

Mission of our clinic is not only to help patients help treat their Diabetes but to prevent new onset of Diabetes. Information below is for patients with Pre Diabetes, or high risk of Diabetes. A lot of this information is abstracted from UP TO DATE. This is an online information source for patients and providers that constantly reviews new publications and ongoing research.

Our practice provides handouts from Up to Date to help educate patients with their health conditions, and help prevent health conditions that they are prone to.

The prevention of type 2 diabetes mellitus will be reviewed here:

OUR APPROACH — We promote lifestyle changes (healthy diet and regular exercise) to all of our patients. In addition, we measure glycated hemoglobin (A1C) or fasting plasma glucose (FPG) in adults at high risk for diabetes, including individuals >45 years of age with body mass index (BMI) >25 kg/m² who have one or more additional risk factors for diabetes (eg, family history of diabetes mellitus in a first-degree relative, sedentary lifestyle, gestational diabetes (history of diabetes during pregnancy), hypertension, dyslipidemia (high cholesterol or high Triglycerides).

If the FPG or A1C value is abnormal, the initial test should be repeated. If you think your risk of Diabetes is high ask your provider to run these screening tests.

Diabetes Prevention Program — In this trial, 3234 obese (average BMI 34 kg/m²) subjects aged 25 to 85 years (average 51 years) at high risk for diabetes (based on BMI ≥24 kg/m², and fasting and two-hour plasma glucose concentrations of 96 to 125 mg/dL [5.3 to 6.9 mmol/L] and 140 to 199 mg/dL [7.8 to 11.1 mmol/L], respectively) were randomly assigned to one of the following groups:

- Intensive lifestyle changes with the aim of reducing weight by 7 percent through a behavioral modification program aimed at a low-fat diet and exercise for 150 minutes per week. Details of the lifestyle intervention have been published.
- Treatment with [metformin](#) (850 mg twice daily) plus information on diet and exercise. {Information on Metformin is available on our web site }
- Placebo plus information on diet and exercise.

The study was terminated one year ahead of schedule when the independent data safety monitoring board determined that the study hypotheses had been answered: At an average follow-up of three years, fewer patients in the intensive lifestyle group developed diabetes (14 versus 22 and 29 percent in the [metformin](#) and placebo groups, respectively). The intensive lifestyle and metformin interventions reduced the cumulative incidence of diabetes by 58 and 31 percent, respectively. **Lifestyle intervention was effective in men and women in all age groups and in all ethnic groups.**

The diet and exercise group lost an **average of 15 pounds (6.8 kg; 7 percent)** of weight in the first year, most of which was sustained for the duration of the study. An analysis of patients in the intensive lifestyle group found that, within the three components of the intervention (weight loss, diet change, and exercise), **diabetes prevention correlated most strongly with weight loss; there was a 16 percent reduction in diabetes risk for every kilogram reduction in weight.**

In a follow-up observational study, the Diabetes Prevention Program Outcomes (DPPOS), the benefit of the lifestyle intervention persisted over 10 years. In this study, 85 percent of patients originally enrolled in DPP joined the long-term follow-up and were offered group-implemented lifestyle intervention [27]. Patients originally assigned to [metformin](#) continued receiving it (unblinded). During a cumulative 10 years of follow-up, the incidence of diabetes in the lifestyle and metformin groups was significantly reduced by 34 and 18 percent, respectively, compared with placebo. In a subsequent analysis of participants with IGT who completed the DPP without developing diabetes, participants who reverted to normal glucose tolerance at least once during the DPP had a lower risk of diabetes during DPPOS than those who consistently had prediabetes (HR 0.44, 95% CI 0.37-0.55). This finding was unaffected by previous group assignment

SETTING A WEIGHT LOSS GOAL — It is important to set a Goal;

LIFESTYLE MODIFICATION — All patients with impaired glucose tolerance (IGT), impaired fasting glucose (IFG), or a glycated hemoglobin (A1C) of 5.7 to 6.4 percent (39 to 46 mmol/mol) should be counselled on the benefits of weight loss and increasing physical activity. Regular reinforcement of these benefits is important for successful compliance. Patients should also be encouraged to stop smoking. Subjects who are at high risk should be followed closely, with repeat examination and measurements of fasting blood glucose and serum lipids on an annual basis.

