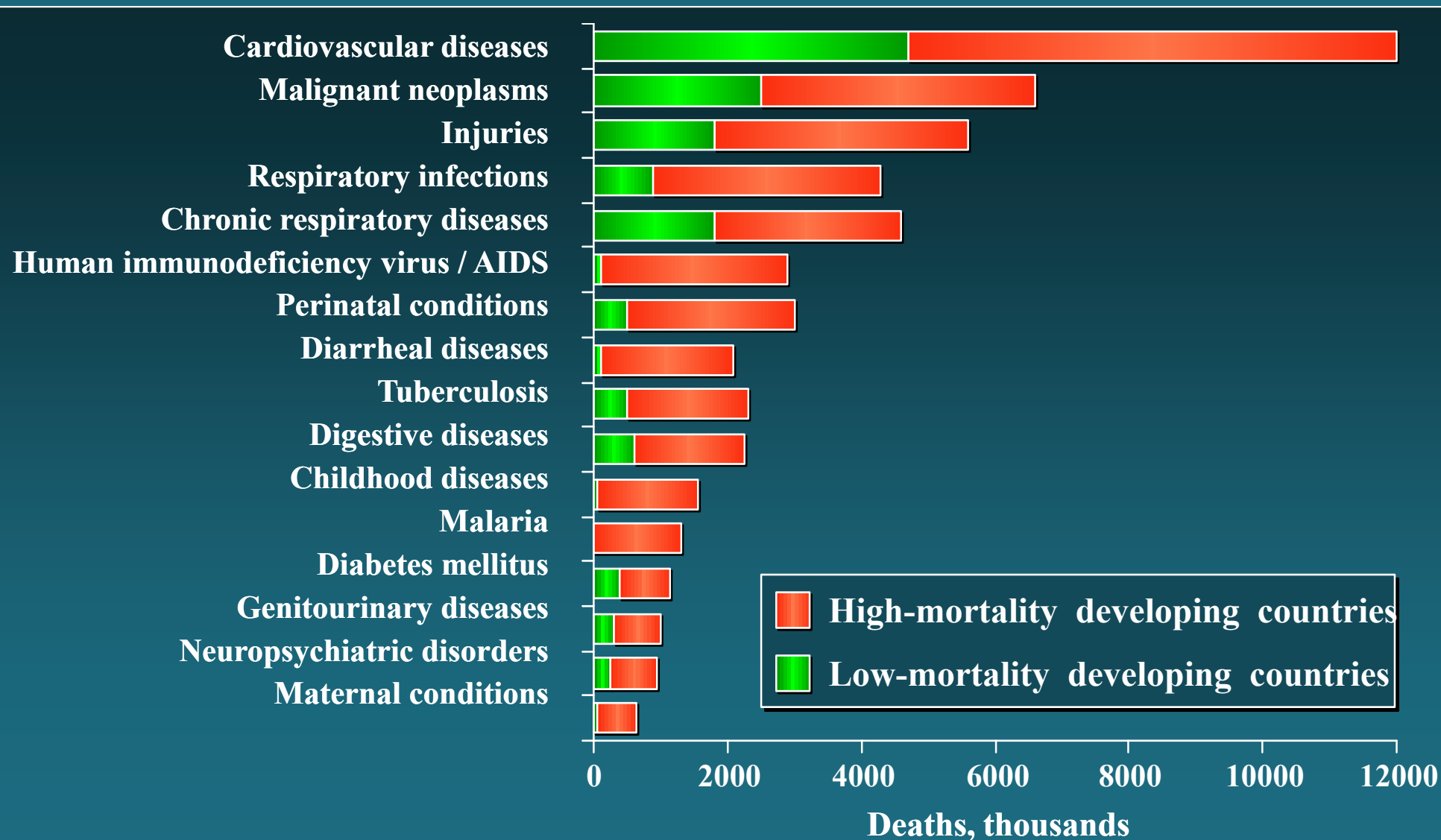


Deaths Attributable to 16 Leading Causes in Developing Countries, 2001



**Cardiovascular
risk factors**

- Sex
- Age
- Family history

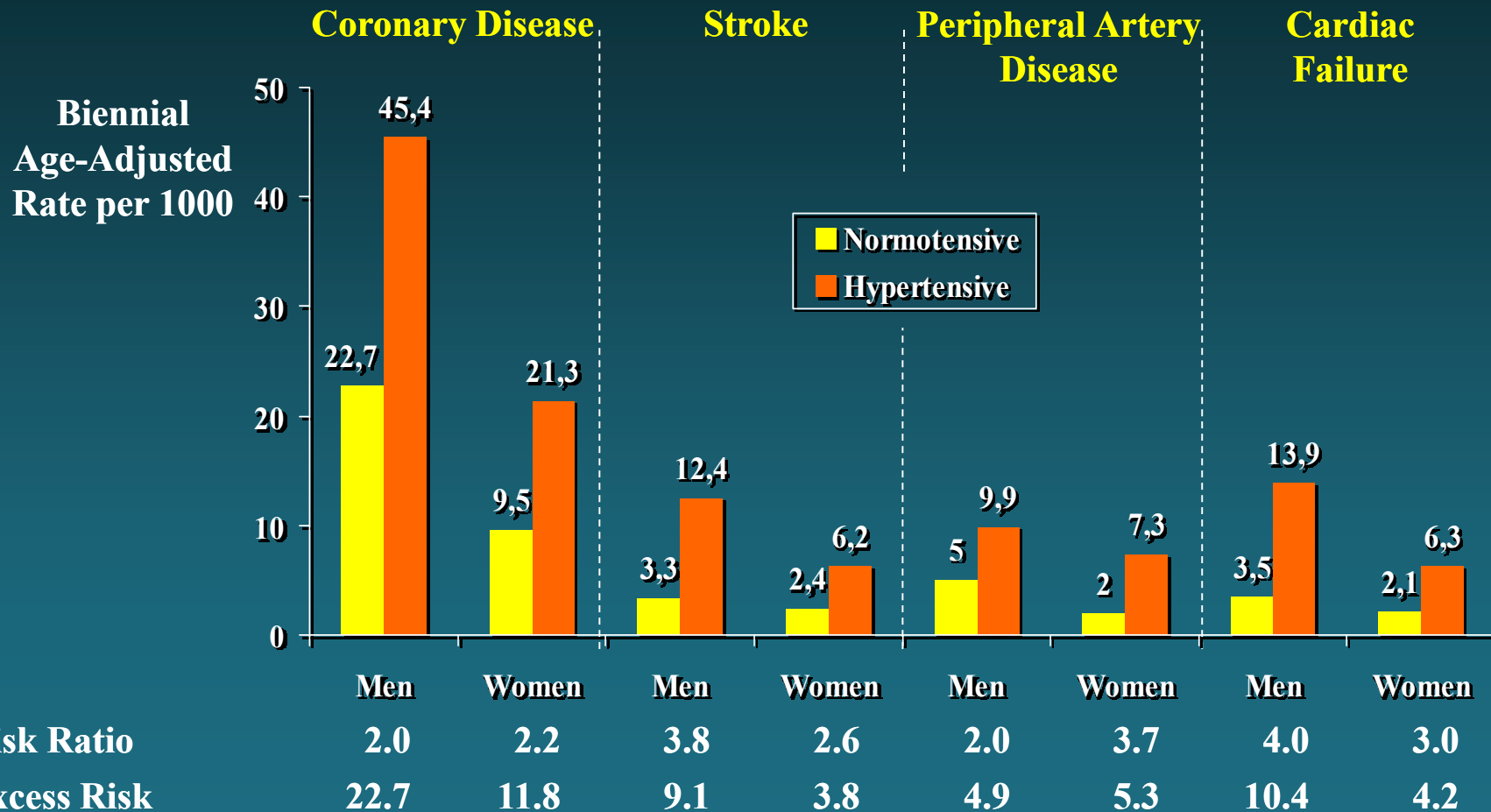
- Major**
- Hypertension
 - Dyslipidaemia
 - Smoking
 - Overweight / Obesity
 - Glucose intolerance

- Others**
- Inflammatory markers
 - C-Reactive Protein
 - Other inflammatory markers
 - GFR < 60 ml/min
 - Microalbuminuria / Proteinuria
 - LVH / LA enlargement
 - CA thickening / Plaques
 - Other subclinical OD

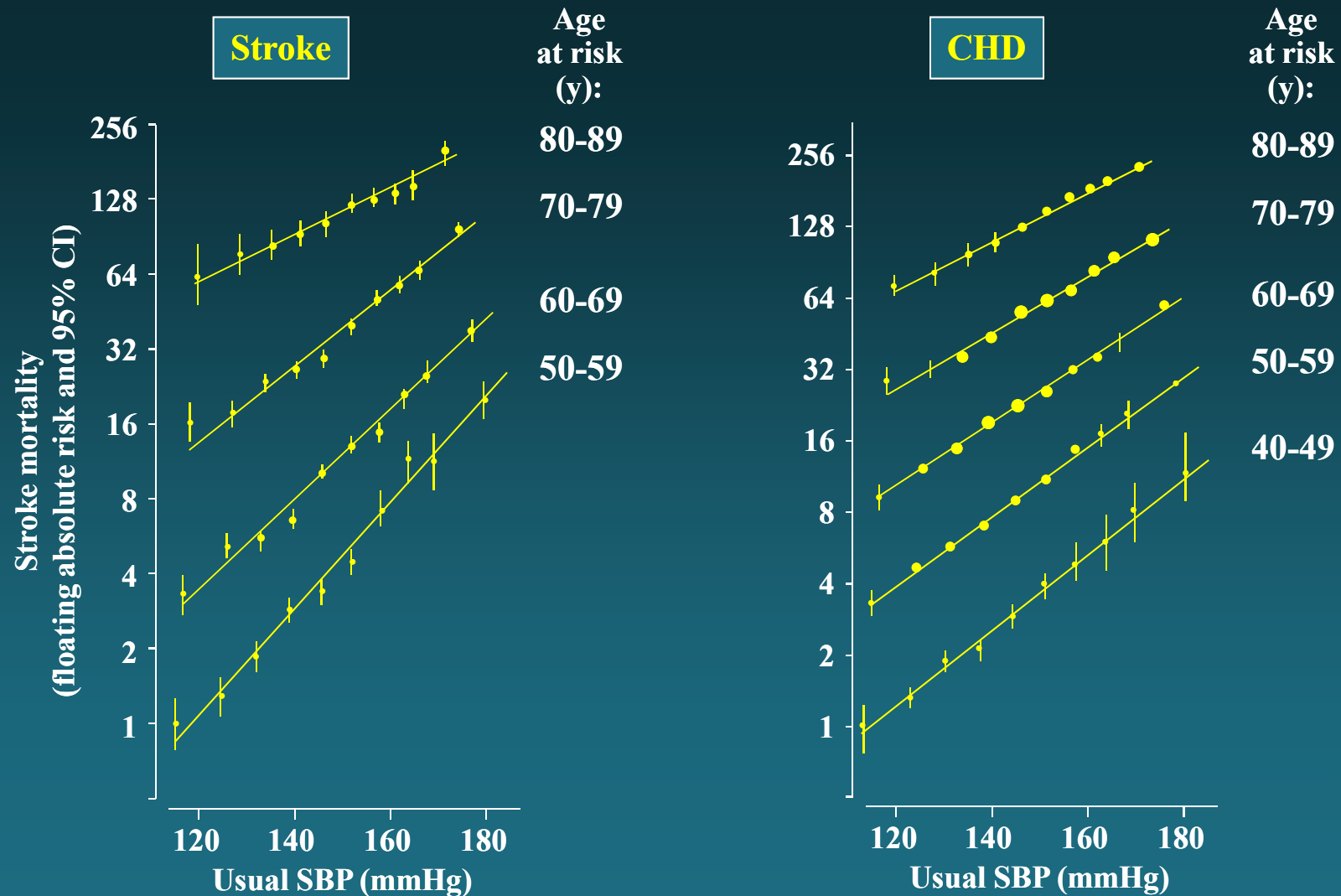
- Minor**
- Sedentariety
 - Personality
 - Socio-economic status
 - Educational level
 - Hyperuricaemia
 - Menopause - Oral contraceptives
 - Psychological factors (stress)

