

HYPERTENSION IN THE COMMUNITY:

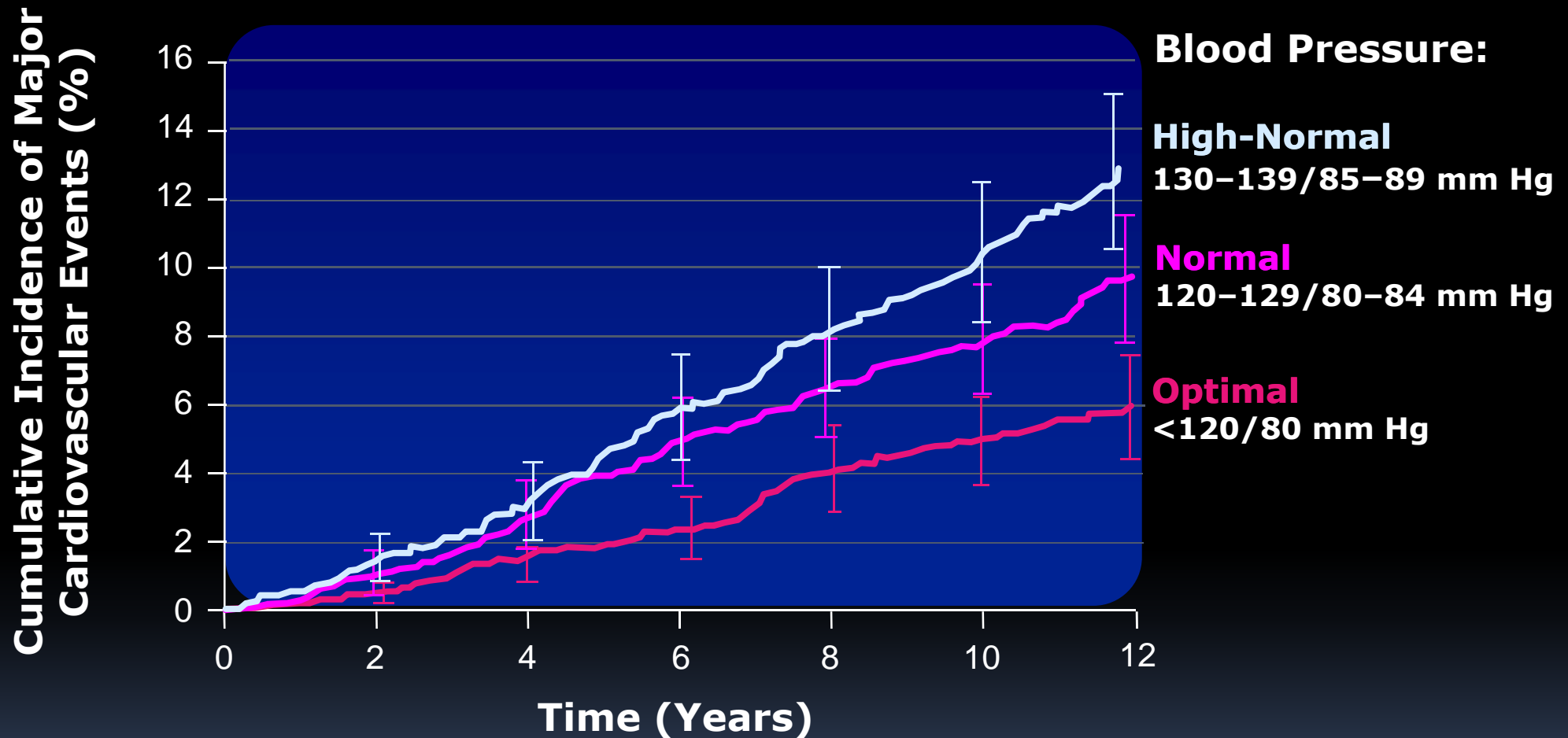
OVERVIEW

JNC 7 Guidelines (2003)

Classification of Blood Pressure

<u>Category</u>	<u>SBP</u>	<u>DBP</u>
Normal	< 120	or < 80
Prehypertension	120-139	or 80-89
Stage 1	140-159	or 90-99
Stage 2	> 160	or > 100

Impact of High-Normal Blood Pressure on Risk of Major Cardiovascular Events* in Men

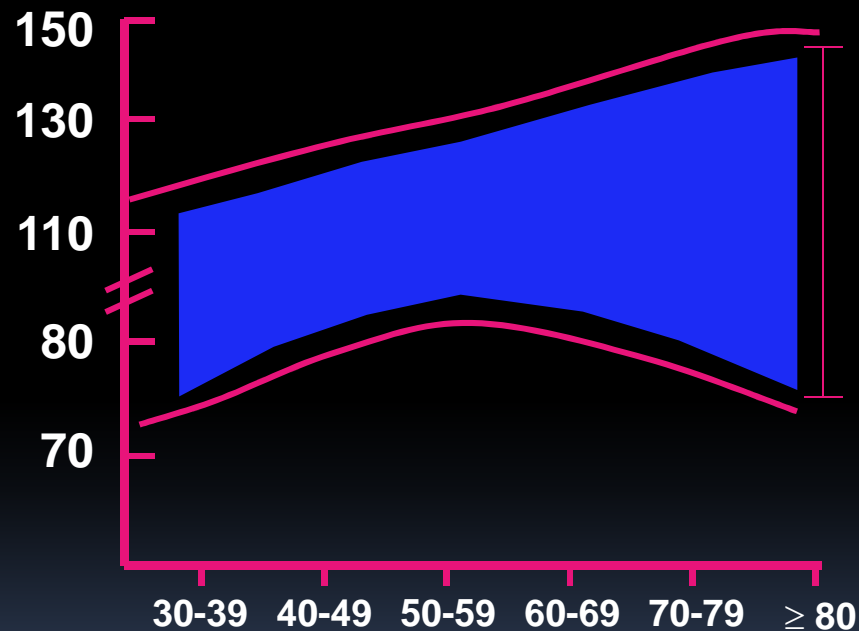


*Defined as death due to cardiovascular disease or as having recognized myocardial infarction, stroke, or congestive heart failure.

Vasan RS. *N Engl J Med.* 2001;345:1291-1297.

