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**PEOPLE'S
PHARMACY**

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Graedons' Guide to

Blood Pressure Treatment

High Blood Pressure

High blood pressure is a very serious health concern that affects roughly 65 million Americans, or almost one in three adults. Another 70 million of us are "prehypertensive." Odds are that you're in one or the other of these categories. High blood pressure is the chief risk factor for strokes, heart attacks, atherosclerosis, kidney damage and dementia. It's also not well controlled in the vast majority (more than 70%) of those who suffer from it.

High blood pressure has been dubbed the silent killer. In many cases, the onset is gradual, and since there are often no symptoms, it may also be unsuspected. The trouble is, untreated hypertension (high blood pressure) can lead to serious consequences over the long term. People with elevated blood pressure are more likely to develop atherosclerosis and kidney disease, and they run more risk of both strokes and heart attacks. Getting the pressure down reduces the likelihood of experiencing such catastrophes.

At the danger of oversimplification, it may be helpful to think about blood pressure in terms of plumbing. Think of the heart as a pump with hoses connected to it. Each time it contracts to squeeze blood through the system, pressure in the hoses reaches a peak, called the systolic pressure. As it relaxes, the pressure lets up. That's called diastolic pressure. Because early pressure-measuring devices used a column of mercury, blood pressure is expressed in

units of mm Hg. The systolic is first and the diastolic second: 120/80, etc.

Now, think about a garden hose and imagine that the water is just pouring out without much pressure. To get a strong flow, you need a nozzle to narrow the opening. The smaller the nozzle, the farther and harder the water will shoot.

Blood vessels operate in similar ways. When the diameter narrows, as it does under stress or excitement or as a consequence of atherosclerosis, the pressure increases. If it gets too high, organs such as the brain, the heart, or the kidneys may suffer.

Blood pressure can vary significantly throughout a normal day or week—by as much as 50 points over the course of 24 hours. Exercise or agitation makes it rise; meditation or sleeping usually makes it drop. The levels at which a doctor decides that blood pressure requires treatment are somewhat arbitrary, and may be different from one doctor to the next.

WHITE COAT HYPERTENSION

White coat hypertension is the medical term for a reaction some people have to the approach of a doctor or nurse with a blood pressure cuff. The pulse may quicken and blood pressure soar 20 or more points right in the doctor's office.

The best study of this was done some years ago in Italy with equipment that took extremely accurate, continuous blood pressure measurements on 48 hospitalized people. When a physician entered the room to take blood pressure with a traditional cuff and stethoscope, 47 out of 48 patients experienced an increase. The average rise was 27 points, but one reading spiked 75 mm. Even people with normal blood pressure had elevations.

How many people are affected by white coat hypertension? Some experts estimate that 15 to 30 percent of patients diagnosed with high blood pressure may have a problem only in the doctor's office. Older people may be especially vulnerable.

White coat hypertension is controversial. Some physicians believe that it should be treated aggressively, on the grounds that any stress may make blood pressure rise excessively in someone who experiences it. They reason that if a person has hypertension in the doctor's office, he or she may respond in a similar way to a disagreement with the boss, an argument with a spouse, or a close call in traffic.

Other doctors fear that white coat hypertension may lead to false diagnoses of disease, as our blood pressure is constantly changing throughout the day and week. Being labeled "hypertensive" is enough to affect self-image, work productivity, and general well being. It may also result in unnecessary medication.

We encourage people to acquire an easy-to-use home blood pressure monitor and to keep a diary of readings to be shared with their health care provider. This way, they can measure their blood pressure under a variety of conditions (work, stress, relaxation, etc.), which can help determine the most appropriate treatment strategy.

Are You Angry?

Drs. Redford and Virginia Williams wrote a fabulous book several years ago called *Anger Kills*. Their work reveals that hostility is bad for the heart.

There's also confirming evidence from Canadian researcher J. David Spence, M.D. that people who react to stress and frustration with elevated blood pressure may be more likely to develop atherosclerosis than people who take life's curveballs in stride. These "hot reactors" may be at least as vulnerable to hardening of the arteries as people who smoke or have diabetes. Dr. Spence believes that people who over-react to stress may be a lot like hostile and cynical folks who are also at greater risk of heart attacks and strokes.

If you're someone who tends to feel stressed or angry when you're cut off in traffic, your spouse is late for dinner, or a person in the express lane at the supermarket has too many items, you might want to think about learning to recognize and monitor your tense reactions, as they could be negatively affecting your health.