Hypertensive Patients are at Increased Risk for Cardiovascular Events

Framingham Heart Study -
Risk of Cardiovascular Events by Hypertensive Status in Patients Aged 35-64 Years; 36-Year Follow-Up

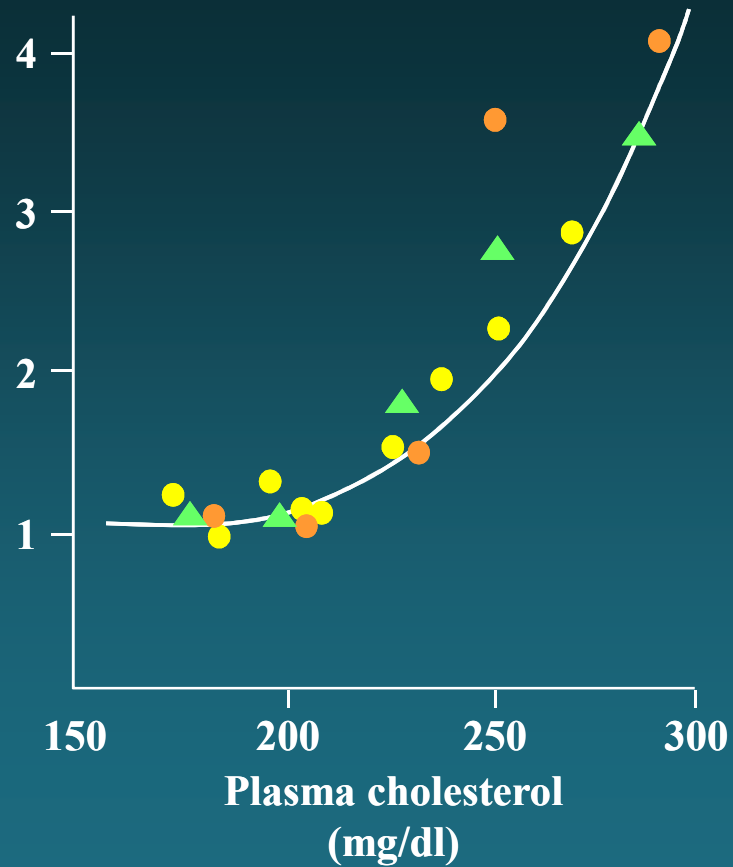


Stroke and CHD Mortality Rate in Each Decade of Age versus Usual Systolic Blood Pressure at the Start of That Decade

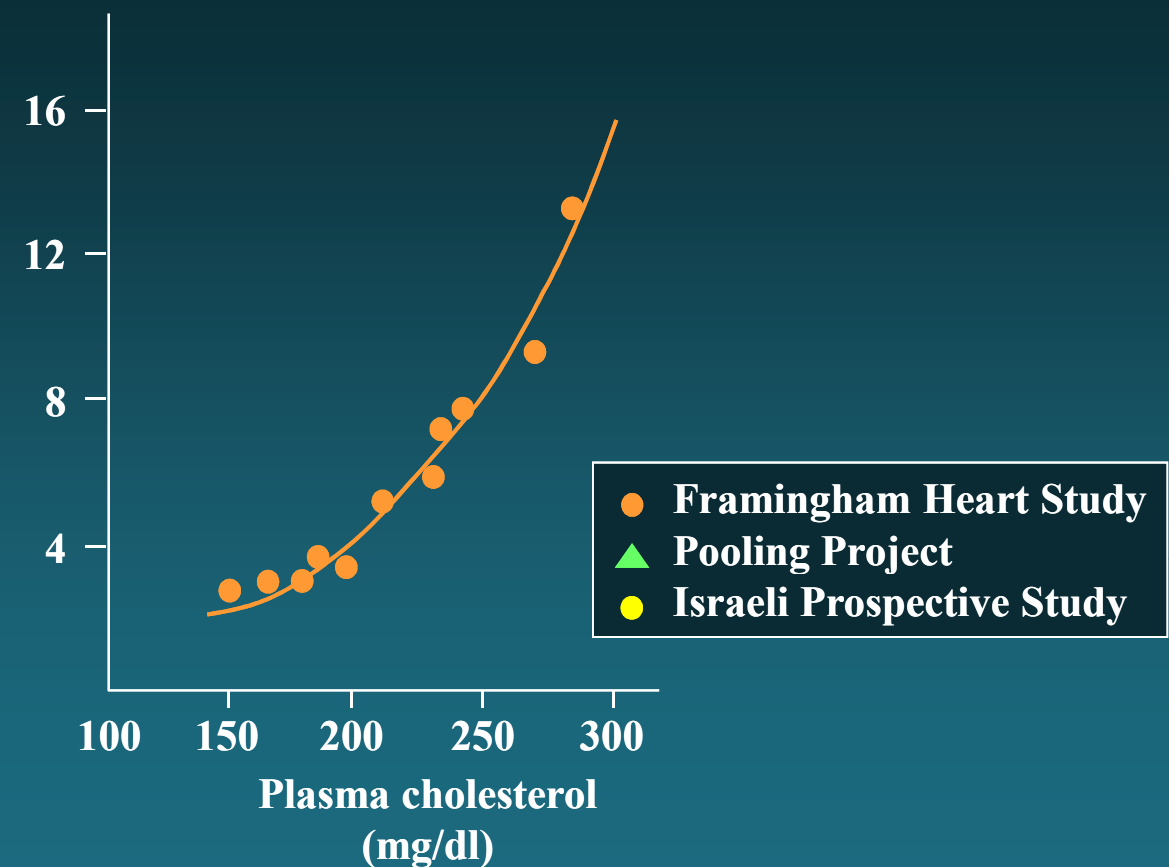


Relationship between Serum Cholesterol Levels and CHD in Male Subjects without Established CHD at Entrance into Prospective Study