Blood Pressure Distribution in the Population According to Age

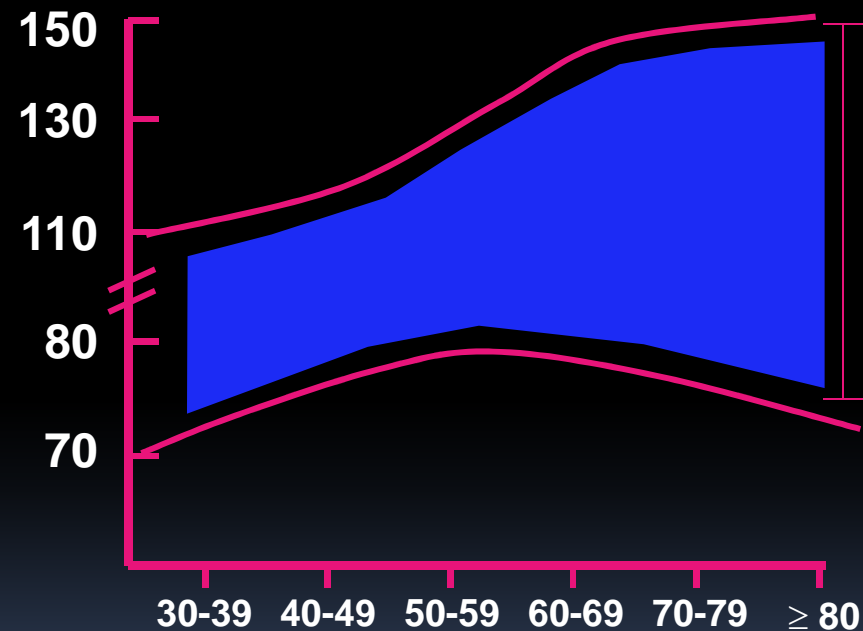
Men



Age

PP=Pulse Pressure.

Women



Age

Adapted from : Third National Health and Nutrition Examination Survey, *Hypertension* 1995;25:305-13

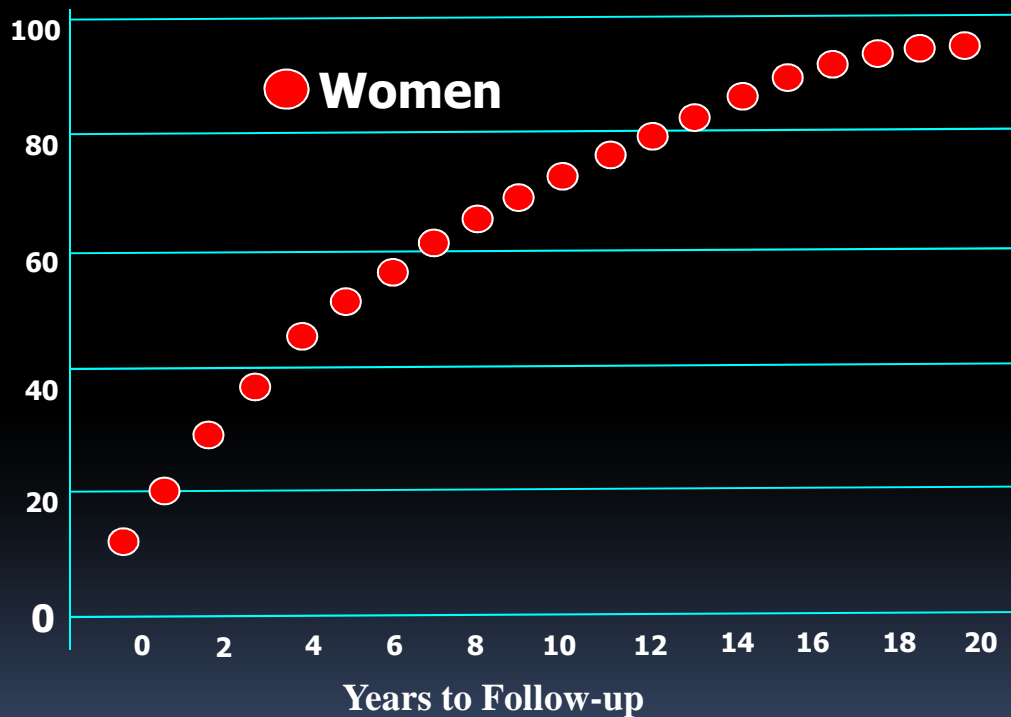
Hypertension is Common

Persons who are normotensive between 55+ 65 years have a 90% lifetime risk for developing hypertension
(*Framingham Data*)

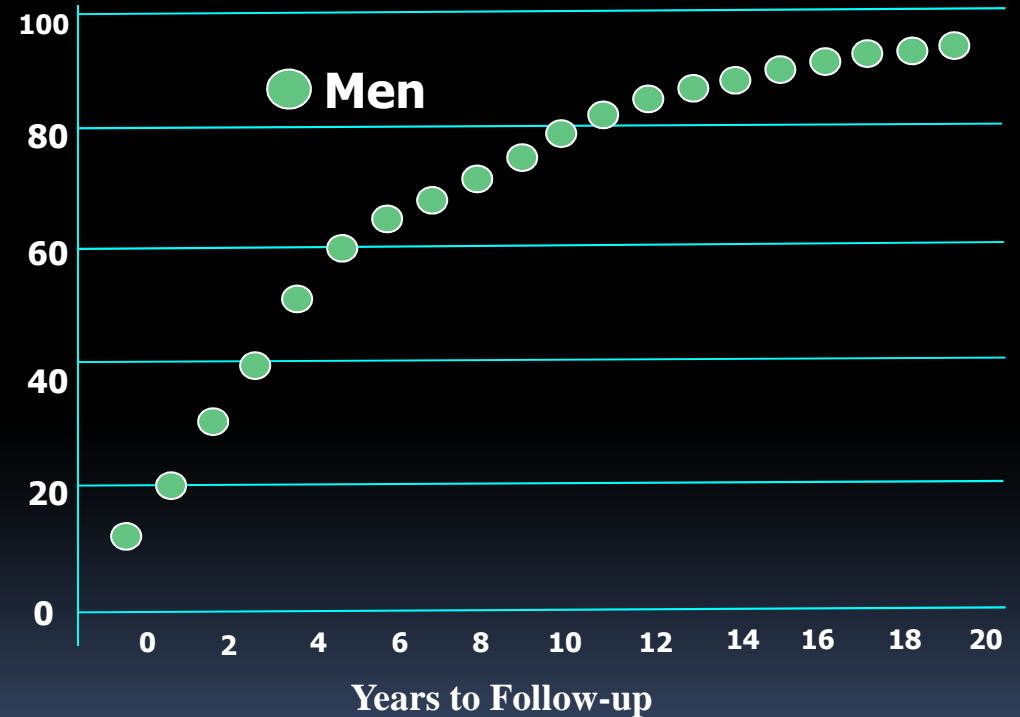
26% of the adult population is hypertensive

Life time risk of Hypertension in Normotensive Women and Men aged 65 years

Risk of Hypertension %



Risk of Hypertension %



JAMA 2002: Framingham data.

