

Hypertension: Amlodipine and/or Diuretics for the Elderly?

**West Coast Cardiovascular Forum
June 19, 2009**

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Disclosures

■ **Financial Conflicts: none**

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- **Intellectual Conflicts: many**

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 - JNC 7 panel
 - JNC 8 panel

Hypertension in the Elderly

- Important Questions

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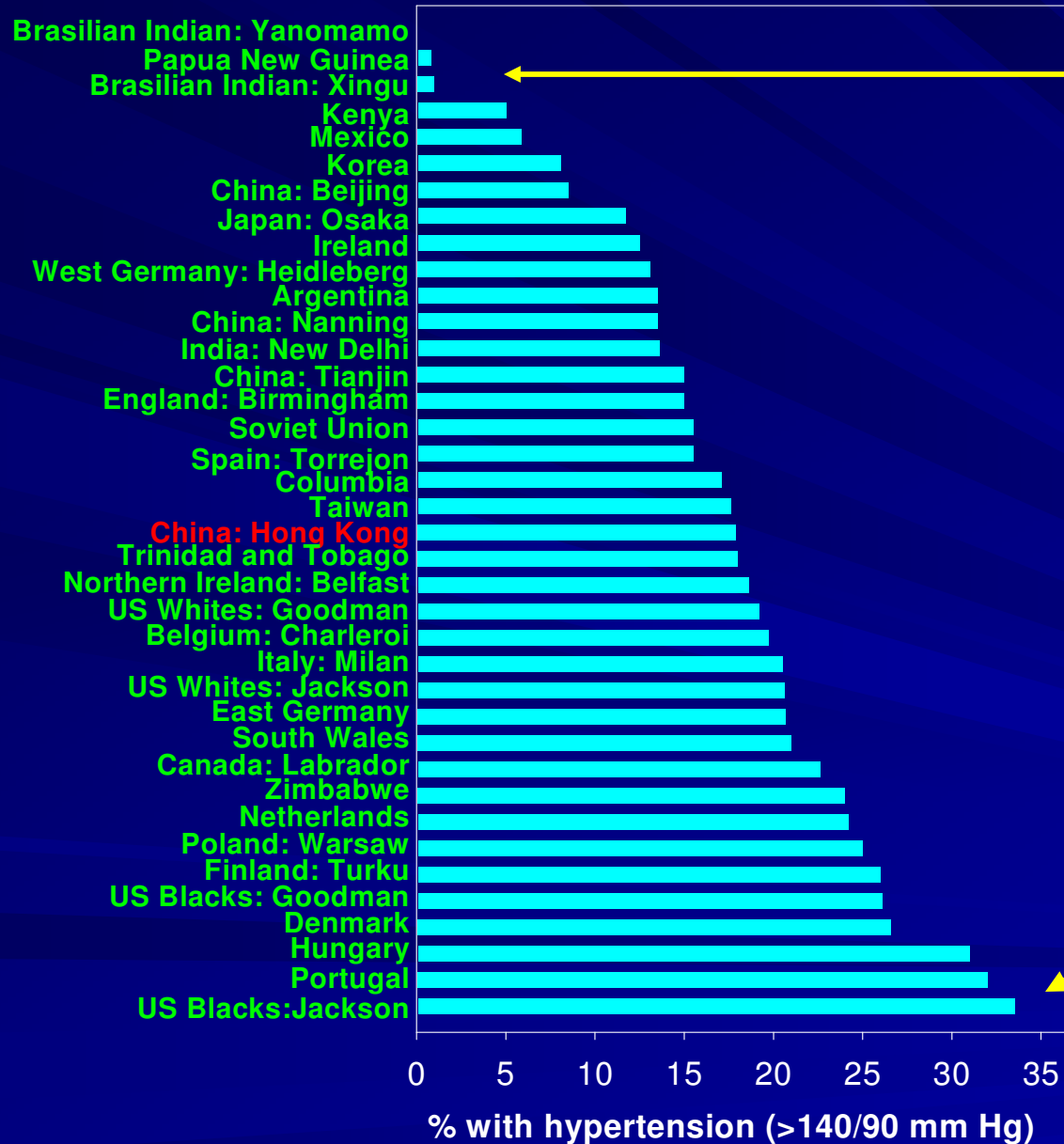
Hypertension in the Elderly

■ Important Questions

- Can the rise in blood pressure with age be prevented?
- Is it useful to lower blood pressure?
- Does it matter how we lower blood pressure?
- **Should there be concern about diastolic blood pressure?**

Can the rise in blood pressure with age be prevented?

