MEDICAL CONDITION	SUGGESTED SOLUTIONS	DISEASE MANAGEMENT/ SCREENING GUIDELINES IN THE UNITED STATES	STATISTICS / RISK REDUCTION
Diabetes Mellitus: fasting (at least eight hours without food intake) plasma glucose of 126 mg/dl or greater or two hour post-glucose (75 grams of glucose in water) reading of 200 mg/dl or greater or some symptoms of diabetes mellitus: such as increased thirst, increased urination, unexplained weight loss or fatigue and any plasma glucose reading of 200 mg/dl or greater (American Diabetes Association criteria for diagnosis and classification of Diabetes Mellitus. Diabetes Care, Vol. 30, supplement 1; January 2007)	1) Ask your doctor about your blood glucose levels. 2) Work out a schedule for communicating your glucose monitor readings with your doctor, so that you are able to achieve and maintain diabetes treatment goals. (A1C less than 7%). 3) You may need to check your glucose monitor readings 2-4 times a day depending on your medical condition and on going medication adjustments. 4) Ask your doctor if you are a candidate for continuous glucose monitoring. That may be particularly helpful if you have frequent episodes of hypoglycemia (low blood sugar), variable glucose monitor readings (swinging up and down of your glucose readings), variable work schedule, variable eating pattern and continued elevation of your Hemoglobin A1C. 5) Have your Hemoglobin A1C checked (sugar attached to your blood) at least three to four times a year, depending on your glycemic control and medication changes. It should be less than 7% without leading to low blood sugar (hypoglycemia). My hemoglobin A1C is _____. • Aim for pre-prandial plasma glucose levels of 70-130 mg/dL and post-prandial (1-2 hours after the beginning of a meal) glucose levels of less than 180 mg/dL (Standards Of Medical Care In Diabetes 2009. Diabetes Care; 32; Suppl 1;January 2009 S13) (Executive Summary: Standards Of Medical Care In Diabetes-2009, Diabetes Care, Volume 32, Supplement 1, January 2009) My glucose monitor readings are _____. (See Institute for Metabolic Improvement Instruction Sheet/Basal/Bolus Regimen (Attachment 2A, 2B, 2C, 2D, or 2E) Anti Diabetic Medications: • Glucagon lowering agents (Byetta	CHECKING FOR DIABETES/PRE DIABETES There are several tests that can be used to check for diabetes: • Fasting Plasma Glucose Test • Oral Glucose Tolerance Test • Random Plasma Glucose Test Everyone 45 and up should consider being tested for diabetes. Testing for diabetes is also important for people younger than 45 who are overweight and have other risk factors for diabetes such as: • Family Members With Diabetes • African, Asian, Pacific Islander, Hispanic, Or Native American Background • History Of Gestational Diabetes Or Giving Birth To A Baby Weighing More Than 9 lbs • High Blood Pressure • High Or Abnormal • Cholesterol or Triglyceride Levels • Inactive Lifestyle • History of Cardiovascular Disease • Severe obesity and acanthosis nigricans. • Impaired Glucose tolerance or Impaired Fasting Glucose on previous testing. • Women with polycystic ovary syndrome. (Source: National Diabetes Information Clearinghouse, http://diabetes.niddk.nih.gov/dm/pubs/diagnosis/#3b) • A1C goal for non pregnant adults is less than 7%. • A1C should be checked 2-4 times a year depending on your glycemic control and medication changes. • Aim for pre-prandial plasma glucose levels of 70-130 mg/dL and post-prandial (1-2 hours after the beginning of a meal) glucose levels of less than 180 mg/dL.	DIABETES MELLITUS AND IT'S COMPLICATIONS About 180 million people worldwide have diabetes. That number is predicted to more than double by 2030. (World Health Organization Fact Sheets: Diabetes: http://www.who.int/mediacentre/factsheets/fs312/en/) Almost 3 million deaths each year are attributed to diabetes mellitus. (World Health Organization Diabetes Program, http://www.who.int/diabetes/facts/en/) 23.6 million people i.e. 7.8% of the population of the United States, have diabetes mellitus. Of those 17.9 million people are diagnosed and 5.7 million people are estimated to be undiagnosed. 1.5 million new cases of diabetes mellitus are diagnosed yearly in individuals ages 20 years or older. (National Diabetes Statistics, 2007 http://diabetes.niddk.nih.gov/dm/pubs/statistics/index.htm) In a single year (2003) in the United States there were 82,000 amputations performed because of diabetes, 12,000-24,000 people lost their eyesight from diabetes, 41,000 people began treatment (dialysis or kidney transplant) for end stage kidney disease, 213,000 individuals died from diabetes and its complications, 3.5 million individuals 35 years and older reported being diagnosed with coronary heart disease, 1.5 million individuals 35 years and older reported being diagnosed with stroke. (American Diabetes Association. National Diabetes Fact Sheet,

