

Food as Medicine

Nutrition Success Strategies in Treating Heart Disease and Obesity.

Objectives

1. To understand that America's No. 1 cause of death, Heart Disease, and America's No.1 cause of preventable death, Obesity, both have their origins and solutions in Nutrition.
2. To become proficient in understanding and using the 7 Key Success Strategies to impact heart disease as much as cholesterol reducing medications.
3. To understand the endocrinologic (not caloric) basis of Obesity and then apply Nutrition Success Strategies to create long-term successful weight loss and craving control.

Outline

- Premise: Heart Disease is America's No. 1 killer and Obesity is America's No. 1 cause of preventable death.
 - *Bad* nutrition is a leading cause of both conditions and **Good** nutrition is critical to good health, free of Heart Disease and Obesity.
- Simple, focused Nutrition Success Strategies are the most powerful way to impact health by turning complex chunks of scientific research into bite-sized pieces of reality.
- Heart Disease
 - Food is Good Medicine.
 - Studies show that clever dietary changes can reduce morbidity/mortality as much as the benefit of cholesterol lowering medications.
 - Learn the 7 nutrition tips that could take Heart Disease off of America's Most Wanted list.
 - When diet is not enough, nutritional supplements can round out an uneven diet.
- Obesity
 - Losing weight is NOT about calories. Successful, long-term weight loss is about understanding and solving a key endocrinologic problem with diet, dietary supplements, and medications.
 - Deconstructing popular diets to understand why they work and to cherry-pick the best of what they have to offer.
 - *Dr. Atkins' New Diet Revolution*
 - *Eat Right 4 Your Type*
 - Putting it all together.
 - Balancing scientific research, human genetics, and craving control to create long-term, successful and personalized weight loss.

Nutritional Therapies for Heart Disease

The heart is an incredible organ, beating 100,000 times daily and pumping 500,000 gallons of blood each year. Yet, the heart is an incredibly fragile organ, and heart disease is the leading cause of death in The United States. Someone dies of heart disease every 33 seconds in this country. That's equivalent to NINE fully loaded 747s crashing everyday without any survivors. Close to 100 people will die of heart disease during our time together today.

Against this backdrop, Americans are spending billions of dollars on supplements and alternative therapies for health enhancement. Survey studies have reported that Americans visit alternative practitioners more than primary care doctors.

Western health professionals are widely viewed as either adversarial or ignorant when it comes to using nutrition and alternative therapies in the treatment of heart disease.

In fact, relying on the mantra "Eat a low fat diet" as your nutrition counsel for patients with heart disease may backfire. An October 2000 British study of 210 patients who were advised to substitute polyunsaturated fats for saturated fats had a significant decline in HDL levels and a significant increase in triglyceride levels, their risk ratio of total to HDL cholesterol increased 40% after three months on the diet. This phenomenon is thought to occur because people tend to eat more food and more simple carbohydrates when they switch their diet to a less palatable "low fat" menu.

By now it is fairly common knowledge among allied health professionals and patients that a low-fat diet rich in whole grains, fruits and vegetables is a heart healthy diet. The problem is that telling a patient to eat a "Mediterranean Diet" without providing specific details and menus (a very time consuming process) will not provide a patient with sufficient information to carry out your suggestion. If you are going to be referring a patient to a dietician or other food counselor, then that professional will likely give the patient a menu plan and sufficient support to allow for adherence to a specific dietary program.

Short of referring a patient for dietary counseling, specific recommendations can be made that are simple, but are likely to have a significant health benefit. Simple and focused suggestions are more likely to be followed and therefore more likely to have the positive benefit that you intend.

What follows is a review of specific foods and nutrition practices that practitioners can quickly and accurately prescribe for their patients. In follow-up appointments, health professionals can review patient progress in attaining these goals. A small number of powerful nutrition suggestions can have a significant heart healthy benefit without a complete overhaul of a patient's diet.

Personalizing a diet for cultural and individual preferences makes it far more likely that a patient will stick with the program. A recent meta-analysis of 27 trials of dietary intervention and cardiovascular risk showed that the morbidity and mortality benefits did not manifest until two years on the healthy diet. Short-term changes in dietary habits are unlikely to produce significant health benefits.

The American Heart Association Recommendations

The latest American Heart Association (AHA) recommendations (as they appear on their official website) are as follows:

- Achieve an overall healthy eating pattern:
- Choose an overall balanced diet with foods from all major food groups, emphasizing fruits, vegetables and grains.
 - Consume a variety of fruits, vegetables and grain products.
 - At least 5 daily servings of fruits and vegetables.
 - At least 6 daily servings of grain products, including whole grains.
- Include fat-free and low-fat dairy products, fish, legumes, poultry and lean meats.
- Eat at least two servings of fish per week.
- Achieve a healthy body weight.
- Avoid excess intake of calories.
- Maintain a level of physical activity that achieves fitness and balances energy expenditure with caloric intake; for weight reduction, expenditure should exceed intake.
- Limit foods that are high in calories and/or low in nutritional quality, including those with a high amount of added sugar.
- Achieve a desirable cholesterol level.
 - Limit foods with a high content of saturated fat and cholesterol. Substitute with grains and unsaturated fat from vegetables, fish, legumes and nuts,
 - Limit cholesterol to 300 milligrams (mg) a day for the general population, and 200 mg a day for those with heart disease or its risk factors.
 - Limit *trans* fatty acids. Trans fatty acids are found in foods containing partially hydrogenated vegetable oils such as packaged cookies, crackers and other baked goods; commercially prepared fried foods and some margarines.
- Achieve a desirable blood pressure level.
 - Limit salt intake to less than 6 grams (2,400 mg sodium) per day, slightly more than one teaspoon a day.
- If you drink, limit alcohol consumption to no more than one drink per day for women and two drinks per day for men.

Fatty Fish: Advise patients to eat 2 to 3 servings per week.

- That a diet rich in fatty fish may protect against heart disease was first suggested through observations of Greenland Eskimos who had a relatively low incidence of heart disease relative to that of other North Americans despite the Eskimos eating a high fat diet.
- The explanation for this difference is thought to be related to the high content of omega-3 fatty acids found in certain types of fish, seal flesh, walrus meat, and whale meat.
- Mechanism of Action of Fish Oils: Anti-Arrhythmic, Improves Endothelial Function, Improves Lipid Profile, Reduces Platelet Activation. The effect of the Eskimo diet rich in omega-3 fatty acids is also thought to explain the reduced platelet aggregation and prolonged bleeding times seen in this population. The mechanism of this hypocoagulable effect is due to the replacement of arachadonic acid with omega-3 fatty acids in platelet membrane. This reduces the production of arachadonic acid dependent thromboxane which is responsible in part for platelet activation and activity. Omega-3 fats also increase levels of tissue plasminogen activator and decrease levels of tissue plasminogen inhibitor as well as fibrinogen. Each of these effects decrease the formation of thrombus.
- This observation has been confirmed in other studies such as the Seven Countries Study (documenting lower coronary mortality in Japanese and Mediterranean populations consuming a diet rich in fish) and the

Chicago Western Electric study and the Zutphen study (two prospective trials which demonstrated that a diet including regular fish consumption led to lower rates of coronary artery disease).

- Weekly Serving Lowers Sudden Cardiac Death 50%, Probably AntiArrhythmic. The anti-arrhythmic effect of omega-3 fatty acids has been documented in the reduction of PVCs and the improvement in heart rate variability in patients status post myocardial infarction.
- A March 2001 report presented at the American Heart Association's 41st Annual Conference on Cardiovascular Disease Epidemiology and Prevention extended the benefit of fatty fish consumption to those over 65. Based on detailed dietary questionnaires of participants in the ongoing National Heart, Lung and Blood Institute's Cardiovascular Health Study, this report of more than 4000 subjects demonstrated that one or two serving of fatty fish weekly in this population reduced the risk of dying from a heart attack by 44%. Fried fish and lean fish (cod, snapper, and catfish) provided no benefit.
 - Other studies such as the Health Professional Follow-up trial did not find risk reduction when fish consumption increased in study participants. Studies evaluation the use of fish oil supplements to enhance coronary artery stenosis regression or prevent restenosis after angioplasty did not show any benefit. However, on balance, fish consumption does appear to have significant positive therapeutic effects.
- Best Lipid Improvements With a Diet Comprised of 30% Fat, Rich In PolyUnsaturated Fats. With a diet containing 40% fat, there can be increases in total and LDL cholesterol. Thus, getting the optimal benefits from adding fish to the diet requires a properly balanced diet comprised of 30% fat, largely from poly-unsaturated sources.
- Fish Consumption Can Lower Total, LDL, Triglycerides & Increase HDL₂
- Good sources of omega-3 fatty acids, include mackerel, tuna, salmon, sturgeon, mullet, bluefish, anchovy, sardines, herring, trout, and menhaden. For a 3.5 oz serving (approximately ¼ pound), there is 1 gram of omega-3 fatty acids.
- Omega - 3 Content of a 4 oz Serving: Salmon (3.7mg), Sardines (2.5mg), Trout (2.0mg), Tuna (0.2-0.7)
- Other studies have documented that 280 g/day (or 9 oz) of cold water fish ingestion can lower the systolic blood pressure by 12%. The mechanism of this effect remains unexplained.
- Recommendation: consume at least two 4 oz servings of baked, grilled, poached or broiled cold-water fish twice weekly. Examples of these types of fish include salmon, sardines packed in water, trout, halibut, and menhaden.
- Getting fish-based omega-3 fatty acids from capsules may significantly reduce natural killer cell activity. A 12 week British study randomized healthy volunteers to 4g/day of either eicosapentanoic acid (EPA-a component of fish oil) or a mixture of other polyunsaturated fatty acids. In subjects given EPA, natural killer cell activity was reduced 48% and remained suppressed for four weeks after supplementation ended.

Sterols: Advise patients to switch to sterol-containing margarines.

