8th Annual Emirates Cardiac Society Conference

ACC Middle East Conference 2017

# DUBAI

## OCTOBER 19 – 21, 2017

**UNIQUE** EDUCATIONAL EXPERIENCE IN YOUR REGION

# The Role of Tobacco in Cardiovascular Disease and Disability; Effects of secondary- and tertiary-tobacco use

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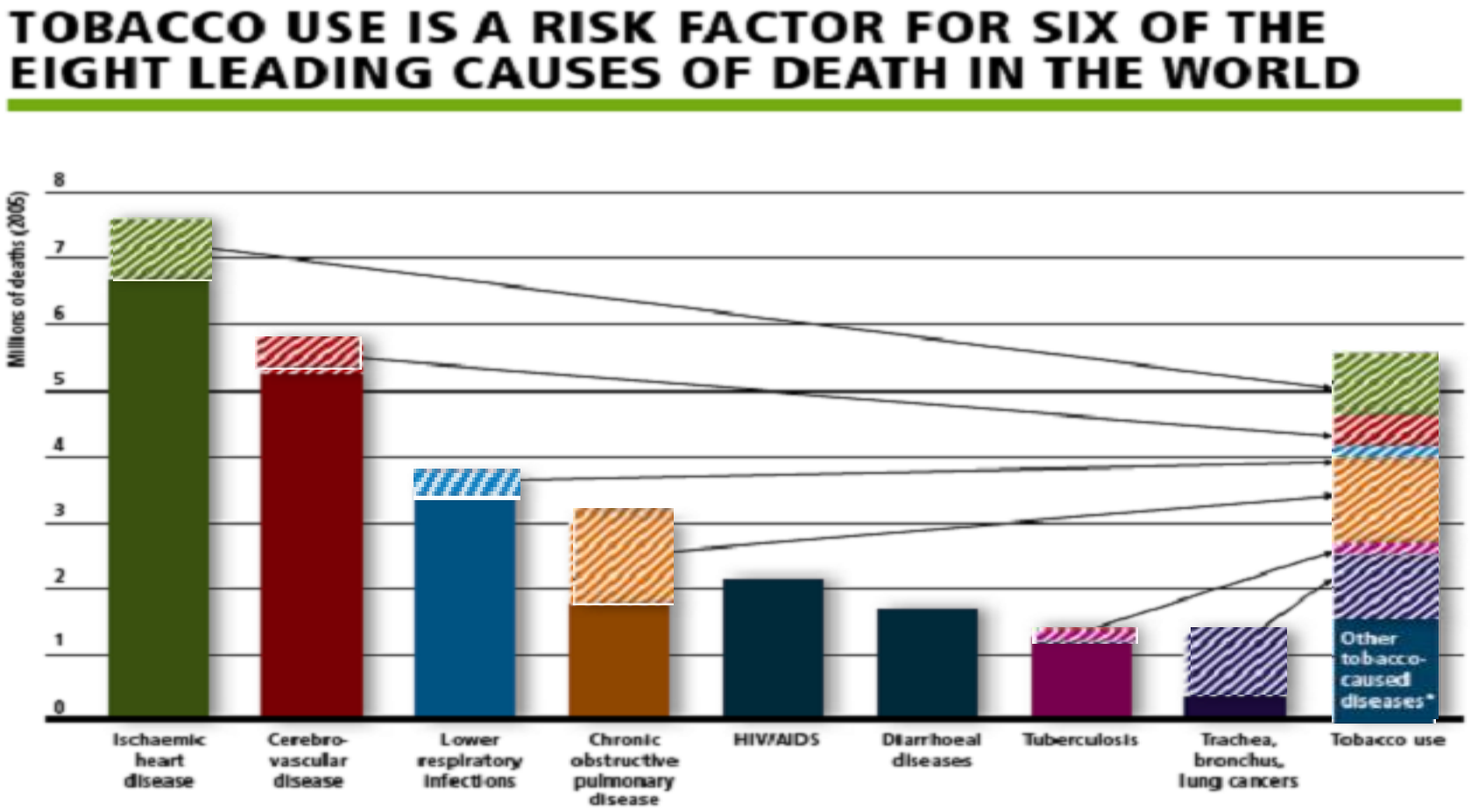
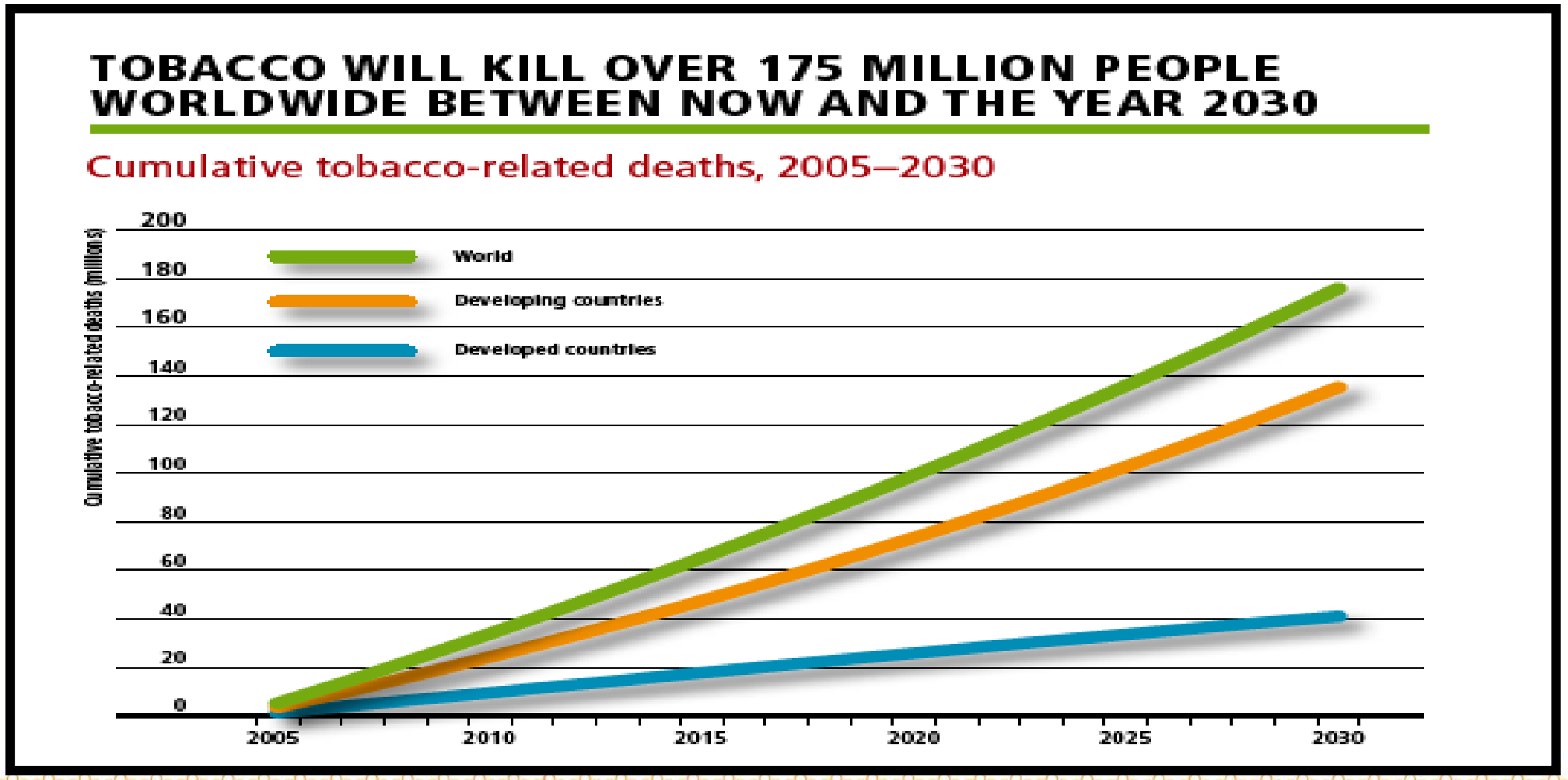
# The Tobacco Epidemic - Today