Aetiology of Hypertension

90% is essential hypertension – complex interaction between genetic and environmental factors

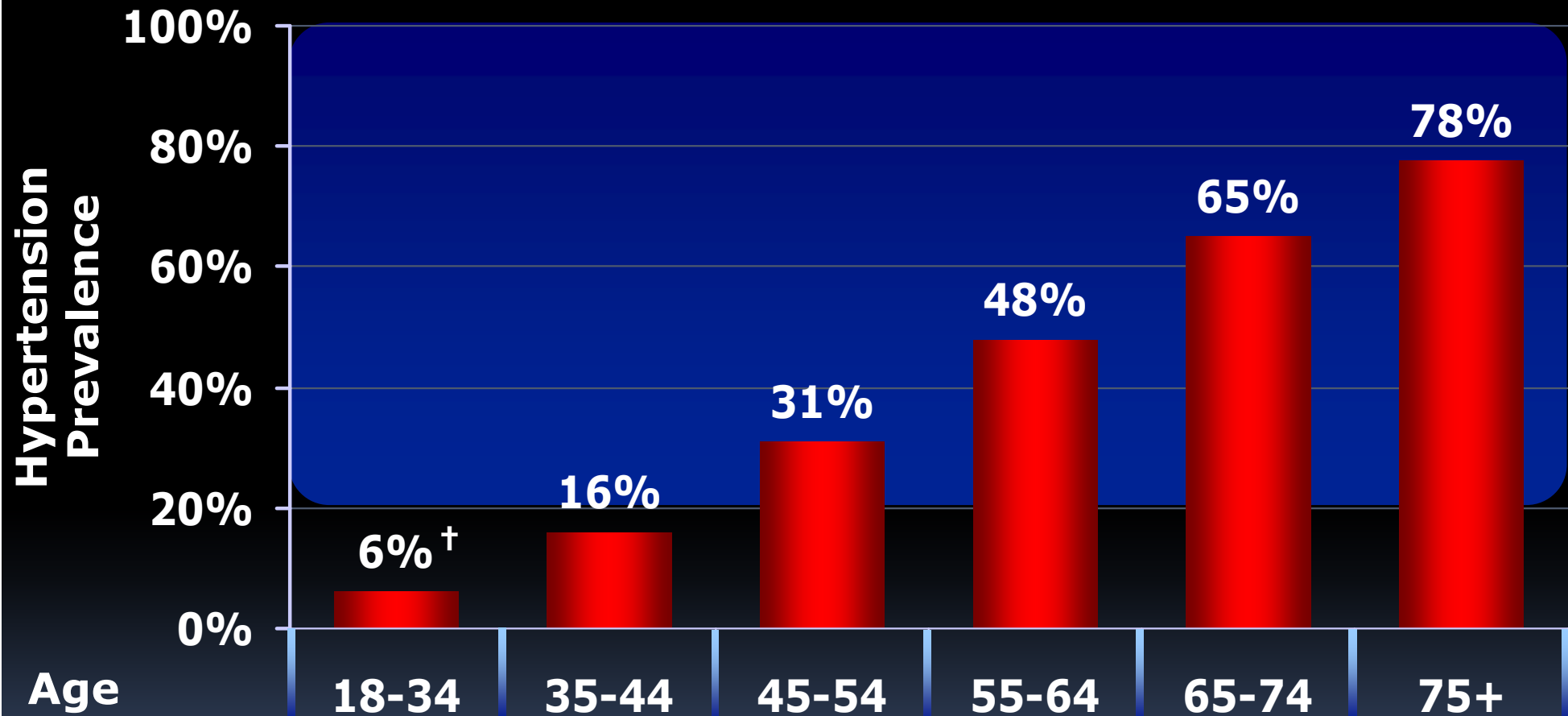
Common factor in all hypertension is decreased renal sodium excretion

2 most important risk environmental risk factors for development of hypertension are BMI > 25 and sodium intake > 100mmol daily

The only groups who do not develop hypertension are certain isolated tribes leading traditional hunter-gatherer existence. These groups do not experience age-related increase in BP and blood pressures ~ young adolescents in Western communities.

Na⁺ intake typically < 50mmol/day

Prevalence of Hypertension in the United States by Age Group*



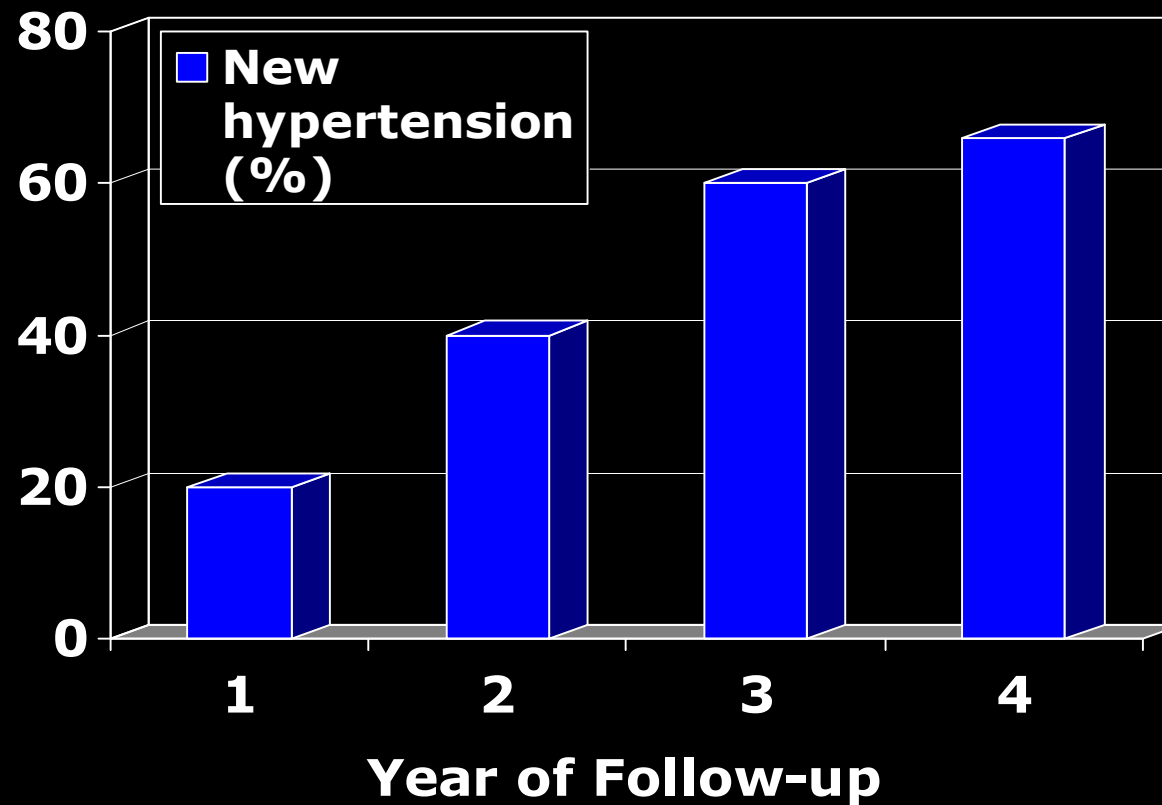
*Based on data from the 1999–2000 National Health and Nutrition Examination Survey. Hypertension is defined as blood pressure $\geq 140/90$ mm Hg or as receiving antihypertensive treatment.

[†]Low reliability due to large relative error.

Fields LE, et al. *Hypertension*. 2004;44:398-404.

