

Heart & Health Reports™

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Medicine, Surgery and Stents Aim to Prevent Stroke

Advances for Carotid Disease

STROKE is a leading cause of severe disability and the third leading cause of death in the U.S. Despite medical advances, about 700,000 Americans suffer a stroke each year. When a stroke occurs, people may feel sudden onset of weakness in a limb, numbness, difficulty speaking or even a generalized change in behavior. Rapid medical attention is needed to deliver therapy to help allow brain recovery and prevent recurrent strokes. Physicians now have a variety of options, both medical and surgical, to treat and prevent this potentially devastating complication of cardiovascular illness.

Sources of stroke

Most strokes are caused by emboli, small blood clots that travel to the brain and prevent the normal delivery of oxygen-containing blood. Sources of emboli include the heart itself, the aorta, and the carotid arteries. In some people with an irregular heart rhythm called atrial fibrillation, clots can form in a chamber of the heart and



For some patients, a carotid stent may be an attractive alternative to surgery.

then travel to the brain causing a stroke. The aorta, the largest artery in the body, can develop plaque accumulation that can also break off and travel to the brain.

The carotid arteries: Vital vessels to the brain

An important cause of stroke is the carotid arteries. Arising from the aorta and its branches (see figure 1), the carotid arteries serve as conduits for oxygenated blood to reach the brain. If atherosclerosis occurs in the carotid arteries, small emboli can dislodge and travel to the smaller brain arteries and clog blood flow, thereby resulting in a stroke. Severe narrowing (stenosis) can completely interrupt blood flow to the brain supplied by that artery.

An insidious danger

Narrowing in the carotid arteries generally occurs over many years without producing symptoms. Often, the first indication of a problem is a sudden neurologic event. This can be relatively mild with

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Real People

An Aortic Answer

TOM, age 60, knew it was time for his yearly visit to the cardiologist. He was pleased during last year's examination when the doctor told him that his blood pressure and high cholesterol were nicely controlled with medication. One additional issue was that his aortic valve had some mild narrowing, called aortic stenosis. The doctor recommended that he take antibiotics before going to the dentist to prevent a valve infection and to have a yearly assessment with an echocardiogram.

It was almost time for this year's examination when Tom noticed some chest pressure and shortness of breath when he walked up a hill. At first he ignored these symptoms, but when they persisted, he called the doctor's office to move up his appointment. After researching chest pain on the Internet and thinking he had coronary disease, he asked the receptionist to also schedule a stress test.

Tom arrived at his doctor's office

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Heart & Health Reports™

Editors

Franklin H. Zimmerman, MD
Assistant Clinical Professor of Medicine
Columbia University

Arthur E. Fass, MD
Chief of Cardiology
Phelps Memorial Hospital, Sleepy Hollow, NY

Dina R. Katz, MD
Attending Cardiologist
Westchester Medical Center

Medical Advisory Board
John A. Ambrose, MD
Chief of Cardiology
University Medical Center, Fresno, CA

Jeffrey L. Boone, MD
Fmr. Director, Stress Medicine & Hypertension
The Cooper Clinic

Barry A. Franklin, PhD
Professor of Physiology
Wayne State University

William H. Frishman, MD
Professor of Medicine and Chairman
New York Medical College

Robert N. Levin, MD
Director, Coronary Care Unit
William Beaumont Hospital, Royal Oak, MI

Marvin Moser, MD
Clinical Professor of Medicine
Yale University

Mehmet Oz, MD
Director, Cardiovascular Institute
Columbia Presbyterian Medical Center

George E. Reed, MD
Professor and Chief of Cardiothoracic Surgery
Westchester Medical Center

Richard J. Solomon, MD
Professor of Medicine
University of Vermont

Victor Vertes, MD
Clinical Professor of Medicine
Case Western Reserve University

David G. Wolinsky, MD
Director of Cardiac Rehabilitation
St. Peter's Hospital, Albany, NY

Contributors

Stefanie Schwartz, RD
Roberta Gershner, RD

Publisher

Laura Grant

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How to exercise safely in cold weather

Here in the Northeast, we only just started to worry about cold weather. Early in January, New Yorkers could still be seen jogging around Central Park dressed in short sleeved shirts and running shorts as the mercury climbed to record highs. Even with such unexpected temperatures, winter is upon us and it's a good idea to review some seasonal exercise advice.