Prevalence rates of hypertension



**Indians in
Brazil**

**African Americans
In Jackson, MS**

**Labarthe DR, 1989
Janus ED, 1997
Tomlinson**

**Is it useful to
lower blood
pressure?**

Lower Blood Pressure?

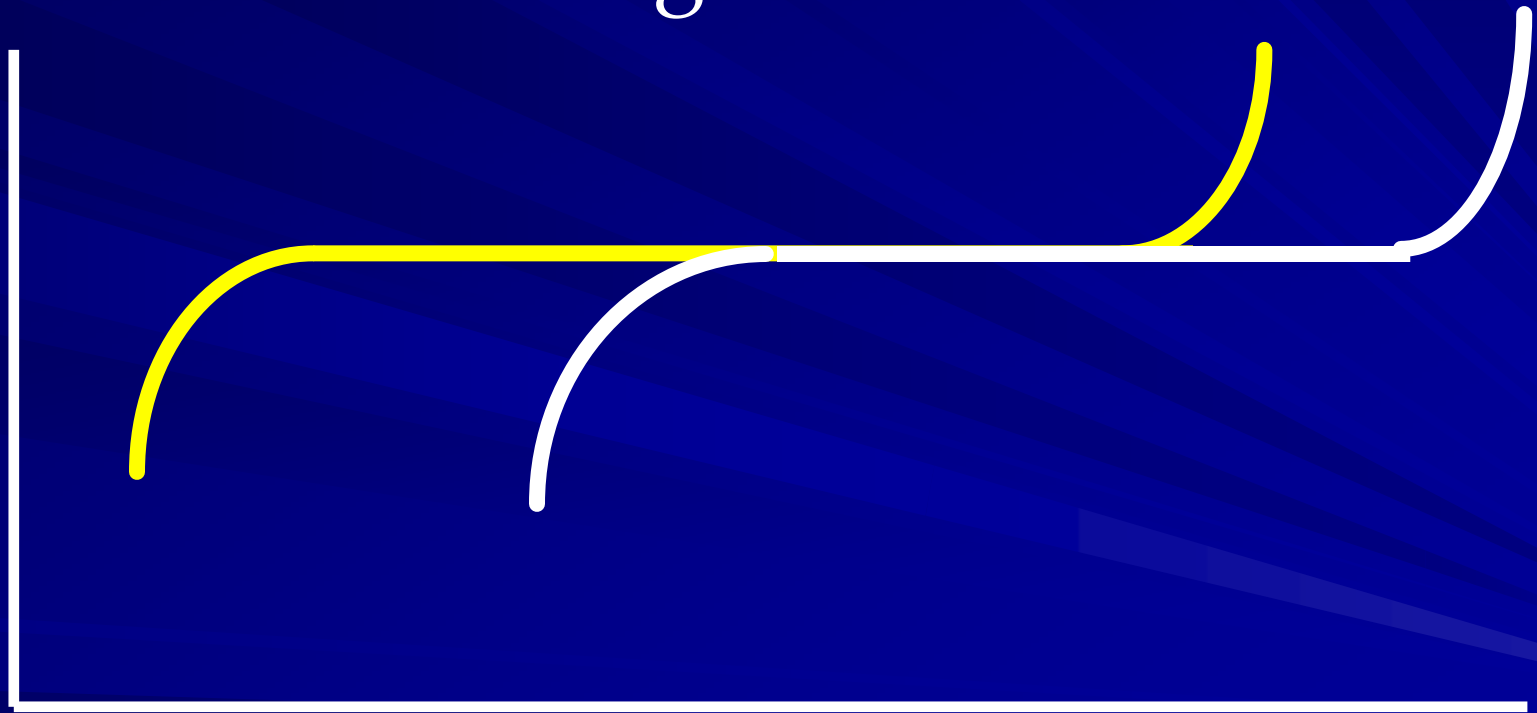
■ The Old Attitude

- First, do no harm (No data)
- Rise in BP with age “natural”
- Appropriate SBP: Age + 100
- Need higher pressure to push blood through sclerotic arteries
- Concern about the diastolic J-curve phenomenon and diastolic flow

Hypertension in the Elderly

Autoregulation

Blood
Flow



Blood Pressure

Lower Blood Pressure?