- Cholesterol-Like Plant Compounds
- Compete With Dietary Cholesterol For Gut Absorption
- Need 3,000mg Sterols/daily, Vegetarians Consume 400 mg/daily, Average Diet contains 175-200mg
- Supplements Contain 200 mg - 400 mg Sterols
- Plant sterols are available in two margarine spreads Take Control (containing betasitosterol) and Benecol (containing sitostanol).
- Beta-sitosterol is a plant sterol with a chemical structure similar to cholesterol. Plant sterols include beta-sitosterol, stigmasterol, campesterol, and sitosterolins, and are found in fruits, vegetables, nuts, seeds, soy, and some grains.
- Plant sterols have atherogenic potential because they are chemically similar to cholesterol; however, less than 5% of ingested plant sterols is actually absorbed.
- It is not clear that capsulated supplements containing beta-sitosterol will disperse properly in the intestines and therefore may not be effective in lowering cholesterol absorption.

- Plant sterols compete for cholesterol absorption via mixed micelles and thus inhibit intestinal cholesterol absorption by 50%, thereby lowering serum cholesterol.
Plant sterols may also accelerate the esterification rate of the lecithin-cholesterol acyltransferase (LCAT) enzyme which reduces cholesterol-rich lipoprotein.
- Some patients may not respond to plant sterol therapies because of compensatory increases in hepatic cholesterol production in the setting of decreased cholesterol absorption.
- The usual dose of plant sterols in the treatment of hypercholesterolemia is 0.5g to 6 g per day in divided doses. Plant sterols need to be preferentially taken 30 minutes before a meal in order to maximally block cholesterol absorption. For patients with severe hyperlipidemia, plant sterol doses of 10 to 15 grams have been prescribed.
- The FDA has allowed products containing plant sterols to make health claims for reducing the risk of heart disease.

Wine: Advise only patients at high risk for CAD who drink regularly to continue drinking no more than 1 (for women) or 2 (for men) glasses of red wine daily.

- Oxford Study, 500K Subjects, 20% Reduction CAD Death, 1 drink/day
- Meta-analyses of Alcohol-CAD mortality have consistently demonstrated a 20-30% benefit in patients who consume alcohol regularly.
- <2 drinks/day Increases HDL₃ - Not Linked To Reduced Risk As HDL₂
- Ethanol Blocks Phosphodiesterase A₂, Platelet Aggregation
- Red Grape Bioflavonoid, Resveratrol, Thought To Be Active Constituent
- Alcohol: A Leading Cause Of Preventable Death: Factors In 50% Of Traffic Fatalities
- Alcohol As Carcinogen: 1,000 Times Greater Than Worst Well Water In Silicon Valley
- Women & Breast Cancer: 1 drink/day, 9% Increase; 2-5 drinks/day, 41% Increase
- Although the results from studies have been mixed, the balance of the evidence suggests that moderate consumption of alcohol (one drink daily or less) does result in a lower risk of coronary artery disease.
- In those patients with established coronary heart disease, no morbidity or mortality benefit from moderate alcohol consumption has been conclusively demonstrated. One exception to this are cases of ischemic left ventricular dysfunction in which alcohol consumption (1 to 14 drinks per week) reduced all-cause mortality.
- Wine and beer are equally effective in reducing cardiac disease risk, but only wine reduces all cause mortality without increasing alcohol-related mortality.
- Consuming more than 3 drinks per day has been shown to increase mortality in men with established heart disease.
- Wine contains on average 10-14% alcohol. Numerous polyphenolic compounds in red wine (much more so than white wine) exhibit antioxidant properties, including transresveratrol, proanthocyanidins, and flavonoids such as quercetin, kaempferol, and catechins. After drinking wine, the antioxidant potential of the blood is increased for up to 4.5 hours.
- Wine is thought to positively affect heart disease risk through several mechanisms: (1) by increasing high-density lipoprotein (HDL) cholesterol levels; (2) by reducing oxidation of low-density lipoprotein (LDL) cholesterol; (3) by the antiplatelet effects of wine polyphenols and flavonoids [Red and white wine have similar anti-platelet effects but differing anti-oxidant potentials.]; (4) by decreasing fibrinogen. It is now thought that the 'French paradox' (a reduced risk of heart disease in the French population in the setting of lots of pate and cheese) is not due to red wine consumption, but due to other components of the traditional French diet, which is lower in animal fat and relies less on between meal snacking.
One alcoholic drink is equivalent to a 4 oz (120 mL) glass of wine, 12 oz of beer, or 1 oz of spirits.

Soy: Advise patients to consume 2 to 4 servings of soy daily.

- Soy is a rich source of phytoestrogens including isoflavones, lignans, and coumestans which are converted into estrogen-like compounds by glucosidases, an intestinal enzyme system. Cholesterol Reductions First Described In 1909, Ignatowski.
- Additional sources of isoflavones include split green peas, lentils, chick peas, flaxseed, clover sprouts, and *alfalfa* sprouts.
- Additional sources of lignans include whole grains (oats, barley, hops, bran, wheat germ, brown rice), fruits (particularly cherries, apples, pears), vegetables (particularly onion, garlic, carrots, and vegetable oils), seeds (fennel, sunflower).
- Additional sources of coumestans include bean sprouts, clover.
- The biological effectiveness of these phytoestrogens was accidentally discovered in western Australian pastures during the 1940s when sheep grazing on phytoestrogenrich red clover became infertile.
- It was not until the 1980s when laboratory experiments characterized the binding of phytoestrogens to estrogen receptors on cell membranes.
- Soy protein-containing foods have been shown in clinical trials to reduce total cholesterol and LDL levels in both hyper- and normocholesterolemic men, normocholesterolemic perimenopausal women, and hypercholesterolemic postmenopausal women.
- Meta-Analysis, 38 Studies, 48 gm/day Soy Protein. Serum Lipid Decreases: Total 9.3%, LDL 13%, Triglycerides 10.5%. For Patients with Type II Hyperlipidemia: 24% LDL Reduction.
- Animal studies suggest that when combined with dietary soy protein, lower doses of HMG CoA Reductase inhibitors may be necessary to achieve clinical outcomes.
- Soy is most effective in diets rich in polyunsaturated fats.
- The cholesterol reducing effect of soy protein may also be attributed to replacement of dietary animal protein with soy protein.
- Both soy isoflavones and soy protein appear able to reduce serum cholesterol.
- Soy food preparations with higher isoflavones concentrations have a more significant cholesterol reduction effect.
- Soy's isoflavones act as phytoestrogens and have a preferred affinity for the beta estrogen receptor which predominates in the heart, vasculature, bone, and bladder. Soy's estrogenic effects may also explain some of its benefits in affecting lipid metabolism much like estrogen does.
- Other heart health benefits of soy include its antioxidant effects, improvements in arterial compliance, and inhibition of platelet aggregation.
- The mechanism of isoflavones may result from blocking dietary cholesterol absorption, increased bile acid excretion, endocrine effects similar to estrogen, and increased hepatic cholesterol receptor clearance of serum cholesterol.
- Isoflavones also act as antioxidants which may inhibit atherosclerotic plaque formation by neutralizing atheromatous oxidized serum cholesterol.
- Soy protein appears to have similar effects as soy isoflavones on lowering serum cholesterol (LDL) and increasing HDL. Soy protein may also block tyrosine kinase, a key enzyme in the production and development of atherosclerotic plaques.
- Side effects: Relate mostly to the estrogenic effects of soy products; include infertility and lengthening of menstrual cycles. Soy allergy can occur and may be a cross over allergy with peanuts, peas, alfalfa, beans, carob, guar gum, gum acacia, kudzu, and licorice. Persons with known allergies to any of these foods should be careful with soy intake.
- Minimum effective dose of soy protein: 25 mg/day with optimal intake 50-75 mg/day. This would be met by three to four servings of soy products daily such as soy milk, tofu, raw soybeans in the pod, textured

vegetable protein (TVP), and soy protein powder with standardized isoflavone content. This would provide an isoflavone dietary content of approximately 80 - 200 mg/day which is the intake range in most traditional Asian diets.

- The FDA has approved labeling soy products for cholesterol reduction. Products containing this health claim must be low in fat and provide at least 6.25 grams of soy protein per serving, which is 25% of the effective amount of 25 grams per day.
- On the downside... The Honolulu-Asia Aging Study and the Honolulu Heart Program of 3,700 Japanese-American men living in Hawaii linked tofU consumption (two or more servings per week) with cognitive impairment later in life. Cognitive impairment was identified in 19% of the “high?” tofU users as compared with 4% of the “low” tofu users. The study was criticized for relying on dietary recall stretching back 30 years. Other factors such as lifestyle and general health may have had a significant negative impact on the studies conclusions.
- Soy intake may worsen hypothyroidism by inhibiting thyroid hormone synthesis, increasing thyroid stimulating hormone (T 511) levels, and possibly leading to goiter formation. This complication seems to occur in people with low iodine levels.

B-Vitamins: Advise patients to eat two large, “dark green” salads daily as part of their five servings of fruits and vegetables.