CHD risk ratio



CHD mortality rate per 1000

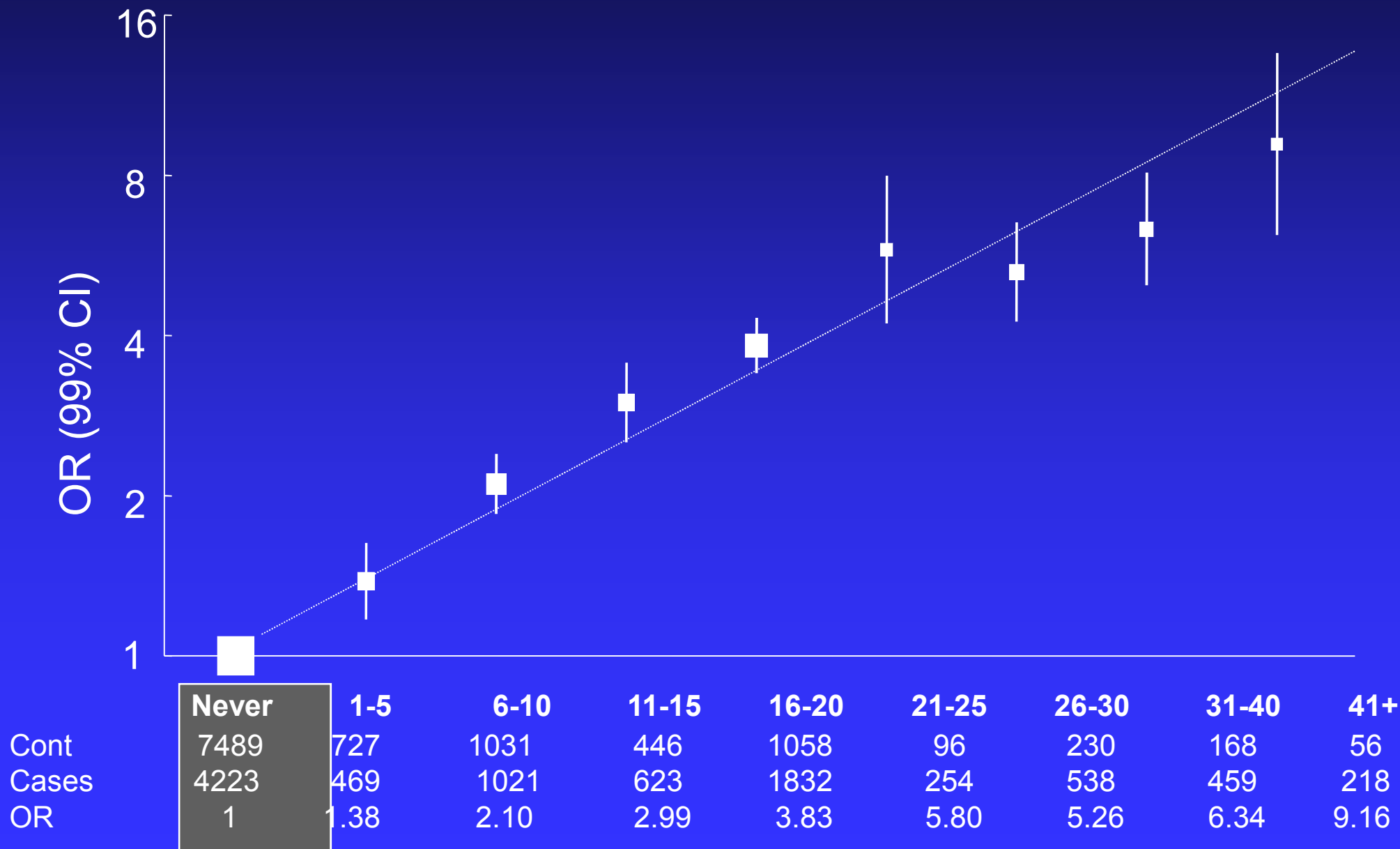




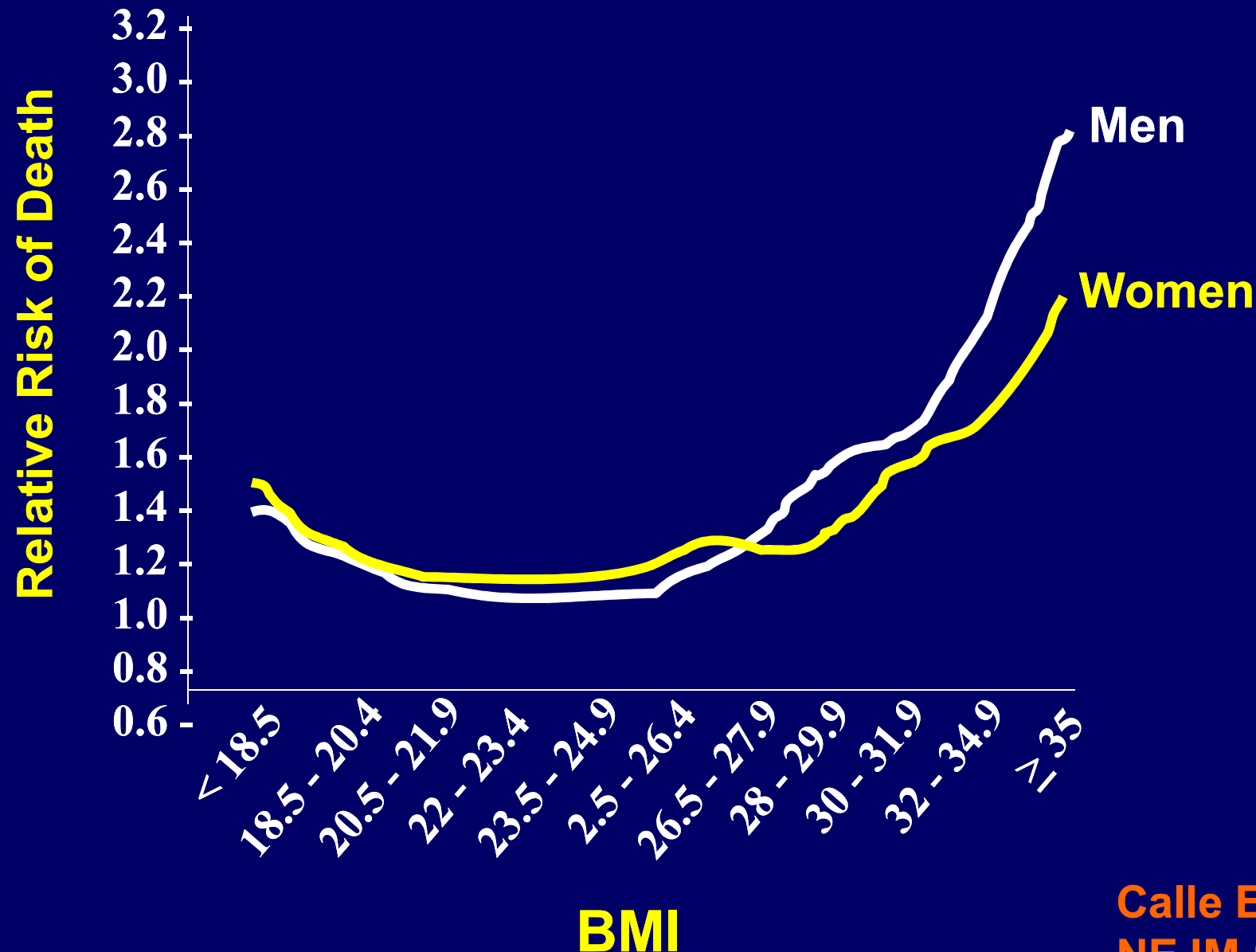
A Global Study of Risk Factors
in Acute Myocardial Infarction

INTERHEART: Smoking and MI

Lancet 2004; 364:937-52



Multivariate relative risk of death from cardiovascular disease among men and women who had never smoked and who had no history of disease at enrollement, according to BMI



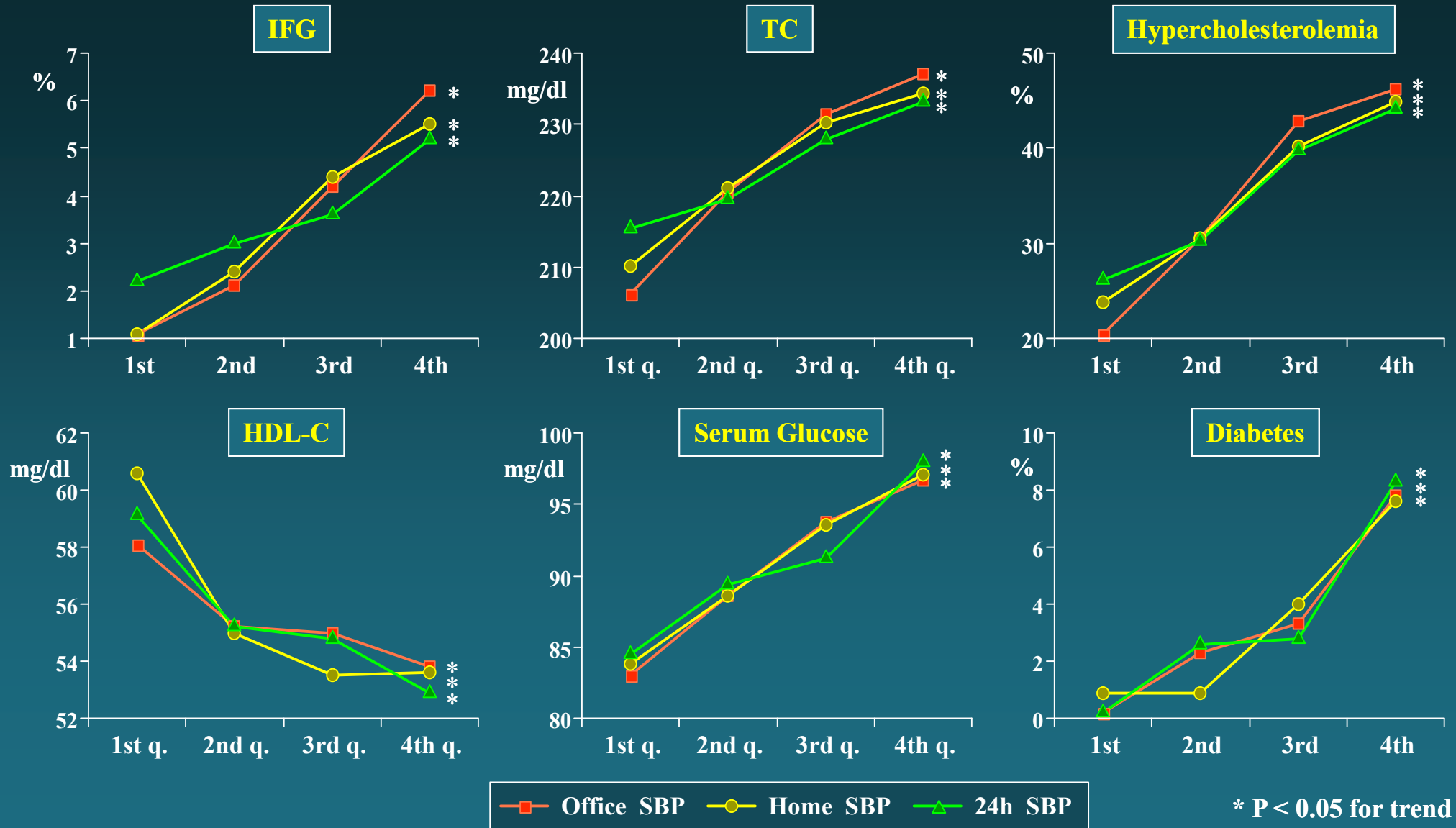
Calle EE et al
NEJM 1999



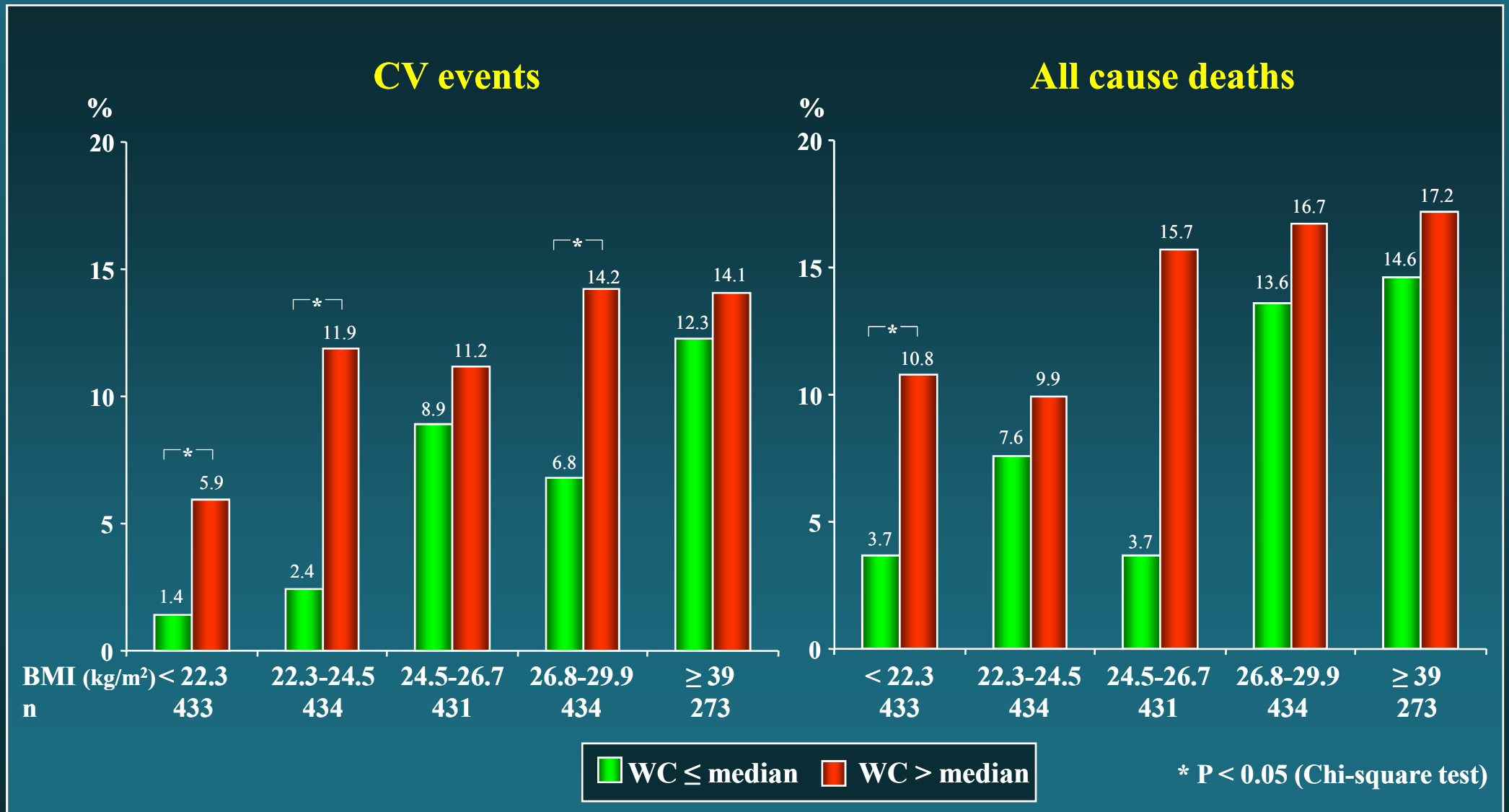
Fattori di Rischio e Malattie Cardiovascolari (CV) - Ulteriori Acquisizioni