The risk of cold weather exposure depends on the body's ability to maintain a normal temperature. The actual outside temperature is not the only factor. Moisture and wind hasten heat loss, increasing the risk of complications.

A frequently misunderstood term is *wind chill temperature*. This refers to how cold people feel because of a wind-induced increase in skin evaporation. As wind velocity increases, evaporation draws heat from the body. This drives down skin temperature more quickly to the ambient temperature. Note that if the outside temperature remains above 32°F, skin will not freeze even in the face of a lower perceived wind chill temperature. Also, a breeze may make you feel more cold, but wind chill is irrelevant to an inanimate object like the water pipes in your house.

Hypothermia is defined when the core body temperature falls below 95°F. Hypothermia is unusual in the recreational athlete and is usually associated with prolonged exposure to severe weather or after cold water immersion accidents.

Frostbite may occur when the skin temperature falls below 32°F. The most common site is on the exposed skin of the face, nose and ears. The extremities are also susceptible to frostbite because with acute exposure to cold, blood vessels in the hands and feet constrict to maintain core temperature and protect the vital organs.

Non-freezing complications also may occur because of cold-induced

effects on other bodily functions. These are particularly important to individuals with cardiovascular disease.

Exercise in cold temperature is more stressful to the heart compared with warm environments. Blood pressure and energy requirements rise more significantly in the cold, posing a potential hazard in patients with coronary disease or hypertension. Snow shoveling is particularly dangerous.

So does the arrival of winter mean the end of outdoor activities for anyone with cardiovascular disease? The answer is clearly no. Some precautions are necessary however, to avoid both freezing and nonfreezing injuries.

First, dress properly. Typical cold weather clothing has three layers: an inner layer of polypropylene to wick moisture away from the skin, a middle insulating layer of fleece or wool, and an outer layer that repels moisture, but allows evaporation from the skin. Remember not to dress too warmly at the start, because you will generate more body heat as you exercise. Pay special attention to your hands, feet and face because of an increased risk of frostbite. Some people are prone to cold-induced wheezing or asthma. Wearing a face mask or scarf can partially heat the air you breathe and avoid this problem.

Keep well hydrated and never drink alcohol during cold weather activities. The beverage may feel warm as you drink it, but alcohol dilates blood vessels and enhances heat loss and also contributes to dehydration.

Finally, if weather conditions really preclude outdoor activities, join a health club, invest in some home exercise equipment, or just take a trip to your local mall and walk. This winter, stay active and stay healthy!

Franklin H. Zimmerman, MD

Editor

Diabetics with acute coronary events need better glucose control

When a diabetic patient presents to the hospital with a heart attack or acute chest pain, a variety of urgent treatments are administered to restore blood flow. Unfortunately, under the pressure to address the acute situation, a fundamental problem is frequently overlooked — the need to control the blood sugar.

Controlling blood sugar during an acute coronary event is important. A number of studies show that aggressive management of blood sugar during an acute coronary syndrome will prevent complications and improve long-term prognosis.

A recently published study assessed the thoroughness of diabetes treatment in patients present-

ing with acute coronary syndromes. While virtually every patient will be evaluated and treated for elevated cholesterol, only about half the patients had a serious attempt at measurement and treatment of their blood sugar levels. For example, only two-thirds of patients had a hemoglobin A1c drawn. This test is a useful measure of long-term diabetes control. Among those whose level was obtained, the majority were poorly controlled. Only about half of these patients with sub-optimal blood sugar control were given a meaningful adjustment of their medications.

