



# Healthy Solutions

by Gateway Health Alliance, Inc. <sup>SM</sup>

## Low Cholesterol Diet

### Purpose

Fat is a major energy source for the body. However, it is not the body's only source of energy, and too much fat in the diet can be harmful. It is especially bad for the circulatory system because it raises blood cholesterol levels that can contribute to heart attack or stroke. These diets are designed to reduce fat and cholesterol to levels recommended by the National Cholesterol Education Program (NCEP). NCEP is made up of 40 private and governmental groups coordinated by the National Heart, Lung, and Blood Institute. Both diets have the following goals:

-  Decrease total dietary fat, especially saturated fat
-  Decrease dietary cholesterol
-  Limit sodium intake
-  Increase intake of fiber and complex carbohydrates
-  Decrease calories if needed to reach a healthy body weight

The Step-1 diet is the first level of treatment for high blood cholesterol in most adults and children over the age of two. The Step-2 diet is more restrictive, and is used when a person currently has or did have any of the following:

-  A high blood cholesterol, even after following Step-1 diet for 6 to 12 weeks
-  Evidence of atherosclerosis (fatty deposits in the arteries)
-  A heart attack or stroke

### Nutrition Facts

These diets are designated to meet the National Research Council's Recommended Dietary Allowances (RDA). For those who require weight reduction, the RDA can be met on a daily calorie level of 1200 for women and 1500 for men. However, if the patient requires a lower daily calorie intake, the physician may prescribe a multiple vitamin supplement.

### Cholesterol

The heart pumps blood through blood vessels called arteries. This blood carries vital oxygen and nutrients needed by tissues and organs throughout the body. The heart itself is supplied with blood vessels called coronary arteries. When cholesterol levels rise above normal limits and stay high, some cholesterol is left behind in the arteries. Over the years, a hardened, waxy substance called cholesterol plaque builds up on the artery walls, and reduces or blocks blood flow. Organs supplied by these arteries then become damaged because they cannot get the oxygen and nutrients they need. For example, when blood flow to the brain is blocked, a stroke occurs. When plaque completely blocks a coronary artery, a heart attack takes place.



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Cholesterol in the body comes from two sources. Most cholesterol is made by the liver from various nutrients and especially from saturated fats. The liver makes just about all the cholesterol the body will ever need. Since all animals can make their own cholesterol, some cholesterol in the human body comes directly from eating animal products. These foods include meats, egg yolks, organ meats, whole milk and milk products. This cholesterol is absorbed through the intestines and added to what the liver makes. It is also known that a diet high in saturated fat seems to increase cholesterol production in the body. Therefore, reducing dietary cholesterol and fats helps to keep blood cholesterol levels within a healthy range.

## Fats In The Diet

Dietary fats can be saturated or unsaturated. An easy way to remember the difference is that saturated fats solidify or remain solid at room temperature. Unsaturated fats do not; they are liquid at room temperature. To reduce blood cholesterol levels, it is especially important to limit saturated fats. Saturated fats are found mainly in meats and dairy products made with whole milk.

Unsaturated fats (polyunsaturated and monounsaturated) are found mostly in plants, and are less likely to raise blood cholesterol levels. In fact, there is evidence that monosaturated fats (olive, peanut, or canola oils) may even help to lower blood cholesterol. There are a few vegetable fats such as coconut oil, palm oil, and cocoa butter (found in chocolate) that act like saturated fats in the body, so they should be avoided.

The term hydrogenated vegetable oils appears often on food labels. Hydrogenated is a manufacturing process for making vegetable oils solid at room temperature. Therefore, they are saturated even though they are vegetable oils. Hydrogenated oils are frequently used in baked goods, snack food, and margarine. Remember that all fat in the diet must be reduced, but it is especially important to avoid saturated fats.

The amount of fat and cholesterol recommended for a healthy diet depends on the daily calorie requirements. Following are the guidelines used to determine the amount of fat and cholesterol allowed in the Step-1 and Step-2 diets.

Those people who like to do their own math can determine their daily fat allowance by using the following formula.

- A. To determine what is 30% of calories, multiply the total day's calories by 0.30. Example:  $1800 \text{ calories} \times 0.30 = 540 \text{ fat calories allowed for a person eating 1800 calories per day.}$
- B. To determine how many grams of fat = 540 calories, divide the calories from fat by 9, because each gram of fat = 9 calories. Example:  $540 \text{ calories from fat} \div 9 = 60 \text{ grams of fat allowed per day.}$
- C. To determine how many of those 60 grams of fat may be saturated fat in a Step-1 diet, take  $\frac{1}{3} \times 60$ . So, 20 grams of the total fat allowance may be saturated fat. On a Step-2 diet, take  $\frac{1}{4} \times 60$ . Less than 15 grams of the total fat allowance should be saturated fat.