- Effetto simile nei due sessi
- Incremento del rischio CV proporzionale a entità alterazione fattore di rischio (inclusa la fascia di normalità)
- Effetto evidente (quasi) a **qualsiasi** età
- Frequente **concomitanza** di più fattori di rischio nello stesso individuo
- Effetti “**moltiplicativi**” sul rischio della presenza simultanea di più fattori di rischio

Relationship between Metabolic Risk Factors and Office, Home, 24h SBP Quartiles

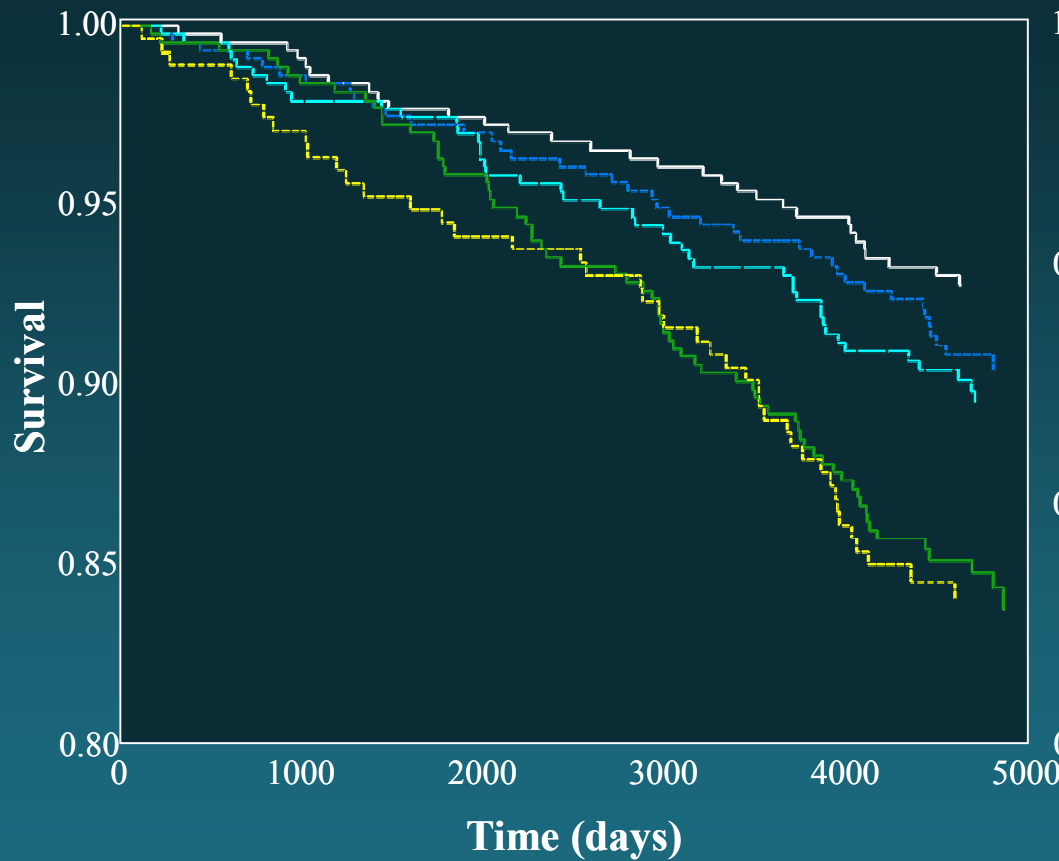


CV Event / Death Rates according to BMI (kg/m²) and WC Above / Below Median Value (PAMELA)

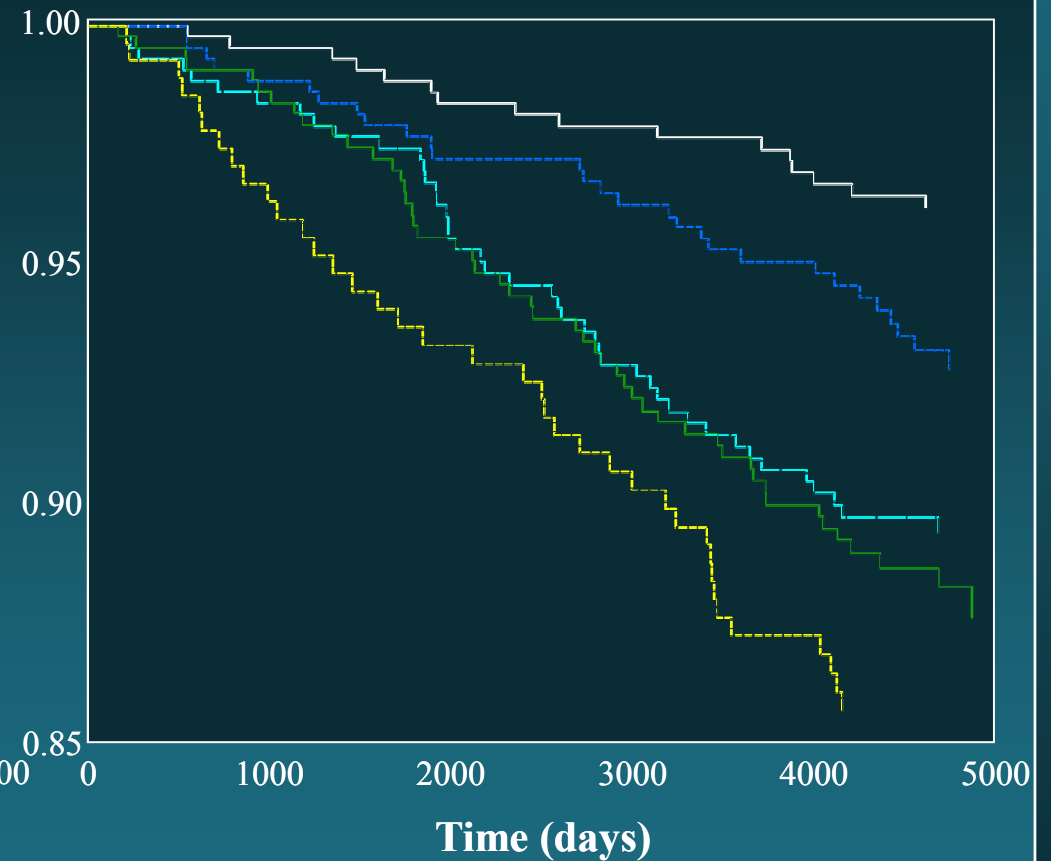


Survival Curves according to Baseline BMI in PAMELA

All cause death



CV events



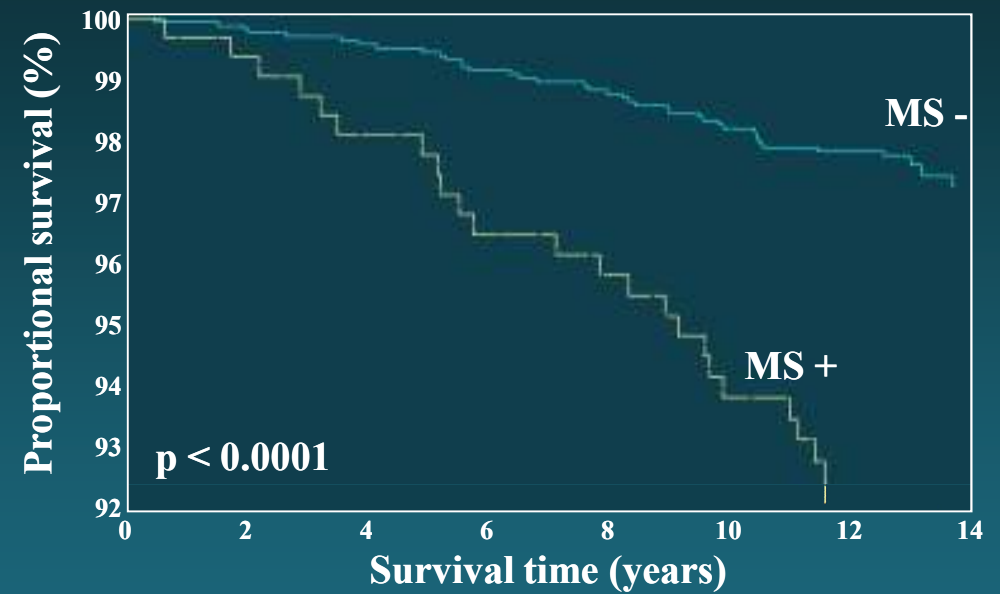
BMI: — 1° quartile — 2° quartile — 3° quartile — 4° quartile — ≥ 30

Kaplan-Meier Survival Curves for CV Death and All Cause Death in Subjects Without and With Metabolic Syndrome