# The Tobacco Epidemic - Tomorrow



# The Tobacco Epidemic is about to Get Much Worse

**Tobacco currently kills more than 5 million/yr but this will increase to over 8 million/yr in 2030**

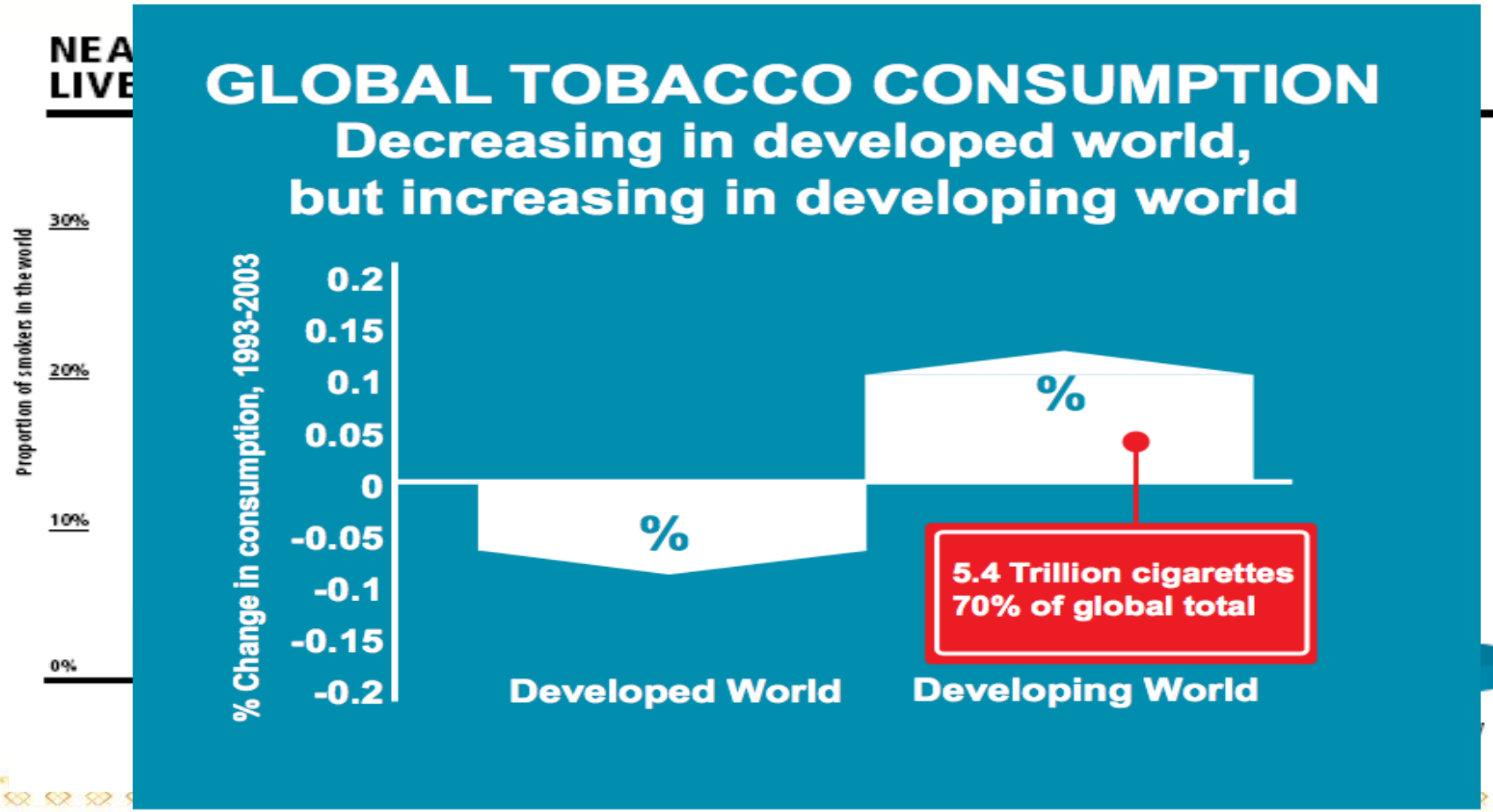
**If current smoking patterns continue, the death toll from tobacco use will be:**

**2000 – 2025 ~ 150M**
**2025 – 2050 ~ 300M**
**2050 – 2100 > 500M**

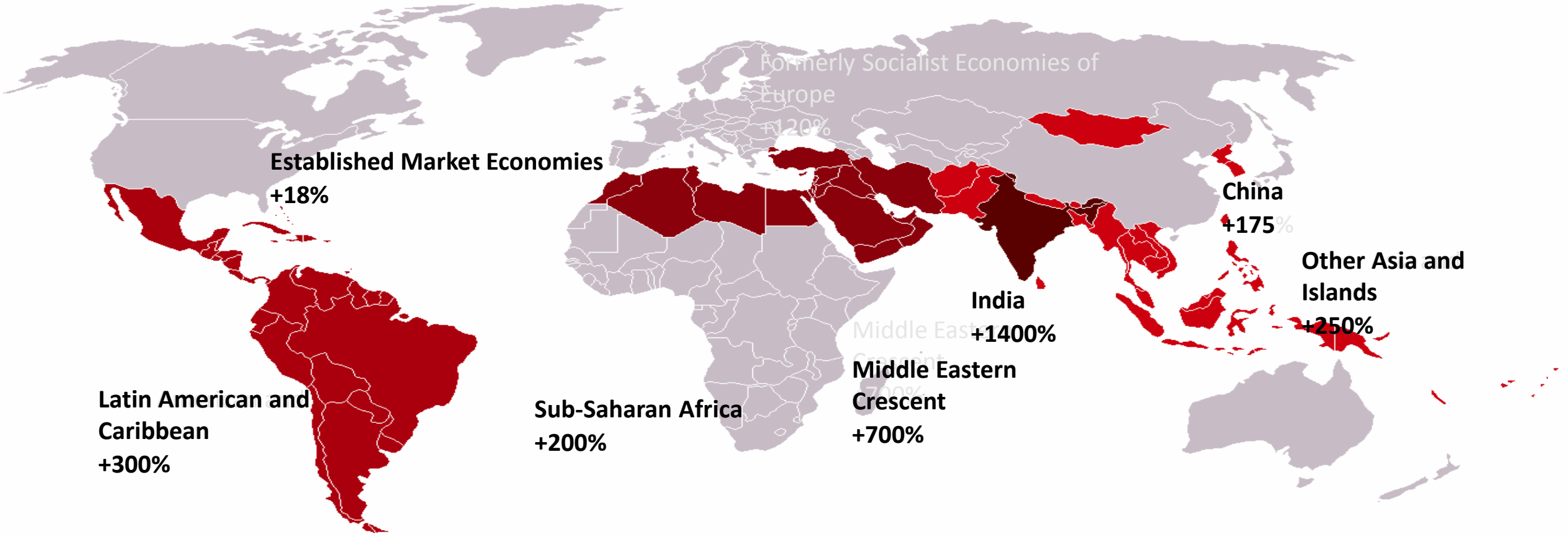
**(Peto, WHA 2008)**

**TOTAL for 20th Century 0.1 billion**
**TOTAL for 21st Century 1 billion**
**(half the deaths in middle age)**

# Tobacco – It's no longer only a problem in developed countries



# Where is the burden increasing the fastest, 1990 to 2020?



25 by 25

# Reducing premature mortality from Cardiovascular Disease (CVD) by **25%** by the year **2025**

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THE TOBACCO ATLAS Fourth Edition