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Hypertension Online
www.hypertensiononline.org

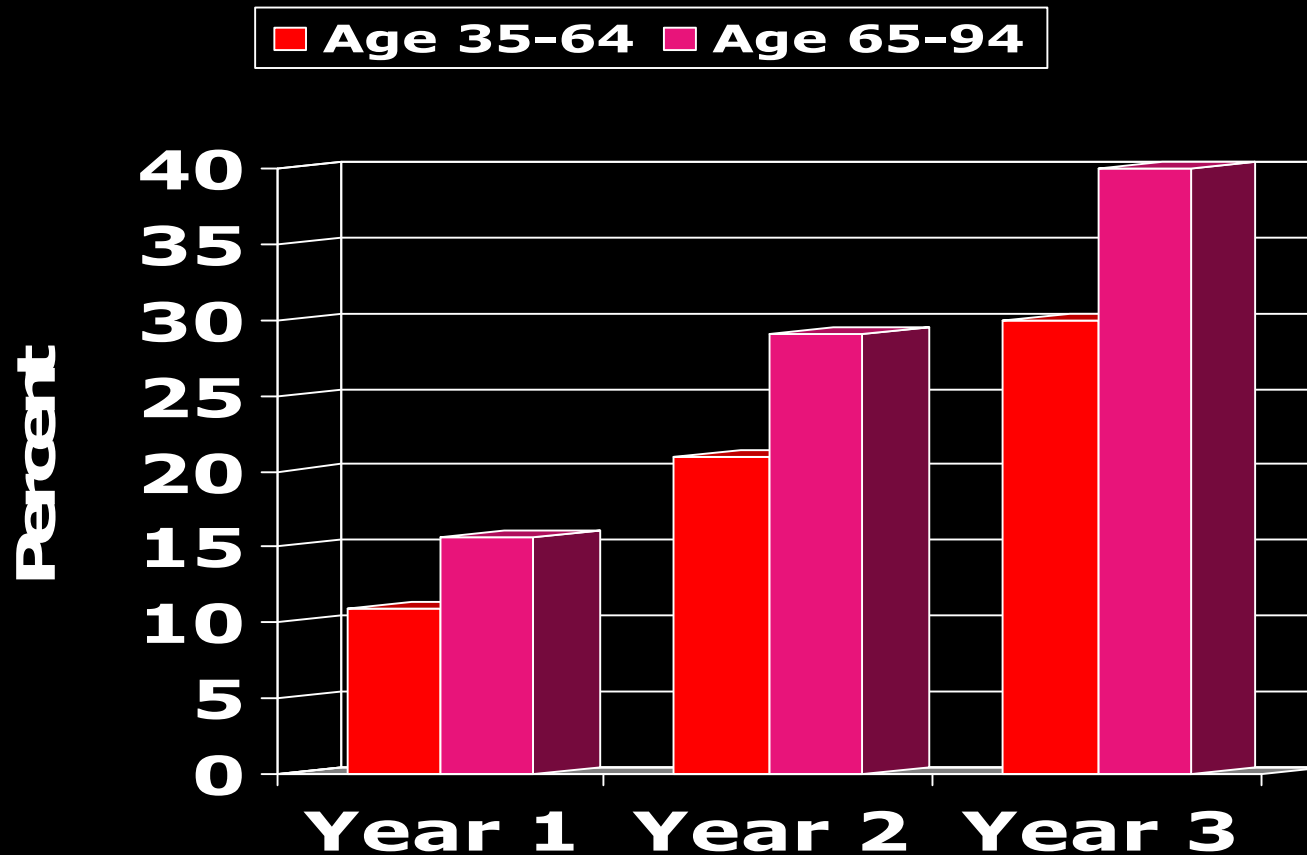
New onset hypertension in people with high normal blood pressure



NEJM 2006;354:1685-97

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Development of hypertension in those with high normal blood pressure



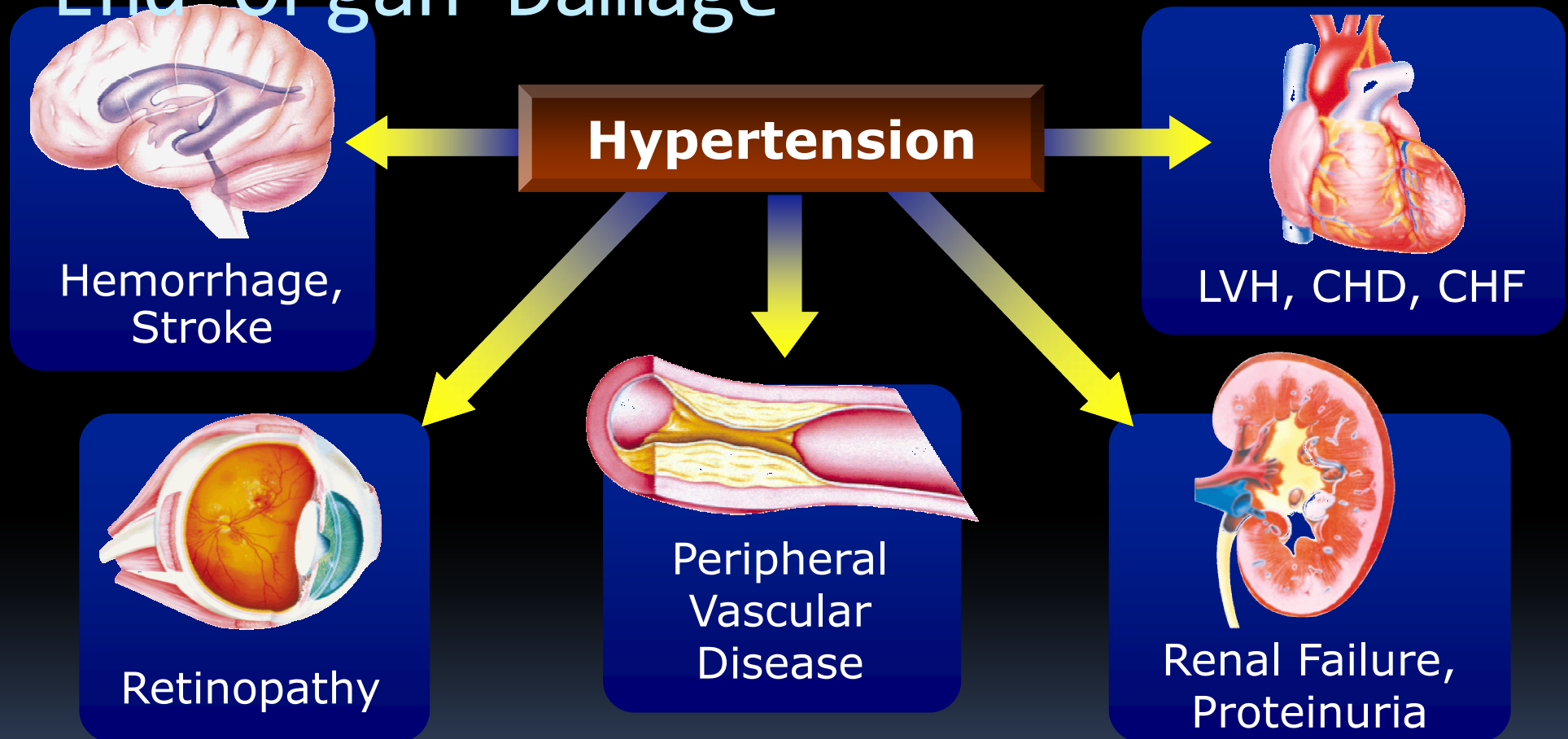
Framingham cohort
Vasan. Lancet 2001

Hypertension as a Risk Factor

Hypertension is a significant risk factor for:

- cerebrovascular disease
- coronary artery disease
- congestive heart failure
- renal failure
- peripheral vascular disease
- dementia
- atrial fibrillation

Complications of Hypertension: End-Organ Damage



CHD = coronary heart disease
CHF = congestive heart failure
LVH = left ventricular hypertrophy

Chobanian AV, et al. *JAMA*. 2003;289:2560-2572.