Changes in lifestyle, including diet modification, weight loss, and exercise slow progression of IGT to overt diabetes. **The beneficial effects of such intervention appear to continue after the original intervention.** The importance of factors such as diet, body weight, and exercise can also be inferred from the findings in certain societies that have undergone rapid change towards a westernized lifestyle. In these societies, the prevalence of IGT and type 2 diabetes often increase greatly, correlated with both weight gain and decreased physical activity.

Diet — Mediterranean diet appears to be associated with several health benefits, including diabetes prevention.

As an example, one trial with 7447 men and women examined the effects of two different Mediterranean diets (one supplemented with extra virgin olive oil, the other with mixed nuts) versus a low fat control diet on cardiovascular outcomes in men and women at high risk for cardiovascular disease (CVD) (eg, type 2 diabetes or three or more cardiovascular risk factors, such as smoking, hypertension, dyslipidemia, body mass index [BMI] ≥ 25 kg/m² or family history of premature CVD).

After a median follow-up of four years, there was a decreased risk of developing diabetes in the groups assigned to the Mediterranean diets.

Although these results suggest that a Mediterranean diet reduces the incidence of diabetes independent of weight loss, they should be interpreted with caution as trial had fewer number of subjects enrolled. In addition, it remains uncertain which components of the Mediterranean diet offer the protective benefit, or if the benefits result from an aggregation of effects.

There is no single definition of a Mediterranean diet, but such diets are typically high in fruits, vegetables, whole grains, beans, nuts, and seeds; include olive oil as an important source of monounsaturated fat; and allow low to moderate wine consumption. There are typically low to moderate amounts of fish, poultry, and dairy products, with little red meat.

Randomized trials of Mediterranean diets with diabetes as a primary endpoint are needed before they can be recommended for the prevention of diabetes.

Weight loss/lifestyle intervention — Weight reduction, if sustained, can substantially improve glycemic control in patients with type 2 diabetes.

Your first goal should be to avoid gaining more weight and staying at your current weight (or within 5 percent or five pounds). Many people have a "dream" weight that is difficult or impossible to achieve.

People at high risk of developing diabetes who are able to lose 5 percent of their body weight and maintain this weight will reduce their risk of developing diabetes by about 50 percent and reduce their blood pressure. This is a success.

Losing more than 15 percent of your body weight and staying at this weight is an extremely good result, even if you never reach your "dream" or "ideal" weight.

LIFESTYLE CHANGES — Programs that help you to change your lifestyle are usually run by psychologists, nutritionists, or other professionals. The goals of lifestyle changes are to help you change your eating habits, become more active, and be more aware of how much you eat and exercise, helping you to make healthier choices.

This type of treatment can be broken down into three steps:

- The triggers that make you want to eat
- Eating
- What happens after you eat

Triggers to eat — determining what triggers you to eat involves figuring out what foods you eat and where and when you eat. To figure out what triggers you to eat, keep a record for a few days of everything you eat, the places where you eat, how often you eat, and the emotions you were feeling when you ate.

For some people, the trigger is related to a certain time of day or night. For others, the trigger is related to a certain place, like sitting at a desk working.

Eating — You can change your eating habits by breaking the chain of events between the trigger for eating and eating itself. There are many ways to do this. For instance, you can:

- Limit where you eat to a few places (eg, dining room)
- Restrict the number of utensils (eg, only a fork) used for eating
- Drink a sip of water between each bite
- Chew your food a certain number of times
- Get up and stop eating every few minutes

The types of foods we eat on a regular basis are related to whether we gain or lose weight over time. Whole grains, fruits, vegetables, nuts, and yogurt are associated with lower weight over four years, as contrasted with weight gain seen when eating french fried potatoes or chips, sugar-sweetened beverages, and red or processed meats.