# Projected Global Tobacco-Caused Deaths

## By cause, 2015 baseline scenario

*Totals might not sum due to rounding.*

**33%**
**Malignant Neoplasms**
**2,120,000**

**29%**
**Respiratory Diseases**
**1,870,000**

**29%**
**Cardiovascular Diseases**
**1,860,000**

**3%**
**Digestive Diseases**
**200,000**

**2%**
**Diabetes Mellitus**
**130,000**

**2%**
**Lower Respiratory Infections**
**150,000**

**1%**
**Tuberculosis**
**90,000**

American Cancer Society | WORLD LUNG FOUNDATION


# BRITISH MALE DOCTORS' STUDY

Prospective study of 34,439 male doctors studied from 1951 to 2001

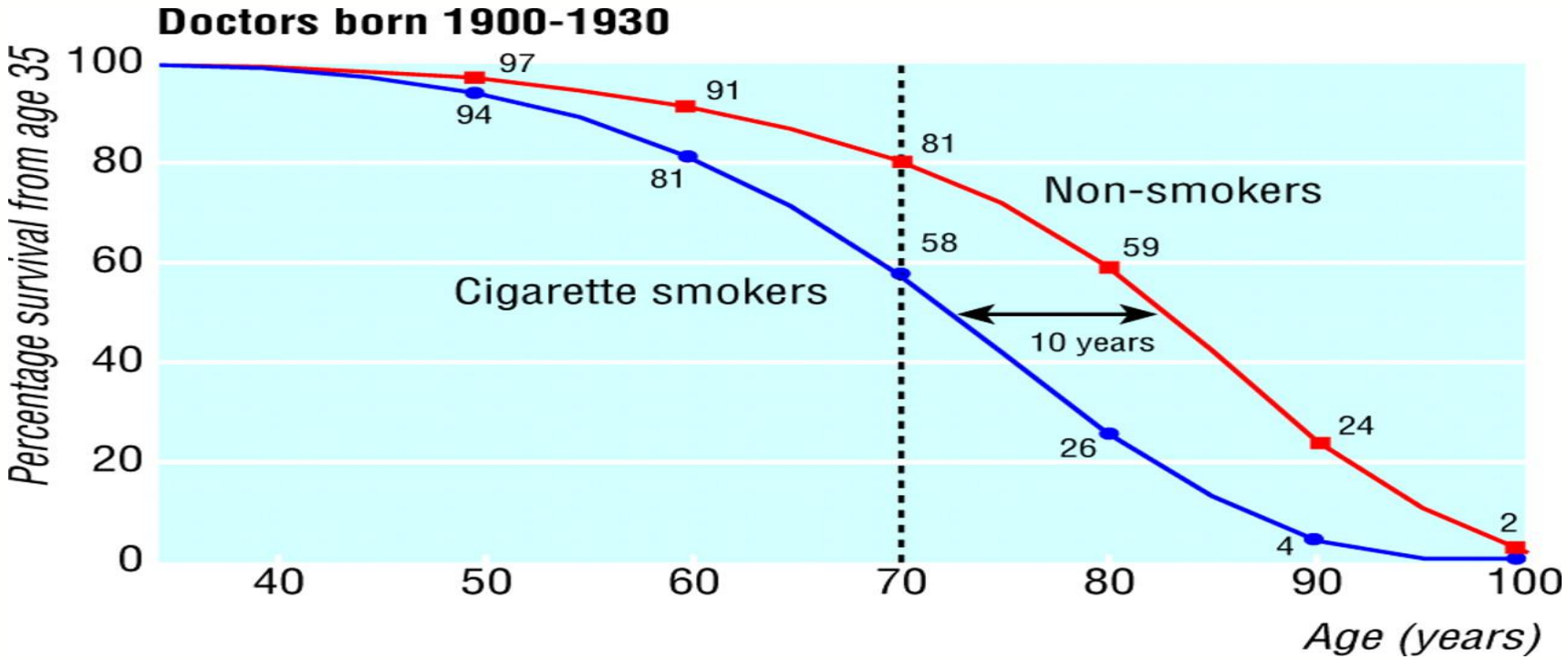
On average, cigarette smokers die about 10 years younger than do nonsmokers.

At least half of chronic smokers will die due to a tobacco-related disease.

Doll et al. (2004). *BMJ* 328(7455):1519–1527.

# BRITISH MALE DOCTORS' STUDY: LIFE LOST

**On average, life-long smokers lose 10 years of healthy life**



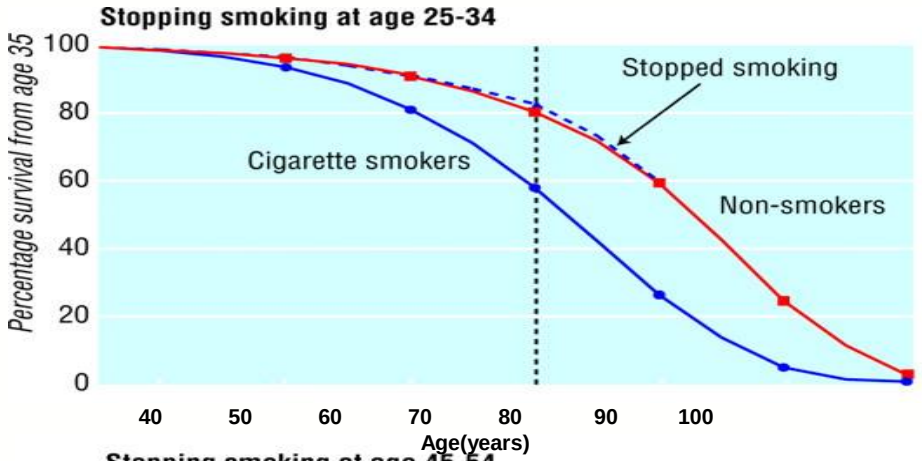

**Survival from age 35 for continuing cigarette smokers and lifelong non-smokers among UK male doctors born 1900-1930, with percentages alive at each decade of age.**

