Management of co-existing risk factors for cardiovascular disease

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Overview

- Population changes
  - Demography
  - Risk factors
- Effects on disease burden
  - Smoking
  - Diabetes
  - Blood pressure
  - Cholesterol

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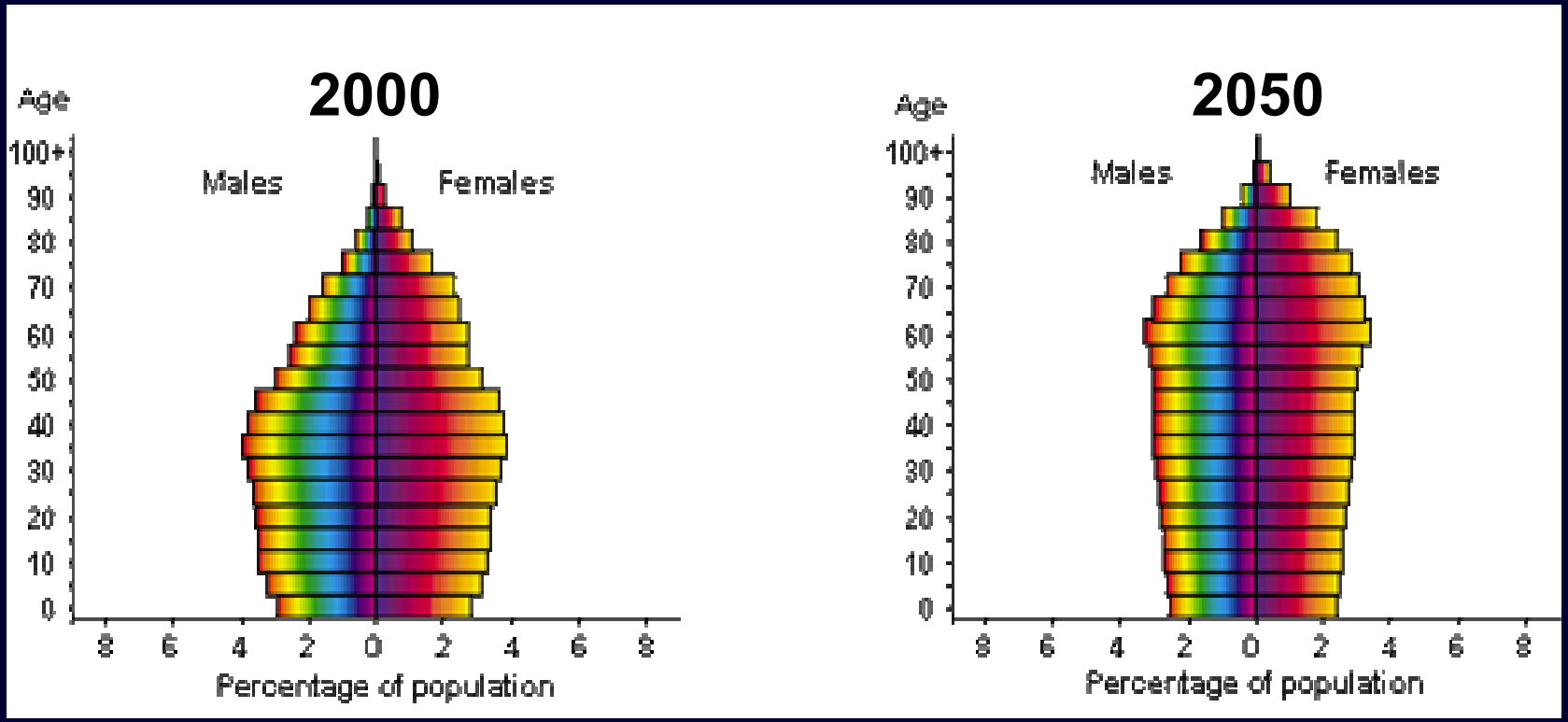
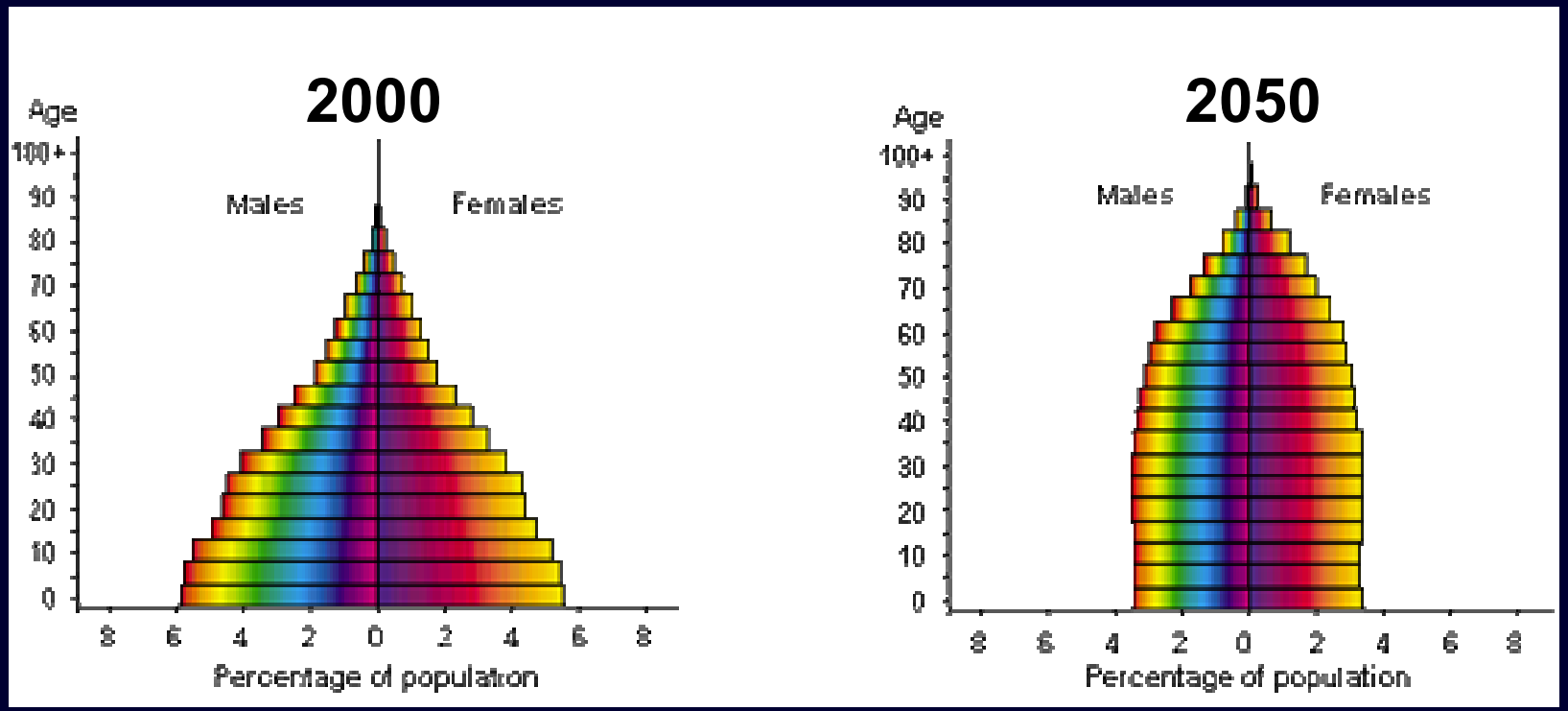
Changing age structure: 2000-2050
High-income countries



Source: United Nations

Changing age structure: 2000-2050
Middle-income countries



Source: United Nations

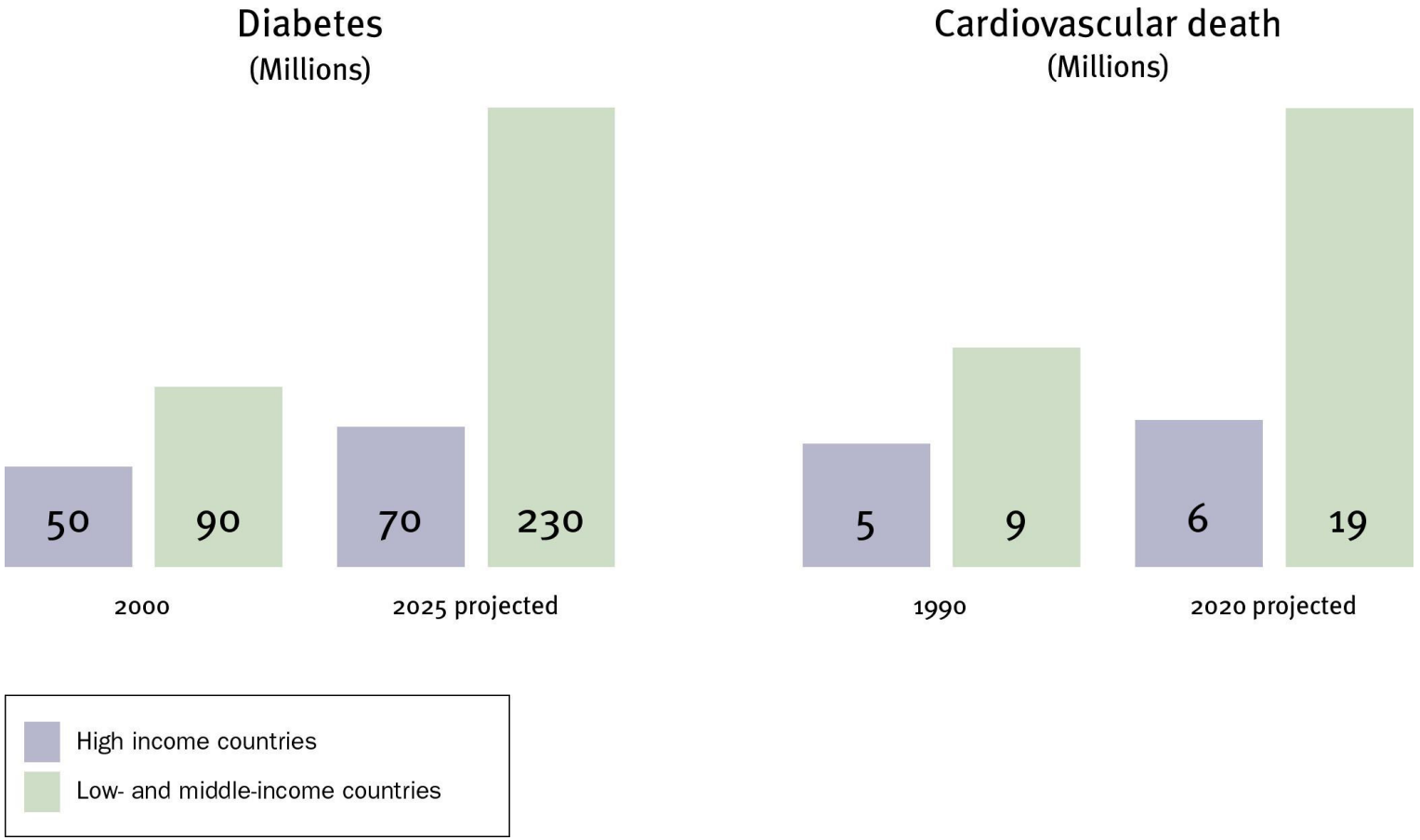
Population over age 60 years

	2000	2050
High income	19%	33%
Middle income	8%	21%
Low income	5%	12%
World	10%	22%

