

SUGGESTED SOLUTIONS

Ask your doctor if you need a stress thallium or adenosine thallium test to check for coronary artery disease (blocking of arteries supplying the heart)

Your risk for coronary artery disease may be higher if you are a male 45 years or older, female 55 years or older, have hypertension, high LDL cholesterol, low HDL cholesterol, high triglycerides, smoke, are starting an exercise program more vigorous than walking, or have diabetes mellitus and even one additional risk factor for coronary artery disease: proliferative retinopathy (blood vessel changes in the eyes), nephropathy (kidney damage from diabetes mellitus), blockage of other blood vessels in the body or autonomic neuropathy (damage to small nerves which regulate heart rate, blood pressure variation and stomach and intestinal emptying) Reference: American College of Cardiology Foundation

www.acc.org www.americanheart.org

My Stress Thallium shows _____.

DISEASE MANAGEMENT/ SCREENING GUIDELINES IN THE UNITED STATES

Screening for coronary artery disease should be considered for individuals at high risk.

(American College Of Cardiology Foundation www.acc.org)

STATISTICS / RISK REDUCTION

CARDIOVASCULAR DISEASE

- HEART ATTACK AND
STROKE

An estimated 17.5 million deaths occur from cardiovascular disease worldwide each year. In 2005, 7.6 million people died of heart attacks and 7.5 million died due to strokes.

(World Health Organization

Cardiovascular Disease
Program,

http://www.who.int/cardiovascular_diseases/en/)

In 2008, an estimated 770,000 people in the United States were expected to have a new heart attack and 430,000 are expected to have a recurrent heart attack.

In 2008, an estimated 770,000 people in the United States were expected to have a new or recurrent stroke.

(www.americanheart.org/statisti cs)

In 2005, 80.7 million people in the United States had some form of cardiovascular disease.

(www.americanheart.org/statistics)

Lipid status: (fat levels in the blood)

 Your cholesterol (lipid) levels should be checked two to three times a year (depending on your levels and medications used).

My lipid profile showed

 Cholesterol levels should be less than 200 mg/dl, triglycerides less than 150 mg/dl, LDL less than 70 mg/dl or 100 mg/dl depending on your condition.

HDL should be greater than 50 mg/dl for women and greater than 40 mg/dl for men.

Find out if you need a Statin, Fibrate, or Cholesterol Absorption Inhibitor, Bile Acid Binding Resin, or HDL raising ADA/AHA 2007 Scientific Statement:

Elevated LDL cholesterol is still the primary target for lipid lowering therapy. LDL cholesterol should be less than 100 mg/dL or less than 70 mg/dL in high risk individuals.

Triglyceride levels should be less than 150 mg/dL.

According to the American Heart Association Guidelines, if triglycerides are 200-499 mg/dL, non HDL goal should be less than 130 mg/dL.

If triglycerides are greater than 500 mg/dL, lowering triglycerides is the primary target.

According to Adult Treatment Panel III update:

The lower the LDL-cholesterol levels in high risk patients, the better the risk reduction for major cardiovascular events. For every 30 mg/dL decrease in LDL-cholesterol, the relative risk for coronary heart disease is decreased by 30%.

Lowering LDL cholesterol using statins have shown 20-40% risk reduction for coronary heart disease.

http://www.medscape.com/view article/569095

In individuals with diabetes, controlling lipids leads to 36-

medication (Niaspan).
My cholesterol –lowering medication is
My HDL-raising medication is
If your triglycerides are elevated you

 If your triglycerides are elevated, you should check with your doctor about the best lipid lowering agent for you. That could be a Fibrate, Lovaza (omega-3 acid ethyl esters) or Niaspan.

My triglyceride-lowering medication is

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- Ask your doctor if you are a candidate for supplementation with omega 3 fatty acids (DHA & EPA).
- Lovaza (omega-3 acid ethyl esters) is a FDA approved omega 3 fatty acid product. Over the counter products are also available.

1 capsule of over the counter fish oil is equivalent to 300mg of DHA & EPA.

1 gram of a Lovaza (omega-3 acid ethyl esters) capsule has 840 mg of DHA & EPA.

