



Indian Health Service
National Pharmacy and Therapeutics Committee
Formulary Brief: 2017 ACC/AHA Hypertension Guidelines
-May 2018-



Background:

The National Pharmacy & Therapeutics Committee (NPTC) reviewed the [2017 clinical practice guidelines from the American College of Cardiology and American Heart Association](#)¹ for high blood pressure during its Spring 2018 Meeting. The NPTC last reviewed antihypertensive guidelines and management in August 2014, which can be found [here](#). **No modifications were made to the National Core Formulary.**

A Joint National Committee (JNC) was formed in the 1970's to produce comprehensive blood pressure guidelines with a focus on prevention, awareness, treatment and control of high blood pressure. To date, there have been eight guidelines published; most recently in 2014 and commonly referred to as the [JNC 8 guideline](#)². This guideline was remarkable in its adherence to the Institute Of Medicine's "Guidelines We Can Trust". Of note, the 2017 ACC/AHA guidelines were produced to update the JNC 7 recommendation.

Discussion:

The 2017 ACC/AHA guidelines are perhaps most well known for their departure from more conventional diagnostic and treatment goals for hypertension. Their recommendation to lower the benchmark for diagnosis of hypertension from $\geq 140/90$ mmHg to $\geq 130/80$ mmHg in the general adult population has been widely debated. The impact of this recommendation is both clear and significant; in U.S. patients aged 45 years or younger, the prevalence of hypertension roughly doubles in women and triples in men. The 2017 ACC/AHA guidelines also recommend initiating pharmacotherapy at $\geq 130/80$ mmHg in patients with pre-existing cardiac disease, diabetes, chronic kidney disease, or at high risk for cardiovascular disease (CVD); all others should start pharmacotherapy in addition to lifestyle modifications when blood pressure is $\geq 140/90$ mmHg. It is noteworthy that younger patient populations were not well represented in trials studying medication therapy with these lower blood pressure goals.

Numerous studies and meta-analyses were included in the ACC/AHA's decision to recommend lower blood pressure goals however, one study, the [Systolic Blood Pressure Intervention Trial](#) (SPRINT), was particularly influential. The SPRINT was a randomized, controlled trial which studied ≥ 50 year old patients at increased CVD risk with systolic blood pressure (SBP) target goals of either < 120 mmHg or < 140 mmHg³. Interestingly, patients with diabetes were excluded. The study was stopped early due to benefit; patients in the SBP < 120 mmHg study arm demonstrated a *relative* 25% reduction in the primary composite outcome (i.e., myocardial infarction, acute coronary syndrome, stroke, acute decompensate heart failure or death from cardiovascular causes). Importantly however, the *absolute risk reduction* was 1.6% in the primary composite outcome over 3.2 years. Serious adverse drug events were significantly increased in the SBP < 120 mmHg arm from 2.5% to 4.7%. Emergency room visits also occurred more frequently in this study arm. It was estimated that if 1000 patients were treated for 3.2 years to a SBP target goal of < 120 mmHg, that on average 16 patients would benefit, 22 patients would be harmed and 962 would experience no benefit or harm⁴.

Conversely, several recent analyses using National Health and Nutrition Examination Survey (NHANES) data suggest the need for greater efforts in hypertension management. A March 2018 study using 2015-2016 NHANES data (the most recent available) reports that hypertension control has plateaued since 2010⁵. Another study from May 2018 estimated outcomes associated with each of the treatment goals recommended in the JNC 8 and 2017 ACC/AHA guidelines⁶. Authors concluded that achieving the 2017 ACC/AHA SBP goals would net a reduction of 340,000 less CVD events and 157,000 less deaths at a cost of 62,000 more hypotensive episodes and 79,000 more acute kidney injuries or failure events.