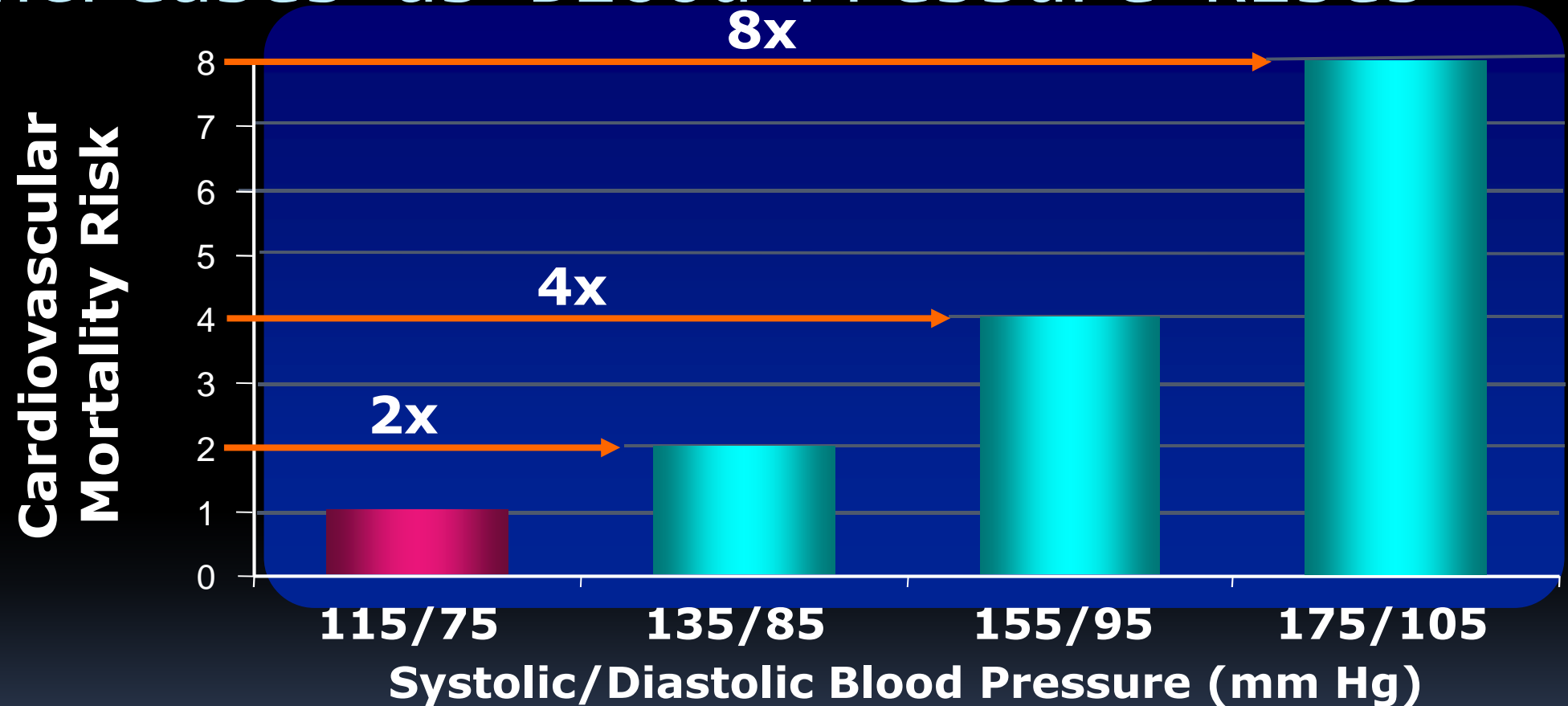
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Relationship of Hypertension to Its Comorbidities

Comorbidity	Relationship to Hypertension
Coronary artery disease	50% of patients with coronary artery disease have hypertension
Left ventricular hypertrophy	15% to 20% of hypertensive adults have an increased left ventricular mass
Ischemic stroke	77% of patients who have a first stroke have a blood pressure >140/90 mm Hg
Chronic kidney disease	8% to 15% of hypertensive adults have decreased renal function
Diabetes	75% of added cardiovascular risk in diabetic patients is attributable to hypertension
Peripheral artery disease	74% of patients with peripheral artery disease have hypertension

Diamond JA, Phillips RA. *Hypertens Res.* 2005;28:191-202; El-Atat F, et al. *Curr Hypertens Rep.* 2004;6:215-223; Pepine CJ. *Am J Cardiol.* 1998;82(3A):21H-24H; Rosamond W, et al. *Circulation.* 2007;115:69-171; Segura J, et al. *Curr Opin Nephrol Hypertens.* 2004;13:495-500; Selvin E, Erlinger P. *Circulation.* 2004;110:738-743.