- If you do not have coronary artery disease, you could benefit from 1-2 capsules of fish oil or 1 tablet of Lovaza a day (at least 500 mg of omega 3 fatty acids daily).
- If you do have coronary artery disease, you would benefit from 3-4 capsules of fish oil or 1-2 capsules of Lovaza a day (at least 1 gm of omega 3 fatty acids daily).

A serving of one oily fish per week may reduce cardiovascular risk by 15% in those individuals who never had a cardiac event.

My fish oil intake is .

(Buse JB, et al. Diabetes Care.2007; 30:162-172. http://care.diabetesjournals.org/cg i/content/full/30/1/162)

HDL has been proposed to be a tertiary target after LDL goals (less than 100 mg/dL 0r 70 mg/dL) and triglyceride goals (less than 150 mg/dL) have been met. HDL levels should be greater than 40 mg/dL in men and greater than 50 mg/dL in women.

The American Diabetes
Association proposes that HDL be
a secondary target along with
triglycerides with a goal of HDL
levels being similar to that
proposed by the American Heart
Association.

(http://www.medscape.com/viewa rticle/571594)

44% risk reduction for CHD events (CARDS, CARE/LIPID, 4S)

Controlling lipids leads to 25-48% risk reduction for strokes (CARDS, 4S, HPS)

For every 10 mg/dL decrease in serum triglyceride level there was 1.4% decrease in the incidence of death, myocardial infarction, and recurrent acute coronary syndrome.

The lowest CHD risk was observed in the cohort with triglycerides less than 150 mg/dL and LDL cholesterol less than 70 mg/dL.

These individuals were on Pravastatin or Atorvastatin in the evaluation and infection therapy-thrombolysis in myocardial infarction study.

(Impact of Triglyceride Levels Beyond LDL Cholesterol After Acute Coronary Syndrome in the PROVE IT-TIMI 22 Trial Miller M. et al. Journal of American College of Cardiology 2008 Feb. 19;51(7)[724-730] www.circ.ahajournals.org/cgi/co ntent/full/115/4/450)

Every 1 mg/dL increase in HDL is associated with a 2-4% decrease in residual risk for coronary heart disease.

(http://www.medscape.com/vie warticle/569095) (Brown BG et. al. New England Journal Med. 2001;345:1583-1592 http://content.nejm.org/cgi/cont ent/full/345/22/1583)

Individuals with HDL cholesterol of less than 35 mg/dL had an 8-fold higher incidence of cardiovascular disease compared to those with HDL greater then 65 mg/dL.

(High Density Lipoprotein As A Therapeutic Target http://jama.ama-assn.org/cgi/content/full/298/7/78 6)

3 kg (about 6.7 lb) weight loss may lead to 1 mg/dL increase in HDL cholesterol. Diet rich in mono and poly unsaturated fatty acids may lead to 5% increase in HDL cholesterol. Tobacco cessation may lead to 5-10% increase in HDL cholesterol. Aerobic exercise may lead to 5-10% increase in HDL cholesterol. (http://www.medscape.com/vie warticle/569095) The GISSI trial has shown that 4 months treatment with Omega 3 Fatty Acids (1 capsule a day with 850 mg of DHA and EPA) reduced sudden cardiac death by 45% and risk of death from any cause by 28%. The JELIS study using a statin and EPA (1.8 gm per day) showed a 19 % reduction in cardiovascular events in those individuals with previous underlying coronary artery disease. In the above two studies. individuals were maintained on statins, aspirin, beta blockers and angiotensin converting enzyme inhibitors. (http://www.medscape.com/vie warticle/571594) (Review: Omega-3 Fatty Acids for Cardio protection. John H Lee et al. Mayo Clinic Proceedings: 2008;83: 324-332 http://www.mayoclinicproceedin gs.com/content/83/3/324.full) HYPERTENSION (HIGH BLOOD Blood pressure: Have your blood pressure checked HYPERTENSION (HIGH three to four times a year; it should PRESSURE: BLOOD PRESSURE) be less than 130/80mm Hg. Current guidelines state that normal blood pressure is less World Wide estimates of (Source: Joint National Committee On than 120/80. individuals with hypertension Prevention, Detection, Evaluation And Pre-hypertension is systolic are 1 billion people currently. Treatment Of High Blood Pressure. blood pressure of 120-139mm Hg Http://Www.Nhlbi.Nih.Gov/Guidelines/H or diastolic blood pressure of 80-In 2000, 972 million adults were 89mm Hg. ypertension/Jnc7full.Pdf) estimated to have hypertension Stage 1 hypertension is (high blood pressure) My blood pressure is . systolic blood pressure of 140worldwide. By 2025, that 159 mm Hg or diastolic blood number is estimated to rise to See if your doctor can prescribe an pressure of 90-99 mm Hq. 1.56 billion. (The Lancet: 365: ARB Therapy (Angiotensin Receptor Stage 2 hypertension is 9455 January 15, 2005:217-Cardiovascular System - Page 3 of 11

