foods – sauces, soups, condiments, canned foods, and prepared mixes. Fast food is another common source of sodium.

Activity:

I have set up two columns. From each column, select foods that you eat on a regular basis (once a week or more).

Column 1

Table salt

Regular canned soup

Canned Vegetables

Tomato sauce, soup, or juice

Boxed rice, noodle, or potato mixes

Biscuits

Corn chips, potato chips

Salted Crackers, Pretzels, or Popcorn

Garlic, onion, or celery salt

Barbeque sauce, catsup, soy sauce, Worcestershire sauce, Bouillon, meat tenderizers

Regular or salted broth

Gatorade, V-8 juice, tomato juice

Cheese

Bacon, pork, sausage, hot dogs, ham

Corned beef, dried beef

Column 2

Salt substitute, spices, herbs, Mrs. Dash, pepper

Reduced sodium canned soup, homemade soup (limited sodium)

No Added Salt canned vegetables, frozen vegetables (no added sauce), fresh vegetables

Tomato paste or low sodium tomato juice

Rice, macaroni, noodles, or potatoes prepared without salt

Whole grain breads

Fresh fruit, Unsalted seeds and nuts, Unsalted chips

Unsalted crackers, pretzels, or popcorn

Garlic, onion, or celery powder

Honey, vinegar, syrup, jelly

Reduced sodium broth

Water, Crystal Light

Low sodium cheese, milk, yogurt, cottage cheese

Fresh pork

Fresh beef

Lunch meat	Peanut butter, dried beans, peas, and lentils
Anchovies, sardines	Fresh fish, water-packed tuna (rinse to remove sodium)
Baking soda, baking powder	

Column 1 contains foods high in sodium. Column 2 contains healthy alternatives.

Do most of your choices fall in column 2 or column 1?

Remember, if you make too many changes at once, you are setting yourself up for failure. Aim for 2-3 changes each week.

What changes are you able to make? (For example, switch from Gatorade to Crystal Light, stop making noodles with salt added to water, switch from canned vegetables to frozen, etc.)

- 1.
- 2.
- 3.

After successfully making 3 changes, come back to this lesson to select additional changes you can make to lower sodium intake.

This does not mean you can *never* eat the foods in Column 1, they just need to be limited and some saved for special occasions only.

I add salt to my food:

Daily	Usually	Sometimes	Rarely
-------	---------	-----------	--------

I add salt:

At the table

Before tasting

During Cooking

Always taste food prior to automatically adding salt. Many times if you omit or reduce the salt added when cooking, you will not notice a difference. Start experimenting with how you can cut back on sodium.

How to Reduce Sodium

Use less salt at the table and when cooking.

If you automatically add salt to food before tasting it, this is the first place to start cutting back. You have many options for flavoring your food in place of salt – salt substitute, herbs, and spices.

If you want to try salt substitute, check with your MD. Salt substitute contains potassium and needs to be monitored if you have kidney disorders.

Complete the activity below after reviewing the table on the next page.

Activity

Instead of using salt what spices/herbs will you try? (i.e. salt substitute, pepper, Mrs. Dash, powders instead of salts, parsley, dill, all spice, extracts, etc.)

Here is a table of spices and foods they complement.

Allspice	Lean meat, stew, tomatoes, peaches, applesauce, cranberry sauce, gravy
Almond or Peppermint extract	Pudding, fruit
Basil	Fish, lamb, ground meat, stew, salads, soups, sauces, fish cocktails
Bay leaves	Lean meats, stews, poultry, soups, tomatoes
Caraway seeds	Lean meats, stews, soups, salads, breads, cabbage, asparagus, noodles
Chives	Salads, sauces, soups, lean meat casseroles, vegetables
Cider vinegar	Salads, vegetables, sauces
Cinnamon	Fruits, breads, pie crusts
Curry powder	Lean meat, lamb, veal, chicken, fish, tomato soup, mayonnaise
Dill	Fish sauces, soups, tomatoes, cabbages, carrots, cauliflower, green beans, cucumbers, potatoes, salads, macaroni, lean beef, lamb, chicken, fish
Garlic powder	Lean meats, fish, soups, salads, vegetables, tomatoes, potatoes
Ginger	Chicken, fruits
Lemon juice	Lean meats, fish, poultry, salads, vegetables
Mace	Hot breads, apples, fruit salads, carrots, cauliflower, squash, potatoes, veal, lamb
Mustard, dry	Lean ground meat, lean meats, chicken, fish, salads, asparagus, broccoli, Brussels sprouts, cabbage, mayonnaise, sauces
Nutmeg	Fruits, pie crust, lemonade, potatoes, chicken, fish, lean meat loaf, toast, veal, pudding
Onion powder	Lean meats, stews, vegetables, salads, soups
Paprika, Parsley	Lean meats, fish, soups, salads, sauces, vegetables,
Pimiento	Salads, vegetables, casserole dishes
Rosemary	Chicken, veal, lean meat loaf, lean beef, lean pork, sauces, stuffings, potatoes, peas, lima beans
Sage	Lean meats, stews, biscuits, tomatoes, green beans, fish, lima beans, onions, lean pork
Savory	Salads, lean pork, lean ground meats, soups, green beans, squash, tomatoes, lima beans, peas
Thyme	Lean meats (especially veal and lean pork), sauces, soups, onions, peas, tomatoes, salads
Turmeric	Lean meats, fish, sauces, rice

Read Food Labels

Read labels when buying prepared and prepackaged foods. Many different sodium compounds are added to foods.

The following terms on labels indicate added sodium:

- Salt (sodium chloride)
- Monosodium glutamate (also called MSG)
- Baking soda (sodium bicarbonate)
- Baking powder
- Brine (table salt and water)
- Sodium _____ (fill in the blank with alginate, benzoate, hydroxide, nitrite, propionate, and/or sulfite)
- Disodium phosphate

Make healthy choices when dining out.

Limiting sodium intake does not mean no more dining out. Here are some tips to enjoy a meal out and maintain a low sodium intake:

- Move the salt shaker out of reach. Use pepper for extra seasoning.
- Avoid sauces or gravies.
- Request to have food prepared without salt.
- Order broiled and baked meats.
- Avoid seasoned or blackened menu items.
- Find out which restaurants offer low sodium items on the menu and dine at those.
- Avoid menu items with a lot of cheese (especially Mexican and Italian foods).
- Avoid soy sauce and MSG (especially with Chinese foods).
- Select plain sandwiches without added pickles.

How often do you dine out?

Daily	2-3 x week	1 x week	2-3 x month
1 x month	seldom/never		

Try limiting meals out to once a week or less. You can make healthy choices when dining out, but you must overcome many obstacles – added sodium/fat and large portion sizes.

What restaurant choices do you have that offer low sodium menu items?

Summary Tips for Reducing Sodium

- Eat more fresh fruits and vegetables and fewer canned.
- Snack on fresh fruit and raw vegetables instead of chips or salted nuts.
- Read food labels — many say "low salt" or "low sodium."
- Select unsalted nuts or seeds.
- Limit salt during cooking. Learn to use spices and seasonings.
- Taste food before picking up the salt shaker.
- Switch from high sodium foods to reduced sodium options.
- Choose unsalted, fat-free broths, bouillons or soups.
- When dining out, become familiar with terms that indicate high sodium.

Lesson 4: Reduce Blood Pressure with 3 Key Minerals – Magnesium, Calcium, and Potassium

Potassium

High potassium intake protects against high blood pressure and will improve control of high blood pressure. If potassium intake is too low, blood pressure will rise.

Potassium helps maintain normal heart and nerve function. If you are using diuretics (i.e. water pills) to lower blood pressure, the excess urination can cause loss of potassium.

How Much Potassium

Shoot for 3500 mg of potassium every day.

Just remember potassium isn't a magic pill all on its own. Use potassium as part of your total plan to fight high blood pressure.

Too much potassium can be harmful!

I recommend getting your needed potassium from food. If you are considering a potassium supplement consult your MD.

Potassium affects your body's fluid balance and needs to be monitored if your kidneys are affected. Kidney disorders result in less potassium being removed from your blood.

Salt substitutes contain added potassium, which is why you want to make sure the added potassium will not negatively affect you before making a switch to salt substitutes. Discuss your medications and health with your MD first. Salt substitutes are usually a good alternative for everyone except those with kidney disorders.

Potassium Sources

I have underlined sources that are especially beneficial.

Fruits

apple, apple juice, apricots, avocado, banana, cantaloupe, date, grapefruit juice, grapefruit, honeydew melon, oranges, orange juice, prune, prune juice, raisin, strawberries, watermelon

Vegetables

asparagus, beans (white or green), broccoli, Brussels sprouts, cabbage (cooked), cauliflower (cooked), corn on the cob, eggplant (cooked), lima beans, green peas, mushrooms, peppers, potatoes, radishes, spinach, squash (summer and winter), tomatoes

Activity:

What potassium sources do you eat regularly (2-3 x week)? Refer to potassium sources listed in Lesson 6.

An easy way to make sure you get the vitamins/minerals you need from fruits and vegetables is to start the habit of including a vegetable and/or fruit with every meal/snack.

For example:

Breakfast orange juice

Lunch Side salad with spinach, radishes, and carrots

Dinner Baked potato, green beans

Snacks Banana (a.m.), Strawberries (p.m.)

What will you do to increase your fruit and vegetable intake tomorrow?

Next week?

Next month?

Give an example of the goal you are working towards: (Indicate where you plan to include a fruit and where you will include a vegetable.)

Breakfast

Lunch

Dinner

Snacks

Magnesium

Poor magnesium levels are common for individuals with cardiovascular disease, usually due to poor diet and magnesium loss caused by diuretics or diabetes. Low dietary magnesium is a risk factor for high blood pressure.

How Much Magnesium

Adult women need 280 mg of magnesium and men need 350 mg.

If you are taking a diuretic (water pill) to control high blood pressure, you have probably been told to increase your potassium intake.

Any time you are told you need more potassium, you need more magnesium also. You may be taking a multivitamin to remedy this issue, but many multivitamins are not an adequate source of magnesium.

Again, I recommend obtaining the magnesium you need from foods. However, if you have a kidney disorder, consult with your MD.

Magnesium Sources

Peanuts and Peanut Butter – provide 500+ mg per ½ cup

Wheat germ, bran cereals, wild rice, lentils, split peas, tofu, cashews, almonds – provide 100-300 mg magnesium per ½ cup

Fortified breakfast cereals, oatmeal, miso, spinach, milk, yogurt, fish – 25-90 mg per ½ cup

Magnesium is present in **whole grain** products. When grain is refined (sugar, all-purpose flour, or white bread) magnesium is not added back in when the product is enriched.

Calcium

If calcium intake is too low, risk for high blood pressure increases. Calcium can be used to lower blood pressure. Calcium as a supplement (multivitamin) does show some effect, but again the best result is from the calcium in foods, specifically dairy.

Low fat dairy is also a good source of potassium and magnesium, which we discussed above.

Using Dairy to Combat High Blood Pressure

Increased low fat dairy intake will reduce your risk of developing high blood pressure and if you already have high blood pressure, low fat dairy will help control high blood pressure. High fat dairy (whole or 2% milk) does not help fight against high blood pressure. The reason high fat dairy doesn't work is possibly linked to saturated fat negating the mineral benefits. Researchers are still studying this one.

Another plus for increasing low fat dairy intake is weight loss. If you consume at least 3 servings of low fat dairy every day, it will promote a shrinking waist line.

How Much Calcium

The amount needed daily differs between experts, but the general consensus is between 1000 to 1500 mg. To make it easier just remember 3 servings every day!

Calcium Sources

One low fat dairy serving equals:

1 cup 1% or fat free milk	1 cup low fat or fat free yogurt
1 ½ ounces reduced fat cheese	½ cup low fat or fat free cottage cheese

Activity:

Do you drink milk?

How much a day?

What ways can you increase your milk/dairy intake to ensure you get 3 servings everyday? For example: Milk with cereal in the morning, yogurt with lunch (good magnesium source, if you add some granola and you get extra magnesium), snack on low fat mozzarella string cheese, add cottage cheese with peaches for dinner, etc.

What goals are you working on this week?

- 1.
- 2.
- 3.

The DASH Diet:

Lower Blood Pressure in 14 Days

The DASH (Dietary Approaches to Stop Hypertension) diet is an eating plan used to reduce blood pressure. A diet reduced in total and saturated fat and rich in fruits, vegetables, and low-fat dairy foods can significantly lower blood pressure. If followed the DASH diet will lower blood pressure, which can help prevent and control high blood pressure.

Refer to Appendix G to learn more about the DASH Diet.

Lesson 5: Tackle Triglycerides to Lower Cholesterol

Elevated triglycerides are a risk factor for heart disease. Individuals with uncontrolled diabetes will often have elevated triglyceride levels.

Triglycerides

Triglycerides are the most common form of fat found within the body and foods you eat. Triglycerides circulate within the blood stream. Also, the body uses triglycerides as a way to store fat for later energy use. For example, if you consume excess calories in the form of carbohydrates, the body will convert the carbohydrates into triglycerides and store them within fat cells. Stored triglycerides are released from the fat cells to meet your energy needs between meals.

The triglycerides circulating within your blood stream are affected by different dietary factors than the other components that make up total cholesterol. Most of the interventions necessary to lower triglyceride levels will result in elevated HDL cholesterol levels.

