JNC 8 and Beyond

Joint National Committee on HTN
National Institute for Health and Clinical Excellence
Learning Goals

• Put JNC 8 in context
• Examine background trials
• SPRINT
• Drug specific effects: ACEI and aldosterone antagonists
Case 1

- 75 y/o wh male. Type 2 DM
- Repeated BP, ABPM 160/80.
- On: ACEI, hctz, metformin
- Added norvasc.
- 3 weeks later, syncope with skull fracture.
- 6 mo later, recovered, BP 165/78.
- Now what?
Case 2

- 80 y/o Af Am woman referred: refractory htn
- Dx htn 1st pregnancy 60 years ago. +FHx
- Always difficult to control BP, more so past few years. No etoh, smoke, drugs, wt. changes.
- PMH: AVR (bovine), Afib
- Meds: Diovan, nifedipine, metoprolol, lasix
- Exam: BMI 25, BP 180/80, 2/6 AS, 1+ edema
- K 4.1, creat .9, Ca 9.5. EKG- LVH.
- Dx? Labs?
Case 2 outcome

- Aldosterone/renin = 187.5
- Rapid response to spironolactone
- Stopped nifedipine, reduced doses others
- Didn’t image
Process

• Panel of clinicians & Scientists under NHLBI
  – National Heart Lung and Blood Institute (NIH)
• Evidence Based Process
  – Care regarding conflicts of interest
• External Review
  – Experts & Federal Agencies
Strength of Recs

A. Strong (high certainty, substantial benefit)
B. Moderate (moderate certainty & benefit)
C. Weak (moderate certainty, small benefit)
D. Against (moderate or more certainty)
E. Expert opinion
N. Neutral
Recommendation 1

• Age 60 years or more, pharmacologic therapy to goal less than 150/90 mm Hg
  Grade A

Corollary: if under 140 mm Hg & doing fine, leave the patient alone
  Grade E
Recommendation 2

Age under 60 years, lower diastolic pressure to under 90mm Hg with pharmacologic therapy

**Grade A** (age 30-59)

**Grade E** (age 18-29)
Recommendation 3

• Age under 60 years, lower systolic pressure to under 140 mm Hg with pharmacologic therapy

Grade E
Recommendation 4

• Age 18 years or more & chronic kidney disease, start pharmacologic therapy to a goal of under 140/90 mm Hg

Grade E
Recommendation 5

- Age 18 years or more & diabetes, start pharmacologic therapy to a goal of under 140/90 mm Hg

Grade E
Recommendation 6

• Non Black population (even with diabetes), initially use Thiazide, calcium channel blocker, ACE inhibitor, ARB
  Grade B
Not B blockers, (higher mortality v. ARB)
Not alpha blockers as 1st line
  or alpha/B, alpha 2, spironolactone, furosemide, reserpine
Recommendation 7

- Black population (even with diabetics) include thiazide or calcium channel blocker

  **Grade B** (general)
  **Grade C** (diabetes)
Recommendation 8

• For all adults with chronic kidney disease, include ACEI or ARB

Grade B
Recomendation 9

• If BP not at goal in 1 month, increase dose or add 2\textsuperscript{nd} drug from thiazide, CCB, ACEI or ARB.
  – Not ARB + ACEI together
  – If more than 3 drugs needed, use other classes
  – Consider referral to HTN specialist

Grade E
1/3 of US adults have HTN

>115/75, CV risk doubles for each 20 mm rise

Af Ams: younger onset, more severe, salt sensitive, more TOD (stroke, ESRD)

All goal: <140/90 but <150 if age> 80 years

Rec ABPM for WCH. Minimal labs.

Other targets, lifestyle, drugs same as JNC 8
Comparing the Guidelines
Introduction

• “BP is normally distributed in the population, & there is no natural cut-off point above which HTN definitely exists & below which it does not”
Diagnosing Hypertension

• If clinic BP is 140/90 or more, offer ABPM to confirm diagnosis of hypertension.
• Use the mean pressure of at least 14 measurements while awake.
Emphasis

• Measuring blood pressure correctly

• Using generic & once daily drugs
Goal BP

• Under 140/90 if age under 80 years

• Under 150/90 if age 80 years or more
Initiating Drug Treatment

- Stage I, under 80 years AND:
  comorbidities (target organ damage, cardiovascular disease, chronic kidney disease, diabetes)
  or 10 year cardiovascular risk ≥ 20%