Measuring Stress

If you lived through the 1970s, you probably remember the mood ring craze. Silly as it may sound, mood rings (or their newer, higher-tech cousins) might provide a good visual cue for rising stress levels that could signal elevated blood pressure. Mood rings are still readily available. (See www.moodjewelry.com.) But we're even fonder of the slightly more sophisticated Bio-Q Thermal Biofeedback and Stress Monitoring Ring at www.futurehealth.com. And if you don't like rings, there are Bio-feedback Bio-Squares, liquid crystal "chips" smaller than stamps that stick to your skin. Like the rings, they change colors as your body temperature (and mood) changes. You can find them on Amazon for about \$15 per 100.

Dos and Dont's of Managing Blood Pressure

- **Measure your blood pressure at home**
- **Monitor your stress level**
- **Practice relaxation**
- **Lose weight**
- **Try the DASH diet**
- **Don't forget your minerals**
- **Drink pomegranate, beet, and grape juice**
- **Breathe easy with RESPeRATE**
- **Keep in touch with family and friends**
- **Stay away from coffee, licorice, and blood pressure-raising drugs**
- **Beware the beta-blocker blues**
- **Talk to your doctor about cholorthalidone**
- **Remember your ACE in the hole**

Home Monitors

There are many blood pressure monitoring devices on the market, ranging from an old-fashioned mercury sphygmomanometer with a stethoscope to a machine with a digital read-out. Some devices are even self-inflating, making it possible for anyone to take his or her own blood pressure without assistance.

We have been especially impressed with the Omron products. They are easy to use and reliable, and were highly rated by *Consumer Reports*. The model that was most highly rated is Omron Automatic BPM with Intellisense. It also has a nice, large cuff that should fit most people, and its memory recall will make it easy to keep track of your readings over time. It's a little pricey at \$80 to \$90, but Omron also makes a ReliOn line which is a bit less expensive. It's available at Wal-mart for about \$40 to \$60. To find a store that sells them in your area, go to www.omronhealthcare.com, or call Customer Service at (800) 634-4350.

To Get An Accurate Reading Make sure you and your doctor:

- **Use the proper cuff size**

A cuff that's too small could falsely elevate your readings. Request the right cuff size at the doctor's office. And if you need a larger cuff at home, Omron makes them in a variety of sizes.

- **Avoid talking**

Doctors and nurses often like to chat with patients during readings because they think it will help calm us down. Research suggests, however, that they may elicit the opposite reaction: a measurement taken during conversation could be artificially high (more than 20 points!). Try to sit quietly for 5 minutes before your blood pressure is taken.

- **Maintain correct body position**

Your arm should rest on a flat surface that's at about the same level as your heart, like a desk. If your arm is in your lap, both your systolic and diastolic numbers will be higher. Also be sure that your back is supported. Sitting on the exam table could add as many as 5 points to your reading.

- **Keep a diary**

There is enormous variability in blood pressure throughout the week and even the day. The numbers that get recorded in your chart are only one tiny sliver of your blood pressure story. For that reason, it's important to take blood pressure readings at various times of day and under as many different conditions as possible. Keep a careful record of your readings and of what you were doing before and during each measurement. That will help you note trends that you can then share with your physician.

Non-Drug Options

There are literally dozens of medications for high blood pressure on the market, and while pharmaceuticals may indeed be the only option for some people, all of these pills can cause side effects, sometimes very serious ones like potassium depletion.

We think it can't hurt to try some non-drug options first. Remember, though, that it's extremely important to communicate with your physician at every stage about blood pressure-lowering strategies. Managing hypertension requires careful medical supervision.

Watch your weight

Losing as little as 10 or 15 pounds can make a big difference in your blood pressure. Overweight people who shed about 18 pounds can expect their systolic blood pressure to drop by 8.5 mmHg and their diastolic pressure to come down by 6.5 mmHg. That's about what you could hope for if you were to go on medication. Of course, losing weight may be difficult, but it is well worthwhile in terms of self-esteem and general health.

The experts tell us that many people munch when they are bored, anxious or upset, and that this contributes to unconscious calories that can really add up. A food diary is a good way to review when you are eating and why. The very act of writing down every bite can make you more aware of your mental state and encourage alternative activities for relaxation or relief of boredom.

Sensible eating usually means less fat and more fresh fruits, vegetables and whole grains. We especially recommend the DASH (Dietary Approaches to Stop Hypertension) diet (see right), but keep in mind that different programs work for different people. And of course, portion control is important, too. One trick we like when we eat out is sharing the entree. If your dining partner is willing, this can halve your restaurant calories.