Blocker) (Example: Valsartan, Irbesartan, Losartan), or ACE Inhibitor Therapy (Angiotensin Converting Enzyme Inhibitor) (Example: Ramipril, Lisinopril, Enalapril) for blood pressure control and for protective effect for your kidneys, heart, and brain.

Combination therapy using ARB Therapy (Example: Valsartan, Irbesartan, Losartan) or ACE Inhibitor Therapy (Example: Ramipril, Lisinopril, Vasotec) With a Calcium Channel Blocker (Amlodipine) may provide faster achievement of blood pressure goal and better protective effect for your heart and brain.

You may need additional therapy with beta blockers, calcium channel blockers, and direct renin inhibitor to achieve blood pressure goal.

My blood pressure medications are

systolic blood pressure of 160mm Hg or greater or diastolic blood pressure of 100mm Hg or greater.

• Regular screening for hypertension should be done at least every 2 years and more frequently in minority population and the elderly.

(Source: Joint National Committee On Prevention, Detection, Evaluation And Treatment Of High Blood Pressure.

http://www.nhlbi.nih.gov/guideline s/hypertension/jnc7full.pdf)

The JNC VII/American Diabetes Association/American Heart Association/recommendation is maintaining blood pressure of less than 130/80 mm Hg. (www.guidelines.gov) 223)

73 million individuals in the United States had hypertension in 2005.

(www.americanheart.org/statistics)

The risk of cardiovascular disease, beginning at 115/75 mm Hg doubles with each increment of 20/10 mm Hg.

(Source: Joint National Committee On Prevention, Detection, Evaluation And Treatment Of High Blood Pressure.

http://www.nhlbi.nih.gov/guidelines/hypertension/jnc7full.htm)

Every 10mm lower usual systolic blood pressure or a 5mm lower usual diastolic blood pressure would predict a 50-60% lower risk of stroke death and approximately 40-50% lower risk of death due to coronary artery disease or other vascular event.

(AHA Scientific Statement

Circulation, 2007; 115:2761-2788 Clive Rosendorff M.D. et.al.

http://circ.ahajournals.org/cgi/content/full/115/21/2761)

- Controlling blood pressure leads to 16-25% risk reduction for MI, stroke, and cardiovascular mortality (ASCOT, LIFE, MICROHOPE)
- Controlling blood pressure reduces stroke risk by 22-50% (UKPDS, LIFE, MICROHOPE)
- Controlling blood pressure with Valsartan in the VALUE Trial, led to 19% fewer hospitalizations for heart failure, compared to the Amlodipine group.
- However failure to control blood pressure with Valsartan to the same level as Amlodipine in the first 6 months, led to increased risk of stroke, myocardial

