

Blood Pressure Classification

BP Classification	SBP mmHg		DBP mmHg
Normal	<120	and	<80
Prehypertension	120-139	or	80-89
Stage 1 Hypertension	140-159	or	90-99
Stage 2 Hypertension	≥ 160	or	≥ 100

Relationship of Gender and Race/Ethnicity to BP Status in Adults \geq 20 Years of Age

	<u>Prehypertension</u>	<u>Hypertension</u>
	(% prevalence)	
Total US	31.2	29.8
Male	39.4	28.4
Female	22.9	30.5
White	31.3	28.4
African American	29.8	41.5
Mexican American	32.2	28.0

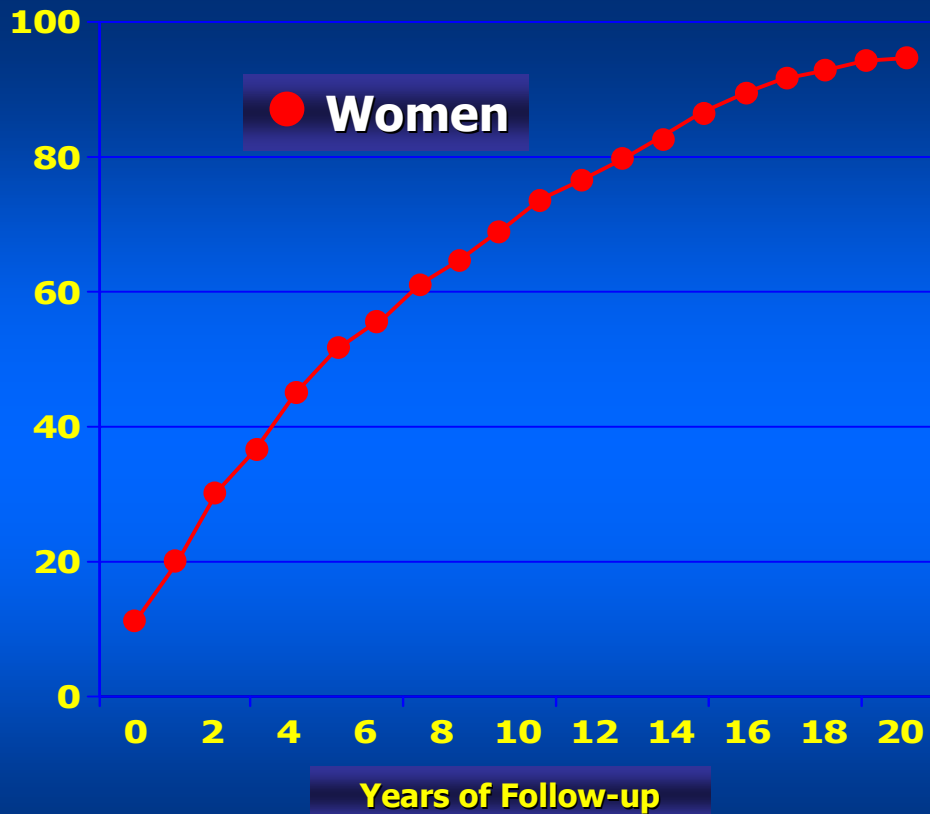
from Greenlund et al., *Arch Int Med* 2004; 164:2113-2118