## Special Considerations

1. Limit sugar and alcohol. They provide few nutrients but many calories. Therefore, they contribute to high cholesterol by increasing body weight. An overweight body contains excess fat that is saturated
2. Certain habits, such as cigarette smoking and a sedentary life, can increase the risk of heart disease. Cigarette smokers should quit. Regular aerobic exercise (at least 20 to 30 minutes, 3 times a week) can lower cholesterol levels and help to prevent the build-up of cholesterol plaque. It can also reduce stress that may cause high blood pressure, another heart disease risk.
3. Fish should be eaten often, 3 or more times per week. Research indicates that certain deep-sea fish – mackerel, salmon, herring, albacore tuna, lake trout – contain an oil called Omega-3 fatty acid. This oil may help to lower blood cholesterol. Fish oil supplements, however, are not recommended because they add too many calories.
4. Avoid high sodium content in foods. Some patients with high cholesterol also have high blood pressure. Reducing sodium can help to keep blood pressure within normal limits. Table salt is about ½ sodium. Sodium is also an ingredient in many commercially processed foods. Common medications such as antacids, laxatives, and cough remedies can contain large amounts of sodium. Read product labels and use products with no more than 300 mg of sodium per serving. Herbs and spices can be used in place of salt to add flavor and variety to meals. Do not use a salt substitute unless approved by your physician.
5. Increase complex carbohydrates, (pasta, whole grains, and potatoes) in the diet. Like fats, they are an excellent source of energy without the harmful effects fats can have on the body. But, read labels of commercially prepared baked goods, cookies, and crackers. These products are notorious for using highly saturated fats such as coconut or palm oils and hydrogenated fats.
6. Eats 20 to 30 grams of dietary fiber every day. Foods such as legumes, oats, barley, brown rice, apples, strawberries, and carrots are good to eat because they contain soluble fiber. Research indicates that soluble fiber helps to lower blood cholesterol levels. Supplements such as psyllium mucilloid (trade names: Konsyl, Metamucil) can lower cholesterol up to 15% when used daily. Oat bran is another soluble fiber that has the same benefit.
7. Choose meats carefully. Grading of meats (Prime, Choice, or Good) refers to fat content, with Prime grades having the most fat. Marbling refers to the threads of white fat running through a cut of meat – the greater the marbling, the more fat. Read labels and avoid any meat product with more than 3 grams of fat per ounce.
8. Eating out can be a challenge. Avoid fast food restaurants; their foods are usually high in fats and sodium. However, many restaurants now understand the need to provide items for clients on fat or cholesterol-restricted diets. Their menus often contain words like “heart healthy” or have items marked with the symbol™. Ask about ingredients and how foods are prepared. Choose foods wisely and ask for smaller portions

The new nutrition labels on food products give consumers information on fat, saturated fat, cholesterol, sodium, and fiber content. If help is needed interpreting the labels, the physician or registered dietitian should be consulted.

Fat is measured in grams. Determine the number of calories needed each day. Then use the following chart for an easy way to find how many grams of fat are permitted each day for the Step-1 and Step-2 diets.



## Sample Menu – Step-1 Diet

Breakfast	Lunch	Dinner
<ul style="list-style-type: none"> <li>• Grapefruit <math>\frac{1}{2}</math> cup</li> <li>• Cereal <math>\frac{3}{4}</math> cup</li> <li>• Banana <math>\frac{1}{2}</math></li> <li>• Egg substitute <math>\frac{1}{4}</math> cup</li> <li>• Whole wheat toast 2 slices</li> <li>• Margarine 2 tsp</li> <li>• Jelly or jam 1 Tbsp</li> <li>• 1% milk 1 cup</li> <li>• Coffee/tea*</li> </ul>	<ul style="list-style-type: none"> <li>• Vegetable beef soup 1 cup</li> <li>• Lean hamburger 2 oz</li> <li>• Low-fat cheese 1 oz</li> <li>• Hamburger bun</li> <li>• Sliced tomato and lettuce with 2 tsp olive oil, 2 tsp vinegar</li> <li>• Fresh fruit salad <math>\frac{1}{2}</math> cup</li> <li>• 1% milk 1 cup</li> </ul>	<ul style="list-style-type: none"> <li>• Tomato juice <math>\frac{1}{2}</math> cup</li> <li>• Broiled chicken breast 3 oz</li> <li>• Herbed brown rice <math>\frac{1}{2}</math> cup</li> <li>• Broccoli spears 2</li> <li>• Hard dinner roll 1</li> <li>• Margarine 1 tsp</li> <li>• Carrot/raisin salad <math>\frac{1}{2}</math> cup</li> <li>• Frozen strawberry yogurt <math>\frac{1}{2}</math> cup</li> <li>• 1% milk 1 cup</li> </ul>