	for type 2 diabetes, Januvia for type 2 Diabetes, or Symlin if you have type 2 or type 1 Diabetes and are taking insulin). These medications may help you lose some weight and also decrease your Glucagon (anti-insulin hormone) levels in response to a meal. • Ask your doctor if you are a candidate for Insulin sensitizers; they will increase your sensitivity to Insulin and may allow preservation of pancreatic beta cell function (cells that produce insulin). If you do take a Thiazolidinedione (Actos/Avandia) you should be sure that your heart is healthy enough and your doctor has considered your cardiac risk. If you take Metformin be sure that your kidneys are functioning well enough to tolerate that medication (you may not be a good candidate for Metformin if you have heart failure, lung disease or severe infection). • Secretagogues for Insulin: medications that stimulate your pancreas to secrete insulin, example: sulfonylurea (Glimeperide) or Meglitinides (Repaglinide or Nateglinide.) • Insulin: medications given by injection or insulin pump. They replace the hormone deficiency that leads to diabetes mellitus, when your pancreas is unable to secrete enough to meet your needs. • If you have type 1 diabetes mellitus, you will need insulin to survive. • See attached guide (2A, 2B, 2C, 2D, or 2E) for using anti-diabetic medications to address the core defects of diabetes; control glucose levels before and after meals with guidelines to prevent and treat hypoglycemia. My anti-diabetic medications are _____ _____ ____.	(Executive Summary: Standards Of Medical Care In Diabetes-2009, Diabetes Care, Volume 32, Supplement 1, January 2009)	http://www.diabetes.org/diabetes-statistics.jsp http://www.cdc.gov/diabetes/) Risk for complications can be reduced by controlling the ABCs of diabetes per ADA guidelines 1.) HbA1C (ADA goal :< 7%) 2.) Blood Pressure (ADA goal: 130/80 mmHg) 3.) Cholesterol (ADA goals: LDL <100 mg/dL; HDL >40 mg/dL [men], >50 mg/dL [women]; triglycerides <150 mg/dL) Reducing mean A1C to 7% in type 1 diabetes led to: 63% risk reduction for retinopathy; 60% risk reduction for neuropathy; 54% risk reduction for nephropathy (DCCT). Maintaining intensive therapy for 17 years led to continuing risk reduction for retinopathy, nephropathy, 42% risk reduction for any cardiovascular event and 57% risk reduction for non fatal MI, stroke and cardiovascular death. (DCCT/EDIC Study Research Group. N Engl J Med. 2005;353:2643-2653 http://content.nejm.org/cgi/content/abstract/353/25/2643) For every 1% decrease in HbA1C, there is a 37% decrease in risk of microvascular complications (i.e. damage to the eyes and kidneys), 43% decrease in peripheral vascular disease/leg amputation, 14% decrease in heart attacks, 12%decrease in strokes, 16% decrease in heart failure, and 19% decrease in cataract extraction and 21% decrease in diabetes related deaths. (UKPDS. Stratham IM, et al. Br Med J. 2000;321:405-412 http://www.bmj.com/cgi/content/abstract/321/7258/405) According to DECODE, high 2 hour plasma glucoses were associated with an increased

			risk of death independent of fasting glucose. Mortality associated with fasting glucose depended on the 2 hour blood glucose in all categories of fasting glucose. All cause mortality appeared to be almost double in those individuals with postprandial glucose levels greater than 200 mg/dL compared to less than 140 mg/dL. (DECODE=2 Epidemiology: Collaborative Analysis of Diagnostic Criteria in Europe. Lancet. 1999; 354 (9179): 617-621 http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(98)12131-1/fulltext) For HbA1Cs ranging from 7.3-8.4%, over all glycemia is impacted equally by fasting glucose and post prandial glucose. The contribution of post prandial glucose to overall hyperglycemia is higher with A1Cs of 7.3% or less and the contribution of fasting glucose is higher with A1Cs of 8.5% or greater. (Monnier L, et al. Diabetes Care 7.1 2003; Volume 26 [3] 881-885. http://care.diabetesjournals.org/cgi/content/full/26/3/881)
Diet and Eating Pattern	See grocery shopping guide (Attachment 1) for maintaining a low fat, low sugar diet with unlimited vegetables, white meats; whole grains in moderation (never be hungry or you may indulge in the wrong food). Keep track of your weight, height and BMI. My weight is _____ My height is _____ My BMI is _____ Ask your doctor if you are a candidate for bariatric surgery especially if your BMI is greater than 35 kg/m². If you do have that surgery you will	BMI is defined as the weight in kilograms divided by the square of height in meters (kg/m²) Normal BMI (according to World Health Organization) is defined as 18.5-24.9 kg per square meter. Overweight is defined as body mass index (BMI) 25-29.9 kg per square meter. Obesity is defined as BMI greater than 30 kg per square meter. Extreme obesity is BMI 40 kg per square meter or higher. Weight Reduction toward normal BMI is recommended because it	<u>OBESITY</u> • There are an estimated 300 million obese adults worldwide. • More than 1 billion adults are overweight globally. • According to WHO estimates, the number of overweight (BMI 25-30) and obese (BMI >30) individuals are set to increase to 1.5 billion by 2015 based on current trends. (World Health Organization www.who.int/dietphysicalactivity/publications/facts/obesity/en/print.html) Obesity is the major risk factor for cardiovascular disease