		infarction, and death.
		Therefore it is important to achieve blood pressure goal sooner than later.
		(Stevo Julius et al. The Lancet; 19. June, 2004;363;9426;2022- 2031 http://www.lancet.com/journals/l ancet/article/PIIS0140- 6736(04)16451-9/fulltext)
		Controlling blood pressure with a combination of calcium channel blocker (Amlodipine) and ACE inhibitor (Perindopril) showed a 14-26% risk reduction for myocardial infarction, angina, heart failure, stroke, peripheral arterial disease, new onset of renal insufficiency and cardiovascular events and mortality compared to the regimen using betablocker (Atenolol) and thiazide diuretic.
		(ASCOT-BPLA Study: Björn Dahlöf et al. The Lancet; 366;9489;895-906 http://www.thelancet.com/journ als/lancet/article/PIIS0140- 6736(05)67185-1/fulltext)
Use of Aspirin:	 Ask your doctor about the benefits of a baby aspirin (81 mg) daily for prevention of stroke and heart attack. Find out if you need additional therapy with Plavix if you have advanced disease involving the heart or brain. Find out if you need to see a 	Aspirin therapy demonstrated 16-33% risk reduction for non fatal myocardial infarction, stroke, and cardiovascular mortality in individuals with previous vascular disease or at high risk for vascular disease. Collaborative meta analysis of
	cardiologist (heart specialist). Does my medication list include aspirin?	randomized trials of anti-platelet therapy for prevention of death, myocardial infarction, and stroke in high risk patients.
		BMJ 2002; 324:71-86 http://www.bmj.com/cgi/content/ full/324/7329/0
		Aspirin therapy should be considered in men older than 40 years; post menopausal women; younger individuals with risk factors for coronary artery disease i.e. diabetes, hypertension or smoking.
		(Aspirin for the Primary Prevention of Cardiovascular Events: Recommendation and

Services Task Force, USPSTF Web site, www.annals.org 136;2;Jan 15 2002) (Executive Summary: Standards of Medical Care in Diabetes- 2009, Diabetes Care, Volume 32, Supplement 1, January 2009) http://care.diabetesjournals.org/ cgi/content/full/32/Supplement 1/S13 OBESITY Diet and Eating See grocery shopping guide BMI is defined as the weight in Pattern (Attachment 1) for maintaining a low fat, kilograms divided by the square • There are an estimated 300 low sugar diet with unlimited of height in meters (kg/m²) million obese adults vegetables, white meats; whole grains worldwide. in moderation (never be hungry or you More than 1 billion adults Normal BMI (according to World may indulge in the wrong food). Keep Health Organization) is defined as are overweight globally. track of your weight, height, and BMI. 18.5-24.9 kg per square meter. According to WHO estimates, the number of overweight Overweight is defined as body (BMI 25-30) and obese (BMI My weight is _____ mass index (BMI) 25-29.9 kg per >30) individuals are set to square meter. increase to 1.5 billion by 2015 My height is _____ based on current trends. Obesity is defined as BMI greater My BMI is _____ than 30 kg per square meter. (World Health Organization www.who.int/dietphysicalactivity Ask your doctor if you are a candidate Extreme obesity is BMI 40 kg per /publications/facts/obesity/en/pri for bariatric surgery especially if your square meter or higher. nt.html) BMI is greater than 35 kg/m². Weight Reduction toward normal Obesity is the major risk factor BMI is recommended because it for cardiovascular disease If you do have that surgery you will require life long follow up and careful will decrease blood pressure and which claims more than 17 may also reduce the risk of monitoring. million lives a year globally. stroke. (Diabetes Care, Volume 32, (http://circ.ahajournals.org/cgi/c Supplement 1, January 2009) (http://www.guidelines.gov/summ ontent/short/113/6/e85) ary/summary.aspx?doc id=6824 &nbr=004191&string=BMI) 142 million people in the United States are estimated to be overweight and obese. (www.americanheart.org/statisti cs) Obesity may be responsible for 300,000 deaths yearly in the United States. Any weight loss (even 5-15%) may reduce risk for heart disease by lowering blood pressure, blood sugar and cholesterol levels. (http://www.surgeongeneral.gov /topics/obesity/calltoaction/fact consequences.htm) There was a 17-27% risk reduction for all coronary heart disease, fatal coronary heart Cardiovascular System - Page 6 of 11