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What happens after you eat — Rewarding yourself for good eating behaviors can help you to develop better habits. This is not a reward for weight loss; instead, it is a reward for changing unhealthy behaviors toward healthy ones.

Do not use food as a reward. Some people find money, clothing, or personal care (eg, a haircut, manicure, or massage) to be effective rewards. Treat yourself immediately after making better eating choices to reinforce the value of the good behavior.

You need to have clear behavior goals and you must have a time frame for reaching your goals. Reward small changes along the way to your final goal.

Other factors that contribute to successful weight loss — Changing your behavior involves more than just changing unhealthy eating habits; it also involves finding people around you to support your weight loss, reducing stress, and learning to be strong when tempted by food.

- Establish a "buddy" system – Having a friend or family member available to provide support and reinforce good behavior is very helpful. The support person needs to understand your goals.
- Learn to be strong – Learning to be strong when tempted by food is an important part of losing weight. As an example, you will need to learn how to say "no" and continue to say no when urged to eat at parties and social gatherings. Develop strategies for events before you go, such as eating before you go or taking low-calorie snacks and drinks with you.
- Develop a support system – Having a support system is helpful when losing weight. This is why many commercial groups are successful. Family support is also essential; if your family does not support your efforts to lose weight, this can slow your progress or even keep you from losing weight.
- Positive thinking – People often have conversations with themselves in their head; these conversations can be positive or negative. If you eat a piece of cake that was not planned, you may respond by thinking, "Oh, you stupid idiot, you've blown your diet!" and as a result, you may eat more cake.

A positive thought for the same event could be, "Well, I ate cake when it was not on my plan. Now I should do something to get back on track." A positive approach is much more likely to be successful than a negative one.

- Reduce stress – Although stress is a part of everyday life, it can trigger uncontrolled eating in some people. It is important to find a way to get through these difficult times without eating or by eating low-calorie food, like raw vegetables. It may be helpful to imagine a relaxing place that allows you to temporarily escape from stress. With deep breaths and closed eyes, you can imagine this relaxing place for a few minutes.
- Self-help programs – Self-help programs like Weight Watchers, Overeaters Anonymous, and Take Off Pounds Sensibly (TOPS) work for some people. As with all weight loss programs, you

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are most likely to be successful with these plans if you make long-term changes. The goal of any diet is to burn up more calories than you eat.

How quickly you lose weight depends upon several factors, such as your age, gender, and starting weight.

- Older people have a slower metabolism than young people, so they lose weight more slowly.
- Men lose more weight than women of similar height and weight when dieting because they use more energy.
- People who are extremely overweight lose weight more quickly than those who are only mildly overweight.

How many calories do I need? — You can estimate the number of calories you need per day based upon your current (or target) weight, gender, and activity level for women and for men [\[4\]](#).

In general, it is best to choose foods that contain enough protein, carbohydrates, essential fatty acids, and vitamins.

Try not to drink alcohol or drinks with added sugar, and most sweets (candy, cakes, cookies), since they rarely contain important nutrients.

Portion-controlled diets — One simple way to diet is to buy packaged foods, like frozen low-calorie meals or meal-replacement canned drinks. A typical meal plan for one day may include:

- A meal-replacement drink or breakfast bar for breakfast
- A meal-replacement drink or a frozen low-calorie (250 to 350 calories) meal for lunch
- A frozen low-calorie meal or other prepackaged, calorie-controlled meal, along with extra vegetables for dinner

This would give you 1000 to 1500 calories per day.

Low-fat diet — To reduce the amount of fat in your diet, you can:

- Eat low-fat foods. Low-fat foods are those that contain less than 30 percent of calories from fat. Fat is listed on the food facts label.
- Count fat grams. For a 1500 calorie diet, this would mean about 45 g or fewer of fat per day.

