



# Comparison of JNC Guidelines

## JNC7

- Nonsystematic literature review and expert opinion
- Range of study designs
- No grading system for recommendations
- Recommendations:
  - Lifestyle modifications
  - Initial therapy for HTN
  - Compelling indications
  - Addressed secondary HTN and resistant HTN

## JNC8

- Systematic review
- Randomized, controlled trials (RCT) only
- Graded recommendations
- Recommendations:
  - No specific lifestyle recommendations
  - Initial therapy for HTN
  - Racial, CKD, and diabetic subgroups addressed
  - Addressed three key questions

# JNC8: Key Questions

- In adults with HTN, does initiating antihypertensive pharmacologic therapy at **specific BP thresholds** improve health outcomes?
- In adults with HTN, does treatment with antihypertensive pharmacologic therapy to a **specified BP goal** lead to improvements in health outcomes?
- In adults with HTN, do various **antihypertensive drugs** or drug classes differ in comparative benefits and harms on specific health outcomes?

# JNC8: Methods

- Excluded sample size < 100 and f/up period < 1 year
- Only included randomized, controlled trials rated as good or fair
- Only included studies reporting effects of interventions on:
  - MI
  - Stroke
  - ESRD, doubling of Scr, or halving of GFR
  - Heart failure (HF) or hospitalization for HF
  - Coronary revascularization or other revascularization
  - Mortality (Overall mortality, CVD-related mortality, CKD-related mortality)

# JNC8: Strength of Recommendation

Grade	Strength of Recommendation
A	<b><u>Strong</u></b> : High certainty net benefit is substantial
B	<b><u>Moderate</u></b> <ul style="list-style-type: none"><li>• Moderate certainty net benefit is moderate to substantial, or</li><li>• High certainty that net benefit is moderate</li></ul>
C	<b><u>Weak</u></b> : At least moderate certainty of small net benefit
E	<b><u>Expert Opinion</u></b> <ul style="list-style-type: none"><li>• Insufficient evidence, or</li><li>• Evidence is unclear or conflicting</li><li>• Further research is recommended in this area</li></ul>

# Recommendations for General Population Age $\geq$ 60 Years

## JNC 7

- BP Goal  $< 140/90$  mmHg  
(No age recommendations)

## JNC8

- BP Goal  $< 150/90$  mmHg
  - Rated Grade A

## Evidence for JNC8

- HYVET Trial
- SHEP Trial
- JATOS Trial
- VALISH Trial

# Recommendations for General Population Age < 60 Years

## JNC 7

- BP Goal < 140/90 mmHg

## JNC8

- SBP Goal < 140 mmHg
  - Grade E
- DBP Goal < 90 mmHg
  - Ages 30-59 years (Grade A)
  - Ages 18-29 years (Grade E)

## Evidence for JNC8

- HDFP Trial
- Hypertension-Stroke Cooperative Trial
- MRC Trial
- ANBP Trial
- VA Cooperative Trial

# Recommendations for General Non-black Population (Including DM)

## JNC 7

- First-line: Thiazide diuretics  
(no racial distinction made)

## JNC8

- First-line
  - Thiazide diuretics
  - CCB
  - ACE inhibitor
  - ARB
- Grade B

## Evidence for JNC8

- ALLHAT Trial
  - BP control more important than medication used
- Alpha blockers not recommended first-line
- LIFE Study
  - Beta-blockers not recommended first-line
- Insufficient evidence to recommend other classes

# Recommendations for General Black Population (Including DM)

## JNC 7

- First-line: Thiazide diuretics (no racial distinction made)

## JNC8

- Initial treatment for black population (Grade B) with DM (Grade C)
  - Thiazide diuretics
  - CCB

## ALLHAT Trial

- Pre-specified subgroup analysis
- Thiazide more effective in improving CV outcomes compared to ACEi in black patient subgroup
  - 51% higher rate of stroke (RR 1.51; 95% CI 1.22-1.86) with use of ACEi as initial therapy in black patients (compared to CCB)
- 46% of patients in subgroup analysis had DM

# Recommendations for General Population Age $\geq 18$ with CKD

## JNC 7

- Goal BP:  $< 130/80$  mmHg
- First-line agent: ACEi or ARB

## JNC8

- Goal BP:  $< 140/90$  mmHg
  - Grade E
- Initial or add-on treatment: ACEi or ARB
  - Grade E
  - Regardless of race or DM status

## Evidence for JNC8

- AASK Trial
- MDRD Trial
  - Potential benefit of goal  $<130/80$  for patients with proteinuria ( $>3\text{g}/24\text{ hours}$ )
- REIN-2 Trial
- No trials showed goal  $<130/80$  mmHg significantly lowered kidney or CV end points compared to 140/90

# Comparison of JNC8 and IM HTN Algorithm: BP Goals

## IM HTN Algorithm

- Age  $\geq$  60 years
  - Not addressed
- General population:  $< 140/90$ 
  - No grade of evidence
- Hypertension & DM:  $< 130/80$ 
  - No grade of evidence
  - ADA Guidelines:  $< 140/80$
- Hypertension & CKD
  - Not addressed

## JNC8

- Age  $\geq$  60 years:  $< 150/90$ 
  - Grade A
- General population:  $< 140/90$ 
  - Grade E (Grade A: DBP, age 30-59)
- Hypertension & DM:  $< 140/90$ 
  - Grade E
- Hypertension & CKD:  $< 140/90$ 
  - Grade E

# Comparison of JNC8 and IM HTN Algorithm: Preferred Agents

## IM HTN Algorithm

- General population
  - Thiazide Diuretic : HCTZ
- Black population
  - Not addressed
- DM
  - ACEi or ARB
- CKD
  - Excluded from algorithm

## JNC8

- General population
  - Thiazide, CCB, ACEi, ARB (Grade B)
- Black population
  - CCB or Thiazide (Grade B)
    - Grade C for black patients with DM
- DM
  - Thiazide, CCB, ACEi, ARB (Grade B)
- CKD
  - ACEi or ARB (Grade B)

# JNC8: Treatment Strategies (Grade E)

- If goal BP not met after 1 month of treatment:
  - Increase dose of initial drug, or
  - Add a second drug (Thiazide, CCB, ACEi, or ARB)
- If goal BP not met with 2 medications:
  - Add and titrate a third medication (Thiazide, CCB, ACEi, or ARB)
  - Do not use ACE and ARB together
- Other classes may be used in the following scenarios:
  - Goal BP not met with 3 medications
  - Contraindication to thiazide, ACE/ARB, or CCB

# Strategies to Dose Antihypertensive Drugs

- Titrate to max dose, then add a second drug
- Add a second drug before achieving max dose of the initial drug
- Start with 2 drugs at the same time
  - If SBP  $\geq$  160mmHg and/or DBP  $\geq$  100 mmHg
  - If SBP  $\geq$  20mmHg above goal and/or DBP  $\geq$  10mmHg above goal

\*\*\*Consider scheduling follow-up with the Enhanced Care Clinic for titration of BP Meds