Rome Cardiology Forum 2014

Update on life-style and cardiovascular prevention: Stakeholders and Problems

Wednesday 29th January 2014

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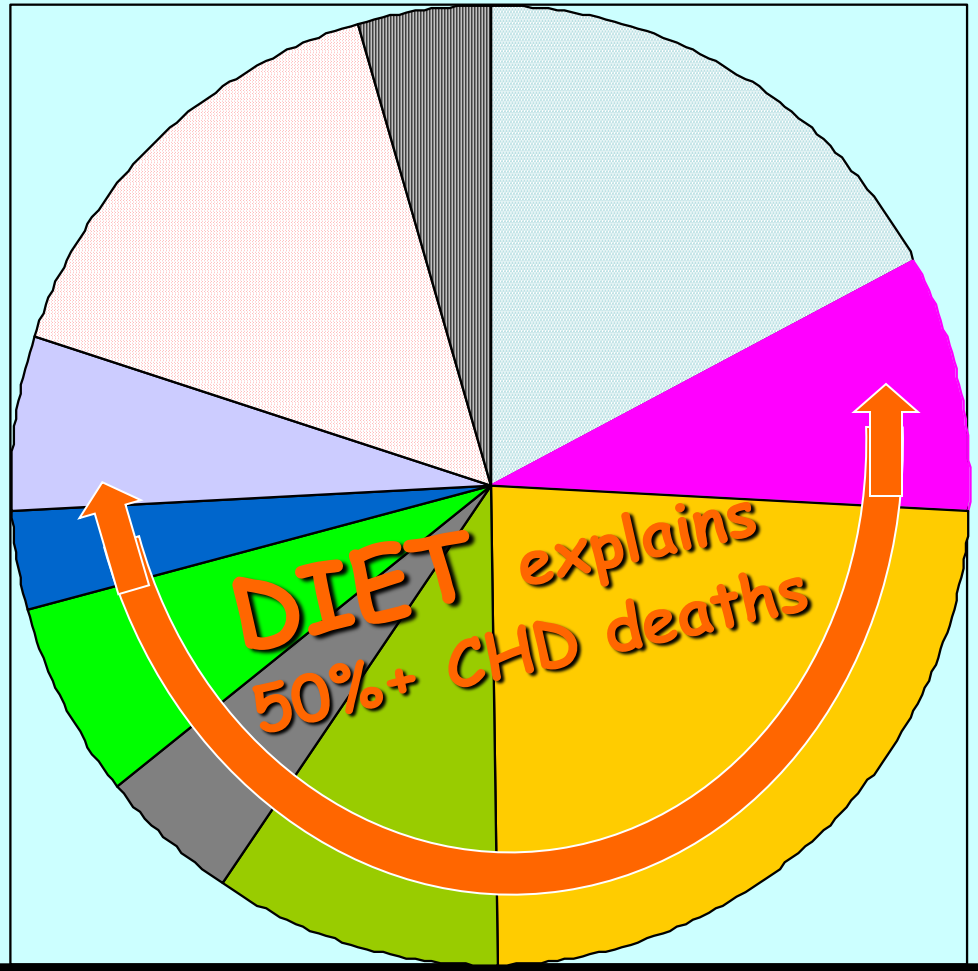
INTERHEART Study

"nine potentially modifiable risk factors account for over 90% of the risk of an initial acute myocardial infarction" ***Population attributable risk fractions***



- Smoking
- Hypertension
- Lipids (ApoB/A1 ratio)
- Abdom obesity
- Diabetes
- Fruit & Veg
- Alcohol
- Exercise
- Psychosocial
- Other

Salim Yusuf et al . Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study). Lancet 364 9437 11 Sept 2004

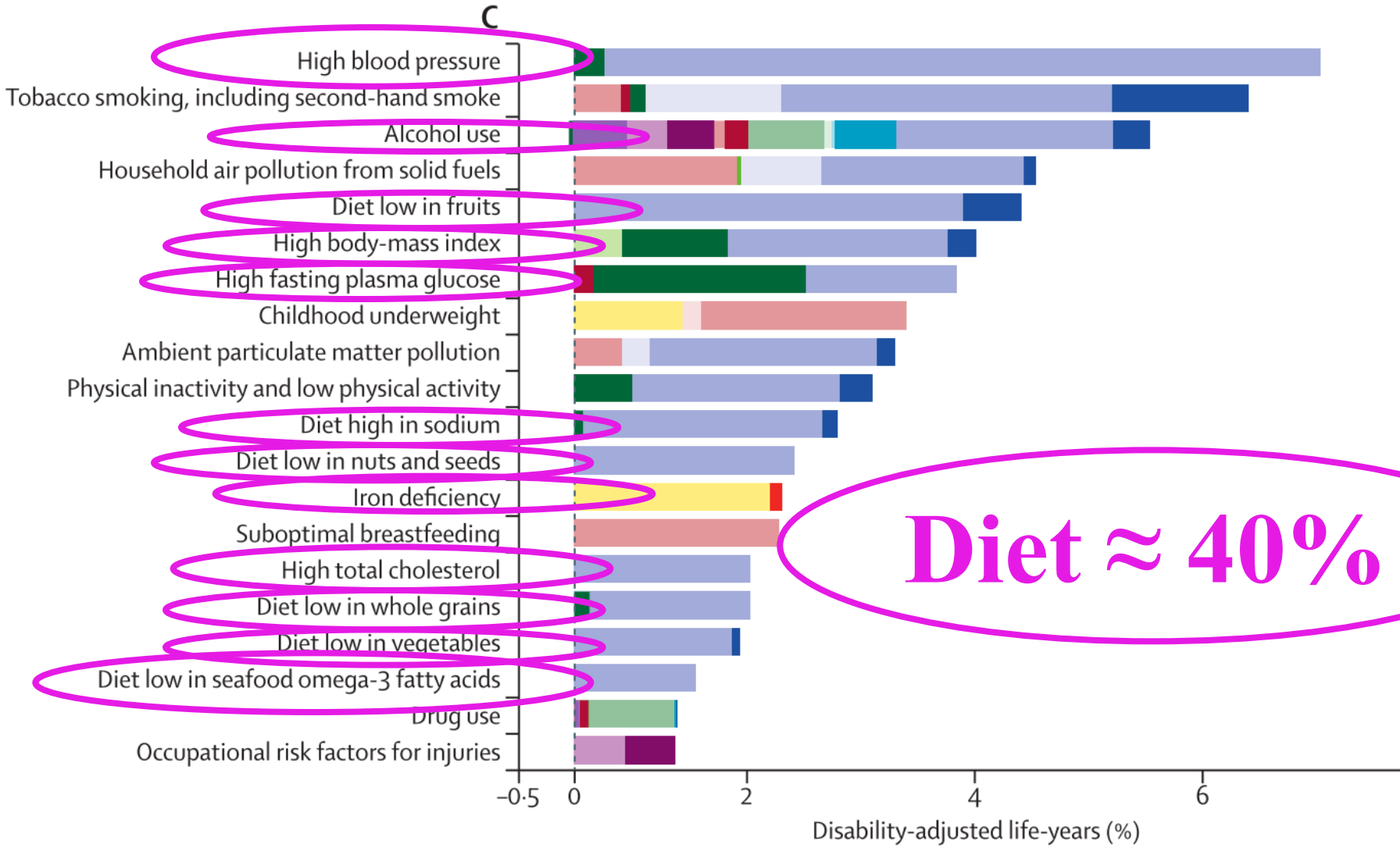
Nutrition: other food-related policy areas:

- obesity and chronic diseases
- climate change
- biodiversity
- efficient use of resources
- food security
- education
- food safety
- trade
- public procurement
- environmental protection
- agricultural policy
- retail & marketing
- taxation and subsidy

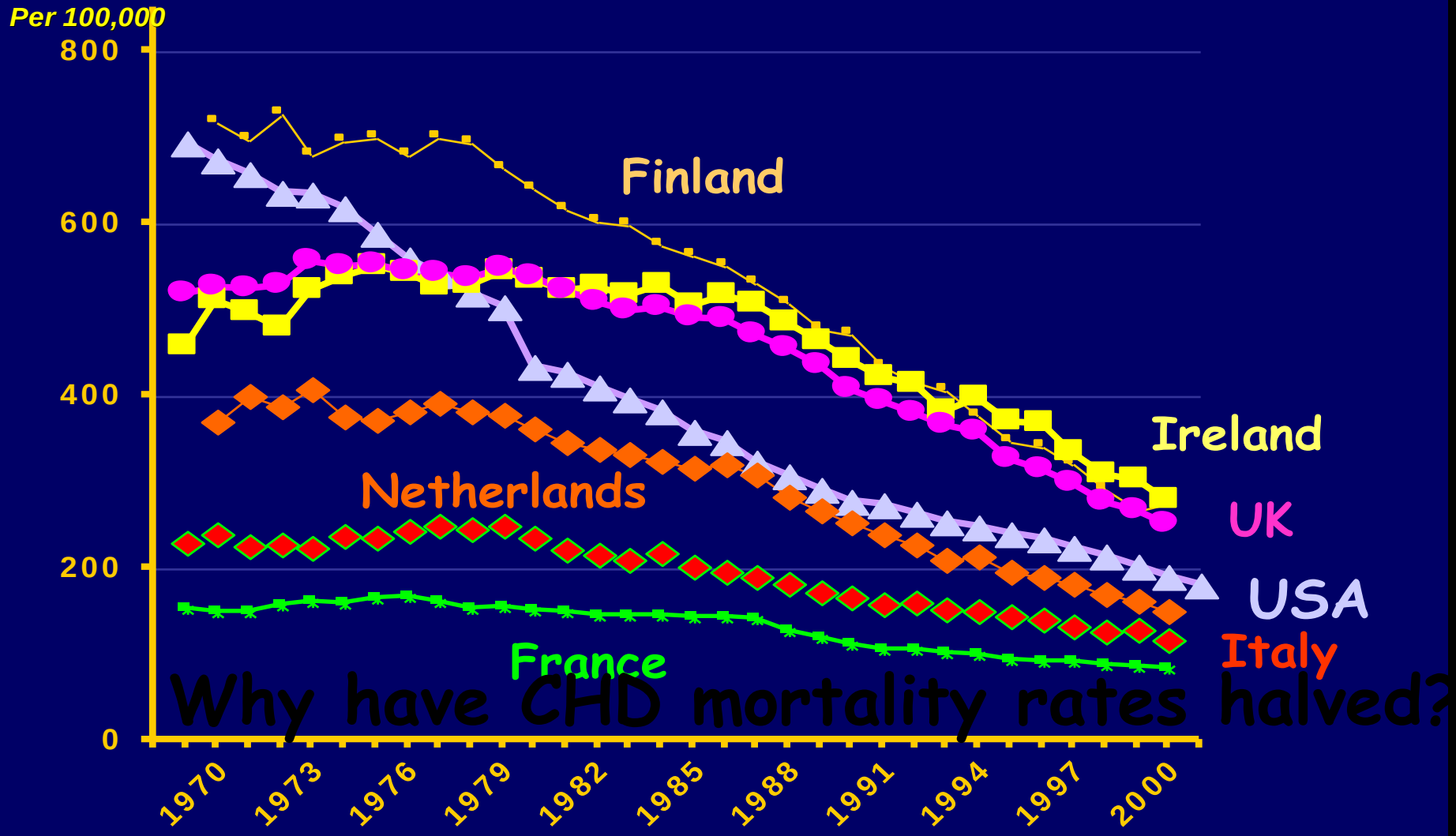
Burden of disease attributable to 20 leading risk factors in 2010

expressed as a percentage of global disability-adjusted life-years

Global Burden of Disease Group. www.thelancet.com 2012 380 2245



International mortality trends 1968-2003 men, coronary heart disease [CHD]



Source:BHF Heartstats (WHO statistics Men aged 35 - 74, Standardised)

EXPLOITING THE IMPACT MODEL

1. Replication in other populations
2. Populations with RISING CHD
3. Calculating life-years gained
4. Cost effectiveness
5. WHAT IF treatment uptakes increased?
6. WHAT IF risk factors reduced further?

