

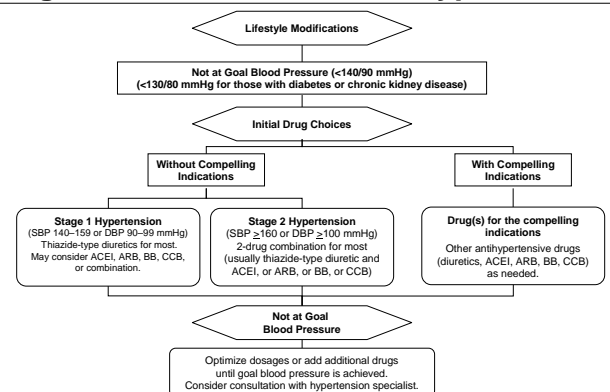
Update on Hypertension 2009

JNC VII

	<u>BP</u>	<u>Treat</u>
<u>Normal</u>	<120/80	none
<u>Prehypertension</u>	120 - 139 or 80 - 89	lifestyle
<u>Stage 1 hypertension</u>	140 - 159 or 90 - 99	1 drug, diuretic
<u>Stage 2 hypertension</u>	>160 or >100	2 drugs, diuretic & ACE/ARB)

- JNC VII
- Drug-Drug Comparisons
- Drug duo Comparisons
- Beta Blockers
- Treatment in Very Elderly
- Current Guidelines
- Summary

Algorithm for Treatment of Hypertension



Lifestyle Modifications

- Most patients will experience better control if they modify diet and exercise.
- Physician advice sometimes works and should always be given along with a follow-up visit appointment to monitor both blood pressure and lifestyle change efforts.
- Most of us do not do lifestyle counseling beyond simple advice and admonishment – the time factor is a problem.
- Nevertheless, lifestyle modification is at the top of the JNC7 algorithm.

DASH Diet

- 3 gm sodium
- 1250 mg calcium
- 115 meg potassium
- 27% fat, 18% protein, 55% CHO,
- 5 fruits, 7 grains, 4 vegetables
- 2 dairy, 2 fats, 2 meats

Lifestyle Modification

Modification	Approximate SBP reduction (range)
Weight reduction	5-20 mmHg / 10 kg weight loss
Adopt DASH eating plan	8 - 14 mmHg
Dietary sodium reduction	2 - 8 mmHg
Physical activity	4 - 9 mmHg
Moderation of alcohol consumption	2 - 4 mmHg

Physician Influence in Lifestyle Modification- What to Do PICM

- **Permission:** Ask the patient for permission to talk about lifestyle change and get preference for beginning with diet or exercise
- **Interest:** Ask the patient about readiness to change – How interested are you on a scale of 1-10. Ask why they are not a lower number – to elicit a motivational statement from the patient.
- **Confidence:** Ask how sure they are that they can do the behavior – again ask why not a lower number
- **Match a message to interest and confidence**

Keys to Physician Influence Matching the Message

- For low interest – “Would you be willing to think about reasons to begin diet/exercise and talk with me again next time?” Reinforce.
- For low confidence – “Would you be willing to monitor your activity/diet, think about a plan and visit with me again about this?” Give monitoring tools. Reinforce.
- For high interest and confidence - Get commitment. Refer to dietitian, give diet plan, and/or assess plan for exercise.

JNC VII

- In type I DM with Microalbuminuria – ACE
- In type II DM with Microalbuminuria – ACE or ARB

Compelling Indications for Individual Drug Classes

Compelling Indication	Initial Therapy Option
Heart failure	THIAZ, BB, ACEI, ARB, ALDO ANT
Post myocardial infarction	BB, ACEI, ALDO ANT
High CAD Risk	THIAZ, BB, ACEI, CCB
Diabetes	THIAZ, BB, ACEI, ARB, CCB
Chronic kidney disease	ACEI, ARB
Recurrent stroke prevention	THIAZ, ACEI

JNC VII

- In type II DM, with > 300mg/d protein or renal insufficiency, use ARB



Drug – Drug Comparisons

Study	Patients	Age	BP	Drugs
AASK	1,094	18 - 70	95+	BB v ACE, CC
ALLHAT	42,418	55+	<180/110	D v ACE, CC
AUS N BP2	6,083	65+	160+, 90+	D v ACE
CAPPP	10,985	25 - 66	100+	D, BB v ACE
INSIGHT	6,321	55 - 80	95+	D v CC
LIFE	9,193	55 - 80	160+, 95+	BB v ARB
NORDIL	10,881	50 - 74	100+	D, BB v CC
STOP-2	6,614	70 - 84	180/105+	D, BB v ACE, CC
TOMS	902	45 - 69	<100	D, BB v ACE, CC
UKPDS	5,102	mean 56	-	BB v ACE
VA COOP	1,292	21+	95 - 109	D, BB v ACE, CC



Ca Channel Comparisons

AASK	ESRD, death, GFR ↓ 50%	ACE > BB > CC
ALLHAT	Stroke	D > CC
INSIGHT	CHF, fatal MI	D > CC
NORDIL	Stroke BP	CC > D, BB
STOP-2	CHF, MI	ACE > CC
TOMS	BP	CC > ACE
VA COOP	BP	CC > D, ACE