Cardiovascular Mortality Risk Increases as Blood Pressure Rises*

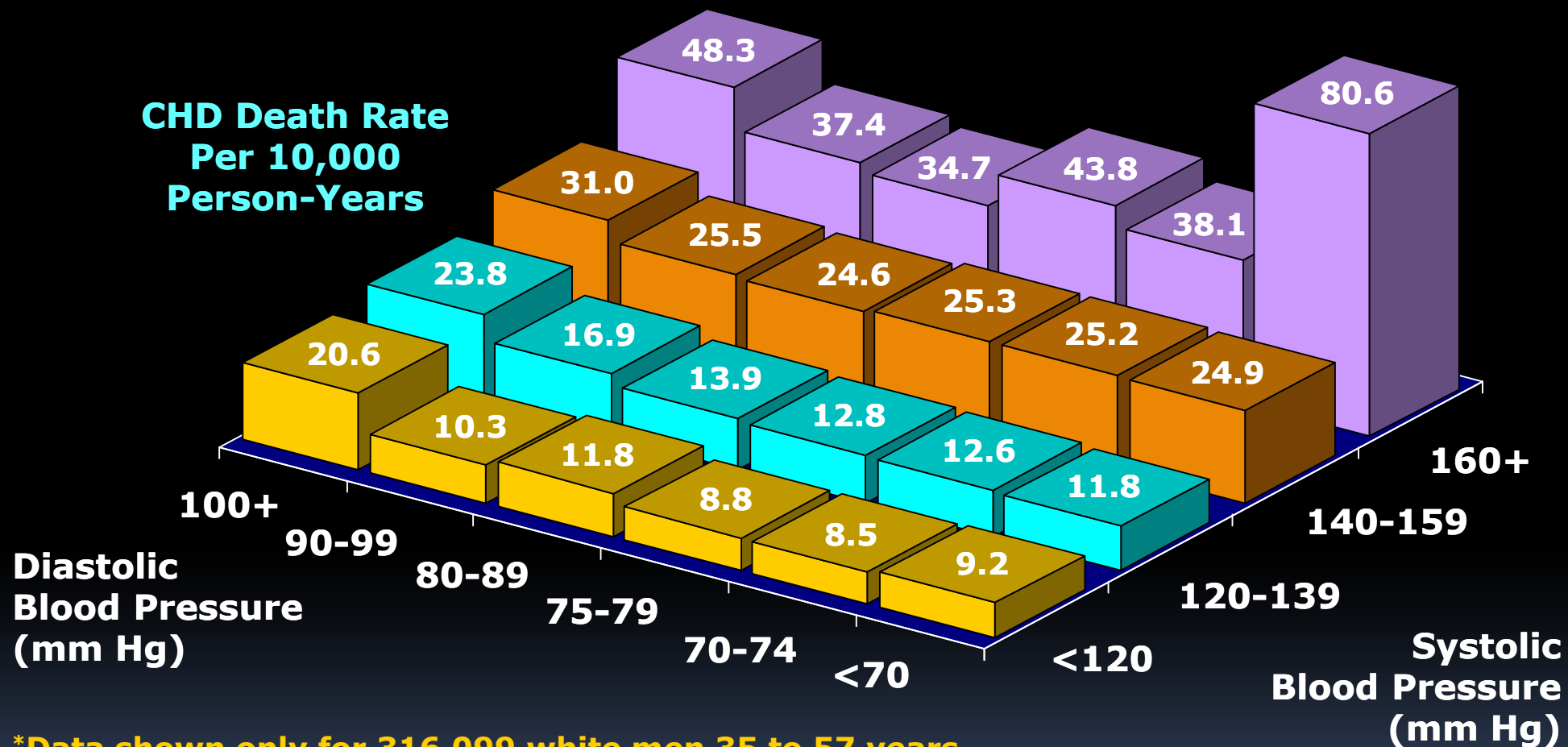


*Measurements taken in individuals aged 40–69 years, beginning with a blood pressure of 115/75 mm Hg.

Lewington S, et al. *Lancet*. 2002;360:1903-1913;
Chobanian AV, et al. *JAMA*. 2003;289:2560-2572.

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Effects of Systolic and Diastolic Blood Pressures on CHD Mortality: MRFIT*



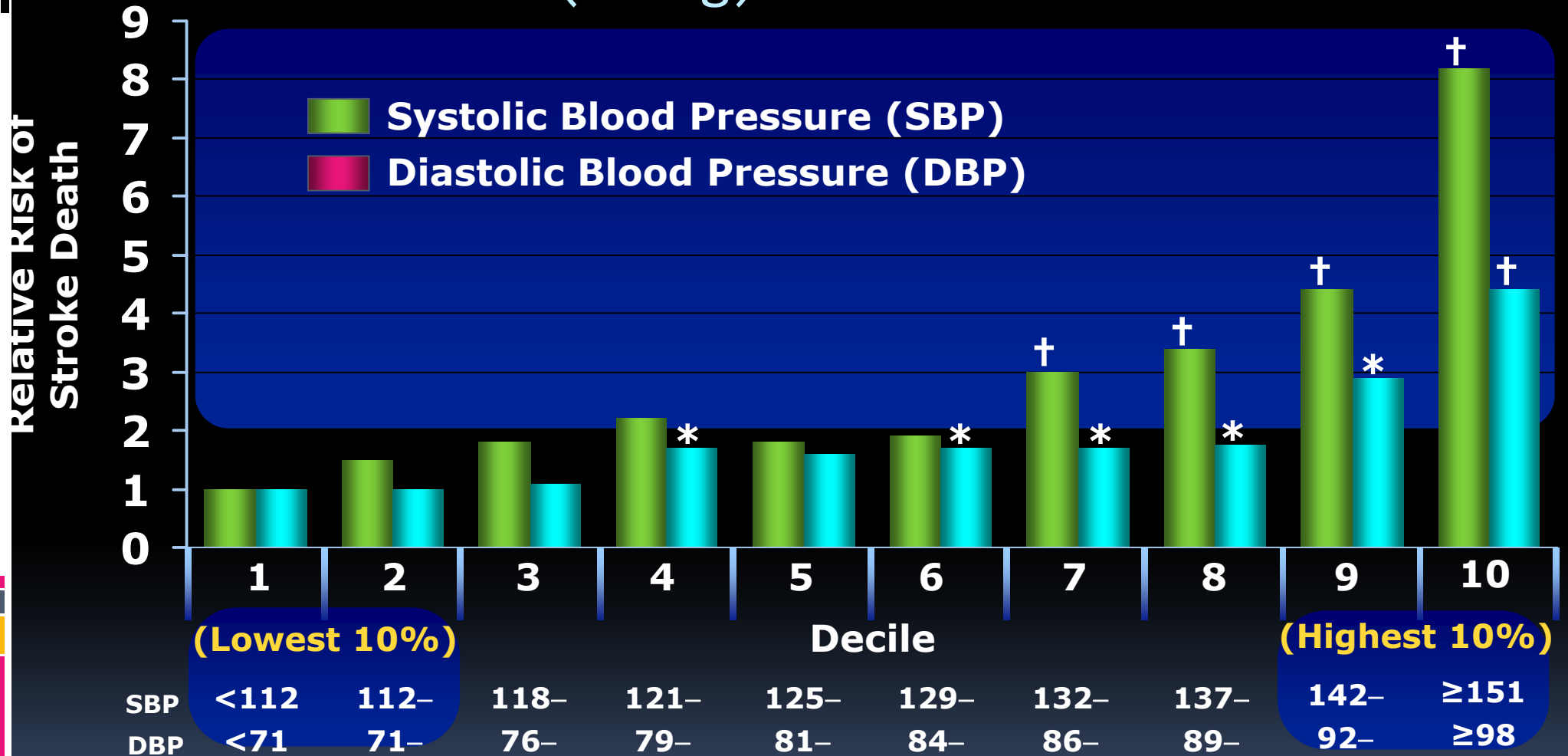
*Data shown only for 316,099 white men 35 to 57 years of age who were followed for a mean of 12 years.

CHD = coronary heart disease

MRFIT = Multiple Risk Factor Intervention Trial

Neaton JD, et al. *Arch Intern Med.* 1992;152:56-64.