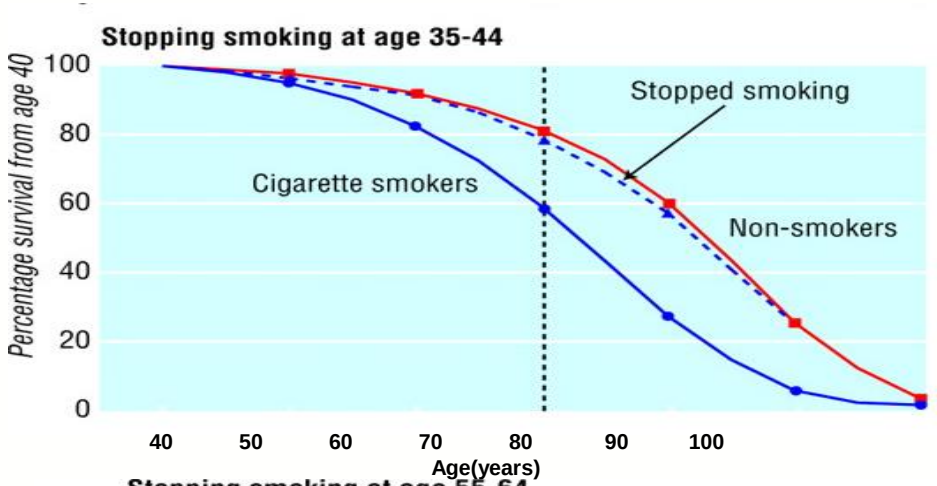
©2004 by British Medical Journal Publishing Group

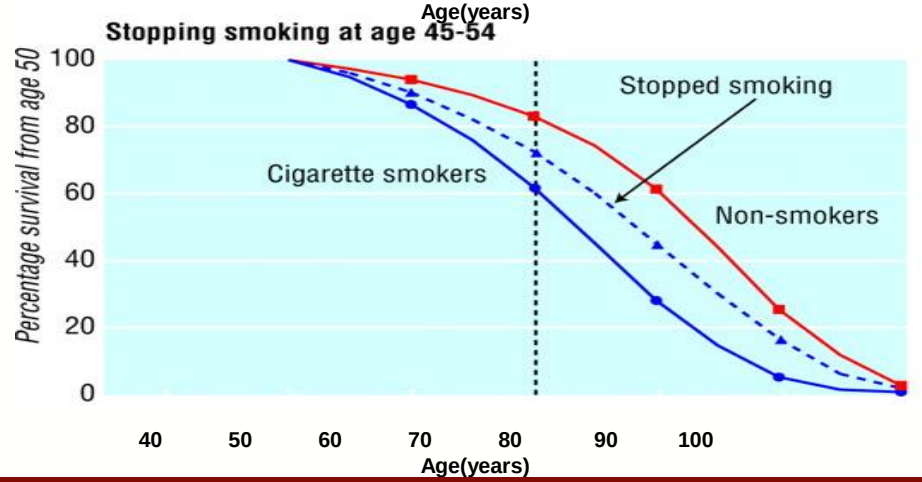


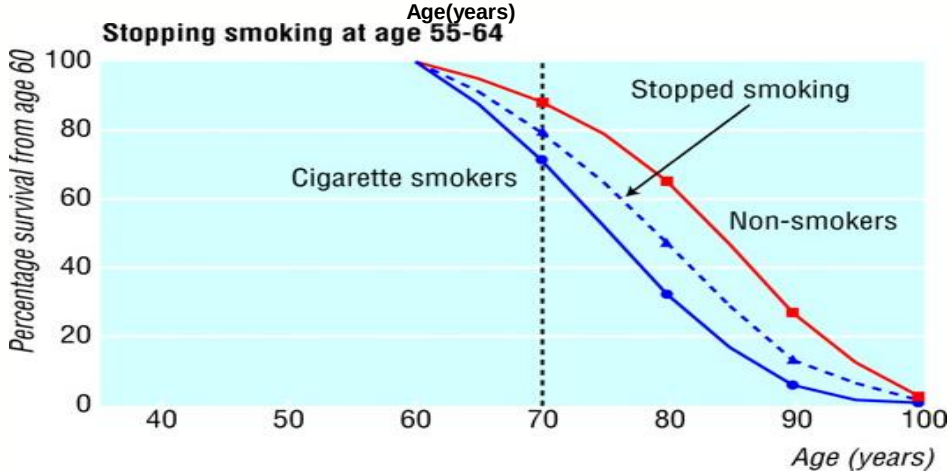
Doll R et al. BMJ 2004;328:1519

# BRITISH MALE DOCTORS' STUDY: STOPPING SMOKING & YRS of LIFE GAINED




STOPPING WORKS: stopping smoking at ages 30, 40, 50, and 60 resulted in 10, 9, 6, and 3 years of life gained, respectively.

Doll R et al. BMJ 2004;328:1519

©2004 by British Medical Journal Publishing Group

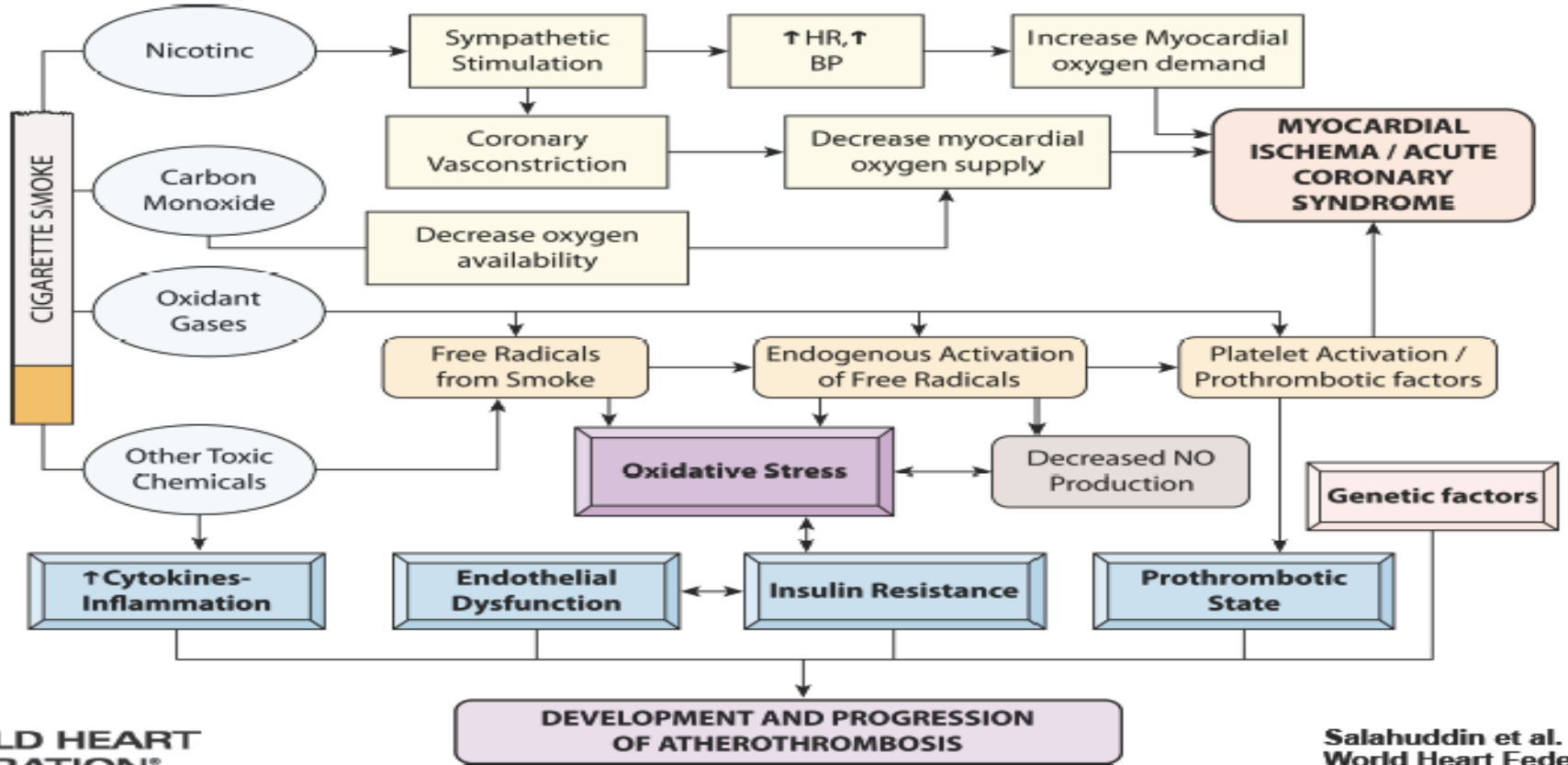
# HEALTH CONSEQUENCES of SMOKING

- Cardiovascular Diseases
- Coronary artery disease
- Heart failure
- Abdominal aortic aneurysm
- Cerebrovascular disease
- Peripheral arterial disease
- Sudden death
- Occlusion of bypass grafts & stents
- Poor surgical outcomes