The other component of a weight loss program is to increase the energy you use. Engaging in regular, moderate exercise can help bring down blood pressure by at least 2 or 3 mmHg. For starters, try parking a little farther away at work or the shopping mall.

Exercise sensibly

If you are out of shape, never start exercising without first checking with your health care provider. Overdoing it, especially in the beginning, is the path to disaster. One study revealed that people who were out of shape and unprepared were 100 times more vulnerable to a heart attack if they suddenly started to exercise vigorously. Shoveling snow or running to catch an airplane can trigger serious heart problems.

Pick an activity that you enjoy. That way you are more likely to stick with it. Walking is excellent, especially if you can do it for 30 to 60 minutes at least four days a week. Whatever exercise you select, keep it up. The buddy system can be a great motivator if your friend encourages you. Make sure to put your exercise times on the calendar as if they were important appointments. Fitness will improve and weight loss will follow.

Eat, Drink and Be Merry

The DASH Diet

Designed specifically to help control hypertension, the DASH diet has been studied extensively and demonstrated to be effective. It brings systolic pressure down by an average of 11.4 mmHg and diastolic by 5.5 mmHg. The basics are daily intake of:

- 4 servings of fruit
- 4 servings of vegetables
- 7 to 11 servings of grains
- 2 to 3 servings of low-fat dairy foods
- Nuts, fish, and poultry
- Little red meat, sweets, and sugary drinks

For \$8, you can get more specifics from the book *The Dash Diet for Hypertension*, or for free, you can get an overview at: www.nhlbi.nih.gov/health/public/heart/hbp/dash/new_dash.pdf.

Remember, though, that other diets may work just as well. In fact, research from Johns Hopkins suggests that replacing some of the carbohydrate calories in the DASH diet with protein or monounsaturated fats may be even more effective for lowering blood pressure and cholesterol. Choose the diet that's right for you—South Beach, the Zone, or something else that better fits with your lifestyle.

Chocolate

Hard as it may be to believe, chocolate can actually be good for your health. It's full of the same antioxidant flavonoids found in red wine and green tea—in fact, cocoa and chocolate have even more of the good stuff, as well as other compounds that help the heart and cardiovascular system. One long-term study showed that Dutch men who ate about 10 grams of chocolate a day (the size of a Ghiradelli square) had lower systolic pressure by 3.7 mmHg. Their chances of dying of heart disease were also decreased by 50%.

Go ahead and try a little chocolate—the taste (and rewards) are sweet! If you're watching your blood sugar or calories, you could go for cocoa without sugar, like Scharffen Berger or Valrhona (not alkali or Dutch-processed).

Special Foods

Although the jury's still out on whether or not garlic and onions really lower blood pressure as many people claim, it certainly can't hurt to try adding them fresh to your diet. Be careful about garlic supplements, though: they may interact with some medications to increase the risk of bleeding.

Another food some folks swear by is celery. Again, there's no scientific evidence to prove it can fight hypertension, but it's worth a try. The "dose" is eight ribs a day; do an experiment and record your blood pressure readings to see if you notice a change.

Some other foods may block angiotensin-converting enzyme just like the ACE-inhibitor class of drugs: compounds in aged gouda and fermented milk products like kefir, which you can get in health-food stores.

High Magnesium Foods

Halibut, 3 oz (90 mg)
Almonds, 1 oz (80 mg)
Cashews, 1 oz (75 mg)
Soybeans, ½ cup (75 mg)
Spinach, ½ cup (75 mg)
Mixed nuts, 1 oz (65 mg)
Shredded wheat, 2 (55 mg)
Oatmeal, 1 cup (55 mg)
Baked potato (50 mg)
Peanuts, 1 oz (50 mg)
Black-eyed peas, ½ cup (45 mg)
Yogurt, plain skim, 8 oz (45 mg)
Brown rice, ½ cup (40 mg)
Lentils, ½ cup (35 mg)
Avocado, ½ cup (35 mg)
Banana (30 mg)
recommended: 250-500 mg

*Derived from data from the Office of Dietary Supplements of the National Institutes of Health.

THE DIRT ON SALT

If you have high blood pressure, you've probably been told for years to avoid salt. But despite the ubiquity of this advice, the data on salt are mixed. One major study conducted in 2006 seemed to indicate that those who consumed less sodium were actually at a higher risk for fatal heart attacks and strokes.

This doesn't mean everyone should go wild with salt; it does mean, however, that assiduously avoiding salt may not benefit longevity as much we've all been told. We encourage you to eat salt with moderation, especially if you're salt-sensitive. But your quality of life doesn't have to suffer entirely, either.