- Stage II - All
Choosing Drugs Step I

- Not Black, under 55: ACEI or ARB
- Blacks: 1. CCB
  2. thiazide

  All over 55 years of age: same as Blacks
  Preferred diuretics: Chlorthalidone 12.5mg – 25mg QD
  or Indapamide 1.5 – 2.5mg QD

If on other thiazides & doing ok, leave alone.
Step 2

- CCB + ACEI/ARB
- Thiazide if CCB not suitable
- Blacks: ARB better than ACEI
  - due to side effects
Step 3

• ACEI or ARB + CCB + thiazide
Resistant HTN: Step 4

• Spironolactone 25 daily if K+ ≤ 4.5

• High dose thiazide if K+ ≥ 4.5
Lifestyle: Helpful?

- Yes: diet, exercise, Na, reduce caffeine, alcohol
- No: relaxation, Ca/Mg/K supplements
Drug Choice in Black Patients
Bangalore. AJM 2015

- Retrospective cohort in NYC (N>400K)
- Compared ACEI v. CCB, thiazide or BB
- Outcome: death, CVA, MI
- Results (HR of ACEI v.):
  - CCB 1.45 (1.2-1.8)
  - Thiazide: 1.65 (1.3-2.1)
  - BB: NS
Barriers to BP Control

Epstein. AJM 2016

- NHANES 2012 showed 52% controlled, unchanged from 2010.
- Underuse of mineralocorticoids cited
- Aldosterone critical in resistance, XS TOD
  - Eg. sleep apnea
- PATHWAY 2: RCT for resistant htn. Aldactone better than alpha or beta blocker
WHAT LED TO SPRINT?
Prior Trials

- SHEP: benefit if lowered < 160 systolic
- Sys-Eur: benefit < 160
- HTN in very elderly: benefit < 150
- ACCORD: all with DM, no benefit 120-140
INVEST Trial
Messerli 2006, Cooper 2010

• Post hoc analysis. Initially CCB v. BB+ACEI
• Nadir of benefit 119/84
  – J curve seen
• No benefit <130 with long term follow up
• All patients had CAD and DM
Meta-Analysis of BP and DM
Emdin. JAMA 2014

• 40 studies with N> 100, 000
• Each 10 mm drop reduced:
  – Mortality RR.87 (.78-96)
  – CV events .89 (.83-95); ARR 3.9 (1.6-6.1)
• More benefit if baseline >140
• Advised: “individualization” <140 due to AE
Mild HTN Control: Meta-Analysis
Sundstrom. Ann IM 2015

• Trials: 10 with DM, 3 w/o.
• Stage 1 HTN. BP reduced 3.6/2.4 mean
• ORs over 5 years:
  – CV events .86; CHF .80; ACS .80 : all NS
  – CVA .72 (.55-.92); CV death .75 (.57-.98)
  – All death .78 (.67-.92)
• Concluded: although small BP reductions, stroke and death declined
SPRINT Trial
Wright. NEJM 2015

• Intensive (120) v. standard (140) BPs control
• N=9361, BPs>130 + CV risk but no DM
• Age 55-79, 102 sites, RCT by NHLBI
• Primary outcomes: MI, ACS, CVA, CHF flare, CV death, renal (drop GFR 30%, alb doubles)
• Analysis: Cox models
SPRINT Continued

- Achieved: 121.4 v. 136.2 mmHg mean systolics
- NNT events: 61, 90, 172 at 1/2/3 years
- RRR for CV death 43%
SPRINT Subgroup over 75 Years
Williamson. JAMA 2016

• N=2636. mean age 80 after 3 years f/u
• Composite CV: HR .66 (.51-.85)
• All death HR .67 (.49-.91)
• Adverse events: both 48% (syncope, lytes, AKI)
• Caveats: stroke NS, renal worse
• Concluded: benefit with high but similar SE
SPRINT Rebuttal
Ortiz. Ann IM 2016

- If goal 120 v. 140, 25% RRR in CV events
- Caveats: ARR 1.6%
- Fatal/severe SE: 4.7% v. 2.5%
  - If 1000 pts x 3.2 years, 16 benefit and 22 harm
- Renal outcomes worse 1% yearly
- No CVA benefit
Putting it all together

• Clearly get most patients under 140/90.
• Elderly BPs is labile, primum non nocere.
  – These trials were under ideal conditions with selected patient groups.
• Individualize drug choice
  – Think high/low renin.
  – Optimize effects/ side effects
How I Lower My BP