Lifestyle Changes Control BP; Rival Drug Therapy

BY MARY ANN MOON
Contributing Writer

People with prehypertension and hypertension can make and sustain multiple lifestyle modifications, controlling their blood pressure and perhaps reducing their risk for many chronic diseases, according to Patricia J. Elmer, Ph.D., of Kaiser Permanente Northwest's center for health research, Portland, Ore., and her associates.

They reported the results at 18-month follow-up of a randomized, multicenter study of middle-aged people. The study, funded by the National Heart, Lung, and Blood Institute, enrolled 810 subjects across the country with a systolic blood pressure of 120-159 mm Hg and a diastolic blood pressure of 80-95 mm Hg.

Almost all participants were overweight or obese, 62% were women, and 34% were African American.

One subject group (268 people) received a behavioral intervention including advice to lose at least 15 pounds, perform at least 180 minutes per week of moderate-intensity physical activity, consume no more than 100 mmol per day of sodium, and drink no more than 1-2 alcoholic drinks per day.

A second group (269 subjects) received the same behavioral intervention plus additional advice to follow the DASH (Dietary Approaches to Stop Hypertension) diet, increasing their consumption of fruits, vegetables, and low-fat dairy products and decreasing their intake of total fat and saturated fat.

Both intervention groups kept food diaries, monitored their calorie and sodium intakes, and recorded minutes of physical activity.

In both groups, the subjects attended 14 group and 4 individual counseling sessions for the first 6 months, then attended monthly group sessions supplemented with 3 individual counseling sessions for the following 12 months. At these sessions, counseling focused on self-monitoring, reinforcement, and problem-solving, and it also promoted social support and individual motivation.

The third group of study subjects (273 people) received only advice rather than a behavioral intervention. They attended a 30-minute individual session at enrollment in the study and another 6 months later, at which they were counseled to lose weight, reduce sodium intake, increase physical activity, and eat a heart-healthy diet.

At 18 months, the prevalence of mild hypertension had decreased in all three groups, from a high of 36%-38% at baseline to 32% in the advice-only group to 24% in the behavioral intervention group instructed in established, guideline-recommended lifestyle changes; and to 22% in the behavioral intervention group instructed in those changes plus the DASH diet. This result compares favorably with the degree of blood pressure control reported for drug therapy in community-based studies, the investigators said (Ann. Intern. Med. 2006;144:485-95).

None of the subjects had normal blood pressure at baseline, but at 18 months the rates of normal blood pressure were 18%, 24%, and 24% in these three groups, respectively.

Participants in the DASH diet group significantly increased their intake of fruits, vegetables, dairy products, and fiber, folate, and minerals.

Fitness, as measured by heart rate on treadmill testing, improved in all three groups. Subjects in all groups also lost weight, but the mean weight loss was significantly greater in the two behavioral intervention groups than in the advice-only group. Subjects in both intervention groups reduced their intake of sodium and fat; those in the DASH diet group also significantly increased their intake of fruits, vegetables, dairy products, and important nutrients such as fiber, folate, and minerals—all of which "may reduce the risk for chronic disease," Dr. Elmer and her associates said.

Adherence to these lifestyle modifications decreased between 6 and 18 months, with "recidivism" in weight loss, sodium intake, and potassium intake. However, subjects in the two intervention groups still maintained about a 4% weight loss at 18 months. This "modest" reduction "should be viewed in the context of public health goals that emphasize the prevention of additional weight gain, rather than weight loss, because of the well-documented difficulties of sustaining weight loss," the researchers said.

They noted that randomized controlled trials typically recruit highly motivated volunteers, so the results of this trial may not be generalizable to the overall population. ■

CLINICAL GUIDELINES FOR FAMILY PHYSICIANS

Blood Pressure Measurement

BY NEIL S. SKOLNIK, M.D., AND ROSS H. ALBERT, M.D.