Following the release of the 2017 ACC/AHA guidelines, other professional organizations published guidelines addressing hypertension, including the [American Diabetes Association](#)⁷ and the [American College of Physicians and American Academy of Family Practitioners](#)⁸. It is important to recognize that these organization's guidelines, along with JNC 8, are not congruent with the lower blood pressure recommendations from the ACC/AHA and endorse more traditional blood pressure goals. Each set of guidelines are independently developed, using different methodology and criteria to reach their

conclusions. Clinicians should appreciate that the universe of guidelines is constantly updating as new findings are realized and published.

The 2017 ACC/AHA guidelines do emphasize certain anti-hypertensive strategies that are universally supported and pertinent to IHS clinicians. Proper methods and technique for blood pressure measurement is specifically highlighted as critical in the diagnosis and management of elevated blood pressure. The ACC/AHA guidelines offer six steps to ensure optimal blood pressure measurement:

TABLE 8 Checklist for Accurate Measurement of BP (S4.1-3,S4.1-4)	
Key Steps for Proper BP Measurements	Specific Instructions
Step 1: Properly prepare the patient	<ol style="list-style-type: none"> 1. Have the patient relax, sitting in a chair (feet on floor, back supported) for >5 min. 2. The patient should avoid caffeine, exercise, and smoking for at least 30 min before measurement. 3. Ensure patient has emptied his/her bladder. 4. Neither the patient nor the observer should talk during the rest period or during the measurement. 5. Remove all clothing covering the location of cuff placement. 6. Measurements made while the patient is sitting or lying on an examining table do not fulfill these criteria.
Step 2: Use proper technique for BP measurements	<ol style="list-style-type: none"> 1. Use a BP measurement device that has been validated, and ensure that the device is calibrated periodically.* 2. Support the patient's arm (e.g., resting on a desk). 3. Position the middle of the cuff on the patient's upper arm at the level of the right atrium (the midpoint of the sternum). 4. Use the correct cuff size, such that the bladder encircles 80% of the arm, and note if a larger- or smaller-than-normal cuff size is used (Table 9). 5. Either the stethoscope diaphragm or bell may be used for auscultatory readings (S4.1-5,S4.1-6).
Step 3: Take the proper measurements needed for diagnosis and treatment of elevated BP/hypertension	<ol style="list-style-type: none"> 1. At the first visit, record BP in both arms. Use the arm that gives the higher reading for subsequent readings. 2. Separate repeated measurements by 1-2 min. 3. For auscultatory determinations, use a palpated estimate of radial pulse obliteration pressure to estimate SBP. Inflate the cuff 20-30 mm Hg above this level for an auscultatory determination of the BP level. 4. For auscultatory readings, deflate the cuff pressure 2 mm Hg per second, and listen for Korotkoff sounds.
Step 4: Properly document accurate BP readings	<ol style="list-style-type: none"> 1. Record SBP and DBP. If using the auscultatory technique, record SBP and DBP as onset of the first Korotkoff sound and disappearance of all Korotkoff sounds, respectively, using the nearest even number. 2. Note the time of most recent BP medication taken before measurements.
Step 5: Average the readings	Use an average of ≥ 2 readings obtained on ≥ 2 occasions to estimate the individual's level of BP.
Step 6: Provide BP readings to patient	Provide patients the SBP/DBP readings both verbally and in writing.

Additionally, out-of-office (home) blood pressure measurements are strongly recommended in the ACC/AHA guidelines when attempting to confirm hypertension diagnosis and during medication titration, in conjunction with telehealth or other clinical interventions.

Findings:

Various organizational guidelines are currently available to guide hypertension management and all offer unique perspectives and approaches towards goal attainment. It is prudent that IHS clinicians be cognizant of guideline inconsistencies, appreciate the data to which recommendations are derived, and understand the applicability of those recommendations within the IHS patient population. In general, guidelines strive to offer evidence-based direction in patient care decisions but should never serve as a substitute for clinical judgment. Informed, mutual decisions that include patient preference should dictate individualized health goals. Implementing system-wide recommendations and working strategically towards goal attainment is arguably more important than selection of any one organizational guideline, which are constantly evolving as new evidence becomes available.

References:

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