Heart Health
Action Plan

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Heart Disease is the number two cause of death for people living in the United States. New research shows that even children as young as ten years old may have arteries resembling heavy smokers. Thus, **prevention** and natural treatments are not a luxury, but a necessity. According to the American Heart Association, at least one-third of deaths from cardiovascular disease (CVD) could be prevented if people followed better diets and exercised more. New risk assessment techniques now allow us to fix or prevent a problem before full-blown heart disease attacks.

Do you have heart disease in your family history? Have you said to yourself and others, “the same thing that happened to my parent(s) will happen to me”? It is likely that when your parent(s) were screened for cardiac health, the "whole" picture was not investigated. It is believed that one-third of all heart attacks occur in persons with normal cholesterol levels. You can take a *proactive* stance to prevent heart disease. Health professionals are now even beginning to screen for genetic mutations to individualize heart health recommendations.

State-of-the-art cardiac screening can accurately detect the presence of cardiac issues, and genetic testing can pinpoint the origin of “family history” for prevention of potential cardiac events. Most cardiac issues are triggered by genetic mutations defects. Unless it is a congenital defect, *nothing is irreversible*. Genetic mutations defects require negative interactions with environment, diet, and lifestyle to perpetuate adverse effects. The key is not to allow those genes to “switch on.” Prudent dietary, nutrient, lifestyle, and in some cases, medication intervention, will greatly improve your chances of avoiding heart disease.

A February 2017 study in *Circulation* indicated that cardiovascular disease biomarkers differed significantly between males and females. This is something that cardiologist do not usually take into account so make sure you ask your doctor about these differences.

A group of researchers in the September 2018 issue of *Expert Review of Clinical Pharmacology* found that high total cholesterol or LDL cholesterol causing atherosclerosis and CVD have been shown to be false. Millions of people all over the world, including many with no history of heart disease, are taking statins despite unproven benefits and serious side effects. A *JAMA* study in February 2019 discovered that lowering triglycerides reduced risk of coronary heart disease as much as lowering LDL cholesterol. Two 2020 studies from Journal of the American College of Cardiology suggest that low-density lipoprotein cholesterol (LDL) may not be the main driver of atherosclerotic cardiovascular disease. Instead, the findings implicate triglycerides, remnant cholesterol (remnant-Co, and very low-density lipoprotein (VLDL) cholesterol in the development of cardiovascular disease (CVD) and myocardial infarction (MI), but there was no similar association with LDL-C. The authors suggest management of lipid profiles as w hole, including remnant-cholesterol and/or triglycerides instead of just statin therapy. Of course, they received tremendous blowback from the LDL believers after these studies were published.

Studies like these will continue to be published and eventually, statins will become a complementary, not first-line, therapy. For people without heart disease, taking a daily aspirin to prevent heart attacks and strokes may increase the risk of severe brain bleeding by 37 percent, according to a May 2019 study in *JAMA Neurology*. 75 percent of patients who suffer heart attacks have cholesterol levels that don't indicate a high risk for such an event.

Aspirin Facts

2019

-American College of Cardiology (ACC) and American Heart Association (AHA) 2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease dropped a titanic bombshell...the recommendation against the broad use of aspirin in primary prevention, after numerous trials called the balance of risk and benefit with treatment into question. Low-dose aspirin now has a recommendation of no, occasionally yes. Aspirin might be considered for primary prevention among select adults 40 to 70, who are at very high CVD risk but not at increased bleeding risk. There is a "harm" recommendation that low-dose aspirin should not be used routinely for those over 70, or those at any age with an increased risk of bleeding.

During a press conference this week, presidents of the both the ACC and AHA discussed the goals for the 2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease.

"What we're here to talk about today is the fact is that through lifestyle choices and modifications, nearly 80% of all cardiovascular disease can be prevented. These 2019

prevention guidelines look at the whole person and how individuals, working hand in hand with their clinicians and physicians, can manage their vulnerabilities."

"Healthy lifestyle is the most important part of prevention throughout the entire lifespan, but these guidelines also look at prevention from a new lens of social determinants of health. Based on scientific evidence, we now know that only 10% to 20% of our health is actually determined by the healthcare that we receive, and 70% to 80% is impacted by social determinants of health."

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No less than five studies in recent months recommend against daily aspirin use unless in very specific instances.

2018
A Daily Baby Aspirin Has No Benefit for Healthy Older People

Effect of Aspirin on Disability-Free Survival in Healthy Elderly

Serum Heart Screening Checklist

If you have or suspect chronic heart-related issues, or have heart-related disease in your family history, the following tests will assist in explaining the “whole picture.” For optimum benefit, we suggest bringing this list to your cardiologist.

- ✓ High Sensitivity C- Reactive Protein (hsCRP)
- ✓ Homocysteine (if high, this can also cause dementia; it is totally treatable with methylated daily doses of B-6, folate, and B-12)
- ✓ Lipoprotein a Lp (a)
- ✓ Fibrinogen
- ✓ Hemoglobin A1C
- ✓ LDL particle size (High LDL-C is inversely associated with mortality in most people over 60 years. This finding is inconsistent with the cholesterol hypothesis (i.e. that cholesterol, particularly LDL-C, is inherently atherogenic). *Ravnskov U et al, BMJ Open 2016;6:e010401*
- ✓ PAI-1 and Leptin

- ✓ Apolipoprotein (Apo A-1)
- ✓ Apolipoprotein (Apo B)
- ✓ NT-proBNP hormone test which will indicate the stress on your heart
- ✓ High Sensitivity Troponin T indicates damage to the heart muscle
- ✓ Lipid Panel (including Triglycerides)
- ✓ Glycoprotein acetylation (GlycA)
- ✓ 12-lead EKG provides information about hypertrophy, or thickening of the heart muscle
- ✓ A coronary calcium scan, a low-radiation imaging test, identifies calcified plaque buildup in the arteries of the heart

High Blood Pressure (Hypertension)

Excerpts taken from *Magnesium for High Blood Pressure*, Jay S. Cohen, M.D.

One of the serious issues of heart health is chronically high blood pressure. It is a vicious, relentless killer that affects 54 million Americans and 800 million people worldwide. Are there any scientifically proven alternatives to prescription drugs?

The National Heart, Lung, and Blood Institute protocol for hypertension are blood pressure readings of between 120-139mmHg SYSTOLIC or 80-89mmHg DIASTOLIC.