Emmett Miller's Tapes
available from:
www.drmilller.com
Or by calling:
800 528-2737

Maximize Your Minerals

Minerals can make a difference for blood pressure and heart health. Calcium, magnesium and potassium are especially important. While the individual effects of each of these electrolytes on blood pressure is relatively small, studies have shown that together they can have a significant impact. Of these three, magnesium may be the most essential, in part because it's often lacking in our diets. This is often especially true for those on diuretics, as these drugs can deplete people's systems of magnesium (and potassium).

Get your minerals from food if possible. Taking supplements could result in an overdose, but that is difficult when eating fruits and veggies. As an extra benefit, you are more likely to get adequate amounts of folic acid, which is helpful for the heart.

For a list of magnesium-rich foods, see the sidebar to the left. Foods high in potassium include: apricots, artichokes, asparagus, bananas, beets, bell peppers, blackstrap molasses, broccoli, brussels sprouts, buttermilk, cabbage, cantaloupe, carrots, cauliflower, chicken, fish, kidney beans, lentils, lima beans, nectarines, oatmeal, onions, oranges, peaches, plums, pomegranates, potatoes, prunes, raisins, raspberries, wheat germ, and yogurt.

Beet Juice

New research out of England suggests that beet juice may be at the vanguard of the blood pressure battle. Volunteers in a study were given either two cups of beet juice to drink or two cups of water. Those who drank the beet juice experienced about a 10-point drop in blood pressure readings, and the effects lasted for a whole day. These results are as good as those you could expect from many drugs.

If you don't have a juicer and you're having trouble finding beet juice in your local health-food stores, you can always order it online. Some retailers to try are www.truefoodsmarket.com or www.luvlijucies.com, but there are many others.

Pomegranate Juice

If you like sipping juice but hate beets, there are some other liquid alternatives for fighting hypertension. Pomegranate juice acts sort of like an ACE inhibitor to block

the angiotensin-converting enzyme, thus lowering blood pressure. It can reduce ACE activity by roughly 36% percent, and one study found that subjects who drank 2 ounces of it daily brought their systolic pressure down by about 8 points.

Pomegranate juice also benefits the cardiovascular system in other ways, by reducing the risk of blood clots and improving blood-flow and oxygen delivery to the heart. It also lowers total and bad LDL cholesterol. In general, the juice from these tiny seeds seems to create big results.

Concord Grape Juice

And finally, purple grape juice may be another blood pressure-lowering beverage. In one study, it brought systolic BP down by about 7.2 points and diastolic by 6.2. Grape juice can also lower cholesterol, improve blood vessel flexibility, and decrease the risk of blood clots. The suggested amount is about two glasses per day. Grape juice has a lot of sugar and calories, though, so we don't recommend it to those watching their weight or sugar intake.

Socialize and Be Merry

One very pleasant solution to the problem of hypertension is to maintain close ties to family and friends. Loneliness is a risk factor for high blood pressure: it can raise readings by up to 30 points. It may also contribute more to cardiovascular disease than even obesity or lack of exercise. Isolation can strike those of retirement age especially hard; at least 9 million Americans over the age of 50 are believed to frequently feel lonely. Nurture your social networks, and try creating new ones: volunteer work, art or dance classes and bringing home a new pet are ways to maintain a sense of connection.

Learn to Relax

Relaxation, whether you get it from listening to soothing music or petting the family cat or dog, is one of the most delightful and effective ways of lowering blood pressure. So many Americans are living in the fast lane that lots of people have forgotten how to relax. Biofeedback can be helpful for folks with high blood pressure. Another approach is listening to relaxation tapes, such as those from Emmett Miller, M.D. Try "Down with High Blood Pressure."

Breathe Easy

This may sound obvious, but learning to breathe deeply and well can really reduce blood pressure. It's harder for some people to do than you might think. One way to bone up on your breathing technique is to try meditation or yoga.

If yoga's not for you, though, another amazing method is to practice breathing with a machine called RESPeRATE. It consists of a chest strap, a set of earphones, and a computerized device about the size of a thick paperback. Initially, you breathe into it normally so that its sensors can learn your breathing pattern. But eventually this breathing "coach" uses melodious tones to prolong your exhalations. Ideally, you want to get down to 10 breaths per minute. Studies have shown that RESPeRATE can decrease blood pressure by at least 5 points, and perhaps by as much as 10 or 15.

But one downside is that RESPeRATE requires a significant time commitment—about 15 minutes per day at least four or five times a week. It's also quite pricey (around \$300), so you shouldn't invest in it unless you're ready to use it regularly. And exercise will likely work at least as well.

