[IMAGE]

Dodging Diabetes

By Drs. Ronald Klatz and Robert Goldman

The number of adults with diabetes worldwide has more than doubled since 1980 to a mind-numbing 347 million, officially making it a global epidemic. But believe it or not, there's good news about diabetes: There are a number of ways to combat and even outright prevent this growing disease.

As the 7th leading cause of death in the United States, diabetes costs the nation $174 billion annually, including $116 billion in direct medical expenses. In addition, the Centers for Disease Control and Prevention estimates that 79 million Americans – one-third of the nation's adult population – has prediabetes, a condition in which blood sugar levels are elevated, raising a person's risk of type 2 diabetes, heart disease and stroke. In fact, according to research, having diabetes increases the risk of death from *all* causes.

For example, in examining data involving 820,900 subjects enrolled in 97 published studies, John Danesh, from the University of Cambridge (United Kingdom), and colleagues found that high fasting blood sugar levels (>100 mg/dL) not only doubles vascular death risk, but also substantially raises the risk of death from nonvascular causes, including cancer and infectious diseases. Subjects with diabetes were 80 percent more likely to die from any cause during the study period. The researchers found that diabetics were at 2.32-fold higher adjusted risk of death from vascular causes, as compared to nondiabetic counterparts; and at significantly elevated risk of death from cancer and other non-vascular, noncancer causes including pneumonia and other infectious diseases, mental disorders, nervous system disorders, and chronic obstructive pulmonary disease.

Diabetics are also at increased risk of developing aging-related diseases. Men and women in their 50s with diabetes have nearly double the risk for developing cognitive impairment, incontinence, falls, dizziness, vision impairment and chronic pain compared to same-age counterparts who do not have diabetes. Because diabetes affects multiple organ systems, it has the potential to contribute significantly to the development of a number of health issues that we associate with aging.

grapes - Copyright â Stock Photo / Register Mark Today, nondrug interventions such as nutritional supplementation, smart dietary choices, and lifestyle changes are becoming more widely recognized as key approaches to reduce the risk of diabetes and/or manage the condition if you've developed it. Let's review some of these strategies and help ensure a healthier, happier, diabetes-free you.

More Magnesium Matters

While magnesium is found in dietary sources such as green leafy vegetables, meats, starches, grains, nuts and milk, a number of surveys suggest that many adults fail to consume the Recommended Daily Allowance (RDA) for this essential mineral. Frank Christoph Mooren, from the Institute of Sport Sciences at the Justus-Liebig University (Germany), and colleagues enrolled 52 men and women in a study in which each received either a magnesium supplement (containing magnesium-aspartate-hydrochloride at a dose of 365 mg per day) or placebo for six months. At the study's conclusion, the team found that two out of three measures of insulin sensitivity had improved significantly in those receiving the supplemental magnesium compared to the placebo group, and blood sugar levels, measured as fasting levels of glucose in the blood, had improved by about 7 percent in the magnesium-supplemented group compared with placebo.

Grab Some Grapes

A daily dose of the polyphenol *resveratrol* (found in purple grapes, red wine, peanuts and some berries) may prove useful in the treatment and/or prevention of type 2 diabetes. Researchers from Hungary's University of Pecs studied 19 people with type 2 diabetes. Participants were randomly assigned to take resveratrol supplements (10 mg/day) or a placebo for four weeks. Results showed that insulin resistance decreased significantly in the participants who received the resveratrol.

A Walk in the Park

Previously sedentary middle-aged men and women who walked 10,000 steps (about 5 miles) daily demonstrated marked improvement in insulin sensitivity. Terry Dwyer, from the Murdoch Children's Research Institute (Australia), and colleagues investigated the relationship between daily step count and both adiposity (obesity) and insulin sensitivity. The team studied 592 non-diabetic adult men and women, average age 50-51 years at the study's start, for a five-year period. Many participants were already overweight (57.4 percent of men, 36.9 percent of women) or obese (17.7 percent of men, 16.0 percent of women) at the outset and then gained additional weight over the five-year study period.

During the study period, most subjects became more sedentary as well, with 65 percent showing a decline in step counts. The researchers found that sedentary individuals who changed their habits to walk an extra 2,000 steps (about 1 mile) a day might expect to shave 0.16 kg/m^2 off their body mass index (BMI) and boost insulin sensitivity by 2.76 units. Further, a relatively inactive person who achieves 10,000 steps (about 5 miles) per day could expect their BMI to drop 0.83 kg/m2 and their insulin sensitivity to rise 13.85 units – a 12.8 percent increase from the average for men and 11.5 percent for women. The team calculated that sedentary individuals who reach 10,000 steps per day might improve their insulin sensitivity threefold compared with increasing daily activity to 3,000 steps five days a week.