Most doctors and patients know that a good diet can lower blood pressure.

Magnesium is even more important than potassium for reducing high blood pressure, C-Reactive Protein, and risk of heart attack and stroke.

- Magnesium is the body's natural relaxant for stabilizing nerve and blood cell function.
- Hundreds of studies – animal, human, epidemiological, and clinical – have linked magnesium deficiencies to vascular disorders
  such as hypertension, migraines, and Raynaud's Syndrome.
- Few people or doctor's know that almost 75% of the population is magnesium deficient. Many drugs deplete or destroy it especially proton pump inhibitors. Harmful food additives (especially MSG and Aspartame) deplete it as does high intake of refined sugar.

Magnesium is safer, milder, and much less costly than antihypertensive drugs. Magnesium is not a panacea, but part of a comprehensive approach to preventing or treating heart disease.

Treating hypertension is imperative. Preventing hypertension is better still. Prescription drugs work, but are prone to side effects such as dizziness, drowsiness, lethargy, and sexual dysfunctions. Side effects are the main reason that 50% of people starting treatment for high blood pressure quit treatment within a year.

How Do We Keep BP in Check? Researchers say they have pinpointed the location of the body's natural blood pressure barometers. These cellular sensors can detect even subtle changes in blood pressure and adjusts the body's hormone levels accordingly.

Scientists first proposed the existence of these "baroreceptors" in 1957. Since then, researchers have believed that these blood pressure sensors are either inside or nearby specialized kidney cells called renin cells, but could never confirm it.

The baroreceptor mechanism detects pressure changes outside the cell and transmits signals to the nucleus of the cells. It's a lot like how the cochlea of the ear turns sound vibrations into nerve impulses the brain recognizes.

The *Circulation Research* finding will allow for even better, more targeted treatments for hypo and hypertension.

Fish Oil. The American Heart Association's *Journal of the American Heart Association* published a study lauding a complementary and alternative medicine modality. In this instance, fish oil was showered with praise for its beneficial effect lowering blood pressure.

The authors of the study purport that about 3 grams of omega-3 fatty acids (EPA and DHA) per day appears to be the optimal dose for reducing blood pressure. Moreover, they suggest this amount can be attained through either consumption of dietary supplements or food. How wonderful is that to see!

There are several caveats that need to be elucidated regarding the 3 grams of omega-3's daily.

- This study was performed on those who had high blood pressure to start with, thus…
- 3 grams of omega-3 daily is not for everyone. 1-2 grams is usually enough for healthy persons. You should always consult with a knowledgeable health professional before changing your omega-3 dosage.
- If you are on blood thinning medication or blood thinning supplements, you need to be careful about how much omega-3 you consume.

Omega-6:omega-3 fatty acid ratio

One simple way to improve upon the deplorable state of heart health in the US is to better balance our omega-6:omega-3 fatty acid ratio. While the ratio should be 2:1, more often than not it is 18:1 for most Americans.

The only two ways this can be fixed is by minimizing omega-6 consumption and increasing omega-3. Fish and fish oil supplements are one sure-fire way to bring up onega-3 levels. The following highlights their incredible benefits. This is in addition to the incredible *American Journal of Clinical Nutrition* study from September 2022

lauding the inflammatory-reducing, fish-oil derived, highly concentrated Metagenics SPM Active.

A study from Clinical Nutrition suggests higher concentrations of marine-derived omega-3 fatty acid biomarkers were associated with a significantly reduced risk of total cardiovascular disease, congenital heart disease and total morality.

Omega-3 Content in Fish (per 4 ounce serving):
Choose wild caught fish if possible.

1 gram (g) or More
Anchovies, herring, mackerel (Atlantic & Pacific), oysters (Pacific), salmon (Atlantic, Chinook, Coho), sardines (Atlantic & Pacific), trout

500 Milligrams (mg) – 1 g
Alaskan pollock, barramundi, crab, mussels, salmon (Chum, Pink & Sockeye), sea bass, squid, tuna (albacore/white), walleye

250 mg to 500 mg
Catfish, clams, flounder/sole, grouper, halibut, mackerel (King), perch, rockfish, snapper, tuna (skipjack)

Less than 250 mg
Cod, crayfish, haddock, lobsters, Mahi Mahi, shrimp, scallops, tilapia, tuna (yellowfin)
**courtesy of Seafood Nutrition Partnership*

Other Sources of Omega-3 Fatty Acids
Egg yolk (one omega-3 infused provides DHA only, not EPA) – 1.5 grams
Nuts, nut oils, vegetable oils, chia seeds and flaxseed go into the body as alpha-linolenic acid (ALA) and need to be enzymatically broken down into EPA and SHA. Almost half of the human population do not sufficiently genetically break down ALA into EPA and DHA. This performing a genetic analysis through our office or other practitioner is warranted so you know how well you break down ALA. This warrants how much omega-3 you really need.

Details of AHA Study. Compared to adults who did not consume EPA and SHA, those who consumed between 2 and 3 grams daily of combined DHA and EPA omega-3 fatty acids (in supplements, food or both) had reduced systolic (top number) and diastolic (bottom number) blood pressure by an average of 2 mm Hg.

Consuming more than 3 grams of omega-3 fatty acids daily may have added blood pressure-lowering benefit for adults with high blood pressure or high blood lipids: At 3 grams a day of omega-3s, systolic blood pressure (SBP) decreased an average of 4.5 mm Hg for those with hypertension, and about 2 mm Hg on average for those without.

Daily Breath Training. Did you know that daily breath training matches the effectiveness of medication for high blood pressure, according to a study from *Journal of the American Heart Association*? Also called inspiratory-muscle strength training, the researchers of the study found it can increase blood vessel function by 45%. Subjects took 30 breaths per day for six weeks using a *high resistance inspiratory muscle training device.* Systolic blood pressure went down by 9mm.

Taking deep, resisted breaths generate same benefits of exercise and physical activity. This therapy is good for all age groups, and can even help athletic performance. Moreover, it is currently being used as a Long COVID therapy.