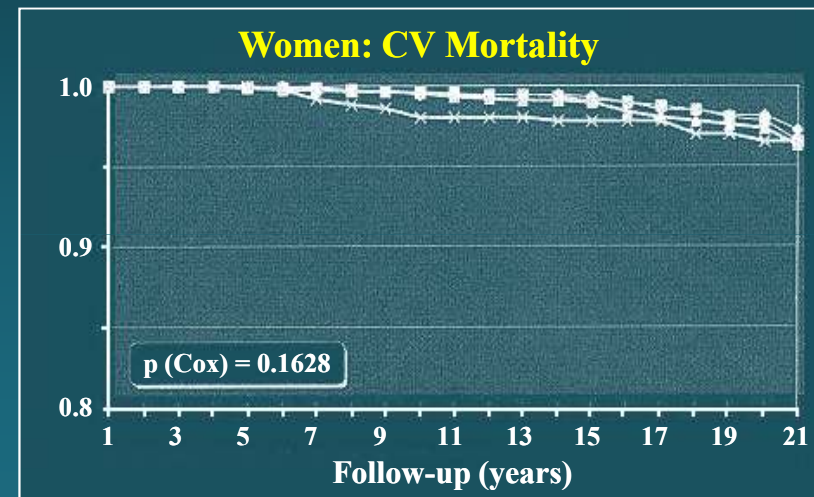
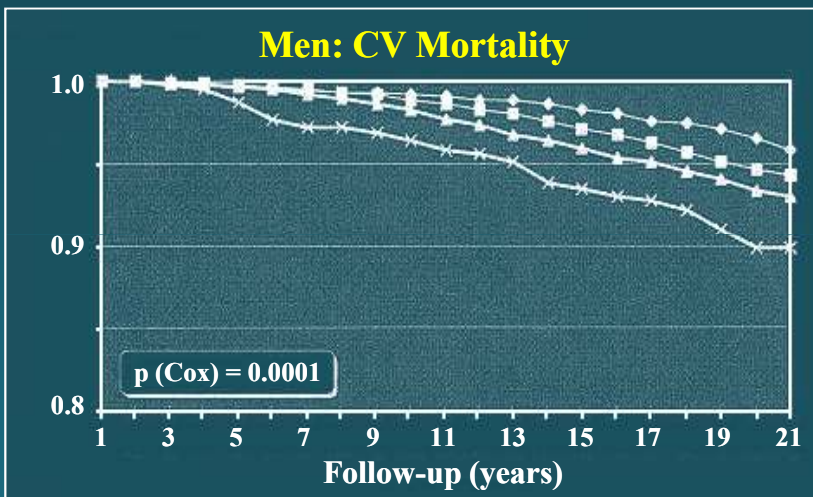
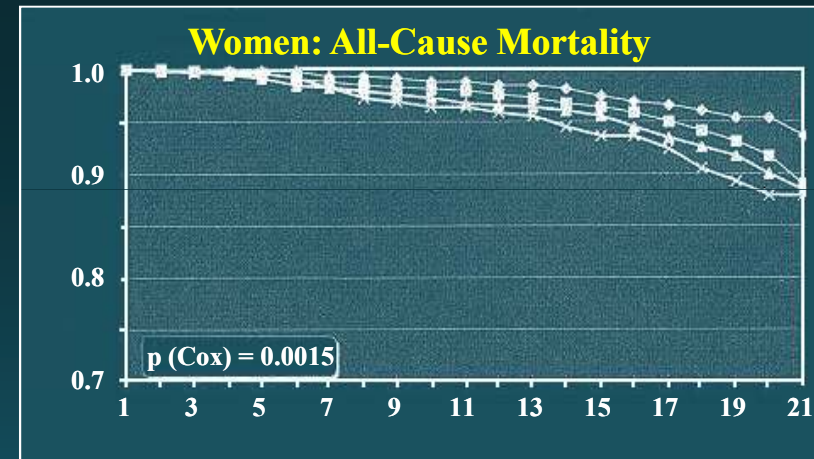
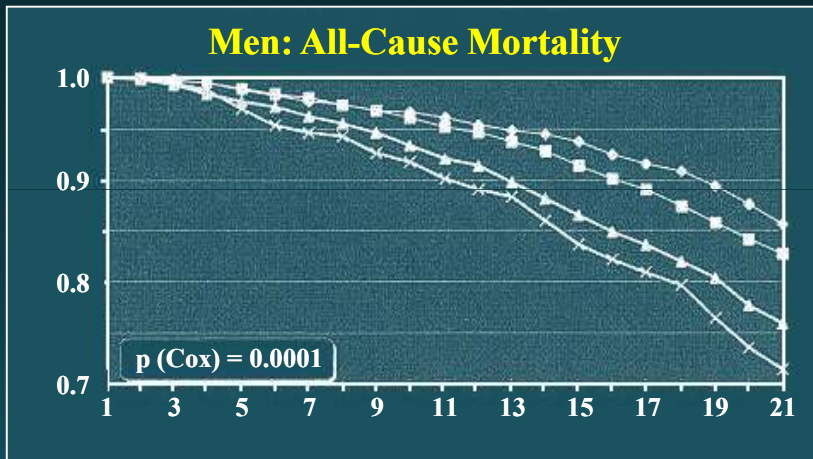
All cause death



Cardiovascular death

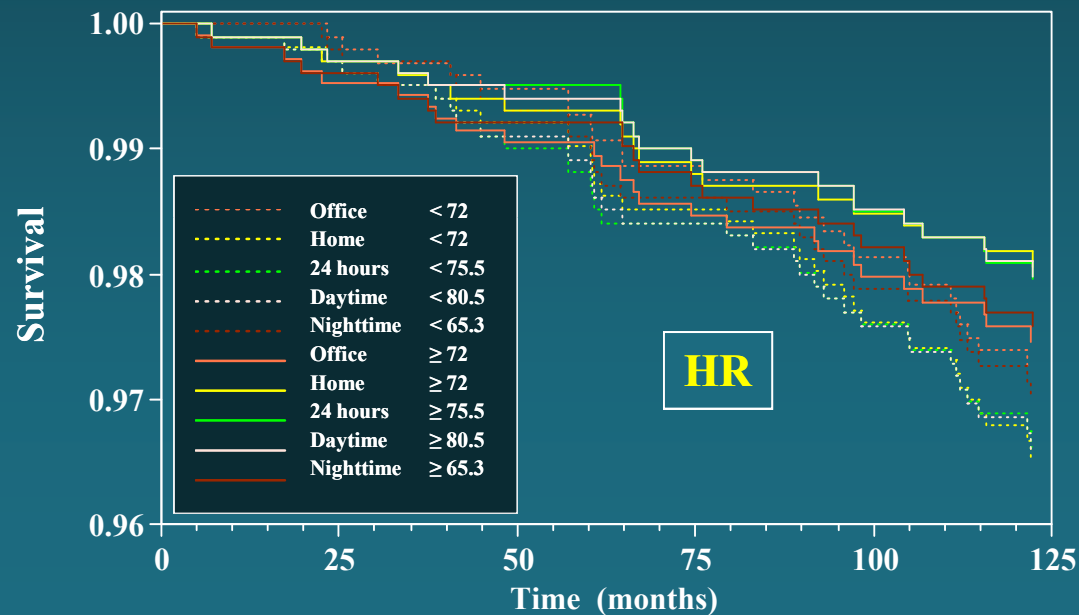
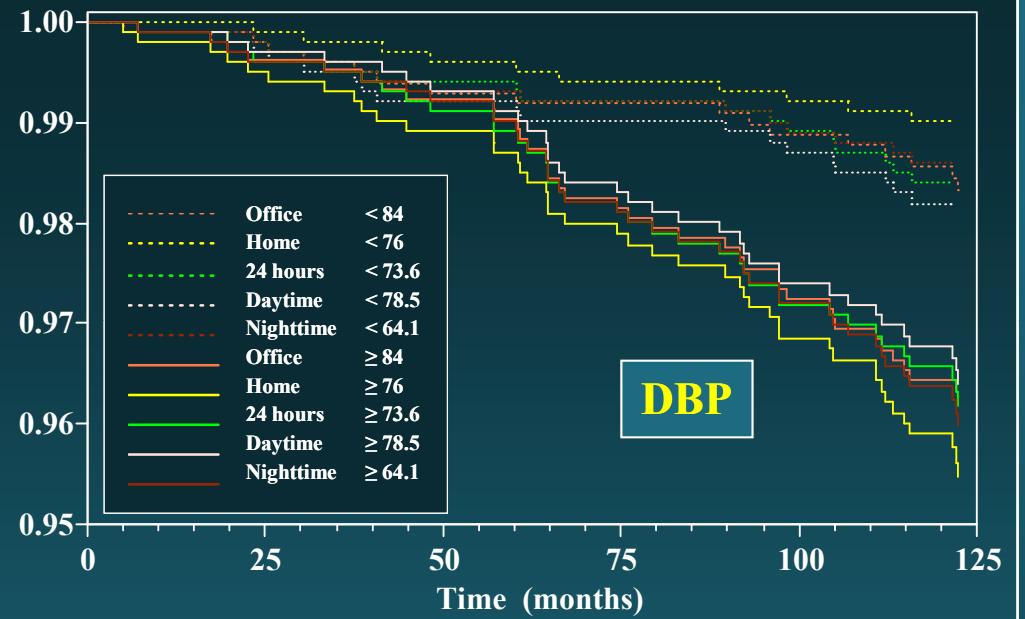
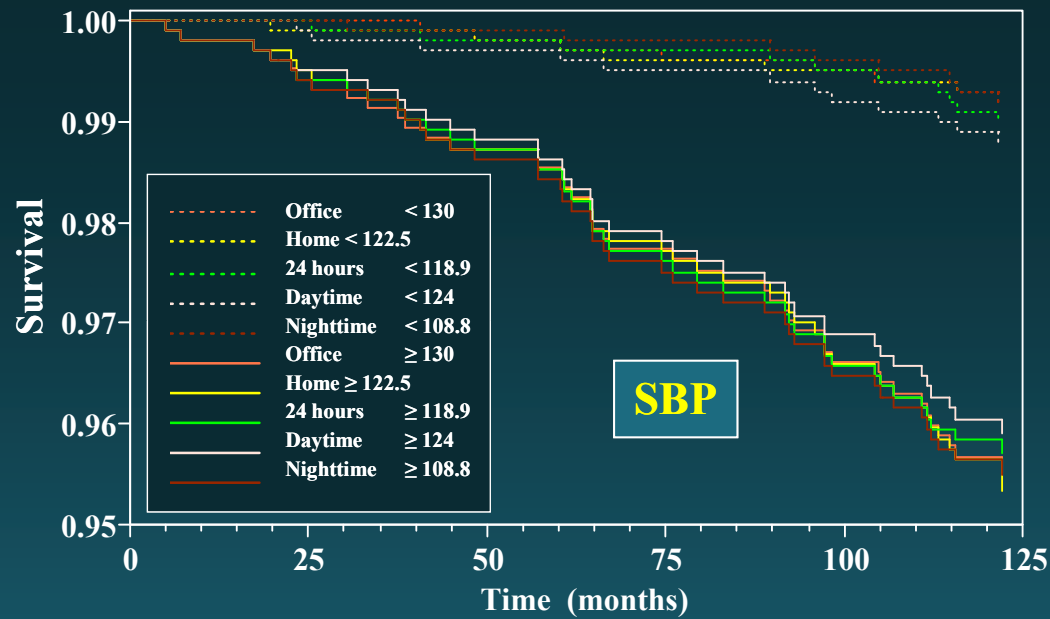


Survival Probability Curves for All-Cause and CV Mortality in Men and Women According to HR Class



HR < 60
 HR ≥ 60 and ≤ 80
 HR > 80 and ≤ 100
 HR > 100

Kaplan-Meier Curves for Survival Free of CV Disease in Subjects with Office, Home, and Ambulatory BP or HR Values Above and Below Median Values



