Hypertension in Diverse Populations:
Overview of Key Messages for Clinical Practice

Key Message 1: The goal blood pressure should be < 140/90 mmHg in most patients with hypertension.1,3-5

- A Cochrane review investigated whether lower blood pressure targets (<135/85 mmHg) are better than standard blood pressure targets (<140/90 mmHg) in patients without hypertension-associated co-morbidities.2
  
  **Conclusion:** Although the lower target groups achieved lower blood pressure, this did not prolong survival or reduce stroke, heart attack, heart failure, or kidney failure. **There is no evidence to support aiming for a BP target less than 140/90 mmHg in any hypertensive patient without co-morbidities.**

- There is less consensus on whether BP should be lowered to a greater degree (<130/80 mmHg) in individuals with hypertension-associated co-morbidities such as chronic kidney disease (CKD) or diabetes.

- **There is a growing consensus that BP goals should be more lenient in the elderly population (patients ≥ 80 years of age).** Recent trials suggest that in people aged 80 or more, achieving a SBP of less than 150 mmHg is associated with strong cardiovascular and stroke protection.3,4

### Hypertension Goals of Various Organizations

<table>
<thead>
<tr>
<th>Guideline</th>
<th>Standard BP goal (no co-morbidities)</th>
<th>BP goals with co-morbidities</th>
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</thead>
<tbody>
<tr>
<td>JNC 83 2013</td>
<td>&lt; 140/90 mmHg</td>
<td>&lt; 150/90 mmHg if ≥ 60 years of age</td>
</tr>
<tr>
<td>ASH/ISH4 2014</td>
<td>&lt; 140/90 mmHg</td>
<td>&lt; 140/90 mmHg if co-existing diabetes</td>
</tr>
<tr>
<td>AHA/ACC/CDC1 2014</td>
<td>&lt; 140/90 mmHg</td>
<td>Lower BP targets may be appropriate for African Americans, the elderly or patients with LV hypertrophy, systolic or diastolic LV dysfunction, diabetes or CKD</td>
</tr>
<tr>
<td>ESH/ESC3 2013</td>
<td>&lt; 140/90 mmHg</td>
<td>&lt; 140/90 mmHg if co-existing diabetes</td>
</tr>
<tr>
<td>ISHIB6 2010</td>
<td>&lt; 135/85 mmHg</td>
<td>&lt; 130/80 mmHg with co-existing radiographic or lab evidence of heart or kidney abnormalities; documented cardiovascular damage (such as HF, PAD, stroke, or TIA); or prior cardiovascular event</td>
</tr>
</tbody>
</table>

**Note:** JNC 8 guidelines have not been endorsed by the National Heart, Lung and Blood Institute (NHLBI), AHA or the ACC.

**KEY:** BP, blood pressure; JNC8, Report of the Eight Joint National Committee on the Prevention, Detection, Evaluation, and Treatment of High Blood Pressure; ESH, European Society of Hypertension; ASH, American Society of Hypertension; AHA, American Heart Association; ACC, American College of Cardiology; CDC, Centers for Disease Control and Prevention; LV, left ventricular; ESC, European Society of Hypertension; CKD, chronic kidney disease; HF, heart failure; PAD, peripheral arterial disease; TIA, transient ischemic attack.

**Lifestyle modifications** are an important component of preventing and managing hypertension as well.\(^1\)

Weight loss, exercise, and dietary changes can help patients achieve a blood pressure goal of < 140/90 mmHg

<table>
<thead>
<tr>
<th>Lifestyle Modifications</th>
<th>Approximate SBP Reduction</th>
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<tbody>
<tr>
<td>Weight loss</td>
<td>5 - 20 mmHg/10kg</td>
</tr>
<tr>
<td>Increased physical activity</td>
<td>4 - 9 mmHg</td>
</tr>
<tr>
<td>Reduced alcohol consumption</td>
<td>2 - 4 mmHg</td>
</tr>
<tr>
<td>Adoption of Dietary Approaches to Stop Hypertension (DASH) eating plan</td>
<td>8 - 14 mmHg</td>
</tr>
</tbody>
</table>