GENERAL NOTES:

1. Systolic blood pressure, the first, higher number in the reading that measures the force on blood vessel walls during a heartbeat, is a better indicator for an increased risk of death than other blood pressure measurements. *Annals of Internal Medicine 11/2003*
2. Blood pressure readings taken on arms parallel, or extended in the same direction as the body, are up to 10 percent higher than readings taken when the elbow is at a right angle to the body with elbow flexed at heart level. *Annals of Internal Medicine 1/2004* *Important note*: to rule out hypertension misdiagnosis, if you doctor has not performed a 24-hour blood pressure screening, it is important to do so. A 24-hour gives a much truer assessment of your blood pressure than a one-time reading in your doctor's office.
3. Besides the usual blood pressure testing, measuring your C-Reactive Protein (CRP) is important. CRP measures inflammation in the bloodstream. It affects high blood pressure and is a heart health measure. Monitoring CRP and taking measures to lower the level if higher than normal will help with prevention. *Journal of the American Medical Association, 12/2003*
4. Visceral fat, better known as "spare tire" or "beer gut," increases your risk for Hypertension. *Am J Physiol Endocrinol Metab6/2003*
5. Another problem with a combination of high blood pressure medications is that they may increase the risk of developing diabetes. *The National Institute of Clinical Excellence (UK) 2/2004*
6. A Mediterranean diet (emphasizing vegetables, fruit, fish, and healthy fats such as avocado, olive oil, nuts/seeds) has been proven to lower mild blood pressure as much as a mild blood pressure pill. Most doctors and patients know that adequate potassium is essential for vascular health. Potassium is found in many foods, but may be an issue if not enough is consumed (3000+ daily mg. goal). See the list of potassium rich foods.
7. A December, 2013 *JAMA* article suggested major changes, including prescribing less medication for mildly high blood pressure because the evidence does not support it.
8. The ideal physiologic range of blood pressure is lower for women than in men. Current approaches to using sex-agnostic targets for lowering elevated BP could benefit from careful reassessment. *JAMA Network Open 2021*
9. A 2022 study in *Journal of American Heart Association* finds a breathing exercise known as Inspiratory Muscle Strength Training can reduce blood pressure in weeks, with benefits on par with daily exercise or medication.

HDL AND LDL CHOLESTEROL

Look Under the Hood: HDL Cholesterol

HDL cholesterol is just as important as LDL cholesterol. Optimal HDL levels render high LDL levels less impactful because HDL removes LDL from dangerous areas such as blood vessels.

If HDL-C, the common test seen in lipid panels, is low, a Cholesterol Efflux Capacity test can show how well HDL is taking LDL out of the tissue. Other tests that can give you a better look into HDL function:

- HDL-P (particle);
- HDL Mapping;
- HDL size and density;
- HDL-free cholesterol (a valuable marker for the rare hyperalphalipoproteinemia (HALP) which is very high HDL and is usually genetic).

In most instances, when HDL is out of range, it is low. Pomegranate juice, seeds, or Urolithin A supplements (derived from pomegranates) and niacinamide are safe ways to bring up HDL. A study from The Journal of Nutrition found that omega-3 fish oil shifted HDL particle distribution toward a favorable cardioprotective profile in healthy older adults.

A study in *Alzheimer's and Dementia*
found optimal HDL reduces the risk of Alzheimer's disease by virtue of its capacity to exchange lipids, affecting neuronal membrane composition and vascular and synaptic functions.

With regard to the rare instance of very high HDL (90% percentile or higher is considered HALP), what can be done? Other than genetic causes, vigorous and sustained exercise, regular/substantial alcohol consumption, extreme weight loss, liver issues, and certain medications can cause high HDL. Unfortunately, little research to date has found ways to assist with HALP, but a very lowfat diet has shown some positive results.

LDL Cholesterol

In the October 2022 issue of Current Opinion in Endocrinology & Diabetes and Obesity, the authors suggest that low-density lipoprotein (LDL)-cholesterol level is a weak predictor of developing cardiovascular (CV) disease and can only explain a small proportion of CV risk. This should not be the first time you've heard this from us.

LDL is not even used to determine CV risk on either the atherosclerotic cardiovascular disease (ASCVD) calculator in the United States, or the Qrisk3 in the UK. A study in JAMA in 2022 suggested that "the absolute benefits of statins are modest and may not be strongly mediated through the degree of LDL reduction."

The authors purport that perhaps it is time to look beyond cholesterol to a different causal model, the "thrombogenic" model of ASCVD. By thrombogenic, they are referring to damaged vessels that carry blood, such as arteries.

There are numerous other conditions leading to this kind of damage, such as COVID-19, which can trigger thrombus formation, causing strokes and myocardial infarctions. Although these are acute events, they highlight a mechanism for the development of ASCVD which centers on vessel damage and thrombus formation as both the primary casual mechanism for acute events, and the driver behind progression towards atherosclerotic plaque development.

As we have said, you must consider many different blood test markers, including but not limited to, C-reactive protein, Homocysteine, Lp(a), triglycerides, LDL particle size, blood sugar markers, HDL among others.

Assessing CV risk is multifactorial, and the cholesterol hypothesis that suggests a raises LDL is directly casual for ASCVD is myopic, and does not adequately explain risk in individuals, or populations, for that matter.

Dietary Improvement Tips

Diet is THE crucial component for cardiac health. According to researchers, following the right diet for you can lower bad (LDL) cholesterol as much as statin medications. ***Am J Clin Nutr March 2005*** Even more important, it can lower high triglycerides (which statin medications seldom can).

1. **Use olive (extra virgin, cold-pressed), avocado, or grapeseed oil**; *Arch Int Med 4/2005; BMJ 4/2005NEJM 2003;348* LDL and HDL cholesterol, as well as triglyceride levels, show improvement when virgin olive oil is used in the diet, according to a 2020 study in *Nutrients*. Consuming a diet rich in extra virgin olive oil for 12 weeks modulated the distribution of HDL subclasses by reducing the level of S-HDL (bad HDL) and increased the level of intermediate-HDL/large HDL (good HGL) in elderly subjects.
2. **Choose whole grains or whole grain substitutes** (especially buckwheat, quinoa, brown/black rice and wild rice);
3. **Eat wild caught fish** (especially sardines and salmon) that are high in Omega-3 oils;
4. **Eat nuts and seeds** (especially raw or dry roasted pecans, walnuts, almonds, flaxseeds and sunflower seeds). Flaxseeds have been found to lower total and LDL cholesterol in patients with peripheral artery disease and has additional LDL- cholesterol lowering capabilities when used alone or in conjunction with statins; *Am Heart Ass 8/20/02, J Nutr 10/24/01; J Nutr 2015* An August 2020 study presented at the European Society of Cardiology Congress found that eating a portion of nuts at least twice per week is linked to a 17% lower risk of dying from a heart attack, stroke, or other heart disease-related condition. Eating a ½ cup of walnuts every day for two years lowered levels of low-density lipoprotein (LDL) cholesterol and reduced the number of total LDL particles, according to a 2022 study in *Circulation*.
5. **Drink tea (especially green and black) and red wine**, if tolerated (5 oz. maximum for women/ 10 oz. maximum for men). Compounds in both green and black tea relax blood vessels by activating ion channel proteins in the blood vessel wall. *Cellular Physiology 2021*
6. **Coffee has been found in research studies to have 5-10 times the antioxidant benefits of tea**. *Arch Int Med 3/22/04* A 2016 study in *American Journal of Clinical Nutrition* found that