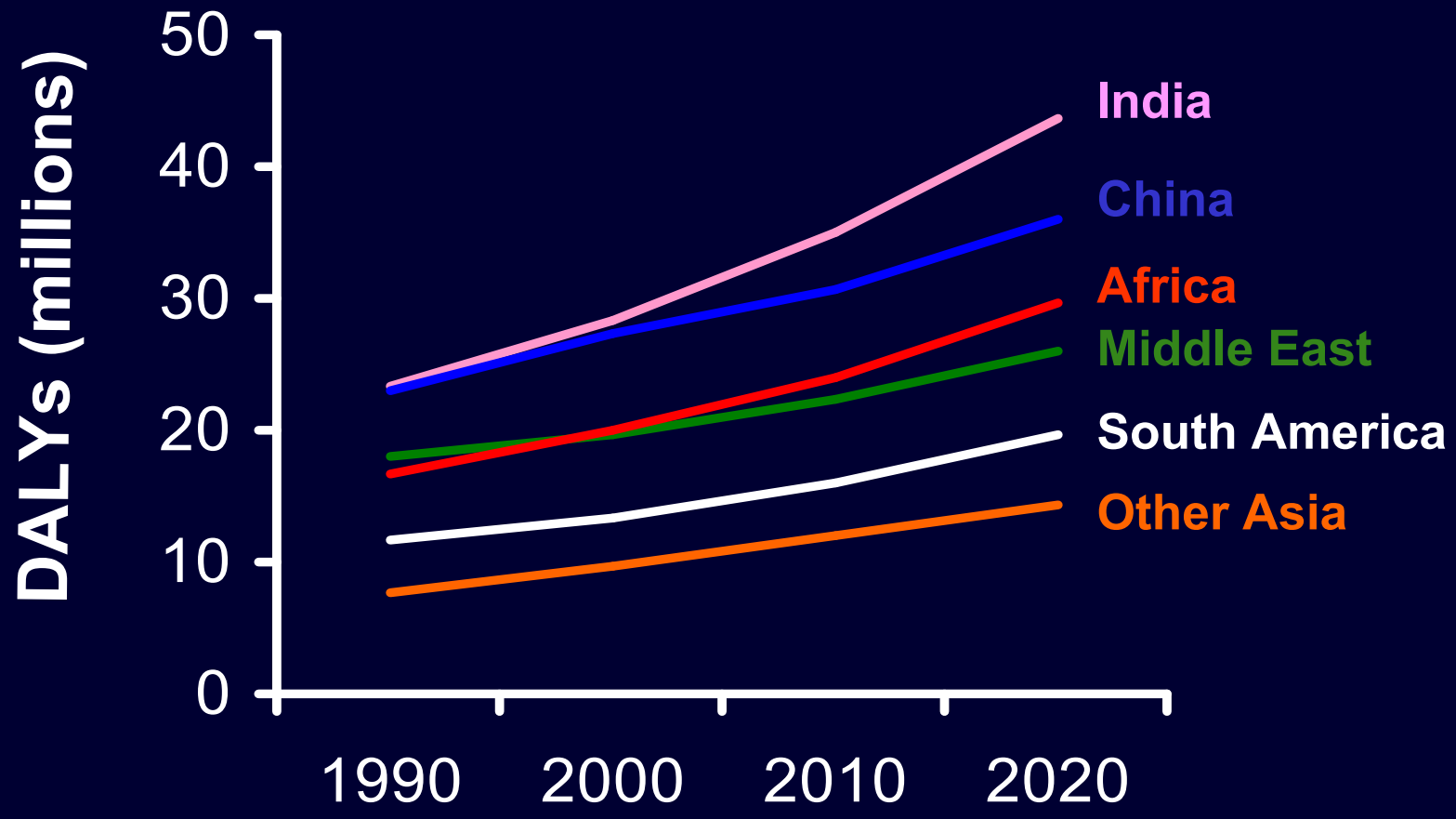
Source: United Nations

Trends in diabetes and cardiovascular disease

Expected global changes in numbers with diabetes and numbers dying from cardiovascular diseases over the next few decades



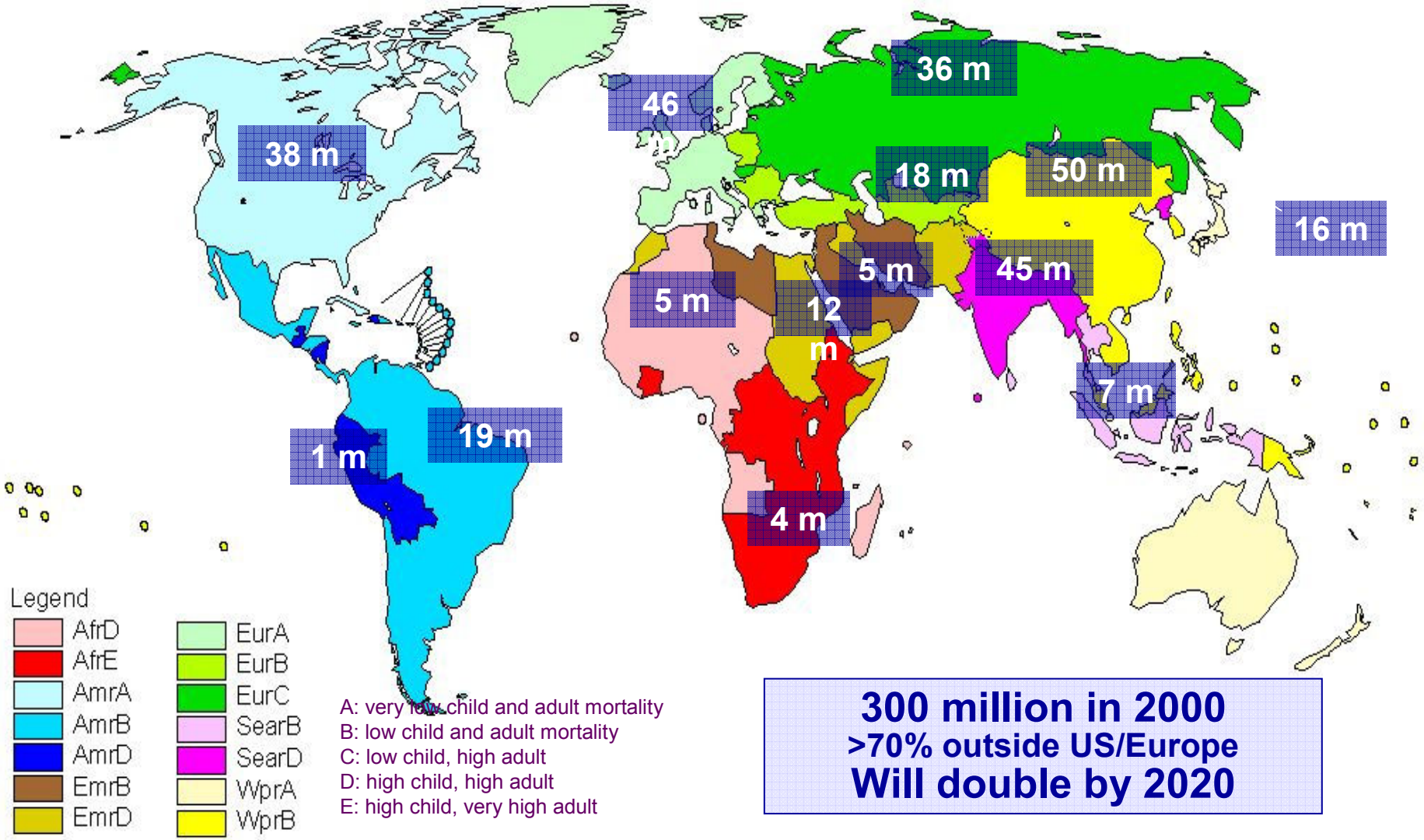
Healthy years of life lost (DALYs)
Cardiovascular diseases



Source: Global Burden of Disease Project

Number of individuals at high-risk of cardiovascular disease: 2000

(25% risk of major cardiovascular event in next decade)