- Other
- Numerous cancers
- Pulmonary diseases
- Reproductive effects
- Eye disease
- Osteoporosis
- Type 2 diabetes
- Periodontitis

USDHHS. (2004). *The Health Consequences of Smoking: A Report of the Surgeon General*.

# Pathophysiological Mechanisms of Tobacco-Related CVD

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Salahuddin et al. Global Heart. World Heart Federation, 2012.

# Smokers are not the only ones sickened and killed by tobacco:

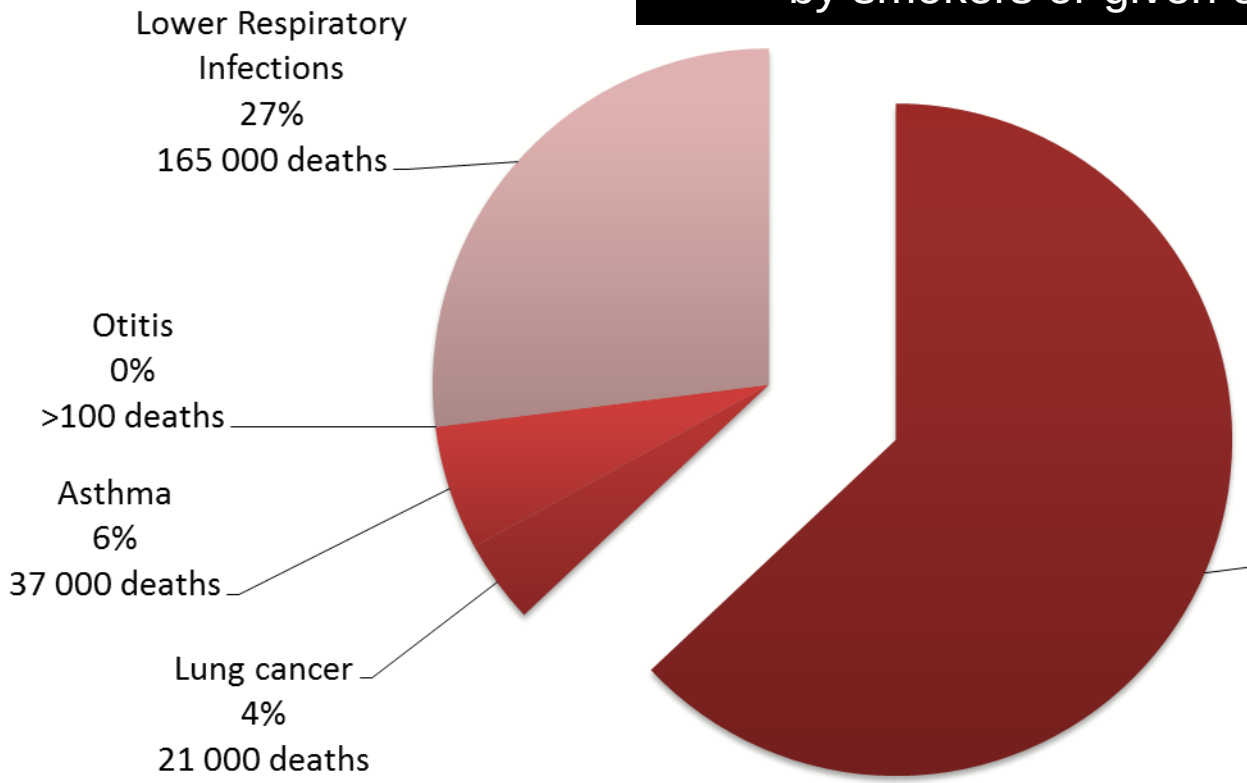
Non-smokers who breathe air **containing second-hand tobacco smoke** also face serious and often fatal health consequences.

Research shows that globally, one third of adults are regularly exposed to second-hand tobacco smoke and about **600 000** people die each year prematurely as a result of exposure to second-hand smoke.

Of the **600 000** deaths, **430 000** are among adults, of whom **64%** are women. **Twenty-eight per cent** of the second-hand smoke deaths are among children.

# DEATHS GLOBALLY from SECONDHAND SMOKE

**Secondhand Smoke** is tobacco smoke that is exhaled by smokers or given off by burning tobacco




Second-hand smoke causes an estimated 603 000 premature deaths worldwide each year. 87% of adult SHS deaths are due to ischaemic heart disease

# SECONDHAND SMOKE & CVD

- Second-hand smoke (SHS) causes premature death and disease in nonsmokers:
  - Immediate adverse effects on the CV system – same effects as active smoking
  - Increased risk for heart disease & lung cancer
  - Bans on smoking in public places reduce exposure to SHS and reduce heart attacks

**There is no safe level of second-hand smoke**

USDHHS. (2006). *The Health Consequences of Involuntary Exposure to Tobacco Smoke: Report of the Surgeon General.*

Institute of Medicine. Secondhand Smoke Exposure and Cardiovascular Effects : Making Sense of the Evidence. Exposure. Washington, D.C.: The National Academies Press; 2010.

