

California Food Guide

Fats

By Toni Piechota M.P.H., M.S., R.D., and Aditi Shah M.P.H., R.D.



What's New?

The Dietary Guidelines for Americans were revised in 2005.¹

The American Heart Association published new dietary guidelines in June of 2006 to include limiting saturated fat to less than 7 percent of calories and *trans* fat to less than 1 percent of calories.²

As of January 1, 2006, the Food and Drug Administration (FDA) began requiring food manufactures to list *trans* fat content on the Nutrition Facts Panel and Supplement Facts Panel. Label information about a product's *trans* fat content will help consumers choose more healthy diets.³

Introduction

Fats have qualities that make food taste good. They deliver flavor from foods and provide aroma. They also give a smooth, creamy texture to many foods like ice cream, chocolate, and peanut butter and make foods such as meat and baked goods moist and tender or brown and crispy.⁴

One role of fats in the diet is to aid in the absorption of fat-soluble vitamins, which include vitamins A, D, E, and K. In addition, fats are required for maintenance of healthy skin, regulation of cholesterol metabolism, and as a precursor to prostaglandin, a hormone-like substance that regulates many body functions.⁵

However, the negative influence of dietary fat intake - both quantity and composition - on health has been a popular topic of public health education since the 1970s. Over time, our understanding of these effects has become more precise and continues to be refined. While at one time, the recommendation was simply to avoid dietary cholesterol, it has become increasingly clear over time that other dietary lipids are of greater importance. For instance, monounsaturated fats appear to favorably alter blood lipid profiles, and recent studies suggest that *trans* fats are more harmful than saturated fats to certain

blood lipid levels. This chapter presents recent updates and current recommendations about dietary fat and its function in disease causation and prevention.

Dietary Guidelines for Americans 2005 Key recommendations for fats include: ¹	
Adults	Children & Adolescents
<ul style="list-style-type: none"> • Less than 10 percent of calories from saturated fat. • Less than 300 mg/day of cholesterol. • <i>Trans</i> fat consumption as low as possible. 	<ul style="list-style-type: none"> • Total Fat intake for children 2-3 years of age should be between 30-35 percent of calories.
<ul style="list-style-type: none"> • Total Fat intake should be between 20-35 percent of calories, with most fats coming from sources of unsaturated fats such as fish, nuts, and vegetable oils. 	<ul style="list-style-type: none"> • Total Fat intake for children and adolescents between ages 4-18 years should be between 25-35 percent of calories, with most fats coming from sources of unsaturated fats such as fish, nuts, and vegetable oils.

MyPyramid also includes information regarding oil consumption and fats. This information is available at <http://www.Mypyramid.gov>.

Public Health Implications

- Objectives for Healthy People 2010 Nutrition and Overweight topics include (<http://www.healthypeople.gov/Document/HTML/Volume2/19Nutrition.htm>):
 - 19-8: Increase the proportion of persons aged 2 years and older who consume less than 10 percent of calories from saturated fat.
 - 19-9: Increase the proportion of persons aged 2 years and older who consume no more than 30 percent of calories from total fat.⁵
- The risk of heart disease and high levels of low density lipoprotein (LDL)-cholesterol can be reduced by decreasing intake of saturated fat.⁶
- LDL-cholesterol can be reduced by decreasing intake of *trans*-fatty acids.⁵
- The risk of developing prostate cancer can be reduced by decreasing intake of saturated fat - especially animal fat from red meat and dairy products.⁷
- The risk of developing type 2 diabetes can be reduced by decreasing intake of total and saturated fat.⁸

Definition

Dietary fats are nutrients, like carbohydrates and proteins, and are needed for an overall healthy lifestyle. Fat is an important source of energy for the body and is the most concentrated source of energy in the diet, providing 9 kcal/g compared to 4 kcal/g from either carbohydrates or protein.⁹

By definition, fats are organic compounds that are made up of carbon, hydrogen, and oxygen; they belong to a group of substances called lipids, and come in either liquid or solid form. All fats are a combination of fatty acids - saturated, monounsaturated, polyunsaturated, and *trans* fatty acids. Whether we consider a food fat to be saturated or unsaturated depends upon the relative amounts of the different categories of fatty acids.