Quit Smoking

Too obvious to belabor. And of course, this will make breathing deeply much easier. One caution, however: we are a bit leery of stop-smoking drugs like Chantix, as they seem to produce a host of negative side effects that worry us, including depression and suicidal ideation. When you do make the decision to quit, work with your doctor and loved ones to come up with a plan that you can stick to.

Other Things to Avoid

Coffee and Soda

The relationship between caffeine and hypertension isn't necessarily straightforward. While some research suggests that as little as a cup of coffee can modestly increase blood pressure, it may not be a problem for all people. Those who *should* watch out, however, are folks who metabolize caffeine slowly. If you find that the cup of coffee or can of soda you drank in the afternoon can keep you tossing and turning at night, you're probably a slow

caffeine metabolizer. Slow metabolizers seem to be at considerably higher risk of heart attack—the more caffeine they consume, the higher the risk. It's hard to be certain what kind of metabolizer you are, so we advise cautious consumption of caffeine for all those with blood pressure concerns.

And it may not only be caffeine that's a problem. A large study of nurses showed that those who drank soda (diet or regular) had a higher rate of hypertension. The researchers didn't think caffeine in the sodas was responsible, but most likely something else (as yet unidentified). It's probably also wise, then, to go light on the cola.

Green or oolong tea might make a very good substitute for coffee and soda: they appear actually to *lower* blood pressure.

Licorice

Black licorice may sound like a surprising culprit for hypertension, but this tasty treat can really throw your metabolism out of whack, imbalance hormones, deplete potassium—and elevate blood pressure significantly. So if you've been heavy-handed with the Good & Plenty's, it might be time to lay off a bit.

Pain Relievers and NSAIDs

Pain relievers can also pose a risk. The entire class of NSAIDs (nonsteroidal anti-inflammatory drugs) can elevate blood pressure, and over-the-counter pain medications can also be a problem.

Preparation H

You may also be surprised to learn that this popular hemorrhoid medication can lead to elevated blood pressure. It contains the decongestant phenylephrine, which constricts swollen blood vessels. There are warnings on the packaging not to use Preparation H if you're taking blood pressure medication, but one of our readers had some very unpleasant episodes before he discovered the fine print.

Other Medications

There are hundreds of other medications that can make it difficult to manage blood pressure. Be sure to speak with your physician about all of the prescription and OTC pills that you're taking, and to always read the information provided for each.

RESPeRATE

Available at:
www.resperate.com
or
877-988-9388

Dietary Supplements

There isn't a lot of hard evidence to suggest that supplements can dramatically reduce blood pressure, but there's some data that seem to indicate coenzyme Q10 might be somewhat effective. Another supplement that may prove beneficial, especially for those who are prehypertensive, is grape seed extract. In one study, subjects taking it saw a 12-point drop in systolic BP and an 8-point decrease in diastolic.

Preparation H and High Blood Pressure

After using Preparation H for several days, my blood pressure went to 206 over 98 and I ended up in the emergency department for hours.

Later that week I read in your column that someone else had experienced the same problem. My doctor was skeptical, to say the least, so I lent him the clipping.

I never had high blood pressure before in my life. It was always around 130 over 65.

Diuretics

(potassium wasting)

Bumex	bumetanide
Diachlor	chlorothiazide
Diucardin	hydroflumethiazide
Diuril	chlorothiazide
Edecrin	ethacrynic acid
Enduron	methyclothiazide
Esidrix	hydrochlorothiazide
Exna	benzthiazide
HydroDIURIL	hydrochlorothiazide
Hygroton	chlorthalidone
Lasix	furosemide
Lozol	indapamide
Oretic	hydrochlorothiazide

Symptoms of potassium depletion:

(normal potassium range = 3.5 to 5 mEq/L)

- Muscle cramps
- Difficulty breathing
- Confusion
- Mood changes
- Lethargy, fatigue
- Weakness
- Dry mouth, thirst
- Nausea, vomiting
- Irregular heart rhythms

*Symptoms are not a reliable indicator of potassium imbalance. Blood tests are essential.

No one should ever stop or start taking medicines without careful medical supervision. Remember, your pharmacist can provide valuable information about side effects and interactions! Please report any symptoms to your physician promptly.

Diuretics Potassium wasting

Diuretics ("water pills") have long been considered a first step in treating high blood pressure, as they're extremely safe and effective. When first introduced, they started a revolution in hypertension treatment, and they were once among the most prescribed drugs in the world. But as beta-blockers, calcium channel blockers, ACE inhibitors and angiotensin receptor blockers came on the market, physicians started to overlook diuretics.