# Secondhand Smoke

Exposure to Secondhand Smoke

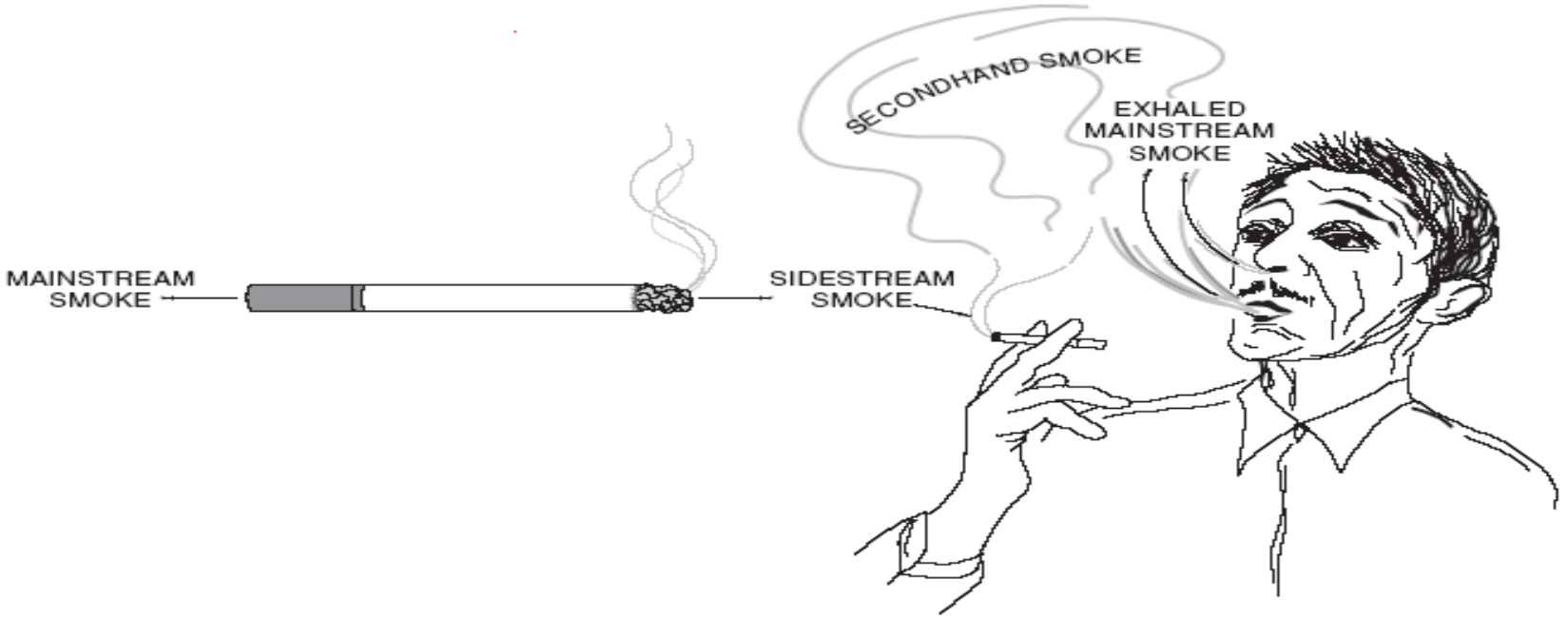
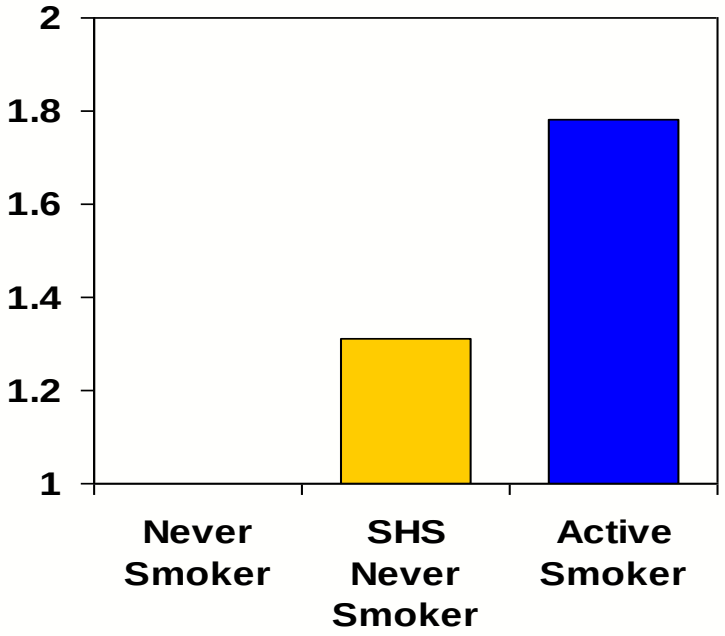



**FIGURE 9.1** Mainstream smoke is inhaled by the smoker during puffing, and to a small extent diffuses through the cigarette paper. Between puffs, the smoker emits exhaled mainstream smoke, and the burning end of the cigarette emits sidestream smoke. The combination of sidestream (~90%) and exhaled mainstream smoke (~10%) is called secondhand smoke. An older term for secondhand smoke is environmental tobacco smoke.

# META-ANALYSIS of CHD RISK DUE to CHRONIC SHS among NEVER-SMOKERS

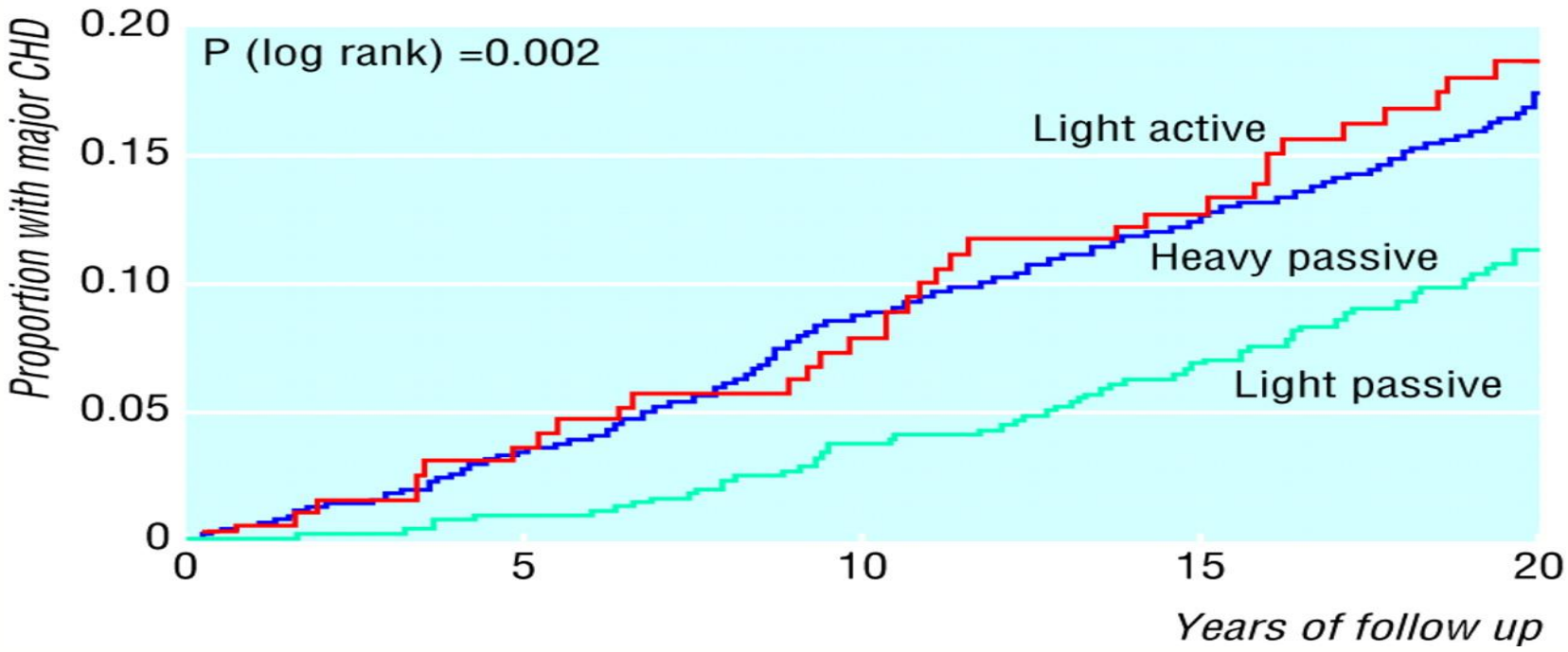
- Overall *RR* = 1.78 for active smokers
- Overall *RR* = 1.31 for passive smoking
- Most of the SHS exposures were spousal




Long-term SHS exposure in the work or home is associated with a 30% increased risk for CHD in adult nonsmokers

# HEAVY SHS EXPOSURE is LIKE BEING a LIGHT SMOKER

"Light passive" refers to the lowest quarter of cotinine concentration among nonsmokers (0-0.7 ng/ml), "heavy passive" to the upper three-quarters of cotinine concentration combined (0.8-14.0 ng/ml), "light active" to men smoking 1-9 cigarettes a day.