\* Use polyunsaturated creamer.

### This Sample Diet Provides the Following

Calories	2250	Fat	72 gm
Protein	114 gm	Sodium	3495 mg
Carbohydrates	282 gm	Potassium	3750 mg
Saturated fat	20 gm	Cholesterol	180 mg

## Sample Menu – Step-2 Diet

Breakfast	Lunch	Dinner
<ul style="list-style-type: none"> <li>• Grapefruit <math>\frac{1}{2}</math> cup</li> <li>• Cereal <math>\frac{3}{4}</math> cup</li> <li>• Banana <math>\frac{1}{2}</math></li> <li>• Egg substitute <math>\frac{1}{4}</math> cup</li> <li>• Whole wheat toast 2 slices</li> <li>• Margarine 2 tsp</li> <li>• Jelly or jam 1 Tbsp</li> <li>• Skim milk 1 cup</li> <li>• Coffee/tea*</li> </ul>	<ul style="list-style-type: none"> <li>• Vegetable beef soup 1 cup</li> <li>• Lean hamburger 2 oz</li> <li>• Low-fat cheese 1 oz</li> <li>• Hamburger bun</li> <li>• Sliced tomato and lettuce</li> <li>• Dill pickle 1/4</li> <li>• Fresh fruit salad <math>\frac{1}{2}</math> cup</li> <li>• Oatmeal cookie 1**</li> <li>• Skim milk 1 cup</li> </ul>	<ul style="list-style-type: none"> <li>• Tomato juice <math>\frac{1}{2}</math> cup</li> <li>• Broiled chicken breast 3 oz</li> <li>• Herbed brown rice <math>\frac{1}{2}</math> cup</li> <li>• Broccoli spears 2</li> <li>• Hard dinner roll 1</li> <li>• Margarine 1 tsp</li> <li>• Carrot/raisin salad <math>\frac{1}{2}</math> cup</li> <li>• Frozen strawberry yogurt <math>\frac{1}{2}</math> cup</li> <li>• Skim milk 1 cup</li> </ul>

\* Use polyunsaturated creamer.

\*\*Use allowed polyunsaturated fat in preparation.

### This Sample Diet Provides the Following

Calories	2150	Fat	65 gm
Protein	114 gm	Sodium	3540 mg
Carbohydrates	276 gm	Potassium	3665 mg
Saturated fat	14 gm	Cholesterol	165 mg



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Fat is measured in grams. Determine the number of calories needed each day. Then use the following chart for an easy way to find how many grams of fat are permitted each day for the Step-1 and Step-2 diets.

Step-1 Diet		
<i>Daily Cholesterol Intake = 300mg or less</i>		
Daily Calories	Total Fat (Grams)	Total Saturated Fat (Grams)
1000	33	11
1200	40	13
1500	50	16
2000	66	22
2200	73	24
2500	83	27
2800	93	31

  

Step-2 Diet		
<i>Daily Cholesterol Intake = 200 mg or less</i>		
Daily Calories	Total Fat (Grams)	Total Saturated Fat (Grams)
1000	33	8
1200	40	10
1500	50	12
2000	66	16
2200	73	18
2500	83	20
2800	93	23

### Step-1

### Step-2

<b>Total Fat</b>	no more than 30% of total calories	no more than 30% of total calories
<b>Saturated Fat</b>	no more than $\frac{1}{3}$ of the total fat calories may be saturated fat	less than $\frac{1}{4}$ of the total fat calories may be saturated fat
<b>Cholesterol</b>	no more than 300 mg	no more than 200 mg