Oils are fats that are liquid at room temperature, like the vegetable oils used in cooking. Oils come from many different plants and nuts. A number of whole foods are naturally high in oils, like: nuts, olives, and avocados.¹⁰ Some common oils are: canola, cottonseed, olive, and peanut oils. Most oils are high in monounsaturated or polyunsaturated fats, and low in saturated fats. Foods from plant sources including vegetable oil and nuts do not contain cholesterol.

Solid fats are fats that are solid at room temperature, like butter and shortening. Solid fats come from many animal foods and can be made from vegetable oils through a process called hydrogenation. Some common solid fats are butter, beef fat (tallow, suet), chicken fat, pork fat (lard), stick margarine, and shortening. Most solid fats are high in saturated fats and/or *trans* fatty acids and have less monounsaturated or polyunsaturated fats. Animal products containing solid fats also contain cholesterol. A few plant oils, such as coconut oil and palm kernel oil, are high in saturated fats and for nutritional purposes should be considered solid fats.¹⁰

Different Types of Fats

Saturated Fats

Saturated fats are generally found in highest concentrations in animal fats as stated above. They are found in meat, seafood, dairy products (cheese, milk, and ice cream), poultry skin, and egg yolks. Some plant foods are also high in saturated fats, including coconut, palm, and palm kernel oils. Saturated fats raise total blood cholesterol levels more than dietary cholesterol.¹¹

Trans Fats

Trans fatty acids are fats produced by heating liquid vegetable oils in the presence of hydrogen. Fast foods such as chips, baked goods, and other commercially prepared foods are high in fat and can contain up to 50 percent

trans fatty acids. *Trans* fatty acids have been shown to increase LDL cholesterol and lower HDL cholesterol, which may increase the risk for heart disease.¹¹

Monounsaturated Fats

Monounsaturated fats are liquid at room temperature. They primarily come from plants and include olive oil, canola oil, and peanut oil.¹²

Polyunsaturated Fats

Polyunsaturated fats are liquid at room temperature. Many common vegetable oils, such as corn, soybean, safflower, and sunflower oil, are high in polyunsaturated fats.¹²

Omega-3 fatty acids

Omega-3 fatty acids are one type of polyunsaturated fatty acids. The plant derived omega-3 fatty acid is not synthesized by humans and, therefore, are considered to be essential in the diet. Some of the plant sources include soybean and canola oils, walnuts, and flaxseed. Some of the longer omega-3 fatty acids are found in fatty coldwater fishes, such as salmon, mackerel, and herring. These longer omega-3 fatty acids can also be made in the body by converting the omega-3 fatty acid obtained from plants. This process is however considered inefficient. Diets high in omega-3 fatty acids may help lower LDL- cholesterol and triglyceride levels.⁶

Omega-6 fatty acids:

Omega-6 fatty acids are another type of polyunsaturated fatty acid. The primary omega-6 fatty acid is not synthesized in the body and is considered essential in the diet. Good sources are nuts, seeds, and vegetable oils such as soybean, corn, and safflower oils.⁶

Table 1: Percentage of Specific Types of Fat in Common Oils and Fats				
Oils	Saturated	Mono-unsaturated	Poly-unsaturated	Trans
Canola	7	58	29	0
Corn	13	24	60	0
Coconut	87	6	2	0
Olive	13	72	8	0
Palm	50	37	10	0
Peanut	17	49	32	0
Safflower	9	12	74	0
Sunflower	10	20	66	0
Soybean	16	44	37	0
Margarine/Spreads				
67% Corn and Soybean Oil Spread, Tub	16	27	44	11
70% Soybean Oil, Stick	18	2	29	23
48% Soybean Oil Spread, Tub	17	24	49	8
60% Sunflower, Soybean, and Canola Oil Spread, Tub	18	22	54	5
Cooking Fats				
Butter	60	26	5	5
Lard	39	44	11	1
Shortening	22	29	29	18
*Values expressed as percent of total fat; data are from analyses at Harvard School of Public Health Lipid Laboratory and USDA publications.				