**Key Message 2:** Most patients will require more than one medication to control blood pressure. Preferred two-drug therapy includes an angiotensin-converting enzyme inhibitor or angiotensin receptor blocker with either a thiazide-type diuretic or dihydropyridine calcium channel blocker.\(^1,3,6,9-11\)

- **In general, no single drug class is superior** to all others.
  - With respect to first-line treatment recommendations, what matters most is the degree of BP lowering that is sustained in order to prevent morbidity and mortality.\(^10\)
  - Standard-dose monotherapy lowers BP up to 10 mm Hg.\(^11\)
  - Most patients will require more than one drug to achieve blood pressure control

### Guideline 1st line treatment recommendations for essential hypertension

<table>
<thead>
<tr>
<th>Guideline</th>
<th>1st line treatment recommendations for essential hypertension</th>
</tr>
</thead>
</table>
| JNC 8\(^5\) 2013 | **Non-black population including patients with diabetes:** thiazide, ACE inhibitor, ARB, CCB or combination  
**Black population including patients with diabetes:** thiazide or CCB |
| ASH/ISH\(^4\) 2014 | **White and other non-black patients aged < 60 years:**  
ACE inhibitor or ARB  
**White and other non-black patients aged > 60 years:**  
thiazide, ACE inhibitor, ARB, CCB or combination  
**Black patients all ages:**  
thiazide or CCB |
| AHA/ACC/CDC\(^1\) 2014 | Thiazide for most, may consider ACE inhibitor, ARB, CCB, or combination |
| ESH/ESC\(^3\) 2013 | All antihypertensive agents are suitable for initiation and maintenance either as monotherapy or in combinations.  
diuretics, beta-blockers, calcium channel blockers, ACE inhibitors and ARB |
| ISHIB\(^6\) 2010 | CCB or diuretic if monotherapy; (ACE inhibitor/ARB) + (thiazide/CCB) if combo |

KEY: JNC8, Report of the Eight Joint National Committee on the Prevention, Detection, Evaluation, and Treatment of High Blood Pressure; ACE inhibitor, angiotensin-converting enzyme inhibitor; ARB, angiotensin receptor blocker; CCB, calcium channel blocker; AHA, American Heart Association; ACC, American College of Cardiology; CDC, Centers for Disease Control and Prevention; ESH, European Society of Hypertension; ESC, European Society of Cardiology; ISHIB, International Society on Hypertension in Blacks.


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Preferred Anti-hypertensive Therapy

- **A Combination of anti-hypertensives** is often required to achieve and sustain BP reduction in most people with hypertension. 9-12
  - If untreated BP is 20/10 mmHg above the target BP goal consider starting treatment with 2 antihypertensive agents. 1,4,5
  - Many anti-hypertensive drugs have low ceiling drug response curves, and the incremental blood pressure reduction from adding a second agent is often much more powerful than doubling the dose of an existing medication. 12
  - Patients will most likely experience fewer side effects with lower doses of two separate anti-hypertensives than with a high dose of one drug. 12
  - The most effective antihypertensive combinations are those with similar pharmacodynamics but complementary mechanisms of action. 12

**Preferred Anti-Hypertensive Therapy for Primary Hypertension**

- ACE inhibitor/ARB + thiazide-type diuretic
- ACE inhibitor/ARB + DHP CCB

ACE: angiotensin-converting enzyme; ARB: angiotensin II receptor blocker; DHP: dihydropyridine; CCB: calcium channel blocker

- A 2014 Cochrane review compared the efficacies of ACE inhibitors versus ARBs in preventing total mortality and cardiovascular events in patients with primary hypertension. 13
  
  **Conclusion:** No difference in total mortality and cardiovascular events between the two classes. Although ARBs, in general, are more tolerable, there is no analysis done in placebo-controlled trials for hypertension regarding efficacy in mortality and morbidity outcomes. **There is no evidence to support substituting ACE inhibitors with ARBs in patients without contraindications or intolerability.**

- ACE inhibitors should **NOT** be used in combination with ARBs due to a greater incidence of side effects without any outcome benefits. 14