



IS TOBACCO BREAKING YOUR HEART

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**Irish
Heart**

Let's live life better

Why?



**Working
together**
towards a
**tobacco free
society**

In the 20th century the tobacco epidemic killed 100 million people world wide



During the 21st century, it could kill one billion

Tobacco causes 1 in 10 deaths world wide





Tobacco the no 1 global preventable killer

The only consumer product to kill half the people who use it –

CVD leading cause of death - tobacco second only to hypertension

Passive smoking third preventable cause of death after smoking and alcohol

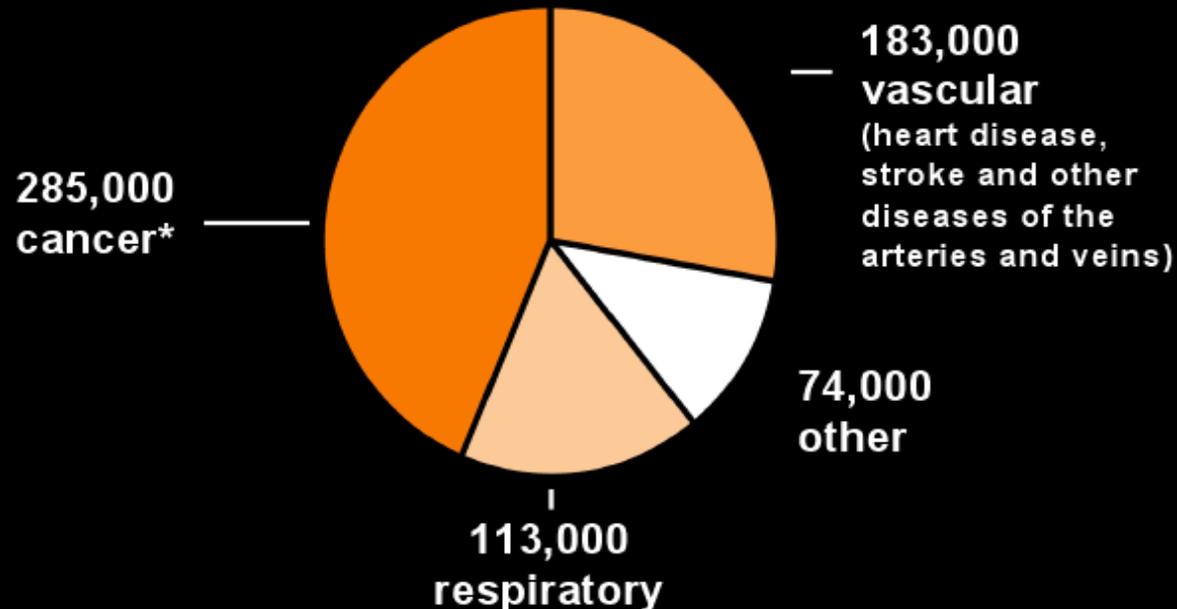


**IRISH HEART
FOUNDATION**

EU25 (European Union), year 2000



**Smoking kills 655,000 people a year,
from many different diseases**

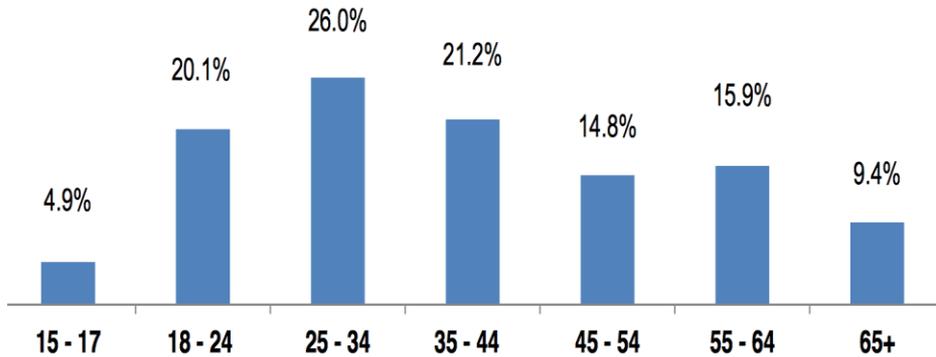


www.deathsfromsmoking.net

*includes 190,000 (85%) of
the 224,014 lung cancer deaths

Smoking prevalence tracker 2017

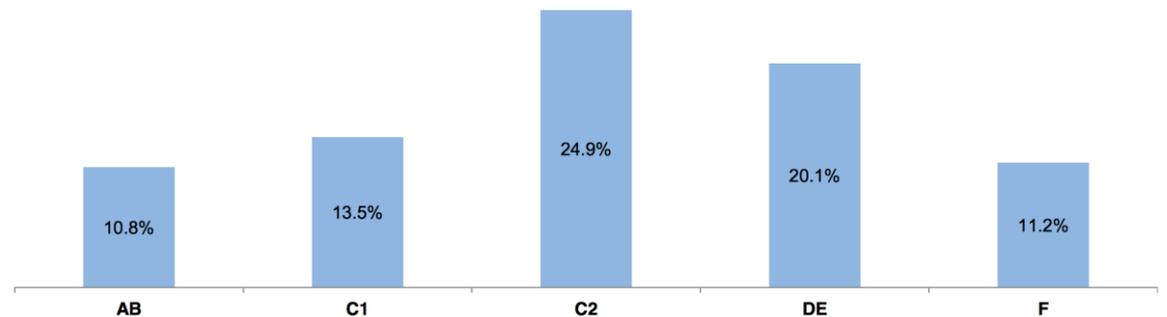
Age Group



Headline Data

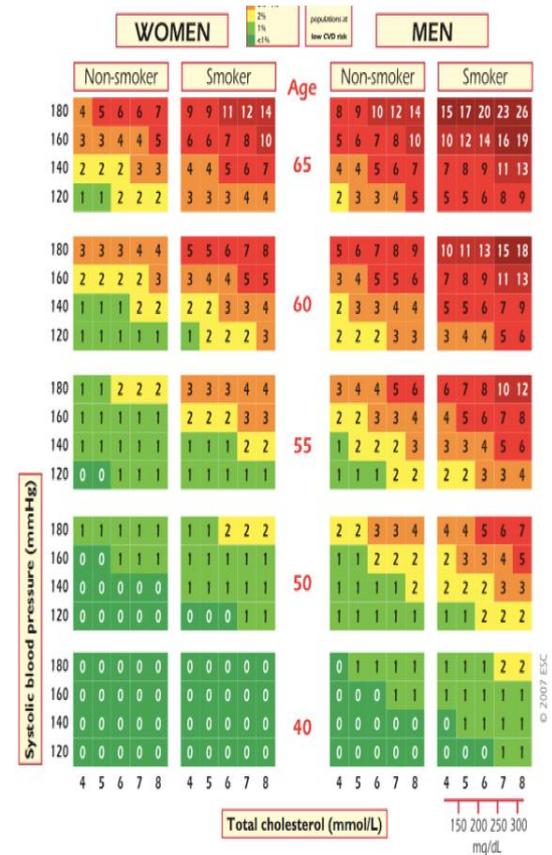
| | |
|----------------------|--------------------------|
| Smoking Prevalence: | 17.5% |