Analysis: Doctors are not paying enough attention to diabetes control when patients present with acute coronary symptoms. There are several possible reasons for this. Doctors have not been adequately convinced of the importance of

“tight” blood sugar control. They may be concerned about the possibility of low blood sugar (hypoglycemia) resulting from aggressive treatment. Also, management of blood sugar sometimes falls between the layers of different treating specialties in an acute-care setting with no physician taking full responsibility.

A hospital stay represents an opportunity to assess the patient’s blood sugar status and make any necessary adjustments in treatment. Clearly, more awareness of diabetes management is necessary to provide the best possible cardiac care.

— Arthur E. Fass, MD

Green Conaway DL, et al. Assessment of and Physician Response to Glycemic Control in Diabetic Patients Presenting With an Acute Coronary Syndrome. Am Heart J 2006; 1022-7.

Effective treatment for cardiac patients with depression

Coronary heart disease and depression frequently go hand in hand. Individuals with coronary artery disease are more prone to depression and vice versa. Major depression is common after a heart attack and has an adverse effect on prognosis. Some patients have depression as a pre-existing condition before the heart attack and their depressive symptoms may be exacerbated by the coronary event. Others will develop depression as a result of the stress of the coronary event itself. Either way, it follows logically that effective anti-depressive therapy in patients with coronary disease will be beneficial in alleviating symptoms of depression and may also prevent cardiac complications. Furthermore, it would be important to assess the safety and

effectiveness in this population of the most widely prescribed type of anti-depressant, the SSRIs (selective serotonin reuptake inhibitors).

The Canadian Cardiac Randomized Evaluation of Antidepressant and Psychotherapy Efficacy Trial (CREATE) studied patients with both coronary heart disease and major depression. Two treatment interventions were evaluated along with standard cardiac care. Pharmacologic treatment with citalopram (*Celexa*) was compared to a course of short-term psychotherapy. After 12 weeks of follow up, citalopram was found to be effective in reducing depressive symptoms compared to placebo, with benefit becoming apparent after six weeks. Citalopram proved to be safe for coronary disease patients in the trial with no increase in blood pressure, changes in EKG measures, or excess cardiac events. In contrast, short-term psychotherapy was not found to be beneficial in these cardiac patients

with major depression.

Analysis: The CREATE Trial supports the use of citalopram, a commonly prescribed anti-depressant, in the management of patients with coronary artery disease and concomitant depression. It was especially noteworthy that unanticipated cardiac side effects such as serious arrhythmias were not observed in this patient population. It is appropriate to treat coronary patients with anti-depressants of the SSRI class if indicated to improve psychiatric symptoms. We still await longer-term studies to determine if anti-depressant treatment results in improvement in overall prognosis or avoidance of cardiac complications.

— Arthur E. Fass, MD

Lesperance F, et al. Effects of Citalopram and Interpersonal Psychotherapy on Depression in Patients with Coronary Artery Disease. JAMA 2007; 297:367-379.

Carotid arteries . . . continued from page 1

transient weakness, a vision or speech disturbance, or other motor or sensory abnormality. If the symptoms resolve over a few minutes to hours, the event is called a transient ischemic attack, or TIA. Unfortunately, the initial symptom of carotid disease can also be a devastating stroke, which results in major loss of function, paralysis or even death.

There is a clue to carotid narrowing that can be detected on physical examination. A *carotid bruit* is a “whooshing” sound, heard with the stethoscope placed over the neck. It is important to note that not everyone with a carotid bruit has significant disease. Similarly, not every patient with major carotid stenosis will have an audible bruit. Another clue to carotid disease may be detected during a fundoscopic (eye) examination.

Finding the blockage

In order to detect the presence and extent of disease in the carotid arteries, imaging studies are performed. The most commonly available technique is duplex ultrasound sonography, which uses sound waves to create images of the arteries and measure the severity of stenosis. Other imaging modalities include MRA (magnetic resonance angiography), CTA (computerized tomographic angiography) and catheterization. The gold-standard test is angiography, in which catheters are inserted into the carotid artery and contrast is injected under x-ray guidance to determine the degree of blockage.