- Homocysteine: Vasculotoxic And Thrombogenic Amino Acid
- Metabolic By-Product of Methionine -> Cysteine Pathway, B-Vitamin CoFactors
- Homocysteine: An Independent Atherosclerotic Risk Factor
- The dangers of hyperhomocystinemia include the promotion of a pro-coagulant state of endothelial cells, vascular endothelial dysfunction, and enhanced serum lipid oxidation. These dysfunctions can be reduced with proper diet and/or B vitamin supplementation.
- Lowering Homocysteine Levels 50% = Cholesterol Reduction Of 86mg/dL
- Unfiltered Coffee May Increase Homocysteine, Cup For Cup
- Subclinical Deficiencies of Folic Acid, B6, B12 May Cause Homocysteinemia
- B Complex Vitamins Sensitive To Cooking, Processing
- Minimum Supplementation: Folic Acid 400 mcg, B12 200 mcg, B6 ???
- B Complex Supplementation Estimated To Save 50,000 Lives Annually
- Since 1998, the US government has required folio acid fortification of all cold cereals and baking flour. Folate in food is about 40% less bioavailable than synthetic folic acid, which is almost 100% bioavailable.
- A minimum of 400 mcg per day of folate seems to be necessary to decrease plasma total homocysteine concentrations. Folic acid supplements and folic acid-fortified foods are more effective than folate-rich foods at reducing plasma homocysteine. Fifty (50) micrograms of folate is found in 1 ¼ bananas, 2 whole eggs, 1 cup of Kellog’s corn or bran flakes or Rice Krispies, 5 slices of white bread, 3 ¼ slices of whole wheat bread, ¼ cup of canned asparagus, or 1/2 cup of canned sweet corn.
- Foods that are naturally high in folate content include spinach, okra, asparagus, legumes, beef liver, and orange and tomato juice. In a recent study of 25 healthy subjects, three (3) glasses of orange juice daily was able to increase HDL by 21%. Less than three glasses daily had no measurable effect.
- Since dietary folate and synthetic folate are not equally bioavailable, the Institute of Medicine established folate equivalencies: 1 mcg dietary folate equivalent (the Institute’s unit of folate measurement) equals 1 mcg food folate, equals 0.6 meg folic-acid-fortified food, equals 0.5 mcg

supplemental folio acid taken on an empty stomach.

- Pyridoxine (Vitamin B6) is a necessary cofactor in the metabolism of homocysteine. When B6 is used in supplement form with folate, studies have shown that homocysteine levels fall. However, it is unclear whether B6 supplements independently reduce homocysteine levels, except in patients with chronic renal failure.
- Vitamin B6 is present in many foods including cereal grains, legumes, vegetables, liver, meat, and eggs.
- Vitamin B12. Low levels of vitamin B12 deficiency are independently associated with elevated homocysteine levels, but not as strongly as folio acid, Low B12 levels are associated with a 3 - 4 fold increase in the odds of having a low ejection fraction.
- A B vitamin supplement (containing vitamin B 12, folic acid and B6) has improved endothelial function in healthy. Before the clinical or laboratory signs of B 12 deficiency manifest, serum methylmalonate levels may be elevated.
- Vegetarians and the elderly (due to poor diet and risk of achlorhydria) are at increased risk of B 12 deficiency and should supplement with 6 mcg of B 12 per day.
- Vitamin B12 is found in meat, fish, and dairy foods.

The Power of “Brown”: Advise patients to switch to “brown” carbs.

- Another simple “in the office” dietary recommendation is to ask the patient to switch to “brown” carbohydrates. This would involve choosing brown rice instead of white rice, whole grain “brown” breads instead of white breads, whole grain pasta instead of white pasta, and potato with the “brown” peel instead of mashed, fried and other overly-processed spud forms.
- These “brown” carbohydrates contain more dietary fiber than their “white” counterparts.
- Dietary fiber is classified as either soluble (such as that found in beans, fruits, vegetables, whole grain rice, psyllium husk and oat bran) and insoluble (such as that found in wheat bran and cellulose). Soluble fiber has been shown to lower blood cholesterol levels.
- Clinical studies of soluble oat bran supplements (3 grams/daily found in one bowl of oat bran cereal or oatmeal) have been shown to lower blood cholesterol levels by as much as 23%. This and other research convinced the FDA to grant products containing sufficient oats to label their foods as helpful in the treatment of heart disease.
- An October 1999 Yale study demonstrated that eating oats after a high fat meal kept arteries open and clear in healthy volunteers. Normally after such a meal, the arteries constrict and limit blood flow which can exacerbate underlying heart disease.
- Another study in the October 27, 1999 Journal of the American Medical Society (JAMA) suggested that fiber may be more important than saturated fat in reducing the risk factors of heart disease. The researchers studied more than 2,900 adults ages 18 to 30 and found that those with the most amount of fiber in their diets had the fewest risk factors for heart disease. Those consuming the most amount of fiber had lower levels of insulin, lower blood pressure, lower blood cholesterol levels, less obesity, and higher fibrinogen levels (a natural blood thinning protein).
- A study of more than 34, 000 Iowa women reported in the March 1999 American Journal of Public Health that women who regularly consume the highest amounts of whole grain foods (an important source of fiber) had less heart disease. These women also had less obesity, cancer, diabetes and high blood pressure. The death rate among these women was much lower than those Iowa women who consistently ate fewer whole grain products.
- Researchers from the Harvard School of Public Health concluded from their study of some

74,000 nurses that eating just two to three servings daily of whole grains (such as brown bread, brown rice, and even popcorn) decreased their risk of dying from a heart attack by almost 50%. They found that just by switching from sandwiches made from overly processed white bread to the less refined whole wheat bread could substantially benefit heart health.

Good Fat, Bad Fat: Advise patients to switch to olive oil and canola oil.

- Few patients are generally unwilling and largely incapable of figuring out the percentages of fat, protein, and carbohydrates in their diets relative to the American Heart Association and American Dietetic Association guidelines. Even fewer patients are likely and able to recognize an overage or deficiency in their diet and then correct the problem. It is unreasonable to expect any patient to be capable of independently working out the percentages of fat subtypes (such as saturated, polyunsaturated, and monounsaturated) in their diet to be in compliance with the guidelines.
- Recent studies have suggested that one or two simple dietary fat substitutions can have a significant impact on cardiovascular risk.
- A diet rich in olive oil, canola oil and other oils rich in monounsaturated fats have been shown to reduce cholesterol and heart disease risk, A 1999 study reported in JAMA that switching to canola oil from butter and other fats reduced the risk of death from heart disease by 70% in one year. The benefits of switching to canola oil were seen as early as three months into the study conducted in Lyon, France. The Mediterranean Diet (rich in olive oil and other healthy fats, vegetables, and fruits) has repeatedly been associated with less risk of heart disease and certain types of cancers.
- Which is better: margarine or butter? A 1999 study from the Harvard School of Public Health reported in the New England Journal of Medicine sought to answer this age-old question. In the study, 18 women and 18 men were given one of six diets for five weeks. Each diet provided 30 percent of calories from fat. The choice of fats included soybean oil, semi-liquid margarine, soft margarine, shortening, stick margarine or butter. LDL and HDL cholesterol levels of the participants were measured after six weeks on the diets. Soybean oil reduced LDL levels by an average of 12 percent compared with those who ate butter. The diets containing semi-liquid margarine lowered LDL levels by 11 percent. Soft margarine dropped LDL 9 percent, and shortening decreased LDL 7 percent. Stick margarine reduced LDL by only 5 percent. Each of these fats reduced the healthy HDL cholesterol, and this reinforces that these types of spreads are not particularly good choices. However, those who ate the softer fats had the smallest reductions in HDL cholesterol. The researchers concluded that the issue is not margarine vs. butter, but soft versus hard. Softer spreads had the best impact on lowering LDL cholesterol and the least negative impact on the healthy HDL cholesterol.
- Harder spreads contain higher amounts of trans-fatty acids that come from the manufacturing process of these spreads. Even though butter is rich in saturated fats, trans-fats are more destructive to heart health and cholesterol levels.

Dr. Atkins' New Diet Revolution

The amazing no-hunger weight-loss plan that has helped millions lose weight and keep it off

A Deconstruction and Analysis

I. The Atkins' Weight Loss Hypothesis

- a. The caloric theory of weight loss is invalid. Losing weight does not depend on the number of calories you eat because some people eat fewer calories than others and still do not lose weight.
- b. Disturbed carbohydrate metabolism underlies obesity, not caloric intake. When a diet is properly configured, "you can sneak them (calories) out of your body, unused or dissipated as heat."
- c. The main health advantage of the Atkins' diet comes from the avoidance of "junk carbohydrates."
- d. "Sugar is a metabolic poison." The ingestion of refined carbohydrates is unnatural. The body's response is to increase insulin production.
- e. The more refined carbohydrates you eat, the more at risk you are for hypoglycemia. It is the shaky, foggy state of hypoglycemia that creates carbohydrate craving, as in sugar begets sugar.
- f. Cravings are not a behavioral problem; they are a physiological problem resulting from carbohydrate ingestion.
- g. Fat in the absence of carbohydrates stimulates the burning of more fat. By severely limiting (and in some cases eliminating) carbohydrates in the diet, the body will be forced to consume its own fat stores for energy (lipolysis).
- h. Lipolysis occurs when fat breaks down into glycerol and free fatty acids. Free fatty acids break down further into ketones, which can be used metabolically as fuel. This metabolic state is referred to as ketosis.
- i. Benign Dietary Ketosis (BDK). This is the "safe" kind of ketosis that comes from keeping carbs at less than 40grams/day. The typical American diet contains more than 300 grams of carbohydrates.
- j. Ketosis "is as delightful and sex and sunshine, and has fewer drawbacks than any of them." Ketosis allows the body to burn its own fat stores for energy. Ketosis also suppresses hunger and cravings.
- k. Fat Mobilizing Substance (FMS). A heretofore still unidentified molecule found in the urine of ketogenic animals, that when injected into other nonketogenic animals causes weight loss without dieting. FMS causes fat to be burned in excess of caloric needs, forcing the body to use inefficient metabolic pathways (ketosis) and dissipate excess calories as heat.
- l. The weight loss that occurs on a ketogenic diet is fat weight, not water weight. On a low carbohydrate, high protein diet, no significant muscle loss occurs.
- m. The Atkins' Diet is *not* a "high fat diet" (even though you can eat as much butter, red meat, cheese and eggs as you want).
- n. Fat is less glucogenic than is protein. Therefore, you will lose more weight the more fat you eat as compared to the more protein you eat.
- o. Exercise is important and heart healthy.
- p. In Part I of his book, Atkins quotes literature describing metabolic studies mostly from the late 1950's, 1960's, and early 1970's.