	require life long follow up and careful monitoring. (Diabetes Care, Volume 32, Supplement 1, January 2009)	will decrease blood pressure and may also reduce the risk of stroke. (http://www.guidelines.gov/summary/summary.aspx?doc_id=6824&nbr=004191&string=BMI)	which claims more than 17 million lives a year globally. (http://circ.ahajournals.org/cgi/content/short/113/6/e85) 142 million people in the United States are estimated to be overweight and obese. (www.americanheart.org/statistics) 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 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, non-smoking, and following a Mediterranean style diet [increasing 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/health/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. (Two Hamburgers, an Order of Fries, and the Metabolic Syndrome to Go, Please! http://www.medscape.com/viewarticle/569307?src=top10) (Lutsey PL, et al. Dietary intake and the development of the metabolic syndrome. Circulation 2008;DOI:10.1161/circulation.aha.107.716159. http://circ.ahajournals.org/cgi/content/abstract/CIRCULATIONAHA.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.org/ http://www.webmd.com/cancer/news/2009
Exercise:	• Aerobic exercise and weight bearing exercise of moderate intensity should be done for about ½ an hour to 1 hour a day (be sure you are cleared by your doctor if you have heart/lung/joint disease). • You may need to be in a medically supervised exercise program if you have had previous heart disease, 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 _____	• Exercise Guidelines recommended by the Centers for Disease Control and Prevention and the National Institute of Health state that greater than or equal to 30 minutes of moderate activity daily should be done as a part of a healthy lifestyle. • 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)	62% of adults in the United States ages 18 or older, engage in some light/moderate/vigorous leisure time physical activity for 10 minutes or greater (www.americanheart.org/statistics) 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/115/17/2358) 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.org/ http://www.webmd.com/cancer/news/2009
Eye problems related to diabetes:	You should be seeing an ophthalmologist (eye specialist) for a dilated eye examination yearly at least. My last ophthalmology (eye doctor) visit was on _____.	<u>SCREENING FOR RETINOPATHY, GLAUCOMA, AND CATARACTS:</u> Evaluation by an ophthalmologist or optometrist is recommended yearly at least. (Executive Summary: Standards Of Medical Care In Diabetes-2009, Diabetes Care, Volume 32, Supplement 1, January 2009)	Diabetic retinopathy accounts for 4.8% of the cases of blindness worldwide. (World Health Organization Report: Prevention Of Blindness From Diabetes Mellitus, http://www.who.int/blindness/Prevention%20of%20Blindness%20from%20Diabetes%20Mellitus-with-cover-small.pdf) Diabetes is the leading cause of new cases of blindness in adults in the United States (12-24,000 new cases per year due to diabetic retinopathy) (ADA 2007) (American Diabetes Association. National Diabetes Fact Sheet, http://www.diabetes.org/diabetes-statistics.jsp http://www.cdc.gov/diabetes) Controlling blood pressure leads to 44% decrease in worsening retinopathy. (UKPDS) Reducing mean A1C to 7% in type 1 diabetes led to: 63% risk reduction for retinopathy; 60% risk reduction for neuropathy; 54% risk reduction for nephropathy (DCCT). Maintaining intensive therapy for 17 years led to continuing risk reduction for retinopathy and 42% risk reduction for any cardiovascular event. (DCCT/EDIC) For every 1% decrease in HbA1C, there is a 37% decrease in risk of microvascular complications (i.e. Damage to the eyes and kidneys), 43% decrease in

			peripheral vascular disease/leg amputations, 14% decrease in heart attacks, 12%decrease in strokes, 16% decrease in heart failure, and 19% decrease in cataract extraction. (UKPDS)