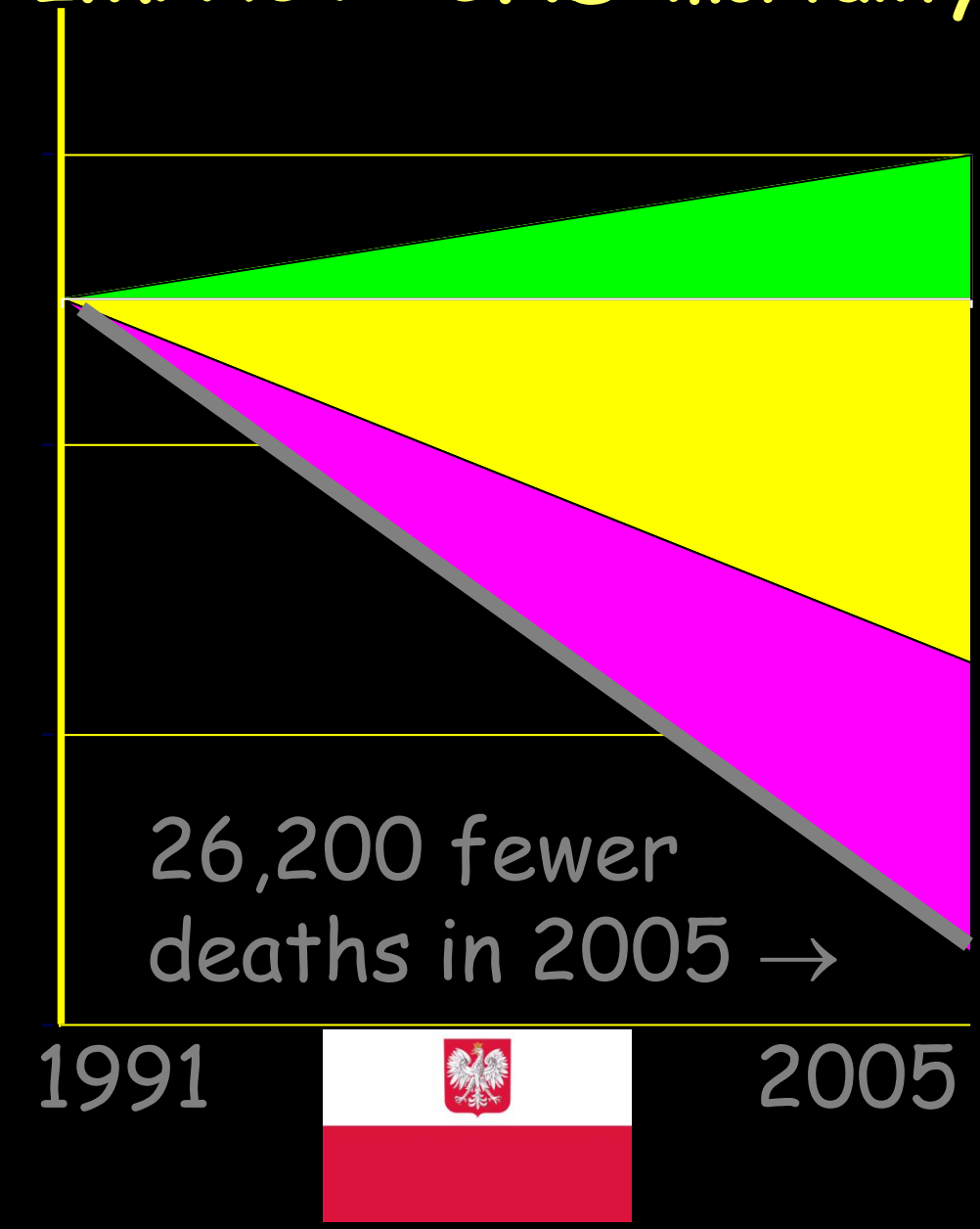
What about CHD trends in HIGH incidence populations?

Central European countries

Poland, Czech Republic

IMPACT: CHD mortality fall Poland 1991-2005

P. Bandoz et al BMJ 2012



Risk Factors worse +7%

Obesity (increase)	+4.5%
Diabetes (increase)	+2.5%

Risk Factors better -66%

Cholesterol (diet)	**-39%**
Smoking	- 11%
Physical activity	-10%
Population BP fall	0% (⇑Men ⇓Women)

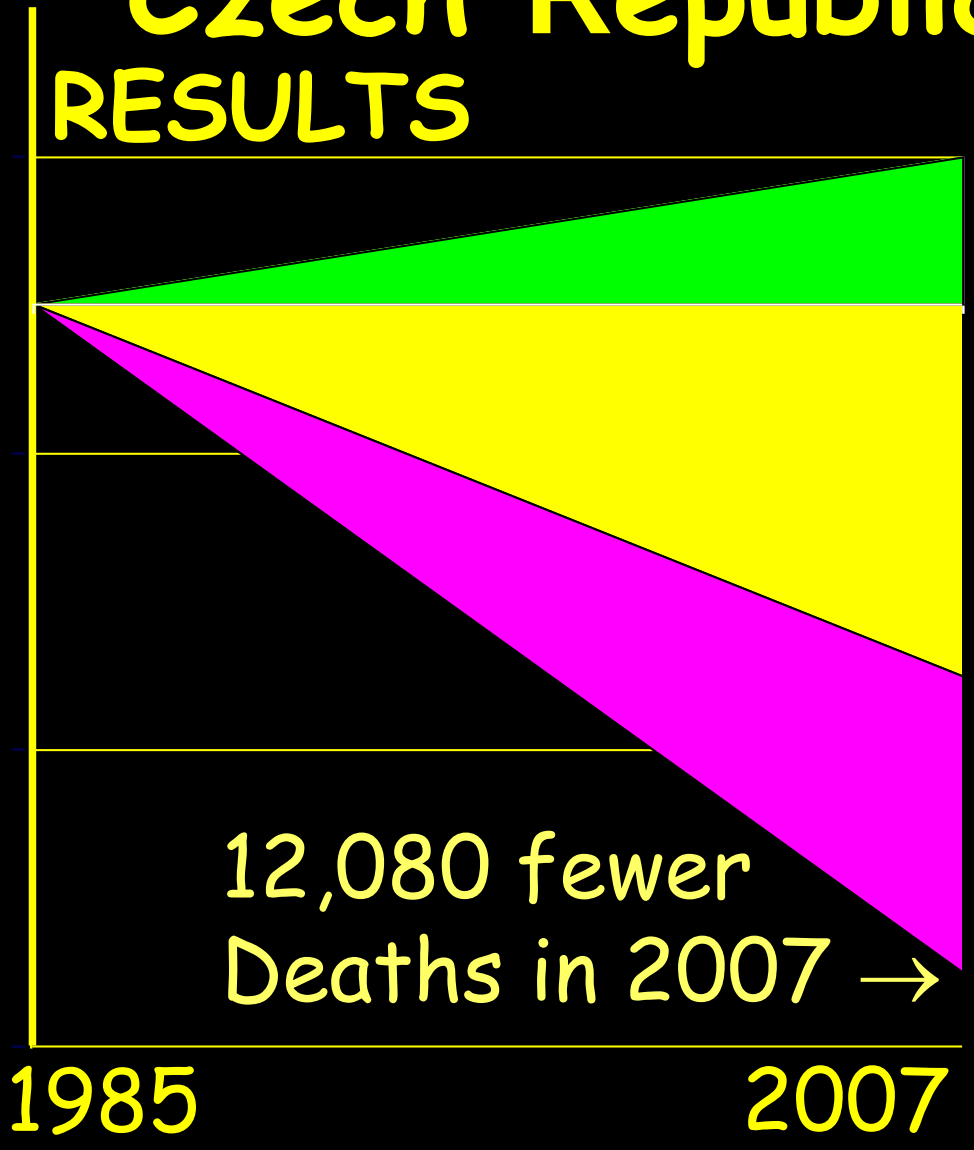
Treatments -38%

AMI treatments	-5 %
Unstable angina	-4%
Secondary prevention	-7%
Heart failure	-12%
Angina: CABG surgery	-2%
Angina ASA	- 1 %
Hypertension therapies	-2%
Statins (Primary prevention)	-3%

Unexplained -10%

Explaining the CHD mortality fall in the Czech Republic 1985-2007:

RESULTS



Risk Factors worse +6%

Risk Factors better -64%

Treatments -41%

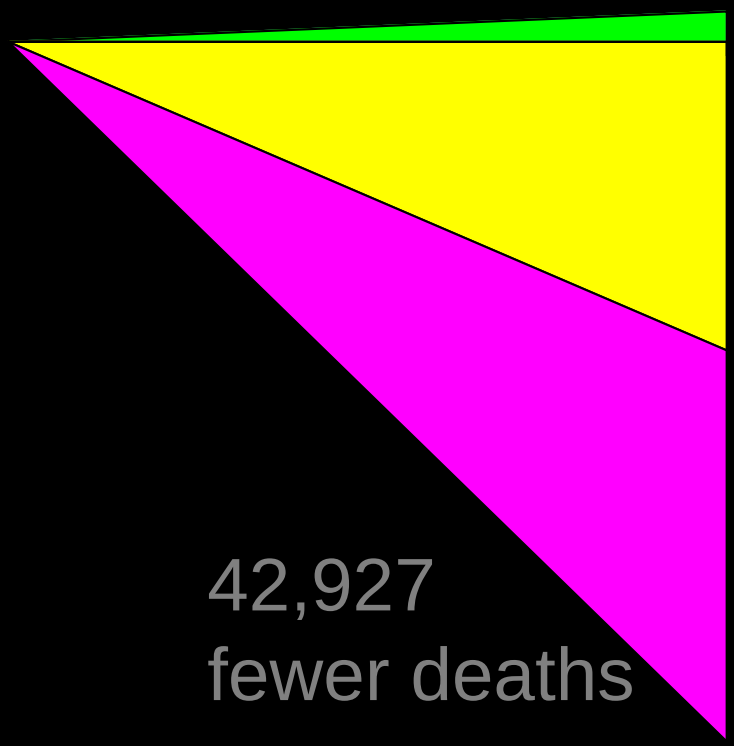
Unexplained -2%

What about CHD trends in LOW incidence populations?

Mediterranean countries

Italy

Explaining the fall in coronary heart disease deaths in Italy 1980-2000



Risk Factors worse +4 %

Obesity (increase)	+ 2%
Diabetes (increase)	+ 2.5%

Risk Factors better –44 %

Cholesterol	-25 %
Smoking	- 9%
Population BP fall	- 4 %
Physical activity (incr.)	- 6 %

Treatments -55 %

Angina	-12 %
CABG & PTCA	- 2 %
Angina: Aspirin etc	- 1 %
Hypertension therapies	- 1 %
Statins 1° prevention	- 2 %

Palmieri et al Am J Public H 2009

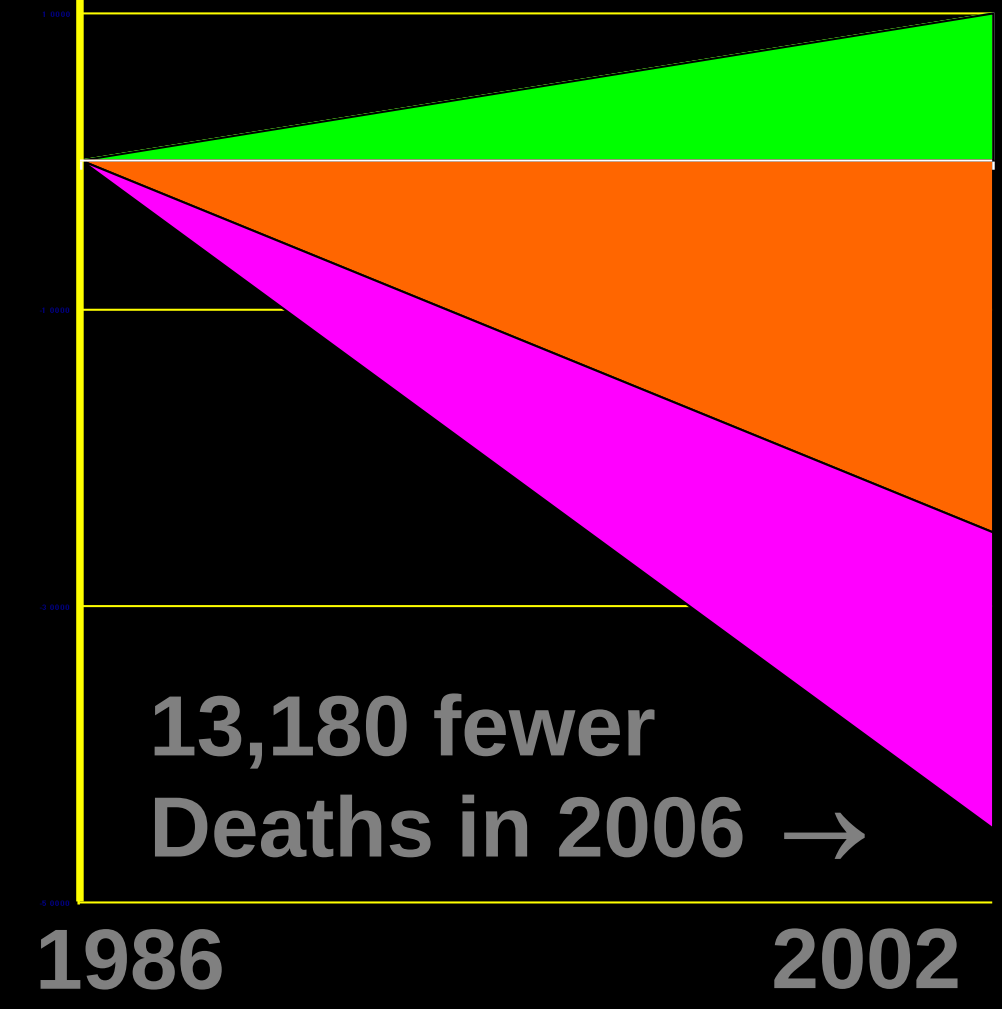
What about CHD trends in HIGH incidence populations?