Reasons for the Prehypertension Designation

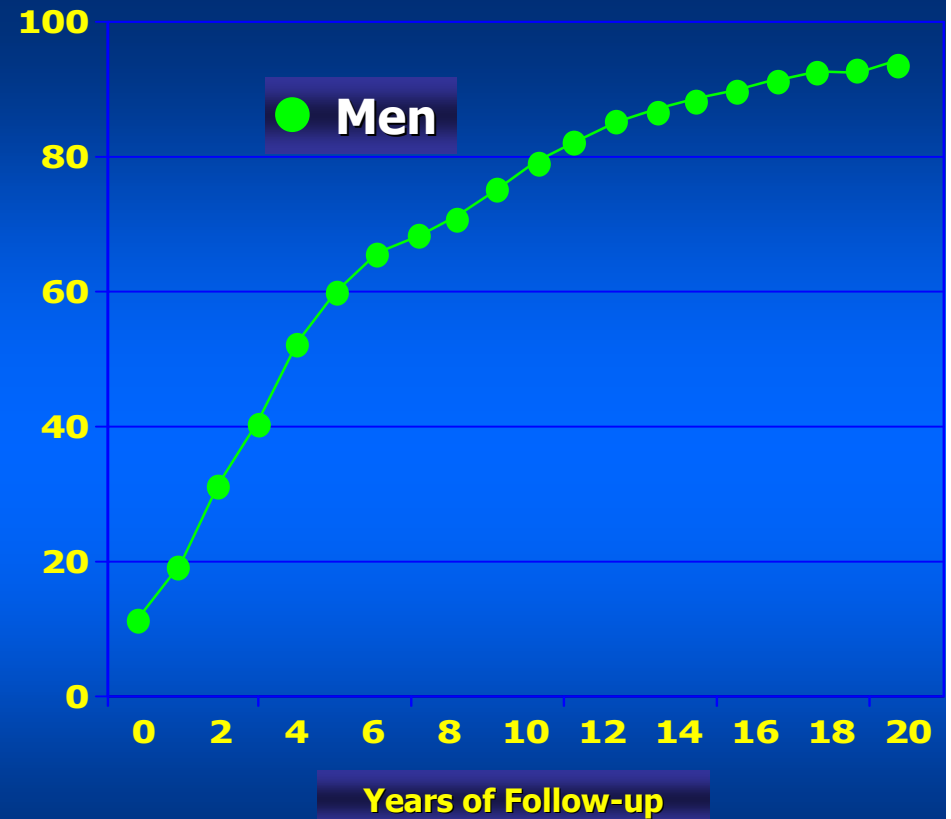
- **The risk of CVD increases progressively from BP levels as low as 115/75 mm Hg upward. The incidence of CHD and stroke doubles for every 20/10 increment of BP.**
- **BP in most societies increases with age. In the Framingham Study, approximately 90% develop hypertension if live to ≥ 75 yrs.**
- **More than two-thirds of prehypertensives have one or more other CVD risk factors.**
- **The designation focuses attention on that segment of the population at increased CVD risk in whom healthy lifestyles may prevent or delay the onset of hypertension and CVD.**

1976-98 Cumulative Incidence of Hypertension in Women and Men Aged 65 Years

Risk of Hypertension %



Risk of Hypertension %



Risk Factors for Hypertension

- **Prehypertension**
- **Increasing age**
- **Obesity**
- **Positive family history**
- **Black race**
- **High dietary sodium/reduced potassium**
- **Excessive alcohol intake**
- **Low socioeconomic/educational status**
- **Sleep apnea**
- **Certain illicit drugs and over-the-counter meds**

Advances in Treatment of Hypertension

- 1940's Potassium thiocyanate
Kempner diet
Lumbo-dorsal sympathectomy
- 1950's Rauwolfia/reserpine
Ganglionic blockers
Veratrum alkaloids
Hydralazine
Guanethidine
Thiazide diuretics
- 1960's Methyldopa
Spironolactone
Beta-adrenergic blockers
- 1970's Alpha-1 adrenergic receptor antagonists
ACE inhibitors
- 1980's Calcium antagonists
- 1990's Angiotensin receptor blockers
Endothelin receptor antagonists*
- 2000's Renin Inhibitors

Summary of Clinical Trial Data on Effects of Antihypertensive Drugs on Cardiovascular Disease Incidence

Effect of Rx vs. Placebo

Stroke Incidence	35-40%
Coronary Disease Events	20-25%
Congestive Heart Failure	40-60%

Benefits of Controlling Stage 1 Hypertension

- **Sustained reduction of SBP by 12 mm Hg for 10 years estimated to prevent 1 death for every 11 patients treated**
- **In presence of CHD or other target organ disease, only 9 patients would require such sustained BP reduction to prevent 1 death**