Foot problems related to diabetes:	<u>SCREENING FOR NEUROPATHY/FOOT EXAM:</u> You should look at your feet on a daily basis to be sure you don't have any cuts or infection in your feet or nails. Also see a podiatrist (foot specialist) on a yearly basis at least. Look at your feet every day because diabetic individuals can sometimes walk on a nail and not even know it because of nerve damage to the feet (neuropathy). My last podiatry (foot doctor) visit was on _____.	Comprehensive foot examination by your health care provider or podiatrist is recommended yearly at least. (Executive Summary: Standards Of Medical Care In Diabetes-2009, Diabetes Care, Volume 32, Supplement 1, January 2009)	Yearly, 4 million people around the world develop a diabetic foot ulcer. A leg is lost to diabetes every 30 seconds somewhere in the world. With proper care, rates of amputation can be reduced by 49-85%. In a single year in the United States there were 82,000 amputations performed because of diabetes. (American Diabetes Association. National Diabetes Fact Sheet, http://www.diabetes.org/diabetes-statistics.jsp http://www.cdc.gov/diabetes/)
Nephropathy (kidney problems related to diabetes):	<u>SCREENING FOR NEPHROPATHY (KIDNEY DAMAGE):</u> Your urine albumin should be checked yearly at least and more often if abnormal. Work with your doctor to try and correct this as far as possible. Ask your doctor if you are a candidate for ARB therapy or ACE inhibitor therapy (blood pressure lowering medications which offer renal protection). If your serum creatinine continues to increase (2mg/dL or greater) or your urine albumin does not decrease or blood pressure remains high consider seeing a Nephrologist (medical doctor specializing in kidneys) to correct these problems. My urine albumin is _____. Your electrolytes, BUN and creatinine should be checked three to four times a	• Measure urine albumin/creatinine yearly at least. • Measure serum creatinine to estimate GFR yearly at least. (Executive Summary: Standards Of Medical Care In Diabetes-2009, Diabetes Care, Volume 32, Supplement 1, January 2009)	41,000 people with diabetes required treatment (dialysis or transplant) for end stage kidney disease in 2003. (American Diabetes Assoc. National Diabetes Fact Sheet) Controlling blood pressure with ACE Inhibitors (angiotensin converting enzyme inhibitors) or ARB (Angiotensin Receptor Blocker) therapy leads to: - 23-28% risk reduction for ESRD (RENAAL, IDNT) - 26-68% risk reduction for progression to overt nephropathy (IRMA 2, MICROHOPE) Reducing mean A1C to 7% in type 1 diabetes led to: 63% risk reduction for retinopathy; 60% risk reduction for neuropathy; 54% risk reduction for nephropathy (DCCT). Maintaining intensive therapy for 17 years led to continuing risk reduction for retinopathy and 42% risk reduction for any cardiovascular event. (DCCT/EDIC)

	year (depending on your medications and other medical problems). (aim for normal levels). My electrolytes, BUN, creatinine are _____ _____ _____ _____.		For every 1% decrease in HbA1C, there is a 37% decrease in risk of microvascular complications (i.e. Damage to the eyes and kidneys), 43% decrease in peripheral vascular disease/leg amputations, 14% decrease in heart attacks, 12%decrease in strokes, 16% decrease in heart failure, and 19% decrease in cataract extraction. (UKPDS)
Renal function: (status of your kidneys)	<u>CHECKING FOR KIDNEY DISEASE:</u> All adults with diabetes mellitus, hypertension (high blood pressure), a family history of kidney disease, kidney stones, are at increased risk for chronic kidney disease If you fit into one of these categories talk to your doctor about: • Having your blood pressure checked My blood pressure is _____. • Having a urinalysis My urinalysis shows _____. • Having blood tests to check your lipids (cholesterol and triglycerides) My lipid profile is _____. • Having blood tests to check electrolytes, blood urea nitrogen (BUN), and creatinine. My electrolytes, BUN, and creatinine are _____ _____ _____ _____. (Source: Michigan Quality Improvement Consortium. Diagnosis And Management Of Adults With Chronic Kidney Disease. Southfield (MI): Michigan Quality Improvement Consortium: 2006 Nov. 1. National Guidelines Clearinghouse. http://www.Guidelines.Gov)	<u>CHECKING FOR KIDNEY DISEASE</u> All adults with diabetes mellitus, hypertension (high blood pressure), a family history of kidney disease, kidney stones, are at increased risk for chronic kidney disease If you fit into one of these categories talk to your doctor about: • Having your blood pressure checked • Having a urinalysis • Having blood tests to check your lipids (Cholesterol and Triglycerides), Electrolytes, Blood Urea Nitrogen (BUN), and Creatinine. (Source: Michigan Quality Improvement Consortium. Diagnosis And Management Of Adults With Chronic Kidney Disease. Southfield (MI): Michigan Quality Improvement Consortium: 2006 Nov. 1. National Guidelines Clearinghouse. http://www.guidelines.gov)	<u>KIDNEY DISEASE</u> In 2005, about 1.9 million people world wide were receiving renal replacement therapy (dialysis or kidney transplant) for end stage renal disease (ESRD). Many more people had ESRD but were not receiving treatment. (BMJ Clinical Evidence: Kidney Disorders: End Stage Renal Disease, http://clinicalevidence.bmj.com/ceweb/conditions/knd/2002/2002.jsp) • The prevalence of chronic kidney disease in the United States is 16.8% (NHANES). (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 _____	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	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