Get Your Omega-3s

Consumption of omega-3 fatty acids may help to improve key markers of insulin resistance, thereby reducing the risk of diabetes. Giuseppe Derosa, from the University of Pavia (Italy), and colleagues studied 167 subjects, each of whom received either 1 gram of omega-3s (concentrated EPA and DHA), or 1 gram of placebo (a capsule containing sucrose, mannitol, and mineral salts) three times a day, during meals, for six months. The team found that the group which consumed the omega-3 capsules showed improvements in HDL cholesterol and plasma triglyceride markers compared to placebo. After challenging the subjects with an oral fat load, the researchers found that the group taking omega-3 capsules showed an improvement in all parameters, include insulin resistance biomarkers, while there was a neutral effect with placebo.

Amino Acids on the Way

nuts - Copyright â Stock Photo / Register Mark L-carnitine is an amino acid (building block for protein) that helps the body to produce energy. The nutrient is also important for proper heart and brain function, muscle movement, and a number of other body processes. Stuart Galloway, from the University of Stirling (Scotland), and colleagues enrolled eight lean and eight overweight / obese men in a 14-day study. The men received 3 grams of L-carnitine or 3 grams of glucose per day with their meals. Subjects then underwent an oral glucose tolerance test, which involved feeding them 75 grams of glucose and then measuring the effects. The team found that blood sugar levels were significantly lower in the L-carnitine group of lean men as compared to the glucose-fed lean men 30 minutes after ingestion. Blood glucose levels were also higher in the group of overweight / obese subjects 90 minutes after ingesting L-carnitine compared to placebo.

Defend With Dairy

Circulating levels of trans-palmitoleic acid, the fatty acid contained in dairy products, may reduce the risk of type 2 diabetes. Trans-palmitoleic acid is a naturally occurring fatty acid in dairy fats, and on a biological basis it may mimic its counterpart, cis-palmitoleic acid, a fatty acid produced in the body that protects against diabetes. Dariush Mozaffarian and colleagues, from Harvard School of Public Health in Massachusetts, examined data from a study that followed 3, 3736 adults enrolled in a cardiovascular health study. The researchers found that those adults with the highest circulating levels of trans-palmitoleic acid had the lowest risk of type 2 diabetes. Specifically, those subjects with the highest levels of trans-palmitoleic acid were found to be at 60 percent lower risk of developing diabetes compared to the subjects at the bottom 20 percent.

The Power of Healthy Living

Among diabetics, sustained benefits are achievable when choosing to follow key anti-aging tenets in dietary choices and physical activity. Osama Hamdy, from the Joslin Clinic in Massachusetts, and colleagues enrolled 141 patients with diabetes: 127 with type 2 diabetes and 14 with type 1 diabetes. Average patient age was 53 and average time from diagnosis was about 9.5 years; the average baseline weight of the participants was 240 pounds. The supervised lifestyle modification program included an interdisciplinary team that involved a diabetologist, a registered dietitian, a clinical exercise physiologist and a psychologist.

The dietary intervention gave patients a choice of 15 dinner meals, two meal replacements, and snacks designed to meet the clinic's nutritional guidelines for diabetics; a diet plan that included 40-45 percent carbohydrates, 20-30 percent protein, and less than 35 percent fat. The researchers also put the patients through a structured strength and cardiovascular exercise program that gradually increased activity. For the first four sessions, patients were encouraged to exercise 20-40 minutes four days a week; during the next four days the exercise prescription was increased to 40-45 minutes five days a week; and in the final four sessions patients were told to exercise 50-60 minutes six days a week. Patients also attended weekly teaching and behavioral support sessions.

woman power walking - Copyright â Stock Photo / Register Mark At the conclusion of the 12-week program, participants were instructed to follow the same plan on their own. Subjects with a mean glycated hemoglobin (HbA1c) of 7.6 percent at the study's start (higher amounts indicate poor control of blood glucose levels) were able to lower the level to 6.6 percent after the 12-week program and keep it at 7 percent

even after three years. In addition, the team reported that subjects experienced an average weight loss after the 12-week study of 24.1 pounds.

Stop the Epidemic

With diabetes rates absolutely skyrocketing and far too many people turning to diabetes medication to "control" their symptoms, you can help stop the epidemic – starting with you and your family – by following the diabetes defense strategies outlined above. Best of all, they're fundamentally simple: nutrition, exercise and a healthy lifestyle; all things you should be pursuing anyway. Dodge diabetes and reap the health rewards. Talk to your doctor for more information.

Key Terms to Understand

Diabetes: A group of metabolic diseases characterized by high blood sugar, either because the body produces little or no insulin (type 1) or because the body does not make enough insulin and/or cells do not respond well to the insulin produced (type 2).

Insulin: A hormone manufactured by the pancreas that removes glucose from the bloodstream and into muscle, fat and liver cells where it can be utilized as fuel.

Glucose: A sugar that enters the bloodstream when food is digested. Glucose is the primary source of fuel (energy) for the body.

Insulin sensitivity / resistance: A decreased ability for the body to use insulin to remove glucose from the bloodstream. The body produces insulin, but does not utilize it well.

Blood glucose levels: The level of glucose in the bloodstream. People with insulin sensitivity / resistance will have higher levels of glucose in the bloodstream because of an impaired ability to remove it, which can lead to diabetes.

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