2. If not calories, what accounts for obesity?

- a. DRD- Diet Related Disorder.
 - i. This is a condition characterized by
 1. hypoglycemia
 2. yeast infections. Yeast overgrowth comes from a diet high in simple carbohydrates, more than 20 weeks of antibiotics in a lifetime, the mercury in dental fillings, and

certain medications such as prednisone and birth control pills.

3. food intolerances (most commonly to corn, grains, soy, dairy, brewers/bakers yeast and eggs; less commonly potato, tomato, eggplant, paprika, tobacco, sulfites, coffee, chocolate, citrus, shellfish, beet chicken, onions, mushrooms, pepper, other spices, and artificial sweeteners).

3. Why not eat a low-fat diet to lose weight?

- a. The physical attributes of a *successful* low-fat dieter: dryness of the skin, pastiness of the complexion, and “deep furrows in the facial lines that extend from the side of the nose to the side of the mouth and below, called the nasolabial folds. Somehow they (successful low-fat dieters) seem to look older than their age.”

4. The Atkins’ Weight-Loss Plan

a. The Induction Diet

- i. This step switches the body from a carbohydrate to a fat burning machine, stabilizes your blood sugar, stops cravings through abstinence rather than moderation, and breaks addictive food behavior.
- ii. The Induction Diet contains no more than 20 grams of carbohydrate daily.
- in. Dieters are instructed to eat only pure protein, pure fat, and low carbohydrate vegetables.
- iv. Some patients are “fat sensitive.” For these patients, their serum cholesterol and metabolic tests are adversely affected by the high fat diet. “Fat sensitive” persons should follow a low-fat, low-carbohydrate diet. If this is unpalatable, they should return to the high-fat Atkins’ Diet and “not bother with it (the low-fat diet).”
- v. The Induction Diet is an “extreme variation” of the Atkins’ Diet. Dieters are instructed not stay on this part of the diet for “any length of time.”
- vi. Typical Induction Menu

1. Breakfast: eggs, scrambled or fried, with bacon, ham, sugarless sausage or Canadian bacon, decaf coffee or tea.
2. Lunch: bacon cheeseburger, no bun; small tossed salad, seltzer water
3. Dinner: shrimp cocktail with mustard and mayo, lean consommé, steak, roast, chops, fish, or fowl, tossed salad, diet Jell-O with a spoonful of whipped, artificially sweetened heavy cream.

- b. Ongoing Weight Loss. After the first 14 days or once enough weight has been lost, the dieter enters the stage of Ongoing Weight Loss. Here, the goal is to find the “Critical Carbohydrate Level for Losing (CCLL)”- that amount of carbohydrate that you can add into your diet and still lose weight. It is important to remain in ketosis during this stage. Dieters can find their CCLL by adding an additional 5 grams of carbohydrates daily to the diet until weight loss stops.

Typical Menu

1. Breakfast: Western omelet, 3 oz. of tomato juice or V-8 juice, 2 carbo grams of bran crisp bread, decaf coffee or tea.
2. Lunch: Chefs salad with ham, cheese, chicken, and egg, iced herbal tea.
3. Dinner: Seafood salad, poached salmon, 2/3 cup of vegetables, half-cup of strawberries in cream.

- c. Premaintenance. In this stage, more carbohydrate is added into the diet. This marks the end of the “protection” of ketosis. The appetite is expected to return, and with it the risks of regaining the weight.
- d. Maintenance. Here, dieters are expected to find their “Critical Carbohydrate Level for Maintenance (CCLM)”- that amount of carbohydrate that can be added into the diet and still maintain weight loss.
 - i. For the average person, this amounts to 40 to 60 grams of carbohydrates daily.
 - ii. Sugar should never be added back into the diet.
 - iii. For some dieters at high risk for weight re-gain, other foods that cannot be added back into

the diet also include bread, fruit, and other fermented foods.

- iv. Foods that can be expected to be tolerated include most vegetables, berries and nuts, Also permitted are whole “grains” such as oats, barley, millet, wild rice (this is not a grain, but a seed), couscous (this is not a grain but a type of pasta), and buckwheat. Some may also be able to add the “occasional” potato or a serving of fruit a day.

Typical Menu

1. Breakfast: Gruyere and spinach omelet, 1/2 cantaloupe, 4 carb grams of bran crisp bread with butter, decaf coffee or tea
2. Lunch: Roast chicken, 2/3 cup of vegetables, green salad, club soda.
3. Dinner: French onion soup, salad with tomatoes, onions, and carrots, 1 cup of vegetables, small baked potato with sour cream and chives, lightly breaded veal chops, generous cup of fresh fruit compote, glass of dry wine or two wine spritzers.

For the *extremely* metabolically resistant (those who do not lose weight on the Induction Diet), 90% fat, 1000 calorie diet is prescribed. This consists of five (5) 200-calorie mini-meals spaced evenly during the day.

1. An example of a mini-meal would include 2 oz of sour cream mixed with 1 tablespoon of caviar served on three or four fried pork rinds.
2. Exercise is extremely important to the metabolically resistant and can be the difference between losing and not losing weight.

5. The Evidence- Supportive

- a. In a study (partially funded by the Atkins Center for Complementary Medicine in New York), 51 subjects lost 10% body weight after six months on a very low carbohydrate diet. Of these, twelve (12) people following the Atkins’ Diet for one year and lost an average of 11% body weight.
- b. In a study funded by the National Cattlemens Beef Association and Kraft Inc. and presented at the Federation of American Societies for Experimental Biology, 24 overweight women, ages 45 to 56, were randomized to either a 1,700 calorie diet which followed the federal guidelines (60 percent carbohydrates, 30 percent fat and 10 percent protein) or a diet containing 40 percent carbohydrates, 30 percent fat and 30 percent protein. At the end of the 10-week study, both groups of women lost an average of 16 pounds. The high-protein group lost an average of 12.3 pounds of body fat and 1.7 pounds of lean muscle mass, while the “standard” diet group lost 10.4 pounds of fat mass and 3 pounds of muscle mass. The high protein group also had an increase in serum HDL levels and decreased levels of triglycerides. The high-protein group also reported having more energy and feeling more satisfied between meals.
- c. A six (6) month study randomized 65 obese subjects into three groups: high carbohydrate (12% protein, 30% fat, 58% carbohydrate), high protein (25% protein, 30% fat, 45% carbohydrate), or control group. Those in the high protein group lost on average 8.9 kg. with 7.6 kg. of fat loss, while the high carbohydrate group lost 5.1 kg. of which 4.3 kg. was fat loss. The control group did not lose any weight.
- d. In a 6 month study of the effects of a high protein diet on renal function, 65 obese subjects were randomized into three groups: high carbohydrate (12% protein, 30% fat, 58% carbohydrate), high protein (25% protein, 30% fat, 45% carbohydrate), or control group. Glomerular filtration rates and kidney volume increased significantly in the high protein group without changes in albuminuria.
- e. A four (4) week randomized trial of 13 male, hyperinsulinemic obese subjects compared weight loss on a high-protein diet (45% protein, 25% carbohydrates, and 30% fat) versus a high-carbohydrate diet (12% protein, 58% carbohydrates, and 30% fat). Results demonstrated that weight loss was

greater in the high-protein group versus the high-carbohydrate group (on average 8.3 kg. and 6.0 kg., respectively). Resting energy expenditure decreased almost three times more in the high carbohydrate group versus the high protein group. Mean insulin levels decreased to normal levels only in the high protein group, while cholesterol decreased similarly in both groups. HDL decreased in the high protein group).

- g. Are high protein diets appropriate for patients with gout? A four-month study of 13 non-diabetic men with gout assigned the subjects to a 1600 calorie/day diets consisting of 30% protein, 40% carbohydrate (mostly complex type), and 30% fat (with emphasis on mono- and polyunsaturated fats). The incidence of monthly gouty attacks decreased from an average of 2 to 0.7/month. Also noted to decrease were the serum urate level, serum total cholesterol level, LDL level, triglycerides level, and HDL-total cholesterol ratios. Those patients who were more symptomatic and with poorer metabolic laboratory profiles had the greatest improvements during the study.

6. The Evidence- Contradistinctive

- a. A study from the Clinical Pharmacology Research Center in Cooperstown, New York reported that subjects following a high-protein diet took in 1,000 fewer calories daily as compared with their usual diet before entering the study.
- b. Research from the National Weight Loss Registry presented at the North American Association for the Study of Obesity (NAASO) studied 2,500 people who lost at least 30 pounds and kept it off for one year. Only 25 subjects used the very low carbohydrate diet. Most of the successful dieters followed a low-fat, high-carbohydrate diet plan.
- c. A six (6) week study conducted in a metabolic hospital ward of 43 obese subjects randomized them to receive either a 1,000 calorie diet containing 32% protein, 15% carbohydrate, and 53% fat, or 29% protein, 45% carbohydrate, and 26% fat. Results were similar between the two groups with regard to weight loss, waist-to-hip ratios, total body fat loss, fasting blood glucose levels, insulin levels, cholesterol, and triglyceride levels.
- d. A six (6) week study of 54 obese subjects randomized them to receive an 1100 calorie diet composed of either 25% protein, 47% carbohydrates and 25% lipids (in which certain foods were not allowed to be consumed at the same time-also known as the "Food Combining Diet") or 25% protein, 42% carbohydrates and 31% lipids (referred to as a balanced diet). Results were similar between the two groups with regard to weight loss, waist-to-hip ratios, total body fat loss, fasting blood glucose levels, insulin levels, cholesterol, and triglyceride levels.
- e. A 12 week study of 68 obese patients randomly divided subjects into one of two 1,200 calorie/day diets: low-carbohydrate (25% of total calories) vs. high-carbohydrate diet (45% of total calories). Both groups lost similar amounts of weight (approximately 10 kg.), fat mass (approximately 8 kg), and lean body mass (approximately 2 kg.). Waist-hip ratios and fasting blood glucose levels also decreased similarly between the two groups. Insulin levels decreased in both groups but more significantly in the low-carbohydrate group. This was thought to result from an increased monounsaturated fat content of the low-carbohydrate group.
- f. A 12-week, randomized, blinded, cross-over study of 25 obese women with previous histories of gestational diabetes vs. non-diabetics compared the effectiveness of low calorie diets, one of 40% carbohydrates and the other 55% carbohydrates as a percentage of the total daily calories. Most of the food was in the form of specially prepared nutrition bars. The two groups of women were similar except that those with previous histories of gestational diabetes had a greater degree of insulin resistance. Weight loss was similar between the two groups of women and was not dependent on the assigned diet. Most of the weight loss occurred in the first six weeks before the cross-over occurred regardless of whether the women began with the normal or low-carbohydrate diet. Serum triglycerides levels were lower in all women assigned to the low-carbohydrate diet.