	• 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 medications (Niaspan). My cholesterol –lowering medication is _____. My HDL-raising medication is _____. • 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 _____. • 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	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. (Buse JB, et al. Diabetes Care.2007; 30:162-172. http://care.diabetesjournals.org/cgi/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/viewarticle/571594)	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/viewarticle/569095 In individuals with diabetes, controlling lipids leads to 36-44% 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/content/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/viewarticle/569095) (Brown BG et. al. *New England Journal Med*. 2001;345:1583-1592 http://content.nejm.org/cgi/content/full/345/22/1583)

	reduce cardiovascular risk by 15% in those individuals who never had a cardiac event. My fish oil intake is _____.		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/298/7/786) • 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/viewarticle/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/viewarticle/571594) (Review: Omega-3 Fatty Acids for Cardio protection. John H Lee et al. Mayo Clinic Proceedings: 2008;83: 324-332 http://www.mayoclinicproceedings.com/content/83/3/324.full)

Blood pressure:	• Have your blood pressure checked three to four times a year; it should be less than 130/80mm Hg. (Source: Joint National Committee On Prevention, Detection, Evaluation And Treatment Of High Blood Pressure. Http://Www.Nhlbi.Nih.Gov/Guidelines/Hypertension/Jnc7full.Pdf) My blood pressure is _____. • See if your doctor can prescribe an ARB Therapy (Angiotensin Receptor 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 _____ _____ _____ _____	<u>HYPERTENSION (HIGH BLOOD PRESSURE:</u> • Current guidelines state that normal blood pressure is less than 120/80. • Pre-hypertension is systolic blood pressure of 120-139mm Hg or diastolic blood pressure of 80-89mm Hg. • Stage 1 hypertension is systolic blood pressure of 140-159 mm Hg or diastolic blood pressure of 90-99 mm Hg. • Stage 2 hypertension is 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/guidelines/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)	<u>HYPERTENSION (HIGH BLOOD PRESSURE):</u> World Wide estimates of individuals with hypertension are 1 billion people currently. In 2000, 972 million adults were estimated to have hypertension (high blood pressure) worldwide. By 2025, that number is estimated to rise to 1.56 billion. (The Lancet; 365: 9455 January 15, 2005:217-223 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/lancet/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 beta-blocker (Atenolol) and thiazide diuretic. (ASCOT-BPLA Study: Björn Dahlöf et al. The Lancet; 366;9489;895-906 http://www.thelancet.com/journals/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 cardiologist (heart specialist). Does my medication list include aspirin? _____.		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 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 Rational, U.S. Preventive 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
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 _____	Avoid Environmental Tobacco Smoke. (guidelines.gov)	In the 20th 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) It is estimated that there are 1 billion individuals who smoke, worldwide. That results in 3 million smoking related deaths, yearly. (PENNSTATE Population Research Institute, http://www.pop.psu.edu/searchable/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/billion-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_Cigarette_Smoking.asp?sitearea=PED&viewmode=print&)
Heart and brain status: (cardio-vascular status):	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 _____.	Screening for coronary artery disease should be considered for individuals at high risk. (American College Of Cardiology Foundation www.acc.org)	<u>CARDIOVASCULAR DISEASE – HEART ATTACK AND STROKE:</u> 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/statistics) In 2005, 80.7 million people in the United States had some form of cardiovascular disease. (www.americanheart.org/statistics)
Screening for Celiac Disease	If you have Type 1 Diabetes you need to be screened for celiac disease by measuring the “celiac antibody panel”. That would be especially important if you have difficulty maintaining your weight, have unexplained diarrhea or persistently low Vitamin D levels.		