| E Cigarette Use: | 5.7% |
| Roll Your Own (RYO): | 29.2% |
| | (% of Smokers using RYO) |

Socio-Economic Group



Smokers under 40 are 5 x more likely to have a heart attack

Smoking doubles the risk, the presence of another major risk factor is estimated to quadruple the risk (2×2). The presence of two other risk factors with smoking results in approximately eight times the risk ($2 \times 2 \times 2$) of persons with no risk factors.



Relative risk and excess death rate from CAD among men by age group

| Age group (years) | Relative Risk | Excess Death Rate |
|-------------------|---------------|-------------------|
| 35–39 | 3.3 | 20.5 |
| 40–44 | 6.3 | 70.7 |
| 45–49 | 5.5 | 119.8 |
| 50–54 | 3.8 | 156.6 |
| 55–59 | 2.7 | 204.1 |
| 60–64 | 2.4 | 317.3 |
| 64–69 | 1.9 | 366.7 |
| 70–74 | 1.7 | 473.2 |
| 75–79 | 1.4 | 439.6 |
| 80+ | 1.4 | 825.7 |

Relative risk and excess death rate from CAD among men by age group

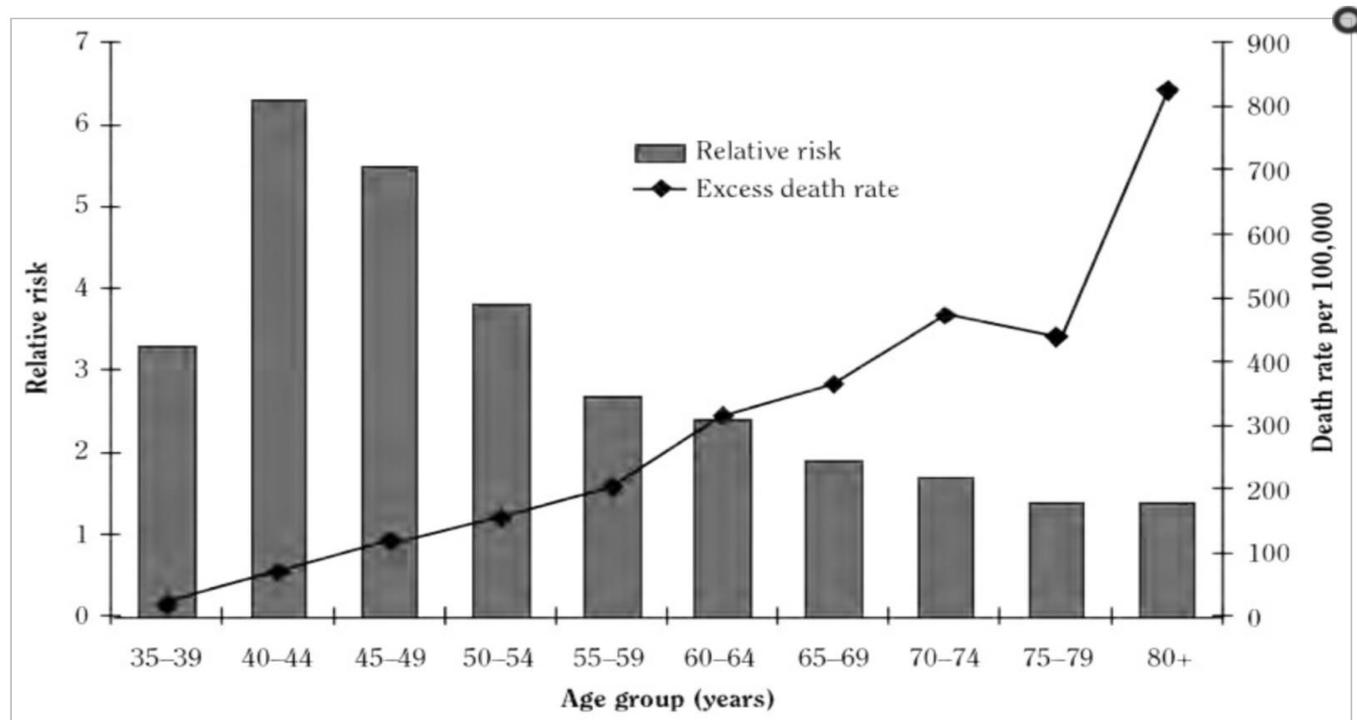


Figure 6.1 Relative risk and excess death rate for coronary heart disease among men, by age group

Source: [Burns 2003](#). Adapted from [Thun et al. 1997](#) with permission from Elsevier, © 2003.