- g. To determine whether dieting can have an adverse effect on food cravings (as in “the more you restrict it, the more you want it”), a 12-week study of 93 obese, Type II diabetics randomly divided subjects into either a 1000-1200 calorie/day balanced diet in which all foods were allowed in moderation or a very-low-calorie diet of 400 calories/day consisting only of animal protein. Both groups experienced a decrease in food cravings but were more significant in the 400-calorie diet, especially for sources of animal protein and complex carbohydrates. The study’s results did not support the hypothesis that restriction of certain food types increases cravings for those foods, nor did the results support the hypothesis that the degree of weight loss affected by food cravings.
- h. A 28-day study of 48 obese women randomly assigned subjects to isocaloric diets differing in protein and carbohydrate content, ranging from low to high protein. The protein sparing effects of the diets were measured with daily urinary ammonia, urea, and total nitrogen excretion. Both carbohydrate and protein were found to have independent protein-sparing effects, but the effects were greatest in the high-carbohydrate diet.
- i. A 10-week study of 33 obese women randomized subjects to a 1200 calorie/day diet containing one of three levels of carbohydrate: 25%, 45%, or 75%. The women were evaluated for changes in body composition, cholesterol, triglycerides, blood urea nitrogen (BUN), uric acid, percent body fat, and nutrient intake. All parameters were similar between the three groups with exception of a higher BUN level in women assigned to the 25% carbohydrate group.
- j. Does dietary sugar impair weight loss? A six-week study randomized two groups of obese women to receive a low-fat, hypocaloric diet consisting of 19% protein, 71% carbohydrate, and 11% fat. In one group, dietary sugar accounted for 43% of carbohydrate calories (high-sucrose) while the other had only 4% of carbohydrate calories from dietary sugar (low-sucrose). In both groups, similar decreases were reported for weight loss, blood pressure, resting energy expenditure, percentage body fat, free triiodothyronine, urinary norepinephrine, and plasma lipids. Also similar were decreases in depression, hunger, and negative mood during the study. Positive mood increased similarly in both groups.

7. **Conclusions**

- a. A low-calorie diet, in a controlled setting, will allow for weight loss, and does not appear to be dependent on the relative percentages of protein, carbohydrate and fat.
- b. High protein diets can help patients lose weight, and are more likely reduce insulin levels and plasma triglycerides levels than are high carbohydrate diets.
- c. The purported improved protein-sparing effects of high protein diets relative to high carbohydrate diets remains unproven.
- d. Sugar does not appear to have an evil, destabilizing effect on weight loss. In the end analysis, Dietary Dogma (food pyramids and fad diets alike) is largely unfounded. Tailoring a workable, palate-pleasing, culturally-sensitive diet to the individual has the greatest chance of long-term success.

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Food as Medicine

Nutrition Success Strategies in
Treating Obesity and Heart Disease

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Why We Die...

- America's No. 1 cause of death
 - Heart Disease
- America's No. 1 cause of preventable death
 - Obesity
- Both Heart Disease and Obesity have both their origin and remedies in Nutrition.

What We Will Talk About...

- Heart Disease
 - Focused, powerful Nutrition Pearls that can dramatically lower morbidity/mortality of Heart Disease in your patients.
 - Appropriate dietary supplements.
- Obesity
 - Understanding the Origins of Obesity.
 - Hint: It's not the same old mumbo-jumbo you've heard before.
 - Deconstructing the most popular fad diets
 - Atkins & Eat Right 4 Your Type
 - Take home lessons?
 - Putting it all together into a weight loss program that **really works**.

Heart Disease: *Is Diet Enough?*

- May back fire
- A British study of patients on a heart-healthy menu had increases of TG and TC-HDL risk ratios.
- Must be long term.
- A meta-analysis of 27 CAD dietary trials showed that morbidity/mortality benefits did not manifest for two years.

The American Heart Association Recommendations

- Achieve an overall healthy eating pattern:
- Choose an overall balanced diet with foods from all major food groups, emphasizing fruits, vegetables and grains.
- Consume a variety of fruits, vegetables, and grains
- At least 5 daily servings of fruits and vegetables.
- At least 6 daily servings of grain products, including whole grains.
- Include fat-free and low-fat dairy products, fish, legumes, poultry and lean meats
- Eat at least two servings of fish weekly.

The American Heart Association Recommendations (con't)

- Achieve a healthy body weight
- Avoid excess intake of calories
- Maintain a level of physical activity that achieves fitness and balances energy expenditure with caloric intake;
 - for weight reduction, expenditure should exceed intake.
- Limit foods that are high in calories and/or low in nutritional quality, including those with a high amount of added sugar.

The American Heart Association Recommendations (con't)

- Achieve a desirable cholesterol level
- Limit foods with a high content of saturated fat and cholesterol. Substitute with grains and fat from vegetables, fish, legumes, nuts.
- Limit cholesterol to 300 mg a day for the general population, and 200mg daily for those with heart disease or its risk factors.
- Limit trans fatty acids. Trans fatty acids are found in foods containing partially hydrogenated vegetable oils such as packaged cookies, crackers, and other baked goods; commercially prepared fried foods and some margarines.

The American Heart Association Recommendations (con't)

- Achieve a desirable blood pressure
- Limit salt intake to less than 6 grams (2,400mg sodium) daily, slightly more than one teaspoon a day.
- If you drink, limit alcohol consumption to no more than one drink per day for women and two drinks per day for men.
- **The problem with the AHA Guidelines is that they are road signs for the sighted presented to the blind.**

Simple, Focused Dietary Prescriptions

- The best way to achieve nutrition goals
- Easy to give to patients.
- Easy to implement in daily life.
- Easy to remember.

Fatty Fish

- Advise patient to eat 2 to 3 servings per week.
- Mechanism of Benefit
 - Anti-Arrhythmic
 - Improved endothelial function
 - Improved lipid profile
 - Reduced platelet activation

A Fish Tale

- Benefits of fish consumption confirmed in numerous studies including:
 - The Seven Countries Study (documenting lower coronary mortality in Japanese and Mediterranean populations consuming a diet rich in fish).
 - The Chicago Western Electric Study
 - The Zutphen Study (two prospective trials that demonstrated a diet which included regular fish consumption led to lower rates of coronary artery disease).

The Benefits of Fish

- Weekly servings lower sudden cardiac death 50%, probably anti-arrhythmic. The anti-arrhythmic effect of omega-3 fatty acids has been documented in the reduction of PVCs and the improvement in heart rate variability in patients with recent MIs.
- A March 2001 report presented at the American Heart Association's 41st conference extended the benefit of fatty fish consumption to those over 65. Fatty fish and lean fish (cod, snapper, and catfish) provided no benefit.

Maximizing the Benefits of Fish

- Best lipid improvements occur with a diet comprised of 30% fat, rich in poly-unsaturated fats. With a diet containing 40% fat, there can be increases in total and LDL cholesterol.
- Fish consumption can lower total, LDL, TG, and Increase HDL2.
- Other studies have documented that 280g/day (9oz.) of cold water fish ingestion can lower the systolic blood pressure by 12%. The mechanism of this effect remains unexplained.

Best Fish

- Good sources of omega-3 fatty acids include salmon, sturgeon, mullet, bluefish, anchovy, sardines, herring, and menhaden.
- Omega-3 content of a 4.0 oz serving: Salmon (3.7g); Sardines (2.8g); Trout (2.0g).
- Recommendation: consume at least two 4 oz. servings of baked, grilled, poached or boiled cold-water fish twice weekly.
- Avoid high mercury containing fish: tuna, swordfish, mackerel, tilefish, shark

Caution

- Other studies such as the Health Professional Follow-Up Trial did not find risk reduction when fish consumption increased in study participants. Studies evaluated the use of fish oil supplements to enhance CAD regression did not show any benefit.
- However, on balance, fish consumption does appear to have significant positive therapeutic effects.

Caution (con't)

- Getting fish-based omega-3 fatty acids from capsules may significantly reduce Natural Killer cell activity.
- A 12 week British study randomized healthy volunteers to 4g/day of either EPA or a mixture of other polyunsaturated fatty acids. In subject given EPA, Natural Killer cell activity was reduced 48% and remained suppressed for four weeks after supplementation ended.

Sterols

- Advise patients to switch to sterol-containing margarines.
- Sterols are cholesterol-like plant compounds.
- Compete with dietary cholesterol absorption.
- Need 3,000mg sterols/day, vegetarians consume 400mg/day, average diet contains 175-200mg
- Supplements contain 200mg-400mg sterols
- It is not clear that capsulated supplements containing beta-sitosterol will disperse properly in the intestines and therefore may not be effective in lowering cholesterol absorption.

Start "Spreading" the News

- Plant sterols are available in two margarine spreads: Take Control (beta-sitosterol) and Benecol (sitostanol).
- Beta-sitosterol is a plant sterol with a chemical structure similar to cholesterol. Plant sterols are found in fruits, vegetables, nuts, seeds, soy and some grains.
- Plant sterols have atherogenic potential because they are chemically similar to cholesterol; however, less than 5% of ingested plant sterols is actually absorbed.

