Hypertension and Chronic Kidney Disease

This is the fifth in the series of 12 one-page articles about chronic kidney disease.

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High blood pressure is both a cause and complication of chronic kidney disease (CKD). Uncontrolled high blood pressure can accelerate the loss of glomerular filtration rate (GFR). Routine monitoring of blood pressure is recommended for all patients with CKD. The classification of high blood pressure should be based on the average of two or more readings at each of two or more visits after an initial screening. The following techniques are recommended:

- The patient should refrain from smoking or ingesting caffeine for 30 minutes prior to measurement.
- Seat patient in a chair with back supported, arms bared and supported at heart level.
- The patient should be allowed to rest for five minutes in the chair prior to measurement.
- Use an appropriate size cuff.

Treatment of High Blood Pressure

Specific targets for blood pressure control should be discussed with the patient. A goal of 130/85 is recommended for patients without proteinuria (<1 g/day), while the suggested goal for patients with diabetic kidney disease or proteinuria > 1 g/day is 125/75.

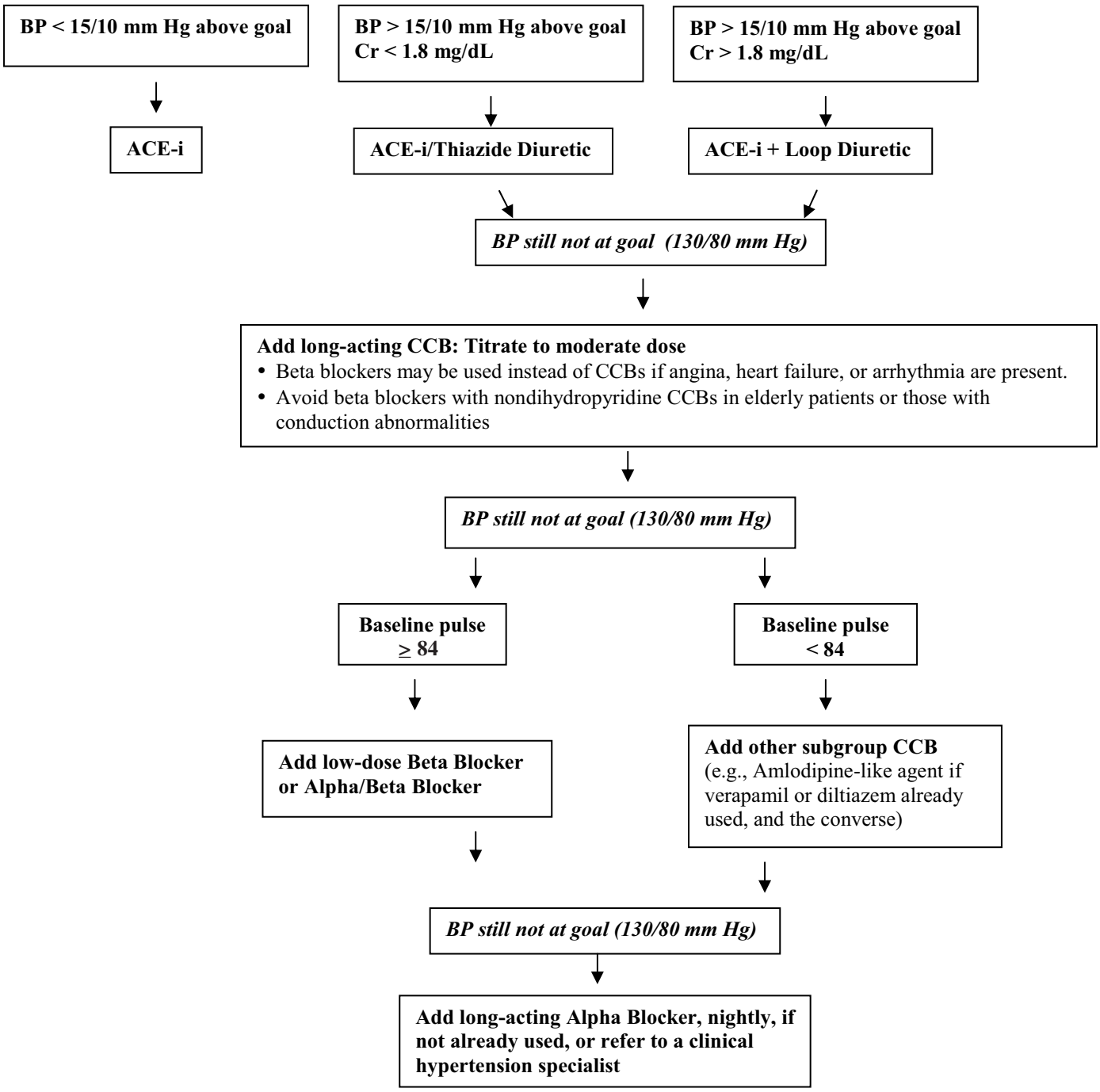
Lifestyle modification and drug therapy are the cornerstones for treating high blood pressure. Lifestyle modifications for prevention and treatment of hypertension include:

- Weight loss if overweight (BMI > 27).
- Limit alcohol intake to no more that 1 oz ethanol (24 oz beer, 10 oz wine, or 2 oz of 100 proof whiskey) per day, or 0.5 oz ethanol per day (12 oz beer, 5 oz wine, or 1 oz 100 proof whiskey) for women and lighter weight men.
- Increase aerobic physical activity (30 - 45 minutes most days of the week).
- Reduce sodium intake to no more than 100 mmol per day (2.4 g sodium or 6 g NaCl).
- Maintain adequate potassium intake (about 90 mmol per day).
- Maintain adequate intake of dietary calcium and magnesium for general health.
- Stop smoking and eat less saturated fat and cholesterol for overall cardiovascular health.
- DASH diet: 9 servings fruits and vegetables a day, 2 - 3 servings of low fat dairy products a day, and 4 - 5 servings of nuts, seeds, and legumes per week.

Angiotensin-converting enzyme inhibitors (ACE-inhibitors) and angiotensin receptor antagonists (ARBs) have been shown to slow the progression of CKD. These medications lower glomerular capillary blood pressure as well as systemic blood pressure.

In summary, blood pressure control is key to slowing the progression of CKD. Blood pressure goals for CKD differ based on presence or absence of proteinuria. Multiple medications may be needed to control blood pressure. Dietary sodium restriction may augment pharmacologic intervention. On the following page is an evidence-based treatment algorithm recommended by the National Kidney Foundation (*Am J Kidney Dis* 2000;36:646-661).

Suggested Paradigm For Achieving Blood Pressure Goals in CKD and/or Diabetes



ACE-i = Angiotensin Converting Enzyme Inhibitor
CCB = Calcium Channel Blocker

- Counsel all patients with diabetes or CKD on lifestyle modifications
- Start medications if BP > 130/85 mm Hg
- Clonidine should NOT be used with beta blockers