Note: Data are from the American Cancer Society's Cancer Prevention Study II; data table for above data found below.



Women have lower absolute rates of CHD than men until menopause. However, cigarette smoking has been associated with higher RR of MI and higher CHD mortality among women than among men.

Relative risk and excess death rate from CAD among men by age group

Studies show increased risk of CHD at **all** levels of cigarette smoking

Increased risks even for persons who smoked < than five cigarettes per day

Further increase in CHD risk with more cigarettes smoked per day up to about 25 cigarettes; risk increased relatively little even with further increases in cigarette consumption

Relative risk and excess death rate

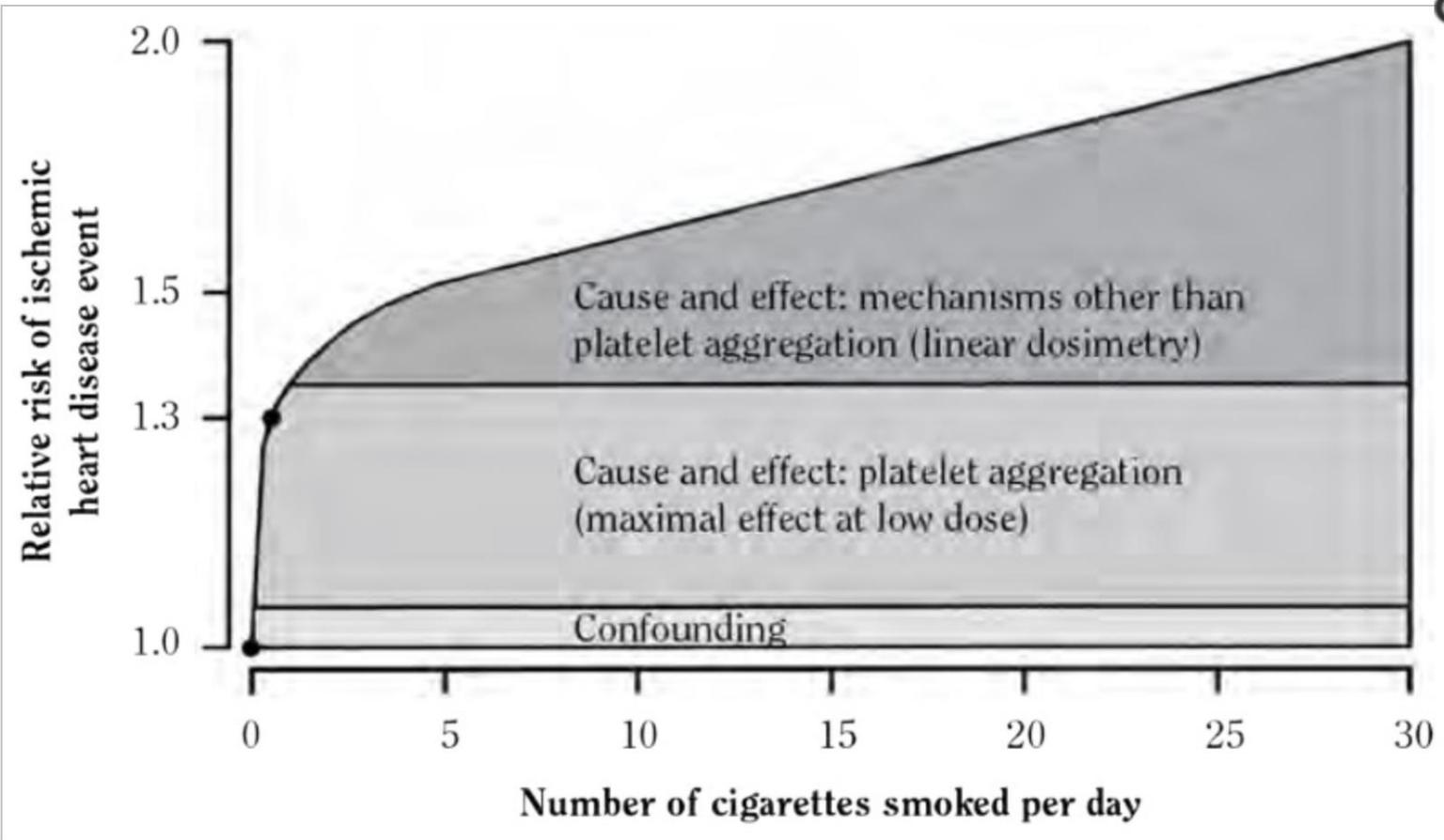


Figure 6.3 Dose-response relationship between number of cigarettes smoked per day and relative risk of ischemic heart disease

