**Blood Pressure Medicines**

**Introduction on Chronic Kidney Disease**

* Certain common health conditions can damage the kidneys permanently. For example, high blood pressure, diabetes, and related conditions can damage the kidneys.1
* Some people call damaged kidneys “weak kidneys.” Doctors call damaged kidneys *chronic kidney disease*.
* Chronic kidney disease can be hard to recognize because there are no clear signs or symptoms in the early stages.
* Chronic kidney disease can range from mild to severe.
* We can prevent mild chronic kidney disease from getting worse by protecting the kidneys from further damage.
* Certain medicines can help protect people with chronic kidney disease and their kidneys.
* Chronic kidney disease increases a person’s chance of having a heart attack or stroke.2
* Chronic kidney disease increases a person’s chance of needing dialysis or a kidney transplant.2

**High Blood Pressure and People with Chronic Kidney Disease**

* Uncontrolled high blood pressure is one of the leading causes of chronic kidney disease and kidney failure in the United States.
* High blood pressure can damage the kidneys by increasing the pressure inside the blood vessels of the kidneys. These blood vessels cannot work properly. This causes damage to the kidneys.
* Controlling your blood pressure is a very important step you can take to protect your kidneys. 3
* The goal is to keep your blood pressure at or below the target set by your doctor. For most people, the blood pressure target is less than 140/90 mmHg.4 For other people, the target can be less than 130/80 mmHg or even something else.
* If your blood pressure is not fully under control, it poses serious risks to your long-term health, including the risk of worsening of your kidney function.3

**Blood Pressure Medicines5**

* Some people can control their high blood pressure with lifestyle changes. These lifestyle changes may include healthy eating, being physically active, and maintaining a healthy body weight.
* When blood pressure cannot be controlled by lifestyle changes, a doctor may prescribe blood pressure medicines.
* Blood pressure medicines can work in different ways in the body, but the goal of all of them is to reduce high blood pressure to a healthy level for you.
* Many people need more than one blood pressure medicine to control their blood pressure.

**Names of Common Blood Pressure Medicines**

There are different types of blood pressure medicines that your doctor may prescribe to control your high blood pressure. You may even already be taking one or more of them.

***Thiazides***

* Chlorthalidone (Thalitone®)
* Hydrochlorothiazide (Aquazide H®, Hydrocot®, Microzide®, Zide®)

***Calcium Channel Blockers***

* Amlodipine (Norvasc®)
* Diltiazem (Cardizem®, Cardizem CD®, Cartia XT®, Dilacor XR®, Tiazac®, Dilt-CD®, Dilt-XR®, Dilitia XT®)
* Felodipine (Plendil®)
* Isradipine (Dynacirc®, Dynacirc CR®)
* Nicardipine (Cardene®, Cardene IV®, Cardene SR®)
* Nifedipine (Adalat CC®, Afeditab CR®, Procardia®)
* Nisoldipine (Sular®)
* Verapamil (Calan®, Verelan®)

***Angiotensin-Converting Enzyme Inhibitors***

* Benazepril (Lotensin®)
* Captopril (Capoten®)
* Enalapril (Vasotec®)
* Fosinopril
* Lisinopril (Prinivil®, Zestril®)
* Moexipril
* Perindopril (Aceon®)
* Quinapril (Accupril®)
* Ramipril (Altace®)
* Trandolapril (Mavik®)

***Angiotensin II Receptor Blockers***

* Candesartan (Atacand®)
* Eprosartan (Teveten®)
* Irbesartan (Avapro®)
* Losartan (Cozaar®)
* Olmesartan (Benicar®)
* Telmisartan (Micardis®)
* Valsartan (Diovan®)

***Beta Blockers***

* Acebutolol (Sectral®)
* Atenolol (Tenormin®)
* Bisoprolol (Zebeta®)
* Metoprolol (Lopressor®, Toprol-XL®)
* Nadolol (Corgard®)
* Nebivolol (Bystolic®)
* Propranolol (Inderal LA®, InnoPran XL®)

**Potential Side Effects of Blood Pressure Medicines**

* Most people do not have side effects when taking blood pressure medicines.
* Some people experience side effects that are caused by the lowering of blood pressure. The side effects include dizziness, drowsiness, feeling tired, or lightheadedness. These effects usually subside once the body has adapted to the lowered blood pressure.
* Doctors may want to monitor their patients to see how they respond to starting a new blood pressure medicine.
* Thiazide side effects may include weakness and muscle cramps.
* Calcium channel blockers side effects may include headaches, nausea, flushing, swelling of legs and arms, and constipation.
* ACE and ARB Side effects may include a cough, high potassium level in the blood, low blood pressure, dizziness, headache, and drowsiness.
* Beta blocker side effects may include fatigue, insomnia, and strange dreams.

**Medical References That Your Doctor Might Want to Read**

1. Centers for Disease Control and Prevention (CDC). Prevalence of chronic kidney disease and associated risk factors--United States, 1999-2004. MMWR Morb Mortal Wkly Rep. 2007 Mar 2;56(8):161-5.2.
2. Sarnak MJ, Levey AS, Schoolwerth AC, et al. Kidney disease as a risk factor for development of cardiovascular disease: A statement from the American Heart Association councils on kidney in cardiovascular disease, high blood pressure research, clinical cardiology, and epidemiology and prevention. Circulation. 2003;108(17):2154-2169.
3. Kidney Disease: Improving Global Outcomes (KDIGO) Blood Pressure Work Group. KDIGO Clinical Practice Guideline for the Management of Blood Pressure in Chronic Kidney Disease. Kidney inter., Suppl. 2012; 2: 337–414.
4. Kidney Disease: Improving Global Outcomes (KDIGO) CKD Work Group. KDIGO 2012 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease. Kidney inter., Suppl. 2013; 3: 1–150
5. How is high blood pressure treated. [https://www.nhlbi.nih.gov/health/health-topics/topics/hbp]

**Information Provided as part of a UCSF Study:**

Care For Your Kidneys

<http://ckdstudy.ucsf.edu/blood-pressure-medicines>

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