Stroke risk related to carotid narrowing and symptoms

The risk of stroke in patients with carotid stenosis is related both to the degree of narrowing and the pres-

ence of symptoms. In general, the risk of a stroke rises when the blockage is greater than 80%. If a patient has already suffered a stroke, even a 50% stenosis confers a significant risk of recurrent stroke with medical therapy alone.

Potential treatments to reduce the risk of stroke include medicines to control risk factors for atherosclerosis, blood thinners to prevent clots and mechanical means to restore blood flow (revascularization). Revascularization can either be performed surgically with carotid endarterectomy (CEA), or by insertion of a stent via a catheter.

Medical management

Risk factors for developing plaque buildup in the carotid arteries include hypertension, diabetes, high cholesterol, and smoking. All patients with evidence of any degree of carotid disease need

Aortic . . . continued from page 1

in his sneakers and sweat pants ready to go on the treadmill. But after hearing Tom’s story and performing a physical examination, the doctor had other ideas. “I think we better take another look at that valve,” the doctor said. “And I would rather have you speak with me about your symptoms and let me decide which tests you need,” the doctor admonished with a smile.

The cardiologist performed an echocardiogram, a test that confirmed his suspicion that Tom’s symptoms were caused by progressive narrowing of the aortic valve. He explained to Tom that he didn’t need a stress test. Instead he needed a cardiac catheterization and an aortic valve replacement. Two weeks later Tom was recovering from valve surgery. And soon after that, he was ready for cardiac rehabilitation. He would have his treadmill test, but now it would be

a routine part of joining a rehabilitation program.

Cardiologist’s comment:

Chest pain and shortness of breath are often caused by blockage in the coronary arteries. Other cardiac conditions, such as aortic stenosis, can also produce these symptoms. The aortic valve separates the heart’s main pumping chamber (left ventricle) from the aorta. When this valve becomes critically narrowed, blood flow is restricted, depriving the heart muscle of vital oxygen.

Aortic stenosis can result from a number of conditions. Rheumatic fever can damage both the aortic and mitral valves, causing critical narrowing. A congenital bicuspid valve is a common cause of aortic stenosis. In this condition, a person is born with an aortic valve that has two rather than the normal three cusps. Over time, the abnormal

cusps may fuse and restrict blood flow. Another common etiology of aortic stenosis is age-related calcification of the valve, which over many years, results in a damaged and stenotic aortic valve.

When the aortic valve becomes critically narrowed, it is necessary to repair or replace the valve. During aortic valve surgery, the damaged valve is removed and replaced with either a mechanical (metal) or tissue (pig or cow) prosthesis. Investigational techniques are also being studied to replace the aortic valve via a catheter, without cardiac surgery.

— Dina R. Katz, MD

The stories reviewed in this section represent actual patients. Details have been modified to preserve anonymity.

— Editor

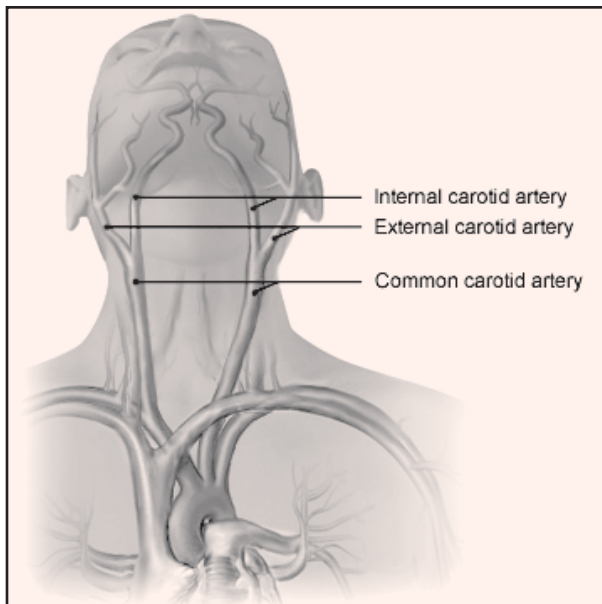


Figure 1. The carotid arteries arise from the aorta to supply blood to the brain.

aggressive medical management. Antiplatelet therapy with aspirin reduces the risk of stroke and heart attack. Tobacco cessation is vital. Control of cholesterol with medications called statins reduces the risk of both heart attack and stroke. Diabetes management is instrumental in preventing stroke and progression of disease.