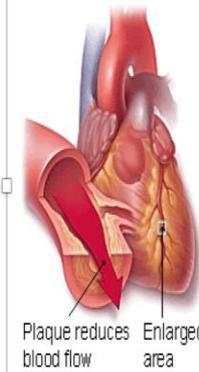
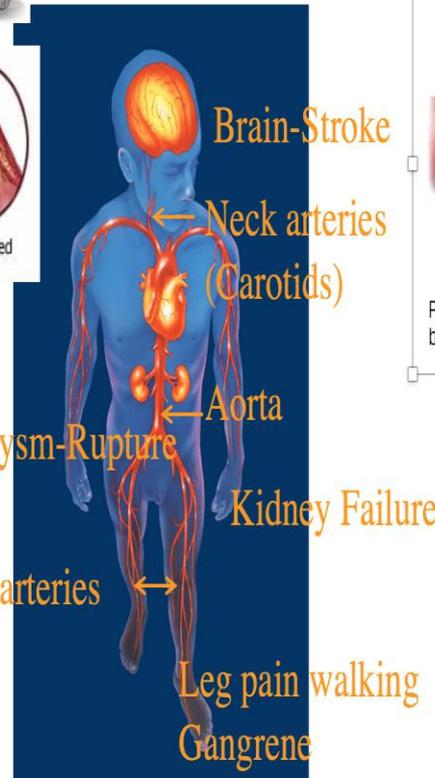
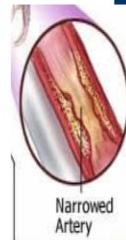
Atherosclerosis

Cigarette smoking accelerates atherosclerosis.

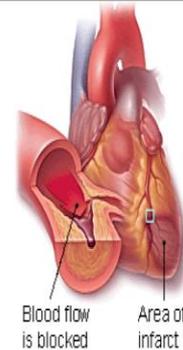
Smoking is associated with an increased risk - acute myocardial infarction, sudden death and stroke.

It aggravates stable angina pectoris, intermittent claudication and vasospastic angina, rethrombosis after thrombolysis and restenosis after angioplasty

How atherosclerosis affects vital organs



Reduced Flow
Heart muscle deprived oxygen



No Blood Flow
Heart muscle no oxygen at all
Muscle Dies

Peripheral Arterial disease

- Smokers have 10-16 x the risk of developing PAD
- 75-98% PAD is caused by smoking leads to claudication, gangrene and may necessitate amputation
- Smokers are 5 times more likely to develop and Abdominal aortic aneurysm



Gangrene of the toes due to PVD.

Brain

Smoking increases the risk of Stroke

SHS increases the risk of stroke

Smoking increases the risk of cognitive disorders such as dementia and depression





Nicotine

Burning tobacco releases nicotine - has a similar effect to heroin and cocaine – the WHO say its more addictive

Nicotine is a sympathomimetic releases catecholamines locally from neurons and systemically from the adrenal gland. This increases heart rate and blood pressure

Nicotine may also contribute to endothelial dysfunction, lipid abnormalities, and insulin resistance .

Tobacco plants have been genetically modified to increase the amount of nicotine burning tobacco releases



Carbon Monoxide



CO exposure aggravates ischemia in people with vascular disease.

- CO exposure in people with coronary disease resulted in more exercise-induced ventricular dysfunction and an increase in frequency of ventricular arrhythmias during exercise.
- Long-term CO exposure in smokers results in greater red blood cell mass and reduced oxygen carrying capacity of red blood cells, resulting in relative hypoxemia.
- Increased RBC masses increases blood viscosity and may contribute to hypercoagulation in smokers.



Oxidants

Oxides of nitrogen and many free radicals from both the gas and tar phases of cigarette smoke
Depletes antioxidants

Oxidant stress contributes to several potential mechanisms of CVD, including inflammation, endothelial dysfunction, lipid abnormalities such as oxidation of low-density lipoprotein LDL, and platelet activation .



Metals



Aluminum, cadmium, copper, lead, mercury, nickel, and zinc

Catalyze the oxidation of cellular proteins
This reaction may lead to structural damage, endothelial dysfunction, and detachment of endothelial cells from the walls of blood vessel



Carcinogens

Cigarettes contain over 4,000 chemicals including proteolytic enzymes that bind DNA and cause genetic mutations

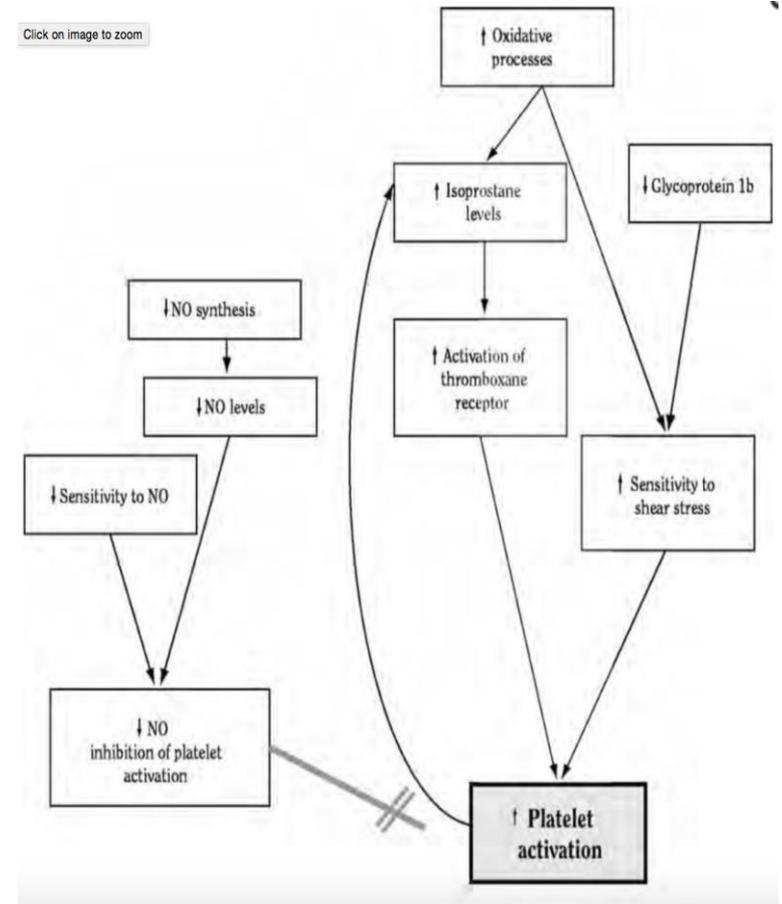
Aromatic hydrocarbons such as benzopyrene irreversibly bind DNA may kill the cell or inhibit programmed cell death and induce cancer