CHOOSING A DIET OR NEW EATING PLAN — A calorie is a unit of energy, ANY DIET THAT RESTRICTS 500 CALS/DAY HELPS YOU LOOSE: 1 LB per week, or restriction of 3500 cals per week=1b of weight loss

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- With a very-low-carbohydrate diet, you eat between 0 and 60 grams of carbohydrates per day . (a standard diet contains 200 to 300 grams of carbohydrates).

Carbohydrates are found in fruits, vegetables, and grains (including breads, rice, pasta, and cereal), alcoholic beverages, and in dairy products. Meat and fish do not contain carbohydrates.

Side effects of very-low-carbohydrate diets can include constipation, headache, bad breath, muscle cramps, diarrhea, and weakness.

Mediterranean diet — The term "Mediterranean diet" refers to a way of eating that is common in olive-growing regions around the Mediterranean Sea. Although there is some variation in Mediterranean diets, there are some similarities. Most Mediterranean diets include:

- A high level of monounsaturated fats (from olive or canola oil, walnuts, pecans, almonds) and a low level of saturated fats (from butter).
- A high amount of vegetables, fruits, legumes, and grains (7 to 10 servings of fruits and vegetables per day).
- A moderate amount of milk and dairy products, mostly in the form of cheese. Use low-fat dairy products (skim milk, fat-free yogurt, low-fat cheese).
- A relatively low amount of red meat and meat products. Substitute fish or poultry for red meat.
- For those who drink alcohol, a modest amount (mainly as red wine) may help to protect against cardiovascular disease. A modest amount is up to one (4 ounce) glass per day for women and up to two glasses per day for men.

Which diet is best? — Studies have compared different diets, including:

- Very-low-carbohydrate (Atkins)
- Macronutrient balance controlling glycemic load (Zone)
- Reduced-calorie (Weight Watchers)
- Very-low-fat (Ornish)

No one diet is "best" for weight loss . Any diet will help you to lose weight if you stick with the diet. Therefore, it is important to choose a diet that includes foods you like.

Fad diets — Fad diets often promise quick weight loss (more than 1 to 2 pounds per week) and may claim that you do not need to exercise or give up favorite foods. Some fad diets cost a lot of money because you have to pay for seminars, pills, or packaged food. Fad diets generally lack

any scientific evidence that they are safe and effective, but instead rely on "before" and "after" photos or testimonials.

Diets that sound too good to be true usually are. These plans are a waste of time and money and are not recommended. A doctor, nurse, or nutritionist can help you find a safe and effective way to lose weight and keep it off.

WEIGHT LOSS MEDICINES — Taking a weight loss medicine may be helpful when used in combination with diet, exercise, and lifestyle changes. However, it is important to understand the risks and benefits of these medicines. It is also important to be realistic about your goal weight using a weight loss medicine; you may not reach your "dream" weight, but you may be able to reduce your risk of diabetes or heart disease.

Weight loss medicines may be recommended for people who have not been able to lose weight with diet and exercise who have a:

- BMI of 30 or more.
- BMI between 27 and 29.9 and have other medical problems, such as diabetes, high cholesterol, or high blood pressure, and who have failed to achieve weight loss goals through diet and exercise alone.

Orlistat — [Orlistat](#) (Xenical 120 mg capsules) is a medicine that reduces the amount of fat your body absorbs from the foods you eat. A lower-dose version is now available without a prescription (Alli 60 mg capsules) in many countries, including the United States. The medicine is recommended three times per day, taken with a meal; you can skip a dose if you skip a meal or if the meal contains no fat.

After one year of treatment with [orlistat](#), the average weight loss is approximately 11.7 pounds (5.3 kg) or 8 to 10 percent of initial body weight (4 percent more than in those who used lifestyle with a placebo). Cholesterol levels often improve and blood pressure sometimes falls. In people with diabetes, orlistat may help control blood sugar levels.