300 million in 2000
>70% outside US/Europe
Will double by 2020

Overview

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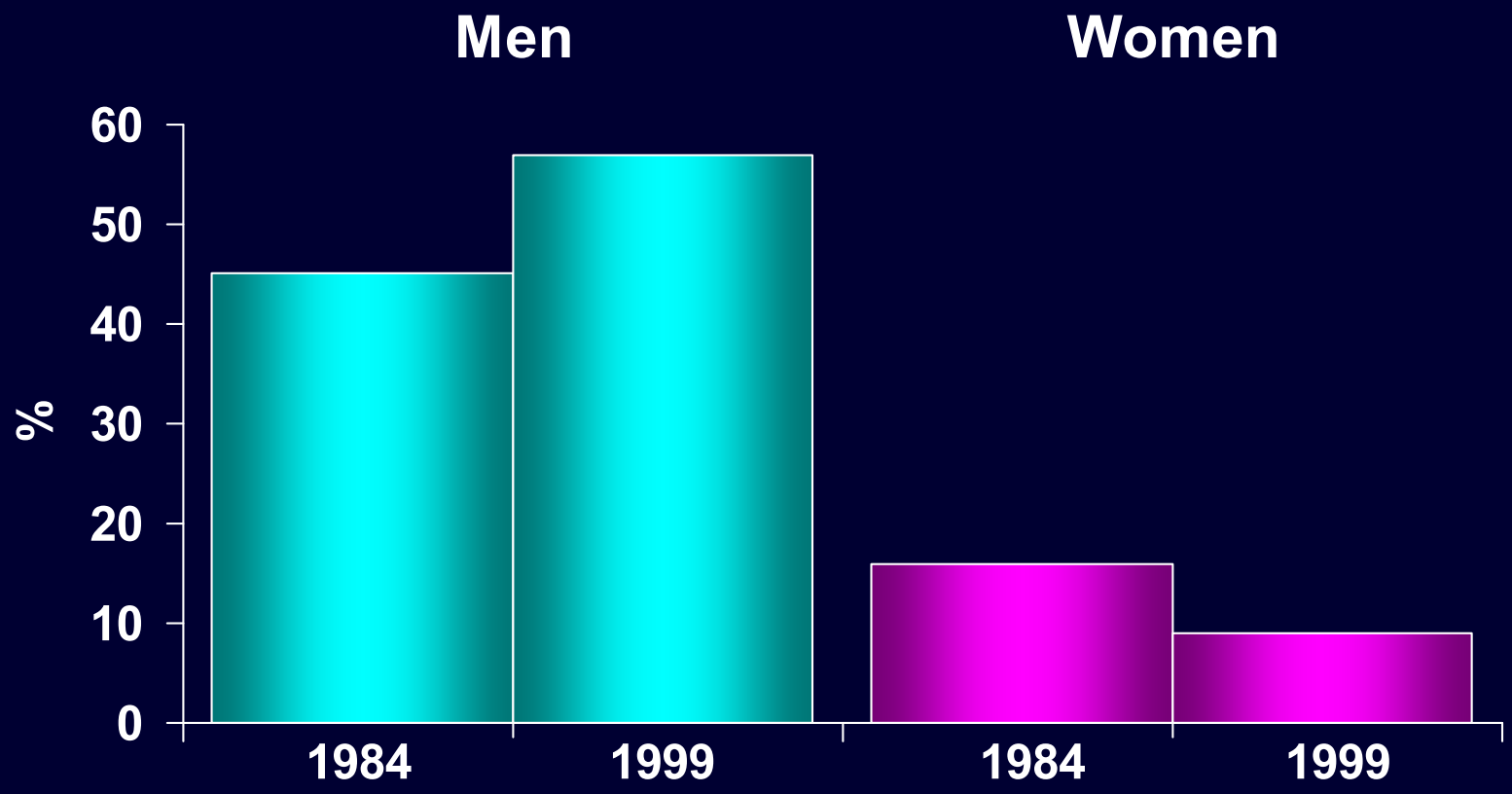
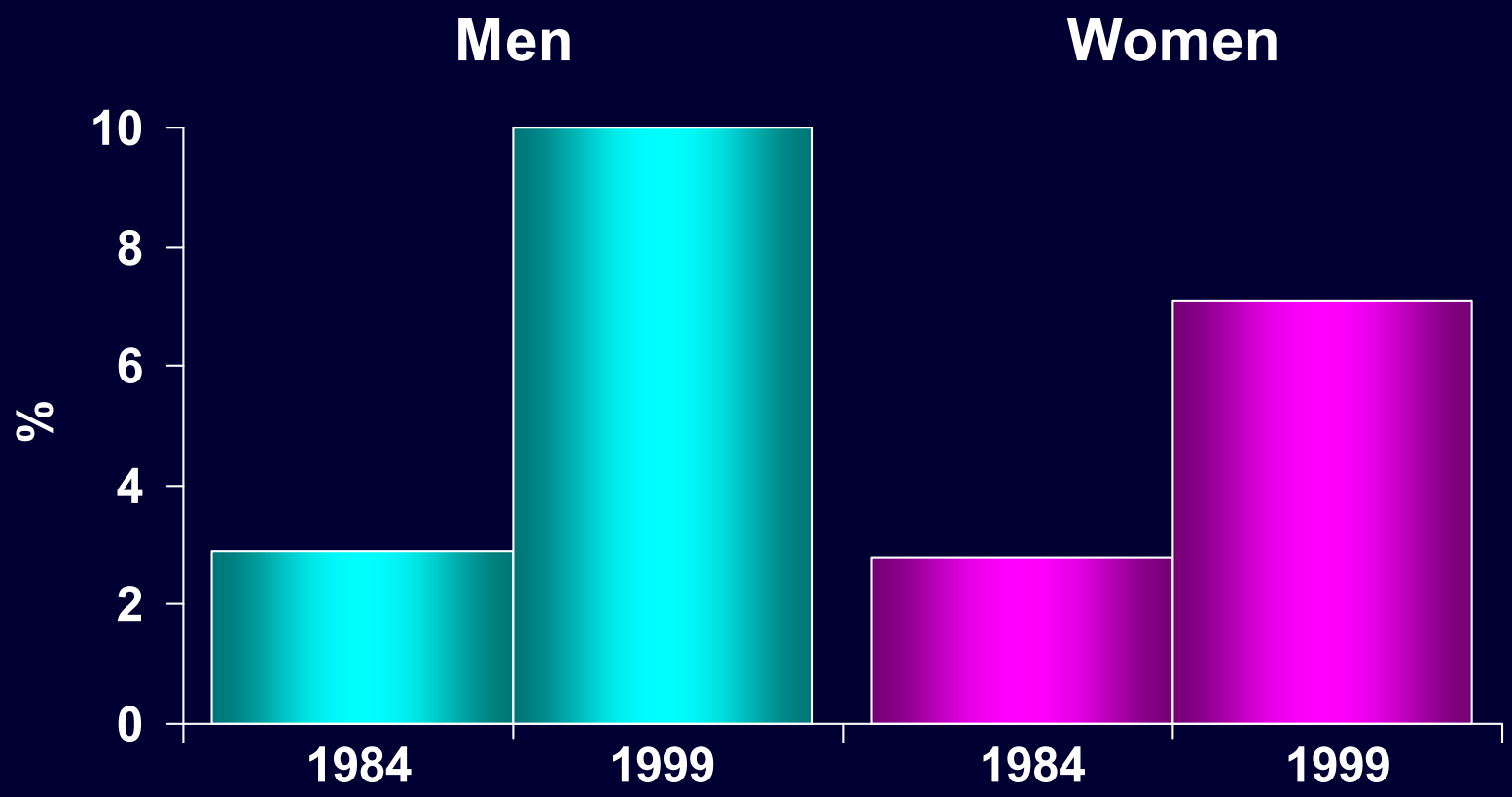
  - Cholesterol
  - Diabetes
  - Smoking

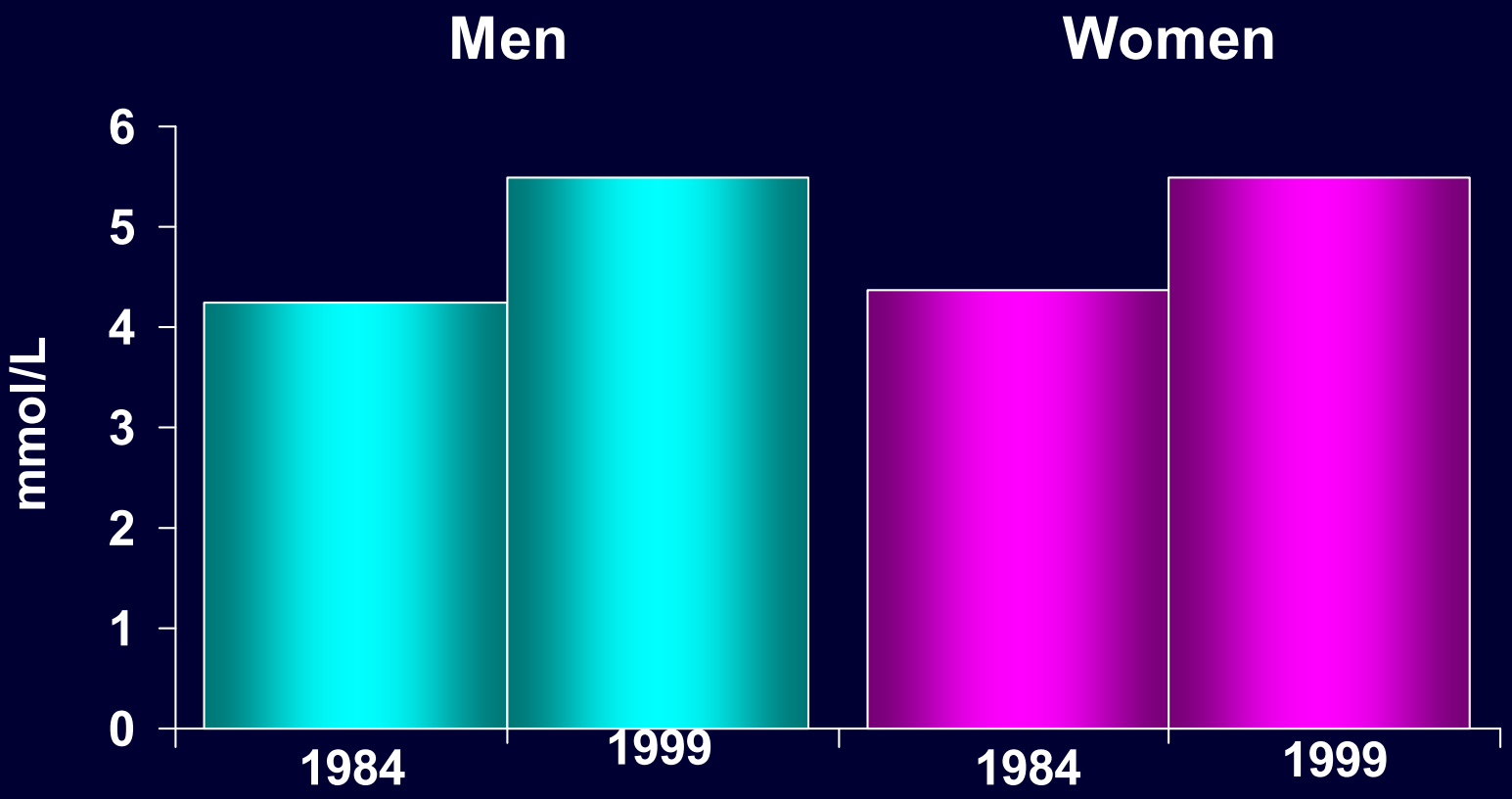
Beijing MONICA Studies:
Smoking (%)



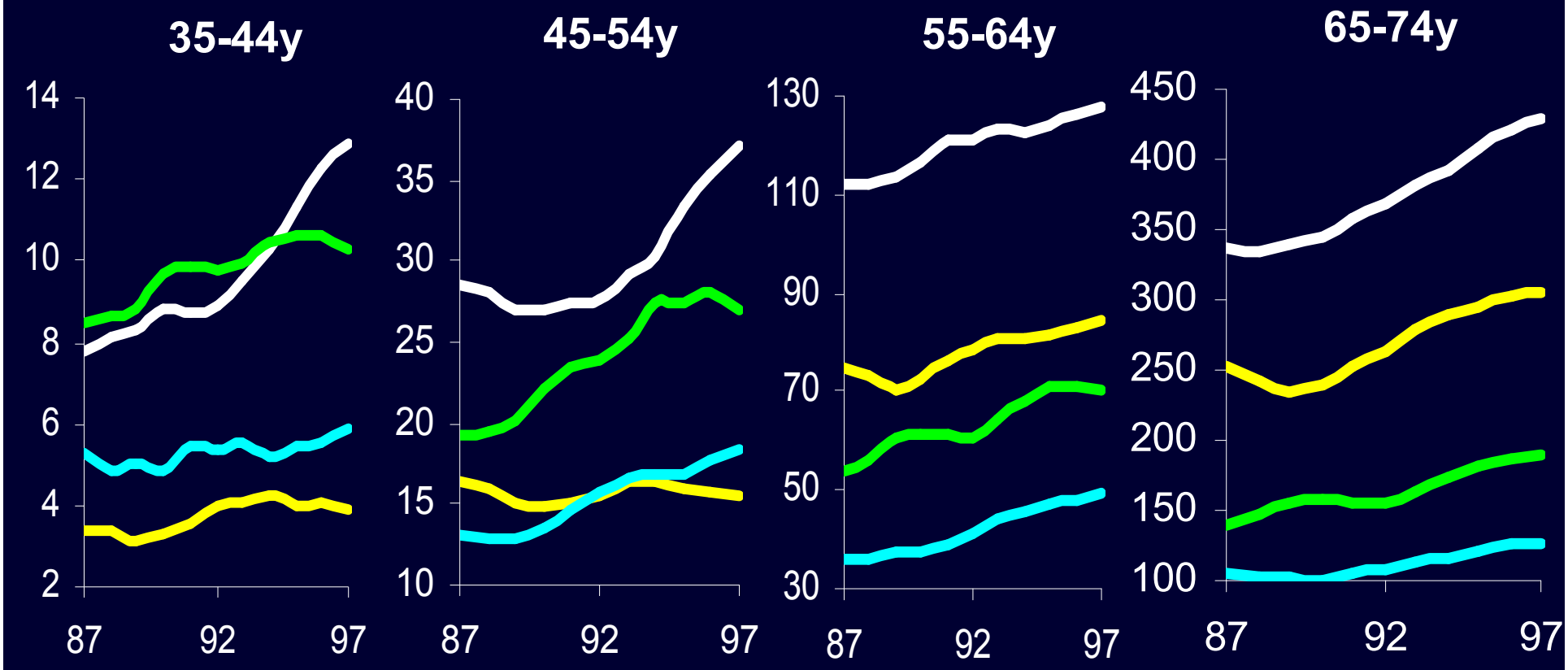
Beijing MONICA Studies:
Diabetes (%)