With recent hypertension guidelines suggesting that multiple agents often be used for the treatment of high blood pressure, the accurate measurement of blood pressure is essential. The Subcommittee of Professional and Public Education of the American Heart Association Council on High Blood Pressure Research released guidelines that recommend methods for blood pressure measurement in various settings. These guidelines focus on the methods and rationale behind blood pressure measurement itself. Here we discuss the guidelines relating to the primary care setting: measurement devices; patient positioning and cuff placement; and common sources of variability (Circulation 2005;111:697-716).

Guidelines are most useful when they are available at the point of care. A concise yet complete handheld computer version of this guideline is available for download, compliments of Family Practice News, at www.redi-reference.com.

Measurement Devices

The standard for blood pressure measurement is the mercury sphygmomanometer. This device is becoming less common in offices because of environmental concerns. Automated devices are now often used in the outpatient setting. Self-measurement by patients with home devices and devices in public places commonly occurs as well. Ambulatory measurements can be done using 24-hour devices that can track trends of daily blood pressure readings. Protocols exist for the validation of these devices, each based on comparison to multiple readings of calibrated mercury-based devices. There is no one standard validation method for blood pressure devices; therefore, variation may exist between devices of different companies, as well as between different models manufactured by the same company.

Patient Positioning and Cuff Placement

Guidelines suggest that the patient be seated for at least 5 minutes prior to blood pressure measurement. A minimum of two measurements, at least 1 minute apart, should be taken. The patient should be seated with the back supported and the legs uncrossed. Lying in the supine position can raise systolic blood pressure by 8 mm, as compared with the seated position. This means that blood pressures measured in the office on the exam table—or in the hospital with a patient lying flat—can be incorrectly high by almost 10 mm of pressure. The patient's arm should be supported at arm level by the physician or nurse measuring the pressure. If the arm is resting down at the patient's side, or if the patient is raising his or her arm with isometric force, the pressure may be altered. Neither the observer nor the patient should speak during the measurement process. Cuff-size determination and cuff position are key. It has been shown that an error in blood pressure measurement—with the blood pressure being read as falsely high—is greater with a blood pressure cuff that is too small than it is with a cuff that is too large. In one study of a referral practice of hypertensive subjects, 61% of 430 subjects had an arm circumference greater than 33 cm, requiring the use of a large adult cuff. The blood pressure cuff should be positioned with the midline of the bladder (typically marked on the cuff) directly above the artery, and with the bladder of the cuff encircling at least 80% of the arm circumference. The cuff should be placed high enough on the arm that the observer's stethoscope can be placed over the artery.

Sources of Variability

Two common sources of error in blood pressure measurement are human error and the white coat effect. Careful observer training and subsequent retraining are critical to ensure accurate measurement of pressure. Basic techniques should periodically be evaluated, because—even with the use of automated devices—the incorrect positioning of the patient, incorrect cuff selection, or incorrect placement of the cuff can lead to incorrect blood pressure readings. Another common source of human error is number bias. Studies have shown that reported measurements are often skewed with excess readings that have zero as the terminal digit. This type of number bias also exists as a result of well-known blood pressure thresholds separating normal and abnormal levels.

The white coat effect has been demonstrated in various studies: Physician-measured blood pressures are consistently higher than those measured by nonphysicians. One large study reported increases of greater than 6 mm of both diastolic and systolic pressure when blood pressure was measured by a physician. The guidelines discussed here do not address "correcting" physician-measured pressures; however, it should be noted that the current blood pressure treatment guidelines are based on measurements collected by nurses and other nonphysician health care workers.

The Bottom Line

Accurate blood pressure measurement is essential for good care. Plans based on these measurements can range from basic lifestyle modifications to medication changes. Measurement devices should be accurately calibrated. Staff should be carefully trained, and their techniques and knowledge periodically reevaluated. Effort should be made to eliminate variability, and multiple measurements should be taken at each visit to ensure accurate results.

DR. SKOLNIK *is associate director of the family medicine residency program at Abington (Pa.) Memorial Hospital and a coauthor of the "Redi-Reference Clinical Guidelines" handbook for handheld computers.* DR. ALBERT *is a first-year resident in the program.*