Calorie level	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200
Oils (g)	15	17	17	22	24	27	29	31	34	36	44	51

The new USDA MyPyramid gives recommendations for dietary fat intake and includes an allowance for “discretionary calories” based on maintenance calorie needs (see Table 3). Discretionary calories are calories from foods of low nutritional value, such as sugar or butter. Oils are not considered to be part of discretionary calories not defined because they are a major source of vitamin E and polyunsaturated fatty acids, including the essential fatty acids in the diet. In contrast, solid fats are listed separately in the discretionary calorie allowance, because compared with oils; they are higher in saturated fatty acids and lower in vitamin E and unsaturated fatty acids, including essential fatty acids.¹¹

Calorie level	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200
Discretionary calories	165	171	171	132	195	267	290	362	410	426	512	648
Example of division of discretionary calories: Solid fats allowance at various caloric levels are shown in grams (g)												
Solid fats (g)	11	14	14	11	15	18	19	22	24	24	29	34

Burden

The Nurses' Health Study and the Women's Health Initiative trial have found no link between the overall percentage of calories from fat and any important health outcome, including cancer, heart disease, and weight gain. Rather, the impact of dietary fat on health depends extensively on the type of fat consumed. Dietary fats and oils have important functions, but too much dietary cholesterol, *trans*-fat and/or saturated fat (stearic acid may be an exception) negatively impact health and a causal relationship between these three dietary components and coronary artery disease is strongly substantiated. There is a dose-response relationship between increased intakes of either cholesterol, saturated fats, and *trans* fats and the development of unhealthy blood lipid levels, especially for *trans* fats. The Nurses' Health Study found that replacing only 30 calories (7 grams) of carbohydrates

every day with 30 calories (4 grams) of *trans* fats nearly doubled the risk for heart disease.^{13, 14, 15, 16}

Conversely, there is strong evidence that high intake of either monounsaturated or polyunsaturated fat lowers the risk for heart disease.¹ Omega-3 fatty acids, found naturally in fatty fish, have inconsistently been shown to reduce heart disease risk or the risk of dying of a heart attack. Three studies, however, found that by getting 1.5 grams per day of omega-3 fatty acids over a two-year period, people who had survived a heart attack could lower their risk of dying from heart disease by 29 percent.¹⁷ Getting a gram a day from fish would mean eating four ounces a day of fatty fish, such as mackerel, salmon, sardines, or swordfish.

Prior research suggesting a correlation between dietary fat intake and risk of certain cancers (breast, colon, and prostate) have not consistently been substantiated.^{18, 19, 20, 21}

However, recent research conducted in Europe is suggestive of a protective effect of monounsaturated fats and breast cancer.²² Preliminary research has also linked the intake of *trans* fat with other non-Hodgkins lymphoma and saturated fat with endometrial cancer, though much more research is needed to confirm these results.

The 2002 recommendations of the Institute of Medicine (IOM) were to minimize consumption of saturated and *trans* fat, as any amount is correlated to an increased risk of coronary artery disease.²³ Because a fat intake of greater than 35 percent of calories typically increases saturated fat intake, and because a low intake of fats and oils (less than 20 percent of calories) increases the risk of inadequate intakes of vitamin E and may contribute to unfavorable changes in high-density lipoprotein (HDL) and triglycerides levels,¹ the IOM also recommended a fat intake range of 20-35 percent of calories. Dietary cholesterol should be restricted to ≤ 300 mg/d (200mg/d for those at high risk for coronary artery disease).

Incidence and Prevalence

While mean daily fat intake as a percentage of calories has decreased over the past 30 years, absolute intake has increased. Fat intake as a percentage of calories decreased from 36 percent to 33 percent between 1971 and 2000;²⁴ however, absolute fat intake increased from 73.4 g/d in 1989-1991 to 76.4 g/d in 1994-1996.²⁵ Between 1994-1996, average daily intake of *trans* fat was estimated to be 2.6 percent of total energy intake, with processed foods and oils providing approximately 80 percent of dietary *trans* fats. During 1999-2000, mean saturated fat intake was 11.2 percent of calories, down from 13 percent in 1971-1974.^{26, 27}

Trends/Contributing Factors

Three key factors that have received attention as potential contributing factors for the trend toward increased fat intake are increased dining outside the home, increased snacking, and reduced price value of fresh fruits and vegetables and low-fat foods. Between 1970 and 1995, calorie intake from food outside the home increased from 18 percent to 34 percent and foods eaten outside of the home tend to be higher in fat and larger portions are served.²⁸ Intake of chips/crackers/popcorn/pretzels roughly tripled from the mid-1970s to the mid-1990s.²⁸ Commercially prepared foods are major contributors of fat, especially trans fat, in the American diet. As awareness about trans fats increases, more trans-fat free products are becoming available and intake of trans-fats may decrease. Finally, relative to the consumer price index, the price of fruits and vegetables increased at a higher rate while the cost of high fat and high sugar foods decreased.²⁸

Barriers to Implementation/Myths

Below are a variety of myths associated with fat consumption.