Sources

Triglycerides are the main form of fat in foods we eat (i.e. fat and oil in foods like butter, margarine, corn, and canola oil are mainly in the triglyceride form). In addition to the triglycerides we consume in foods, sugar, alcohol, exercise, and caloric intake all affect triglyceride levels.

Digestion

Blood triglyceride levels are normally higher following a meal.

The more triglycerides you eat the more cholesterol your liver produces. Even if total cholesterol levels are normal (less than 200 mg/dl), a high triglyceride level can still contribute to artery clogging. Triglycerides are processed 3 different ways:

1. Too much saturated fat - liver produces cholesterol and releases it into blood stream
2. Too many calories (in sugar or fat form) - liver puts extra calories into triglyceride form and body stores as fat
3. Alcohol consumption - liver produces triglycerides and releases into blood stream

What is a normal triglyceride level?

You want your triglycerides to be below 200 mg/dL. Borderline high triglycerides are from 200-500 mg/dL. Triglycerides are high risk above 500 mg/dL.

Some experts argue that 200 mg/dL is too high and that a normal level should be less than 150 mg/dL. The numbers I've listed above are the current guidelines from the National Cholesterol Education Program Experts' Panel.

Controlling Triglycerides

Lowering triglyceride levels requires making lifestyle changes.

Weight loss and/or weight maintenance

Your current weight:

Are you:

Overweight

Healthy Weight

Underweight

Maintaining a healthy weight is an important component of controlling blood pressure and cholesterol levels.

Excess abdominal fat, apple shape, is linked with high blood pressure, high cholesterol, and heart disease.

Get out a tape measure.

Wrap the tape measure around your abdomen at the level of your navel (belly button). Make sure the tape measure is level all the way around (you may need extra hands). Resist the temptation to cinch in the tape measure for a lower number, instead hold the tape measure lightly against your skin.

Men - A waist measurement of 40 inches (102 cm) or greater equals abdominal obesity.

Women - A waist measurement of 35 inches (88 cm) or greater equals abdominal obesity.

Weight reduction of as little as 10 pounds reduces cholesterol and blood pressure and allows medications to be more effective.

Sugar

Sugar has significant influence on triglyceride levels. Avoid foods that contain a high concentration of simple sugars - candy, baked goods, syrup, table sugar, soft drinks, jelly, and honey. A high intake of fruit juice can also raise triglyceride levels since it contains a high content of natural sugars.

Activity -

I have set up two columns. From each column, select foods that you eat on a regular basis (once a week or more).

Column 1

Syrup

Sugar

Soda

Lemonade, Gatorade, Hi-C,
Sunny Delight

Jelly, Jam

Baked goods

Canned fruit in heavy syrup

Excess fruit juice

Honey

Candy

Column 2

Light syrup

Sugar substitutes (i.e. Splenda, Equal)

Diet soda, Water

Crystal Light Lemonade, Water

All fruit preserves, sugar free jelly/jam

Whole grain products

Canned fruit in light syrup or packed in its
own juices, fresh fruit, frozen fruit

Limit fruit juice to 4 oz/day, Whole fruit

Honey - Limit amount

Sugar free candy

Column 1 contains foods high in sugar, while Column 2 contains healthier alternatives. This does not mean you can *never* eat the foods in Column 1, they just need to be limited and some saved for special occasions only.

Recipe Substitutions:

How to Make Home Cooking Heart Friendly

Learn to make your baked goods healthier by making substitutions.

Refer to Appendix H for more details.

Soda is a common beverage individuals go overboard on amount. How much soda do you drink daily?

How much are you willing to cut back to tomorrow?

Next week? Next month?

What will you drink in place of soda?

Options: Crystal Light, Flavored Water (with zero calories), Water

Fat intake

For triglyceride control, you need to limit total fat intake, saturated fat, trans fats, and cholesterol intake.

- To achieve lower triglyceride levels, maintain a dietary intake of 30% or less of total calories coming from fat.
- Saturated fat intake should be limited to less than 7% of your total daily calories.
- Daily trans fat intake should be less than 1% of your total calorie intake.
- Cholesterol should be limited to less than 300 mg/day.

A healthy diet to maintain or achieve normal triglyceride levels should be based on whole grains, beans, fruits, vegetables, and low-fat animal products.

Do not replace high fat products with simple carbohydrates. Simple carbohydrates may raise triglycerides and lower HDL cholesterol.

If you struggle to replace saturated fats with heart healthy unsaturated fats, I recommend you review the previous section Balance Your Fats to Promote Heart Health.

Omega 3 fatty acids are found in fatty fish, such as salmon, and have a positive impact on triglyceride levels. We will cover omega 3 fatty acids later in the section How to Use Omega 3's to Reduce Heart Disease Naturally.

Alcohol

Limiting alcohol intake is critical. Even a small amount of alcohol can affect blood triglyceride levels.

Activity - Which of the following do you drink?

Beer Wine Hard liquor

How often?

Daily 2-3 x week 1-2 x month Seldom/Never

How much do you consume?

How will you cut back? Ordering virgin mixed drinks does not fix the problem. Mixes are usually loaded with sugar. Do you need to avoid or limit certain social situations? Are there beverages you would drink in place of the alcohol?

Fruits and Vegetables

Have you been told to avoid fruits because they are full of sugar? What about the "bad" potatoes and corn?

Let me clear up this issue. Yes, fruits and some vegetables contain simple carbohydrates that easily bump up blood sugars, which in turn can affect triglycerides.

You can still eat your favorite fruits and veggies, but remember to eat them in moderation and balance your intake with protein due to blood sugar concerns.

If you want to have a banana, have some peanut butter (protein) with it. Protein helps slow the breakdown of carbohydrates, preventing the quick blood sugar rise. Also, eat only one serving of fruits or vegetables at a time. For example, you could have an apple with breakfast and an orange with lunch, but don't eat both at the same time. Then, be sure to include a protein source with each meal/snack. Quick and easy proteins for snacks include yogurt, cheese, nuts, and peanut butter.

Most vegetables, with the exception of your starchy vegetables like potatoes and corn, have less impact on blood sugar levels than fruits. Again, you can still eat them, but watch the serving size (keep it around a ½ cup) and be sure your meal includes meat or another source of protein.

If you are diagnosed with diabetes and regularly monitor your blood sugar, watch your blood sugars closely to make sure portion size and protein combination are maintaining a steady blood sugar.

Here are a few protein sources that are quick and easy to combine with a fruit or vegetable:

Glass of skim milk
Yogurt
Cheese

Nuts
Peanut Butter

Physical Activity

Also, exercise can help control triglyceride levels by as much as 40%. Aerobic activities are the best choices. If you are currently sedentary, check with your doctor before starting an exercise program.

To reduce triglycerides, you need to be physically active for 30 minutes on 3 or more days each week.

Individuals with elevated triglyceride levels often have high blood pressure and high blood sugars. Exercise will not only improve triglyceride levels, but also blood pressure and blood sugars.

Activity - Are you currently active? Yes No

If not, consult your MD before beginning an exercise program.

What date will you speak to your MD?

What do you have access to? (i.e. treadmill, stationary bike, health club, community center, sidewalk, bike path, etc.)

What activity do you currently participate in or are you willing to start?

Walking Biking Swimming Recreational sports

Other

What days of the week can you add physical activity to your schedule?

Sunday Monday Tuesday Wednesday Thursday

Friday Saturday

Most people find they stick with their activity plans if they do it in the morning and cross it off their "to do" list for the day. It does not matter if you work out in the morning, afternoon, or evening. What matters is that you do it! Find a time of day that works for you.

What time of day will you be active?

Morning

Afternoon

Evening

If you need further assistance switching from a sedentary lifestyle to heart healthy activity, I recommend reading the free report [How to Make Heart Healthy Changes](#) for effective strategies to successfully change your habits.

Do you think you have no time for activity?

Fitting in Fitness

Consider reading Fitting in Fitness by the American Heart Association. This is a quick and easy read, best of all you do not need to read it front to back. You can skip around to the sections that work best for you. The book also includes information boxes with quick tips for how to add physical activity into your normal daily routine. [Click here](#) to purchase the book on Amazon.

Walk Yourself Thin

Are your resources limited? Would you prefer not going to a gym? The easiest activity everyone has access to is walking. If you want a motivational read that hammers this point home, I recommend **Walk Yourself Thin** by David Rives which you can also find on Amazon by [clicking here](#).

Lesson 6: How to Use Omega 3's To Reduce Heart Disease Naturally

Part 1: What are fatty acids?

To fully understand fatty acids, you need to understand where they fall in the fat spectrum. For this first lesson, I have to get technical. I know you may not like the technical side of things and you're welcome to skip this first section, but I feel it's important to cover if you're going to have a clear understanding of how omega 3 fatty acids promote heart health. I will simplify the explanation as much as possible.

What are fatty acids?

Fatty acids are the "building blocks" of fat, just as amino acids are the building blocks of protein. Fatty acids are pretty much long chains of carbon atoms with hydrogen bonds. The link or bond between carbon and hydrogen atoms determines whether a fat is saturated or unsaturated.

Saturated Fat

All the carbons in a saturated fat are connected to each other and a hydrogen atom by single bonds. Therefore they are considered fully "saturated" with hydrogen atoms. There's no way for them to hold any more hydrogen. Saturated fats lead to increased cholesterol levels and are NOT heart healthy choices.

Saturated Fat Sources - meat, milk, cheese, ice cream, butter, lard, shortening, hydrogenated vegetable fat, palm oil, and coconut oil

Unsaturated Fat

In unsaturated fats, some of the carbon atoms release the hydrogen and hold on to each other with a double bond. It's possible for only one set of carbons to release hydrogen atoms and sometimes several carbons release their hydrogen atoms. This determines the difference between monounsaturated or polyunsaturated fats. Polyunsaturated and monounsaturated fats promote heart health by lowering LDL cholesterol and raising HDL cholesterol. Some types of unsaturated fats are more beneficial than others, which we'll delve into in part 2 of this course.

Unsaturated Fat Sources - vegetable oils, peanut butter, fish, nuts, and seeds

Monounsaturated Fat

This is an unsaturated fat where one set of carbons has released hydrogen atoms to hold on to one another with a double bond. Omega 9 fatty acids are monounsaturated fatty acids. Olive oil is a good source of omega 9 fatty acids.

Olive oil is very prominent in Mediterranean diets, which are well-known to be linked with reduced levels of heart disease, compared to the sunflower oil (omega 6 fatty acid) that is widely used in the United States.

Polyunsaturated Fat

This is an unsaturated fat that occurs when multiple carbons release hydrogen atoms to form double bonds. The location of the first double bond determines the difference between an omega 3 or omega 6 fatty acid.

Omega 3 Fatty Acids

The first double bond is located on the third carbon from the "omega" end of the carbon chain. Fish oil is one type of omega 3 fatty acid.

Omega 6 Fatty Acids

The first double bond is located on the sixth carbon from the "omega" end of the carbon chain.

Okay, let's move away from the biochemistry side of fatty acids and into how they reduce your cholesterol levels and heart disease risk.

How Omega 3's Reduce Heart Disease Risk

Let's start with eating a juicy cheeseburger. The fat and cholesterol enter your digestive system and are picked up by the liver. The liver packages the fat and cholesterol into "lipoproteins". The lipoprotein LDL drops cholesterol along your artery walls as it moves throughout circulation. The arterial plaque builds up and narrows your artery. When LDL is oxidized by "free radicals" the immune system kicks into play and the process of inflammation begins as the body tries to repair the damage to the artery wall caused by LDL. A whole series of steps takes place that lead to plaque formation within your artery wall. This hard plaque may be "stable" or "unstable". A stable plaque is not as dangerous as an unstable plaque, but neither is desired. An unstable plaque can rupture and lead to three events - stroke, heart attack, or arrhythmic death (racing heart or heart stops due to electrical instability).

Within *three short days* of eating a diet rich in omega 3 fatty acids, omega 3 can penetrate the arterial plaque to slow the rate of plaque build-up and reduce the risk of plaque rupture, damage to the artery wall, and sudden death from heart attack, stroke, or arrhythmia. Omega 3 fatty acids also help blood vessels relax to achieve reduced blood pressure and decrease stress placed on artery walls. Omega 3 also reduces blood thickening, which reduces the risk of blood clots.

To sum up the benefits of omega 3 fatty acids: By reducing inflammation, relaxing blood vessels, and decreasing the clot factor, omega 3 fatty acids decrease your risk of heart disease.

All Benefits of Omega 3's

- Decreases lipoprotein A and triglycerides (blood fat)
- Reduces blood pressure
- Increases HDL cholesterol
- Reduces arterial wall inflammation
- Improves endothelial function (inner layer of artery wall)
- Makes blood less likely to form clots (decreased fibrinogen)
- Slows and may reverse plaque build-up (decreased atherosclerosis)
- Prevents plaque rupture - Within three days, fish oil can penetrate plaque build-up in your arteries and make it less susceptible to rupture
- Improves heart rhythm (decreases arrhythmia)

Activity:

Let's review this information with a short quiz.

1. What type of fat is best for heart health - saturated or unsaturated?
2. True or False - Omega 3 and Fish oil are the same thing?
3. What oil is a monounsaturated fat and prominent in Mediterranean diets?
4. Out of all the benefits of omega 3 fatty acids, which is most beneficial to you and will motivate you to change your diet to include more omega 3 fatty acids?

Essential Fatty Acids

It's important to eat foods rich in omega 3's, because it's an essential fatty acid. This means omega 3 is necessary for heart health, but your body cannot make omega 3 fatty acids. Your only source of essential fatty acids (such as omega 3's) is from the foods you eat.