Heart Rate (HR) as CV Risk Factor

Association of HR with CV disease
heterogeneous link



Coronary



Yes



Cerebrovascular



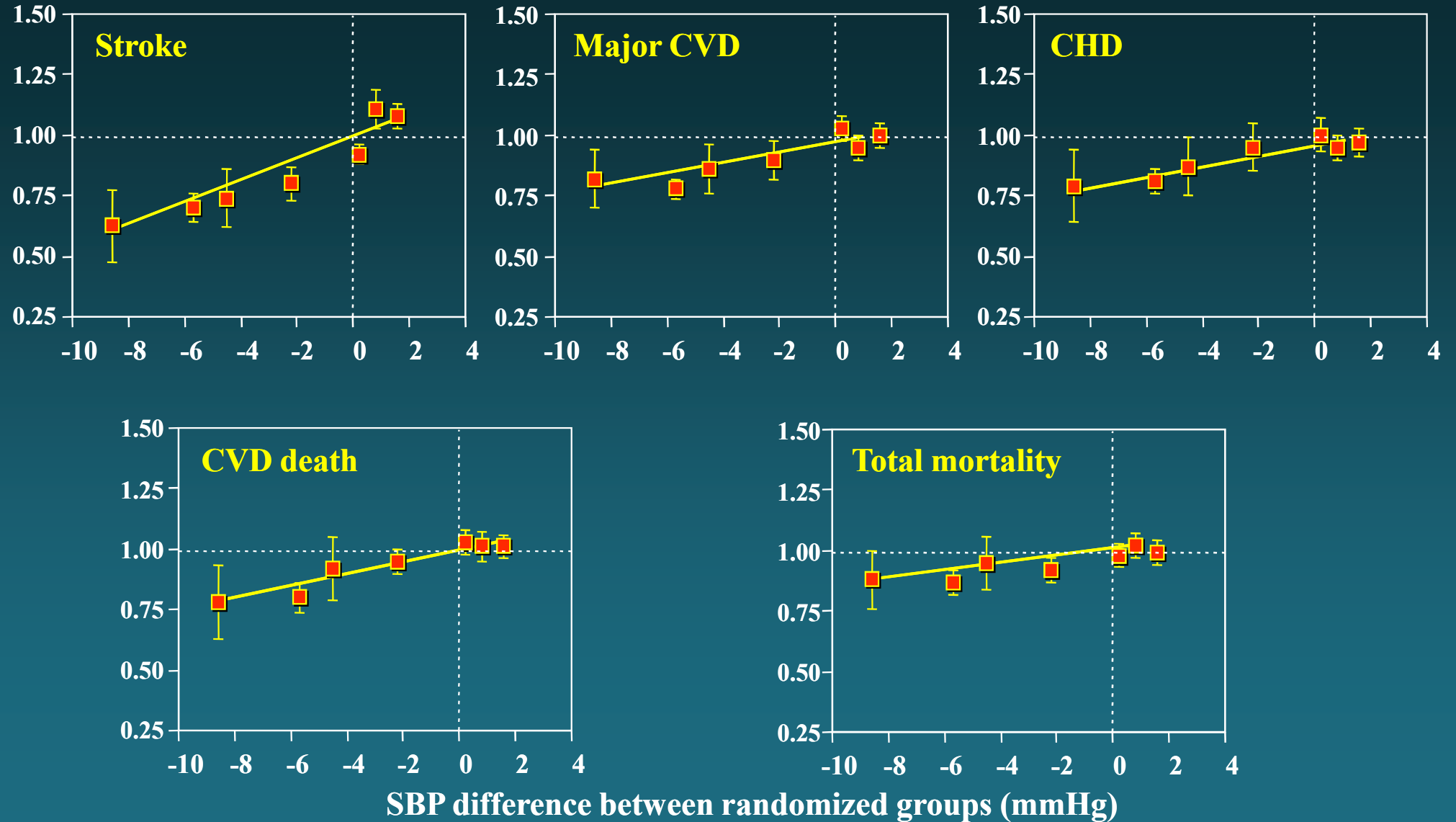
No

Benefit of BP Lowering Treatment

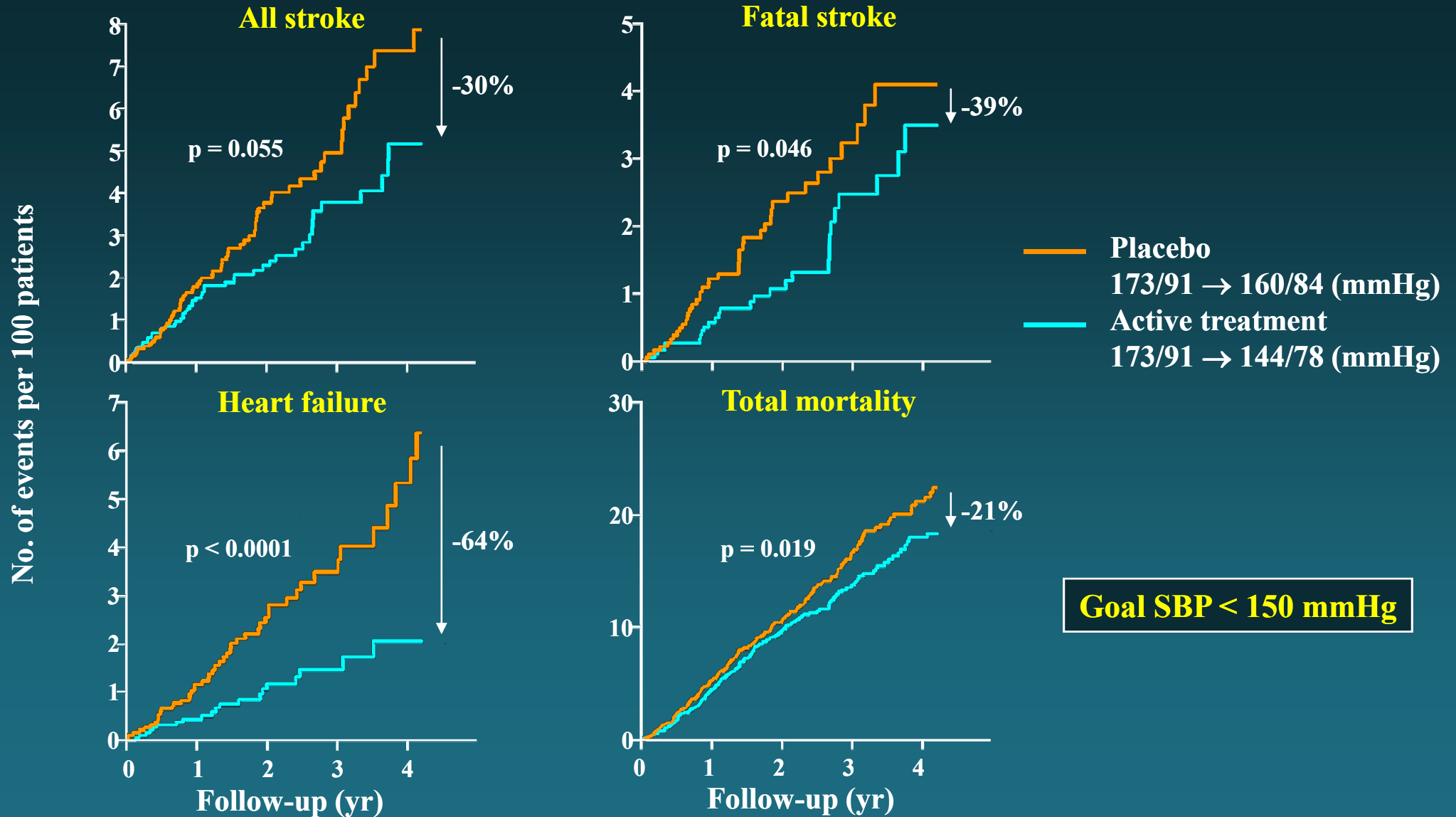
- **Evidence based on an impressively large number of patients**
- **Significant reduction in CV morbidity/mortality (also all-cause mortality)**
- **Benefit seen at older ages (including ISH)**
- **CV risk reduction similar in men/women**
- **Beneficial effects in Caucasian/Asian/Black populations**
- **All-cause specific events reduced**
 - **Stroke → - 30-40%**
 - **CHD → - 20-25%**
 - **CHF → - 40-50%**

Metanalysis of Trials Comparing Different Treatments or Treatment vs Placebo in Hypertension