Risk of Stroke Death According to Blood Pressure (mm Hg): MRFIT



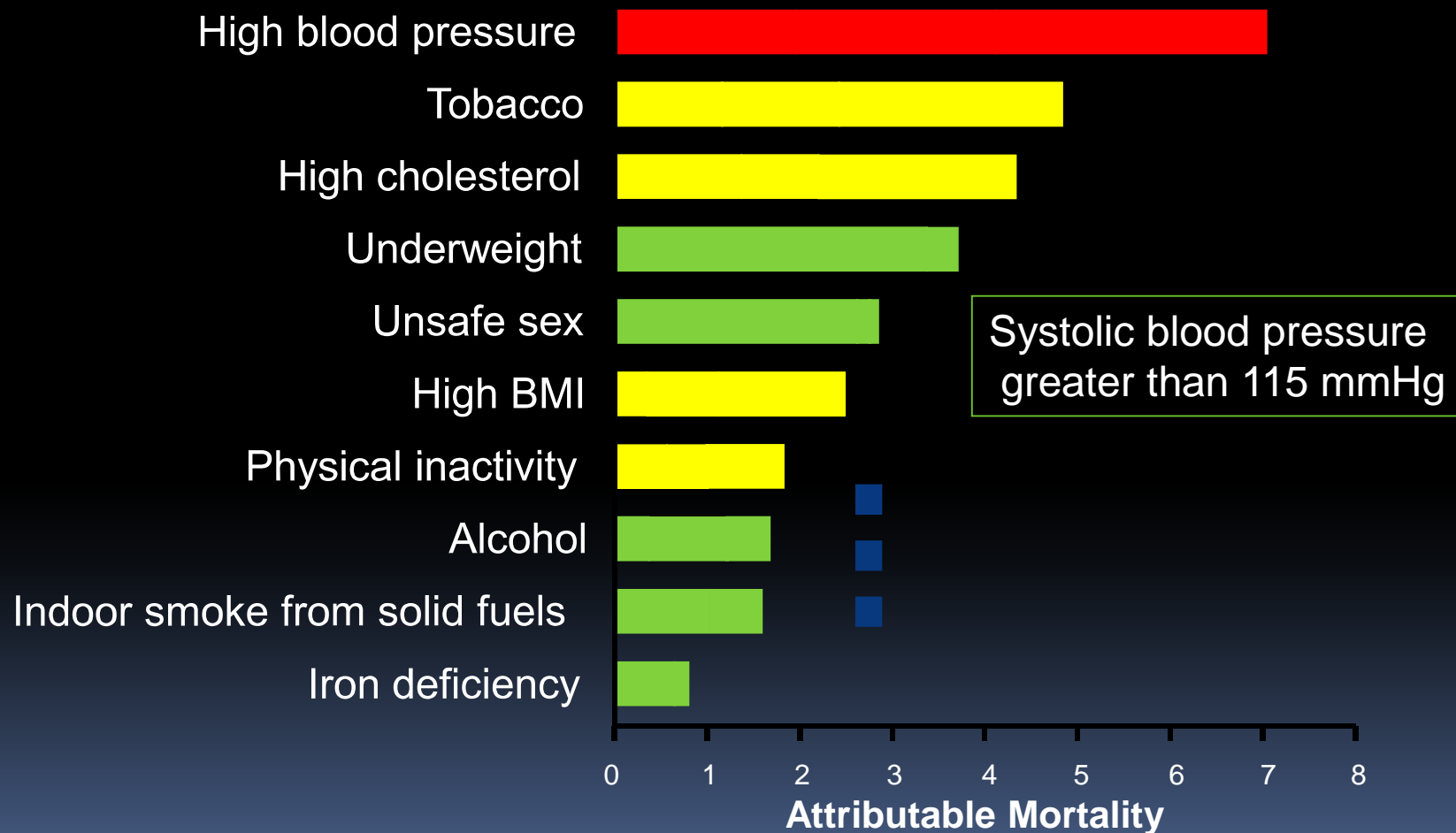
MRFIT = Multiple Risk Factor Intervention Trial; * $P < 0.01$; † $P < 0.001$.

Stamler J, et al. *Arch Intern Med*. 1993;153:598-615;
 He J, Whelton PK. *Am Heart J*. 1999;138(Pt 2):211-219.

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- Continuum of increasing CV risk from SBP 115mmHg
- CV mortality doubles for every 10/5 increase in BP > 120/70mmHg
- High BP causes
 - 35% of all cardiovascular deaths
 - 50% of all stroke deaths
 - 25% of all CAD deaths
 - 50% of all congestive heart failure
 - 25% of all premature deaths
 - commonest cause of CKD overall and commonest cause of ESRD in older individuals

Proportion of deaths attributable to leading risk factors worldwide (2000)



WHO 2000 Report. *Lancet*. 2002;360:1347-1360.

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www.hypertensiononline.org



Untreated hypertension reduces
life expectancy by ~ 5 years

Unequivocal Benefits of Lowering BP:

Relative risk reduction – constant

Absolute risk reduction – varies

Average % Reduction

Stroke incidence	35-40%
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Myocardial Infarction	20-25%
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Heart Failure	50%
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Benefits of Treating Hypertension

- Younger than 60 (reducing BP 10/5-6 mmHg)
 - reduces the risk of stroke by **42%**
 - reduces the risk of coronary event by **14%**
- Older than 60 (reducing BP 15/6 mmHg)
 - reduces overall mortality by **15%**
 - reduces cardiovascular mortality by **36%**
 - reduces incidence of stroke by **35%**
 - reduces coronary artery disease by **18%**