Types of Omega 3

There are several different types of omega 3 fatty acids. I want to touch on three of them:

ALA – alpha linolenic acid

EPA – eicosapentaenoic acid

DHA – docosohexanoic acid

All three promote heart health, but studies find DHA to be the most effective, with EPA second, and ALA third in regards to effectiveness.

The body can convert ALA to EPA and EPA to DHA, but the conversion process is not efficient. It's best to include food sources rich in EPA and DHA as part of your daily diet.

Sources of Omega 3

Fish

Fish is a source of omega 3 fatty acids rich in DHA. Select types of fish rich in omega 3's, such as anchovies, Atlantic sturgeon, herring, mackerel, salmon, sardines, rainbow/lake trout, and albacore tuna.

Flaxseed

Flaxseed is a good source of omega 3 fatty acids, specifically ALA. You can buy flaxseed two different ways - whole seed or ground. In order for the body to utilize the omega-3 fatty acids, flaxseed must be ground. If the flaxseed is not ground it passes straight through the body without being absorbed. Flaxseed is high in fiber, so by ingesting whole flaxseed you have increased your fiber intake, which is beneficial, but if you grind your flaxseed you will have the added benefit of increasing your omega-3 fatty acid intake and lowering cholesterol.

Add ground flaxseed to pancakes, waffles, quick breads, meatloaf, spaghetti sauce, chili, hot/cold cereal, yogurt, etc.

Nuts and Seeds

Walnuts, pumpkin seeds, Brazil nuts, sesame seeds, butternuts, pecans

Vegetables

Legumes - pinto, navy, or lima beans; peas or split peas; green soybeans

Green leafy vegetables - broccoli, avocados, spinach, lettuce, greens, kale, mustard greens, collards

Fruit

Citrus fruit

Eggs

Omega 3 enriched eggs (limit to 1-2 eggs/week)

Oils

Canola oil, soybean oil, flaxseed oil

Supplements

Fish oil supplements

Start with the smallest bottle you can find and make sure you do not have the unpleasant side effect of burping a fishy aftertaste. Not everyone has this problem, so you may be fine. To decrease the likelihood of this problem I recommend taking the supplement and then eating, so food "sits on top" of the fish oil. Fish oil has a tendency to go rancid, so keep supplement refrigerated, especially if you buy a bottle of 250 or more.

Flaxseed oil supplements

Flaxseed contains the omega 3 fatty acid ALA. Now, ALA is not as effective as DHA and EPA at lowering cholesterol, but still promotes heart health. Again, may go rancid so refrigerate.

Activity:

Out of the top 5 sources of omega 3 fatty acids, which source is a regular part of your current diet (3 or more times/week):

Fish - rich in omega 3's

Flaxseed (ground)

Nuts and Seeds

Fish oil supplement

Flaxseed oil supplement

What will you do this week to increase your omega 3 fatty acids intake?

Examples:

Take a fish oil supplement daily (finish this program before purchasing)

Add ground flaxseed to foods.

Snack on walnuts.

Eat legumes 3 times a week.

How Much Omega 3 to Be Heart Healthy

This is under debate and more research is being done. Right now the range experts recommend is from 500-2000 mg/day. Here are the current American Heart Association (AHA) recommendations.

- The AHA recommends that individuals without heart disease eat a variety of fish twice a week, use heart healthy oils (flaxseed, canola, soybean oils), and consume flaxseed and walnuts.
- For individuals with heart disease, the AHA recommends 1 g of EPA + DHA daily, preferably from fatty fish.
- The AHA recommends 2 to 4 g of EPA + DHA daily, *under physician's care only*, for individuals who need to lower triglycerides. High doses, > 3 grams/day, can result in excessive bleeding. (Do not self medicate! Talk to your MD before supplementing greater than 2 grams.)

So, let's take this a step further and lay out how the fats in your diet should line up in order to lower cholesterol, lower blood pressure, and decrease your heart disease risk.

Out of your total daily caloric intake, 30% of your calories should come from fat. Out of this total fat of 30%, 10% should be omega 3's, 50% omega 9's, 10% omega 6's, and less than 30% saturated.

Total fat = 30%

10% = omega 3's

50% = omega 9's

10% = omega 6's

<30% = saturated

How many calories do you eat each day? (For this example I'm going to use 2000 calories, but you should use your actual caloric intake.)

To calculate your total fat intake, multiply daily calories by 30%. To change fat calories to fat grams, divide by 9.

$2000 \times 0.30 = 700$ total fat calories (~78 grams)

Omega 3: $700 \times 10\% = 70$ calories (~8 grams)

Omega 9: $700 \times 50\% = 350$ calories (~39 grams)

Omega 6: $700 \times 10\% = 70$ calories (~8 grams)

Saturated Fat: $700 \times 20\text{-}30\% = 140\text{-}210$ calories (~16-23 grams)

Trans Fat: $0\% = 0$ calories (0 grams)

Since our focus in this lesson is omega 3 fatty acids, I'll touch on omega 6 and omega 9 briefly, then we'll focus on omega 3's.

Omega 9

39 grams of omega 9:

1 Tbsp olive oil = 10 grams

A well known cardiac MD recommends 4 tbsp olive oil per day and this would give you the 39 grams you need for heart health. However, 4 tbsp equals a significant chunk of calories and can be a problem if you are trying to lose weight. Stick with 1-2 Tbsp per day added to your meals. Use light margarines/butter with no trans fatty acids made with olive oil (~2.5 grams omega 9/tablespoon).

Omega 6

8 grams of omega 6:

Omega 6 is very prevalent in Western diets and typically you will have more difficulty cutting back on omega 6's versus struggling to meet the 10% needed each day. Typical sources of omega 6 include sunflower oil, safflower oil, soybean oil, and cottonseed oil. You'll need to read food labels to evaluate the foods you currently eat and their content of omega 6 fatty acids. Fatty acids are not bad for heart health, but the balance between omega 6's and omega 3's tends to be out of proportion. In the typical American diet, for every gram of omega 3, there's usually 11-30 grams of omega 6. Ideally the ratio between omega 3 and omega 6 should be 1:1. Increasing the amount of omega 3 fatty acids in your diet and decreasing the amount of omega-6 is beneficial in reducing your risk for heart disease.

Omega 3 Fatty Acids

8 grams of omega 3:

Fish Sources (3 ½ ounces or 100 grams)

Atlantic mackerel = 2.6 g
 Herring = 2.5 g
 King mackerel = 2.2 g
 Lake trout = 2.0 g
 Atlantic salmon, farmed = 1.9 g
 Pacific herring = 1.8 g
 Bluefin tuna = 1.6 g
 Atlantic sturgeon = 1.5 g
 Chinook salmon = 1.5 g
 Anchovies = 1.4 g
 Canned sardines = 1.4 g
 Pink salmon = 1.0 g
 Halibut = 0.5-0.9 g
 Rainbow Trout = 0.6 g
 Pollock = 0.5 g
 Tuna = 0.5 g
 Catfish = 0.3-0.5 g
 Sole = 0.1

Shellfish (3 ½ ounces or 100 grams)

Shrimp = 0.5 g

Crab = 0.4 g

Lobster = 0.4 g

Clam = 0.1

Non-fish ways to add omega 3:

2 Tbsp ground flaxseed = 3.5 grams (Add to pancakes, waffles, cold/hot cereals, yogurt, quick breads, spaghetti sauce, chili, meatloaf, etc.)

Whole grain products made with ground flax (breads, muffins, etc.) - Read the food label

Omega 3 enriched eggs (1-2 per week) = 0.5 grams/egg

Green leafy vegetables (broccoli, spinach, lettuce, greens, kale, Brussel sprouts) - 0.10 - 0.25 grams/cup

Legumes (pinto, navy, lima beans; peas/split peas) 1.0 gram/cup

Walnuts .25 cup = 2.25 grams

Citrus fruit (strawberries) 0.10 gram/cup

How to apply this to your diet:

Breakfast - 1 Tbsp flaxseed added to cold cereal (1.75 g)

Snack - 1 Tbsp flaxseed added to yogurt (1.75 g)

Lunch - 2 cup salad made of dark green leafy vegetables (~.50 grams)

Snacks - ¼ cup walnuts (2.25 grams)

Dinner - 3 ounces lake trout (2.0 grams)

Snack - frozen yogurt with strawberries (0.10 grams)

Total omega 3 for the day = 8.35 grams

Activity:

Calculate the grams of omega 3 you need each day to be heart healthy.

Daily calories x 30% = Daily fat calories

Daily fat calories x 10% = Daily omega 3 calories

Daily omega 3 calories divided by 9 = Daily grams of omega 3

Refer to the example above and write the total grams of omega 3 you need on the line below.

Goal: _____

Now, plan your meals tomorrow. Include omega 3 sources so your daily intake totals the goal amount of omega 3's.

Breakfast:

Snack:

Lunch:

Snack:

Dinner:

Snack:

Total omega 3's = _____

You almost have all the pieces to eat a heart healthy diet rich in omega 3's. Watch your inbox for part 4 to learn the final pieces of the puzzle!

Supplements

Meeting your goal omega 3 intake every day may be difficult through foods alone. As we discussed in the last lesson, the American Heart Association recommends a 1 gram omega 3 as a diet supplement.

When choosing a supplement, select one high in DHA and EPA. Ideally, the DHA and EPA content should equal 850 mg in a 1 gram supplement. Read supplement labels!

A 1 gram supplement containing 850 mg DHA and EPA reduces sudden cardiac death by 30% over a 1 year period of time.

Precautions

You now have the knowledge and tools you need to increase omega 3's in your diet and lower cholesterol, lower high blood pressure, and reduce your risk of heart disease. Here are a few precautions to keep in mind as you follow a diet rich in omega 3's:

Amount

You may be tempted to simply use supplements to meet your omega 3 fatty acid needs versus making diet changes. I do NOT recommend you go this route. The side effects of doses greater than 3 grams are not fully understood at this time. The American Heart Association recommends supplementing 2-4 grams only under a physician's care. Work with your doctor to determine what's best for you!

Quality

Don't select just any fish oil available. Use pharmaceutical-grade fish oil. This means products free of toxic substances, such as mercury and PCB's (chlorinated compounds).

Medication Interactions

Early research found increased bleeding risk linked to fish oil. This is especially a concern if you take Coumadin or other anticoagulants (blood thinners). More recent research has not shown increased risk of bleeding with fish oils, but exercise caution and discuss with your MD. Recent studies have actually found fish oil to reduce gastrointestinal bleeding risk and heal peptic ulcers. Discuss with your MD, in case he needs to monitor your clotting status or adjust your medications.

In certain situations, it would be very important for your blood to be able to clot quickly, such as an upcoming surgery!

It's best to stop supplementing your diet with fish oil prior to any surgery. Consult your MD regarding when to stop your supplement and when to start back up after your surgery.

Side Effects

While fish oil is typically well-tolerated, some people complain of "fishy" burps. This problem can often be resolved by eating food when you take the supplement. Also, you can find some supplements with a special coating designed to reduce the fish odor/taste.

Activity:

Do you currently take a fish oil supplement?

If yes, grab your supplement and check the label. How many mg of DHA and EPA does it contain? Are you receiving ~850 mg in 1 gram of fish oil?

Are you confused? Here are some examples:

Nutriline Ocean Essentials Heart Health (Quixtar)

Serving Size = 3 soft gels

EPA = 1200 mg

DHA = 600 mg

This gives you a total of 1800 mg, well above the needed 850 mg. This is a more expensive supplement at \$45 for 90 capsules. You could opt to reduce the recommended serving size to 2 capsules/day and still receive 1200 mg DHA/EPA daily.

Spring Valley Fish Oil - Heart Health (Wal-Mart)

Serving Size = 1 soft gel

Fish oil = 1200 mg

EPA = 410 mg

DHA = 274 mg

This gives you a total of 684 mg DHA/EPA. So, this product is slightly below the needed 850 mg/day. When reading supplement labels, remember the term "fish oil" is not interchangeable with omega 3 fatty acids. Look for DHA and EPA specifically. Add the two together and compare the total to your goal of 850 mg/day. Spring Valley is ~\$5 per 90 capsules.

If you're not currently supplementing fish oil, when will you start? Be sure to read food labels when making your selection.

Discuss your supplements with your MD!

If you do not tolerate fish oil supplements, flaxseed oil is another option to boost omega 3 fatty acid intake. Flaxseed oil contains the omega 3 fatty acid ALA, so you do not need to check the label for DHA and EPA. Simply find a quality product that provides 1 g of omega 3's.

PAM (Pan-Asian Mediterranean) Diet Guide

Refer to Appendix I for more details on the PAM Diet.

Lesson 7: Lower Cholesterol by Boosting Soluble Fiber

What is dietary fiber?

Dietary fiber is the portion of a plant that cannot be digested, also known as roughage. Dietary fiber passes through the digestive system without being absorbed.

Types of Dietary Fiber

Fiber is divided into two categories - soluble and insoluble. Both types of fiber are not absorbed by the body; therefore, they are excreted from our bodies and not used for energy.

Insoluble Fiber

Insoluble fiber remains relatively intact as it passes through the digestive system. The primary function of insoluble fiber is to move waste through the intestines and maintain intestinal acid balance.

Sources

- Fruit skins and root vegetable skins
- Vegetables (green beans, celery, cauliflower, zucchini, beets, turnips, potato skins, and dark green leafy vegetables)
- Wheat and whole-wheat products
- Wheat oat
- Corn bran
- Seeds and nuts

Activity - Which of the following sources of *insoluble* fiber do you eat daily?

