Hypertension Guidelines
An Update
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Hypertension Guidelines

• Million Hearts Campaign
  o Improving quality of care for the ABCS
    • B = Blood Pressure Management
  o Improving prescription and adherence to appropriate medications for the ABCS
  o Focusing clinical attention on the prevention of heart attack and stroke
  o Improving access to effective care
  o Activating the public to lead a heart-healthy lifestyle

• Screening

• Treatment
Screening

Screening recommendations:

• U.S. Preventive Service Task Force (USPSTF) screening recommendation revision in progress
  o 2007 – recommends screening for high blood pressure in adults 18 years and older (Grade A)

• American Heart Association
  o Screening starting age 20
  o At each regular healthcare visit
  o Every 2 years if blood pressure less than 120/80
Thresholds, Goals, and Treatment – JNC 7

Review of JNC 7:

- Used different types of studies
- Defined hypertension (HTN) and pre-HTN
  - Normal blood pressure = less than 120/80
  - Pre-HTN = SBP 120-139, DBP 80-89
  - Stage 1 HTN = SBP 140-159, DBP 90-99
  - Stage 2 HTN = SBP 160 and above, DBP 100 and above
- Treat to less than 130/80 for diabetics and CKD
- Recommendations for other comorbidities
- 5 drug classes recommended
Thresholds, Goals, and Treatment – JNC 8

Based on JNC 8:

- Evidence review focused on the following:
  - RCTs → systematic review
  - Studies from January 1, 1966 to December 31, 2009

- Second search
  - Studies published December 31, 2009 to August 31, 2013
  - Major study in hypertension
  - At least 2000 participants in each study
  - Multi-centered
JNC 8 – Inclusion Criteria

Inclusion criteria:

• 18 years or older with a diagnosis of Hypertension (HTN)
• Pre-specified subgroups of these adults with HTN:
  o DM
  o Coronary artery disease (CAD), peripheral artery disease (PAD)
  o CKD, proteinuria
  o Older adults
  o Men and women
  o Racial and ethnic groups
  o Smokers
JNC 8 – Health Outcomes Reviewed

Health outcomes in the studies reviewed:

• Mortality-overall, cardiovascular disease (CVD) related, CKD related
• Myocardial infarction (MI), heart failure (HF), hospitalization for HF, and stroke
• Coronary and peripheral artery revascularization
• End stage renal disease (ESRD), doubling of the creatinine level, and/or halving of the glomerular filtration rate (GFR)
JNC 8 – Exclusion Criteria

Exclusion criteria:

• Studies that included participants without a diagnosis of HTN
• Systematic reviews, meta-analyses
• Sample sizes less than 100
• Follow-up period less than 1 year
JNC 8

Three main questions for adults with HTN:

1. Does initiating antihypertensive pharmacologic therapy at a specific blood pressure (BP) threshold improve health outcomes?

2. Does treatment with antihypertensive pharmacologic therapy to a specified BP goal lead to improvements in health outcomes?

3. Do various antihypertensive drugs or drug classes differ in comparative benefits and harms on specific health outcomes?
## JNC 8 Summary

<table>
<thead>
<tr>
<th>Rec #</th>
<th>Evidence Grade</th>
<th>Details - age, threshold, goal, treatment</th>
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<tbody>
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<td>18 to 70 years with CKD, 140/90</td>
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</table>
Threshold and Goal Blood Pressures

Recommendation 1 (Grade A):

- General population
- Age 60 years and older
- Initiate pharmacologic treatment if systolic blood pressure (SBP) 150 mmHg or higher OR diastolic blood pressure (DBP) 90 mmHg or higher
- Treat to SBP less than 150 mmHg AND DBP less than 90 mmHg
Threshold and Goal Blood Pressures

Corollary Recommendation (Grade E):

• If pharmacologic treatment results in lower SBP without adverse effects on health or quality of life, dose need not be adjusted
Threshold and Goal Blood Pressures

Recommendation 2 (Grade A and E):

- General population, younger than 60 years
  - Grade A for 30 to 59 years old
  - Grade E for 18 to 29 years old (no evidence)
- Initiate treatment at DBP greater than or equal to 90 mmHg
- Treat to DBP less than 90 mmHg
Threshold and Goal Blood Pressures

Recommendation 3 (Grade E):

- General population, younger than 60 years
- Initiate pharmacologic treatment at SBP of 140 mmHg or higher
- Treat to a goal SBP of 140 mmHg or lower
Threshold and Goal Blood Pressures

Recommendation 4 (Grade E):