Then in 2002, some remarkable results from the government-sponsored study ALLHAT (the Antihypertensive Treatment to Prevent Heart Attack Trial) shook the cardiology world. ALLHAT followed 40,000 patients for several years to test the efficacy of various blood-pressure-lowering drugs. Researchers discovered that perhaps the most effective medication for controlling blood pressure was chlorthalidone, an inexpensive diuretic.

Diuretics do have some disadvantages, though. For one thing, they deplete the body of two essential minerals, potassium and magnesium. If these electrolytes drop too low, a person may experience disrupted heartbeat or cardiac arrest. That is why periodic blood tests are crucial. Eating potassium-rich foods (listed on page 4) should help lower this risk. Cholesterol should also be monitored before and during treatment. Some diuretics actually raise cholesterol levels. **Lozol** does not have this complication.

Cautions: Anyone allergic to thiazide diuretics, sulfa drugs or oral diabetes drugs should not be taking these medicines. Rash or itching should be reported promptly, as it may be a sign of allergy. If you have kidney or liver disease, lupus or asthma, inform the doctor of your condition, as certain diuretics may make your situation worse. In some cases these drugs may increase blood sugar or aggravate gout.

Side Effects: Adverse events are uncommon. Increased urination is anticipated, so taking such medicine early in the day may reduce the number of times you have to get up at night to go to the bathroom. Muscle cramps, upset stomach, loss of appetite, diarrhea, dizziness, sexual difficulties, increased

susceptibility to sunburn, blurred vision and headache have been reported.

Interactions: Please check with a pharmacist and physician if you combine a diuretic with other medicine. NSAIDs such as **Advil**, **Aleve**, **aspirin**, **Indocin**, **Naprosyn**, **Orudis**, **Relafen** or **Voltaren** may reduce the effectiveness of diuretics. This could be especially dangerous if someone were taking **Lasix** or **Bumex** for heart failure.

Other drugs that may interact with diuretics include colestipol (**Colectid**), cholestyramine (**Questran**), lithium (**Es-kalith**, **Lithobid**, etc.) and oral diabetes medicines (**DiaBeta**, **Diabinese**, **Glu-cotrol**, **Orinase**, etc.). Laxatives may deplete the body of potassium, which could be dangerous in combination with potassium-wasting diuretics.

Digoxin (**Lanoxin**) is commonly prescribed with diuretics like furosemide (**Lasix**). But if potassium levels drop below normal, this could become a life-threatening situation.

Potassium sparing

In order to counteract the potassium-depleting properties of some thiazides, diuretics were developed that preserve potassium. Amiloride (**Midamor**), spironolactone (**Aldactone**) and triamterene (**Dyrenium**) are prescribed alone or, even more commonly, in combination with hydrochlorothiazide as **Aldactazide**, **Dyazide**, **Maxzide** and **Moduretic**.

They have many of the same side effects and precautions as the diuretics discussed above. They may still deplete magnesium, and this crucial mineral should be measured periodically.

One of the biggest problems with these potassium-preserving pills is the potential interaction with the ACE inhibitor category of blood pressure medicines (**Aceon**, **Accupril**, **Altace**, **Capoten**, **Lotensin**, **Mavik**, **Monopril**, **Prinivil**, **Univasc**, **Vasotec** and **Zestril**). Because the ACE inhibitors also preserve potassium, levels of this electrolyte could rise dangerously. If a physician prescribes a potassium-sparing diuretic and an ACE inhibitor simultaneously, medical supervision must be extremely meticulous with frequent blood tests. Symptoms of too much potassium include breathing difficulty, weakness, confusion, slow heart rate and heart rhythm changes.

ACE Inhibitors

These blood pressure drugs block an enzyme called angiotensin converting enzyme. Some are also useful in controlling congestive heart failure. **Vasotec** and **Capoten** may help preserve kidney function in diabetics as well, and ACE inhibitors may be beneficial for secondary stroke prevention when paired with diuretics. It's hard to say which are "best" without head-to-head trials, but cardiologists we trust seem to prefer longer-acting **Aceon**, **Altace**, and **Mavik**.

Cautions: Because ACE inhibitors are generally well tolerated, they are widely used. But some people may develop life-threatening allergies to these drugs. Swelling of the face, tongue, lips and airways can make breathing difficult. At the first sign of such a reaction, emergency treatment is essential. Pregnant women must avoid ACE inhibitors; such drugs can be toxic to the fetus during the 2nd or 3rd trimester. Blood disorders and kidney problems are rare but serious complications of ACE inhibitors. People with kidney or liver disease require dose adjustments and monitoring.