Nordic countries

Sweden, Finland

Explaining the CHD mortality fall in Sweden 1986-2002

Bjorck et al Eur Heart J 2009



Risk Factors worse +11%

Obesity (increase)	+3%
Diabetes (increase)	+8%

Risk Factors better -66%

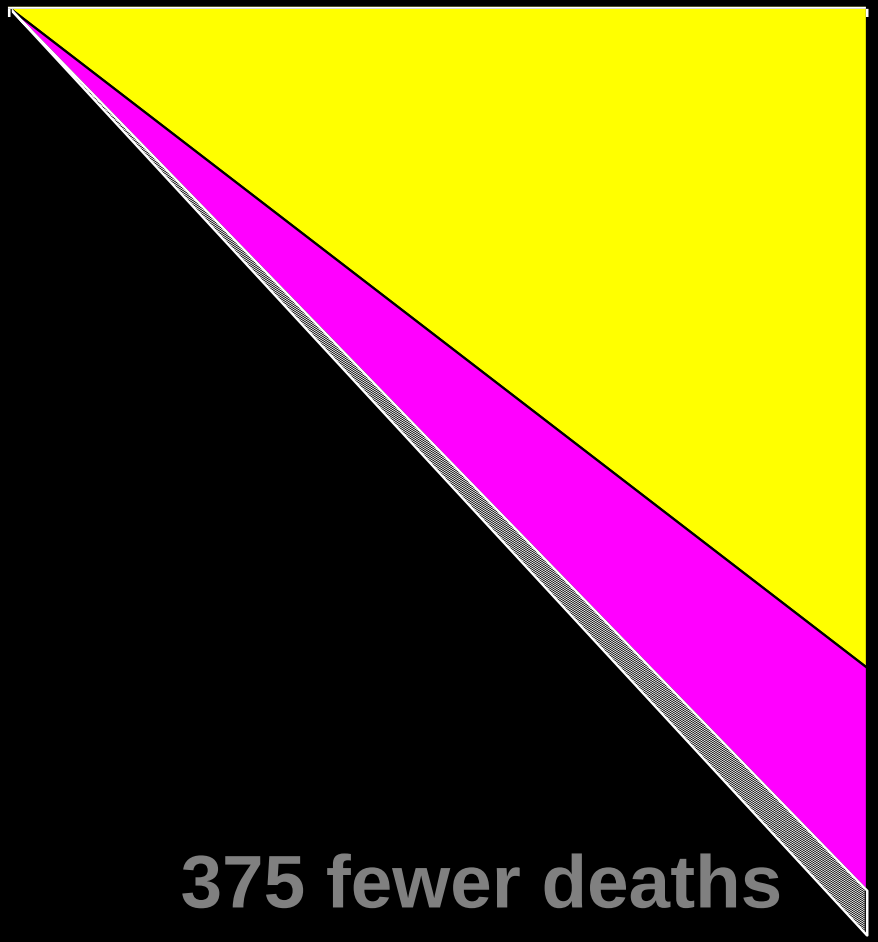
Cholesterol (diet)	-39%
Population BP fall	-9%
Smoking	-20%
Physical activity	-13%

Treatments -36%

AMI treatments	-6%
Unstable angina	-2%
Secondary prevention	-12%
Heart failure	-7%
Angina:CABG & PTCA	-3%
Hypertension therapies	-4%
Statins (primary prevention)	-2%

Unexplained -9%

IMPACT model: CHD mortality fall in Finland 1982 - 1997



375 fewer deaths in 1997 →

1982

1997

Risk Factors -71%

- **Cholesterol - 53%**
- Smoking - 11%
- Blood pressure - 7%

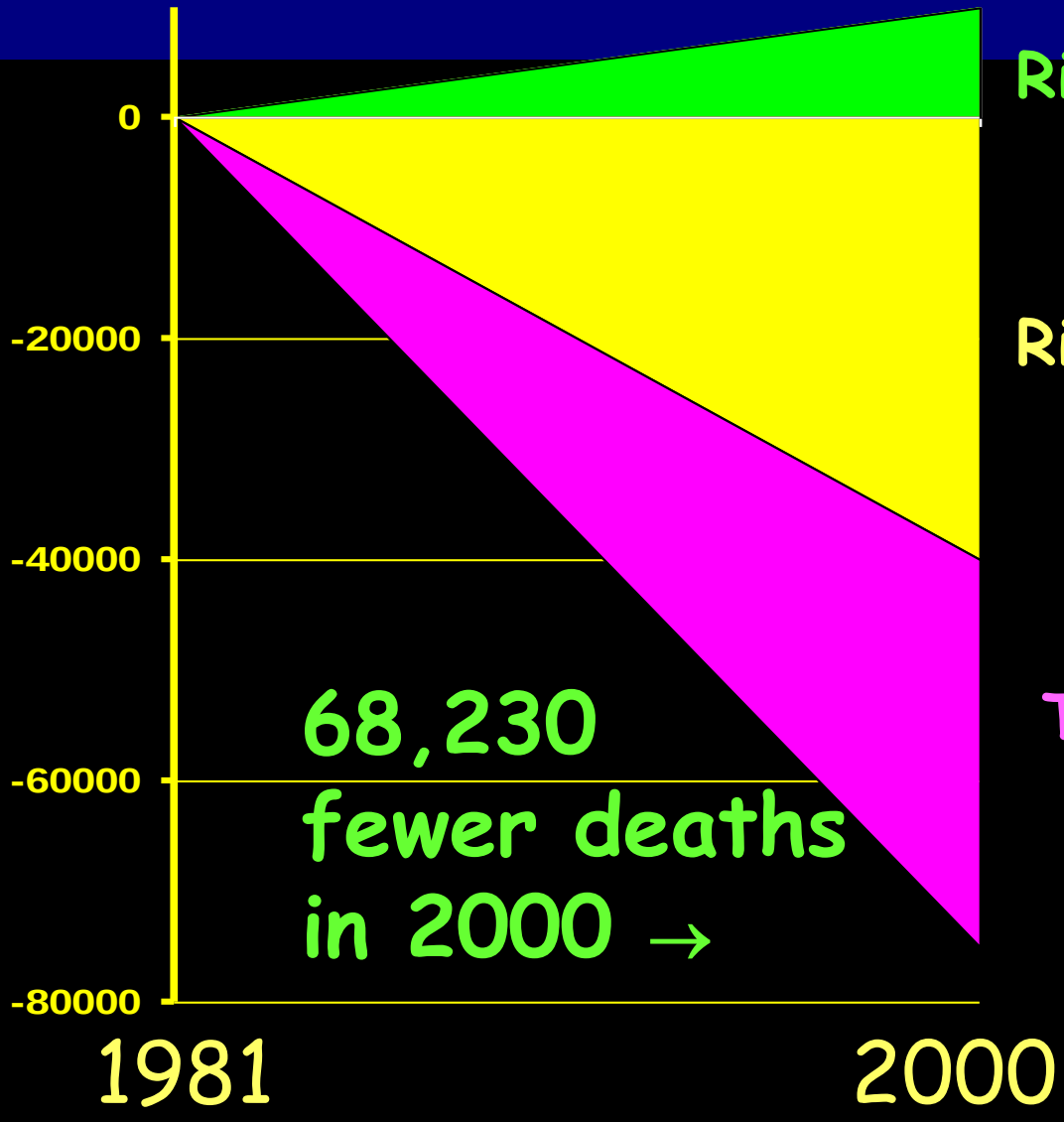
Treatments -24%

- AMI treatments - 4%
- Secondary prevention - 8%
- Heart failure - 2%
- Angina:CABG & PTCA - 8%
- Angina: Aspirin etc - 2%

Other Factors -5%

Laatikainen et al Am J Epid 2005 162 764

Explaining the fall in coronary heart disease deaths in England & Wales 1981-2000