Nitrosamines are produced during the curing process
Arsenic, cyanide, formaldehyde urea etc. are also found

Tobacco crops contain uranium, radium, lead, polonium and radon. Smoking an average 1.5 pack per day gives a radiation dose of 60-160mSv/year, compared to living near a nuclear power plant (0.0001mSv/year)

Potential sites of actions and mechanisms of effects of smoking

In smokers, response in coronary blood flow to increased myocardial demand is impaired (i.e., reduced coronary vasodilatory reserve) Smoking plays a direct role by constricting coronary arteries through nicotine-mediated action on α -adrenergic receptors and by induction of endothelial dysfunction by nicotine and oxidizing chemicals.



Smokers under 40 are 5 x more likely to have a heart attack

Smoking increases platelet reactivity /thrombogenesis (lower NO, increased TXA

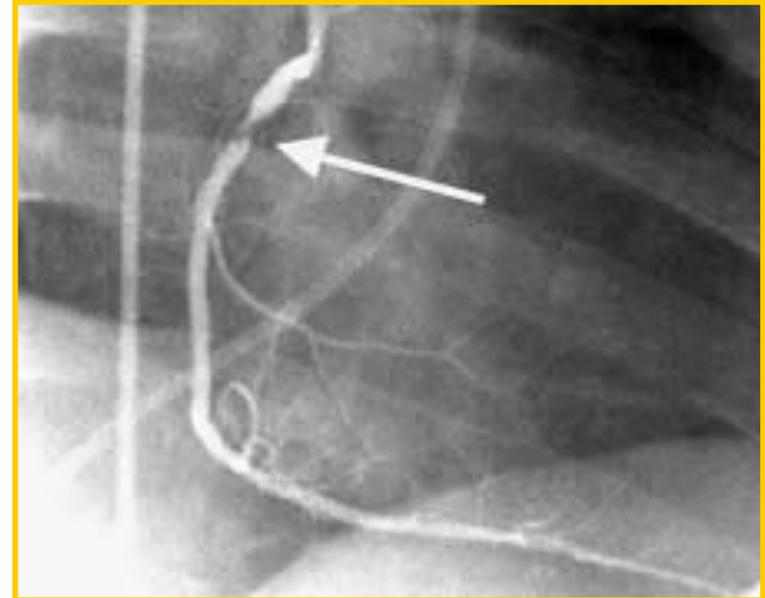
Increases fibrinogen, CRP leucocyte levels and activates monocytes