Whincup et al. (2004). *BMJ* 329:200-205.

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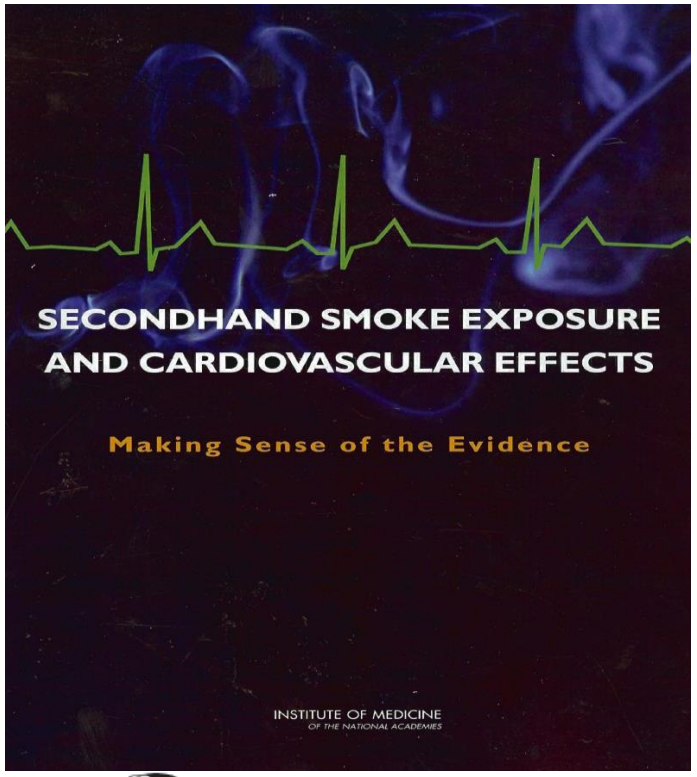
# Smoking Bans Prevent Heart Attacks!!

- IOM Report: “Secondhand Smoke Exposure and Cardiovascular
- Effects: Making Sense of the Evidence”
  - 11 studies reviewed
  - All show an association between smoking bans and a reduced incidence of heart attacks
  - Reductions: -6% to -47%
- “[B]ased on its review of the available literature, the committee concludes that there is a causal association between smoking bans and decreases in heart attacks”
- No data from low- and middle-income countries

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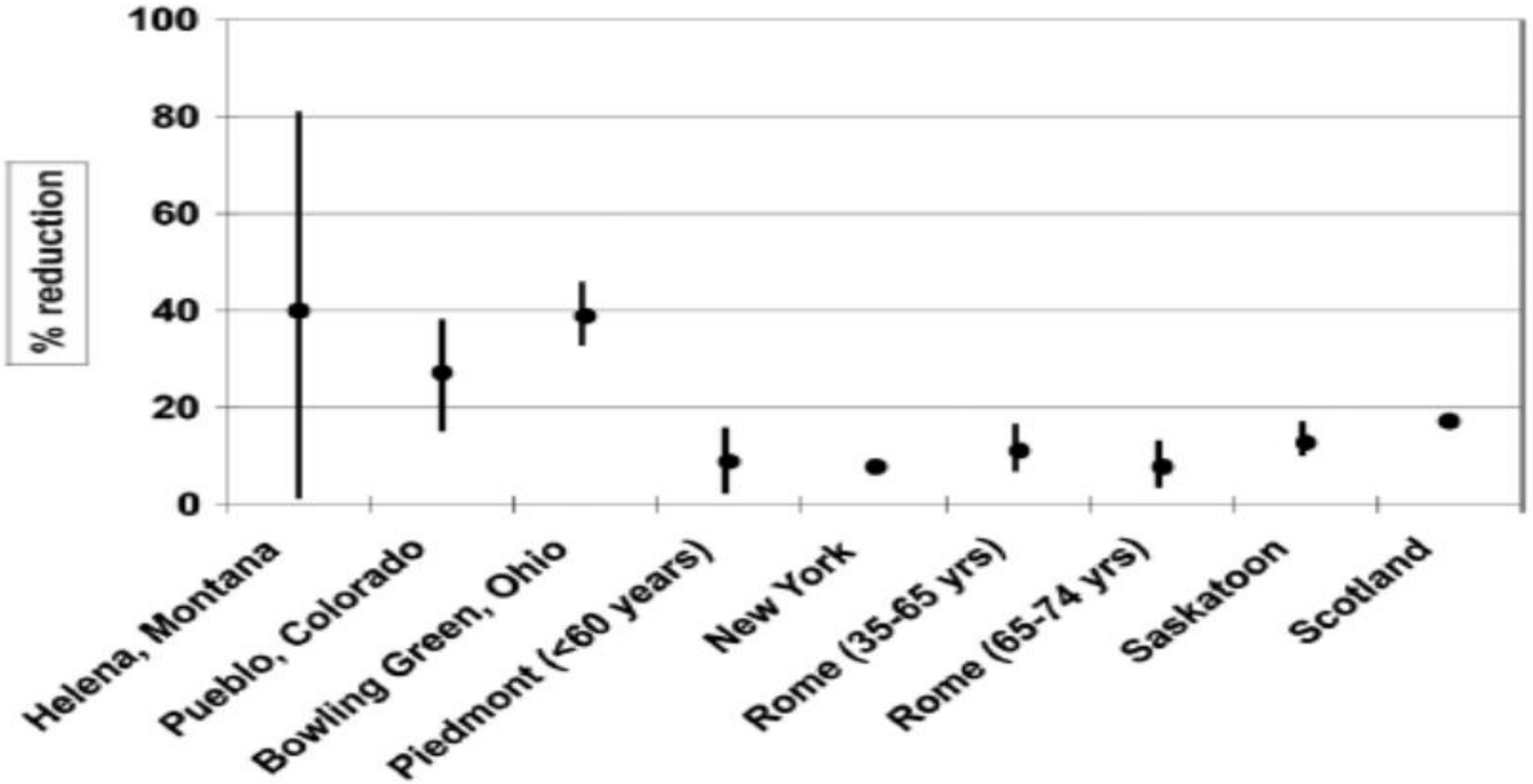
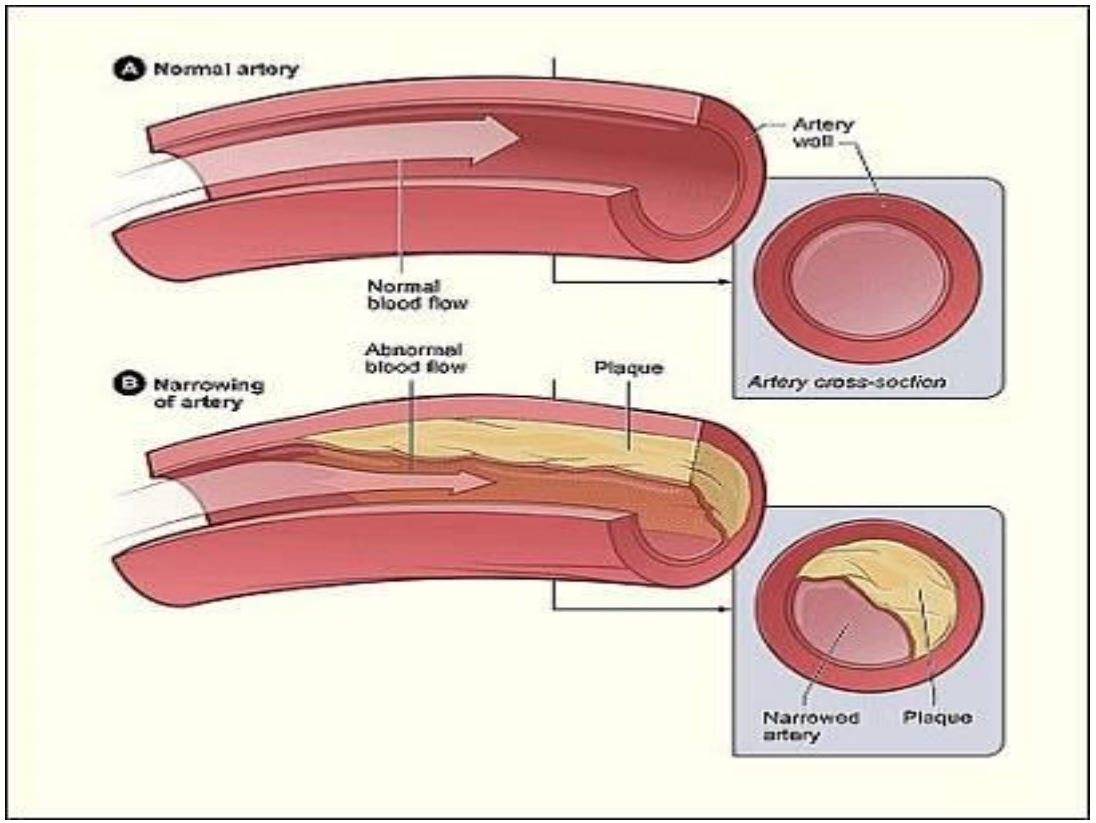
# REDUCING SHS EXPOSURE REDUCES HOSPITAL ADMISSIONS for MI