green tea improves cardiovascular risk factors, including lipids. Three new studies presented at the American College of Cardiology 2022 Scientific Session shows regular coffee drinking, especially a daily intake of two to three cups, is not only safe for the heart but may be cardioprotective. People without cardiovascular disease (CVD) with that level of coffee intake, compared with those who weren't coffee drinkers, showed significantly reduced risks of death, ranging from 8% to 15% over 10 years. In a separate analysis, participants with CVD also showed significantly improved survival with coffee intake of two to three cups daily, and no increased risk of arrhythmias. In a third trial, clinical benefits of the same level of coffee drinking were observed whether the coffee consumed was the "instant" kind for reconstitution with water or brewed from ground whole beans.

7. **Eat more fruits and vegetables** (especially blueberries, dark green/leafy vegetables, cruciferous vegetables, sweet potatoes, avocado, and apples); *Am J Clin Nutr 6/24/02*
8. **Reduce refined sugar**: The American Heart Association now recommends <25 grams daily for women and < 30 grams daily for men over the age of 50. The reason is that dietary cholesterol does not cause high blood cholesterol. The big culprit is refined sugar.
9. **Restrict harmful fats** (such as bacon, ice cream, lard, and high fat cheese); *Am J Clin Nutr 4/04, Am Heart Ass 12/01, Art Thromb Vasc Biol Mar 2004*
10. **Avoid trans fats** (labels listing hydrogenated or partially hydrogenated fats should be completely avoided; the amount of trans fats listed on food labels should read "zero"); *JAMA 11/27/02* Although they are now banned in the United States, they are still found in some food products.
11. **Choose higher fiber foods** instead of high glycemic carbohydrates.
12. **Add cocoa flavanols.** The first large-scale trial to test the long-term effects of a 500 mg per day cocoa flavanol supplement to prevent cardiovascular disease (CVD) reported a 27 percent lower rate of cardiovascular death after 4 years, according to authors of *The American Journal of Clinical Nutrition* study. A review in Nutrients suggest that a flavanol-rich diet, not just cocoa flavanols, helps protect against the world's leading cause of death.

Dietary Supplement Suggestions

Chromium (non-yeast) - 100 to 300 mcg. for CVD. *Am Heart Ass Annual Conf CVD Epid & Prev 3/5/04*

CoQ10 - 100 mg. or greater for all aspects of cardiac health. *Digiesi V, Cantini F, Bisi G, et al. Mechanism of action of coenzyme q10 in essential hypertension. Curr Ther Res 1992;51:668–72.* Subjects who supplemented with CoQ10 and **Selenium** for four years showed a 49% lower risk of death from both cardiovascular disease and heart disease after ten years than those who did not supplement. *PloSOne, December 2015 issue* It is essential to take at least ten times as much CoQ10 as the amount of a statin drug (example: if taking 20 mg. of statin, take 200 mg. of CoQ10). Genetic testing of your ability to make CoQ10 is essential.
A study in the July 2022 issue of *The Journal of Nutrition* found that in predominantly older adult males with cardiovascular disease or heart failure, CoQ10 supplementation added to conventional therapy was safe and offered significant health benefits clinically and at the cellular level?

Subjects supplementing with CoQ10 showed improved functional capacity, had fewer major adverse cardiovascular events, and showed positive, quantifiable effects on inflammatory markers.

The shame of it all, which we have discussed numerous times over the last 30 years, is that CoQ10 was included in the original patent of the first statin drug because scientists knew statins depleted CoQ10. Prior to production, however, it was dropped from the formula because it was deemed too expensive.

EPA/DHA Fish Oil - 1 to 5 grams daily for LDL, triglycerides, CRP, coagulation, gene expression, and may improve effectiveness of statin therapy. High doses (3 g/d) of fish oil containing EPA/DHA are linked with 10 to 30% reductions in triglycerides- the third part of total cholesterol. *Effects of Omega-3 Fatty Acids on Cardiovascular Disease. National Center for Complementary and Alternative Medicine March 2004*, *Am Heart Ass 11/19/02*, *JAMA 2002;287*, *Am J Clin Nutr 2003;77 & 8/2002, BMJ 1/2004, Clin Chem 2002;48(6) and CNN Health Review, August 2009.* A large 2018 clinical trial found that the drug, called Vascepa, which is a high dose of EPA/DHA fish oil supplement, sharply reduced the rate of cardiovascular events in people with a history of heart disease and high triglycerides. According to results presented at a September 2019 North American Menopause Society annual meeting, fish oil showed a small reduction in the primary cardiovascular endpoint of major CVD events, and were associated with significant reductions in heart attacks. Fish oil supplements were associated with 12% lower risk of death, a 16% lower risk of dying from cardiovascular disease, and a 7% lower risk of cardiovascular disease events such as stroke or heart attack.

Krill Oil – For those who do not tolerate different forms of fish oil, a study from *JAMA Network Open* found that a krill oil-derived omega-3 supplement lowered triglyceride levels and was safe and well tolerated in patients with severe hypertriglyceridemia.