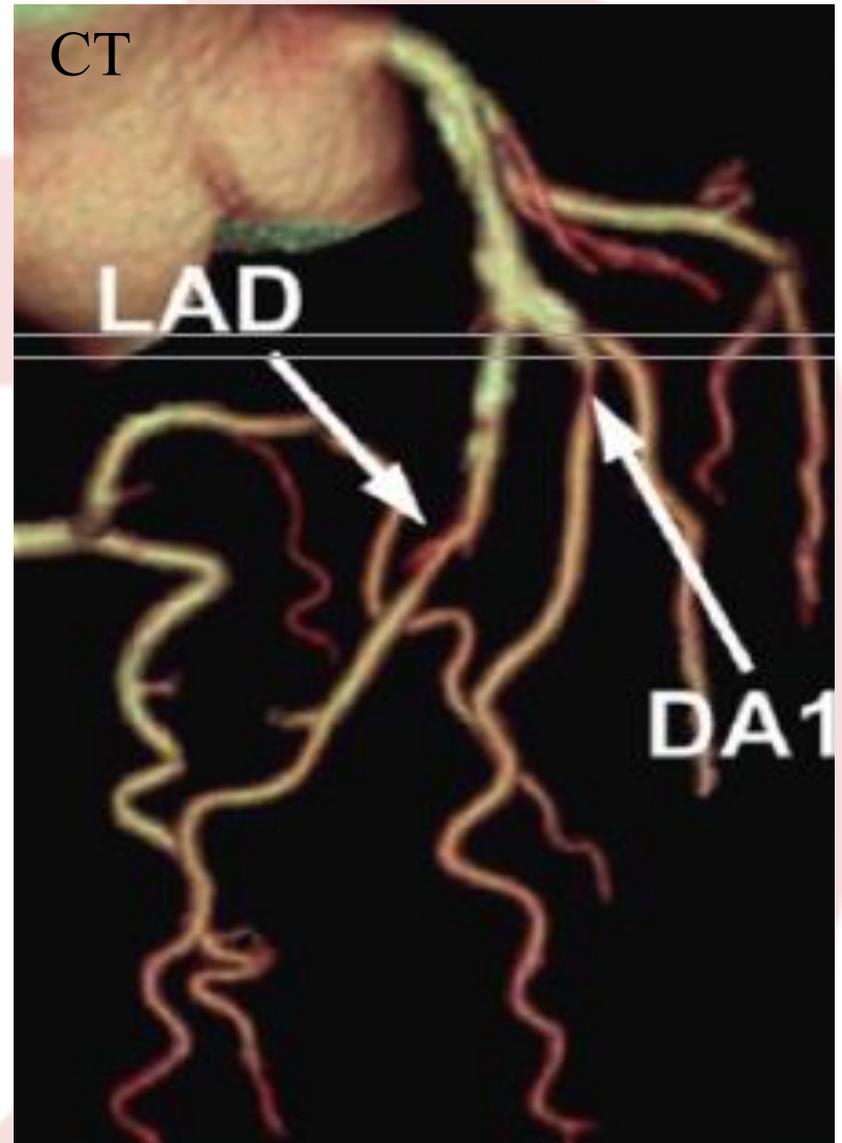
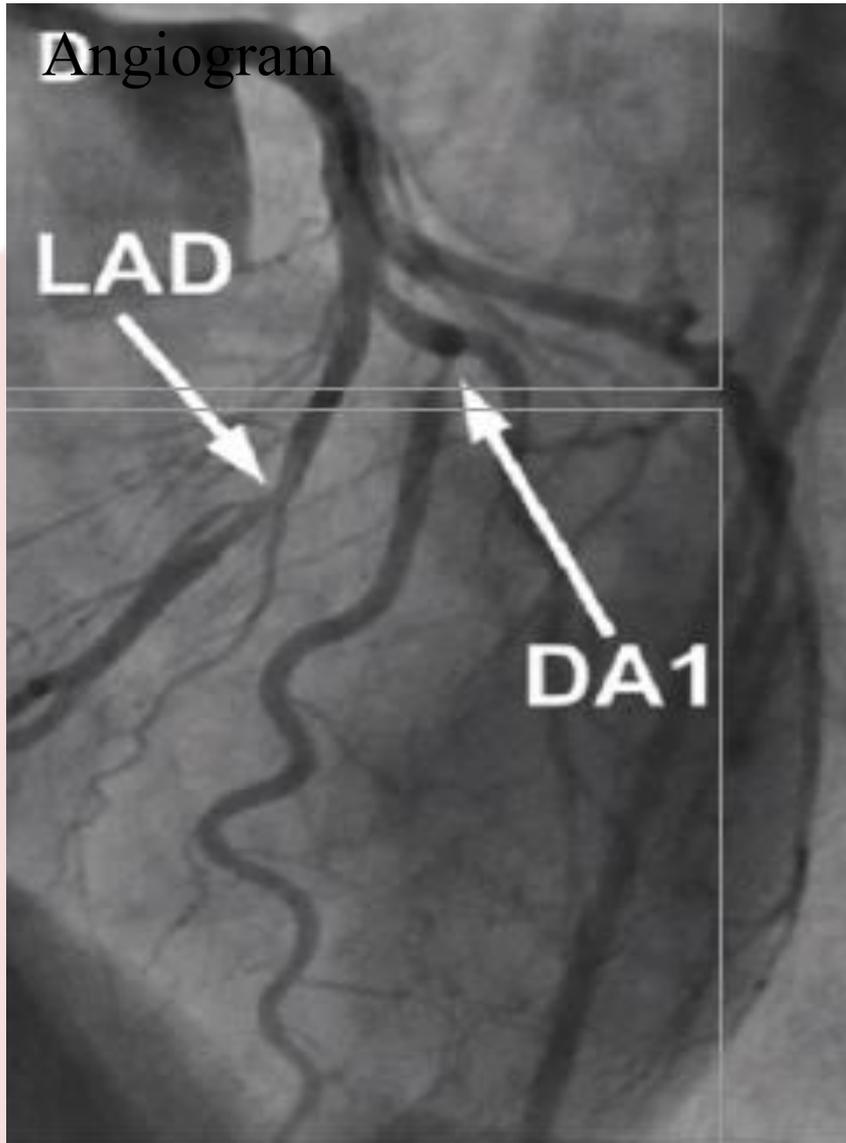
Vasoconstriction and alters coronary flow reserve

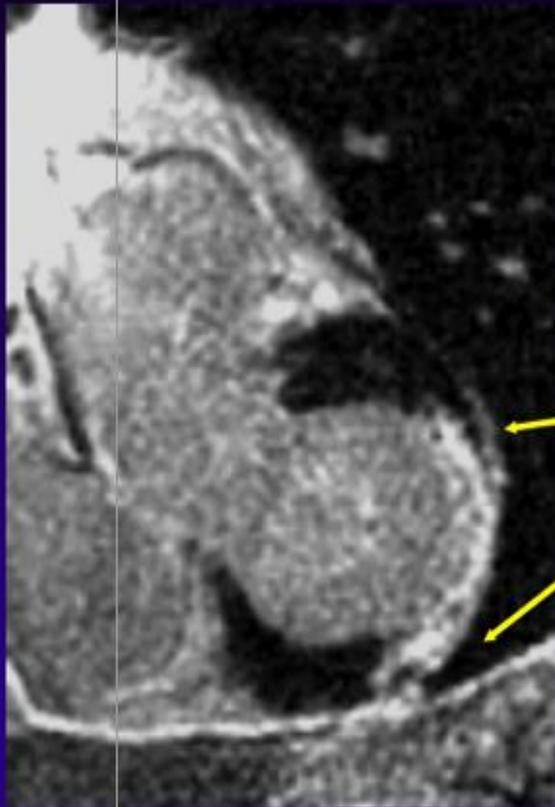
Carbon monoxide – increases RCM, cholesterol levels of WBC and reduces the oxygen carrying capacity of the blood