Risk Factors worse +13%

- Obesity (increase) +3.5%
- Diabetes (increase) +4.8%
- Physical activity (less) +4.4%

Risk Factors better -71%

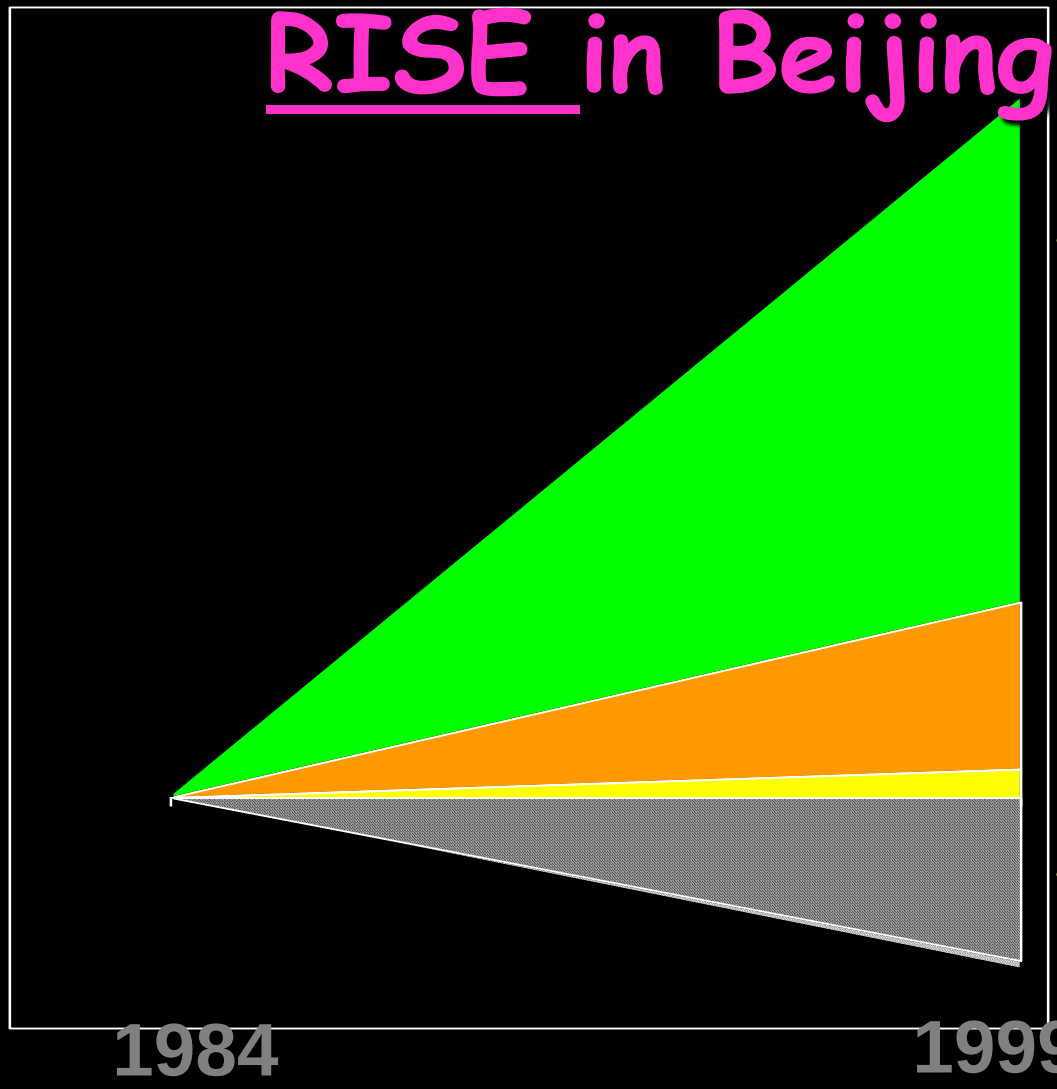
- Smoking -41%
- Cholesterol -9%
- Population BP fall -9%
- Deprivation -3%
- Other factors -8%

Treatments -42%

- AMI treatments -8%
- Secondary prevention -11%
- Heart failure -12%
- Angina:CABG & PTCA -4%
- Angina: Aspirin etc -5%
- Hypertension therapies -3%

Unal, Critchley & Capewell
Circulation 2004 109(9) 1101

IMPACT model: CHD mortality RISE in Beijing 1984 - 1999



DEATHS ATTRIBUTABLE TO RISK FACTOR CHANGES

Cholesterol 77%

Diabetes	19%
BMI	4%
Smoking	1%

370 FEWER DEATHS BY TREATMENTS

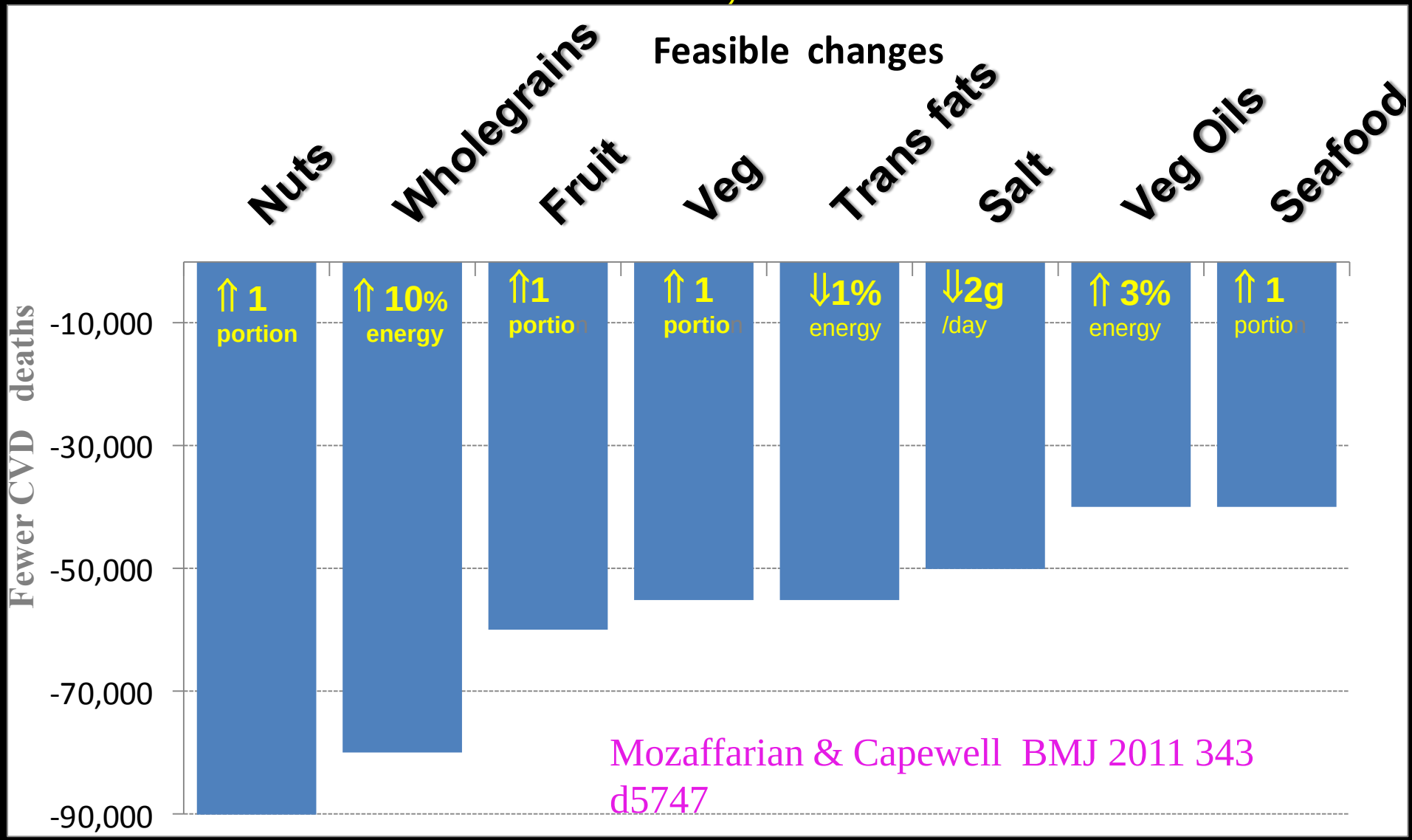
AMI treatments	41%
Hypertension treatment	24%
Secondary prevention	11%
Heart failure	10%
Aspirin for Angina	10%
Angina:CABG & PTCA	2%