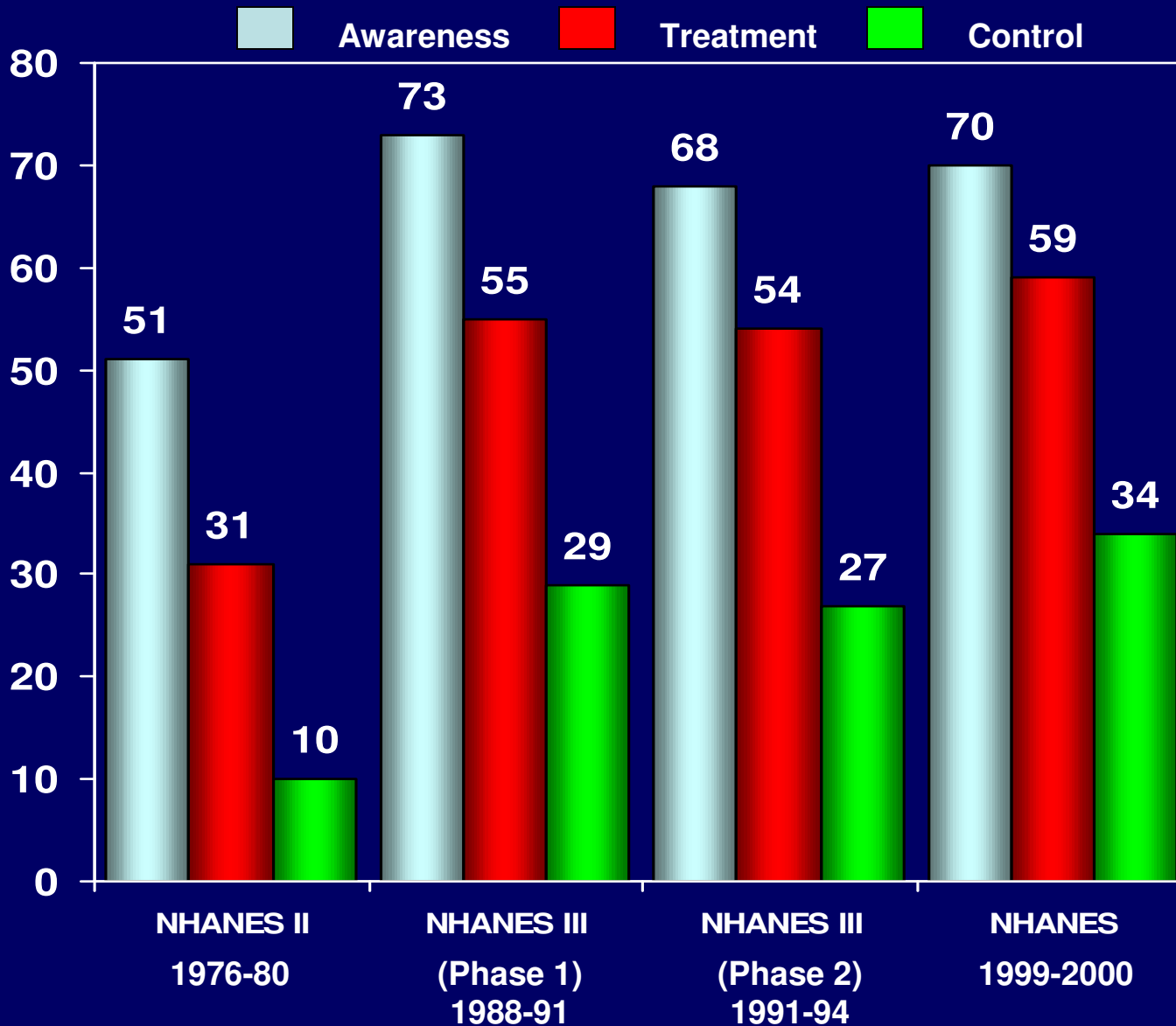
from Ogden et al., Hypertension 2000;35:539

JNC Recommendations for an Initial Antihypertensive Agent

<u>Committee</u>	<u>Year</u>	<u>Recommendation</u>
JNC 1	1977	Thiazide-type diuretic
JNC 2	1980	Diuretic
JNC 3	1984	Thiazide-type diuretic or BB
JNC 4	1988	Diuretic or BB or CCB or ACEI
JNC 5	1993	Diuretic or BB
JNC 6	1997	Diuretic or BB
JNC 7	2003	Thiazide-type diuretic, either alone or in combination with ACEI, ARB, BB, or CCB

BB indicates β blocker; ARB, angiotensin receptor blocker

Treatment and Control of High Blood Pressure in Adults Ages 18-74 (140/90 mm Hg)



NHLBI JNCVI 1999-2000 unpublished data

Recommended BP Targets for Therapy in Hypertensive Patients

<u>Group</u>	<u>BP goal (mm Hg)</u>
Without Co-morbidities	< 140/90
Diabetes	< 130/80
Chronic Kidney Disease	< 130/80
Cardiac-related Conditions	
High CHD Risk	< 130/80
Stable & Unstable Angina	< 130/80
LV Dysfunction	< 130/80
Stroke Secondary Prevention	< 140/90

from JNC-7 and Rosendorff et al., *Circulation* 2007;115:2761

Relationship of Race/Ethnicity to Hypertension Control -- NHANES

Control (<140/90 mm Hg)

Whites	33.4%
Non-Hispanic Blacks	28.1%
Mexican-Americans	17.7%

from Hajjar and Kotchen, *JAMA* 2003; 290:199-206

Physicians' Attitudes in the Management of Isolated Systolic Hypertension (ISH)

- **Poor SBP control the major contributor to low rates of BP control**
- **Most patients with ISH require 2 or more drugs to achieve BP control**
- **Three-fourths of primary care physicians do not initiate BP therapy if SBP in the 140-159 mm Hg range. Most do not try to achieve SBP goal of < 140 mm Hg**
- **Many physicians continue to believe that control of DBP is more important than SBP**

Important Priority Areas

- **Expand national public health efforts to promote lifestyle changes that reduce blood pressure and other CVD risk factors**
- **Expand hypertension detection and treatment programs**
- **Intensify education of clinicians on the importance of lowering systolic blood pressure**