ACE Comparisons

AASK	ESRD, DEATH, GFR ↓ 50%	ACE > BB > CC
ALLHAT	Stroke, CHF, BP new dg DM	Diuretic > ACE ACE > diuretic
AUS N BP2	CV dis., death in males Fatal stroke	ACE > D D > ACE
CAPPP	Stroke, BP New dg DM CV events in DM	Diuretic > ACE ACE > diuretic ACE > diuretic
STOP-2	CHF, MI	ACE > CC
TOMS	BP	D > CC, BB > ACE
UKPDS	No differences	
VA COOP	BP	CC, D > ACE
LIFE	Stroke, new dg DM	ARB > BB



BP Comparison Summary

• Diuretic > ACE	BP↓, stroke prevention (women, African-American)
• ACE best	New DM, renal dis. Prevention (men)
• CC worst	MI prevention
• ARB > BB	Stroke prevention
• Diuretic > ACE > CC	CHF prevention

Invest Trial*

- 22,576 age 50+ CC+ACE vs. BB+D
 - ✓ 63% CC group on ACE, 60% BB group on D
 - ✓ 64 - 88% achieved BP goal
 - ✓ Of those with prior CHF, BB+D had less CV events
 - ✓ No outcome differences otherwise

*Pepine, et. al. JAMA 290:2805, 2003

Accomplish Trial*

- 11,506 patients, ACE+CC vs. ACE+D
 - ✓ Industry sponsored
 - ✓ Mean HCTZ dose 19mg
 - ✓ All authors employees or heavy ties to Novartis
 - ✓ 20% less CV event or death in ACE+CC

*Jamerson, et. al. NEJM 359:2417, 2008

ASCOT Trial*

- 19,257 patients age 40 - 79, ACE+CC vs. BB+D
 - ✓ 23% less stroke with ACE+CC
 - ✓ MI + fatal CV disease, no difference
 - ✓ CHF not included
 - ✓ Atenolol was beta blocker

*Dahlof, et. al. Lancet 366:895, 2005

Two Drug Comparisons

<u>Study</u>	<u>Number</u>	<u>Drug</u>	<u>Outcome</u>
ASCOT	19,257	CC+ACE vs. BB+D	23% less stroke
ACCOMPLISH	11,506	CC+ACE vs. D+ACE	20% less cardiac death or event
INVEST	22,576	CC+ACE vs. BB+D	No difference

Beta Blockers

- Traditional Studies
- Recent Meta-Analysis
- New Beta Blockers

Beta Blockers: Meta-analysis

- Risk of Stroke 16% higher with beta blockers vs. others
- Risk of Stroke 26% higher with atenolol
- 3/12 Studies Statistically Significant

Lindholm, et. al. Lancet 366:1545, 2005

Beta Blockers: Traditional Studies

<u>AASK</u>	<u>BB vs. ACE, CC</u>	<u>ACE>BB>CC</u>	<u>Death, ESRD</u>
CAPPP	D, BB vs. ACE	D, BB > ACE	Stroke
LIFE	BB vs. ARB	ARB > BB	Stroke
NORDIL	D, BB vs. CC	CC > D, BB	Stroke, BP

Beta Blockers: Newer Beta Blockers

- Labetolol
- Carvedilol
- Nebivolol

Beta Blockers: Newer Beta Blockers

Nebivolol 5mg = Lisinopril 20mg

Nebivolol meta-analysis

- 5mg vs. other drugs, placebo (no diuretics)
- More BP lowering vs. ACE
- More BP normalized vs. ARB, CC

Rosei, et. al. Blood Pressure Suppl May2003, Page 30
Van Bortel, et. al. Am J Cardiovasc Drug 8:35, 2008

HYVET

- 3845 people over 80 y.o., BP > 160
- Diuretic vs. placebo
- Stroke 30% less
- Death 21% less
- CHF 64% less

Beckett et. al. NEJM 358:1887, 2008

Hypertension in the Elderly

- Controversy on how aggressive to treat
 - ✓ HYVET vs. Swedish Study

BP in 85+ y.o.

- Surveyed ½ 85 y.o., all 90+ (Sweden)
- Systolic BP strongly associated with mortality
- 4 year mortality: 81% BP < 120
62% 120 - 140
47% > 140

Molander et. al., JAGS 56:1853, 2008

On the Horizon

- To date, no genetic studies have been successful at identifying subgroups in which one drug might be superior.

Suonsyrja, et. al. Am J Hypertension Dec 2008

Summary

- Beta blockers not first line (except possibly nebivolol)
- Alpha blockers should be avoided
- Treatment in very elderly is controversial
- If everyone were very compliant, treatment might matter—since they are not, simpler and cheaper is better, but certain groups have specific benefits

Guidelines

- JNC VII
 - ✓ Diuretic first line
 - ✓ Diuretic plus ACE if need 2 meds
- NICE
 - ✓ < 55 yo
 - ACE first line
 - ACE plus diuretic or CC if need 2
 - ✓ > 55 yo, AA
 - CC or diuretic first line
 - ACE plus diuretic if need 2