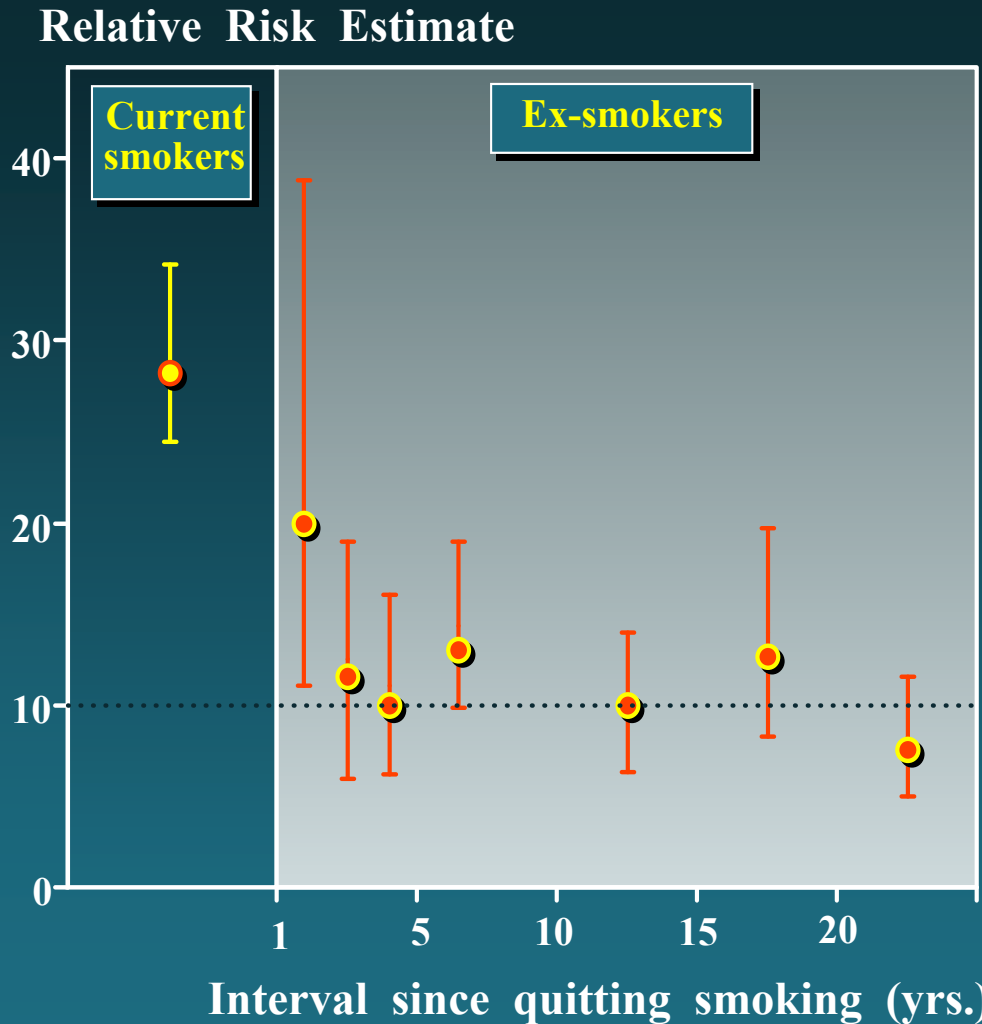
Relative risk of outcome event



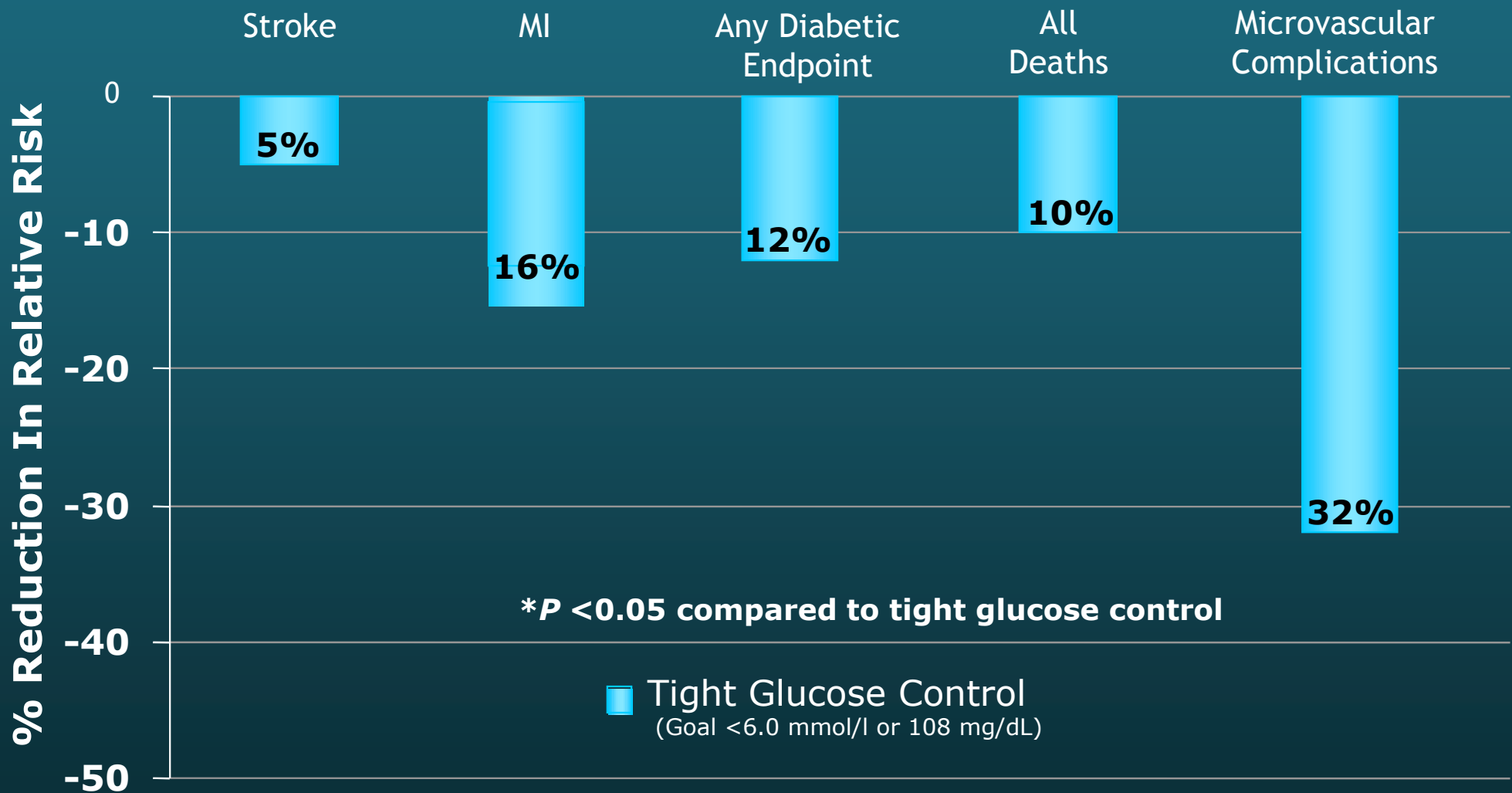
Incidence of Morbidity / Mortality in HYVET



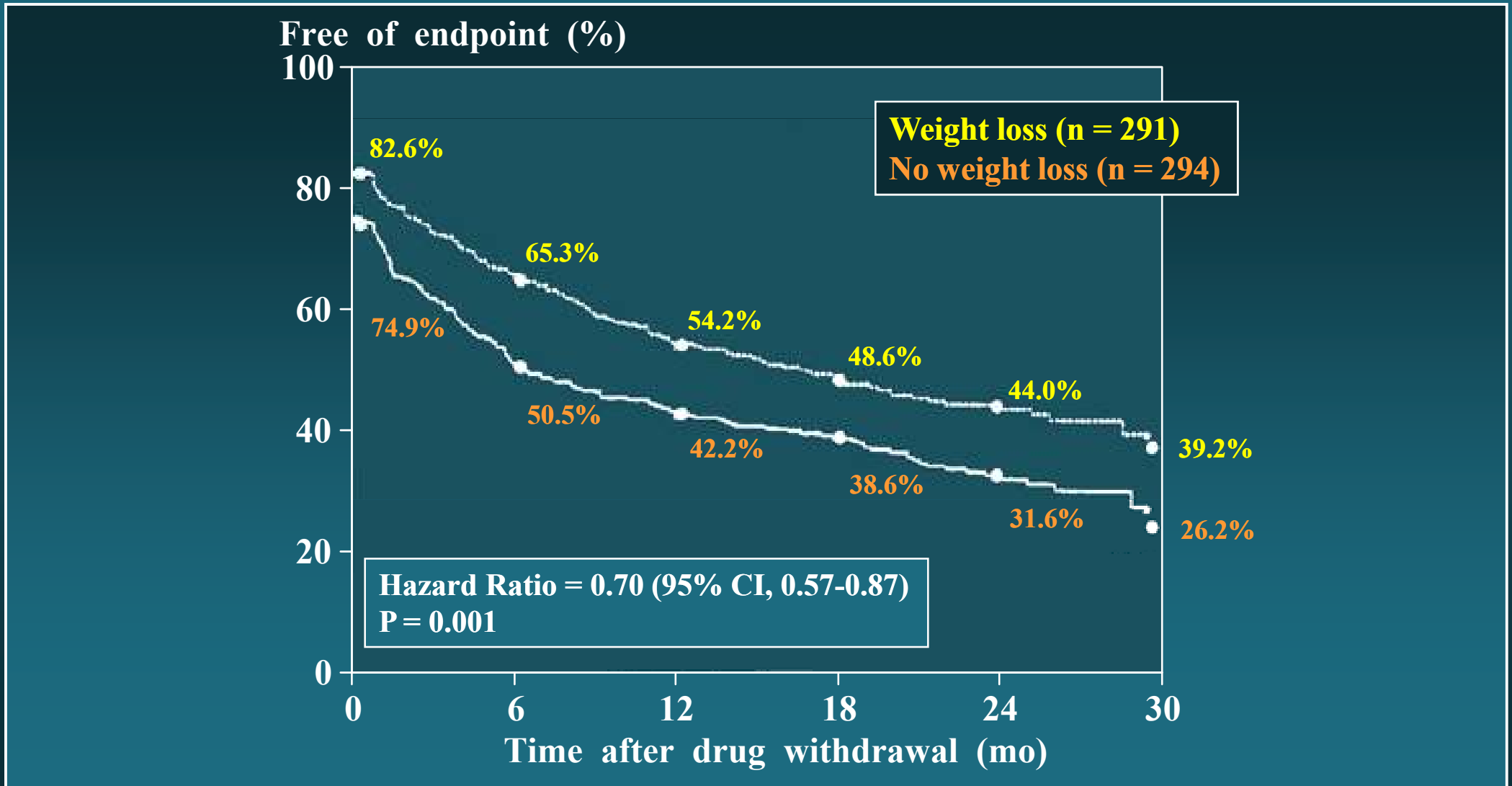
Estimated relative risk of MI after quitting smoking



Tight vs Less Tight Blood Glucose Control



Percentages of Participants who Remained Free of Cardiovascular Events and High Blood Pressure and Did Not Have an Antihypertensive Agent Prescribed during Follow-up, According to Weight Loss