Perhaps the most important risk factor to control is hypertension. The risk of stroke increases three-fold when the systolic blood pressure exceeds 160 mmHg. According to recent reviews, even a modest lowering in blood pressure of 10 mmHg systolic and 3-6 mmHg diastolic reduces the risk of stroke by 30% and 42%.

Despite excellent medical management some patients continue to have strokes. This tends to occur in those patients who have had strokes in the past and those with more extensive carotid blockages.

Carotid surgery reduces stroke risk

Medical therapy alone may not be sufficient to reduce the risk of stroke. In patients who have already suffered a stroke and have a carotid stenosis greater than 50%, the two-year risk of recurrent stroke is 26%.

Carotid endarterectomy can reduce the two-year risk of stroke to 9% after the surgical correction.

For patients with carotid disease who have not had previous symptoms, the risk of stroke increases significantly when the stenosis is greater than 80%. For these individuals, CEA reduces the risk of stroke from 11% down to 5% after 2-3 years.

While surgical revascularization has shown benefit, not all patients can tolerate anesthesia and surgery because they have other major illnesses. Furthermore, the above benefits are present only in the hands of skilled surgeons. Patients with coronary heart disease, chronic obstructive pulmonary disease, and prior neck surgery are examples of those at increased risk from carotid surgery. Because of the need for less invasive revascularization, carotid stenting technology was developed.

Stents right for some patients

Recently, carotid stenting has been developed as an alternative to

carotid surgery in selected patients. Performed under x-ray guidance, a catheter is advanced from an artery in the leg, through the aorta, and into the carotid artery. A wire with a protective filter or mesh is placed beyond the blockage. The narrowing is opened with a balloon and a stent placed to keep the artery open (see figure 2). The protective apparatus traps any debris that may have been dislodged during the procedure. One study in patients at high-risk for surgery showed that carotid stenting is at least equivalent and likely better than surgery because of a decreased risk of heart attacks.

Cardiologist's comment:

Stroke is a devastating event and prevention is extremely important. Control of medical illnesses and risk factors for atherosclerosis is paramount. For patients with critical carotid stenosis, revascularization can reduce the risk of stroke. In expert hands, both carotid surgery and stent procedures are important options.

— Neil Goyal, MD
Instructor in Clinical Medicine
Columbia University

— William A. Gray, MD
Director of Endovascular Services
New York -Presbyterian Hospital
Columbia University



Figure 2. X-ray image of carotid stenosis (arrow) before (left) and after stent (right).

Figures courtesy Abbott Vascular

Lovenox

(*enoxaparin sodium injection*)

What kind of medicine is Lovenox?

Lovenox is an injectable anticoagulant. This class of medication is commonly known as a “blood thinner.”

How does Lovenox work?

Lovenox works by interfering with proteins that are part of the body’s normal clotting mechanism. Lovenox does not dissolve clots that have already formed, but it can help prevent these clots from extending and causing more damage.

How will Lovenox help me?

Lovenox is used to prevent and treat harmful blood clots. This helps to reduce your risk of stroke, heart attack, deep venous thrombosis (clots in the leg veins) and pulmonary embolism (clots in the lung).

This medication is also used to treat acute illnesses associated with blood clotting such as unstable angina or heart attack.

Conditions that increase your risk of developing blood clots include:

- Hip and knee surgery
- Abdominal surgery
- Atrial fibrillation
- Mechanical heart valves
- Any condition that results in prolonged inactivity and bed rest.

Lovenox is also used as a temporary “bridge” to prevent clots from forming in high-risk patients taking warfarin (*Coumadin*), when their oral anticoagulant needs to be held for surgical or diagnostic procedures.

How is Lovenox prescribed?

Lovenox is usually prescribed in the hospital setting. It is injected under the skin, usually in the abdomen.