Fiber (soluble and insoluble) - for all aspects of cardiac health. *Ann Int Med Vol. 98; No. 5, Part 2 May 1983*

Garlic - through food for short-term reduction total, LDL, triglycerides. *Santos OS de A, et al. Effects of garlic powder and garlic oil preparations on blood lipids, blood pressure and well being. Br J Clin Res 6: 91–100, 1995*

Magnesium - 300 to 400 mg daily from supplements for all aspects of cardiac health. *Am J Carido 9/03, Am Heart J 6/03, Ann of Phar 2/02, Hypertension 2003* Higher serum levels of magnesium may reduce the risk of hypertension by almost 50% and the risk of coronary artery calcification by 42%. *Nutrition Journal, June 2016,* Helps prevent vascular calcification. *Nutrients, January 2020* The #1 cause of heart attack and stroke IS NOT HIGH CHOLESTEROL… it is magnesium deficiency! *Harvard Public Health School Research Analysis 2020)*

Multivitamin/Mineral - for all aspects of cardiac health. *J Nutr 8/03, Am J Med 12/16/03* A study of 8,678 women found that multivitamin use lowered mortality rates over a twenty year period. *J Nutr 3/15.* According to Harvard researchers who followed 18,530 male physicians for over 20 years, the ones who were taking a multivitamin had a 44% lower risk of heart attack compared to those taking the placebo. *Journ of Nutr, May 2016*.

Niacin – While this B vitamin has been found to lower cholesterol, LDL and triglycerides, its biggest benefit appears to be in raising HDL, the good cholesterol. However, the dose (2 to 3

g/d) and the delivery method (controlled release) are considered crucial to success against cholesterol. *CNN Health Review, August 2009*

Plant Sterols/Stanols (free form) - Minimum 3 grams for LDL. *Am Heart Ass 12/10/01, Nutr 2003;19, J Nutr 2000;130, Am J Clin Nutr 2002;76, Lipids 2003;38, J Am Diet Ass 2002;102*

Potassium Citrate – 200-400 mg. is beneficial, especially for high blood pressure or inability to get at least 3000 mg. from foods.

Probiotics – The consumption of 2 probiotic strains (especially lactobacillus acidophilus and bifido bacterium) for 12 weeks lowered triglycerides 18% and increased the apolipoprotein and good LDL particle size in hypertriglyceridmic subjects. *Atherosclerosis, November 2015.*

Red Yeast Rice – Well known to contain a statin used in pharmaceutical drugs (lovastatin), this fungus-based supplement has delivered strong clinical results in lowering LDL by 20 to 30%. The concern with this product is controlling the consistency of lovastatin levels in the product. *CNN Health Review, August 2009*

Vitamin C - 500 mg daily in supplement form for all aspects of cardiac health, including CRP/inflammation reduction. *J Am Coll Nutr 4/04*, *Circ 10/30/01*

Vitamin D (including cod liver oil) – 1000+IU/25 mcg. for all aspects of cardiac health. *J Clin Endo & Metab 2001;86:1633-1637* A 2022 study from *Journal of the Endocrine Society* found that subjects who were Vitamin D deficient were at a significantly increased risk of myocardial infarction (heart attack).

Vitamin D supplementation in a cohort of children demonstrated positive effects on HDL cholesterol, LDL cholesterol, and total cholesterol, especially at the lower dosage of 600IU, with several significant changes persisting during the post-supplementation period, according to the authors of a *The American Journal of Clinical Nutrition* study.

Vitamin E (mixed tocopherol with tocotrienols) - 200IU to 400IU for all aspects of cardiac health. *Lancet 2002;359, Am J Clin Nutr 8/02, J Am Coll Caridol 1999;34(4)* If there is a genetic defect, a greater amount may be recommended.

Vitamin K – 200-300 mcg. can boost cardiovascular health by reducing arterial stiffness and improving blood pressure. If you are on a blood thinning medication or have a family history of excessive clotting disorder, you should avoid **supplemental** vitamin K. *Journal of American Heart Association July 2019* Data presented at the American Society for Nutrition's annual meeting suggest increasing Vitamin K intake from food to maintain stable anticoagulation while on warfarin in those who have instability with it in the past. *December 2019* People who eat a diet rich in vitamin K have up to 34 percent lower risk of atherosclerosis-related cardiovascular disease. Foods high in vitamin K include green leafy vegetables, meat, eggs, and fermented food such as cheese. *Journal of the American Heart Association 2021*

In individuals with diabetes, supplementation with 10 mg vitamin K1 per day may prevent the development of newly calcifying lesions within the aorta and the coronary arteries, according to research in *The American Journal of Clinical Nutrition*.

Zinc – 15-35 mg. (do not go over 50 mg. daily since this can suppress your immune system) Low serum zinc levels correlate with hypertension as well as CHD, type 11 DM, hyperlipidemia, elevated lipoprotein, and insulin resistance. Zinc also plays a vital role in many biological processes such as insulin action and carbohydrate metabolism. It also may have a protective role in the prevention of heart disease through improved lipid markers. *Houston, Mark, M.D. Nutraceuticals, Vitamins, Antioxidants and Minerals in the Prevention and Treatment of Hypertension and Cardiovascular Disease. July 28, 2010; 2015 September issue of Nutrition Journal.*

Heart Healthy Pantry Essentials

Carbohydrates

(= Items may be best kept in the freezer)*

- Brown/black/red rice
- Buckwheat groats (such as Wolff's Kasha)
- Quinoa
- *Flaxseed (finely ground)
- Organic canned beans (pre-cooked variety)
- *Raw or dry roasted pecans/walnuts
- *Raw or dry roasted whole almonds/cashews
- Raw or dry roasted sunflower/pumpkin seeds

Condiments/Flavor Enhancers/Soups/Canned Foods

(= Items may be best kept in the refrigerator)*

- *Cold expeller pressed organic canola oil
- Extra virgin olive oil
- *Cold pressed grapeseed oil
- *Cold pressed sesame oil
- *Avocado oil
- *Tamari lite (low sodium soy sauce substitute- best if gluten-free)
- *Brown rice vinegar
- Sea salt (best if iodized)
- Organic dried spices and herbs (fresh are best)
- Stevia powder or liquid (organic)
- Monk fruit extract (organic- 200 times sweeter than table sugar)
- Organic chicken broth/bone broth
- *Arrowroot (kudzu) powder (thickener)
- Nori dried seaweed sheets or Wakame dried seaweed flakes (plain or flavored; great flavor enhancer instead of salt)
- Canned wild salmon
- Canned sardines