	(Diabetes Care, Volume 32, Supplement 1, January 2009) http://care.diabetesjournals.org/cgi/content/full/32/Supplement_1/S13		
Achieving all your ABCs	Work with your doctor or other health care provider using the above check lists: • To target each of your medical conditions. • To try and achieve favorable results in a real world setting: HbA1C less than 7%; blood pressure less than 130/80 mm hg; LDL less than 100 mg/dL or 70 mg/dL; HDL greater than 40 mg/dL for men and greater than 50 mg/dL for women; triglycerides less than 150 mg/dL. • Work with your health care provider to use a Statin, ACE inhibitor therapy or ARB therapy and aspirin appropriately. My medication list includes _____ _____ _____ _____ _____		In the Steno 2 diabetes study involving 160 individuals with type 2 diabetes mellitus and microalbuminuria followed for 13.3 years, there was a 20% absolute risk reduction for all cause mortality and 13% risk reduction for cardiovascular mortality in the intensively treated group. There was 56% relative risk reduction for the development of nephropathy, 43% decrease in progression of retinopathy 49% decrease in blindness, 47% decrease in progression of autonomic neuropathy. After 13 years of follow up, there was a 6.3% absolute risk reduction in the need for dialysis. Unfortunately the mortality among the conventionally treated group, who did not achieve all the above goals, was 50%. At the end of 13.3 years of follow up the fasting blood glucose level had decreased to 160 $\pm$ 55 mg/dL, glycated hemoglobin 7.7 $\pm$ 1.2%, total cholesterol 147 $\pm$ 34 mg/dL, LDL cholesterol 71 $\pm$ 29 mg/dL, HDL cholesterol 51 $\pm$ 15 mg/dL, fasting serum triglycerides were 99 mg/dL (median value), urine albumin excretion of 69 mg per 24 hours (median value). 91% of this cohort was on ACE inhibitor or ARB therapy, 18% on both ACE inhibitor and ARB therapy, 84% were on statin therapy, and 85% were on aspirin therapy. At then end of 13.3 years of follow up, 20% of the cohort had achieve glycated hemoglobin of less than 6.5%, 80% had achieved cholesterol of less than 175 mg/dL, 80% had achieved triglycerides of less than 150 mg/dL, 25% had achieved systolic blood

			pressure of less than 130 mmHg, and 70% achieved diastolic blood pressure of less than 80 mmHg. The effect of blood pressure reduction on cardiovascular end points usually occurs in a few months; the effect of lipid lowering is seen after 1-2 years. However the effect of lowering glucose levels occurs a few years later in allowing risk reduction for microvascular complications (retinopathy/nephropathy). As commented by Dr. Pedersen, (the senior author of the Early Multifactorial Intervention Key in Diabetes), there is a need to translate these kinds of greenhouse experiments done during this clinical trial to the real world primary care setting where patients are treated. (Peter Gaede et.al. N Engl J Med; 2008: 358; 580-591. Effect of Multi-Factorial Intervention on Mortality in Type 2 Diabetes) http://content.nejm.org/cgi/content/abstract/358/6/580 Varma S, Boyle LL, Varma MR, Piatt GA, Controlling the ABCs of diabetes in clinical practice: a community-based endocrinology practice experience. *Diabetes Res Clin Pract* 2008; 80(4):89-95. *http://www.diabetesresearchclinicalpractice.com/article/S0168-8227(07)00572-4/abstract* Varma S, Boyle LL, Varma MR, Piatt GA, Controlling the ABCs of diabetes: A Community-Based Private Endocrinology Practice (CBPEP) experience. Presented at the American Diabetes Association 66th Annual Scientific Sessions, Washington, DC, June 9-13, 2006. [*Diabetes* 55(Suppl 1):A3, 2006]