## Complex Carbohydrates (Starches/Breads/Cereals)

Choose	Avoid
<b>Baked goods:</b> whole grain or enriched breads and rolls; low-fat or homemade muffins, pancakes, waffles, and biscuits using polyunsaturated margarine or oil and non-fat milk	<i>Butter or cheese rolls and breads; croutons; commercial biscuits, muffins, pancakes, pastries, sweet rolls, donuts, croissants, popovers</i>
<b>Home recipes:</b> use weekly egg allowance or use egg whites and egg substitutes	<i>Store bought mixes with saturated fats including coconut, palm oils, and hydrogenated fats</i>
<b>Tortillas:</b> corn, soft flour made with unsaturated oils	<i>Soft flour made with lard, shortening, hydrogenated fats, coconut, and palm oils</i>
<b>Pasta &amp; Rice:</b> noodles, spaghetti, macaroni, brown rice (preferred), white rice, wild rice	<i>Prepared with whole eggs, cream, and cheese sauces; canned or boxed noodle and macaroni dishes; canned spaghetti dishes</i>
<b>Cereals:</b> cooked or dry (unsweetened preferred), oats and bran, barley	<i>Any with coconut, instant hot cereals, granola</i>
<b>Crackers/Snacks:</b> unsalted crackers, pretzels, popcorn prepared with air popper or mono/polyunsaturated oil	<i>Salted crackers or snacks; fried snack foods; any snacks or crackers containing saturated fats, coconut or palm oils, hydrogenated or partially hydrogenated fats; cheese crackers or snacks; potato chips; corn chips; tortilla chips; chow mein noodles; commercially buttered popcorn</i>



## Meats and Proteins

Limit total portion of meat, seafood, poultry, egg, cheese, peanut butter, and tofu  
To 6 oz daily for Step-1 diet; limit to 5 oz daily for Step-2 diet.

### Serving Guide

Raw meat, fish, and poultry lose weight in cooking. Three ounces cooked is about the size of a deck of cards and equals:

- 4 oz raw meat or fish without bone
- 3.4 cup cooked, flaked, or chopped meat, fish, crab, lobster
- 9 to 12 clams, oysters, scallops
- A ground beef patty, 3" diameter x 1" thick
- 1.2 large chicken breast
- 1 chicken thigh and drumstick

*Serving guide for substitutes – 1 ounce of meat equals the following:*

- 1/4 cup tuna or cottage cheese
- 2 oz lobster
- 4-6 oz tofu
- 1 Tbsp peanut butter
- 1 oz cheese
- 1 egg
- 2 egg whites
- 1/3 cup cooked legumes

Choose	Avoid
<b>Lean meats:</b> trim visible fat, limit to one 3 oz serving per meat, five meals per week, beef (round, sirloin, chuck, loin, super lean hamburger/ground beef); lamb (leg, arm, loin); pork (tenderloin, fresh leg, shoulder-arm, picnic); veal (all trimmed cuts except commercially ground)	<b>Fatty meats:</b> corned beef, regular pastrami, mutton, ham, Canadian bacon, luncheon meats, short ribs, spareribs, bacon, sausage, frankfurters, canned meats, scrapple, sandwich spreads
<b>Poultry:</b> chicken and turkey with skin removed	<i>Self-basted poultry; processed poultry products such as turkey franks, chicken franks, turkey bologna</i>
<b>Eggs:</b> egg whites and low cholesterol egg substitutes; Step-1 limit, 4 egg yolks per week; Step-2 limit, one egg yolk per week	<i>Step-1: egg yolks over 4 per week; Step-2: egg yolks over one per week; Includes yolks in cooked or prepared foods</i>
<b>Organ meats:</b> liver for Step-1, limit to one 3 to 4 oz serving per week in place of one whole egg	<i>Liver for Step-2, brain, kidney, heart, tripe, sweetbreads, chitlins (pig intestines), gizzards, pork maw (stomach), all other organ meats</i>
<b>Seafood:</b> swordfish, mackerel, albacore tuna, salmon, walleye, Pollack, blue; Step-1: shrimp, eel, oysters, squid limited to one serving per week	<i>Caviar, roe, anchovy for Step-1 and Step-2; no shrimp, eel, oysters, squid for Step-2</i>
<b>Cheese:</b> Step-1: skim or part-skim milk cheese such as mozzarella, ricotta, bakers, farmers, hoop, low-fat(1%) cottage cheese, and pot cheese; special low-	<i>Cream cheese; processed cheese and cheese spreads; all other cheeses</i>