Beijing MONICA Studies:
Cholesterol (mmol/L)



Deaths from coronary disease in China: 1987-1997



Source: PRC Ministry of Health

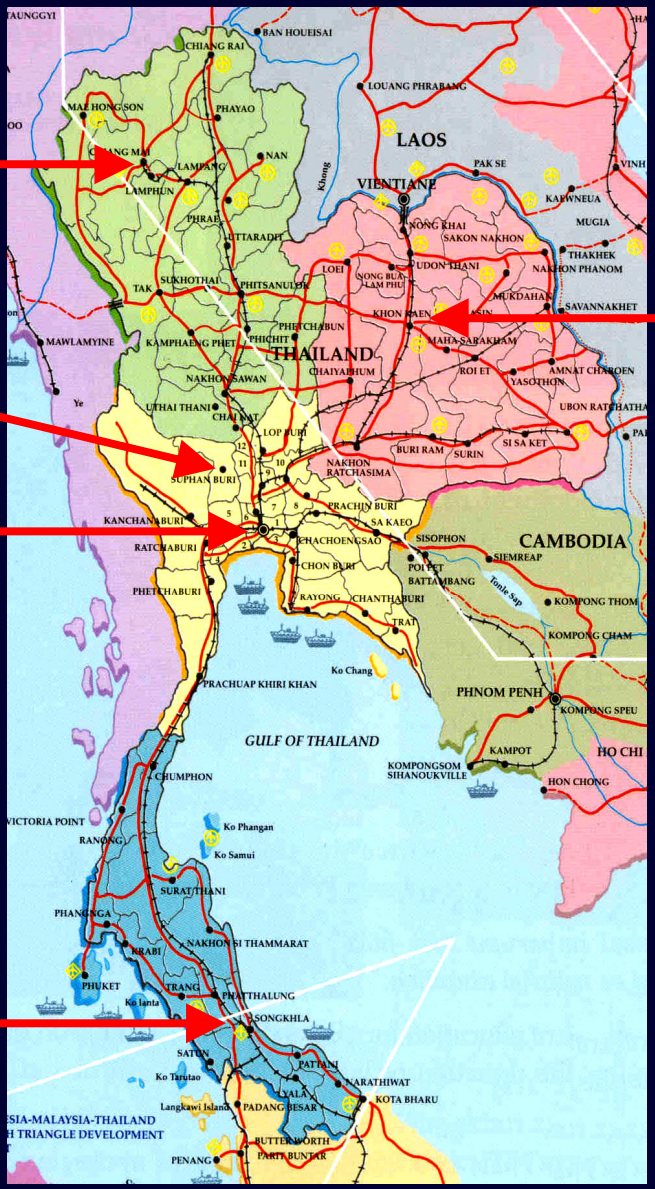
InterASIA: CV health in Thailand

Chiang Mai
(North)

Suphanburi
(Central)

Bangkok

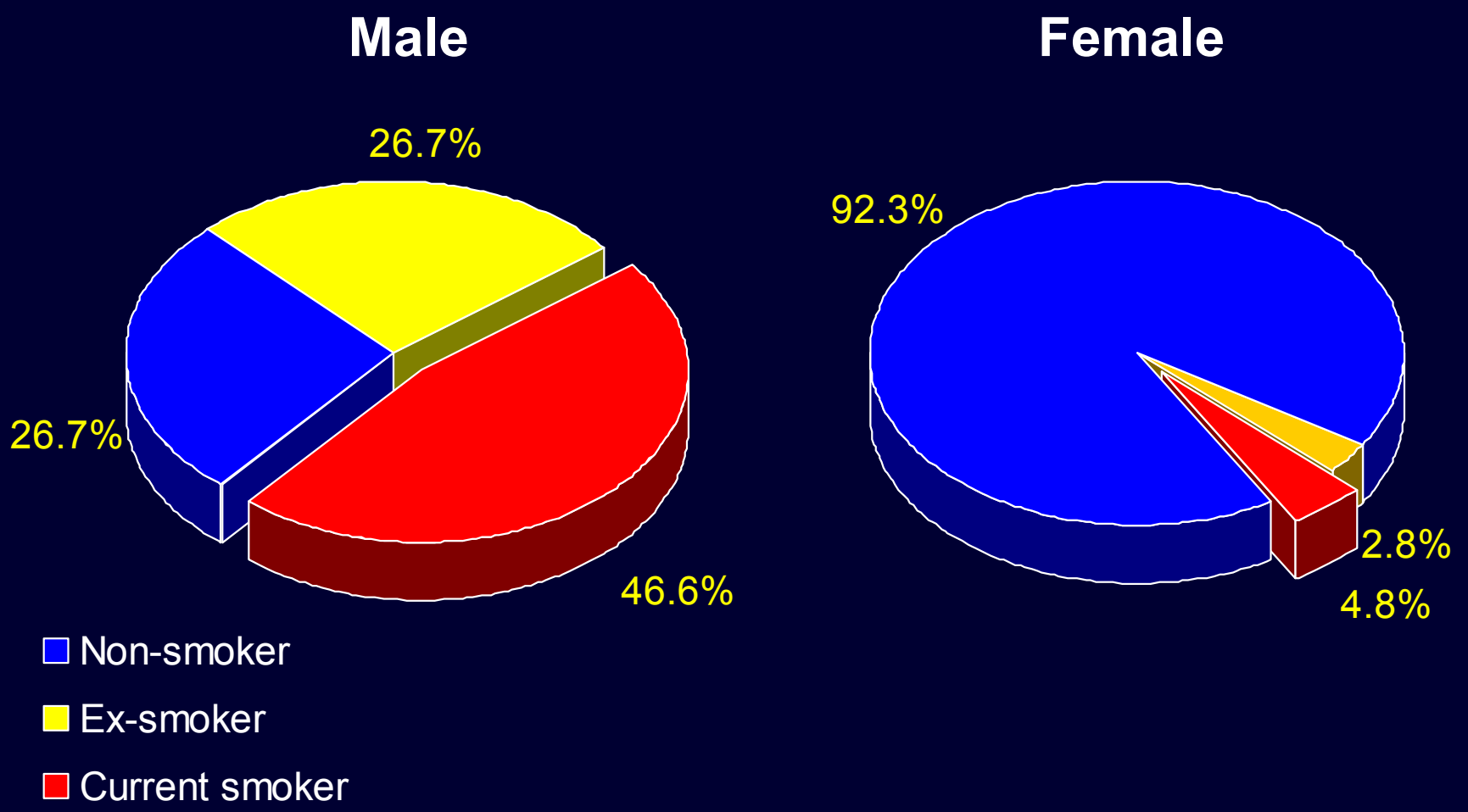
Songkhla
(South)



Khon Kaen
(Northeast)