- **Myth: Reduced-fat foods are always low in fat.**²⁹
Fact: These foods are lower in fat than their full-fat counterparts, but that does not necessarily mean they are "low-fat." To know the facts, read the nutrition label and compare the fat content of two similar products.
- **Myth: Americans are getting fatter because they are overeating fat-free and low-fat foods.**²⁹
Fact: Obesity occurs when more calories are consumed than used. Lower-fat, lower-calorie foods can help cut total calorie intake when used as part of a well balanced and calorie controlled diet. Increased physical activity also plays an important role in weight maintenance. In addition to burning calories, increased activity benefits overall health in many ways such as disease prevention and stress reduction.
- **Myth: Low-fat means low calorie.**²⁹
Fact: Reducing the amount of fat in food does not necessarily mean the food is low in calories. While a product may be lower in fat, the calorie content may be equal to or even higher than that found in the regular product as they can have a higher carbohydrate and sugar content. Consume low-fat foods in moderation just as you would a full-fat, full-calorie product. The Nutrition Facts panel on the label is the key to finding out the fat and calorie content of foods.
- **Myth: Fat-free means taste-free.**²⁹
Fact: Although many of the first fat-free products on the market did not meet

taste expectations, today's products have greatly improved. If certain fat-free products do not satisfy your taste buds, try low-fat versions. Slight adjustments can add up, and just a little fat can go a long way in adding both flavor and texture to a food. Think of skim milk versus 1 percent milk.

- **Myth: Americans have successfully cut the amount of fat in their diets.**²⁹
Fact: We are not actually eating less fat, but surveys do indicate we have reduced the percent of calories that come from fat in our diets. That is because calorie intake has increased while fat intake has remained the same. To meet dietary goals, we still need to cut back on fat.
- **Myth: Light oils keep your fat intake low**
Fact: Light or "lite" oils have exactly the same fat and calorie content as regular oils. They are simply light in flavor or lighter in color.
- **Myth: "Cholesterol-free" means a product is heart healthy.**³⁰
Fact: With all the concern about cholesterol and heart disease, numerous companies are promoting their products as cholesterol-free. Blood cholesterol is a contributor to heart disease, but saturated and *trans* fat increase blood cholesterol levels more than dietary cholesterol. Therefore, read labels carefully to see if "cholesterol-free" products contain any saturated or *trans* fat. Foods such as crackers, cookies, chips, sports bars, and other snack foods often contain palm, coconut, or hydrogenated vegetable oils (which are even more saturated than butter). Look for labels that list the grams of fat and type of fat used. Do not be persuaded by misleading advertising.

Common Concerns/Strategies

It is important to emphasize the role of fat consumption in disease prevention. Contributing strategies could include development of positive, practical, and simple educational messages. According to the Continuing Survey of Food Intakes of Individuals (CSFII), the median intake of total fat in the United States ranges from about 32-34 percent of total calories. Major contributors of dietary fats include butter, margarine, vegetable oils, visible fat on meat and poultry, whole milk, egg yolks, nuts, and baked goods.³¹ Despite this, it is not clear why this knowledge is not being translated into decreased consumption of fats.

Food manufacturers should continue to develop high quality, low-fat food products that are equally tastier compared to the regular products, so that consumers can frequently choose low-fat food products over regular food products that may be high in saturated fats or *trans* fats. In 2004, the International Food Information Council (IFIC) conducted qualitative research to determine consumers' knowledge and perceptions of dietary recommendations regarding general nutrition, nutrients, dietary fats, dieting, and health.^{32, 33} Some

other major findings from the study revealed that the consumers are confused about fats. The following were identified as knowledge gaps among the consumers surveyed about fat:

- Consumers believe that some fats are better for them than other fats but, for the most part, they do not know which fats are which.
- There is significant confusion regarding what types of food contain which fats. Consumers do not know the difference between polyunsaturated fats, monounsaturated fats, *trans* fats, etc., and in what foods these fats can be found.^{32, 33}
- Messages about fats are viewed as confusing and inconsistent (e.g., not long ago, the fat in margarine was said to be better than the fat in butter; now it is the reverse). Therefore, consumers are increasingly skeptical about the information provided and their inclination may be to ignore all of it and follow their own advice.
- Many higher fat foods are perceived as good tasting, while many lower fat foods are seen as not meeting taste expectations.
- Consumers participating in this research were ambivalent about adding information about *trans* fats to nutrition labels, since they do not understand what these fats are, where they come from, and how they impact their health.^{32, 33}

Common strategies for consumers to decrease consumption of total fats include:

- Eat more fiber rich foods such as oats, barley, whole-grain breads, dried peas and beans, bran, fruits, and vegetables.
- Reduce portion sizes for weight control.
- Trim fat from meat and remove skin from poultry.
- Bake, broil, roast, or grill rather than fry.
- Use nonstick cooking sprays rather than oils, margarine, or butter.
- Choose fat-free (skim) or one percent fat dairy products.
- Try liquid, nonfat, or low-fat soft tub margarine.
- Limit red meat (beef, veal, pork, and lamb) to three times per week or less in 3 ounce portions.

Margarine vs. Butter Controversy

Nutritionists may be asked: "So which is better for me: butter or margarine?" Although they both are sources of fat, to determine which is better for health it is important to look more closely at what kind of fats are found in butter and margarines.³⁴

Butter is made from the fat portion of cow's milk, by agitating the milk fat in a churn until coagulation (solidification) occurs. Saturated fats are found in cow's milk, but there is also a small amount of *trans* fat that occurs naturally. Cow's milk normally contains up to 3.7 percent milk fat, but milks with 2 percent and 1

percent fat are common in dairy products. Skim milk contains about 0.2 percent milk fat.³⁴

Vegetable oils are the base for margarines. Soybean, olive, corn, and canola are common oils used in the manufacture of margarines, but oils are liquid at room temperature. In order to produce solid margarine, unsaturated fats in the oil are converted to saturated fats by a process called hydrogenation. The level of unsaturated fats goes down in margarines and the level of saturated fats goes up. Even more important is the fact that during the process of hydrogenation to produce margarines, *trans* fatty acids are produced. *Trans* fat like saturated fat raises the level of LDL cholesterol in the blood, and so we should be limiting the amounts of *trans* fat in our diet.³⁴

Table 4 illustrates the differences in the amount of fat in butter, stick margarine, and tub margarine. Butter contains less total fat than stick margarine and tub margarine, but the amount of saturated fat found in butter is almost three times the amount in margarine. Butter does contain less *trans* fat than margarines, but when the total of *trans* and saturated fat is compared, traditional vegetable margarines come out ahead of butter. Even better are margarines that are not hydrogenated. These products should be *trans* fat-free.³⁴

Table 4: Different Types of Fat in Butter and Margarines (grams/serving. A serving is defined as 13-14 g, approximately 1 tablespoon)				
Product	Total fat	Saturated fat	Trans fat	Trans fat + saturated fat
Butter	10.8	7.2	0.3	7.5
Stick margarine (82% fat)	11.4	2.3	2.4	4.7
Tub margarine (80% fat)	11.2	1.9	1.1	3.0

Sources: United States Food and Drug Administration Table of Trans Values, 1995; USFDA Composition DATA, 1995

Did you know?

"A whole stick of butter has almost as much fat and cholesterol and double the amount of saturated fat as three popular quarter-pound burgers with cheese?" This is something to keep in mind when your recipe calls for a whole stick of butter."³⁵