Smoking: Role in the Pathogenesis of Cardiovascular Events

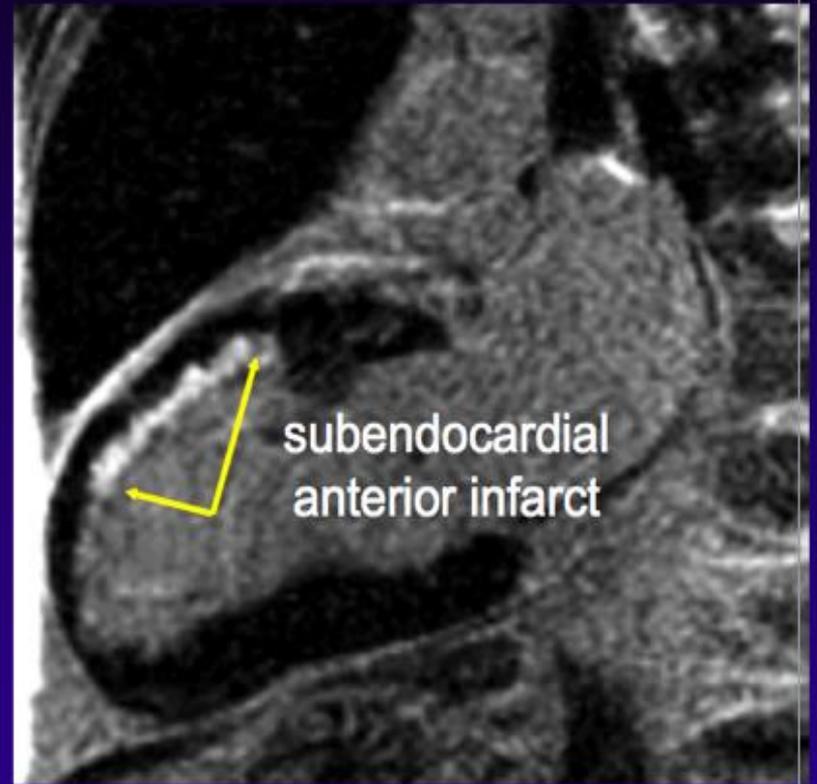
-  Endothelial dysfunction
-  Increased hematologic thrombogenicity
-  Enhanced inflammatory response
-  Oxidative modification







transmural
post. lat. infarct



subendocardial
anterior infarct

Benefits of quitting

In 72 hours BP and pulse decrease and smell and taste improve

Within a few weeks lung function improves and platelet function normalises

Within a year the risk of IHD halves

Within 5-15 years the risk of IHD is reduced nearly to that of a never smoker

Benefits of quitting

Among smokers who had MI or angiographically documented CHD, people who stop smoking have a substantially lower rate of reinfarction than those who continue to smoke.

The risk of stroke declines among smokers who have stopped smoking for two years and is similar to that of lifetime nonsmokers after five years of abstinence from smoking.

Deforestation

600 Million trees felled yearly
-risks desertification and erosion
In 1 year in Malawi tobacco
caused 26% deforestation
Cleared to grow crops build
curing barns to dry tobacco



ENVIRONMENTAL DEGRADATION FROM TOBACCO FARMING

Northern Region, Malawi
1992-2015 (2015 Landsat 8 image)



Western Tabora Region, Tanzania
1999-2017 (2017 Landsat 8 image)



VEGETATION LOSS

In many countries, farmers clear forested land that is agriculturally marginal to grow tobacco—often by burning—and/or harvest wood for curing. Typically, the land is quickly abandoned and becomes unusable, often leading to desertification.

Photo Credit: Environmental Degradation photos from Landsat 8.

Climate change

Deforestation

– green house effect

Burning trees releases more CO₂

Smoking releases 2.6 billion Kg
CO₂ and 2.5 billion kg methane

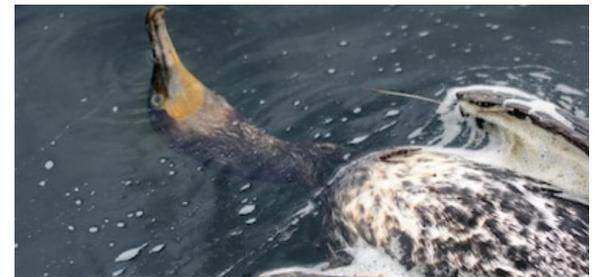


Pollution

Pesticides – Imidacloprid, Chlorpyrifos, methoxychlor etc

ozone depleting toxins to birds insects and fish found in ground water in the US and elsewhere

Block CNS some associated with birth defects can cause respiratory problems and skin irritation



Pollution- green tobacco sickness

Nicotine absorbed through the skin – nausea, weakness, dizziness abdominal cramps fluctuation in the BP and pulse
A quarter of tobacco pickers have suffered from GTS at least once and children particularly susceptible



Pollution

Slurries plastics solvents

Cigarette filters are of cellulose acetate take up to 12 years to decompose

An estimated 4.5 trillion cigarette ends discarded and believed to kill many animals and fishes

Most littered item in the world accounts for 28% of all marine pollution



Pollution

Cigarette butts account for 70-90% of all urban street litter
200 million butts are dropped every day in the UK – equivalent to 122 tons of rubbish
In Ireland – its one of the most common items of litter



Pollution

Tobacco litter leaches into soil and water – cadmium, arsenic, lead can contaminate water.