Side effects occur in 15 to 10 percent of people and may include stomach cramps, gas, diarrhea, leakage of stool, or oily stools. These problems are more likely when you take [orlistat](#) with a high-fat meal (if more than 30 percent of calories in the meal are from fat). Side effects usually improve as you learn to avoid high-fat foods. Severe liver injury has been reported rarely in patients taking orlistat, but it is not known if orlistat caused the liver problems.

Lorcaserin — [Lorcaserin](#) is a medicine that reduces appetite and thereby reduces body weight in men and women. Lorcaserin appears to have similar efficacy as [orlistat](#). After one year, the mean weight loss is approximately 12.8 pounds (5.8 kg) compared with 6.4 pounds (2.9 kg) in the placebo group. Adverse effects of lorcaserin included headache, upper respiratory infections, nasopharyngitis, dizziness, and nausea, occurring in 18, 14.8, 13.4, 8, and 7.5 percent of patients, respectively.

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The recommended dose of [lorcaserin](#) is 10 mg twice daily, taken with or without food. The response to therapy should be evaluated by week 12. Lorcaserin should be discontinued if patients do not lose 5 percent of body weight in 12 weeks.

[Lorcaserin](#) should not be used in individuals with reduced kidney function (creatinine clearance <30 mL/min). It is contraindicated during pregnancy. In addition, lorcaserin should not be used with other serotonergic drugs (eg, selective serotonin reuptake inhibitors, selective serotonin-norepinephrine reuptake inhibitors, [bupropion](#), tricyclic antidepressants, and monoamine oxidase inhibitors) because of the theoretical potential for serotonin syndrome.

Phentermine-extended release topiramate — [Phentermine](#) is a drug that reduces food intake by causing early satiety. [Topiramate](#) is used for the prevention of migraine headaches and epilepsy. Patients taking topiramate for these indications lose weight, but the mechanism is uncertain. In one year trials comparing the combination of phentermine and extended release topiramate (in one capsule) to placebo, patients lose approximately 8 to 10 percent of their bodyweight (mean weight loss 22.4 pounds [10.2 kg] compared with 3.1 pounds [1.4 kg] in the placebo group).

The initial dose of [phentermine-topiramate](#) is 3.75 to 23 mg for 14 days, followed by 7.5 to 46 mg thereafter. If after 12 weeks a 3 percent loss in baseline bodyweight is not achieved, the dose can be increased to 11.25 to 69 mg for 14 days, and then to 15 to 92 mg daily. If an individual does not lose 5 percent of body weight after 12 weeks on the highest dose, [phentermine-topiramate](#) should be discontinued gradually, as abrupt withdrawal of topiramate can cause seizures. Women of child-bearing age should have a pregnancy test before starting this drug and monthly thereafter.

The most common adverse events are dry mouth (13 to 21 percent), constipation (15 to 17 percent), and paraesthesia (14 to 21 percent). There is a dose-related increase in the incidence of psychiatric (eg, depression, anxiety) and cognitive (eg, disturbance in attention) adverse events. Although blood pressure improves slightly with combination [phentermine](#)-extended release [topiramate](#), there is an increase in heart rate (0.6 to 1.6 beats/min) compared with placebo.

This combination medicine is contraindicated during pregnancy because of an increased risk of orofacial clefts in infants exposed during the first trimester of pregnancy. We do not use [phentermine-topiramate](#) for patients with cardiovascular disease (hypertension or coronary heart disease) or in pregnant women. [Phentermine-topiramate](#) may be used in obese postmenopausal women and men without cardiovascular disease, particularly those who do not tolerate [orlistat](#) or [lorcaserin](#).

Dietary supplements — Dietary supplements are widely used by people who are trying to lose weight, although the safety and efficacy of these supplements are often unproven. A few of the more common diet supplements are discussed below; none of these are recommended because they have not been studied carefully and there is no proof that they are safe or effective.

- Chitosan and [wheat dextrin](#) are ineffective for weight loss and their use is not recommended.