- For patients with an acute coronary syndrome, heart attack, pulmonary embolism or deep venous thrombosis, the dosage is 1 mg per kg of body weight, every 12 hours.
- For preventing blood clots during orthopedic surgery, the dose is either 30 mg every 12 hours or 40 mg, once daily. For abdominal surgery, the dose is 40 mg, once daily.
- For bridging therapy, your doctor will recommend a preferred dosing routine. A typical routine is to stop warfarin five days prior to the procedure. Lovenox, 1 mg per kg of body weight, is given every 12 hours for three days prior to the procedure. The last dose of Lovenox is given in the morning, one day before the procedure.

What dosage forms are available?

Lovenox is available in prefilled, single dose syringes of 30 mg, 40 mg, 60 mg, 80 mg, 100 mg, 120 mg, 150 mg, and 300 mg.

How long will it take to work?

Anticoagulation occurs almost immediately.

What if I miss a dose?

Take the missed dose as soon as possible. If later than a few hours, call your doctor for instructions.

Do food or other drugs affect Lovenox?

- Food has no effect on the Lovenox injection.
- Combining Lovenox with other medications that interfere with blood clotting can cause excessive bleeding. Examples include aspirin, non-steroidal anti-inflammatory drugs, and Plavix.

Who should use caution or not take this medicine?

- Nursing mothers. It is unknown whether the drug is excreted in human milk.
- Low weight individuals. There is an increased risk of bleeding and the dose may need to be adjusted.
- People with kidney disease. The dose will need to be reduced.
- People with uncontrolled high blood pressure may have an increased risk of bleeding.
- Individuals with recent spinal procedures. There is an increased risk of bleeding in the spine and serious complications.
- Use caution with a history of severe bleeding or trauma .

How will I feel while taking Lovenox?

Lovenox is usually well tolerated and should not change the way you feel. Mild, local irritation or bruising is common at the injection site.

Are there serious side effects to watch for?

Call your doctor for any severe bruising or bleeding.

How does the doctor monitor my progress?

Unlike warfarin, it is not necessary to monitor a blood test to check the level of anticoagulation. Your doctor will monitor your clinical condition and watch for signs of excessive bleeding.

Do you have any special tips for me?

- If you give yourself the injection, lie down and inject Lovenox under the skin, either once or twice a day, as directed. Alternate the left and right sides of the abdominal wall to inject. The whole length of the needle should be introduced into a skin fold held between the thumb and forefinger. To minimize bruising, do not rub the injection site.

For more information visit: www.Lovenox.com.

Lovenox® is a trademark of Sanofi-Aventis.

— Dina R. Katz, MD

Nuts to you

ARE you nutty for nuts? Well, I am too. But this food item can fool you some time, even if you check out the food label. Nuts in the right proportion are an important part of a heart-healthy diet. But too much of a good thing can cause problems because of a little something called calories. Take a glance at the label on your favorite almond or peanut jar and you might be surprised by the fat and calorie content. And, if you have been loading up on nuts because of their health benefit, you might just have found the answer for your “unexplained” weight gain. So, let’s set the nut record straight.

First let’s talk about the fat content of nuts. Yes, nuts are loaded with fat, but fortunately, it’s the right kind of fat. Nuts are high in the good type of fat, namely monounsaturated and polyunsaturated fat. Cashews, almonds and peanuts are loaded with monounsaturated fats, the same kind found in olive oil. Walnuts are a unique source of heart-healthy omega-3 fatty acids, a form of polyunsaturated fat. This is the same healthy fat that is found in salmon and can help lower cholesterol levels, decrease platelet aggregation (thin the blood), lower triglycerides, and possibly decrease the risk of sudden heart attack.

The benefit of nuts is not just theoretical. Numerous

research studies support the concept that a diet rich in nuts is good for the heart. In 2003, the Food and Drug Administration issued a “qualified health claim” for walnuts, peanuts, almonds, hazelnuts, pecans, pine nuts, pistachios and walnuts. Walnuts received a separate identification as an item that may reduce the risk of heart disease. Cashews, macadamia and Brazil nuts didn’t make the list because of their higher saturated fat content.