Opportunities for Improvement

- Policies aimed at improving the quality of fats and oils can be effective with the collaboration of food industries.
- Consumers should be encouraged to substitute liquid oils and "soft" fats (i.e., those that are soft at room temperature) for "hard fats" (those that are more solid at room temperature) to reduce both saturated fats and trans fat.
- Food manufacturers could reduce the levels of *trans* fats arising from hydrogenation.
- Official agencies should be encouraged to consider monitoring the levels of *trans* fat in the food supply.
- Official agencies should be encouraged to consider limiting the claims concerning the saturated fatty acid content of foods that contain appreciable amounts of *trans* fatty acids, and they should not allow foods that are high in trans fatty acids to be labeled as being low in saturated fatty acids.
- Official agencies should be encouraged to consider making sure that programs such as the National School Lunch and Breakfast Programs meet the guidelines for dietary fats.
- Messages on types of dietary fats could be better conveyed by MyPyramid. Consideration should be given to the design and implementation of a project that will help consumers use MyPyramid to recognize different types of fats and their food sources, and to choose a diet that is low in saturated and trans fat and cholesterol and moderate in total fat in the context of the total diet.
- Programs that teach specific food-choice strategies such as choosing skim milk and lean meats instead of higher fat counterparts, increasing intake of fruits, vegetables, and whole grains, and reducing portion sizes could be implemented by different food programs.
- Collaborations could occur with the media to publicize the need for decreased consumption of saturated and *trans* fats, and to communicate environmental, and consumer-oriented solutions that identify steps of action.

Recommendations

The 2006 recommendations of the American Heart Association (AHA) regarding dietary fat intake are as follows:

- The dietary fat intake for Americans should be between 25-35 percent of total calorie intake, in compliance with the Institute of Medicine (IOM) and the National Cholesterol Education Program recommendations.
 - Less than 7 percent of total calories should be as saturated fats.
 - Less than 1 percent of total calories should be as trans fats (the IOM recommends limiting "as much as possible").
 - Less than 300 mg cholesterol per day.
 - Eat fish, preferably oily fish, at least twice a week.

The key recommendations for fats and oil consumption in the Dietary Guidelines for Americans are as follows:

- The guidelines for fat intake for healthy Americans, is to consume no more than 30 percent of total calories from fat. The 30 percent guideline means:³⁶
 - 7-10 percent of total calories from saturated fats,
 - About 10-15 percent of total calories from monounsaturated fats, and
 - About 10 percent from polyunsaturated fats.
- When selecting and preparing meat, poultry, dry beans, and milk or milk products, make choices that are lean, low-fat, or fat-free.
- Limit intake of fats and oils high in saturated and/or *trans* fatty acids, and choose products low in such fats and oils.

According to a recent study, evidence suggests that consuming approximately two servings of fish per week (8 oz.) may reduce the risk of developing coronary heart disease and that consuming the n-3 polyunsaturated fatty acids, docosahexaenoic acid and eicosapentaenoic acid, may reduce cardiovascular disease risk in people who have already experienced a cardiac event.⁶ Although concerns have been raised about contamination of fatty fish with mercury and polychlorinated biphenyls (PCBs), it is thought that the benefits outweigh the risks, especially in middle-aged and older men and postmenopausal women. Some concerns for contamination exist for pregnant women, children, and susceptible subgroups, and the Environmental Protection Agency recommends avoiding certain fish (e.g., shark, mackerel, tilefish, and swordfish) and limiting intake to 12 ounces per week of low-mercury fish, such as canned light tuna, salmon, pollock, and catfish. (<http://www.epa.gov/ost/fishadvice/advice.html>. Accessed on 8/2/06).

AHA currently recommends that people eat at least two servings (8 oz.) of fish a week and choose fats and oils with 2 grams or less saturated fat per tablespoon, such as liquid and tub margarines, canola, corn, safflower, soy bean, and olive oils.³⁷ If you are a vegetarian, consider more plant-based products that contain omega-3 fatty acid such as flaxseed oil, ground flaxseed meal, canola oil, walnuts, and seeds.³⁷

Ways of Reducing Fat and Cholesterol in the diet

For a 2,000 calorie diet, 30 percent of calories as fat corresponds to 67 grams of fat. Some of this fat will be already in foods, such as meat, baked goods, and dairy products (invisible fat). The remainder will be added fats. A serving of added fat generally contains five grams of fat, and the following count as one serving of fat:

- One tsp vegetable oil (canola, safflower, olive, peanut);
- Two tbsp low-fat mayonnaise;

- One tbsp regular salad dressing;
- One tsp soft margarine (zero trans fat); one tsp butter; one tsp stick or hard margarine.¹

Meal Planning

Planning meals to meet the recommended fat intakes does not have to be complicated. Here are a few suggestions:

- Choose fish, poultry, and lean cuts of meat, and remove the fat and skin before cooking. Eat no more than six ounces per day.
- Substitute vegetarian sources of protein for animal sources several times a week. Good sources include soybeans or soy foods and other high protein plant sources such as many types of beans.⁴
- Broil, bake, roast, or poach foods rather than fry them.³⁸
- Cut down on high fat processed meats, including hot dogs, sausage, bacon, spare ribs, and such cold cuts as salami and bologna.
- Season with fat-free broth and herbs and spices instead of fatty meat, fat back, bacon, or butter.³⁸
- Limit organ meats such as liver, kidney, or brains.
- Replace a whole egg with two egg whites or use 1/4-cup egg substitute.³⁸
- Use skim or low-fat milk, cheeses, and yogurt.
- Use shredded cheese so a little looks like more.³⁸
- Use liquid or soft tub margarines or vegetable oils high in monounsaturated fats like canola and olive oil instead of butter.⁴
- Choose margarine containing liquid vegetable oil as the first ingredient.
- Limit intake of obvious sources of saturated fats such as butter, butter/oil blends, cream, sour cream, coconut, and whole milk.
- Use all fats and oils sparingly.
- Use fat-free chicken or vegetable broth for cooking instead of fats or oils.
- Eat plenty of fruits and vegetables, as well as cereals, breads, rice, and pasta made from whole grains.⁴
- Go easy on packaged and processed foods, such as pies, cakes, cookies, doughnuts, croissants, and muffins, which are all high in saturated, *trans*, or hydrogenated fats.⁴

Table 5: Alternatives in Food Selections

Table 5 gives alternatives in food selections to decrease fat content.³⁹

Table 5: Alternatives in Food Selection		
Instead of:	Try This:	Save ---- grams of fat
Ice cream bar	Fudgesicle	12 grams per bar
Whole milk	1% (low fat)	5 grams per cup
2% milk	Skim milk (nonfat)	5 grams per cup
Cheddar cheese	Reduced-fat cheddar cheese	8 grams per ounce
Ice cream	Ice milk or frozen yogurt	4.5 grams per 1/2 cup
Sour cream	Non-fat sour cream	2 grams per tablespoon
Potato chips	Baked potato chips	10 grams per ounce
Butter popcorn	Light popcorn	7 grams per serving
Pepperoni pizza	Vegetable pizza	7 grams per slice

Source: American Cancer Society. Cut Calories and Fat, Not Flavor. Available at

http://www.cancer.org/docroot/PED/content/PED_3_2X_Cut_The_Fat_Not_The_Flavor.asp?sitearea=PED. Accessed on February 25, 2006.

Read the Label⁴

Use the Nutrition Facts panel on food labels to help balance your food choices. The panel shows how many calories, as well as fat, and other nutrients there are in a particular food product. The ingredient list will name the types of fat and fat replacers used. The terms used on food labels also have strict definitions to help you make choices.

Fat-free	Less than 0.5 grams per serving size listed on the label.
Low-fat	3 grams or less per serving.
Reduced or less fat	At least 25 percent less fat per serving than the reference food.
Saturated fat-free	Less than 0.5 grams saturated fat and less than 0.5 grams trans fatty acids per serving.
Low saturated fat	1 gram or less per serving and not more than 15 percent of the calories from saturated fatty acids.
Reduced or less saturated fat	At least 25 percent less per serving than the reference food.
Cholesterol free	Foods, which contain less than 2 milligrams of cholesterol per serving and 2 grams or less of saturated fat per serving.
Low cholesterol	Foods with less than 20 milligrams of cholesterol per serving and 2 grams or less of saturated fat per serving.
Cholesterol reduced	Foods that have no more than one-quarter (25%) of the cholesterol content of the foods for which they substitute and that they resemble in taste and flavor. These products provide information on how the new product compares with the one it replaces.

Tips for healthful Eating Out⁴⁰

- Choose restaurants that have low-fat, low cholesterol items.
- Select poultry, fish, or meat that is broiled, grilled, or steamed rather than fried.
- Chose lean cuts of deli meats like fresh turkey or lean roast beef instead of higher fat cuts like salami or bologna.
- Order a low fat dessert like sherbet, fruit, or low fat yogurt.
- Control serving size by ordering smaller portions.