Thai InterASIA

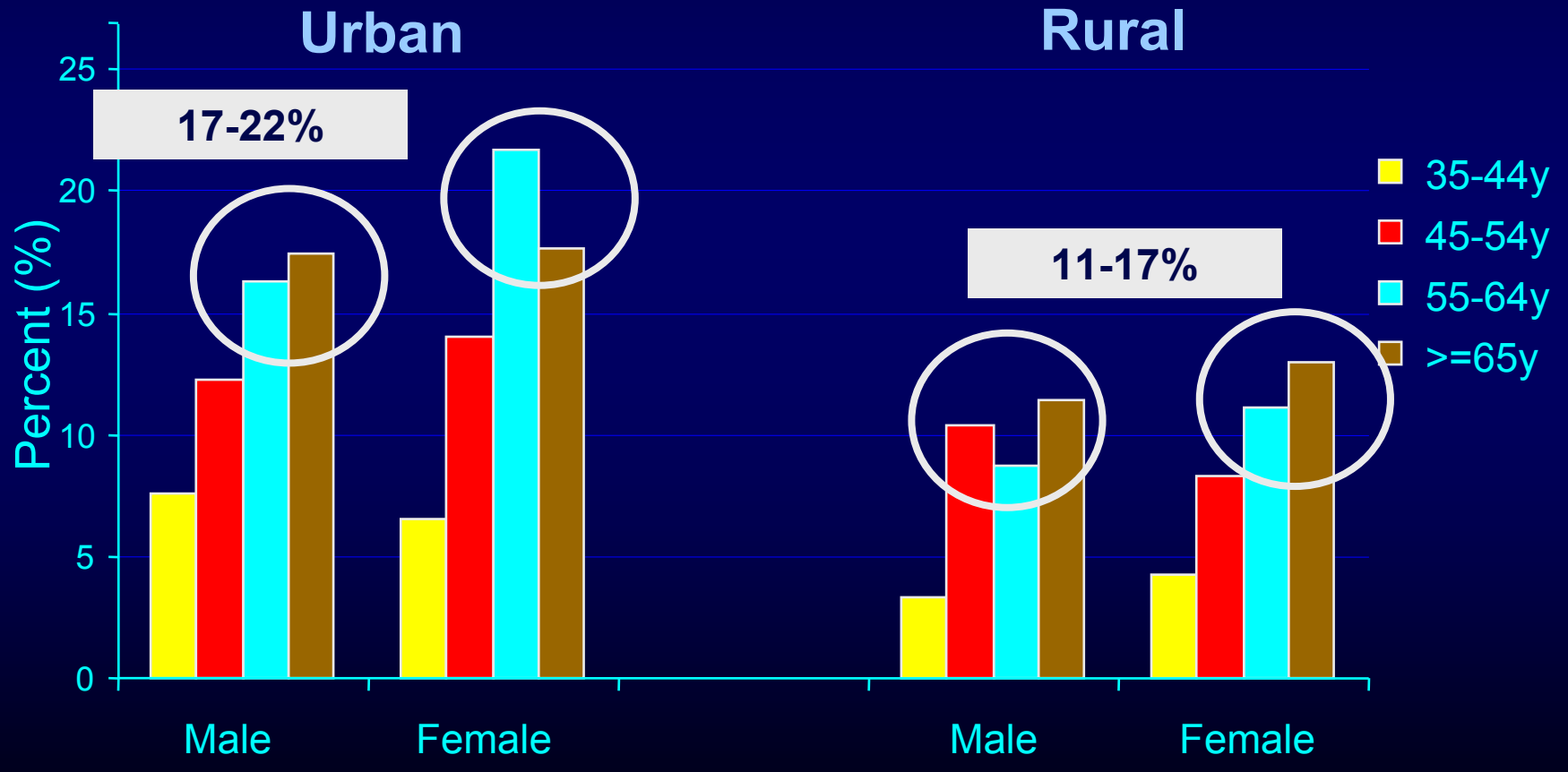
Smoking



Thai InterASIA

Diabetes

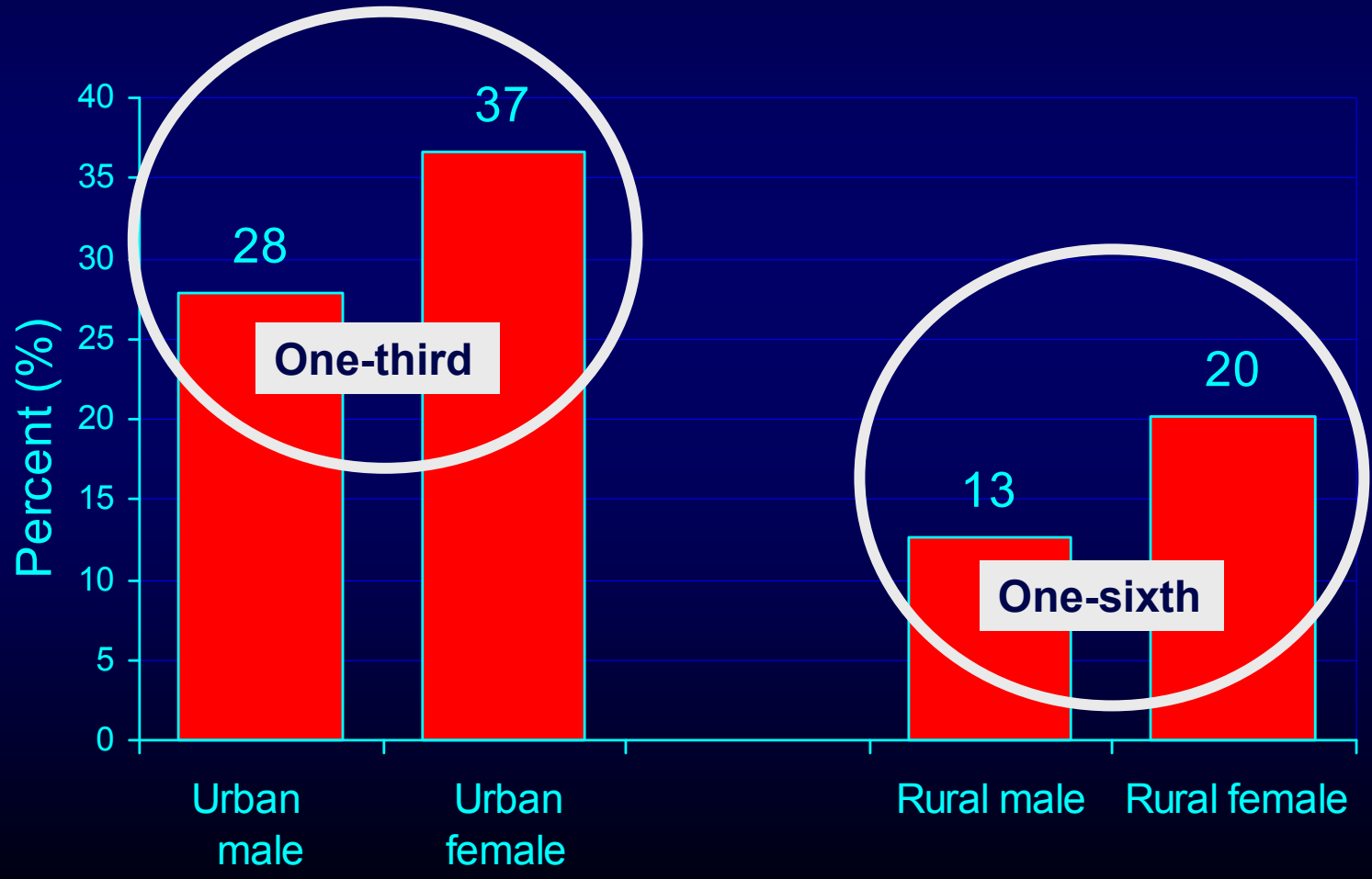
Fasting blood glucose ≥ 126 mg/dL



Thai InterASIA

Hypercholesterolemia

Total cholesterol ≥ 240 mg/dL or on medication



Overview

- Population changes
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  - Smoking
  - Diabetes
  - Blood pressure
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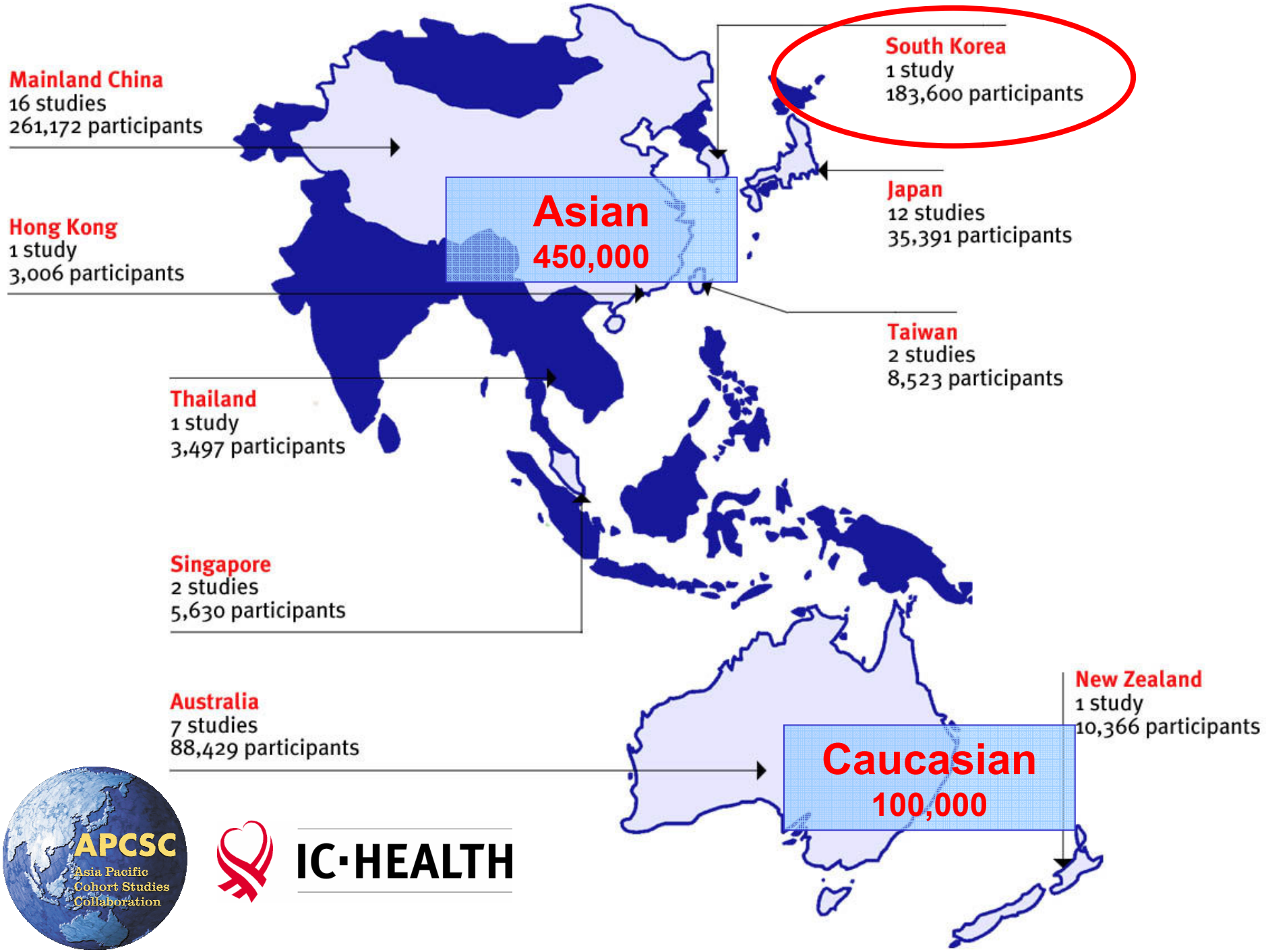
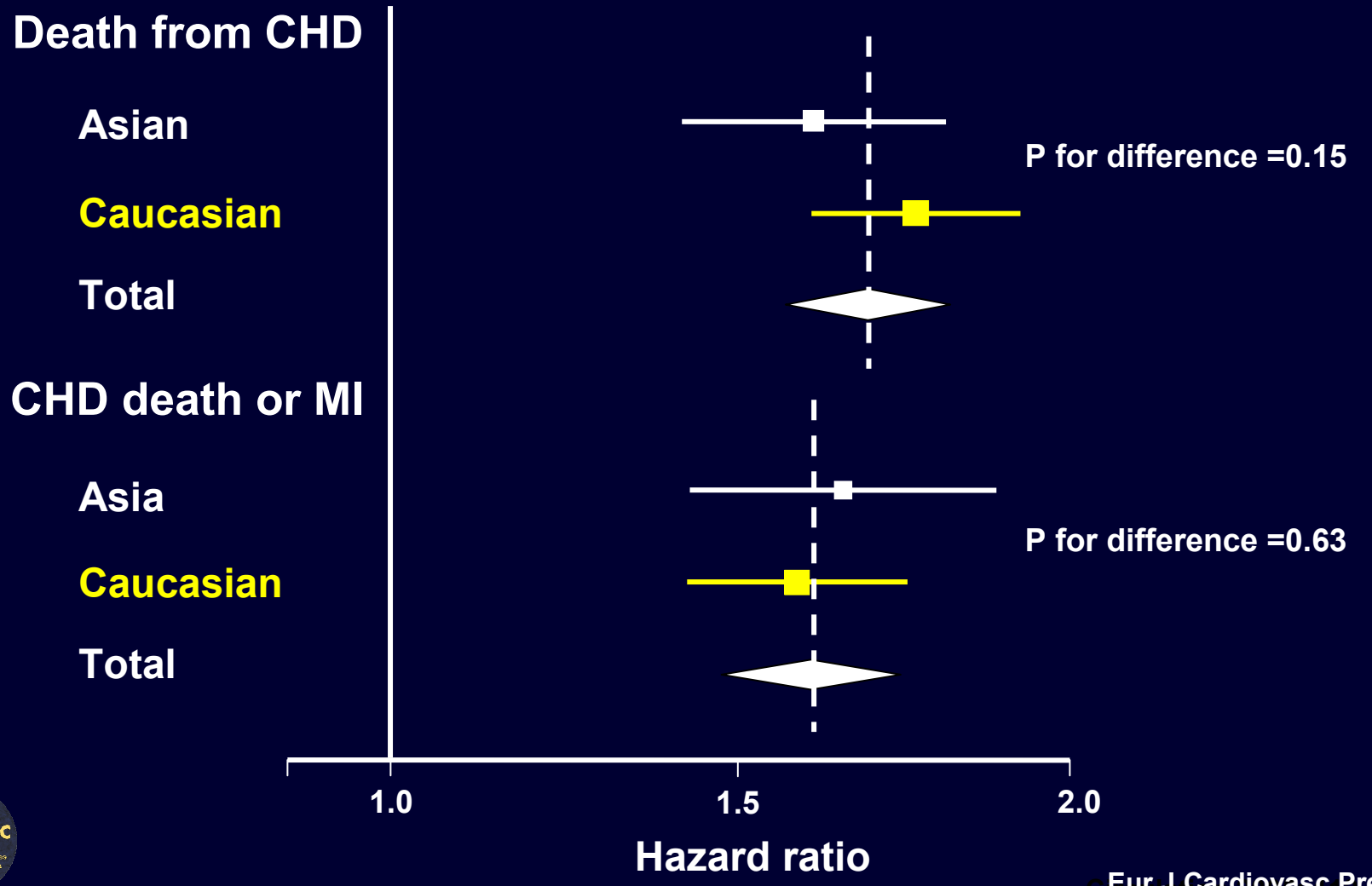
APCSC
Asia Pacific
Cohort Studies
Collaboration