- **Systolic Hypertension in the Elderly**
 - SBP > 160, DBP < 90
 - Goal: SBP < 160, or, for baseline SBP 160-180, reduction ≥ 20 mm Hg
 - Mean BP: 170/77 \longrightarrow 143/68
 - Drugs: low dose diuretics, beta blocker
 - Risk reduction: CAD 27%, Stroke 33%, CHF 55%, All CVD 32%

JAMA 1991;265:3255-64.

Lower Blood Pressure?

- Hypertension in the Very Elderly Trial (HYVET) (Age \geq 80)
 - SBP \geq 160
 - Goal: 150/80
 - Mean BP: 173/91 \longrightarrow 158/85
 - Drugs: indapamide 1.5 mg, perindopril 2, 4 mg
 - Risk reduction: Stroke 30%, CHF 64%, All CVD 23%, **Total Mortality 21%**

NEJM 2008;358(18):1887-1898.

**Does it matter
how we lower
blood pressure?**

Which Drugs?

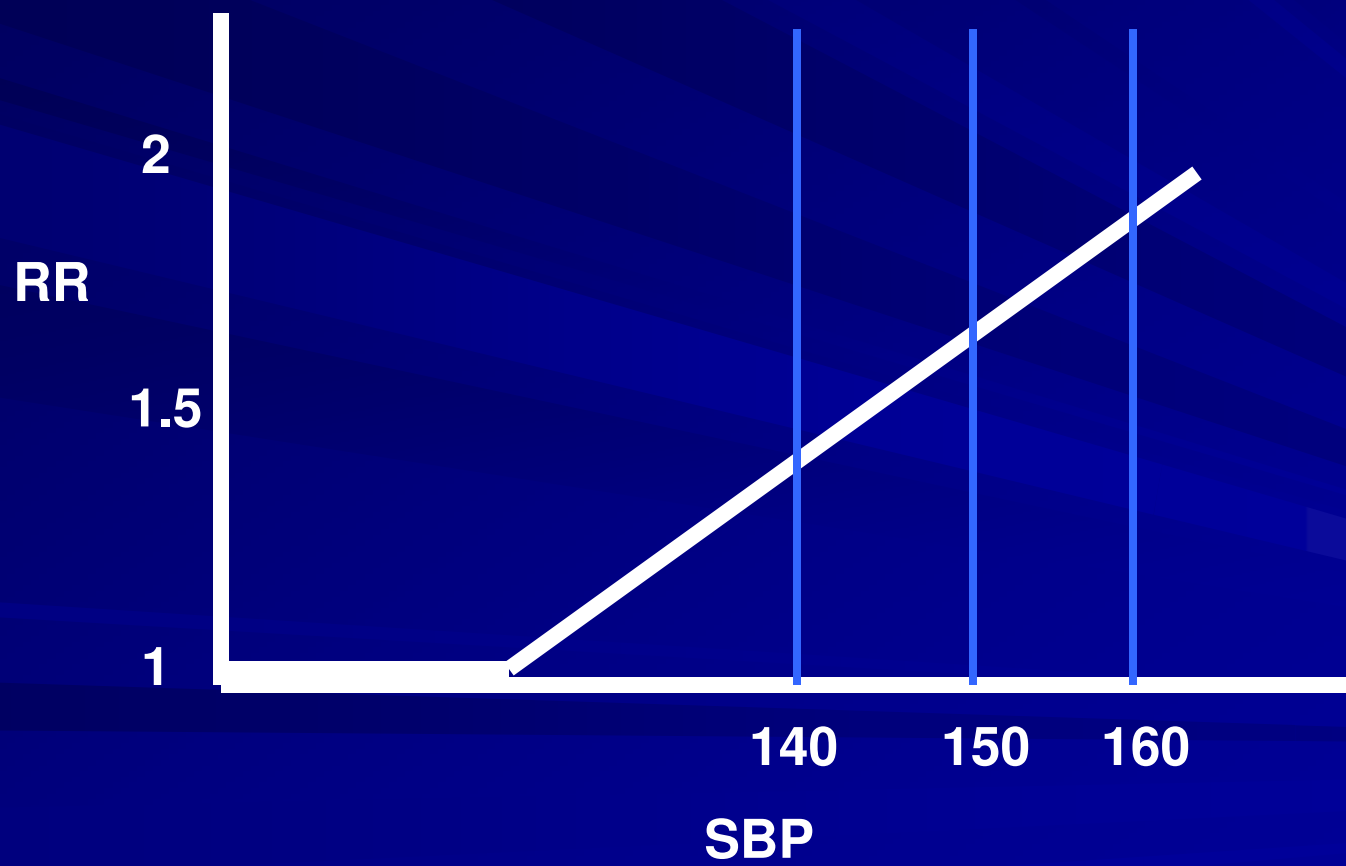
- **Good people reviewing the same evidence come to different conclusions.**
 - **US Guidelines (JNC 7): prefer diuretics**
 - **ESH/ESC Guidelines: no preference among 5 classes**
 - **British Guidelines: discourage diuretics and beta blockers**