Fruit skins and root vegetable skins (apple skins, plum skins, potato skins)

Vegetables (green beans, celery, cauliflower, zucchini, beets, turnips, and dark green leafy vegetables)

Wheat and whole-wheat products (breads, cereals, crackers)

Wheat and corn bran (cereals)

Seeds and nuts

What will you add to increase your insoluble fiber intake?

Benefits of Dietary Fiber

A diet high in dietary fiber plays an important role in preventing heart disease and lowering cholesterol levels. Dietary fiber binds to cholesterol in circulation and helps remove it from the body. Research has shown that for every 1-2 grams of daily soluble fiber intake, LDL cholesterol is lowered 1%. Fiber also increase satiety (how full you feel), aiding efforts to lose weight and/or maintain a healthy weight.

Soluble Fiber

Soluble fiber is the type of fiber responsible for lowering total cholesterol and LDL cholesterol levels.

Sources

- Oat and oat bran
- Legumes (dried beans and peas)
- Nuts
- Barley, rye
- Flax seed
- Fruits (i.e. oranges, apples, prunes, plums, berries)
- Vegetables (i.e. carrots, broccoli, potatoes, sweet potatoes, onions)
- Psyllium husk

Activity - Which of the following sources of *soluble* fiber do you eat daily?

Oat and oat bran (oatmeal)

Legumes (beans, lentils, and peas)

Nuts and seeds (sunflower seeds, flax seeds)

Barley, rye (cereal, breads)

Fruits (i.e. oranges, apples, prunes, plums, berries, apricots, figs)

Vegetables (i.e. carrots, broccoli, potatoes, sweet potatoes, onions, collard greens, avocado, parsnips, Brussels sprouts)

How Much Dietary Fiber

You need to consume between 25-35 grams of dietary fiber daily. Of this, soluble fiber should make up 15 grams. For every 1-2 grams of daily soluble fiber intake, LDL cholesterol is lowered 1%.

The average US dietary fiber intake is 12-18 grams/day. If your current diet is very low in dietary fiber, do not increase to 35 grams overnight. A sudden increase will result in gastrointestinal (stomach) distress and unpleasant side effects (flatulence and diarrhea). You want to increase your intake gradually.

Fiber Content

Top 5 Foods Containing Dietary Fiber

1. Legumes - 15-19 grams of fiber per cup
2. Wheat bran - 17 grams per cup
3. Prunes - 12 grams per cup
4. Asian pear - 10 grams each
5. Quinoa - 9 grams per cup

Two fruits worth mentioning are the raspberry (8 grams dietary fiber per cup) and blackberry (8 g dietary fiber per cup).

Each of the following contains 2 grams of soluble fiber:

- 1 cup cooked oatmeal
- 1 cup oat bran
- 1 cup collard greens
- 1 cup cooked rye cereal
- 1 cup cooked barley
- 1 cup lentils
- ½ avocado
- 1 cup broccoli
- 1 cup parsnips
- 1 cup Brussels sprouts
- 1 cup carrots
- 6 prunes
- 1 large sweet potato
- 1 cup split peas
- ½ cup apricots or figs
- 1 cup cooked beans (i.e. pinto, navy, black)
- ¼ cup ground flax seeds
- ½ cup sunflower seeds

Read food labels to increase your dietary fiber intake. If you select foods that are whole grain and eat at least 5 servings of fruits and vegetables every day, you will likely meet your daily fiber needs.

Activity - I have set up two columns. From each column, select foods that you eat on a regular basis (once a week or more).

Column 1

White bread, bagels

White flour

Original snack crackers

Red meats

White rice

Refined pasta

Column 2

100% whole wheat bread/bagels

Whole wheat flour

Whole grain snack crackers, popcorn

Legumes, seeds, and nuts

Brown rice

Whole grain pasta

Fruits and Vegetables

Column 1 contains foods low in dietary fiber, while Column 2 provides healthy high fiber alternatives. You may still eat the foods in Column 1 occasionally, but try to make a switch to Column 2 foods for your normal daily intake.

How much fiber do you usually eat for -

Breakfast

Lunch

Dinner

Snacks

Typical daily total

For the questions above, think about what you eat on a typical day. For example, do you usually have a bowl of Cheerios for breakfast. If so, read the Cheerios food label to see how many grams of dietary fiber are in one bowl.

How many grams of fiber should you eat daily?

What will you add or change about your typical meals to increase your fiber intake? (For example, have a piece of fruit at breakfast and an afternoon snack. Remember, if your current fiber intake is low, add higher fiber foods gradually over several weeks.)

Breakfast

Lunch

Dinner

Snacks

Typical daily total

Appendix A –

Guide to Understanding Cholesterol Levels: *Reduce Heart Disease Naturally*

Lipid Profile

It's very possible your MD orders lab work and you have no idea what or why you're having blood drawn. Well, let's clear up the confusion when it comes to your cholesterol labs.

The terms "lipid panel", "lipid profile", and "lipoprotein profile" are used interchangeably to order the same set of labs. To make reading this easier, I'm going to use "lipid profile" from here on out.

"Lipid" is simply a medical term for "fat". A lipid profile measures fatty substances in your blood. Cholesterol is one type of fat.

What is cholesterol?

Cholesterol is a soft, waxy fat found in the blood. Cholesterol is used for many bodily functions and is produced by our bodies. Our liver makes some cholesterol which is needed for normal growth. The amount of cholesterol our bodies produce is related to our genetic makeup. Cholesterol is also found in animal products (eggs, meat, poultry, fish, and dairy products).

When you eat food containing cholesterol or when your body produces cholesterol and releases it into your bloodstream, the cholesterol will attach to a protein. This package of cholesterol plus a protein is called a lipoprotein (lipid or fat plus protein). A lipid profile measures lipoprotein levels in your blood.

Lipid profiles include five components:

LDL cholesterol

LDL (low-density lipoprotein) cholesterol carries mostly cholesterol, some protein, and minimal triglycerides throughout your circulation, depositing cholesterol along blood vessel walls as it travels. LDL has a longer half life than VLDL (3-4 days); therefore it is more prevalent in the blood.

LDL should be less than 100 mg/dL (less than 70 mg/dL if you are at high risk of a heart attack)

VLDL cholesterol

VLDL (very low-density lipoprotein) cholesterol contains minimal protein and mainly transports triglycerides. When we consume a high fat food our body breaks the food down and releases fatty acids into the blood. When the fatty acids reach the liver, the liver changes the fatty acids into triglycerides. The liver then releases a package or vehicle called VLDL that contains the triglycerides, along with cholesterol, into circulation. VLDL is quickly broken down by the body and the triglycerides are released and repackaged as LDL. VLDL is not a number you will see in your lab results. VLDL is estimated by taking 20% of your triglyceride level.

Triglycerides x 20% = VLDL or triglycerides divided by 5 = VLDL cholesterol

VLDL should be less than 40 mg/dL.

Triglycerides

Triglycerides are a type of fat in the blood, not a type of cholesterol.

Triglycerides are used to store fat from the foods we eat and make up our "fat cells". Triglycerides are frequently used to estimate VLDL cholesterol.

Triglycerides should be less than 150 mg/dL

HDL cholesterol

HDL (high-density lipoprotein) cholesterol removes cholesterol from your bloodstream and carries it back to the liver. I like to think of HDL as a vacuum cleaner, picking up cholesterol LDL leaves behind in your arteries, the more HDL the better. High HDL levels are protective against heart disease.

HDL should be greater than 40 mg/dL for men and greater than 50 mg/dL for women (ideally greater than 60 mg/dL for both men and women)

Total cholesterol

Cholesterol is essential to bodily functions, such as building cells and producing hormones. However, too much cholesterol will build up on artery walls, form a plaque, and potentially "plug" the artery resulting in a heart attack or stroke. Total cholesterol is calculated from the above components:

Total cholesterol = HDL + LDL + VLDL.

Total cholesterol should be less than 200 mg/dL.

Do you see how if you only know your total cholesterol, you only have one piece of the lipid profile?

Activity - Have you had your cholesterol checked?

If you answered 'No', I strongly encourage you to have your levels checked. You have a couple options - local health fairs, ask your MD to order labs, lab direct (order labs yourself). When and where will you have labs drawn?

You should have your cholesterol checked at least once every 5 years. I recommend attending local health fairs to have a screening completed annually.

What are your numbers?

Total Cholesterol

LDL

HDL

Triglycerides

What numbers do you need to change?

Cholesterol Ratios and Risk Scores

Now, sometimes your results will include ratios or a risk score. Here's an explanation of what those numbers mean.

Risk Score

A risk score is based on your lipid profile results, sex, age, family history, and various other risk factors. If you have a high risk score for heart disease, it's best to speak with your MD to evaluate your risk score.

Cholesterol:HDL Ratio

You want a low ratio of cholesterol to HDL. A ratio lower than 4.5 is good, but 2 or 3 is best. You can calculate your cholesterol to HDL ratio by dividing total cholesterol by HDL. For example, if your total cholesterol is 195 and your HDL is 55, $195 \div 55$ equals a ratio of 3.5.

It's actually not your total cholesterol that has the greatest impact on your heart disease risk. The ratio of total cholesterol to HDL is a critical factor. If your total cholesterol is less than 200, but your ratio is 5, you are still at increased risk for developing heart disease.

LDL:HDL Ratio

This ratio compares the amount of LDL cholesterol to your HDL cholesterol levels. You want a ratio less than 3.5, ideally less than 2.5. To calculate your ratio, divide LDL by HDL. For example, your HDL is 55 and LDL is 100. $100 \div 55$ equals a ratio of 1.8.

Triglyceride:HDL Ratio

A low ratio of triglycerides to HDL is best, ideally less than 2. To calculate your triglyceride to HDL ratio, divide your triglycerides by your HDL. For example, your triglyceride level is 200 and your HDL is 55. 200 divided by 55 equals a ratio of 3.6.

Use of Lipid Profiles

Lipid profiles are commonly ordered to assess your heart disease risk. Your doctor or dietitian will evaluate the results to determine the best treatment to reduce your risk.

A lipid profile is beneficial, because you learn both your HDL and LDL cholesterol levels. The interventions that work best to raise HDL and lower LDL differ, so knowing all your numbers helps you make the most effective changes.

You're probably wondering why a lipid profile isn't always ordered versus simply checking your total cholesterol (and possibly HDL). Cost and time always play a part and if your risk for heart disease is low, then a quick and less expensive screening makes sense. If you are at increased risk, a more complete assessment (lipid profile) may be more appropriate. Everyone's situation is unique, so it's best to discuss what's right for you with your MD.

Activity

What are your ratios?

Cholesterol:HDL Ratio _____

LDL:HDL Ratio _____

Triglyceride:HDL Ratio _____

Which ratio do you need to improve?

What is your risk score?

Appendix B –

Guide to Understanding Blood Pressure: Reduce Heart Disease Naturally

Circulatory System

To understand blood pressure you also need to have a basic understanding of the circulatory process. Here is a rudimentary explanation. The heart has four chambers – left and right atriums, left and right ventricles. Oxygenated blood exits the heart from the left ventricle into arteries. Blood then flows through ever narrowing channels – arteries to arterioles to capillaries. It is at the capillary level that oxygen and nutrients are exchanged within our organs and body cells for nourishment. Blood that is depleted of oxygen is then returned to the heart via veins. The oxygen poor blood enters the right atrium, is transferred to the right ventricle, which is followed by circulation through the lungs (pulmonary system) where it is again saturated with oxygen and ready for distribution to the body. Oxygenated blood exits the lungs into the left atrium. This oxygen rich blood is then delivered to the left ventricle and pumped back into circulation throughout the body. This is a never ending cycle.

What is Blood Pressure?

Everybody who is alive has a blood pressure. If you did not have a blood pressure, blood would not circulate and provide oxygen and food to your organs.

When the heart contracts and pushes blood to the arteries, pressure is created within the artery walls. The pressure that is created is blood pressure and it is the result of two forces. The first force occurs when the blood enters the arteries from the heart. The second is the arteries' resistance to the blood.

Healthy arteries are muscular and elastic. When blood enters they will dilate (expand) to aid in the blood flow. The degree to which arteries dilate, depends on the force of the blood and nerve impulses.

This is information I wanted to include to clear up any confusion you may have related to heart rate, pulmonary hypertension, and high blood pressure.

Blood pressure versus heart rate

As stated above, blood pressure is the force of the blood against artery walls and is measured with two numbers – systolic and diastolic – which I defined above.

Heart rate is the number of times the heart beats each minute and is reported with one number. A normal heart beat is 60 to 100 beats per minute; although research is indicating a heart rate greater than 80 beats per minute may be a red flag.

Just because your heart rate increases does not automatically mean your blood pressure increases also. Blood pressure will increase slightly during each heart beat (blood released into the arteries) and decrease between beats (heart relaxes).

If you have healthy arteries and veins, they will dilate (expand) to aid blood flow. During exercise, your heart rate should increase to get oxygenated blood to your muscles quicker, while a healthy individual's blood pressure may have just a slight increase.

Blood pressure can change from minute to minute as you change position (sitting versus standing) and with changes in your activity level (exercise versus sleeping).