Mechanism of Action

- Plant sterols compete for cholesterol absorption via mixed micelles and thus inhibit intestinal cholesterol absorption by 50%, thereby lowering serum cholesterol.
- Plant sterols may also accelerate the esterification rate of the lecithin-cholesterol acyltransferase enzyme which reduces cholesterol-rich lipoprotein.
- Some patients may not respond to plant sterol therapies because of compensatory increases in hepatic cholesterol production in the setting of decreased cholesterol absorption.

Therapeutic Dosing

- The usual dose of plant sterols in the treatment of hypercholesterolemia is 0.8g to 6.0 per day in divided doses. Plant sterols need to be preferentially taken 30 minutes before a meal in order to maximally block cholesterol absorption. For patients with severe hyperlipidemia, plant sterol doses of 10 to 15 grams have been prescribed.
- The FDA has allowed products containing plant sterols to make health claims for reducing the risk of heart disease.

Wine

- Advise only patients at high risk for CAD who drink regularly to continue drinking no more than 1 (for women) and 2 (for men) servings of alcohol daily, preferably red wine.
- Oxford Study, 500K subjects, 20% reduction in CAD death, 1 drink/day
- Meta-analyses of Alcohol-CAD mortality demonstrate a 20-30% benefit from moderate alcohol consumption has been conclusively demonstrated
 - One exception to this are cases of ischemic left ventricular dysfunction in which alcohol consumption (1 to 14 drinks per week) reduced all-cause mortality.

Mechanism of Action

- Wine is thought to positively affect heart disease risk through several mechanisms:
- By increasing HDL levels: ≤ 2 drinks/day increases HDL3—? as beneficial as HDL2?
- By reducing oxidation of LDL cholesterol
- By the antiplatelet effects of wine polyphenols and flavonoids. Red and white wine have similar anti-platelet effects but different anti-oxidant potential.
- By decreasing fibrinogen
- Ethanol blocks phosphodiesterase A2 platelet aggregation.

The Advantages of Red Wine

- Wine and beer are equally effective in reducing cardiac disease risk, but only wine reduces all cause mortality without increasing alcohol-related mortality.
- Wine contains on average 10-14% alcohol. Numerous polyphenolic compounds in red wine (much more so than white wine) exhibit antioxidant properties, including trans-resveratrol, proanthocyanidins, and flavonoids such as quercetin, caempferol, and catechins. After drinking wine, the antioxidant potential of the blood is increased for up to 4.5 hours.

French Paradox

- The “French Paradox”— a reduced risk of heart disease in the French population in the setting of lots of pate and cheese.
 - Is not due to red wine consumption, but due to other components of the traditional French diet, which is lower in animal fat and relies less on between meal snacking.
- One alcoholic drink is equivalent to a 4 oz (120ml) glass of wine, 12 oz. beer, or 1 oz spirits.

Warning Label

- Alcohol: A leading cause of preventable death: factors in 50% of traffic fatalities.
- Consuming more than 3 drinks per day has been shown to increase mortality in men with established heart disease. Alcohol as a carcinogen: 1,000 times more carcinogenic than the worst well water in Silicon Valley.
- Women and Breast Cancer: ≤ 1 drink/day, 9% increase in cancer risk; 2-5 drinks/day, 41% increase in cancer risk.

Soy

- Advise patients to consume 2 to 4 servings of soy daily
- Soy is a rich source of phytoestrogens which are converted into estrogen-like compounds by glucosidases, an intestinal enzyme system.
- Additional sources of isoflavones include split green peas, lentils, chick peas, flaxseeds, clover sprouts, and alfalfa sprouts.
- Additional sources of lignans include whole grains (oats, barley, hops, bran, wheat germ, brown rice), fruits (particularly cherries, apples, pears), vegetables (particularly onion garlic, carrots and vegetable oils), seeds (fennel, sunflower)
- Additional sources of coumestans include bean sprouts, clover

Soy: Mechanism of Action

- Blocks cholesterol absorption
- Increases bile acid secretion
- Replaces dietary animal protein
- Increases serum cholesterol clearance
- Soy is most effective in diets rich in polyunsaturated fats
- Both soy isoflavones and soy protein appear able to reduce serum cholesterol.
- The higher the isoflavones concentrations, the more significant the reduction effect.

Summary of the Data

- Cholesterol reductions first described by Ignatowski in 1909
- Soy protein-containing foods have been shown in clinical trials to reduce total cholesterol and LDL levels in both hyper- and normocholesterolemic men, normocholesterolemic perimenopausal women, and hypercholesterolemic postmenopausal women.
- Meta-analysis, 38 studies, ~48gm/day soy protein. Serum lipid decreases: total 9.3%, LDL 13%, TG 10.5%. For patients with Type II hyperlipidemia: 24% LDL reduction.

Soy: Other Heart Healthy Benefits

- Estrogen-like effects: bind preferentially to the estrogen beta-receptor.
 - No human data that soy has any negative role in breast cancer.
- Anti-oxidant effects
- Blocks tyrosine kinase
- Improves arterial compliance
- Platelet inhibition

How Much Soy?

- Minimum effective dose of soy protein: 25g/day with optimal intake of 50-75g/day.
 - Met by three to four servings of soy products daily such as soy milk, tofu, raw soybeans, TVP, and soy protein powder with standardized isoflavone content. This would provide an isoflavone dietary content of approximately 80-200mg/day which is the average intake in most traditional Asian diets.
- The FDA has approved labeling soy products for cholesterol reduction. Products containing this health claim must be low in fat and provide at least 6.25g of soy protein per serving, which is 25% of the effective amount of 25g/day.

“Soy Vey”

- Side effects: Relate mostly to the estrogenic effects of soy products; include infertility and lengthening of menstrual cycles. Soy allergy can occur and may be a cross-over allergy with peanuts, peas, alfalfa, beans, carob, guar gum, gum acacia, kudzu, and licorice.
- Soy intake may worsen hypothyroidism by inhibiting thyroid hormone synthesis, increasing TSH levels, and possibly leading to goiter formation. This occurs only in people with low iodine levels.

“Soy Vey” (con’t)...

- Honolulu-Asia Aging Study and the Honolulu Heart Program of 3,700 Japanese-American men living in Hawaii linked tofu consumption (two or more servings/week) with cognitive impairment later in life. Cognitive impairment was identified in 19% of the “high” tofu users as compared with 4% of the “low” tofu users.

B-Vitamins

- Advise patients to eat two large “dark green” salads daily as part of their five servings of fruits and vegetables.
- Homocysteine: vasculotoxic and thrombogenic.
- Metabolic by-product of methionine → cysteine.
- Homocysteine: an independent atherosclerotic risk factor
 - The dangers of hyperhomocysteinemia include the promotion of a pro-coagulant state of endothelial cells, vascular endothelial dysfunction, and enhanced serum lipid oxidation. The dysfunctions can be reduced with proper diet and/or B vitamin supplementation.

Effectiveness of Supplementation

- Lowering homocysteine levels 50% = cholesterol reduction of 86mg/dl
- Minimum supplementation amounts: folic acid 400mcg/day, B12 200mcg/day, B6 ?
- Since 1998, the US government has required folic acid fortification of all cold cereals and baking flour. Folate in food is about 40% less bioavailable than synthetic folic acid, which is almost 100% bioavailable.

Achieving Results

- A minimum of 400mcg/day of folate seems to be necessary to decrease plasma total homocysteine concentration.
- Foods that are naturally high in folate content include spinach, okra, asparagus, legumes, beef liver, orange juice, and tomato juice.
- In a recent study of 25 healthy subjects, three glasses of orange juice daily were able to increase HDL by 21%. Less than three glasses had no measurable effect.

The Importance of B6

- Pyridoxine (B6) is a necessary cofactor in the metabolism of homocysteine. When B6 is used in supplement form with folate, studies have shown that homocysteine levels fall.
- However, it remains unclear whether B6 supplements independently reduce homocysteine levels, except in patients with chronic renal failure.
- Vitamin B6 is present in many foods including cereal grains, legumes, vegetables, liver, meat and eggs.

The Importance of B12

- Low levels of vitamin B12 deficiency are independently associated with elevated homocysteine levels, but not as strongly as folic acid. Low B12 levels are associated with a 3-4 fold increase in the odds of having a low cardiac ejection fraction.
- Vegetarians and the elderly (due to poor diet and risk of achlorhydria) are at increased risk of B12 deficiency and should supplement with at least 6mcg B12/daily.
- B12 is found in meat, fish, and dairy foods.

B-Wise

- A B vitamin supplement (containing B12, folate and B6) has improved endothelial function in healthy volunteers. Before the clinical or laboratory signs of B12 deficiency manifest, serum methylmalonate levels may be elevated.
- Did you get all of your B vitamins today?
 - If unsure, take a B complex vitamin.

The Power of “Brown”

- Advise patients to switch to “brown” carbohydrates.
- This would involve switching to brown rice instead of white rice, whole grain “brown” breads instead of white breads, whole grain pasta instead of white pasta, and potato with the “brown” peel instead of mashed, fried and other over-processed spud forms.
- These “brown” carbs contain more dietary fiber than their “white” counterparts.

The Importance of Dietary Fiber

- Dietary fiber is classified as either soluble (such as that found in beans, fruits, vegetables, whole grains, rice, psyllium husk and oat bran) and insoluble fiber (wheat bran and cellulose).
- Clinical studies of soluble oat bran supplements (3 gr/daily) have been shown to lower blood cholesterol by as much as 23%. This and other research convinced the FDA to grant products containing sufficient oat fiber to be able to label their foods as heart healthy.
- An October 1999 Yale study demonstrated that eating oats after a high fat meal kept arteries open and clear in healthy volunteers.