Rational, U.S. Preventive

disease, and stroke in individuals following the DASH style diet. That was high intake of fruits, vegetables, whole grains, nuts, and legumes and lower intake of red and processed meats, sweetened beverages, and sodium. (Fung TT, et al. Adherence to a DASH-style diet and risk of coronary heart disease and stroke in women. Arch Intern Med 2008; 168: 713-720) Individuals age 70-90 years adhering to a Mediterranean diet and healthy lifestyle: increased physical activity, moderate alcohol use, nonsmoking, and following a Mediterranean style diet fincreasing consumption of vegetables, fruits, whole grains, fish, low fat dairy, nuts, olive oils]) appeared to have a 50% lower rate of all-cause and cause-specific mortality. (Coronary heart disease, cardiovascular disease and cancer). (Mediterranean Diet, Lifestyle Factors, and 10-Year Mortality in Elderly European Men and Women, Kim T. B. Knoops, JAMA. 2004; 292:1433-1439, Mediterranean Diet for Heart Health, http://www.mayoclinic.com/heal th/mediterranean-diet/CL00011) Consumption of red meat twice a day was associated with a 26% increase in the risk of the metabolic syndrome (Abdominal obesity, i.e. a waist circumference of 40 inches or greater in men or 35 inches or greater in women, elevated serum triglycerides of 150 mg/dL or greater, HDL cholesterol of 40 mg/dL or lower in men and 50 mg/dL or lower in women, blood pressure 130/85 mm Hg or greater, and fasting glucose of 100 mg/dL or greater). Increased consumption of fried foods was associated with a 25% increase in the development of the metabolic syndrome. Cardiovascular System - Page 7 of 11

(Two Hamburgers, an Order of Fries, and the Metabolic Syndrome to Go, Please! http://www.medscape.com/view article/569307? src=top10) (Lutsey PL, et al. Dietary intake and the development of the metabolic syndrome. Circulation 2008:DOI:10.1161/circulation.a ha.107.716159. http://circ.ahajournals.org/cgi/co ntent/abstract/CIRCULATIONA HA.107.716159v1) According to a report from the World Cancer Research Fund (WCRF) and American Institute for Cancer Research (AICR), eating a balanced, nutritious diet, maintaining physical activity, and decreasing body fat may allow some prevention of the following cancers endometrial cancer: 70%, esophageal cancer: 69%, cancer of the mouth, pharynx and larynx: 63%, stomach cancer: 47%, colorectal cancer: 45%, pancreatic cancer: 39%, breast cancer: 38%, lung cancer: 36%, kidney cancer: 24%, cancer of the gallbladder: 21%, cancer of the liver: 15%, cancer of the prostate:11%. There could be 24% prevention of all cancers. (2007 Expert Reports; Findings from Policy and Action for Cancer Prevention - Food, Nutrition, and Physical Activity: a Global Perspective; World Cancer Research Fund: American Institute for Cancer Research) http://www.dietandcancerreport. http://www.webmd.com/cancer/ news/2009 Aerobic exercise and weight bearing **Exercise Guidelines** 62% of adults in the United Exercise: recommended by the Centers States ages 18 or older, exercise of moderate intensity should be done for about ½ an hour for Disease Control and engage in some to 1 hour a day (be sure you are Prevention and the National light/moderate/vigorous leisure cleared by your doctor if you have Institute of Health state that time physical activity for 10 heart/lung/joint disease). greater than or equal to 30 minutes or greater You may need to be in a medically minutes of moderate activity supervised exercise program if you daily should be done as a part (www.americanheart.org/statistic have had previous heart disease, of a healthy lifestyle. s) Cardiovascular System - Page 8 of 11

- weakness or joint disease.
- You would need to be evaluated by your physician before starting a regular exercise program if you have a history of heart disease, or if you have 2 or more of the following risk factors for heart disease: being 45 years of age or older, have an immediate family member with a history of heart disease prior to age 55 years, are a smoker, have high blood pressure, have diabetes mellitus, are above your ideal body weight, and/or do not have an active life style. (Jonathan Meyers, PhD. Circulation. 2003; 107: e2-e5. http://circ.ahajournals.org/cgi/content /full/107/1/e2)

My exercise duration is

- High risk patients (example: with cardiac disease) should be in a medically supervised program.
- Appropriate programs would be advisable for individuals with physical/neurological deficits.

