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More than 60 million people have hypertension in this country. Hypertension is a silent killer, as it does not produce significant symptoms. However, it can cause serious target organ damage such as stroke, heart failure, heart attack, kidney failure, or arterial blockage in the legs. Less than one third of the hypertensive people are well controlled on their treatment.

### Why Treat Hypertension?

Hypertension, if uncontrolled can cause severe cerebral bleed and stroke. Adequate control of blood pressure can reduce the risk of stroke by 60%.

Long standing hypertension is a leading cause of congestive heart failure. Good control of blood pressure can prevent the thickening and enlargement of the heart and also reduce the risk of heart attacks that weakens the heart muscle.

Uncontrolled hypertension can eventually lead to kidney failure necessitating dialysis in the long run.

The hypertension treatment cost is miniscule compared to that of managing any of the morbid complications. Most hypertension can be controlled with one or two medicines. The cost of three months' supply could be less than what you spend for an evening dinner.

### Life Style Changes

The treatment of hypertension begins with you. Reducing your weight, engaging in a regular exercise has been shown to bring down blood pressure. Alcohol, caffeine, and smoking have been known to increase the blood pressure transiently. Routine blood pressure check helps you to monitor your blood pressure and adjust your medications so that your blood pressure is controlled throughout the day. Meditation and relaxation techniques that reduce stress have been known to lower blood pressure.

### Diet & Salt Restriction

There is a direct correlation between blood pressure and salt intake. Excess sodium in the blood vessel walls makes the walls stiff, raise the resistance to blood flow, and thus elevate blood pressure. Some people are more sensitive to salt than others. Nonetheless, all patients with blood pressure problems must watch the salt intake. Reducing the salt intake can lower blood pressure. Replacing regular salt with salt substitutes can also help. Dash is a salt substitute that contains potassium instead of sodium. However, you need electrolytes monitoring to ensure that you are not getting excess potassium, especially in the presence of kidney disease. Diet low in calories and fat helps you to lose weight and reduce the amount of cholesterol deposition in the arterial walls that increases the resistance to blood flow.

### Water Pills

Water pills increase the sodium elimination in the urine, reduce the amount of sodium in the arterial walls, and decrease the resistance to the blood flow, thus reducing the blood pressure. Water pills also increase the excretion of potassium and hence, some patients may need

potassium supplements and routine electrolytes monitoring. There are potassium sparing diuretics (Maxide, aldactone) that conserve potassium. They may have a tendency to raise potassium levels too much if not closely monitored. You should also minimize sodium rich foods such as pickles, soups, and tomato juice.

### Beta Blockers

Beta-blockers block the beta-adrenergic receptors in the heart, reduce the heart rate, the force with which heart muscle contracts, and reduce the blood pressure. The most common beta-blockers in the market are Lederal, atenolol, and metoprolol. Beta blockers may increase bronchospasm in patients with asthma or chronic lung disease, worsen the symptoms of arterial disease in the legs, and may mask the hypoglycemia symptoms (low blood sugar). They reduce the risk of heart attack and sudden death. The slow heart rate can be a problem with some patients.

### ACE Inhibitors

Angiotensin II Converting Enzyme inhibitors (ACE) are very potent agents that reduce the arterial wall tension and lowers the blood pressure. Hence, it may be necessary to take water pills along with large doses of ACE inhibitors. The most commonly used ACE inhibitors are enalapril, monopril, lisinopril, quinapril, etc. They are also useful in a variety of conditions such as heart failure, coronary artery disease, diabetes, kidney disease, heart attack among others. They may also cause a dry hacking cough and could become bothersome in patients with chronic lung disease. They also may increase the potassium levels in patients, who are on supplemental potassium along with diuretics. Occasionally people may develop a rash, dizziness, or

lightheadedness. It is the most widely prescribed group of medicine for hypertension. Women who plan on getting pregnant must avoid these drugs as they can cause birth defects.

### ARBs

Angiotensin II receptor blockers (ARBs), block the action of angiotensin II on the receptors thus reducing the arterial wall tension and blood pressure.

The most commonly used ARBs are Losartan (Cozaar), Valsartan (Diovan), Irbesartan (Avapro), and Candesartan (Atacand).

They are as effective as the ACE inhibitors. They are not associated with the hacking cough seen with ACE inhibitors. They also increase the production of aldosterone that increases the salt and water retention that can increase the blood pressure. Other side effects may include headache and dizziness.

### Calcium Channel Blockers

Calcium channel blockers (CCB) block the entry of calcium into the heart muscle, and blood vessel walls, thus reducing resistance and blood pressure.

The most commonly used CCB are cardizem, nifedepine, verapamil, and amlodipine.

Verapamil can slow the heart rate and reduce heart's pumping function, and should be used with caution in heart failure patients.

Nifedepine can increase heart rate and heart work. Its short acting forms must be avoided in patients with heart disease.

Cardizem also has a tendency to slow the heart rate.

Other side effects include constipation, leg swelling and flushing.

### Centrally Acting Agents

These agents block the release of adrenergic agents in the brain. Thus they reduce the arterial wall resistance and blood pressure. The most commonly used agent is Clonidine. It has to be taken two to three times daily.

The major side effects are drowsiness, fatigue, impotence, constipation, dry mouth, weight gain.

Abrupt stopping can cause a rebound hypertension.

### Vasodilators

They dilate the blood vessel and reduce the blood pressure. Hydralazine and minoxidil are commonly used agents. Minoxidil can drop the blood pressure too much in standing position. They are used as the last resort for hypertension treatment. Hydralazine can increase the chances of developing Lupus.

### Combination Drugs

Generally, I avoid using combination drugs, since it is difficult to adjust the dosages.

### Multiple Drugs

When the blood pressure is moderate or severe, we need to use two or more medicines to get the desired effect. When you are on more than two medicines for blood pressure control, make sure you are taking a water pill to reduce salt retention.

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