Guidelines

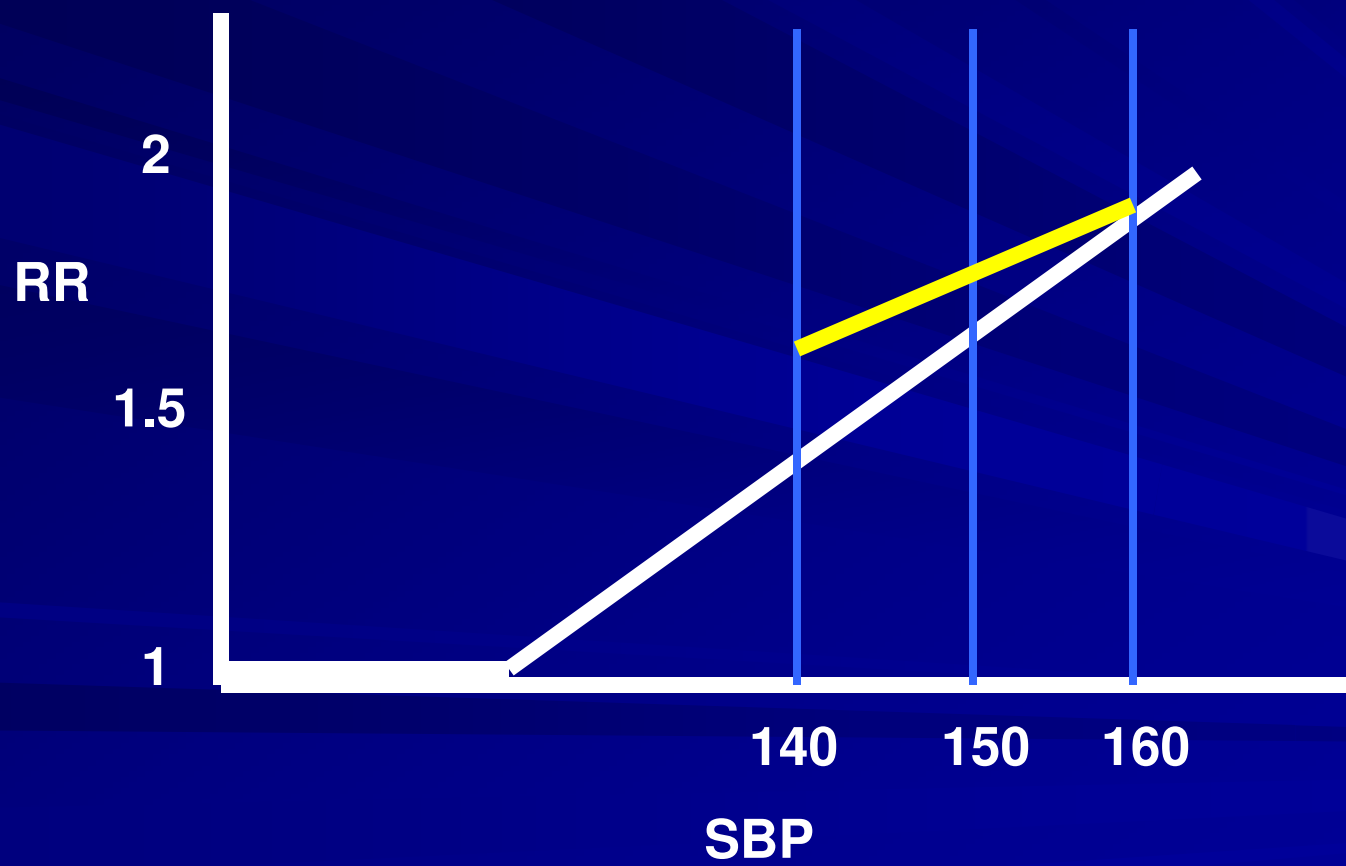
■ **JNC 7 - NHLBI/NHBPEP**

**Hypertension. 2003;42:1206-
1252.**

BP Rx Residual Risk



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Causes of Residual Risk?