**Studies reporting reduction in hospital admissions for acute MI/acute coronary syndrome following smoke-free legislation**

One study has been published that did not detect evidence of a reduction in hospital admissions for acute heart disease (Edwards et al., 2008)

# Potential Mechanisms




- Two studies evaluated impacts among non-smokers
  - Both found a decrease in coronary events (Scotland, Indiana)
- Brief exposure to tobacco smoke can lead to endothelial dysfunction, increased thrombosis, inflammation, and impacts on plaque stability.
  - All are on the pathway to acute MI.

# AFTER the LAST CIGARETTE…

| | |
|---|---|
| < 30 min | Blood pressure and pulse return to normal |
| 8 hr | CO levels in blood return to normal |
| 24 hr | Endothelial better, chance of heart attack decreases |
| 48 hr | Nerve endings begin regrowth |
| 72 hr | Breathing becomes easier; lung capacity increases |
| 2-12 wks | Lung function increases 30%; circulation improves |
| 1 year | Risk of CHD is half that of a smoker |
| 3 years | MI risk is similar to that of never-smokers |
| 5-15 years | Stroke risk reduced to that of never-smokers |

# SMOKING CESSATION is a TREATMENT for CVD

- Standard treatments reduce the risk of death in patients with CVD by 15–35%
  - Aspirin = 15%
  - Beta blockers = 23%
  - ACE inhibitors = 23%
  - Statins = 29–35%
- Smoking cessation in patients with CVD reduces the risk of death by 36% and reduces the risk of future cardiac events by 50%

# TREATING TOBACCO is a GOLD STANDARD TREATMENT

| Intervention | Outcome | NNT |
|---|---|---|
| Statins | Prevent 1 death over 5 years | 107 |
| Aspirin | Prevent 1 MI over 5 years | 118 |
| Antihypertensive therapy | Prevent 1 stroke, MI, death over 1 year | 700 |
| Cervical cancer screening | Prevent 1 death over 10 years | 1140 |
| MD 5 min advice to stop smoking | Prevent 1 premature death | 80 |
| + cessation medication | Prevent 1 premature death | 38-56 |
| + behavioral support | Prevent 1 premature death | 16-40 |

**NNT = Number Needed to Treat**

Anthorison, 2006, Ann Intern Med; McQuay & Moore, 2006, Bandolier; Gates 2001, Am Fam Phys; Cochrane Reviews by Stead, Bergeson, et al., 2008; Stead, Perera, et al. 2012; Stead & Lancaster, 2012; Cahill et al., 2010; and USPSTF, 2009

# TOBACCO TREATMENT is COST EFFECTIVE

Rx for Change

- Tobacco cessation counseling + medications = **$2587** per life-year saved (Cromwell et al., 1997)
  - Far less than the cost-effectiveness conventional benchmark of $50,000 per life-year gained

- ***Tobacco cessation counseling and medication are highly cost-effective relative to other reimbursed treatments and should be provided to all smokers*** US Agency for Healthcare Research & Quality

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# WHY ADDRESS TOBACCO in CARDIOLOGY?

- Smoking and SHS are independent and synergistically linked with other CVD risk factors
- Quitting smoking: improves survival, improves quality of life, reduces risk of future CVD events
- Reducing SHS: reduces hospitalizations for MI

**TREATING TOBACCO is a GOLD STANDARD TREATMENT for CVD**

# RELAPSE following MI HOSPITALIZATION

- Most patients return to smoking within 6 months following an MI hospitalization
- Patients more likely to stay smoke-free if…
  - Hospital has a cessation program
  - Patient referred for cardiac rehab
  - Less depressive symptoms during hospitalization

Dawood et al. (2008). *Arch Intern Med* 168:1961-1967.

# CARDIOLOGISTS in PRACTICE

- Anonymous survey of 326 cardiologists in Spain
  - 11% response rate, so best case scenario
- 3 in 4 said they always ask patients about smoking and recommend that smokers quit
- 1 in 5 had cessation print materials in the office
- 2 in 5 followed up with patients to check on progress
- Majority were unfamiliar with cessation meds (73%) and wanted to improve their tobacco treatment skills (71%)

This training is designed to meet the needs of cardiologists for effectively treating tobacco in practice

# FUNDAMENTAL PRINCIPLE

**Treat smoking in exactly the same way that you would manage any other cardiovascular disease risk factor**

A. Pipe (2013) The Ottawa Model of Smoking Cessation

# THE CARDIOLOGY TEAM'S RESPONSIBILITY

The cardiology team has a

professional obligation

to address tobacco use & exposure

ADDRESSING TOBACCO USE & EXPOSURE
is an ESSENTIAL COMPONENT of CVD TREATMENT
for ALL PATIENTS

# Cardiologists have an Important Responsibility

Refuse collaboration and funding from the Tobacco Industry

Be non-tobacco using role models

Advise tobacco users to quit and tell all patients to avoid SHS

Approach tobacco use as a chronic disease; document smoking status

Comply with the Code of Practice on Tobacco Control for Health Professional Organizations


Support the WHO FCTC

Ensure cessation support is accessible

**Help reduce premature mortality from CVD by 25% by 2025**

Provide medical students with the skills and motivation to treat tobacco use

Support smoke-free healthcare and educational facilities