Pulmonary hypertension versus high blood pressure

We have two circulatory systems – systemic and pulmonary. Systemic (entire body) circulation starts at the heart's left ventricle and goes until the oxygen poor blood returns to the heart via veins. The second circulatory system is pulmonary (lungs). This system begins when the heart's right ventricle pumps blood into the arteries of the lungs, where it accumulates oxygen for recirculation to the entire body. In most cases, the arterial blood pressure in the lungs (pulmonary) is significantly lower than systemic (entire body). Individuals are diagnosed with pulmonary hypertension when pressure in the pulmonary arteries is greater than 25 mm Hg at rest and 30 mm Hg during exercise.

Pulmonary hypertension and high blood pressure are not the same thing.

High Blood Pressure (Hypertension)

When blood pressure remains too strong for a long time, you have high blood pressure. The medical term for high blood pressure is ***hypertension***.

The number of people diagnosed with high blood pressure is on the rise. Just because it is becoming a common disease, does not make it acceptable. Nerves, excitement, and activity can all increase blood pressure, but this increase is temporary. If blood pressure stays high, this indicates high blood pressure. Doctors will normally monitor you repeatedly before a diagnosis is made and/or treatment started.

Development of High Blood Pressure

Quick review of the circulatory system – Blood that leaves the heart goes through a series of channels – arteries to arterioles to capillaries. The blood travels through the largest vessel (arteries) down to the smallest (capillaries) where the oxygen and nutrients are exchanged to your body's organs. Blood is then circulated back to the heart via veins.

As I stated above, nerve impulses influence arteries to dilate (expand) or contract (narrow). When arteries are dilated, blood flows easily. When arteries are narrow, blood flow is difficult and pressure within the artery walls increases. This puts strain on the heart and arteries can become damaged.

Hardening of the artery walls (arteriosclerosis) and the build up of plaque and cholesterol on the artery walls (atherosclerosis) reduce the elasticity of arteries increasing the heart's workload. The heart must pump harder every beat to send blood into circulation, which affects blood pressure. This hardening of the artery wall and build-up of plaque is related to blood cholesterol levels and has a direct impact on blood pressure.

If you do have high cholesterol, it does not mean you automatically have high blood pressure also. However, many of the lifestyle factors that affect cholesterol levels, also impact blood pressure (low physical activity, high saturated fat intake, excess alcohol consumption, etc.).

What Causes High Blood Pressure?

Primary (also called essential) **hypertension**

You can have high blood pressure without a known cause. This is the most common type of high blood pressure and is true for 90-95% of cases.

Secondary hypertension

You can link your high blood pressure to a cause, such as kidney abnormality. In the 5-10% of secondary hypertension cases, the cause of high blood pressure can be linked to:

- *Kidney disease* – limits the ability of the kidneys to remove salt from your blood
- *Sleep apnea* (breathing difficulty interrupts sleep)
- *Structural abnormality or narrowing of aorta* (large blood vessel leaving the heart)
- *Narrowing of renal artery* – causes release of hormones that increase blood pressure
- *Cushing's disease, aldosteronism, and pheochromocytoma* – result in excess hormone production from adrenal glands, which leads to high blood pressure

Most of these problems can be effectively treated to avoid high blood pressure.

Symptoms

There are usually **no symptoms** associated with high blood pressure, hence the name the “silent killer”. Many people have no idea they have it.

Even those who are aware that they have high blood pressure, they do not treat the diagnosis seriously because they feel fine. Fortunately, the heart, brain, and kidneys can withstand the increased pressure for a long time. This is why you can live for years without knowing you have high blood pressure. Unfortunately, during this time, damage is being done.

Nervousness, sweating, and sleep difficulties are not signs that you have high blood pressure. This is a frequent misconception. The only way to know is to have your blood pressure checked.

Headaches, dizziness, and/or nosebleeds do not usually occur until high blood pressure has reached advanced stages.

High Blood Pressure's Effect on Body

High blood pressure increases the heart's workload by making the heart pump harder through the arteries. If the high pressure continues over a long period of time, the functioning of the heart and arteries (and other organs, such as the kidneys') gradually deteriorates under the strain. The added workload causes the heart to enlarge. If your heart enlarges too much, it may have difficulty meeting the needs of your body.

Arteries harden as a normal process of aging. High blood pressure speeds up this process. Hardened and narrowed arteries are less effective at delivering oxygen and nutrients to your organs. If the needs of your organs are not met, they do not work properly. Blood clots become a risk as arteries narrow, cutting off the body's blood supply.

High blood pressure increases your risk for stroke, congestive heart failure, kidney failure, and heart attack. High blood pressure combined with excess weight, high cholesterol, smoking, or diabetes, increases the risk exponentially.

If high blood pressure is not treated it can cause serious damage and even kill you!

Blood Pressure Monitoring

Start monitoring your blood pressure early. Blood pressure should be checked every two years after the age of 21, annual checks after age 50, more frequent checks if you have risk factors. Luckily it is fast, easy, and painless.

It is easiest to treat high blood pressure if you catch the gradual increase early on. If you have a family history of heart disease or stroke, all the more reason to pay attention.

Most likely, since you are here to learn how to 'Control High Blood Pressure', you are already past that stage and it is time for action. Don't worry, there are ways to control high blood pressure, which we will get to.

Home High Blood Pressure Monitoring

It is a good idea to monitor your blood pressure at home, as well as your doctor's office. Combining your readings with your doctor's will provide a better measure of your high blood pressure and treatment to control it.

Also, home monitoring will rule out if you suffer from "white coat hypertension".

About 30% of individuals diagnosed with hypertension, have "white coat hypertension". In other words, their blood pressure is elevated due to increased anxiety when visiting the doctor. Now, don't get excited that this may be your problem! The only way to know the effects on your blood pressure is to monitor it regularly. For the most accurate results, monitor your blood pressure at the same time every day.

There are many options for home monitoring - Mercury sphygmomanometer (standard bp cuff and stethoscope), aneroid equipment, automatic equipment, manual inflation monitors, automatic inflation monitors, and wrist monitors. Work with your MD to decide which method is best for you.

DO NOT substitute home monitoring in place of regular MD checkups. Your MD appointments are very important, especially if your high blood pressure is being treated with medication.

Left Arm versus Right Arm

It is not unusual for your blood pressure to be higher in one arm than the other. Blood pressure may be slightly higher in your dominant arm. For example, if you are right-handed, you may get a higher blood pressure reading when taken on your right arm. Usually the difference between arms is 10 mm Hg or less. Now, if you have heart disease, studies show the difference between arms to be greater. **The arm with the higher blood pressure, is the one you should monitor.**

Variance

It is normal for your blood pressure to change depending on what you are doing. It can fluctuate slightly with every heartbeat! Typically, blood pressure increases during activity and decreases when you are resting. Frequently, blood pressure will increase in cold weather and when you are stressed, startled, or if you feel threatened. As discussed above, "white coat hypertension" does occur for some.

You will get a good average blood pressure reading if you take your blood pressure at the same time every day. This will minimize the effect of external factors.

Have you had your blood pressure checked?

Yes No

If you answered 'No', I strongly encourage you to have your blood pressure checked. You have a couple options – MD appointment, local health fairs, Wal-mart self check machine. List when and where you will have blood pressure checked.

Do you have 'white coat hypertension'?

Yes No

Start a blood pressure log at home to monitor your blood pressure.

Ideally, monitor your blood pressure at the same time every day. If you occasionally monitor your blood pressure in the morning and receive an abnormally high reading, discuss with your MD. This may be a sign of sleep apnea issues.

Use the log below to get started.

Blood Pressure Log

Date	Time	Blood Pressure	Notes

Review your log with your MD at your next appointment.

When is your next MD appointment?

Understanding the Numbers

Your blood pressure consists of two numbers – systolic (top) and diastolic (bottom). For example, if your blood pressure is 162/84, the systolic number is 162 and the diastolic is 84. The systolic number is always larger than the diastolic.

Systolic blood pressure is the pressure in your arteries when your heart contracts (pumps) and diastolic is the pressure when your heart is relaxed (between beats).

Blood pressure is measured in millimeters of mercury (mmHg).

Hypertension (high blood pressure) is defined as a blood pressure reading of 140/90 mmHg or higher.

An ideal blood pressure is less than 120/80 mmHg.

One blood pressure reading greater than 140/90 mmHg, does NOT mean you have high blood pressure. Your blood pressure needs to be carefully monitored before a diagnosis can be made.

Prehypertension

In December 2003, a new blood pressure category was established - prehypertension. It used to be a blood pressure less than 140/90 mm Hg was your goal. Now, a resting blood pressure must be less than 120/80 mm Hg to be considered normal. If your blood pressure consistently falls between 120-139/80-89 mm Hg, this is considered "prehypertensive" and is a warning. It is time to take action and get your blood pressure under control. Usually you can reverse the gradual increase with some lifestyle changes fairly quickly.

A blood pressure in the prehypertensive range increases your risk of stroke, heart attack, kidney failure, and heart failure. To sum up, if your average blood pressure is equal to or greater than 120/80, your cardiovascular risk is increased.

Blood Pressure Categories

The Joint National Committee defines *four* blood pressure categories.

Very High Range - Stage 2 Hypertension

Systolic (top) blood pressure **160 mm Hg or high**

Diastolic (bottom) blood pressure **100 mm Hg or higher**

If in this range you have **hypertension (high blood pressure)**.

High Range - Stage 1 Hypertension

Systolic (top) blood pressure **140 - 159 mm Hg**

Diastolic (bottom) blood pressure **90 - 99 mm Hg**

If in this range you have **hypertension (high blood pressure)**.

Caution Range - Prehypertension

Systolic (top) blood pressure **120 - 139 mm Hg**

Diastolic (bottom) blood pressure **80 - 89 mm Hg**

Take action!

Normal Range - Normal

Systolic (top) blood pressure **below 120 mm Hg**

Diastolic (bottom) blood pressure **below 80 mm Hg**

Perfect!

Classification of Blood Pressure in Adults by the National Institute of Health			
Category	Systolic (top number)		Diastolic (bottom number)
<i>Normal</i>	< 120	AND	< 80
<i>Prehypertension</i>	120-139	OR	80-89
<i>High Blood Pressure</i>			
<i>Stage 1/High</i>	140-159	OR	90-99
<i>Stage 2/Very High</i>	> 160	OR	> 100

Systolic versus Diastolic

More research equals more understanding of this disease. MD's were once trained to use diastolic blood pressure (the lower number) to diagnose hypertension. However, this changed in 1997, when studies showed that systolic blood pressure (top number) was more critical. Systolic blood pressure tends to gradually increase with age due to less elasticity in the arteries, while diastolic tends to rise gradually until ~50 years-old, then tapers off for a decade. Systolic is the better indicator of developing heart disease.

Bottom line: Prior to age 50, diastolic hypertension is more common and after age 50, systolic hypertension dominates. Monitor both numbers!

What is your blood pressure?

Systolic (top)

Diastolic (bottom)

Which number(s) do you need to change?

Systolic

Diastolic

What category is your blood pressure?

Normal

Pre-hypertension

High Range

Very High Range

Lifestyle Factors that Impact Blood Pressure

Fortunately, you can treat high blood pressure. The category your blood pressure falls within determines which treatment(s) will work best.

Normal Blood Pressure

- Consider lifestyle changes – Blood pressure increases with age. Make small changes now to keep your blood pressure as low as possible.

Prehypertension

- Make lifestyle changes

High Blood Pressure (Stage 1)

- Make lifestyle changes
- Consult with your MD (medication will probably be prescribed)

Very High Blood Pressure (Stage 2)

- Make lifestyle changes
- Consult with your MD (one or more medications will probably be prescribed)

Making lifestyle changes is the best way to control blood pressure.

If making lifestyle changes is not enough to control blood pressure, then drugs may be used. The risk of side effects that may occur from these drugs is generally much less than the health risks that result from high blood pressure.

Lifestyle changes may reduce the *amount of drugs needed* to control blood pressure.

Lifestyle Factor 1:

Tobacco Use

You know that smoking and secondhand smoke are bad for your health. There is a significant rise in blood pressure with every cigarette you smoke. If you stop smoking you will most likely see cardiovascular benefits within one year.

I am not an expert and unable to coach you through the difficult task of smoking cessation. Consult with your MD for local resources.

Do you smoke cigarettes?

Yes No

Are you ready to quit?

Yes No

What smoking cessation programs are available for your use?

If you are ready to enter a smoking cessation program I recommend putting Control High Blood Pressure on hold. If you try to change too many things at once you are setting yourself up for failure. To stop smoking is a major undertaking and should be focused on by itself.

What is your quit date?

Are you regularly exposed to secondhand smoke?

Yes No

How can you reduce your exposure? This might mean taking your work break at a different time to avoid the smokers, asking friends not to smoke in the car, requiring visitors to smoke outside, selecting smoke free restaurants/bars, etc.

Lifestyle Factor 2:

Alcohol

Heavy drinking and regular alcohol consumption will eventually damage the heart and dramatically raise blood pressure. Alcohol can also interfere with the effectiveness of medications.

Limiting alcohol intake is key. More than two drinks daily for men and one drink daily for women can elevate blood pressure. One drink is equal to 12 ounces of beer, 5 ounces of wine, or 1 ½ ounces of 80-proof distilled spirits.

Lifestyle Factor 3:

Physical Activity

Be regularly active! Inactivity usually results in a higher heart rate. A higher heart rate means the heart must pump harder, exerting more force on artery walls. Also, a sedentary lifestyle leads to excess weight.

To reduce your risk of developing high blood pressure, you need to increase physical activity to at least 30 minutes on 5 or more days each week.