Lancet 1990;335:827-38
Arch Fam Med 1995;4:943-50

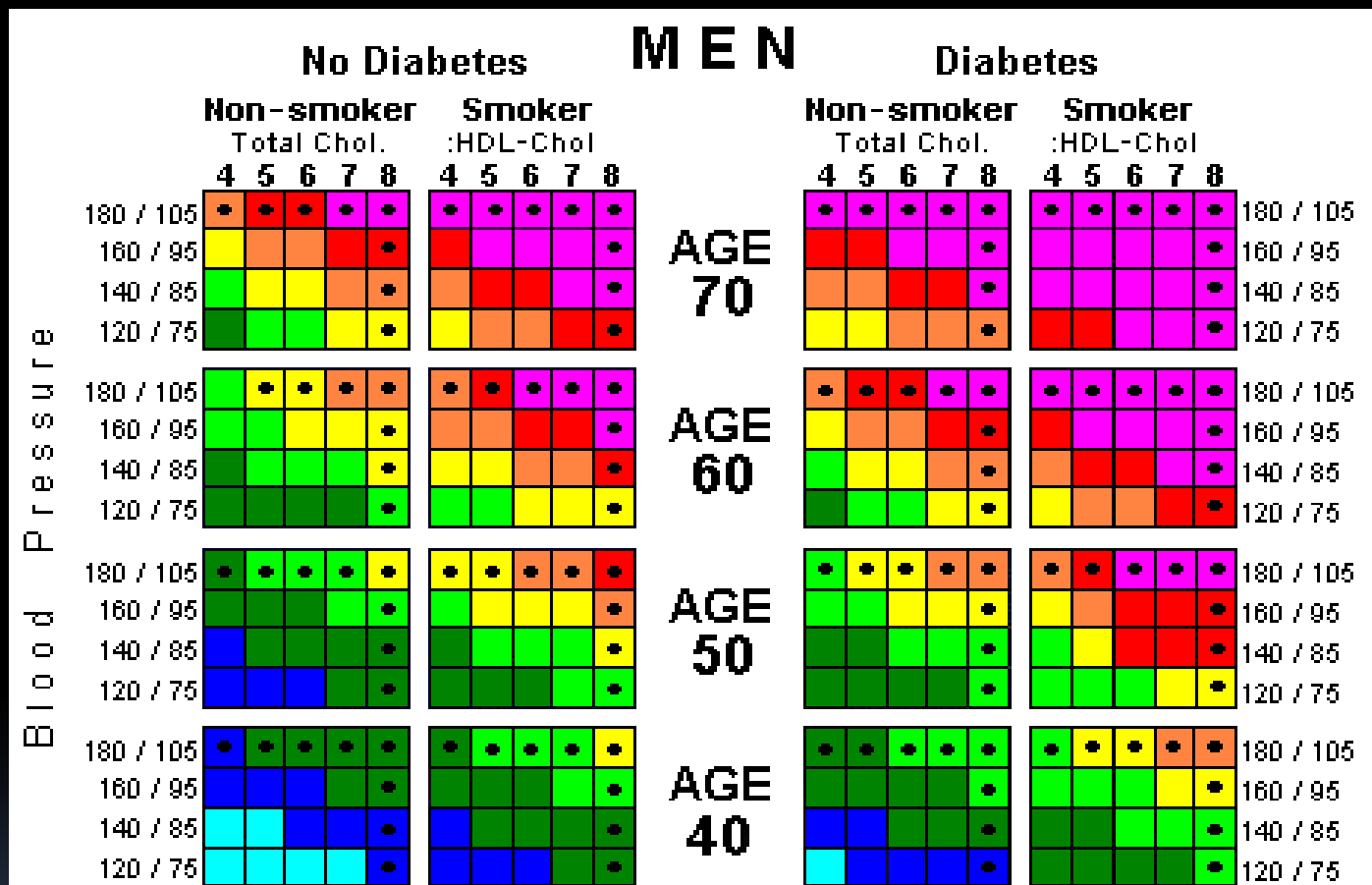
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Benefits of Treating to Target

- Older than 60 with isolated systolic hypertension (SBP ≥ 160 mm Hg and DBP < 90 mm Hg)
 - 42% reduction in the risk of stroke
 - 26% reduction in the risk of coronary events

Lancet 1997;350:757-64

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Hypertension occurs less than 20% of the time
without one or more of the following risk factors:

High triglyceride or LDL cholesterol

Low HDL cholesterol

Glucose intolerance

Hyperinsulinaemia

Obesity

Metabolic Syndrome

Left ventricular hypertrophy

90% of Hypertensive Individuals have other Cardiovascular Risk factors

**10%
Reduction
in BP**

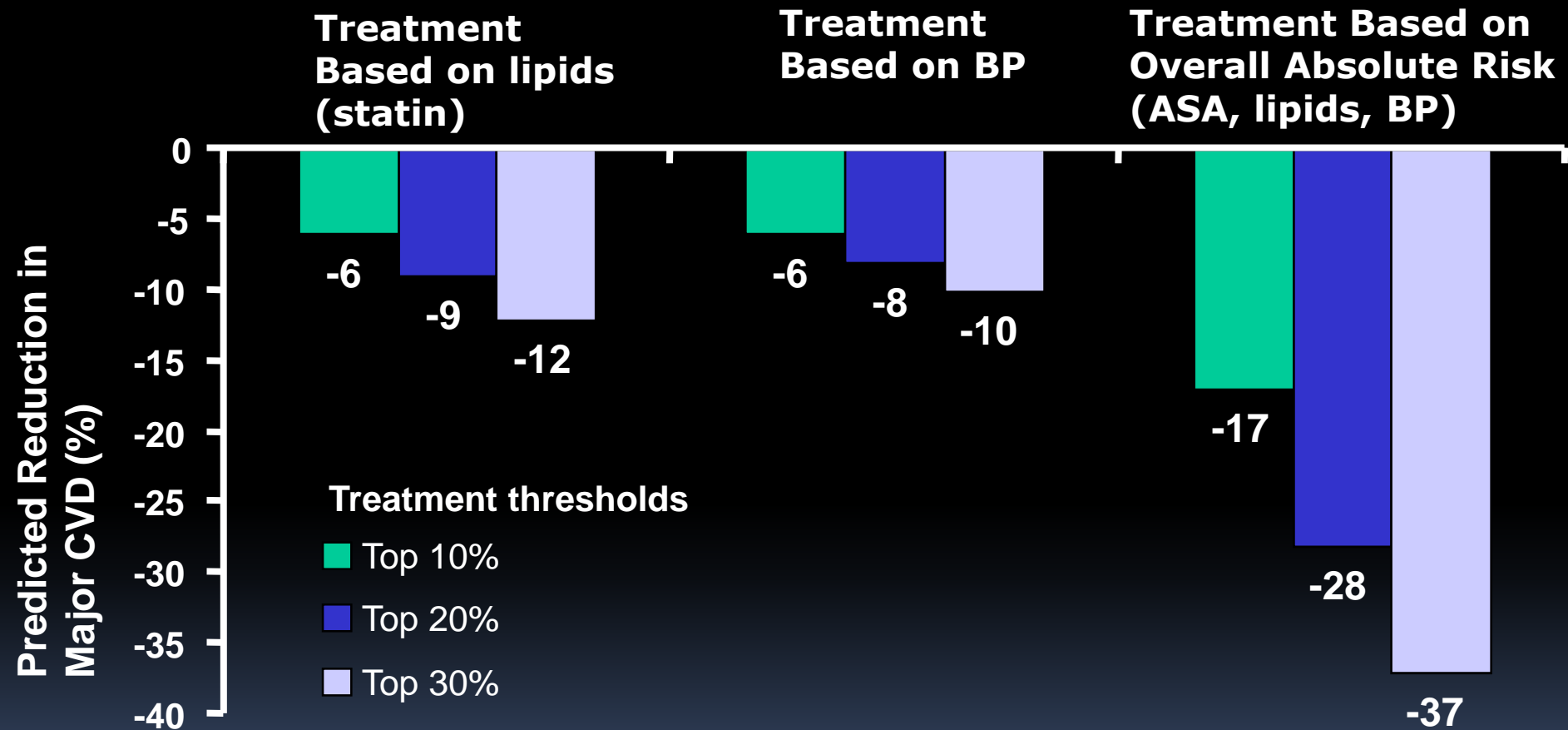
+

**10%
Reduction
in Total-C**

=

**45%
Reduction
in CVD**

Treating hypertension and other risk factors



Adapted from Emberson et al. *Eur Heart J.* 2004;25:484-491.



Summary

Hypertension is common in all age groups

Usually coexists with other CV risk factors

Leading cause of cardiovascular disease and death

Much of the excess morbidity and mortality can be prevented by detection and appropriate treatment