- Age 18 to 70 years old with CKD
  - GFR less than 60 mL/min
  - Albuminuria of 30 mg albumin/gram of creatinine
- Initiate pharmacologic therapy at SBP of 140 mmHg or higher or DBP of 90 mmHg or higher
- Treat to SBP lower than 140 mmHg AND DBP less than 90 mmHg
- Age 70 and older with CKD
- No recommendation for a BP goal for those with GFR less than 60 mL/min
Threshold and Goal Blood Pressures

Recommendation 5 (Grade E):

- Age 18 and older with DM
- Initiate pharmacologic therapy at SBP of 140 mmHg or higher or DBP of 90 mmHg or higher
- Treat to SBP lower than 140 mmHg AND DBP less than 90 mmHg
Pause for Another Study Re HTN and DM

Another study regarding treatment of HTN in patients with DM2:

- A 10 mmHg reduction in SBP associated with significantly lower risk of the following:
  - All cause mortality
  - CVD events
  - Coronary Heart Disease (CHD) events
  - Stroke
  - Albuminuria
  - Retinopathy
Pause for Another Study Re HTN and DM

• Compared threshold (for treatment) of baseline SBP of greater than or equal to 140 mmHg to less than 140 mmHg
  o Lower relative risk (RR) for all cause mortality, CHD, CVD and HF if the mean baseline SBP was greater than or equal to 140 mmHG
  o No significant associations among those with baseline BP less than 140 mmHG
• Compared treating to goal SBP less than 130 mmHg versus SBP greater than or equal to 130 mmHg
  o Lower RR for all cause mortality, CHD, CVD, HF, and albuminuria if treatment to greater than or equal to 130 mm Hg
Pause for Another Study Re HTN and DM

• Specific medications to lower blood pressure- few differences observed except for the following outcomes:
  o Heart Failure outcome
    ▪ Diuretics: (ALLHAT) lower RR compared to other classes of meds:
      RR 0.83 (0.72-0.95)
    ▪ ARBs: lower RR compared to other classes of meds:
      RR 0.61 (0.48-0.78)
    ▪ CCBs associated with higher RR compared to the other classes of meds:
      RR 1.32 (CI 1.18-1.47)
  o Stroke outcome
    ▪ CCBs: lower RR compared to other classes of meds:
      RR 0.86 (CI 0.77-0.97)
Back to JNC 8.....Treatment

Recommendation 6 (Grade B):

- General non-African American population and diabetics
- Initial antihypertensive therapy should include thiazide type diuretics, calcium channel blockers (CCB), angiotensin-converting enzyme inhibitor (ACE-I), and angiotensin receptor blocker (ARB)
Treatment

Recommendation 7 (Grade B and C):

- General, African American population
- Initial antihypertensive treatment should include thiazides or CCB
  - Without DM (Grade B = moderate recommendation)
  - With DM (Grade C = weak recommendation)
Treatment

Recommendation 8 (Grade B):

- Age 18 years and older (to 75) with CKD and HTN
  - CKD with or without proteinuria
- Initial or add-on antihypertensive treatment should include ACE-I or ARB to improve kidney outcomes
  - For African American population (Grade E)
  - No evidence to support renin-angiotensin system (RAS) treatment for those 75 years and older
Treatment

Recommendation 9 (Grade E):

- If goal BP not reached by 1 month, increase the dose of the initial drug or add a second drug from one of the others in recommendation 6
- Continue to assess and adjust regimen until reach BP goal
- Do not use ACEI and ARB together in same patient
## Treatment

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<td>Start 1 drug, titrate to maximum dose, then add a second drug.</td>
<td>First 3 medications should be chosen from the 4 first-line medications. Avoid combining ACEI with ARB.</td>
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<td>Start 1 drug, then add another drug before achieving max dose of first drug</td>
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<td>Begin with 2 drugs at the same time as 2 separate pills or a combination pill</td>
<td>Some committee members suggest starting 2 medications at once with a BP 160/100 or if SBP is 20 greater than goal and/or if DBP is 10 greater than goal.</td>
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Hypertension Guidelines

Summary:

• Screen to identify hypertension
• Age 18 to 59 years, treat to less than 140/90
• Age 60 and older, treat to less than 150/90
  ○ No specific recommendations for threshold and goal BP for hypertensive patients with CKD age 70 and older
• There are 4 first-line agents for most except:
  ○ 2 first-line agents for African American hypertensive patients
  ○ Caution with ACEI or ARB in hypertensive patients with CKD age 70 and older
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