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- Ephedra, a compound related to [ephedrine](#), is no longer available in the United States due to safety concerns. Many nonprescription diet pills previously contained ephedra. Although some studies have shown that ephedra helps with weight loss, there can be serious side effects (psychiatric symptoms, palpitations, and stomach upset), including death.
- There are not enough data about the safety and efficacy of chromium, ginseng, glucomannan, green tea, hydroxycitric acid, [L-carnitine](#), [psyllium](#), pyruvate supplements, St. John's wort, and conjugated linoleic acid.
- Two supplements from Brazil, Emagrece Sim (also known as the Brazilian diet pill) and Herbathin dietary supplement, have been shown to contain prescription drugs.
- Hoodia gordonii is a dietary supplement derived from a plant in South Africa. It is not recommended because there is no proof that it is safe or effective.
- Bitter orange (*Citrus aurantium*) can increase your heart rate and blood pressure and is not recommended.
- Human chorionic gonadotropin is a hormonal preparation similar to luteinizing hormone that is given by injection. There have been several studies showing that these injections are not any better than placebo injections and it is thus not recommended.

Exercise/Physical Activity:

A PROGRAM FOR PHYSICAL ACTIVITY — Increasing the level of physical activity would be beneficial to all ages and all groups, particularly for the prevention of obesity. For those who are able, walking 150 to 250 minutes per week (≥ 30 min/day, five to seven days per week) would be beneficial in preventing weight gain and in improving cardiovascular health. This will increase energy expenditure by 1000 to 1200 calories per week, or slightly more than 150 calories per day. The amount of energy expended depends upon the duration and intensity of the exercise, and the subject's initial weight. *As an example, a 120-pound person walking three miles per hour expends slightly less than 2 calories per minute more than standing still. At 160 pounds, the difference is 2.4 calories per minute, and at 200 pounds it is 3 calories per minute. Thus a 30-minute walk at three miles per hour for a person weighing 200 pounds would dissipate an extra 90 calories as compared with 60 calories for a person weighing 120 pounds.*

There appears to be a dose effect for physical activity and weight loss, with very high levels being required in the absence of a diet to produce significant weight loss. The optimal strategy to lose weight is to combine a calorically-reduced diet with gradually increasing amounts of physical activity. Although exercise is not required for weight loss, increasing amounts physical activity during weight loss is important so that patients will be able to sustain adequate amounts of exercise to maintain the weight loss. In addition, physical activity during weight loss may prevent loss of lean body mass. In the weight loss maintenance period, most people require >60 minutes per day of moderate intensity activity to successfully maintain the weight loss.

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A Hand out on Lipid Lowering (Cholesterol and Triglycerides): written by Dr Quddusi.

Main Points:

Habitual low saturated fat, low cholesterol, and high fiber diet is associated with less heart disease.

Fish oil use is associated with lowering of triglycerides in doses 1-9 g/day.

Concentrated fish oil as from Costco or GNC brand 1-2 capsules can substitute for 10-16 capsules.

Prescription fish oil includes Lovaza and Vascepa.

Monounsaturated fats have advantages compared to polyunsaturated fats in being less oxidizable and not associated with a reduction in HDL (Good cholesterol)

Meats: Good sources of Protein.

Chicken without skin baked, grilled, pan fried (spray oil or small amounts of Olive or canola oil).

Turkey without skin.

Fish is good for lowering triglycerides and it raises your good cholesterol (HDL)

Examples of oily fish Salmon, Tuna in oil.

Allow 2 servings of fish per week for a heart healthy diet.

Beef is OK if you buy less than 7% fat ground beef. Again grilled, baked, and pan fried meat patties would be better.

Avoid Pork and Lamb or Beef steaks.

Fruits and Vegetables:

Allow 3-5 servings a day of fruits and vegetables.

For Patients with diabetes avoid Bananas, Grapes, and Mangoes. These have high dense carbs. Also one apple or orange at a time is better snack than packaged food. Among vegetables avoid high starch vegetables like potatoes.