## Take control.

fat/low cholesterol cheeses Step-2: low-fat (1%) cottage cheese, pot cheese, part-skim ricotta, Weight Watchers, Swiss	
<b>Wild game:</b> elk, deer (venison), pheasant, rabbit, wild duck, squirrel	<i>Domestic duck and goose</i>
<b>Beans:</b> dried beans, peas, lentils; tofu; peanut butter – limit to 2 Tbsp a day	<i>Regular canned peas, beans, lentils</i>
<b>Milk:</b> skim, non-fat (fluid, powered, evaporated, condensed), buttermilk, lactose-reduced, and sweet acidophilus made from skim milk	<i>Any milk product made with whole or 2% milk, chocolate milk, milkshakes, eggnog, coconut milk</i>
<b>Yogurt:</b> made from skim or non-fat milk	<i>Made from whole milk or custard style</i>
<b>Creamers:</b> only those containing polyunsaturated oils	<i>Any containing coconut or palm oils; whipped, sour, light, heavy, half&amp;half creams</i>

## Fruits and Vegetables

<b>Vegetables:</b> fresh, frozen, or low-sodium canned; low-sodium tomato and vegetable juices	<i>Regular tomato sauce and puree; spaghetti sauce; creamed, breaded, or deep-fat fried vegetables; vegetables in sauces; regular tomato and vegetable juices</i>
<b>Fruit:</b> fresh, unsweetened dried fruits; canned or frozen packed in water, own juice or light syrup preferred; all fruit juices (unsweetened preferred)	<i>Canned or frozen packed in heavy syrup, sweetened dried fruits, coconut, fried fruit snack chips</i>

## Fats

*Although fats in nuts, seeds, and avocado are mostly unsaturated, they are very high in calories and should be limited.*

<b>Polyunsaturated fats:</b> sunflower, safflower, corn, soybean, cottonseed, sesame oils; <b>monosaturated fats:</b> canola, olive, peanut oils	<i>Butter, lard, beef tallow, salt pork, bacon, bacon drippings, ham hock, animal fat, shortening, chocolate, cocoa butter, coconut, coconut oil, palm and palm kernel oil, hydrogenated fats</i>
<b>Margarine:</b> made with unsaturated fats, with liquid oil the first ingredient; tub margarine preferred over stick	<i>Made with saturated fat or hardened (hydrogenated) vegetable oil</i>
<b>Salad dressings:</b> made with unsaturated oils	<i>Made with saturated oil and/or egg yolks</i>
<b>Seeds and nuts:</b> unsalted pumpkin seeds, sesame seeds, sunflower seeds, any nuts not on the avoid list	<i>Cashews, macadamia, pistachio, Brazil, salted seeds &amp; nuts, coconut</i>



## Miscellaneous

<p><b>Desserts:</b> homemade baked goods made with unsaturated oils or margarine, skim or 1% milk, and egg substitute or egg whites; gelatin; angel food cake; ginger snaps; fruit ice, fruit whips, sorbet, sherbet – lime two ½ cup servings per week; low-fat frozen desserts; puddings, custards, or junkets made with non-fat milk and egg allowances</p>	<p><i>Made with whole milk, cream, butter, chocolate, and egg yolks; commercially prepared cakes, pies, cookies, pastries; ice cream; chocolate desserts; frozen cream pies; commercial dessert mixes such as cake and brownie mixes; chocolate; candies made with cream fillings</i></p>
<p><b>Beverages:</b> sparkling or mineral water, seltzer, club soda – unsweetened preferred; coffee; tea</p>	<p><i>Tonic, commercially or home softened water, instant cocoa mixes, Dutch processed cocoa</i></p>
<p><b>Soups &amp; sauces:</b> fat-free, low-salt broth, consommé, and bouillon; homemade soup; skim off the fat; cream soup and sauces made with non-fat milk and fat allowance</p>	<p><i>Soup made with whole milk or cream; broth containing fat; canned soups; dehydrated soup mixes; bouillon not labeled low-sodium; gravy and sauces made with butter, other animal fat, and whole milk</i></p>
<p><b>Other:</b> spices, herbs, pepper, lemon juice, garlic &amp; onion powder, Tabasco, catsup, mustard, vinegar, relishes, jam, jelly, marmalade (unsweetened preferred)</p>	<p><i>Commercially fried foods, pickles, any foods containing items not allowed</i></p>

## Nutrition Labels

*The new nutrition labels on food products give consumers information on fat, saturated fat, cholesterol, sodium, and fiber content. If help is needed interpreting the labels, the physician or registered dietitian should be consulted.*