Mainland China
16 studies
261,172 participants
Hong Kong
1 study
3,006 participants
Thailand
1 study
3,497 participants
Singapore
2 studies
5,630 participants
Australia
7 studies
88,429 participants
Asian
450,000
South Korea
1 study
183,600 participants
Japan
12 studies
35,391 participants
Taiwan
2 studies
8,523 participants
New Zealand
1 study
10,366 participants
Caucasian
100,000
APCSC
Asia Pacific
Cohort Studies
Collaboration
IC·HEALTH

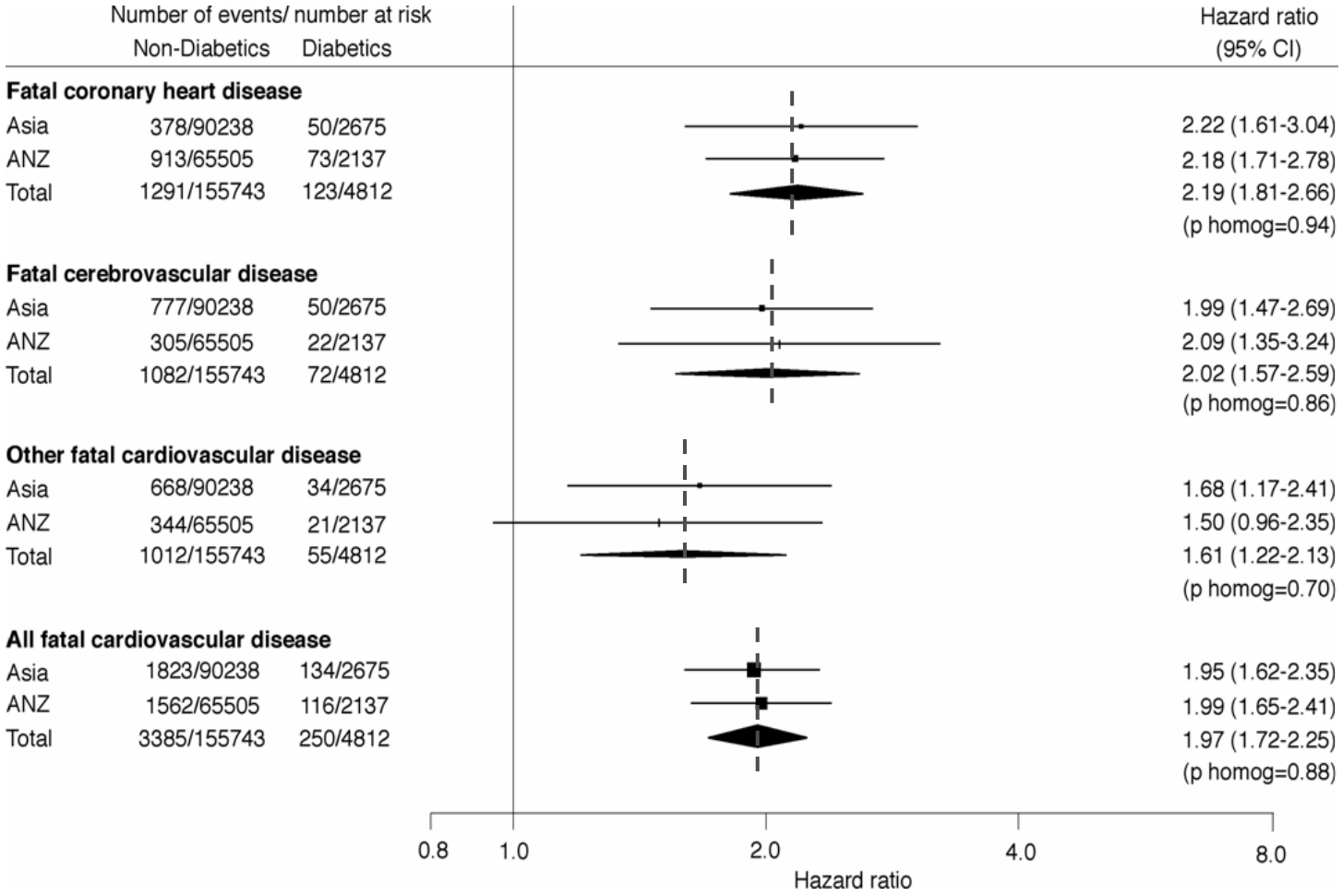
Smoking
Effects on coronary disease risk