Avoid frying vegetables. A fresh tossed vegetable salad, with non fat salad dressing is a good start for Lunch and dinner. To add crunch and flavor add nuts like walnuts or almonds to your salad.

Celery sticks with peanut butter is a good snack at work for diabetics. Carrots with peanut butter are also a good snack.

Serving potatoes: I suggest baked potato with skin and non fat sour cream with chives. Avoid French fries, chips and dips that are high in saturated fat, trans fats, and calories.

Carbohydrates:

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Avoid simple and refined carbohydrates eg. Sugar, pasta, white rice, and white bread. Avoid bakery products eg. Cookies, pastries, and pies.

Complex carbohydrates like lentils, legumes, whole grain breads, nuts, seeds, bran flakes, oats, fruits and vegetables are better sources of nutrition and vitamins.

Cooking oils:

Canola oil and Olive oil are the best cooking oils. These are your main sources of monounsaturated fats. Replacing saturated fats with monounsaturated fats decreases your bad cholesterol and triglycerides and can maintain or raise your good cholesterol. Mediterranean diet (high in monounsaturated fats) has been shown to protect from heart disease. Several good Mediterranean cook books are available in book stores.

In patients with Type-2 diabetes using mono instead of polysaturated fats helps lower insulin resistance.

Poly unsaturated fats come from oils such as safflower, sunflower, and corn oil. These oils lower LDL, HDL, and Triglycerides. They are probably beneficial for patients with heart disease.

Saturated fats raise LDL, total cholesterol, and triglycerides. Avoid saturated fats these come from animal fat and dairy products. Butter and margarine would count under this category. If saturated fat is replaced with carbohydrates as in most low fat or non fat snacks your good cholesterol will also go down with possible rise in Triglycerides. Watch and read food labels. On the other hand when you replace saturated fat with unsaturated fat you may not change your HDL or with monounsaturated fats may raise it.

Trans fatty acids: TRY TO AVOID THESE

Natural sources are animal fat. Most of dietary Trans fats come from industrial hydrogenation of polyunsaturated fats. Partial hydrogenation results in fats that are easier to cook with. A lot of processed/ packaged food has them. They keep pastries firm, and margarine stiff at room temp.

Trans fatty acids lower good cholesterol, and a very small decrease in bad cholesterol. Overall they raise the ratio of bad to good cholesterol. This high ratio is a risk factor for heart disease. Trans fats are still used to make pastries, cakes, and pies.

Fish oil: Omega 3 fatty acids. Rich sources are oily fish like salmon or plant sources like flax seed oil. You can buy fish oil or flax seed oil caps at Trader Joe's or Costco. They are sold in most organic food stores and grocery stores.

Dietary Cholesterol: raises total cholesterol but less important than saturated fat. 1-egg has about 213 mg of cholesterol. You can use egg beaters that come in a carton for scrambled eggs. These have yolks taken out and are a very good source of protein. Cooking oil can be canola oil or vegetable oil spray.

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Nuts and seeds: Moderate amounts of nuts and seeds are good snacks in b/w or instead of a meal. Nuts shown to have heart healthy effects include walnuts, almonds, and possibly pistachios. Seeds include sunflower seeds.

Soy: source of protein and has isoflavones. Substituting animal protein with soy protein is beneficial by decreasing saturated fat intake and increasing unsaturated fats.

Plant sterols or stanols: decrease cholesterol absorption , available as margarines. Examples include Benecol, take control, and I can't believe it's not butter.

Fiber: Metamucil and Citrucel have Psyllium. Soluble fiber has been shown to lower bad cholesterol. However, do not substitute fiber for your cholesterol lowering medications. They can work together to achieve better numbers.

Mediterranean diet: Rich in fruits, vegetables, whole grains, beans, nuts, and seeds and olive oil is the cooking oil. Low to moderate amounts of fish, poultry, and dairy products and very little red meat is used.