- Canned wild tuna

Drinks

- Sparkling, plain, or flavored mineral or filtered spring water (especially Gerolsteiner and Fiji waters)
- Distilled electrolyte water
- Green tea *J Nutr 10/03*
- Black tea
- Hint fruit flavored enhanced waters
- Spice teas (especially ginger and parsley)
- Coffee (organic fair trade)
- 6 oz. serving low-sodium V-8 juice (also a great enhancement for soups and stews)
- Red Wine (especially low pesticide sources from Italy, New Zealand, Australia, & Napa Valley) *Arch Int Med 3/22/04, Am Heart Ass 9/4/02, NEJM 1/9/03, Am J Clin Nutr 2002, Alcoh Clin 8/02, E J Clin Nutr 2002*

Have on Hand Regularly in your refrigerator or freezer

- Frozen veggies (single type or medleys; especially broccoli, cauliflower, cauliflower rice, Brussels sprouts)
- Frozen blueberries (no sugar added)
- Frozen cherries
- Organic apples (especially Fuji)
- Avocado/Guacamole
- Fresh organic herbs (requires refrigeration)
- Onion family (garlic/scallions/shallots/chives/leeks)
- Garlic
- Lemons/Limes
- Eggs (organic with added omega-3/DHA fats)
- Shredded cruciferous vegetables (cabbage/broccoli/Brussels sprouts)
- Organic greens (pre-washed), such as mixed baby greens, Mediterranean blend, Caesar blend, baby Romaine)
- Sweet potatoes
- Organic black/brown olives
- Organic hummus

Lifestyle Suggestions

☼ **Stress Reduction** (massage, relaxation techniques, nature walks, etc.). *Circulation 3/22/04*

☼ **Lower Anxiety Level** because it increases the risk of major cardiac events in coronary heart disease. *Current Opinions in Psychiatry 3/16*

☼ **Exercise** (brisk walk of at least 30 minutes 5-7 days weekly). *American Heart Association 11/17/03, Stroke 10/03*

☼ **Stand rather than Sit** (even an extra 2 hours a day can make a big difference!)

☼ **Optimism**. *Psychosomatic Med 2/22/02*

☼ **Positivity** has been found by researchers to improve the outcome in patients with heart disease. *Psychosomatic Med 2015*

☼ **Yoga/Tai Chi**. *British Medical Journal 2001;323:1446-1449*

☼ **Sauna**. *J Am Coll Cardiol 2001;38:1083-8*

☼ Far Infrared sauna

☼ Monitor or choose options of **nonsteroidal antinflammatory** drug therapy.
Archives of Internal Medicine 2002; 162:2204-2208

☼ Limit **sodium** (< =1800 mg daily), but don't limit too much. A 2016 study in *Lancet* found that a diet ***too low*** in sodium may actually increase the risk for cardiovascular disease. Make sure you get potassium which is the great equalizer for potential negative effects of excess sodium. A May 2020 study in *Nutrients* echoed this sentiment as well.

☼ Follow a **Mediterranean Type Diet** including fish, olives/olive oil, onion family, and a wide variety of vegetables.

☼ Men should not take supplemental calcium unless they have less than 800 mg. daily intake. A 2016 study revealed that men who took more than 1000 mg. or more of supplemental calcium had a slight increased risk of all-cause mortality (much of the risk from CVD-related outcomes).

☼ Avoid heavy **alcohol** consumption (mild consumption, especially from red wine, may be okay if there is no medication interference).

☼ Limit **environmental toxins** and **air pollution** exposure. *JAMA, March 17, 1996; BMJ November 2015*

☼ Monitor your **blood pressure** regularly.

☼ "**Relaxing Breath**" technique (for tense moments and before going to bed) - inhale for a count of four, hold the breath for seven beats, then exhale for an eight count. *Dr. Stephen DeVries; "Doctor Beats a Wider Path to Heart Health," Chicago Tribune*

☼ **Be social.** An 8-year study published in *JAMA Network Open* showed that social isolation and loneliness were associated with an increased risk for incident CVD in postmenopausal women by 8% and 5%, respectively. For older women who experience high levels of both social isolation and loneliness, the increased risk was up to 27%.

☼ **Get your sleep.** A study from European Heart Journal states the large the number of insomnia symptoms, the higher the risk of newly diagnosed heard failure over 11 years of follow-up.

☼ **High cholesterol** is no longer the gold standard for cardiac risk. Use the serum heart screening chart for "state-of-the-art" reference. In fact, your cholesterol can even change depending on the season (higher in fall/winter, lower in spring/fall). *Arch Int Med 4/27/04* Make sure to be aware of your HDL-LDL ratios. As many know, it is very good to have a high HDL level, but a study in the *European Heart Journal* found that men and women with extremely high levels are at a higher risk for mortality (106% for men and 68% for women). A March 2019 study in the *British Journal of Clinical Pharmacology* further elucidates a major, yet often ignored, side effect of statin cholesterol medication: **type 2 diabetes.** Statin users had a 38% higher risk of incident type 2 diabetes than non users.

☼ Monitor your **Triglycerides** regularly. In a transformational study published in *Clinical Lipidology*, strong evidence suggests that the hypertriglycerdemic waist phenotype maybe useful in identifying those individuals with high cardiac event risk. The combination of elevated waist girth and triglyceride levels could identify individuals with increased amounts of visceral fat that are characterized by a deteriorating cardiometabolic risk profile. According to the most recent NHANES survey, almost half of all U.S. adults have borderline-high (31.0%), high (16.2%), or very high (1.1%) triglyceride levels. The prevalence of hypertriglyceridemia increases with age. There is ever-growing evidence that Triglycerides are not just a marker of increased cardiovascular (CV) risk, but rather a causal factor that rivals LDL-C, according to a May 2018 study in *European Heart Journal*.

☼ Be cautious when doctors recommend **Cholesterol Lowering Medication or Statins**. These can increase the risk of stroke, heart attack, and development of Type 2 diabetes by 46%. Even doctors who originally deemed statins safe are changing their tune due to the devastating side effects and new research that has found statins may actually CAUSE coronary artery calcification. Statin use attenuated substrate use during maximal exercise performance, induced muscle fatigue during repeated muscle contractions, and decreased muscle mitrochondrial oxidative capacity. This suggests disturbances in mitochondrial oxidative capacity occur with statin use even in patients without statin-induced muscle complaints. *Neeltje,A et al. Statins Affect Skeletal Muscle Performance, J Clin Endocrinol Metab 2018; 103(1):75-84.* Idiopathic Inflammatory Myositis (IIM), a group of autoimmune myopathies, has now been linked to statin use. *JAMA Internal Medicine, October 2018.* The benefits of statin treatment have been exaggerated and there needs to be a re-evaluation of the guidelines for cardiovascular prevention. *Ravnskov U et al. BMJ Open 2016;6:010401* In December 2019, the FDA issued a new statin warning: **Immune-mediated necrotizing myopathy**, which should be appearing on labels in the beginning of 2020. It can cause muscle cell death (necrosis) that leads to weakness of the skeletal muscle. Beatrice Golomb, lead researcher at University of California-San Diego, has collected reports of broken marriages, destroyed careers, and a surprising number of men who have come unnervingly close to murdering their wives. In almost every case, the symptoms began when they starting taking statins, then promptly returned to normal when they stopped.