Eur J Cardiovasc Prev Rehab 2005;12: 484-491

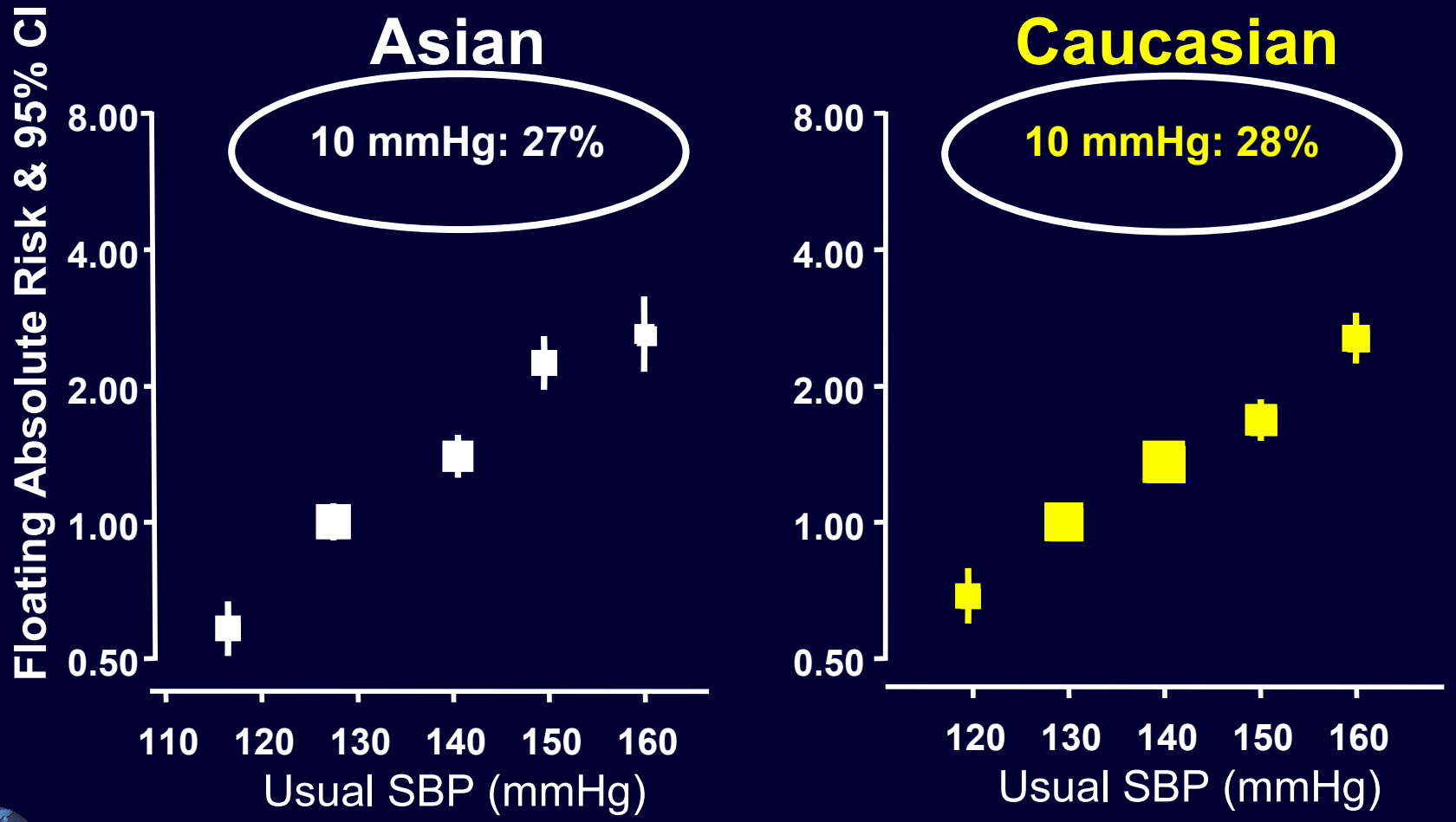
Diabetes

Effects on coronary disease and stroke risks



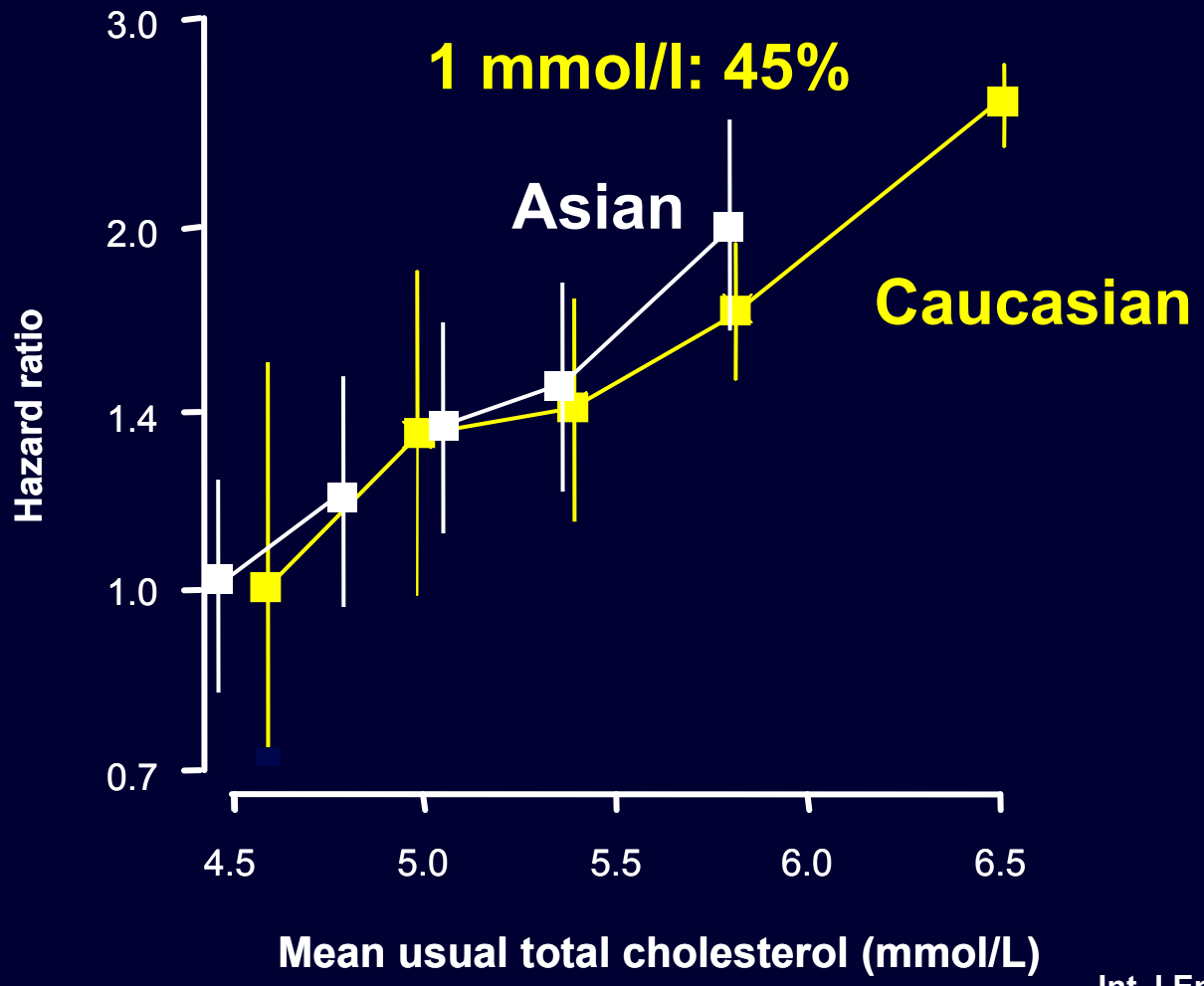
Diabetes Care 2003; 26:360-366

Blood pressure and the risk of coronary heart disease



J Hypertens 2003;21:707-716

Cholesterol and the risk of coronary disease



Int J Epidemiol 2003; 32:563-572

Effects of cholesterol and BP on CHD are roughly *multiplicative*

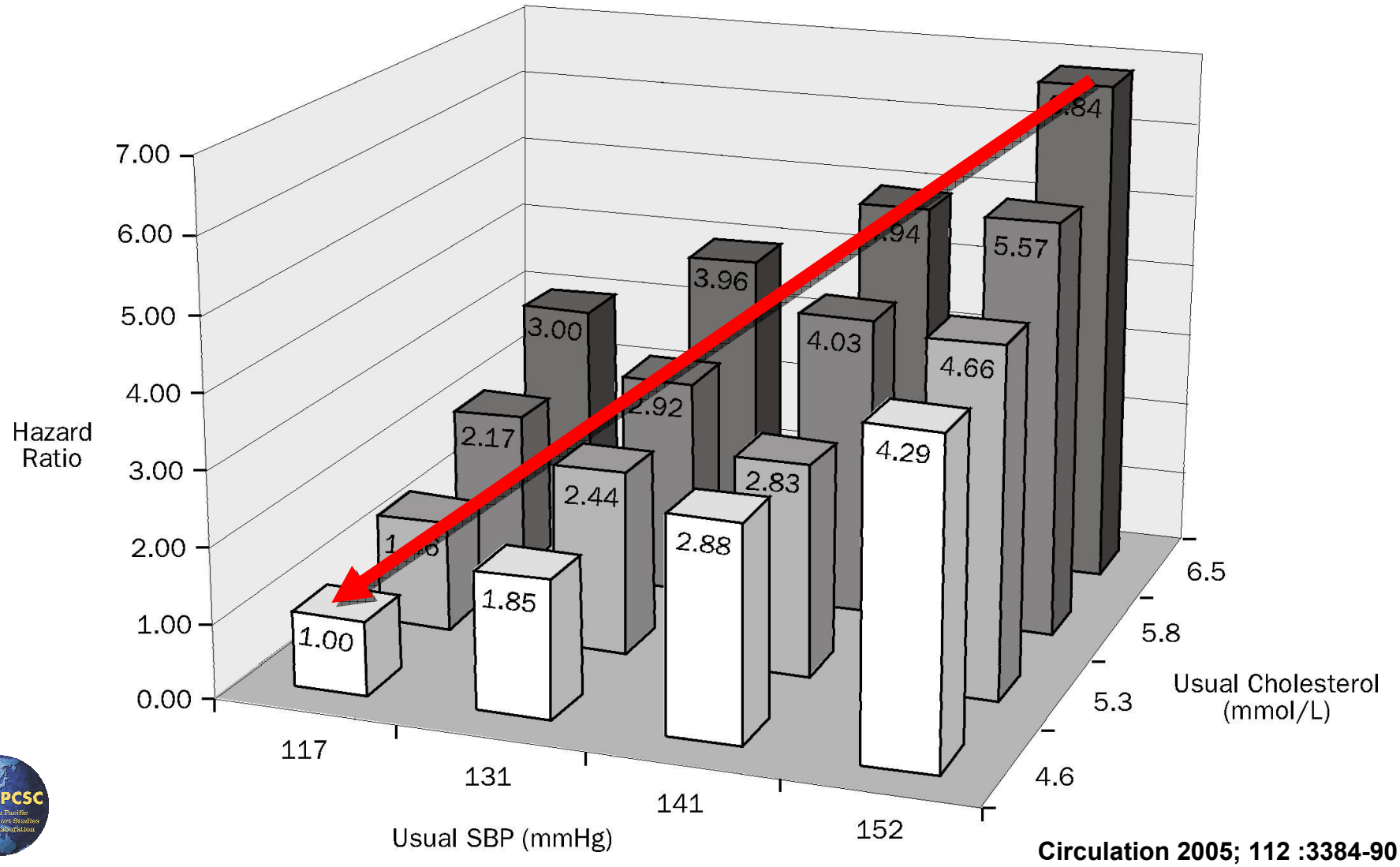
Example: at age 60-69 y

- 10 mmHg lower systolic blood: relative risk of 0.78
- 1 mmol/L lower total cholesterol: risk of 0.68
- Joint effects: 0.78 x 0.68 = 0.53

Circulation 2005; 112 :3384-90

Coronary heart disease

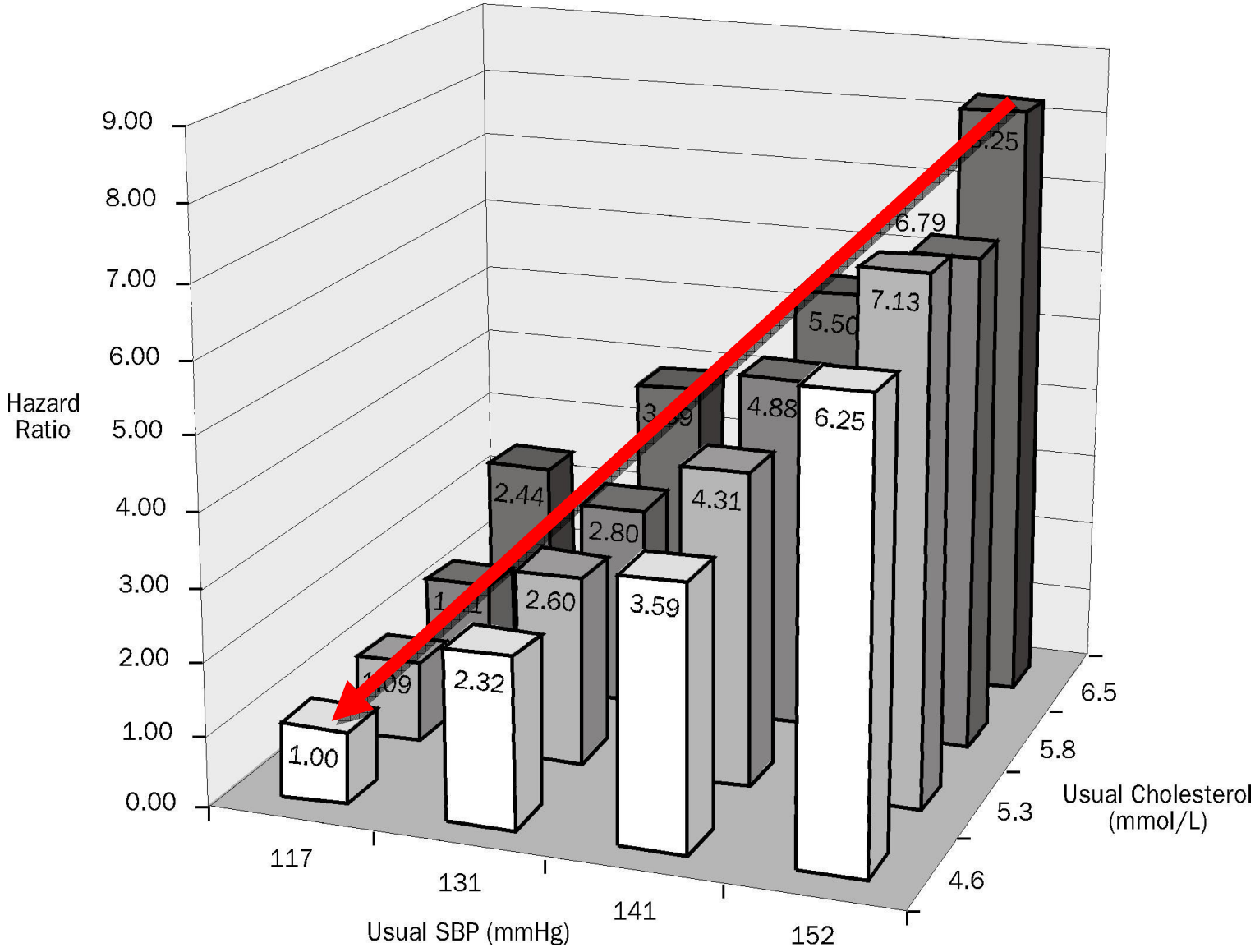
Joint effects of blood pressure and cholesterol