Blood Pressure during Exercise

Blood pressure rises during most activities. The rise depends on the type of activity – aerobic or anaerobic.

Aerobic activity

Large muscle groups involved in repeated movements. Examples: jogging, bicycling, swimming, brisk walking.

During aerobic activities, muscles require oxygen to perform. The circulatory system is delivering this needed oxygen to the muscles, causing the heart to pump larger blood volumes more frequently. Heart rate increases in proportion to oxygen needed; therefore, the more vigorous activity the higher the heart rate to sustain that activity. Systolic blood pressure proportionally rises also, while diastolic blood pressure remains unchanged or may decrease slightly.

Anaerobic activity

Sustained muscle group contraction. Example: weight lifting.

Anaerobic means without oxygen. Therefore, when you are sustaining a muscle contraction the oxygen demand is minimal and blood flow does not significantly change. Cardiac output (volume of blood pumped by the heart) does increase slightly. The combination of unchanged blood flow with increased cardiac output causes a rise in both systolic and diastolic blood pressure.

Pace Yourself

If you are inactive, gradually add activity into your routine. Do not go from sedentary to running a mile. Begin by walking every day for a couple weeks, then add a jog, and move up to a run. Give your heart time to strengthen and adjust to the new demands.

You can give yourself the simple “talk test” to make sure you are not pushing too hard.

1. If you can talk and walk with no difficulty – not working hard enough. Pick up the pace!
2. If you can talk, but need to pause for a breath every 4 or 5 words, you are right on track. Good job!
3. If you try to speak and are gasping for breath after every word, you are doing too much. Slow down!

Warm-up and Cool-down

Do not skip the warm-up and cool-down. Give your body and heart time to transition between rest and activity. If you stop exercising too quickly, blood pressure can drop sharply. You also risk muscle cramping. Be sure to breathe regularly throughout your activity. Holding your breath can raise blood pressure and cause muscle cramps.

Are you currently active? Yes No

Lifestyle Factor 4:

Stress

Learn to manage your stress. Scheduling breaks in your work day and making time in the evenings and weekdays to relax, may help reduce blood pressure. Be aware of what triggers your stress and what you do to cope. Do you turn to cigarettes, alcohol, and food?

Physical activity causes the release of endorphins, which are mood boosters that help combat depression and stress. All the more reason to make physical activity part of your daily routine.

Rate your stress level:

Low stress

Moderate stress

High Stress

If Moderate or High Stress, how do you cope?

What steps can you take to better manage your stress?

Examples: Walk 30 minutes daily, meditate, schedule work breaks, make time to relax in the evening, bubble baths, massages, share your thoughts/burden with a friend, etc.

If stress is a major factor in your life and causing you to cope in ways that are not heart healthy, the information above is not sufficient to make a difference in your life and fight against high blood pressure. I recommend you speak with your MD about local resources you can utilize to better manage your stress levels.

If you are a highly stressed, inactive smoker who likes to drink, you are probably very overwhelmed right now by all the changes you have been confronted with in your battle against high blood pressure.

The good news is that small lifestyle changes can make a significant impact. So, say you cannot increase your activity 7 days a week, but you can add an evening walk 3 times a week. This change is a positive step towards a lower blood pressure.

On the flip side, the sooner you make significant changes the sooner you will reap the rewards – blood pressure control!

Revisit this lesson down the road, evaluate where you are, and determine if you are ready to take another step.

Appendix C –

Introduction to New Cardiology: The Cutting Edge of Heart Health

Physicians who follow *New Cardiology* order a lab panel that includes the following twelve labs:

CoQ10
CRP
Ferritin
Fibrinogen
Homocysteine
Lipoprotein(a)
Total Cholesterol
HDL
LDL
Oxidized LDL
Triglycerides
AA/EPA ratio

We've discussed total cholesterol, HDL, LDL, and triglycerides already. Read on to learn more about how the additional eight measures can be used to assess and reduce your heart disease risk.

Oxidized LDL

LDL cholesterol is not the "bad guy". What's makes LDL "bad" is oxidation. Let me explain what causes LDL to be oxidized. Free radicals are atoms that are missing an electron. They move throughout your system "stealing" electrons from other atoms. When a free radical "steals" from LDL cholesterol, LDL becomes oxidized. This oxidized form of LDL sticks to artery walls which lead to inflammation and eventual plaque formation. Normal oxidized LDL levels are between 0-650 units.

CoQ10

Coenzyme Q10 (CoQ10) is a fat-soluble vitamin. This nutrient helps with all forms of heart disease, lowers blood pressure, increases energy levels, boosts the immune system, counteracts negative effects of statin drugs, and improves the nervous system.

If you are taking statin drugs to lower cholesterol levels and feel fatigued or short of breath, it could be due to low levels of CoQ10. CoQ10 is involved in ATP production and allows the heart to contract and relax. As CoQ10 levels decrease and ATP levels drop, the heart becomes stiff. This can lead to feelings of fatigue and shortness of breath. Normal levels of CoQ10 are 1.0-1.8 micrograms/milliliter. Discuss with your MD. Supplements are available.

CRP (C-Reactive Protein)

CRP, a blood protein, rises with chronic infection, excess weight, antioxidant deficiency, high blood sugar, and essential fatty acid deficiency. Elevated CRP leads to inflammation and increases your heart disease risk. There is a strong link between excess abdominal fat and elevated CRP.

Normal CRP levels vary from lab to lab.

Ferritin

Ferritin is a protein in the body that binds to iron. This lab test is used to measure the level of iron in your blood. The normal range for iron is 10-290 micrograms/liter.

Too much iron in your blood stream increases oxidation of LDL cholesterol, which increases arterial plaque. If your ferritin levels are above 200 micrograms/liter, your risk of having a heart attack doubles. Physicians who follow *New Cardiology* believe the optimal level of ferritin to be ~100 micrograms/liter.

Fibrinogen

Fibrinogen is protein that regulates blood clotting. It converts into fibrin, which binds to platelets for clot formation. Fibrinogen also affects blood resistance and stickiness. Fibrinogen is needed in order for blood to clot following an injury. Too much fibrinogen is an independent risk factor for cardiovascular disease and stroke. Smoking and insulin resistance cause fibrinogen levels to increase. The normal range for fibrinogen is 180-350 mg/dl.

Lipoprotein(a)

Normally, lipoprotein(a) is a beneficial substance that works to repair arterial walls. As inflammation and plaque develop in your artery walls, lipoprotein(a) becomes overwhelmed by all the "work" and contributes to the clogging of your arteries.

Lipoprotein(a) is strongly determined by your genetics, so if it's a known problem in your family history it would be good to have this blood test.

The risk of lipoprotein(a) becoming overloaded and increasing your risk for heart disease is increased if you are deficient in vitamin C. Vitamin C takes the lead in arterial repair and lipoprotein(a) fills in when needed. If you are deficient in vitamin C all the repair work falls to lipoprotein(a). Lipoprotein(a) is 10 times more potent at producing arterial plaque than oxidized LDL cholesterol. FYI - Some studies show a link between increased levels of lipoprotein(a) and statin drugs. Lipoprotein levels are also increased in diabetics and menopausal women. Lipoprotein(a) levels should be less than 30 mg/dl.

Homocysteine

Homocysteine is an amino acid that results in arterial plaque and clot formation. When we consume the essential amino acid methionine, it is normally broken down by the liver into homocysteine. Homocysteine will either be recycled back into methionine or excreted in the urine. This process is dependent on three B vitamins - folic acid, B-6, and B-12. If there is a deficiency of any one of these three vitamins, homocysteine levels rise and lead to oxidation, plaque formation, and clot formation. Homocysteine levels should be less than 9 micromols/liter.

AA/EPA ratio

This provides a ratio between the more inflammatory omega 6 fatty acids (AA) and the heart healthy omega 3 fatty acids (EPA) and is a silent measure of inflammation. When you consume a diet high in refined carbohydrates and sugar, insulin levels rise and AA production increases. The omega 6 fatty acid - AA - increases the productions of inflammatory and blood clotting chemicals (eicosanoids). A desirable AA/EPA ratio is 1.5-3.0.

If you have not been tested for the above labs, but would like to know your numbers, discuss with your MD. Some of the tests are covered by insurance and some are not.

Activity

Out of these eight additional tests conducted by *New Cardiology*, which have you had and what are your numbers?

CoQ10 _____

CRP _____

Ferritin _____

Fibrinogen _____

Homocysteine _____

Lipoprotein(a) _____

Oxidized LDL _____

AA/EPA ratio _____

Which labs do not fall within the recommended levels?

Appendix D –

Guide to Reading Food Labels: How to Make Heart Healthy Choices

Food labels (Nutrition Fact Panel) allow you to compare the nutritional content of different foods. This means you can use the food label to increase the needed nutrients in your diet and decrease your intake of the nutrients you want to limit.

For example, if you are purchasing canned chicken noodle soup, but are also trying to watch your salt intake, you can refer to “sodium” on the food label to decide between different brands, such as Campbell’s versus Healthy Choice.

The food label helps you make quick and informed selections for products that will best meet your nutrition needs and goals.

Unfortunately, the nutrition fact panel can be confusing. I am going to help you understand each section. Let’s break the sections down and review them one at a time.

Serving Size

The serving size is listed at the top of the label. A serving size is what is standard for that food. That doesn’t mean it is your standard serving size, but it provides a measurement tool so you can calculate the nutritional value of what you consume.

Here is an example using sugar-free chocolate pudding. One serving is ¼ of a package or ½ cup prepared. There are four servings. This means that if you prepare this product with fat free milk you will have 2 cups of chocolate pudding. Now, if you eat 2 cups you are eating 4 servings. Your calorie intake for 4 servings equals 320 calories (4 servings x 80 calories/serving = 320 calories).

Most people get confused because they think the number of calories listed is the number of calories in the entire package. That is not the case. The calories are the number of calories *per serving*. All nutrition information on the food label refers back to serving size.

Nutrition Facts		Amount/Serving	Mix	% DV** With Fat Free Milk	Amount/Serving	Mix	% DV** With Fat Free Milk
Serv. Size 1/4 package (11g)		Total Fat 0g*	0%	0%	Potassium 60mg	2%	8%
Makes 1/2 cup		Saturated Fat 0g	0%	1%	Total Carb. 8g	3%	5%
Servings Per Container 4		Trans Fat 0g			Fiber 0g	0%	0%
	With Fat Free Milk	Polysat. Fat 0g			Sugars 0g		
	Mix	Monounsat. Fat 0g			Protein 0g		
Calories 40	80	Cholesterol 0mg	0%	1%			
Calories from Fat	0	Sodium 500mg	21%	23%			
		Vitamin A	0%	4%	Vitamin C	0%	2%
		Calcium	0%	15%	Iron	0%	0%
		Folic Acid	0%	0%			

*Amount in dry mix
 **Percent Daily Values (DV) are based on a 2,000 calorie diet.

INGREDIENTS: FOOD STARCH-MODIFIED, MALTODEXTRIN, COCOA (PROCESSED WITH ALKALI), TETRASODIUM PHOSPHATE AND DISODIUM PHOSPHATE (FOR THICKENING), CONTAINS 2% OR LESS OF SALT, MONO- AND DIGLYCERIDES (PREVENT FOAMING), MICROCRYSTALLINE CELLULOSE, TITANIUM DIOXIDE (FOR COLOR), NONFAT DRY MILK, XANTHAN GUM, ASPARTAME* (SWEETENER), ACESULFAME POTASSIUM (SWEETENER), NATURAL AND ARTIFICIAL FLAVORS, RED 40, YELLOW 5, BLUE 1.

***PHENYLKETONURICS:** CONTAINS PHENYLALANINE. ALLERGY WARNING: CONTAINS MILK. MANUFACTURED IN A FACILITY THAT PROCESSES EGGS, ALMONDS, COCONUT, PISTACHIOS, PEANUTS, WHEAT, SOYBEANS. MARKETING BY: Wal-Mart Stores, Inc. Bentonville, AR 72716 ©1999

GLUTEN-FREE

Sugar-Free Chocolate Pudding

The serving size information is a good tool to use if you are trying to reduce your portion sizes. That means if you would normally consume 2 cups of chocolate pudding try cutting yourself back to 1 cup. By reducing your portion size to 2 servings instead of 4, you have reduced your calorie intake to 160 calories (2 servings x 80 calories/serving = 160 calories). By reducing your portion sizes you reduce calorie intake. This will promote weight loss if that is your goal.

Calories and Calories from Fat

Calories and Calories from Fat are included in the second section of a nutrition fact panel. The calories tell us how much energy a serving of this food provides. To determine the number of calories you consume you multiply the number of servings you eat times the calories per serving. Refer to the above example for chocolate pudding.

By looking at the number of calories from fat in this product, you can determine if it is a high fat product. Here's an example using Betty Crocker Blueberry Muffin mix. The serving size is 1/12 package and the box makes 12 servings; therefore, 1 muffin equals 1 serving. This means that 1 muffin contains 190 calories and 60 of those calories come from fat. Now if you divide 190 calories by 60 calories from fat you learn that the muffin is 30% fat. You want to stick with products that provide 30% or fewer calories from fat. This muffin mix meets the criteria.

The remaining calories (for this example $190 - 60 = 130$ calories) are from the carbohydrates and protein contained in the product or food.

The following is a guide for determining whether you are purchasing a low or high calorie product.