(www.guidelines.gov)

The Lack of physical activity may contribute to about 250,000 deaths per year in the United States.
Regular exercise may increase exercise tolerance, help reduce weight, reduce blood pressure, decrease LDL, raise HDL cholesterol, and increase insulin sensitivity.

(Jonathan Meyers, PhD. Circulation. 2003; 107: e2-e5. http://circ.ahajournals.org/cgi/content/full/107/1/e2)

Several epidemiological, clinical, and basic scientific evidence suggest that regular physical activity lowers the risk of coronary heart disease and should be encouraged. According to the recommendations made by The Center for Disease Control and Prevention/ ACSM, at least 30 minutes of moderate physical activity, 7 days per week should be pursued.

However, vigorous activity could increase the risk for acute myocardial infarction and sudden cardiac death even in exercise conditioned individuals. Therefore physically active children and adults as well as high school and college athletes, should be appropriately evaluated before starting a regular exercise program. Athletes with known medical conditions should be evaluated prior to competition according to the published guidelines. Exercise programs will need to be modified according to an individual's exercise capacity and needs.

(Maron BJ. et.al.. Circulation. 1998; 97: 2294 http://circ.ahajournals.org/cgi/content/full/97/22/2294) (Maron BJ. J Am Coll Cardiology 2005; 45:2-64. http://content.onlinejacc.org/cgi/content/full/j.jacc.2005.04.052v1) Paul D. Thompson et.al..

			Circulation 2007:115: 2358- 2368 http://www.circ.ahajournals.org/ cgi/content/abstract/115/17/235 8)
Smoking cessation:	IF YOU DO SMOKE, IT IS BEST FOR YOUR HEART, LUNGS, AND OTHER ORGAN SYSTEMS IF YOU QUIT SOON. ASK YOUR DOCTOR FOR ANY HELP THAT YOU MAY NEED. The last time I smoked was on Cardiovascular System - Page 10 of 11	Avoid Environmental Tobacco Smoke. (guidelines.gov)	According to a report from the World Cancer Research Fund (WCRF) and American Institute for Cancer Research (AICR), eating a balanced, nutritious diet, maintaining physical activity, and decreasing body fat may allow some prevention of the following cancers — endometrial cancer: 70%, esophageal cancer: 69%, cancer of the mouth, pharynx and larynx: 63%, stomach cancer: 47%, colorectal cancer: 45%, pancreatic cancer: 39%, breast cancer: 36%, kidney cancer: 24%, cancer of the gallbladder: 21%, cancer of the liver: 15%, cancer of the prostate:11%. There could be 24% prevention of all cancers. (2007 Expert Reports; Findings from Policy and Action for Cancer Prevention — Food, Nutrition, and Physical Activity: a Global Perspective; World Cancer Research Fund; American Institute for Cancer Research) http://www.dietandcancerreport.org/ http://www.webmd.com/cancer/news/2009 In the 20 th century there were approximately 100 million deaths globally from tobacco-associated diseases. (http://www.who.int/mediacentre/news/releases/2003/pr27/en/print.html) There could be approximately 60% reduction in the number of cancer deaths over several years with smoking cessation. (http://www.who.int/mediacentre/news/releases/2003/pr27/en/print.html)

That results in 3 million smoking related deaths, yearly. (PENNSTATE Population Research Institute, http://www.pop.psu.edu/search able/press/nov2098.htm) (last modified 9/10/07)
Research Institute, http://www.pop.psu.edu/search able/press/nov2098.htm) (last modified 9/10/07)
However, the WHO report on the Global Tobacco Epidemic, 2008 reported 5.4 million smoking related deaths yearly.
(http://www.jointogether.org/ne ws/headlines/inthenews/2008/bi llion-smoking-deaths-by.html)
According to the Centers for Disease Control and Prevention (CDC), there were 44.5 million smokers in the United States in 2006.
That leads to 438,000 deaths yearly in the United States from disease related to cigarette smoking.
(http://www.cancer.org/docroot/ PED/content/PED_10_2X_Ciga rette_Smoking.asp?sitearea=P ED&viewmode=print&)