Fattori di Rischio Cardiovascolare - Problemi

- **Stimolo a frazionamento competenze / subspecialità**

Coronary Risk Chart

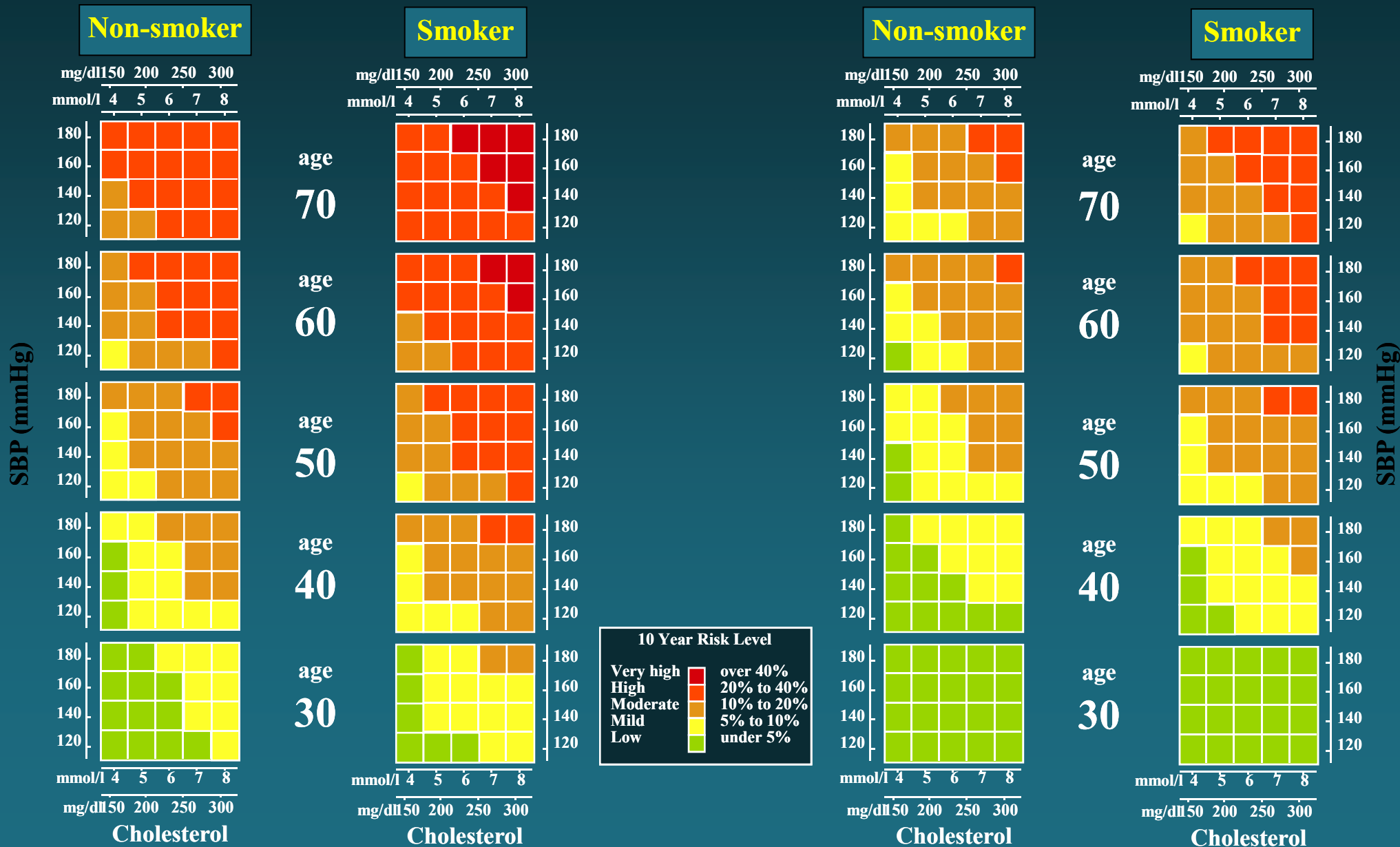
MEN

Risk of Coronary Heart Disease



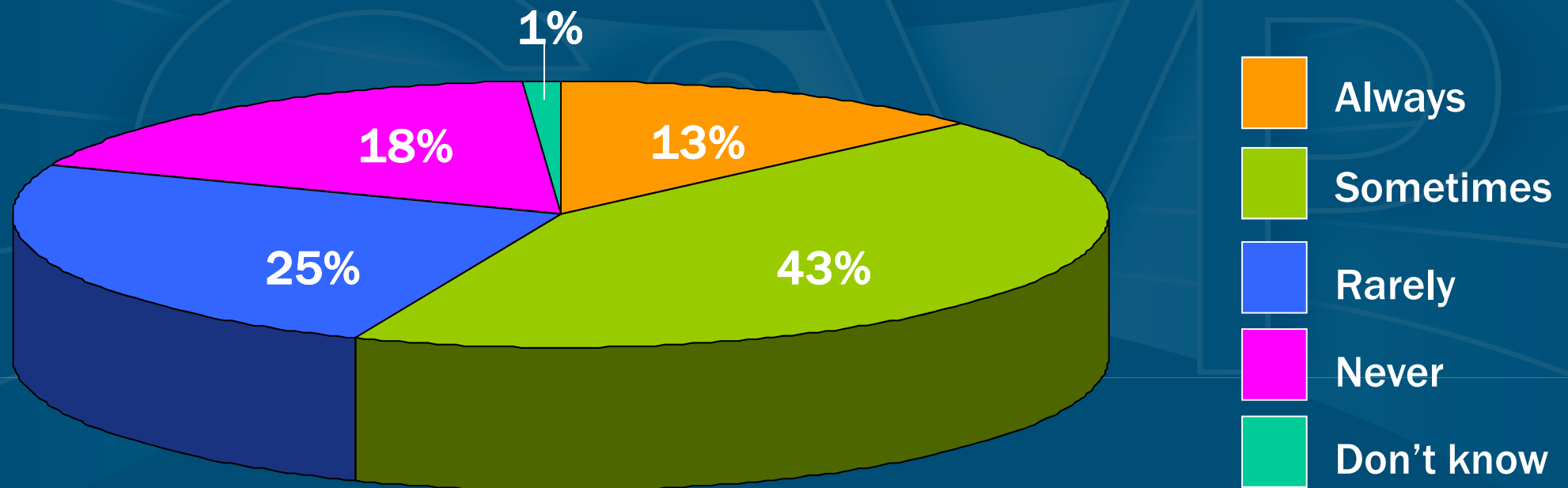
WOMEN

Risk of Coronary Heart Disease



Unmet Need: Low Frequency of Risk Chart Use

- Only 13% of physicians always use risk charts to assess a patient's risk of developing CHD



Fattori di Rischio Cardiovascolare - Problemi

- **Stimolo a frazionamento competenze / subspecialità**
- **Quanto accurato / completo è il potere predittivo?**

**In INTERHEART
risk factors explained
90.4% of MI incidence**

Cardiovascular Risk Evaluation: an Inexact Science

S.S. Franklin, Nathan D. Wong
J Hypertension 2002; 20: 2127-2130

23/09/2011 15.12.38

**Cardiovascular
risk factors**

- Sex
- Age
- Family history

- Major**
- Hypertension
 - Dyslipidaemia
 - Smoking
 - Overweight / Obesity
 - Glucose intolerance

- Others**
- Inflammatory markers
 - C-Reactive Protein
 - Other inflammatory markers
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 - LVH / LA enlargement
 - CA thickening / Plaques
 - Other subclinical OD

- Minor**
- Sedentariety
 - Personality
 - Socio-economic status
 - Educational level
 - Hyperuricaemia
 - Menopause - Oral contraceptives
 - Psychological factors (stress)

**The most stressing thing
about research on stress
is how to define stress**

Contributi degli Studi Genetici in Campo Cardiovascolare (opinione personale)

- **Enorme numero di studi**
- **Finanziamenti ingenti (sottratti ad altre linee di ricerca)**
- **Dati ottenuti in passato spesso inutilizzabili**
 - **Limiti dell'approccio "geni candidati"**
 - **Risultati legati al caso (non replicabili)**
 - **Fenotipi clinici imprecisi**
- **Contributo al rischio totale dei pochi geni identificati modesto**
- **Individuazione dei meccanismi attraverso cui il gene esplica la sua azione difficile**
- **Estrema complessità (numero geni / interazione tra geni / interazione geni-ambiente) del fenomeno**

Scarso Impatto Pratico dei Dati Genetici

- **Nonostante la mole di ricerca e l'impegno finanziario, ancora oggi il medico desume il possibile ruolo dei fattori genetici dall'anamnesi, e cioè dalla presenza in famiglia di fattori di rischio / infarto-ictus in età precoce**

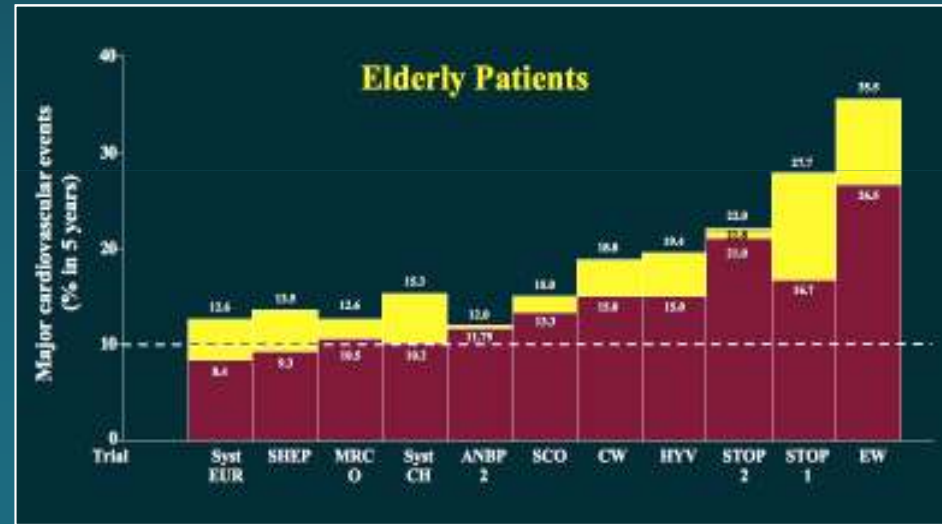
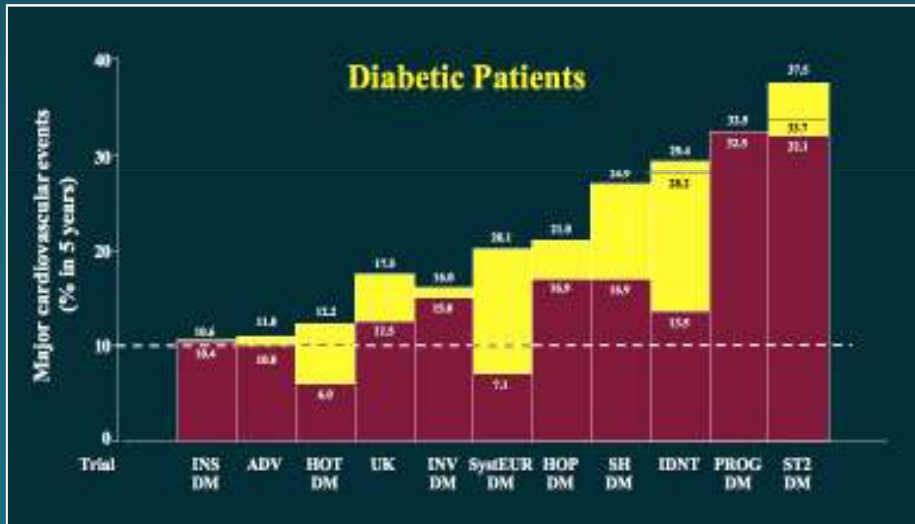
Demographic and Clinical Data of Subjects who Died or are Still Alive in the Follow-up (average 131 months) of PAMELA

	Alive (n = 1865)	CVD deaths (n = 56, 2.7%)	All cause deaths (n = 186, 9.1%)
Age (years; mean \pm SD)	50 \pm 13.5	65 \pm 7.6	63 \pm 9.1
M / F (%)	48.6 / 51.4	80.4 / 19.6	70.4 / 29.6
Increased Body Mass Index (\geq 26 kg/m², %)	40.6	69.1	57.8
Smoking (%)	27.0	32.1	32.3
Hypercholesterolemia (\geq 240 mg / 100 ml, %)	34.1	37.5	44.6
Diabetes mellitus (%)	1.9	7.1	4.3
CVD history (%)	3.0	23.2	16.1
Hypertensives (%)	39.9	73.2	65.1

Fattori di Rischio Cardiovascolare - Problemi

- **Stimolo a frazionamento competenze / subspecialità**
- **Quanto accurato / completo è il potere predittivo?**
- **Rischio residuo con trattamento (apparentemente) ottimale**

Residual Risk in BP Lowering Trials



Fattori di Rischio Cardiovascolare - Problemi

- **Stimolo a frazionamento competenze / subspecialità**
- **Quanto accurato / completo è il potere predittivo?**
- **Rischio residuo con trattamento (apparentemente) ottimale**
- **Controllo / prevenzione dei fattori di rischio nelle popolazione**