Women handle statin drugs very differently than men. Beatrice Golomb, PhD., M.D., has extensively researched this issue. Her advice for women is "unless you have had a heart attack, stroke, bypass surgery, or stents, the risk of taking a statin drug far outweighs the benefits." Common serious side effects include joint/muscle pain, short-term memory loss, and excessive hair shedding.

This is right from the horse's mouth: "The US Preventative Services Task Force concludes that the current evidence is insufficient to assess the balance of benefits and harms of initiating a statin for the primary prevention of CVD events and mortality in adults 76 years or older."

This was published in September 2022 in JAMA. Please speak with a health professional that will work with you to find statin alternatives if you are 76 or older (and for many under 76 as well).

☼ **Cholesterol Lowering Therapy Update** As we have reported recently from multiple medical journals, there is much more to managing cholesterol that just statin medication. Specifically, statins do nothing to lower small particle LDL, which comprises the greatest cardiovascular risk when levels are high.

A new study from *American Journal of Cardiovascular Drugs* mentions new pharmaceuticals that, are either here or coming soon, claim to do a much better job managing cholesterol than statin medication.

Note: we do not condone medication unless it is the last resort, of if you have heterozygous familial hypercholesterolemia. However, if you are currently on a statin, we want you to be as informed as possible about alternatives.

PCSK9-inhibitors, whose effects on cardiovascular outcomes are well-known but are still too costly for the masses, hopefully will come down in price, because they actually lower small particle LDL levels.

Recently approved inclisiran is a monoclonal antibody, thus an option in patients who are statin intolerant or for whom a statin is contraindicated. It was also found to be efficacious for heterozygous familial hypercholesterolemia.

Recently approved bempedoic acid focuses on lipid lowering in the small intestine, thus is an option in patients who are statin intolerant or for whom a statin is contraindicated.

The aforementioned will become part of daily use recommendations, if not already. PCSK-9 inhibitors seem relatively well tolerated, but we would not recommend taking inclisiran or bempedoic until there is more long-term safety data.

Evinacumab is a potent inhibitor of lipoprotein lipase, which helps lower plasma levels of triglycerides as well as LDL. This therapy is currently in phase II trials. While we abhor any kind of inhibitor, we mentioned it because it's at least encouraging that scientists realized that there is more to the cardiac puzzle than just lowering LDL. Triglycerides play a huge part.

Lipidomics This new screening tool gives you an idea how ludicrous relying on just serum LDL levels really is. According to this state-of-the-art screening tool, there are 282 lipid (fat) biomarkers, 69 of which are associated with at least cardiovascular disease and type 2 diabetes.

In the very near future, this screening tool should be widely available to physicians all over the world. We just need them to use it!

In the *Circulation* study, researchers tested dietary elements that would lower some of the bad lipid biomarkers. Monounsaturated fatty acids such as olive oil, and omega-3 fatty acids such as fish oil, were found to be most effective for lipid risk reduction.

☼ **Triglycerides** are finally getting the respect they deserve for their importance to your health. Triglycerides are part of a standard lipid panel. Until recently, physicians have not paid as much attention to this diagnostic tools as others such as LDL cholesterol. The tide seems to be turning.

For example, a new study from *Neurology* suggests that people who have a stroke along with higher levels of triglycerides, have a higher risk of having another stroke or other cardiovascular problems one year later, compared to people who had a stroke but have lower triglyceride levels.

Another study from *Nutrients* suggests that men with high triglycerides have a higher risk of prostrate cancer and should be monitored more closely.

High triglycerides also can accelerate the aging process.

At Nutritional Concepts, we consider the lipid marker triglycerides as important, if not more so, than LDL cholesterol when assessing not just cardiac, but overall health? A recent study in *Nutrients* found that high serum triglyceride levels are independently and negatively correlated with prostate cancer among American males. Another study from *Neurology* states that people who have atherothrombotic stroke have higher levels of triglycerides, and may have a higher risk of having another stroke or other cardiovascular problems one year later. The study found an association even when people were taking statin drugs to protect against heart attach and stroke. The great thing is triglycerides are easy to bring down with diet and lifestyle modifications!

Triglyceride-Glucose Index (TyG)
We have always focused on triglycerides and glucose levels (TyG index) when many did not. It is nice to finally see preprint research showing that increased TyG index is associated with a greater risk for diabetes, stroke, and coronary artery disease in healthy individuals, and it might be correlated with asymptomatic carotid artery atherosclerosis. As we have always said, there is much more to the heart health puzzle than just cholesterol. See more on this at the end of the Action Plan.

☼ Look into **alternatives for bypass surgery or angioplasty/stenting** for coronary artery disease. Enhanced External Counterpulsation (EECP) is now becoming a preferred therapy because it is non-invasive, requires no hospital stay, anesthesia, or other medications. It is very inexpensive and the course of treatment is 35 visits.

☼ Women who take antibiotics over a long period of time are at increased risk of heart attack or stroke, according to a study published in *European Heart Journal*. The group most at risk are women aged 60 or older, but women middle age (aged 40-59) are also at risk.

