Adults ≥18yrs with hypertension

Implement lifestyle modifications (continue throughout management)

Set blood pressure (BP) goal and initiate BP-lowering medication based on age, diabetes, and chronic kidney disease (CKD)

General population (no diabetes or CKD)
- Age ≥60yrs
  - BP Goal <150/90mmHg
  - Initiate thiazide-type diuretic, ACEI, ARB, or CCB, alone or in combination
- Age <60yrs
  - BP Goal <140/90mmHg
  - Initiate thiazide-type diuretic, ACEI, ARB, or CCB, alone or in combination

Diabetes or CKD present
- • All ages
  - With diabetes
  - No CKD
  - BP Goal <140/90mmHg
  - Initiate ACEI or ARB, alone or in combination with other class
- • All ages
  - CKD present w/o or w/ diabetes
  - BP Goal <140/90mmHg
  - Initiate thiazide-type diuretic or CCB, alone or in combination

Select drug treatment titration strategy:
A. Maximize first medication before adding second OR
B. Add second medication class before maximizing first medication OR
C. Start with two medication classes separately or as a fixed-dose combination

At goal?
- Yes
- No
  - Strategy A or B: Add and titrate thiazide-type diuretic, ACEI, ARB, or CCB (use class not previously selected)
  - Strategy C: Maximize dose of initial regimen

At goal?
- Yes
- No
  - Reinforce medication and lifestyle adherence
  - Add and titrate thiazide-type diuretic, ACEI, ARB, or CCB (use class not previously selected)

At goal?
- Yes
- No
  - Reinforce medication and lifestyle adherence
  - Add additional class (eg, β-blocker, aldosterone antagonist, or others not previously selected) and/or refer to hypertension specialist

At goal?
- Yes
- No
  - Reinforce medication and lifestyle adherence
  - Continue current therapy and monitoring

(continued)
### First Line Therapy for Compelling Indications

<table>
<thead>
<tr>
<th>Compelling indication</th>
<th>First-line Therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart failure</td>
<td>ACEI, ARB, angiotensin receptor-neprilysin inhibitor, mineralocorticoid receptor antagonist, diuretic, BB (carvedilol, metoprolol succinate, bisoprolol)</td>
</tr>
<tr>
<td>Post myocardial infarction</td>
<td>BB&lt;sup&gt;d&lt;/sup&gt; (carvedilol, metoprolol, nadolol, bisoprolol, propranolol, timolol), ACEI, ARB</td>
</tr>
<tr>
<td>Diabetes</td>
<td>Thiazide diuretic, ACEI, ARB, CCB</td>
</tr>
<tr>
<td>Chronic kidney disease (CKD)</td>
<td>ACEI, ARB</td>
</tr>
<tr>
<td>Secondary stroke prevention</td>
<td>Thiazide diuretic, ACEI, ARB</td>
</tr>
</tbody>
</table>

### Lifestyle Modifications

<table>
<thead>
<tr>
<th>Modification</th>
<th>Recommendation</th>
<th>Approximate SBP reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight loss</td>
<td>Aim for at least a 1kg reduction in body weight; best goal is ideal body weight</td>
<td>1mmHg/kg of weight loss</td>
</tr>
<tr>
<td>DASH diet (Dietary Approaches to Stop Hypertension)</td>
<td>Adopt a diet rich in fruits, vegetables, whole grains, and low-fat dairy products with reduced content of saturated and total fat</td>
<td>3–11mmHg</td>
</tr>
<tr>
<td>Sodium reduction</td>
<td>Reduce dietary sodium intake by at least 1000mg/day; optimal goal is &lt;1500mg/day</td>
<td>2–6mmHg</td>
</tr>
<tr>
<td>Potassium supplementation</td>
<td>Increase dietary potassium intake to 3500–5000mg/day. Four to five servings of fruits and vegetables will usually provide 1500–&gt;3000mg of potassium</td>
<td>2–5mmHg</td>
</tr>
<tr>
<td>Physical activity</td>
<td>Increase physical activity:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Aerobic exercise: 90–150mins/wk</td>
<td>2–8mmHg</td>
</tr>
<tr>
<td></td>
<td>• Dynamic resistance: 90–150mins/wk (6 exercises, 3 sets/exercise, 10 repetitions/set)</td>
<td>2–4mmHg</td>
</tr>
<tr>
<td></td>
<td>• Isometric resistance: 3 sessions/wk for 8–10wks (4 x 2min hand grips, 1min rest in between)</td>
<td>4–5mmHg</td>
</tr>
<tr>
<td>Reduced alcohol consumption</td>
<td>Limit to no more than 2 drinks/day in men and 1 drink/day in women (1 drink = 12oz beer, 5oz wine, 1.5oz distilled spirit)</td>
<td>3–4mmHg</td>
</tr>
<tr>
<td>Tobacco Cessation</td>
<td>Provide behavioral interventions. May need to consider pharmacotherapy for cessation</td>
<td></td>
</tr>
</tbody>
</table>

### Strategies to Improve Treatment Adherence

- Clinician empathy increases patient trust, motivation and adherence to therapy
- Clinicians should consider patients’ cultural beliefs and individual attitudes in formulating a treatment plan
- Simplifying medication regimens:
  - Dosing to once daily rather than multiple times per day may improve adherence
  - Use of fixed-dose combination agents rather than individual drug components

### Notes

Key: CVD = cardiovascular disease; ARB = angiotensin II receptor blocker; ACEI = angiotensin converting enzyme inhibitor; BB = beta blocker; CCB = calcium channel blocker

- Avoid combination of ACEIs and ARBs.
- Wait 1 month before titrating.
- If BP goal not maintained, re-enter the algorithm where appropriate; individualize.
- Avoid atenolol or BB with intrinsic sympathomimetic activity.

### References