Critchley, Capewell et al
Circulation 2004 110: 1236-1244

CVD Prevention Food Policies are powerful

CVD mortality reductions with healthier US food policy options

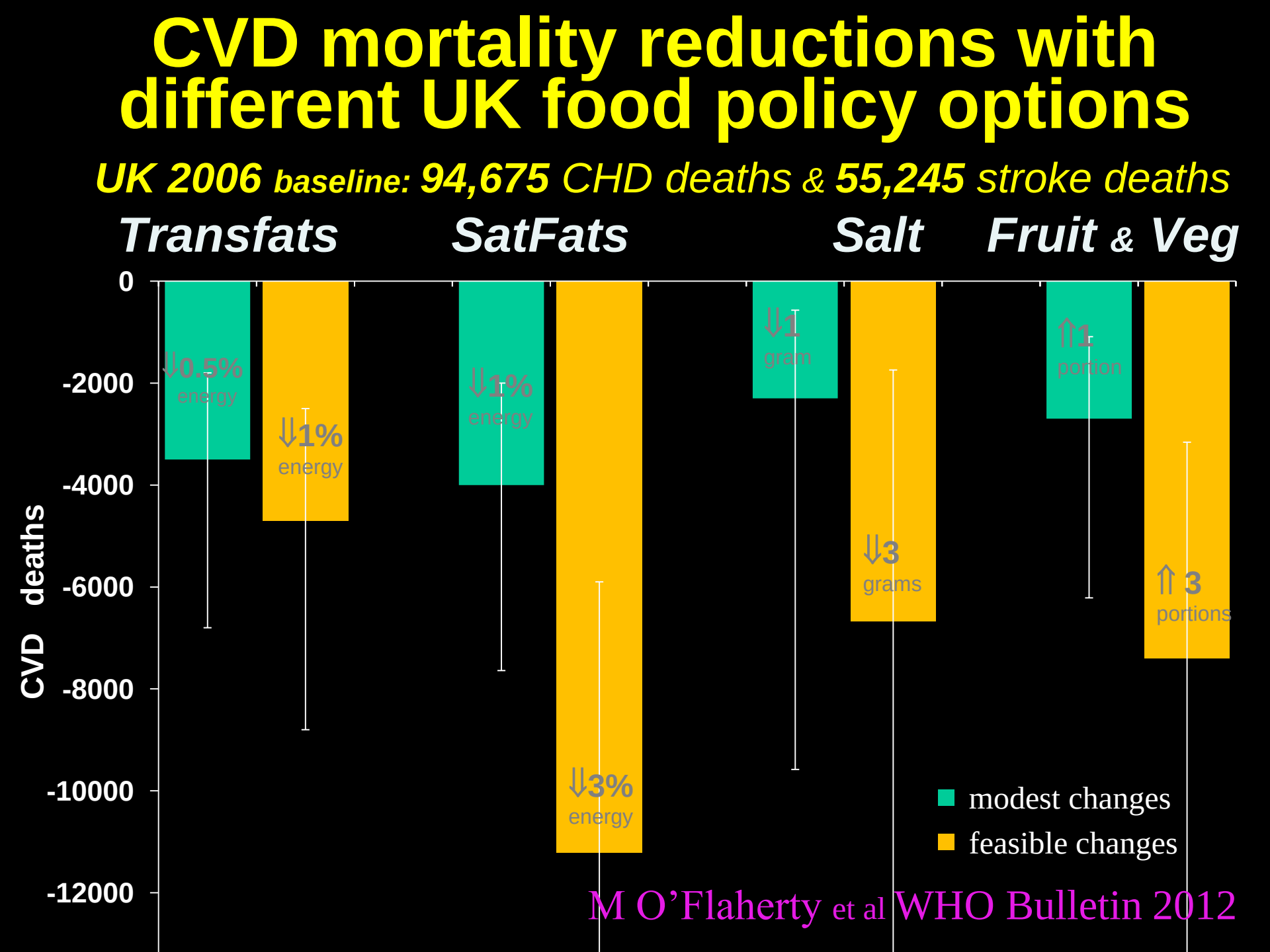
*US 2006 baseline: **810,000** CVD deaths*