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- **Adverse effects of drugs**

Causes of Residual Risk?

- Adverse effects of drugs
- Lack of BP-independent effects

Causes of Residual Risk?

- Adverse effects of drugs
- Lack of BP-independent effects
- Incomplete improvement of BP profile

Large Hypertension Trials Comparing Two or More Agents/Regimens, One Including a Thiazide Diuretic

Trial	n	Outcomes
CAPPP	10,800	captopril not superior to BB/D*
STOP-2	6,628	isradipine/felodipine & ACEIs not superior to BB/D*
ALLHAT	42,418	chlorthalidone superior to doxazosin, amlodipine (HF only), lisinopril
NORDIL	10,881	diltiazem not superior to BB/D?
INSIGHT	6,592	nifedipine GITS not superior to diuretic
CONVINCE	16,602	verapamil not superior to BB/D* (equivalent?)
ANBP-2	6,083	ACEIs not superior to diuretics*
INVEST	22,576	verapamil±trandolapril equivalent to atenolol±HCTZ
ASCOT	19,257	amlodipine±perindopril superior to atenolol ±bendroflumethiazide*
ACCOMPLISH	11,462	amlodipine+benazepril superior to HCTZ*+benazepril

ACCOMPLISH

- amlodipine/benazepril 5/20-10/40 vs HCTZ/benazepril 12.5/20-25/40
- Mean age 68 years
- BP 131.6/73.3 vs 132.5/74.4 mmHg
- Composite primary end point:
 - RR reduction 19.6% $P < 0.001$
 - Absolute risk reduction 2.2%

NEJM 359:2417-2428. December 4, 2008

ACCOMPLISH

■ Meaning of results

- Calcium antagonists are superior to diuretics?
 - ...with an ACE Inhibitor?
 - ? BP independent effect?
- HCTZ 12.5 – 25 mg QD insufficient dose or duration?
- 24 Hour Blood Pressure control may be different (HCTZ duration)?

Which Drugs?

■ Summary of Trials:

- At least five classes provide mortality benefit
- Lowering BP is most important

Which Drugs?

■ Summary of Trials:

- **Combination therapy is needed to achieve goal in many (most)**
- **Several lifestyle approaches are beneficial for lowering BP**

Which Drugs?

■ Summary of Trials:

- Superiority trials have mixed results
- Drugs useful in management of a co-morbidity may not be the best at preventing that co-morbidity
- The ideal drug may be dependent on certain patient characteristics

Which Drugs?

My view on trial data:

BP response is a reasonable way to predict “protection” for a given drug in an individual patient.

Which Drugs?

My suggestion based on trial data:

Lower BP in the least intrusive manner that fits with your beliefs about the evidence.

**Should there be
concern about
diastolic blood
pressure?**

Concern about DBP?

- Observational studies consistently demonstrate an association between low diastolic BP and poor outcomes including CVD, total mortality, and dementia

Concern about DBP?

- Observational studies consistently demonstrate an association between low diastolic BP and poor outcomes including CVD, total mortality, and dementia
- Clinical trials have demonstrated “no harm” and demonstrated improvements in outcomes (SHEP: DBP 77 to 68 MM Hg)

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- Some hypertension in the elderly is preventable.
- Lowering blood pressure in the elderly hypertensive is useful.
- Diuretics and/or amlodipine, along with many other drugs are reasonable choices.
- There is more to learn about the safe limits for diastolic blood pressure in the elderly, but 55-60 mm Hg is likely okay for most.

Treatment Principles in the Elderly

- **Lower BP slowly**

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- Individualize goals: stroke, CHF, DM

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- Individualize goals: stroke, CHF, DM
- Individualize therapy decisions
- Titrate standing blood pressure

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