ACE inhibitors may occasionally raise potassium to dangerous levels. For this reason it is important to avoid extra potassium, either as a supplement or salt substitute.

Side effects: Most people do well on ACE inhibitors, but if blood pressure drops too low, some individuals may become dizzy or faint. This is more likely after the first few doses, so extra caution is important early in treatment. A dry, hacking cough can be an unpleasant side effect of ACE inhibitors. If such a cough persists, please tell your doctor. Other possible adverse effects include rash and itching, stomach upset, headache, weakness, irregular heart beats, fluid retention, sexual difficulties, elevated enzymes related to kidney function, and sensitivity to sunburn. Some ACE inhibitors may cause loss of taste sensation.

Interactions: Diuretics that spare potassium such as **Aldactazide**, **Dyazide**, **Maxzide** and **Moduretic** (see page 6) may cause dangerous potassium overload in combination with ACE inhibitors. Other drugs that may interact include aspirin and the arthritis medicines **Clinoril**, **Dolobid** and **Indocin**, the gout medicine allopurinol, lithium, cyclosporine, oral diabetes medicines, and rifampin. Check with your pharmacist and physician regarding any other drug in combination with ACE inhibitors.

The ACE Cough

Many of our readers have complained to us about the annoying cough they experience while taking ACEs. One wrote: "My husband and I were on **Altace**. The coughing was unbearable. Our family doctor put us both on **Diovan** and the coughing stopped, but NOT right away. It diminished gradually and all too slowly for us!" Another reader reported: "I took lisinopril and developed a cough that would start with a terrible tickle in my throat. Neither cough drops nor syrup had any effect on the problem. I had been taking a generic form of the drug for about the same interval I'd been coughing, and the doctor suggested I go back to the original. But the pharmacist cautioned that both versions contained the same ingredients, so I might not notice any difference. Since I am a singer, I could not take a chance and stopped taking the drug altogether. I will let my doctor know, but in the meantime I continue to exercise, watch my diet, and take my BP regularly. So far no problems."

For those who have a hard time controlling their blood pressure with diet, exercise and non-drug approaches alone, though, there are other options.

Angiotensin Receptor Blockers

Angiotensin receptor blockers, or ARBs, work in a way similar to ACE inhibitors. They're less likely to cause the persistent, nagging cough that can be associated with ACEs, though, so they can be a good alternative for people who can't tolerate ACEs.

Are ARBs as good as ACEs at controlling high blood pressure? The answer seems to be yes. Some cardiologists are now prescribing ACEs and ARBs in combination for maximum blood-pressure-lowering benefits. One issue that you may want to discuss with your physician, however, is that there is still some question about whether or not ARBs are as effective at preventing heart attacks as ACEs. As with ACE inhibitors, pregnant women must avoid these medications.

Side effects: Adverse reactions are rare but may include stomach upset, muscle cramps, and dizziness.

Interactions: **Cozaar** interacts with cimetidine (**Tagamet**) and barbiturates.

ACE Inhibitors

Aceon	perindopril
Accupril	quinapril
Altace	ramipril
Capoten	captopril
Lotensin	benazepril
Mavik	trandolapril
Monopril	fosinopril
Prinivil	lisinopril
Univasc	moexipril
Vasotec	enalapril
Zestril	lisinopril

ACE-Aspirin Interactions

Many physicians are unaware that aspirin may reduce the effectiveness of ACE inhibitors. This may occur at aspirin doses of 325 mg or greater, whereas low doses (100 mg) do not seem to be a problem. See: Guazzi, M. et al. *Clin. Pharmacol. Ther.* 1998;63:79-83. Hall, D. et al. *J. Am. Coll. Cardiol.* 1992;20:1549-1555.

Angiotensin Receptor Blockers

Atacand	candesartan
Avapro	irbesartan
Benicar	olmesartan
Cozaar	losartan
Diovan	valsartan
Hyzaar	losartan + HCTZ
Micardis	telmisartan
Teveten	eprosartan

Calcium Blockers

Adalat	nifedipine
Calan	verapamil
Cardene	nicardipine
Cardizem	diltiazem
Covera-HS	verapamil
Dilacor XR	diltiazem
DynaCirc	isradipine
Isoptin	verapamil
Norvasc	amlodipine
Plendil	felodipine
Procardia	nifedipine
Sular	nisoldipine
Tiazac	diltiazem
Vasacor	bepidil
Verelan	verapamil

Beta Blockers

Blocadren	timolol
Cartrol	carteolol
Corgard	nadolol
Inderal	propranolol
Kerlone	betaxolol
Levatol	penbutolol
Lopressor	metoprolol
Sectral	acebutolol
Tenormin	atenolol
Toprol XL	metoprolol
Visken	pindolol
Zebeta	bisoprolol

Beta-Blocker Blues

Beware of the beta-blocker blues. When one of our readers was prescribed beta blockers, he reported: "I went through a living hell because I became severely depressed. When I complained [to my doctor] of my depressed feelings and asked if the medication might be responsible, he brushed my concerns aside and prescribed an antidepressant. It made me anxious and gave me insomnia, so he added a tranquilizer."