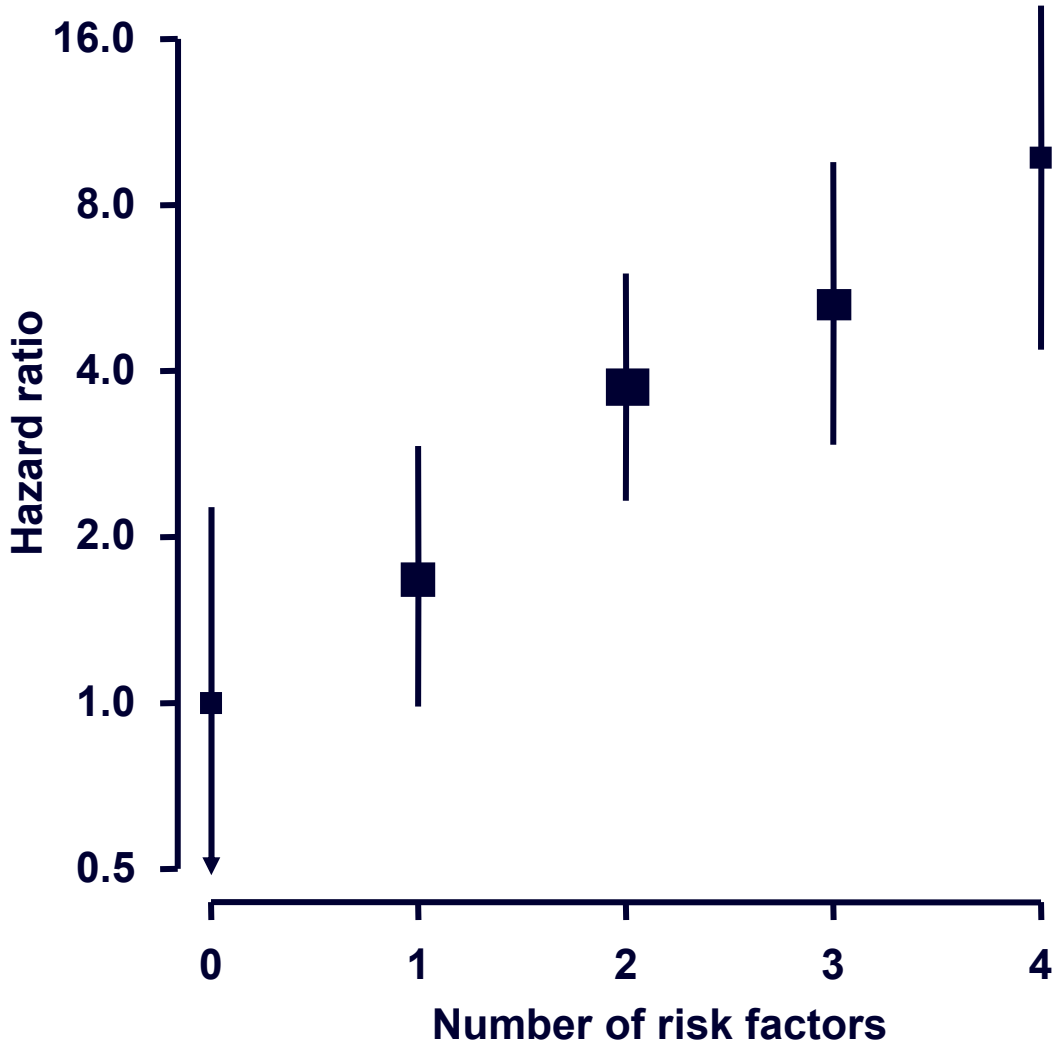
Circulation 2005; 112 :3384-90

Ischemic stroke:

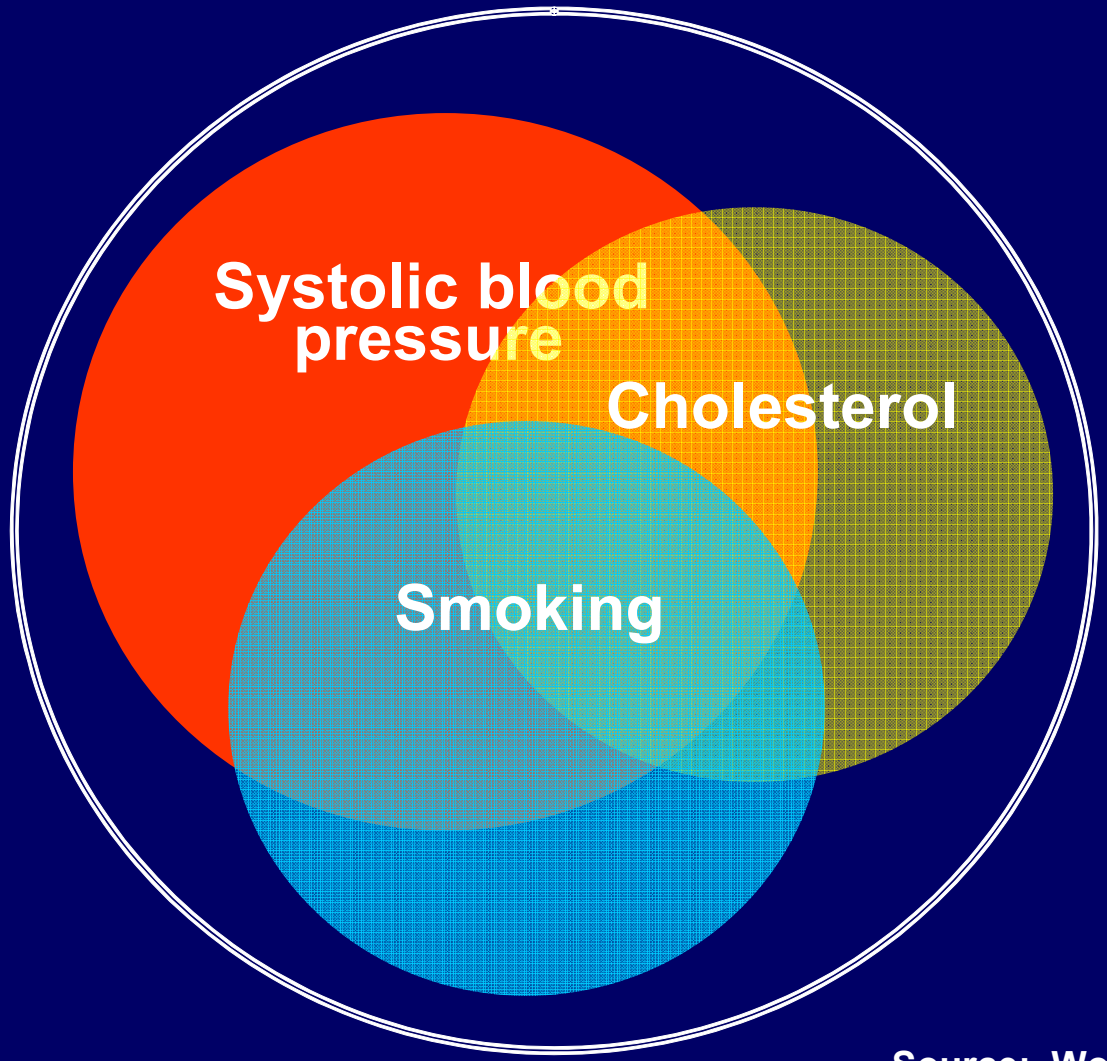
Joint effects of blood pressure and cholesterol



Total number of risk factors
Effects on coronary disease risk

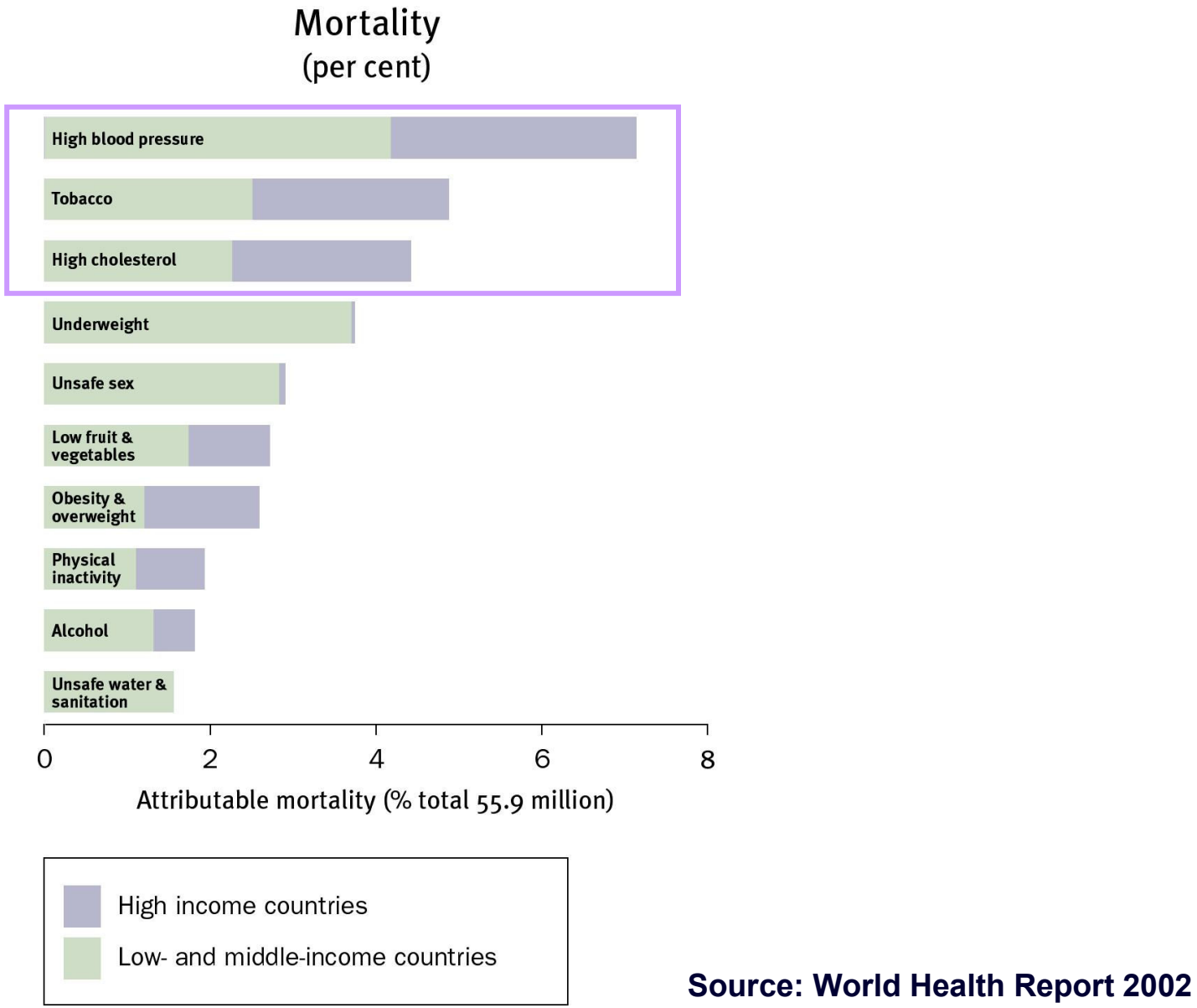


Contribution of risk factors to global burden of cardiovascular disease



Source: World Health Report 2002

Global burden of disease



Source: World Health Report 2002

Conclusions

The burden of cardiovascular diseases

- 300 M high-risk individuals in 2000
- 600 M high-risk individuals in 2020
- Cost already exceeds USD 1 trillion
- Growth in Asia:
  - 120 M high-risk individuals in 2000
  - 300 M by 2020
  - Major strain on health and social services

Conclusions

The burden of cardiovascular diseases

- Modifiable causes well established
- Safe, preventive therapies
- *Most* CVD could be prevented by:
  - BP lowering
  - Cholesterol lowering
  - Smoking cessation

Conclusions

The burden of cardiovascular diseases

- But, in many parts of Asia most high-risk individuals do not receive *any* preventive care (e,g, India, China)
- Many others receive inadequate care
- Andhra Pradesh
  - 145 rural villages
  - CVD leading cause of death (32%)
  - 1 in 6 with MI receive aspirin

Conclusions

The burden of cardiovascular diseases

- **Prevention requires**
  - **Prioritization of chronic disease control by governments, WHO, World Bank**
  - **Population-wide health promotion strategies**
  - **Accessible, cost-effective primary care programs**

Conclusions
The burden of cardiovascular diseases

- **Without effective control**
  - **Millions will die or be disabled in *middle age* each year**
  - **The poor will be most affected**
  - **Acute treatment costs will divert essential resources**
  - **Economic and social development will be adversely affected**