Heart Health Menu Ideas

BREAKFAST

Choice One –

2 whole (especially DHA Omega 3) Organic egg with 2 additional organic egg whites in scrambled or omelet form with onions/broccoli florets/baby kale/asparagus

1 whole kiwi, banana, or organic blueberries

1 cup green or black tea with lemon or 1 cup black coffee

Choice Two –

2oz. nitrate-free wild smoked salmon or 4oz. sardines with 4 slices cucumber, onion, and avocado

1 whole kiwi, banana, or organic cherries

1 cup green or black tea with lemon or 1 cup black coffee

Choice Three (if tolerated) –

6 oz. (3/4 cup) organic plain Greek yogurt or cottage cheese

1 fruit serving

Crushed nuts/seeds to sprinkle in or on top (especially flaxseed/chia seeds/pumpkin seeds/sunflower seeds)

1 cup green or black tea with lemon or 1 cup black coffee

LUNCH

Choice One –

4oz. organic sliced chicken or turkey breast with 4 cups organic baby greens

1T. olive oil and lemon or vinegar dressing

2T. Pecans/walnuts/pumpkin seeds/sunflower seeds (as a topping)

1 Fuji apple or watermelon slice

Electrolyte, Gerolsteiner bicarbonate water or Hint fruit essence water

Choice Two –

4-6oz. wild canned tuna/salmon with dark lettuce, shredded broccoli/cabbage/Brussels sprouts, and half avocado, sliced

5-8 rice or no grain almond crackers

1T. olive oil and lemon or vinegar dressing

Gerolsteiner/Pellegrino sparkling water

SNACK

Choice One –

½ RX bar (chocolate with sea salt)

Choice Two –

½ cup guacamole with celery/carrot/jicama sticks

Choice Three –

½ cup hummus with celery/carrot/jicama sticks

Choice Four –

¼ cup pecans/walnuts/sunflower seeds/pumpkin seeds with apple or pear slices

DINNER

Choice One –

4-6oz. organic baked or rotisserie chicken (remove skin)

½ large sweet potato

Kale or bok choy sautéed in garlic and olive OR grapeseed oil

1 cup decaf green or black tea with stevia extract OR sparkling water

Choice Two –

DINNER LETTUCE CUPS
-2 T. avocado oil
-1 lb. ground free range/hormone-free ground chicken
-1/4 cup organic red bell pepper, finely diced
-1/2 cup organic scallions (some green parts), finely diced
-1/4 cup organic celery, finely diced
-1/4 cup water chestnuts, finely diced
-1 cup cooked brown/Jasmine rice (preprepared organic frozen is easy)
-optional: 1/4 cup finely chopped dry roasted cashews (unsalted)
-1/4 cup San-J or other gluten-free Teriyaki sauce
-8-12 large organic Bibb or Boston lettuce leaves

Heat a large skillet with oil. Add the vegetables, and cook on a medium high heat for 2 minutes. Add the ground chicken and sauté, stirring frequently with a wooden spoon, until the chicken is white and cooked through. Add the optional cashews and rice until warmed. Add the teriyaki and stir to blend all ingredients. Just before serving, stuff the lettuce leaves with the mixture. If left-overs, this recipe can be frozen (without the lettuce). SERVES: 4

Choice Three –

6-8oz. broiled/grilled/poached wild salmon or halibut

1 whole artichoke, steamed and served with garlic flavored olive oil or 3/4c. marinated artichoke hearts on a bed of baby greens with olive oil and lemon dressing

1/2-3/4c. parslied brown rice or quinoa (precooked organic is easy)

Sparkling or electrolyte water

DESSERT/TREAT

Choice One –

¾ cup melon chunks

Choice Two –

¾ cup mango/papaya chunks

Choice Three –

5-6oz. red wine (especially Pinot Noir) or ¾ cup sweet cherries

Long-Term Dietary Principles to Live By!

-Avoid Sugar
-Avoid artificial sweeteners which have been proven to be a direct cause of diabetes
-Consume adequate Omega-3 fatty acids while managing your Omega-6 intake
-Avoid trans fats (partially hydrogenated or hydrogenated oils) and saturated fats that are fried and mixed with refined sugar
-Make sure your plate is balanced – 50% carbohydrates (2/3 from fruits and vegetables), 30% from lean protein, and 20% from healthy fats

Triglyceride-Glucose Index May Help Predict ASCVD Risk
By Dawn Elliott Knapp, PA-C
January 31, 2022
The study covered in this summary was published on ResearchSquare.com as a preprint and has not been peer reviewed.

Key Takeaways

- Researchers found an independent relation between the triglyceride-glucose (TyG) index and thoracic-aorta intima-media thickness (IMT), an early marker of subclinical atherosclerosis in patients without atherosclerotic cardiovascular disease (ASCVD). They concluded that the TyG index can be used to identify otherwise healthy patients at an increased risk for ASCVD.

- Increased TyG index is associated with a greater risk for diabetes, stroke, and coronary artery disease in healthy individuals, and it might be correlated with asymptomatic carotid artery atherosclerosis. An IMT greater that 1.5 mm has been associated with an increased risk for coronary artery disease and stroke.

- TyG, an independent marker of insulin resistance, is easily calculated from fasting glucose and triglyceride levels, making it a potentially valuable tool for clinical practice.

Why This Matters

- This study is the first to show an independent relation between the TyG index and thoracic-aorta IMT.

- The TyG index could be used as a relatively simple, noninvasive test to predict cardiovascular risk as an initial alternative to more complex studies, such as carotid ultrasound or echocardiography.

Study Design

- A total of 122 patients undergoing transesophageal echocardiography (TEE) for suspected noncoronary structural heart disease between January and June 2021 were enrolled in the study. The population was divided into two groups of 61 patients, according to IMT: high IMT (> median) or low IMT (≤ median); the median IMT was 1.42mm.

- Patients with known cardiovascular disease or those taking drugs that affect lipid characteristics or insulin sensitivity were excluded.

- Fasting blood samples were drawn before the TEE procedure. The TyG index was calculated using the formula TyG = In [(glucose (mg/dL) triglycerides(mg/dL/2], and major risk factors for cardiovascular disease were recorded for each participant.

- SPSS 22.0 software was used for statistical analysis. Variables known to play a role in atherosclerosis were entered into the regression model, with $P < .05$ considered statistically significant.

Key Results

- The TyG index was higher in the high IMT group (8.69 $\pm$ 0.59 vs 8.37 $\pm$ 0.53; $P = .003$). The index was correlated with IMT ($P = .005$) and age ($P < .001$).

- People in the high-IMT group were older, with higher creatinine, glucose and triglyceride levels, and a higher TyG index.

- Sex, smoking status, cholesterol levels, and TEE indications were similar among the high-IMT and low-IMT groups.

- Although IMT was correlated with age, glucose, triglycerides, creatinine and TyG index, no correlation was seen with cholesterol levels.