Calcium Blockers

Calcium channel blockers became popular in the 1980s because they appeared to have fewer side effects than previous drugs. Not only did they control angina and blood pressure, they offered relief for a variety of other problems including certain arrhythmias, migraines, strokes, and Raynaud's syndrome.

There are now data to suggest, however, that their safety may be in question. Instead of a clear indication that calcium antagonists improve and prolong life, there is concern that some of these medications may actually predispose certain people to heart attacks and increase the risk of heart failure.

Clearly there are specific situations in which drugs like **Norvasc**, **Calan**, **Cardizem**, **Covera-HS**, **Isoptin** and **Verelan** may be necessary. And of course no one should ever stop any medication without medical supervision. But be sure to discuss all potential risks and side effects of your medications with your physician.

Cautions: Older people may be vulnerable to dizziness if they stand suddenly. Severe heart conditions or kidney or liver disease may create special problems for people on these medicines.

Side Effects: **Nifedipine** can produce flushing, dizziness, headache, nausea and fluid retention (swollen ankles or hands). Other adverse effects may include irregular heart beats, breathing difficulties, trouble sleeping or sexual problems. **Verapamil** can cause constipation, hair loss, dizziness, swollen hands or feet, sexual difficulties, headache or rash. **Diltiazem** is often well tolerated, but some people experience fluid retention, dizziness, headache or flushing. Other reactions include nausea, constipation, sensitivity to sunburn and rash. **Amlodipine** may produce rash, dizziness, headache, weakness, upset stomach, swollen gums, fatigue and fluid retention.

Interactions: People with heart rhythm problems may be prescribed quinidine, which may be dangerous in combination with **nifedipine** or **verapamil**. When a beta blocker is combined with a calcium antagonist, cardiac function should be monitored carefully. Certain calcium blockers may also interact with antidepressants, barbiturates, carbamazepine (**Tegretol**), cimetidine (**Tagamet**), cyclosporine (**Sandimmune**), digoxin (**Lanoxin**), grapefruit juice and theophylline.

Beta Blockers

Beta blockers are some of the most widely prescribed blood pressure drugs; more than 115 million prescriptions are dispensed for them annually, with **atenolol** and **metoprolol** at the helm. They're also used to control angina, normalize irregular heart rhythms, lower the risk of repeat heart attacks, prevent migraines and diminish performance anxiety.

They vary widely in their side effect and interaction profiles, but we now have fairly grave concerns about some of their hazards. We would not recommend these drugs as the first or even second line of defense for controlling high blood pressure. They're simply not as effective as they should be, particularly **atenolol**.

There are many beta blockers, so what follows is general information. For more details on a specific drug, please check with your physician and pharmacist.

Cautions: People who have asthma and other serious breathing problems can get into terrible trouble with many beta blockers, as these drugs can lead to constricted airways. Diabetes and thyroid disorders may also be harder to treat. Never stop a beta blocker suddenly, since this could trigger angina, irregular heart rhythms or even a heart attack.

Side Effects: Some effects associated with drugs like **propranolol** include slow heart rate, cold hands and feet, fatigue, stomach upset, insomnia, nightmares, shortness of breath, rash, hair loss, blurred vision, dizziness, joint pain and sexual difficulties. Some people experience the "beta blocker blues": depression, nightmares, confusion, memory problems, and lethargy. Cholesterol elevation may also occur with certain beta blockers, so blood tests are recommended.

Interactions: Other blood pressure pills may be prescribed in combination with beta blockers. If clonidine (**Catapres**) is stopped suddenly in such a situation, blood pressure may rise to life-threatening levels. NSAIDs may reduce beta-blockers' effectiveness. Other medications that may interact with beta blockers include **ampicillin**, anti-psychotics, barbiturates, **cimetidine**, **ergotamine**, oral contraceptives, **rifampin**, **theophylline** and some drugs for irregular heart rhythms (**amiodarone**, **flecainide**, **propafenone**, **quinidine**).