# Indian Health Service
# National Pharmacy and Therapeutics Committee
# Formulary Brief: ***Antihypertensive Guidelines***
-August 2014-

**Background:**
In August 2014, the IHS National Pharmacy and Therapeutics Committee undertook a comprehensive review of five guidelines published from 2013 through 2014 regarding the management of hypertension. These included guidelines from the European Societies of Hypertension and Cardiology, American and International Societies of Hypertension, Canadian Hypertension Education Program, and the report of the JNC-8 panel, as well as a science advisory published in collaboration by the American Heart Association, American College of Cardiology, and the U.S. Centers for Disease Control and Prevention.

These guidelines were generally formulated based on principles set forth by the Institute of Medicine, representing a departure from the principles of guideline development guiding the JNC-7 panel, whose recommendations were published a decade ago and which had formed the basis of contemporary hypertension management. The current guidelines were largely based upon a systematic review of the literature from 1966 to present, with emphasis placed on randomized controlled trials evaluating the relationship between the pharmacologic management of hypertension and primary outcomes including adverse cardiovascular events, cardiovascular mortality, and all-cause mortality.

Hypertension is a common risk factor for atherosclerotic cardiovascular disease, affecting one in three American adults and two-thirds of adults over age 60 years. It accounts for forty percent of the population attributable-risk for cardiovascular disease, making it the single most important modifiable risk factor for the leading cause of morbidity and mortality in the United States as well as in the I.H.S. service population. Epidemiologic data indicates that roughly one-half of hypertension sufferers in the United States have uncontrolled high blood pressure.

The NPTC focused deliberations on three fundamental questions; 1) When should treatment for elevated blood pressure be initiated, 2) What is the appropriate blood pressure goal to be achieved, and 3) Which pharmacologic treatment strategy is best supported by evidence relative to improvement in the stated primary outcomes.

**Discussion:**
Hypertension is defined as blood pressure equal to or in excess of 140/90. Evidence suggests that a log linear relationship exists between blood pressure and adverse cardiovascular outcomes such that for every 20/10 increase above the “ideal” blood pressure of 115/75, risk doubles. It should be noted that the best data supporting a benefit from the pharmacologic management of high blood pressure is based upon randomized controlled trials designed to evaluate benefit relative to higher systolic blood pressure targets, particularly for older adults.

Among the general adult population, there is consensus that a blood pressure target of 140/90 is appropriate for both medication initiation as well as ongoing pharmacologic management of hypertension. There is also general agreement that for stage 1 hypertension (which has been defined as blood pressure of 140-159/90-99) among otherwise healthy younger adults, a limited trial of lifestyle modification alone may be appropriate before considering initiation of drug therapy.

For otherwise healthy older adults, the JNC-8 panel was joined by other guideline committees in recommending both an initiation and treatment target blood pressure of 150/90. However, it should be noted that guidelines differed on the appropriate age cutoff for this higher systolic blood pressure target. The majority opinion of the JNC-8 panel based its 60 years age cutoff on the most rigorous principles of study design while other guidelines favored the higher systolic blood pressure treatment target for persons over age 80 years.

The higher systolic blood pressure treatment target for older persons generated some controversy, resulting in a separate published recommendation from a minority representing 5 members of the JNC-8 panel who cited post-hoc analysis of trial data in several studies of isolated systolic hypertension among the elderly, concluding that a

target blood pressure in the 140-145 range may produce additional benefit. Several guidelines have advocated tailoring blood pressure treatment goals among older adults based upon variables including general health and comorbid conditions.

For persons with co-existing diagnoses of diabetes mellitus and chronic kidney disease with gross proteinuria, general consensus among the guidelines was a blood pressure target of less than 140/90. However, clinical practice guidelines from the American Diabetes Association and National Kidney Foundation favored blood pressure goals of less than140/80 and less than 130/80 respectively in these two groups based on some limited study data favoring these more stringent targets.

**Findings:**
Based on strong outcomes-based data from randomized controlled trials, there was general consensus among the various hypertension guidelines to favor four medication classes as first-line therapy for the general management of hypertension after considering compelling indications in a particular patient. These were thiazides, calcium channel blockers, ACE-inhibitors, and angiotensin-receptor blockers. Agents from these same classes were deemed appropriate additions as second or third line therapy to achieve recommended blood pressure treatment goals.

All of the guidelines cautioned against combination of ACE-inhibitors and angiotensin-receptor blockers. There was also consensus that either ACE-inhibitors or angiotensin-receptor blockers are preferred for management of hypertension among patients with chronic kidney disease and that both classes may have less utility among Black patients.

In a departure from JNC-7 recommendations, the JNC-8 panel, along with most of the other guideline committees, moved beta-blockers as a class to the second tier of medications for blood pressure management after the aforementioned four drug classes, except for compelling indications such as systolic heart failure or post-MI patients.

In a science advisory, the American Heart Association partnered with the American College of Cardiology and Centers for Disease Control and Prevention in issuing a call to action advocating systems changes to improve blood pressure control rates in the United States. Pertaining to pharmacologic management strategies, these partner organizations advocated the use of fixed-dose combination anti-hypertensive medications to improve adherence. This recommendation was echoed by the various expert panels who authored the recent guidelines, who also pointed out that in most major trials, a combination of two or three agents from different classes was necessary to achieve recommended blood pressure target goals.

*If you have any questions regarding this document, please contact the NPTC at IHSNPTC1@ihs.gov. For more information about the NPTC, please visit the NPTC website.*

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