More Evidence for Fiber

- A JAMA study suggested that fiber may be more important than saturated fat in reducing the risk factors of heart disease.
- More fiber consumption is associated with less heart disease, obesity, cancer, diabetes, HTN, and overall mortality.
- Eating just two to three servings daily of whole grains (such as brown breads, brown rice and even popcorn) decreases CAD mortality by ~50%.
- Just switching from sandwich bread from white to brown substantially reduces heart risk.

Good Fat, Bad Fat

- Advise patient to switch to olive oil and canola oil.
- Recent studies have suggested that one or two simple dietary fat substitutions can have a significant impact on cardiovascular risk.
- A diet rich in olive oil, canola oil and other oils rich in monounsaturated fats have been shown to reduce cholesterol and heart disease risk.
- The Mediterranean Diet (rich in olive oil and other healthy fats, vegetables, and fruits) has repeatedly been associated with less risk of heart disease and certain types of cancers.

How do you say “Canola Oil” in French?

- A 1999 study reported in JAMA that switching to canola oil from butter and other fats reduced the risk of death from heart disease by 70% in one year. The benefits of switching to canola oil were seen as early as three months into the study conducted in Lyon, France.
- The oversight committee stopped the study early because the benefits were so great it was unethical to not share them with the control group.

Butter vs. Margarine

- A 1999 Harvard School of Public Health Study:
- Soybean oil reduced LDL levels by an average of 12% compared with those who ate butter. The diets containing semi-liquid margarine lowered LDL levels by 11%. Soft margarine dropped LDL 9%, and shortening decreased LDL 7%. Stick margarine reduced LDL by 5%.
- Each of these fats reduced the healthy HDL cholesterol. However, those who ate the softer fats had the smallest reductions in HDL cholesterol.
- The researchers concluded that the issue is not margarine vs. butter, but “soft” vs “hard.” The trans-fatty acids found in “harder” spreads have a more negative impact on serum cholesterol than does saturated butter fat.

Dietary Supplements for Heart Disease

- B-complex
- Proanthocyanidins
- Catechins
- Garlic
- Ubiquinone
- For Cholesterol Management
 - Monascus, Gugul, Policosanol,

Heart Disease Summary

- Eat fatty fish 2 –3 times weekly.
- Switch to sterol containing margarines.
- Drink one (women) or two (men) glasses of red wine three to four times weekly.
- Include two to three servings of soy daily.
- Include two servings of dark green veggies daily.
- Focus on “Brown” carbs.
- Switch to canola oil.

Obesity: A New Approach... *That Works!*

- Basic Approaches
 - Eat less, exercise more
 - Protein-sparing Modified Fast
 - Very Low Calorie Liquid Diet
 - Medication
 - Bariatric Surgery
 - ?Fad Diets?

Lower Fat, Higher Obesity

- “...diets high in fat do not appear to be the primary cause of excess body weight and the reduction in dietary fat is not the solution... In a sedentary population with widespread insulin resistance, a move to a low fat/high carbohydrate diet induces hyperinsulinemia.”
- Insulin is the body’s number one fat-building hormone.
- Am J Clinical Nutr. 1998;68L:1149-1150

Insulin Resistance at the core of the Apple shape

- “Hyperinsulinemia, both in the fasting state and in response to a glucose load or a meal, appears as one of the first and major abnormalities of obesity. It has been proposed by animal studies that it could be the origin of obesity via the lipogenic activity of insulin.”
- Diabetes/Metabolism Rev 11:69-80 (1995)

Linking Obesity and Insulin

- “Fasting plasma insulin concentration correlated with the rate of weight gain per year in both boys and girls and was associated with the rate of gain independent of known determinants...”
- In conclusion, fasting hyperinsulinemia may be a risk factor for the development of obesity in young children.”
- Diabetes 1997; 48(8): 1341-1345.

What Does Insulin Do?

- Specific Actions
 - Promotes fat accumulation:
 - Activates lipoprotein lipase which catalyzes removal and uptake of TG from blood into cells
 - Inhibits fat mobilization
 - By inhibiting hormone sensitive lipase, adipose tissue cannot be mobilized during weight loss.
 - Stimulates conversion of serum glucose to fat
 - During fasting, insulin levels fall and allow for mobilization of stored fat and glycogen.

Are You an Apple or Pear?

- You may be an Apple if:
 - Women
 - Waist Circumference > 35 inches
 - Waist/Hip Ratio > 1.0
 - Men
 - Waist Circumference > 40 inches
 - Waist/Hip Ratio > 0.8

Bad Apple

- “Women with a waist to hip ratio greater than 0.88 had a relative risk to heart disease of 3.25 as compared with women with WHR of less than 0.72...
- “The WHR is independently associated with the risk of CHD in women.”
- JAMA Vol. 280, No. 21: 1843-1848: Dec 2 1998

Insulin Resistance

- Defined
 - A state in which greater than normal amounts of insulin are required to elicit normal blood glucose control.

“X” Marks the Spot

- “The cluster of changes associated with insulin resistance has been said to comprise Syndrome X, and all of the manifestations of Syndrome X have been shown to increase risk of coronary heart disease. Thus it is concluded that insulin resistance and its associated abnormalities are of utmost importance in the pathogenesis of NIDDM, HTN, and coronary heart disease.”
- Physiological Rev, Vol 75, No. 3, July 1995

Syndrome X

- Features
 - Hyperinsulinemia
 - Glucose intolerance
 - Increased TG
 - Decreased LDL
 - HTN
 - Hyperuricemia

Exercise Common Sense

- No clinical weight loss trials have ever shown long-term successful weight loss and maintenance without exercise.
- 10,000 steps to Exercise Absolution
 - ~about 6 miles
- Benefits: facilitates weight loss, improves weight loss maintenance, enhances lean body mass, improves insulin sensitivity, and decreases reliance on meds for HTN, DM, hyperlipidemia.

More Benefits of Exercise

- Sedentary lifestyle choices are as bad as high cholesterol
- Decreases coronary mortality by 50%, similar to aspirin's effectiveness.
- Reduces stroke risk by 40%.
- Improves immune system and resistance to illness (including URIs).
- Improves Sleep
- Improves Mood
- Improves bone density
- Decreases cancer risk

Fad Diets

- Dr. Atkin's New Diet Revolution
 - ?Vindicated low-carb approach
 - We will take the theory to middle ground.
- The Blood Type Diet
 - Four blood types, four diets
 - A tower of babble built on a grain of truth

The Atkin's Weight Loss Hypothesis

- The caloric theory of weight loss is invalid
- Disturbed carb metabolism underlies obesity, not caloric intake
- The main health advantage of the Atkins' diet comes from the avoidance of "junk" carbs.
- "Sugar is a metabolic poison."
- Cravings are not a behavioral problem; they result from a physiological problem resulting from carbohydrate ingestion.
- Fat in the absence of carbohydrates stimulates the burning of more fat.

Ketosis: Heaven on Earth

- Lipolysis occurs when fat breaks down into glycerol and free fatty acids. Free fatty acids break down further into ketones which can be used metabolically as fuel. This metabolic state is referred to as ketosis.
- Benign Dietary Ketosis. This is the “safe” kind of ketosis that comes from keeping carbs at less than 40 grams/day.
- Ketosis “is as delightful as sex and sunshine, and has fewer drawbacks than any of them.” Ketosis also suppresses hunger and cravings.

Other Notes

- The Atkins’ Diet is not a “high fat diet” (even though you can eat as much butter, red meat, cheese and eggs as you want).
- Fat is less glucogenic than is protein. Therefore, you will lose more weight the more fat you eat as compared to the more protein you eat.
- Exercise is important and heart healthy.
- In Part I of his book, Atkins quotes literature describing metabolic studies mostly from the late 1950’s, 60’s and early 70’s.

Do Not Make This Mistake...

- According to Aktins, *this* is the reason not to eat a low-fat diet to lose weight...
 - The physical attributes of a successful low-fat dieter: dryness of the skin, pastiness of the complexion, and “deep furrows in the facial lines that extend from the side of the nose to the side of the mouth and below, called the nasolabial folds. Somehow they seems to look older than their age.”

Supportive Evidence for Low Carb/High Protein

- In a study (partially funded by the Atkins Center for Complementary Medicine), 51 subjects lost 10% body weight after six months on a very low carb diet.
 - Of these, twelve people followed the Atkins' diet for one year and lost 11% body weight.

More Evidence...

- In a study presented by the American Societies for Experimental Biology and funded by the National Cattleman's Beef Association and Kraft Foods, 24 overweight women were randomized to either a 1,700 kcal diet that
 - Followed guidelines consistent with 60% carb, 30% fat, and 10% protein.
 - Followed a diet of 40% carb, 30% fat, and 30% protein.
 - Each group lost ~16lb, but the high protein dieters lost more fat and less muscle mass.

More Evidence II...

- A six month study randomized 65 obese subjects into three groups: high carb (58% carb, 30% fat 12% protein), high protein (25% protein, 30% fat, 45% carb), or control.
- Those in the high protein group lost on average 8.9kg with 7.6kg fat loss, while the high carb group lost 5.1 kg and 4.3kg fat loss.
- The control group lost no weight.

More Evidence III...

- In a 6 month study of the effects of a high protein diet on renal function, 65 obese pts. Were randomized into three groups: high carb (12%protein, 30% fat, 58% carbs), high protein (25% protein, 30% fat, 45% carb), or control.
- Glomerular filtration rates and kidney volume increased significantly in the high protein group without changes in albuminuria.

More Evidence IV...

- A four week randomized trial of 13 male hyperinsulinemic obese subject compared weight loss on a high-protein diet (45% protein, 25% carbs, 30% fat) vs. a high carb diet (12% protein, 58% carb, and 30% fat).
- Results demonstrated that weight loss was greater in the high-protein group (8.3kg) vs. the high-carb group (6.0kg).

More Evidence V...