Low = 40 calories per serving

Moderate = 100 calories per serving

High = 400 or more calories per serving

Nutrition Facts		
Serving Size 1/12 package (36g mix)		
Servings Per Container 12		
Amount Per Serving	Mix Prepared	
Calories	130	190
Calories from Fat	10	60
% Daily Value**		
Total Fat 1.5g*	2%	11%
Saturated Fat 0.5g	3%	8%
Trans Fat 0g		
Cholesterol 0mg	0%	12%
Sodium 210mg	9%	9%
Total Carbohydrate 27g	9%	9%
Dietary Fiber <1g	2%	2%
Sugars 15g		
Protein 2g		

Blueberry Muffin Mix

Total Fat, Cholesterol, Sodium, Total Carbohydrate, Protein

The third section of the nutrition fact panel is made up of these five nutrients – fat, cholesterol, sodium, carbohydrates, and protein. The percents listed are based on a 2,000 calorie diet. As stated above, the total number of calories you need each day depends on your height, weight, and activity level. If your daily calorie needs equal 2,000, you can use the percents listed next to each nutrient to give you an idea of how this particular food fits with your nutrient needs. The percents are based on a standard diet of 50% carbohydrates, 30% fat, and 20% protein. If you are following a low carbohydrate or low fat diet, these percents will not be of value to you. The percentages are called % daily value.

Total Fat

The amount of fat, saturated fat, and the recently added trans fat is listed on the food label. Your total intake of saturated fat should be less than 10% of your total calorie intake or 1/3 of your fat intake. This means if you consume a 2000 calorie standard diet of 50% of calories from carbohydrates, 30% from fat, and 20% from protein that 600 calories (2000 calories total x 30% from fat = 600 fat calories) would come from fat. In a 2000 calorie diet only 200 calories should come from saturated fat (2000 x 10% = 200). Two hundred calories of fat is equal to 22 grams. Trans fat should always be close to zero no matter how much you eat each day. You will find that many products, such as margarine, will state “no trans fat”.

When reading food labels, select items for each category that fall within the total fat content ranges below:

Frozen dinners	≤ 10 grams fat/serving
Cheese	≤ 5 grams fat/serving
Lunch Meat	≤ 3 grams fat/serving
Ice Cream	≤ 5 grams fat/serving
Sherbet or Frozen Yogurt	≤ 2 grams fat/serving
Microwave Popcorn	≤ 3 grams fat/serving
Soup	≤ 3 grams fat/serving
Snacks	≤ 3 grams fat/serving
Side Dishes	≤ 3 grams fat/serving

Cholesterol

Ideally you should consume less than 300 mg of cholesterol each day.

Sodium

Sodium has been linked to high blood pressure. Most people consume significantly more than the 1 tsp or 2300 mg of sodium they should limit themselves to each day. Let's use a store brand chicken noodle soup as an example. One serving is ½ cup condensed soup; therefore, if you make the soup with water, one serving would equal 1 cup of prepared soup. This can makes six servings or 6 cups prepared. The sodium in each serving is 920 mg. If you ate 2 cups of soup for lunch you receive 1840 mg of sodium (920 mg x 2 servings = 1840 mg). This does not take into account the sodium content of the saltine crackers you probably had with your soup. You see, it is very easy to go over your sodium limit if you are not reading food labels.



Chicken Noodle Soup

Total Carbohydrates

This section is broken down into dietary fiber and sugars. A diet high in dietary fiber is desirable. You can see from the food label that chicken noodle soup contains very little dietary fiber. You need between 25-35 grams of dietary fiber each day. Switching to whole grain products (pasta, bread, cereal) makes reaching this goal easier. A slice of 100% whole grain bread contains 3-5 g of dietary fiber.

Total Protein

You can use this number to ensure adequate protein intake. For a 2000 calorie diet you should aim for 20% of your calories from protein or 400 calories. This is equal to 100 g of protein daily.

Here is a brief guide to follow for this section of the nutrition fact panel:

Total Fat – Less than 30% of total caloric intake

Saturated Fat – less than 1/3 of total fat intake and less than 10% of your daily choices.

Trans Fat – less than 1%

Cholesterol – less than 300 mg per day

Sodium/Salt – Less than 2300 mg per day

Vitamins and Minerals

The fourth section lists a variety of vitamins and minerals depending on the product. The values are listed as a percent of your total daily needs if you consume a 2000 calories/day diet. Eating a variety of foods will help you reach your daily goals of 100% for each vitamin/mineral.

Nutrient Needs for 2000 and/or 2500 calorie diet

This section shows how you many grams of each nutrient you should consume daily if you follow a 2000 calories/day diet or 2500 calories/day. Refer to the box and you can see that someone on a 2000 calorie per day diet should consume 300 g of carbohydrates, while a 2500 calories/day diet needs 375 g of carbohydrates. This continues to be based on a standard breakdown of 50% calories from carbohydrates, 30% from fat, and 20% from protein.

		Calories	2,000	2,500
Total Fat	Less than		65g	80g
Sat Fat	Less than		20g	25g
Cholesterol	Less than		300mg	300mg
Sodium	Less than		2,400mg	2,400mg
Total Carbohydrate			300g	375g
Dietary Fiber			25g	30g

Ingredient List

At the bottom of a food label is the ingredient list. Ingredients contained in the product are listed from largest to smallest amount by weight. This means the ingredient listed first makes up most of the product while the one listed last contributes the least.

As an example, you can use the ingredient list to limit saturated fat intake. You would want to avoid ingredients like bacon drippings, beef lard, cocoa butter, coconut oil, cream, egg yolk solids, hydrogenated oil, lard, palm oil, palm kernel oil, and whole milk solids. Instead you want to select products that contain unsaturated fat – canola oil, corn oil, peanut oil, safflower oil, soybean oil, vegetable oil.

Label Claims

Some foods make claims, such as “low fat”, “sugar free”. In order to print these claims they have to follow government definitions.

LABEL CLAIM	DEFINITION (per standard serving size)
Calorie free	Less than 5 calories
Cholesterol free	Less than 2 mg cholesterol and 2 g or less saturated fat
Enriched or fortified	Nutritionally altered so that one serving provides at least 10% more of the Daily Value for a nutrient than the standard product
Extra lean	Less than 5 g fat, 2 g saturated fat, and 95 mg of cholesterol
Fat free	Less than 0.5 g of fat
Free	"Without," "no," or "zero" can all be used
Fresh	Usually for foods in their raw state. Cannot be used on food that has been frozen, cooked, or containing preservatives.
Fresh-frozen	Foods that have been quickly frozen while still fresh.
Good source	One serving provides 10-19% of the Daily Value of a stated nutrient.
Good source of fiber	Contains 10 to 19% of the Daily Value for fiber (2.5-4.75 g)
High	Provides at least 20% or more of the Daily Value for stated nutrient.
High fiber	20% or more of the Daily Value for fiber (at least 5 g) per serving.
Lean	Less than 10 g fat, 4 g saturated fat, and 95 mg cholesterol
Light	1) At least one-third fewer calories per serving than comparison food 2) 50% less fat than comparison food 3) At least 50% less sodium than a comparison food 4) can refer to texture and/or color (light brown sugar)
Low	"Little," "few," or "low source of" may be used
Low calorie	40 calories or less
Low cholesterol	20 mg or less cholesterol and 2 g or less saturated fat

Low fat	3 g or less
Low saturated fat	1 g or less saturated fat and 15% or less calories from fat
Low sodium	140 mg or less
More	At least 10% more of the Daily Value of a nutrient than standard product
Percent fat free	Claim made on a "low fat" or "fat free" product accurately reflecting amount of fat in 100 g of food; for example, 3 g of fat per 100 g equals "97% fat free."
Reduced	Nutritionally altered product that contains 25% less of a nutrient or of calories than standard product.
Salt or sodium free	Less than 5 mg
Sugar free	Less than 0.5 g of sugars
Unsalted	No salt added during processing. Standard product must normally use salt in processing.
Very low sodium	Less than 35 mg or less sodium

New Label Claims

New label claims are showing up, such as "organic" and "natural". The organic food label means the food was produced under environmentally friendly conditions and no antibiotics, growth hormones, fertilizers with synthetic ingredients or sewage sludge, pesticides, bioengineering, or ionized radiation. "Natural" has not been defined at this time. "Organic" and "natural" are not interchangeable. The USDA seal to the right indicates a product is at least 95% organic.



Appendix E –

Promote Heart Health with Lean Meat Selections: *Reduce Heart Disease Naturally*

By selecting lean meat cuts, you are able to reduce the amount of fat, especially saturated fat, you consume.

When shopping for meat, select cuts with minimal visible fat and marbling (white streaks within meat). Trim excess fat prior to cooking. Use low fat cooking methods (roast, bake, broil, and grill). One serving of meat equals 3 ounces (size of a deck of cards).

The following are lists of lean meats for chicken, pork, beef, and fish. Each list starts with the leanest choice at the top.

Chicken



Remove the skin. Cooking skinless light chicken is leaner than cooked beef, but equal in protein, vitamins and minerals, with the exception of iron and zinc. Dark meat with skin is the fattiest.

Skinless chicken breast
Skinless chicken leg
Skinless chicken thigh

Pork

Slightly less saturated fat than beef.

Tenderloin
Boneless sirloin chop
Boneless loin roast
Boneless top loin chop
Loin chop
Boneless sirloin roast
Rib Chop
Boneless rib roast



Beef

Ground Beef –

Select the leanest option available. For example, 96% lean is a better choice than 90% lean. When appropriate, rinse with hot water after browning to reduce fat content more.

Beef options are now much leaner than they were years ago. *Select* grade has the least fat, while *prime* grade has the most fat. Higher grades equal more marbling (fat within meat).

Eye of round
Top Round
Tip Round
Top Sirloin
Top Loin
Tenderloin



Fish



Excellent sources of Omega 3 fatty acids.

Cod
Flounder
Halibut
Orange Roughy
Salmon
Shrimp

Appendix F –

How to Make Heart Healthy Choices When Dining Out: Reduce Heart Disease Naturally

Eating healthy does not equal no dining out. Many restaurants offer healthy menu options. If you learn what to look for on a menu, you can enjoy a healthy meal away from home.

Use the following tips when dining out:

1. **Restaurants** - select a restaurant you know has a menu with healthy options highlighted
2. **Food preparation**
 - a. request salt not be added when cooking
 - b. request gravy, butter, rich sauces, and salad dressings be served on the side - this way you can control the amount you add
 - c. request margarine instead of butter
 - d. request fat free or 1% milk instead of whole milk or cream
 - e. request visible fat be trimmed from meat
 - f. request foods be prepared "light" - less oil or butter
3. **Substitution** - request a baked potato in place of fries or chips
4. **Appetizer** - share with a friend
5. **Entrée** - automatically place half in take home container for another meal later, select entrées with fruits and vegetables as the main ingredient
6. **Pasta** - choose tomato based sauces instead of cream based
7. **Soup** - choose broth based soups over cream; consider soup for an appetizer or entrée

8. **Vegetables** - steamed vegetables make a great side dish, request salsa for your baked potato instead of sour cream, butter, cheese, or bacon
9. **Whole grain** - look for whole grains, such as brown rice
10. **Bread/Rolls** - limit the amount of butter/oil you add
11. **Sandwiches** - request mustard instead of mayonnaise or special sauces
12. **Beverages** - select water, diet soda, or unsweetened tea/coffee instead of regular soda or alcohol
13. **Dessert** - Sweet tooth craving? Look for lower fat options - sorbet, sherbet, fresh berries, or fruit.

Do not be afraid to ask for an item to be modified to fit your needs!

Menu Item Descriptions

The terms used to describe a menu item will indicate if it is a healthy choice or not.

Terms to AVOID on menu

au gratin, in cheese sauce or parmesan, buttered or buttery, breaded and fried; casserole, hash, or pot pie; creamed, creamy, cream sauce; fried, French fried, deep fried, batter fried, pan fried, crispy; hollandaise; gravy; pastry; rich; scalloped or escalloped.

Terms to SELECT on menu

baked or roasted; broiled, grilled, poached, steamed; fresh; garden fresh; in its own juices; lean; lightly sautéed or stir-fried

Terms for high sodium/salt content

pickled, in cocktail sauce, smoked, in broth or au jus, in soy or teriyaki sauce

Appendix G –

The DASH Diet:

Lower Blood Pressure in 14 Days

WHAT IS THE DASH DIET?

The DASH (Dietary Approaches to Stop Hypertension) diet is an eating plan used to reduce blood pressure. A diet reduced in total and saturated fat and rich in fruits, vegetables, and low-fat dairy foods can significantly lower blood pressure. If followed the DASH diet will lower blood pressure, which can help prevent and control high blood pressure.

HOW TO FOLLOW THE DASH DIET

Serving Sizes and Choices

To help you follow the DASH diet, the list below suggests the number of servings per day from each of the indicated food groups. These servings apply to people who require 2000 calories per day. The number of servings may increase or decrease depending on your caloric needs, which vary according to age, gender, size, and how active you are.



7-8 servings **Whole Grains and Whole Grain Products** per day



4-5 servings **Vegetables** per day



4-5 servings **Fruits** per day



2-3 servings Low fat or Nonfat **Dairy Foods** per day



2 or fewer servings of **Meats, Poultry and Fish** per day



4-5 servings **Nuts, Seeds and Legumes** *per week*



Limited intakes of **Fats and Sweets**

Tips on Eating the DASH Way

Start small. Make gradual changes in your eating habits.