Children ingesting tobacco can lead to nausea vomiting irregular heart rates and seizures



Actions -Protect

Continue to reduce smoking prevalence

- Smoking cessation at every opportunity,

- Education and awareness – targeting high risk groups ,

- Extend tobacco free areas-

- Tax increases especially on Roll your own

- Every contact counts -interventions and

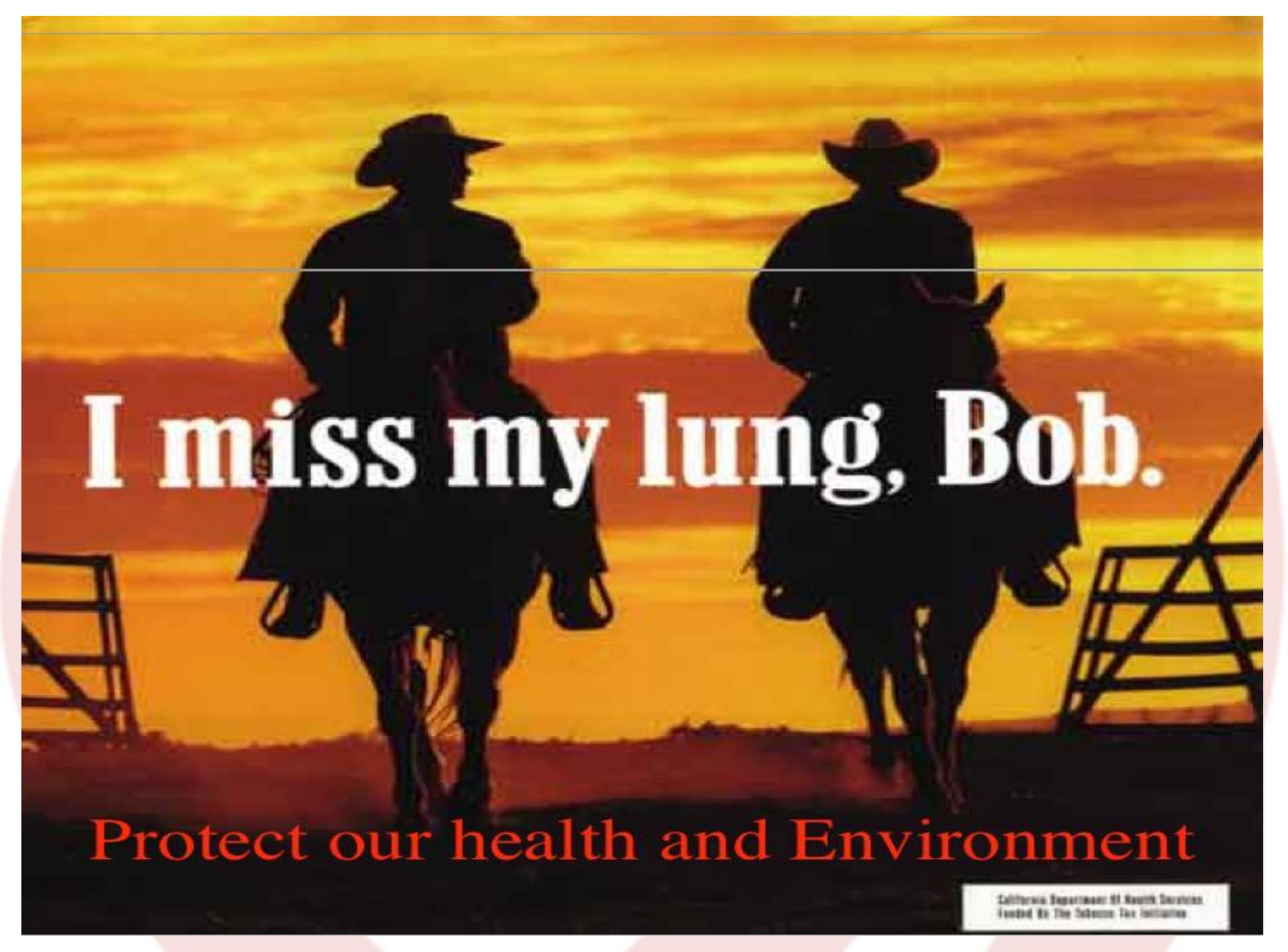
ensure all CV risk factors treated aggressively

Actions -Protect

Environmental tax – polluter pays

Liter levy 50 cent per pack could raise over 125 million

Use for smoking cessation, remove litter and raise awareness of health consequences and environmental harm

The image features two cowboys on horseback, silhouetted against a vibrant sunset sky. The cowboys are wearing wide-brimmed hats and are positioned in the center of the frame. The sky is a mix of orange, yellow, and red, with some clouds. In the foreground, there are wooden fences on either side, suggesting a ranch or farm setting. The overall mood is nostalgic and evocative.

I miss my lung, Bob.

Protect our health and Environment

California Department of Health Services
Funded By The Tobacco Tax Initiative



THANK YOU



Benefits of quitting

After 9 weeks, participants had cut their smoking in half, average levels of carbon monoxide declined by about 17%, Total cholesterol and LDL ("bad") cholesterol levels fell. HDL cholesterol rose, and the blood's capacity to transport oxygen also improved,

According to previous research, reducing total cholesterol by up to 9% and reducing LDL cholesterol by just 1% can lower a person's risk of heart disease.

Smoking ban

- Cardia study has shown a 25% reduction in the incidence in CVD in areas of the United States that have the indoor smoking ban (25 states have a complete ban)
- Two effects protecting non smokers from second hand smoke and by changing behavior – people living in these areas are less likely to smoke and ore likely to try and quit if they do smoke