- Resting energy expenditure decreased almost three times more in the high carb group vs. the high protein group
- Mean insulin levels decreased to normal levels only in the high protein group, while cholesterol decreased similarly in both groups.
- HDL decreased in the high protein group.

More Evidence VI...

- A three week study of 25 obese women randomly divided subjects to an 800 cal. high protein diet (45% protein, 35% carb, 20% fat) vs an 800 cal high carb diet (20% protein, 60% carb, 20% fat).
- Total weight loss was similar between the two groups.
- However, subjects on the high-protein diet lost ~ 50% less fat-free mass, and improved insulin sensitivity, and reduced levels of free fatty acids.

Gout and High Protein?

- A four-month study of 13 non-diabetic men with gout assigned the subjects to a 1600 cal diet consisting of 30% protein, 40% carbs, and 30% fat.
- The incidence of monthly gouty attacks decreased from an average of 2 to 0.7/month. Also noted to decrease were the serum urate levels, serum total cholesterol levels, LDL level, TG level, and HDL-TC ratios.
- Those patients who were most symptomatic had the greatest improvements.

The Evidence Against

- Clinical Pharmacology Research Center study reported that subjects following a high-protein diet too in 1,000 fewer calories daily as compared with their baseline diet.
- Of 2,500 people who lost at least 30 pounds and kept it off for one year, only 25 subjects used the low carb diet. Most of the successful dieters followed a low-fat, high carb diet plan.

The Evidence Against II...

- A six weeks study conducted in a metabolic ward of 43 obese subjects randomized them to receive either a 1,000 cal diet containing 32% protein, 15% carb, and 53% fat or 29% protein, 45% carb, and 26% fat.
- Results were similar between the two groups with regard to weight loss, waist-hip ratios, insulin levels, total body fat loss, fasting blood glucose, cholesterol and triglyceride levels.

The Evidence Against III...

- A 12 week study of 68 obese patients randomly divided subjects into one of two 1,200 calorie/day diets: low carb (25%) vs. high carb (45%).
- Both groups lost similar amounts of weight (~10kg), fat mass (8kg), and lean body mass (2kg).
- Insulin levels decreased in both groups but more significantly in the low-carb group.
 - This was thought to result from an increased monounsaturated fat content of the low-carb group.

The Evidence Against IV...

- Food Cravings
 - A 12-week study of 93 obese, Type II diabetic pts randomly divided into either a 1200 cal diet in which all foods were allowed in moderation vs. a 400 cal/day diet consisting only of animal protein.
 - Both groups experienced a decrease in food cravings but were more significant in the 400-cal diet, especially for sources of animal protein and complex carbs.

The Evidence Against V...

- Does dietary sugar impair weight loss?
 - A six-week study randomized two groups of obese women to receive either a low-fat, hypocaloric diet of 19% protein, 71% carb, and 11% fat.
 - In one group, dietary sugar accounted for 43% of carb calories while the other group had 4% of dietary carbs as sugar.
 - All weight loss, physiological and psychological parameters were identical between the two groups.

“Eat Right 4 Your Type” *Deconstructed*

- This book is based on the subjective observations of the author’s father who served as a health professional in European spas and watched as some patrons ate the low-cal spa cuisine but did not lose weight.
- The author’s father published his observations linking blood type and diet in the book “One Man’s Food” which was inspired by the saying, “One man’s food is another’s poison.”

The Premise of ER4YT

- The blood type diet is the restoration of your natural genetic rhythm.
- Your blood type is the key that unlocks the door to the mysteries of health, disease, longevity, physical vitality, and emotional strength.
- Your blood type determines:
 - Your susceptibility to illness, which antibiotics are best, which vaccines are best, which foods are best, which exercises are best, and your personality.

The Mechanism: Lectins

- Lectins are commonly found in plants and are widespread natural products with the ability to recognize and bind to simple or complex saccharides and act as effective information protein molecules.
- As part of our diet, lectins are powerful exogenous growth factors in the small intestine and influence our health, the digestive function, and the bacterial ecology of the alimentary tract.

The Mechanism...(con't)

- D'Adamo states that when you eat foods containing lectins that are incompatible with your blood type, those lectins can enter the blood stream and attach to internal organs (liver, kidney, heart stomach, brain) and begin to agglutinate blood cells in that area.

Blood Line

- Type O is the Oldest: hunters, meat eaters. Requires an efficient metabolism to stay lean and energetic.
- Type A evolved with Agrarian society; "a mutation allows humans to absorb cultivated grains leading to farming; this mutation also conferred a resistance to infections which come with crowded living.

Blood Line...(con't)

- Type B is Balanced, emerging as humans migrated North into colder, harsher territories; pastoral agrarian and warlike nomads developed as humans pushed out of Africa into Europe.
- Type AB is modern, a result of the intermingling of disparate groups: the Type A Caucasians and the Type B Mongolians that occurred when the barbarians “sliced through collapsing civilizations.”

Type O Diet

- The hunter, meat eater, hardy digestive tract.
- Weight loss occurs by restricting grains, breads, legumes.
- Weight gain: gluten lectins inhibit insulin metabolism and create insulin resistance.
 - Other foods that can cause weight gain: beans, sugar, chocolate.
 - Seltzer water is very good for Type Os

Type A Diet

- The first vegetarian, reaps what is sown, sensitive digestive tract.
- Type As are deficient in stomach acid and cannot digest meat well.
- Dairy is also poorly digested.
- Best foods for weight loss: vegetable oils, soy, vegetables, and pineapple.
- Best foods to eliminate: peppers, fermented olives, potatoes, yams, cabbage, tomatoes, tropical fruits, and oranges (too acidic).

Type B Diet

- Balanced, strong immune system, tolerant digestive system, dairy eater.
- Most likely to gain weight when consuming corn, lentils, and sesame seeds.
- Type Bs who want to lose weight should also avoid wheat like Type O.

Type AB Diet

- Sensitive digestive tract, overly tolerant immune system (?).
- Weight gain is likely with red meats, kidney beans, lima beans, corn, and wheat.
- Weight loss is likely with tofu, seafood, green vegetables, pineapple.
- Sea salt is best because it is lower in sodium. (Huh?)

Do Lectins in Foods Really Cause Disease?

- Significant clinical and bench-top research have described the chemical properties of lectins and their numerous interactions with human glycoproteins.
- The link between lectins and human disease remains largely theoretical and controversial.
- Wheat lectins may cause or exacerbate Celiac disease, IgA nephropathy, and RA.

Wheat Lectins

- Wheat lectins can bind to glyco-proteins of crustacean exoskeletons such as the popular dietary supplement, N-acetyl glucosamine
- Glucosamine's proven clinical effectiveness may result from its ability to provide an alternative binding site for dietary wheat lectins, thereby reducing the inflammatory effects of wheat lectins.

More on Lectins and Disease

- Tomato, potato, wheat and peanut lectins may stimulate Class II HLA antigens on pancreatic islet and thyroid cells, targeting cells for auto-immune attack.
 - This is a suspected causative factor in insulin dependent DM and thyroid disease.
- Lectins have a mucus-stripping effect that may increase the risk of Strep pharyngitis and IBD.

Do Lectins interact with ABO Blood type?

- This is a completely unsupported hypothesis.
- The diets presented in ER4YT are ALL low in calories and fat, and discourage junk foods, fried foods, and overly processed foods.
 - Follow any of these diets (regardless of your blood type) and you will likely be upgrading from the Standard American Diet (S.A.D.).

My Way

- Two Tenets:
 - Weight loss programs must be individualized.
 - Everybody can not read the same book and get the same results.
 - Genetic differences must be incorporated.
 - Do you have the “Serengeti Gene”?
 - Cultural differences must be incorporated.
 - Weight loss programs must have an ending, and that ending should be a healthy diet balanced for the individual.
 - *If you do what you have always done, you will get what you have always gotten.* Chinese proverb.

A Calorie is not a Calorie

- Different people are designed to process foods differently.
- The key is to discover for each person the blend of protein, fat and carbohydrates that comprise a balanced diet.
- Use the laws of Thermodynamics.
 - 100 cal dietary fat = 98 cal of body fat.
 - 100 cal carbs = 67 cal of body fat.
 - 100 cal protein = 33 cal of body fat.

Re-Engineering Diets

- Three step program to re-introduce foods, one at a time, and see:
 - Which foods stick—cause weight gain.
 - Which foods don't stick—allow weight maintenance.
- Foods re-introduced include carbs and those foods that are comfortable and familiar to each patient.

Stabilizing Blood Sugar

- Undulating blood sugar levels caused by poor food selection and pairing are the root of food cravings.
 - Carb Rules
 - Always combine a protein and a carb.
 - Always choose “brown” carbs whenever possible.
- Emotional vs. Physical Hunger
 - Many use food as medicine: to calm, to invigorate, to numb.

The Slow Metabolism

- Screen for endocrinologic problems and then *fix* them.
 - Insulin Resistance
 - Thyroid dysfunction
 - Hypogonadism
 - Adult Human Growth Hormone Deficiency
 - PCOS

Exercise

- You will not lose weight and keep it off without regular exercise.
 - Exercise does not need to happen at the beginning of weight loss, but must be there by the end.
- Think outside the box:
 - Household chores count.
 - Walking or swimming count.
 - 10K steps every day absolves the exercise commandment.

Dietary Supplements

- Most do not work or are dangerous.
 - Nothing will work for long-term successful weight loss without proper diet and exercise.
- Consider these effective supplements:
 - Griffonia
 - Phenylalanine
 - CLA
 - Guarana
 - Phaseolamine
 - Glutamine

This is the Last Slide!

- What we eat does make a difference in the disease we get and the diseases we avoid.
- America's No. 1 killer, Heart Disease, and America's No. 1 cause of preventable death, Obesity, are both **NUTRITIONAL PROBLEMS** and can be solved with **NUTRITIONAL SOLUTIONS**.