Most people find it hard to make changes in their diet if they try to do too much too fast. Start slow. You are more likely to have your healthier habits be lasting ones if you make small changes that you can realistically maintain. Try some of these steps:

- If you eat only one or two vegetables a day, add one serving at lunch and one at dinner.
- If you don't eat fruit or only have juice at breakfast, add fruit as a snack.
- Use half the butter, margarine, or salad dressing you usually have now.
- Try low fat or nonfat condiments, like nonfat salad dressings.
- Drink low fat (1%) or skim milk with lunch or dinner instead of soda, alcohol, or sugar-sweetened tea.

Treat meat as one part of the whole meal, instead of the focus.

Although meat contains protein and other nutrients, which are good for your body, it also has a lot of fat, including saturated fat, calories and cholesterol. Often people have a large portion of meat as a main course and don't eat enough vegetables or grains. To help change your diet, try some of the following tips:

- Limit meat to six ounces a day (2 servings), which is all you need to be healthy. That is less than most people eat. Three to four ounces is about the same size as a deck of cards.
- If you currently eat large portions of meat, cut back by half or by one-third at each meal.
- Include two or more vegetarian-style meals (meatless) every week.
- Include more servings of vegetables, rice, pasta and beans so that you need less meat to make a satisfying meal. Casseroles, pasta and stirfry often include less meat and more vegetables, grains and beans.

- Purchase less meat. If it's not there, you won't eat it.

Use fruits or low fat, low-calorie foods as desserts and snacks.

Many people enjoy snacks. This can be a healthy benefit to your diet if you choose the right kinds of foods. Instead of chips, cookies, candy bars, or high fat muffins, try some of the following foods:

- Fresh, whole fruits or canned fruits packed in their own juice.
- Dried fruit (easy to leave in the car or carry in a briefcase or purse).
- Unsalted pretzels or nuts mixed with raisins.
- Graham crackers and other reduced fat crackers.
- Gelatin.
- Low fat and nonfat regular and frozen yogurt.
- Popcorn, plain with no added salt.
- Raw vegetables.

Remember!

If you use the DASH diet to help prevent or control high blood pressure, make it a part of a lifestyle that includes choosing foods lower in salt and sodium, keeping a healthy weight, being physically active and, if you drink alcohol, doing so in moderation.

Food Group	Daily Servings	1 Serving Equals	Examples & Notes
<i>Whole grains and Whole grain products</i>	7-8	1 slice bread 1/2 C dry cereal 1/2 cup cooked rice, pasta or cereal	100% whole wheat breads, whole grain pasta, English muffin, pita bread, bagel, whole grain cereals, grits, oatmeal
<i>Vegetables</i>	4-5	1 cup raw leafy vegetable 1/2 cup cooked vegetable 6 oz vegetable juice	tomatoes, potatoes, carrots, peas, squash, broccoli, turnip greens, collards, kale, spinach, artichokes, beans, sweet potatoes
<i>Fruits</i>	4-5	6 oz fruit juice 1 medium fruit 1/4 C dried fruit 1/2 C fresh, frozen, or canned fruit	apricots, bananas, dates, grapes, oranges, orange juice, grapefruit, grapefruit juice, mangoes, melons, peaches, pineapples, prunes, raisins, strawberries, tangerines
<i>Low fat or nonfat dairy foods</i>	2-3	8 oz. milk 1 cup yogurt 1.5 oz. cheese	skim or 1 % milk, skim or low fat buttermilk, nonfat or low fat yogurt, part skim mozzarella cheese, nonfat cheese
<i>Meats, poultry, fish</i>	2 or less	3 oz. cooked meats, poultry, or fish	select only lean; trim away visible fats; broil, roast, or boil, instead of frying; remove skin from poultry
<i>Nuts</i>	1-2	1.5 oz or 1/3 C 2 Tbsp. seeds 1/2 C cooked legumes	almonds, filberts, mixed nuts, peanuts, walnuts, sunflower seeds, kidney beans, lentils

Appendix H –

Heart Healthy Recipe Substitutions: How to Make Home Cooking Heart Friendly

No one wants to completely give up the treats we love, but there are ways to modify recipes and baked goods without sacrificing taste. Following is a table of substitutions that you can use to reduce the fat and calories in some of your favorite foods while maintaining the flavor you enjoy.

If you are modifying an old family recipe it will take some trial and error before you find the right balance between healthier substitutions and a quality product. It may work best when baking to replace half of an ingredient with a healthier alternative. For example, if a recipe calls for 2 cups all-purpose flour instead use 1 cup all-purpose flour and 1 cup whole wheat flour. Also, reduce the amount of fat added to a product. For example instead of 1 cup of oil try $\frac{3}{4}$ cup of oil. You may not notice a difference. Experiment with different options until you get a product you enjoy.

Instead of. . . .	Substitute. . . .
Whole Milk	1% or Fat Free Milk
Whole Egg	2 Egg Whites or egg substitute
1 cup Butter or Margarine	1 cup Light Butter/Margarine or 1 cup applesauce/fruit puree or vegetable oil (1 Tbsp butter = $\frac{3}{4}$ Tbsp oil)
Vegetable Oil	Non-stick Vegetable Spray or Canola/Olive Oil
Mayonnaise	Reduced Fat or Fat Free Mayonnaise
1 cup Sour Cream	1 cup Plain, low fat yogurt or 1 cup fat free sour cream or 1 cup low fat cottage cheese + 2 Tbsp nonfat milk + 1 Tbsp lemon juice
1 cup Cream	1 cup Evaporated Skim Milk or 2 tsp cornstarch/flour whisked into 1 cup nonfat milk/evaporated milk
Whipped Cream	Plain low-fat yogurt or fat-free sour cream
Ricotta	Low fat ricotta or low fat cottage cheese
Cheese	Reduced fat cheese
8 oz. Cream Cheese	8 oz. Low Fat or Fat Free Cream Cheese or 4 Tbsp light margarine blended with 1 cup dry curd low-fat cottage cheese
Cottage Cheese	Low Fat Cottage Cheese
Ice Cream	Low fat/fat free ice cream or low fat/fat free frozen yogurt
Bologna, Salami	Low fat turkey, chicken, lunch meat

Bacon	Turkey Bacon or lean ham
Ground beef	Extra lean ground beef, lean ground turkey or chicken
Sausage	Lean ground turkey or 95% fat free sausage
1 oz Baking Chocolate	3 Tbsp Unsweetened Cocoa powder and 1 Tbsp canola oil
Oil in baked goods	Applesauce or other fruit purees
1 cup oil or fat for basting	1 cup fruit juice or low fat stock
Fat for sautéing	Low fat stock, fruit juice, or wine and sauté until liquid evaporates
Pastry dough crust	Graham cracker crust

Fruit Purees

The reason fat makes products taste good is because it adds moisture, flavor, and a tender texture to baked goods. Substitution of fruit purees or nonfat dairy products can provide some of the same fat-like characteristics without the actual fat. The type of fruit puree you choose to use will affect the final product. For example, a prune puree provides rich flavor with a moist, tender texture. A prune puree works best in recipes containing chocolate, cinnamon, and orange seasoning. For some recipes it may be best to just replace half the fat. For example, replace 1 cup butter with ½ cup pureed prunes/bananas/applesauce and ½ cup butter instead.

Prune puree: Combine 1 ½ cups (8 oz) pitted prunes and 6 Tbsp hot water in food processor and puree until smooth. Makes 1 cup. Can refrigerate up to two months in tightly sealed container.

Appendix I –

PAM (Pan-Asian Mediterranean) Diet **Guide to a Healthy Heart: The Right Foods to** **Reduce Heart Disease Naturally**

A diet to promote heart health and weight loss modeled after the Asian and Mediterranean traditional diets.

1. Low-glycemic vegetables, grains, and fresh fruits.

Select whole grains high in fiber. Balance fruits and vegetables with protein and heart healthy fats to prevent blood sugar spikes and increased insulin production. A high fiber diet cleanses the intestines to keep your colon healthy and promotes satiety (sense of fullness). Best choices include legumes (beans and peas) and broccoli.

2. High in antioxidants.

Antioxidants reduce “free radicals” in the body that cause damage to your cardiovascular system. Good sources: Fruit – prunes, raisins, berries, oranges, plums, red grapes, and cherries. Vegetables – broccoli, beets, spinach, corn, kale, Brussels sprouts, eggplant, onions, alfalfa sprouts, red bell peppers. Beverages – red wine (in moderation!) and green tea.

3. High levels of omega 3 fatty acids.

Eat fish several times a week and supplement omega 3 fatty acids. Select a supplement that provides 850 mg of EPA and DHA per 1 gram of fish oil. Omega 3 fatty acids are linked to lower blood pressure, increased HDL cholesterol, and multiple other heart health benefits.

Good fish choices: Anchovies, Atlantic sturgeon, herring, mackerel, salmon, sardines, rainbow/lake trout, and albacore tuna.

Non-fish sources: Ground flaxseed, nuts and seeds (walnuts, pumpkin seeds, Brazil nuts, sesame seeds, and pecans), legumes, green leafy vegetables (broccoli, avocados, spinach, lettuce, greens, kale, mustard greens, and collards), citrus fruit, and enriched eggs.

4. Less beef.

Beef contains saturated fats and high levels of methionine. Methionine is an amino acid precursor to homocysteine. High levels of homocysteine promote damage to arteries. Replace a diet high in beef with more fish, chicken, pork, turkey, and vegetarian based meals.

5. More olive oil.

Olive oil contains monounsaturated fats that reduce heart disease risk. Use olive oil when cooking, such as sautéing vegetables or boiling pasta.

6. Reduce sodium intake.

Sodium causes water retention, which equals increased blood pressure and weight gain.

7. Snack on nuts and seeds.

Nuts and seeds contain compounds that reduce the absorption of dietary cholesterol.

8. Add garlic.

Garlic contains the compound allicin. Allicin raises HDL, lowers LDL, homocysteine, and blood pressure.

9. Soy.

Soy promotes lower LDL and higher HDL levels. Add soy to your typical diet, such as edamame, miso, soy cheese, soy milk, soy nut butter, soybeans, and tofu.

Weight Loss

The PAM Diet promotes weight loss via the heart healthy fats and high fiber foods (olive oil, fish, eggs, nuts, fruits, vegetables), which increase energy levels and reduce cravings.

Drink lots of water!! Eight to ten 8-ounce glasses each day. Water cleanses the body by flushing toxins through your kidneys and keeps you hydrated. Water also promotes weight control by swelling fiber in your stomach to increase satiety, reduces fat stores, and removes sodium from your organs.

How to Follow the PAM Diet

Avoid –

Sugary condiments (e.g. jellies, jam, cranberry sauce).
Sugary drinks (e.g. soda, fruit juice, lemonade).
Trans fats and saturated fats (e.g. whole milk, mayonnaise, whole yogurt, sour cream, bacon, lunch meats).
High sodium and high preservative foods – prepackaged dinners, canned foods, and boxed goods.
Refined carbohydrates (e.g. sugary cereals, cookies, chips, crackers, pasta, bread, cake mixes, instant mashed potatoes, pudding mixes, gelatin).
All oils, except olive oil, almond, walnut, and fish oils.
All sweeteners (including artificial) with the exception of small amounts of honey.

Include –

Dairy: skim milk, low fat yogurt, soy milk, eggs, fat free cottage cheese, Parmesan cheese, feta cheese, soy cheese
Fruits and vegetables: lemons, dark green lettuce, broccoli, spinach, tomatoes, cantaloupe, onions, garlic, celery, and berries
Poultry: skinless and boneless chicken and turkey breasts
Fish: fresh, canned packed in water or olive oil
Seasonings: vinegars (red wine, balsamic), cinnamon, basil, oregano, bay leaf, marjoram, thyme, rosemary, fennel, coriander seeds, cardamom pods, cumin, ground ginger, sesame seeds, cloves, and Szechuan peppercorns.

Next Step – Implement!

I hope you have not only read this information, but you've put it into practice. Only by taking action will you see results, lower cholesterol levels, lower blood pressure, and reduce your heart disease risk.

Lisa Nelson RD

Heart Health Nutrition Specialist



I am passionate about helping you lower cholesterol and blood pressure so you can live the life you want and enjoy your family for years to come. My passion for health comes from my own family history of heart disease, so I don't dispense trendy treatments; I 'practice what I teach' in my own daily life. Because my own health is the foundation of my expertise, you can trust that I will make it truly possible for you to see dramatic changes in your health, without crazy fads or impossibly difficult techniques.

I am Lisa is the founder and owner of HeartHealthMadeEasy.com, which offers support, education, and guidance as you achieve your heart health goals. Receive regular heart health and weight loss tips from dietitian Lisa Nelson when you subscribe to [The Heart of Health](#) ezine and the free special report "How to Make Heart Healthy Changes in to Lifelong Habits".

Working with Lisa is One of the Best Moves I Could Have Made!

"I found Lisa's website on the internet and decided to take a gamble and sign-up for a Mini Diet Makeover. The whole time my wife thought it was a bad idea and I knew she was just waiting to say "I told you so!", but I went ahead and finalized the purchase - one of the best moves I could have made! Lisa has been a GODSEND.

I have to say that I am very impressed with Lisa. She is very knowledgeable and a true professional. Lisa sincerely thinks that she can help me and I believe that also. With my willingness to change and her expertise I think I can lose those thirty pounds and hopefully more before my next trip to the cardiologist office. I'm down 20 pounds and if I continue like this I will be close to my thirty pound goal!" ~ David Craig, Retired, Madison, NC

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