- At fast food restaurants, go for grilled chicken sandwiches, salads with low fat --dressing, and pizza topped with vegetables and less cheese, which are all better options.
- Slow down, practice mindful eating!

*General Cooking Tips*⁴⁰

Meats and Vegetables:

- Use a fat separator to remove liquid fat.
- Remove chicken skin before eating. It may be left on during cooking to help retain moisture and add flavor.
- Cook meats in non-stick pans or use cooking sprays.
- Choose cuts of meat that are lean, with little visible fat and not too much marbling (fat in the lean). Trim off visible fat before cooking.
- Add more vegetables or starches (rice, pasta, potatoes), and cut down on the amount of meat used per serving.
- Try ground turkey for a lower fat alternative to ground beef. After cooking ground beef rinse in a colander. Read the label—some brands contain about the same amount of fat as lean ground beef.
- Try these lower-fat cooking methods:
 - Roasting – Place meat on a rack in the roasting pan so that the fat drips away during cooking.
 - Braising or Stewing – To get rid of the fat that remains in the cooking liquid, refrigerate overnight, and then remove the hardened fat. Longer cooking times helps tenderize tougher cuts of meat.
 - Broiling – For less tender cuts of meat, tenderize by scoring, pounding, grinding or marinating before cooking.
- Sauté onions and garlic in one tablespoon or less olive oil to start and then add water or broth to steam and sauté.
- Steam or microwave vegetables instead of sautéing.

Sauces, Gravies, and Dressings⁴⁰

- To make gravies or sauces with less fat but without lumping, mix the flour or cornstarch with a small amount of cold liquid until smooth. Stir this mixture slowly into the hot liquid you want to thicken and bring to a boil.
- If a sauce made with yogurt is to be heated, add one tablespoon of cornstarch for each cup of yogurt to prevent separation.
- For homemade salad dressings, use less oil in proportion to other ingredients. For creamy dressings, add yogurt to replace some of the oil.
- Try lemon juice or herbed vinegar for fat-free dressings, and reduced calorie or fat-free salad dressings.

*Baking Tips*⁴⁰

In baked products, try cutting back the fat or oil by one-fourth to one-third. For example:

- If the recipe calls for one cup of oil or margarine, try using 2/3 to 3/4 cup of oil.
- Make one-crust or “no crust” pies rather than two crust pies.
- Nuts are high in fat. Try using only half the nuts called for in your recipe.
- Substitute dried fruits and raisins for chocolate chips.
- Use non-stick sprays to grease pans.
- Use two egg whites instead of one whole egg.
- Make angel food cake in place of other cakes. It uses egg whites and has only a trace amount of fat.
- The minimum amount of fat or oil for cakes and drop cookies is two tablespoons per cup of flour.
- Substitute applesauce or mashed fruit (banana) in place of some fat in cakes and muffins.

Clinical Implications

- Diets low in saturated fats and cholesterol are associated with low risks and rates of coronary heart disease.⁶
- High intake of products high in *trans* fat can increase LDL-cholesterol levels.⁶
- Excessive fat intake has been linked to obesity, heart disease, and cancer.
- High fat diets may promote prostate, colorectal, lung, and endometrial cancers.⁴¹
- Healthy, low-fat diets may lower the risk of cancer, particularly some gastrointestinal, respiratory, and reproductive system cancers.⁴²
- Consumption of foods containing omega-3 fatty acids are associated with decreased risk of coronary heart disease, depression, rheumatoid arthritis, allergies, bipolar disorder, attention deficit hyperactivity disorder, stroke, lupus, and a type of renal disease.⁴³
- Diets rich in the plant-based sources of omega-3 fatty acids lower risk of developing heart disease.³⁷

Resources/ Web Sites

1. American Cancer society. <http://www.cancer.org>
2. American Dietetic Association. <http://www.eatright.org>
3. American heart Association. <http://www.americanheart.org>
4. United States Department of Agriculture, MyPyramid. <http://www.MyPyramid.gov>
5. National Association of Margarine manufacturers. <http://www.margarine.org/nutritionallyspeaking.html>
6. International Food Information Council. <http://www.ific.org>

7. National Association of Margarine manufacturers. <http://www.margarine.org>
8. Healthy People 2010. <http://www.healthypeople.gov>
2005 Dietary Guidelines.
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