Nuts are an important part of the heart-healthy Mediterranean and DASH diet. But you do need to watch the serving size. Too big a portion will add plenty of calories, and can contribute to weight gain. The best way to incorporate nuts into your diet without gaining weight is to eat them as an accent to foods rather than as an individual snack. Throw a handful on salad, in a stir-fry, on top of yogurt, or mixed into oatmeal. This is also a tasty way to delay gastric (stomach) emptying and make you feel more full. Use our chart below to compare the different types of nuts.

— Stefanie Schwartz, RD

Ms. Schwartz is a nutrition consultant in Chappaqua, NY.

Supermarket Savvy

Nut buying guide

Variety (serving size)	Calories	Total Fat (g)	Sat. Fat (g)	Mono/Polyunsat. Fat (g)	Sodium (mg)
Planters dry roasted peanuts (1 oz)	170	15	2	4.5/7	110
Planters whole cashews (1 oz)	170	14	3	2.5/7	115
Planters almonds (1 oz)	170	15	1	3.5/9	40
Planters heart healthy mix (1 oz)	170	16	1.5	5/8	40
Planters mixed nuts (1 oz)	170	15	2	4.5/7	110
Planters dry roasted pistachios (1/2 c)	170	14	2	4/8	170
Blue Diamond wasabi/soy almonds (1/4 c)	170	15	1	N/A	115
Blue Diamond shelled walnuts (1/4 c)	200	20	2	14/2.5	0
Mauna Loa macadamias (1/4 c)	200	21	3.5	N/A	60
Planters trail mix (3 Tblsp)	160	12	1.5	4.5/4.5	15
Planters pecan lovers mix (1 oz)	180	17	2	5/9	70
Planters sunflower seeds (1 oz)	160	14	1.5	9/2.5	150
Planters chocolate almonds (12 pc)	220	15	5	2/7	15

Q: My doctor recently told me that I have prehypertension. What does that mean?"

— Armonk, NY

A: Prehypertension is a term that has recently been introduced to describe people whose blood pressures range from about 120/80 to 140/90 mm Hg. Many of these people were once considered to be high-normal. The designation of prehypertension is based on evidence from long-term studies that people with these levels of blood pressure are at increased risk for cardiovascular disease.

The designation of prehypertension does not imply that you are going to have heart or kidney problems in the near future but that more attention should be paid to blood pressure levels, even though these are not very high. There is a risk that labeling anyone with the term prehypertension may produce unnecessary anxiety.

If you have been told that you do indeed fall into the prehypertension

range, you should not be overly concerned. It merely implies that you should pay more attention to losing weight if obese, exercising more if you are sedentary, moderating your alcohol intake if you are drinking more than 2-3 drinks a day, and limiting the amount of salt in your diet if you are a heavy salt user. Generally, these lifestyle changes will reduce your blood pressure to a more normal or optimal range of about 120/80 mmHg.

Being told that you are prehypertensive does not mean that you have to take medication or that you have a disease. It merely suggests that you have a slightly greater risk over a long period of time of developing hypertension as we define it (blood pressures above 140/90 mmHg) and that you may eventually require specific medical treatment.

A recent study reported that the use of medication, in addition to nonpharmacologic approaches, will reduce blood pressure in people with prehypertension and may

reduce the risk of developing high blood pressure.

The bottom line is that being told that you have prehypertension suggests that you must be more careful about how much and what you eat and your daily activities.

To learn more about high blood pressure or hypertension, please visit: hypertensionfoundation.org. There, you can download a booklet, "High Blood Pressure: What You Should Know about it and How to Help Your Doctor Treat It." You can also receive a copy by mail by sending a self-addressed, stamped envelope to the Hypertension Education Foundation, Box 651, Scarsdale, NY 10583.

— Marvin Moser, MD

Dr. Moser is a member of the editorial board, the founding Director of the Hypertension Education Foundation and is Clinical Professor of Medicine at Yale University

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