Mozaffarian & Capewell BMJ 2011 343 d5747

CVD mortality reductions with different UK food policy options

***UK 2006 baseline: 94,675** CHD deaths & **55,245** stroke deaths*



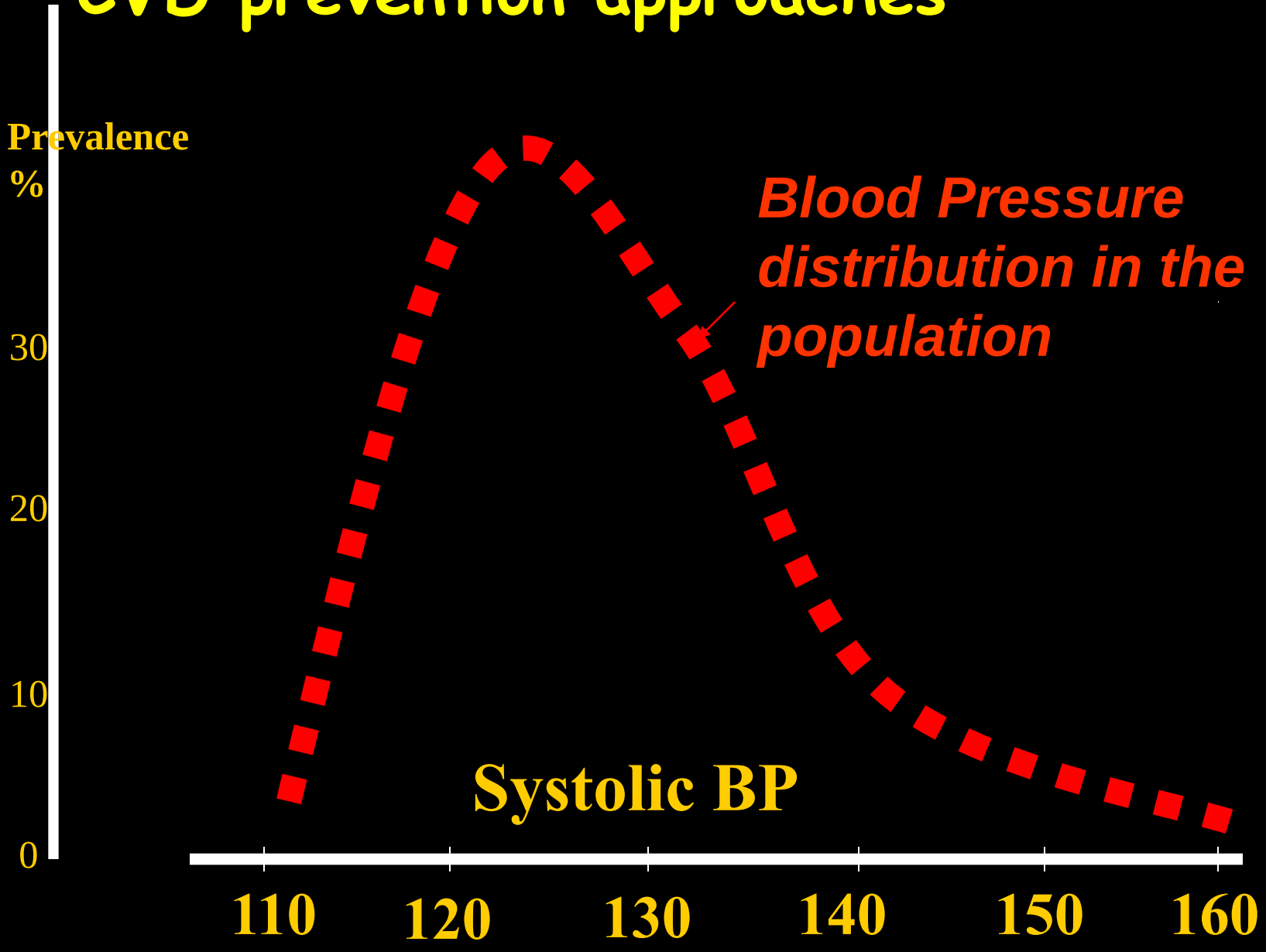
CVD prevention strategies

High Risk Individual approach

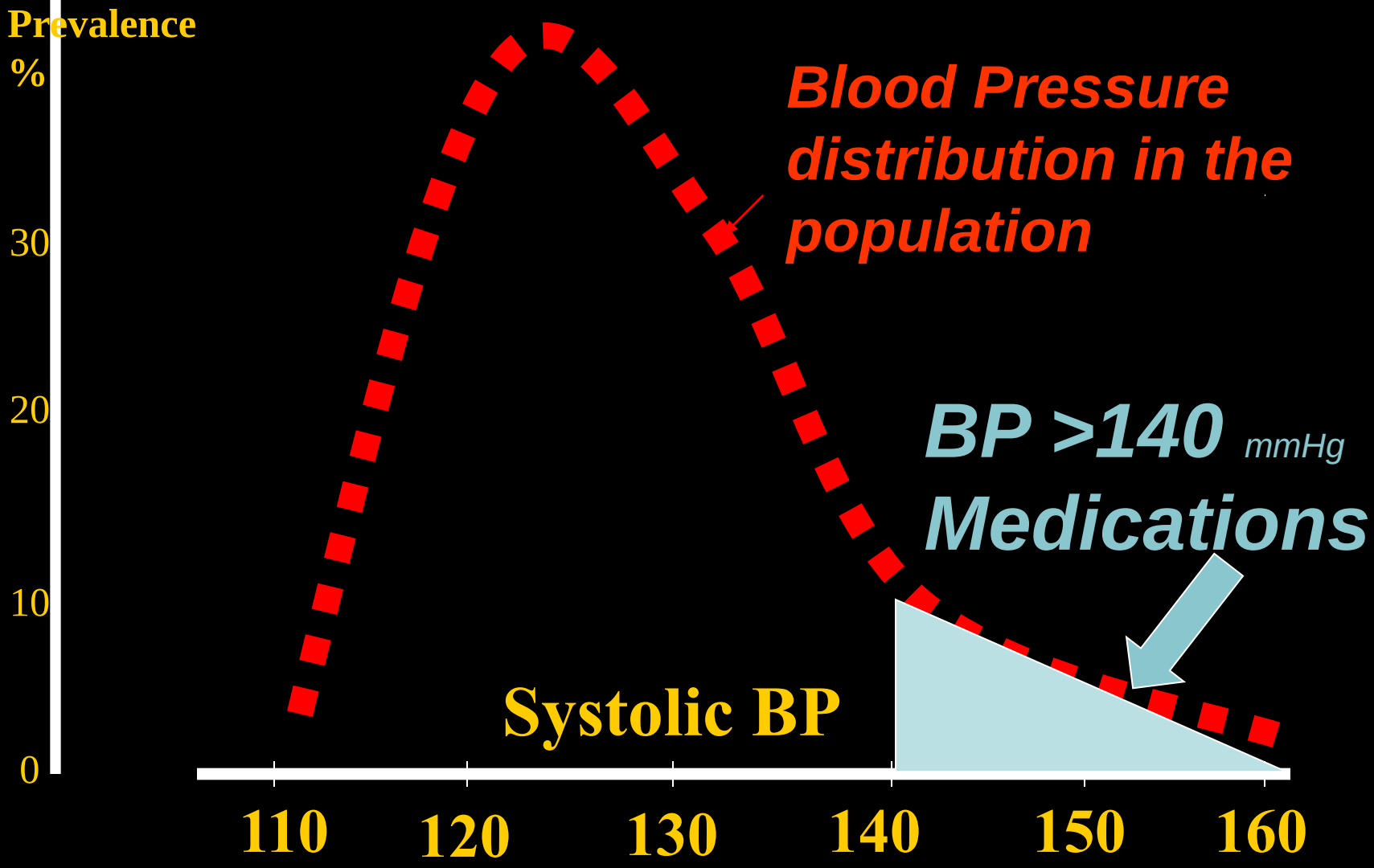
v

Population-based approach

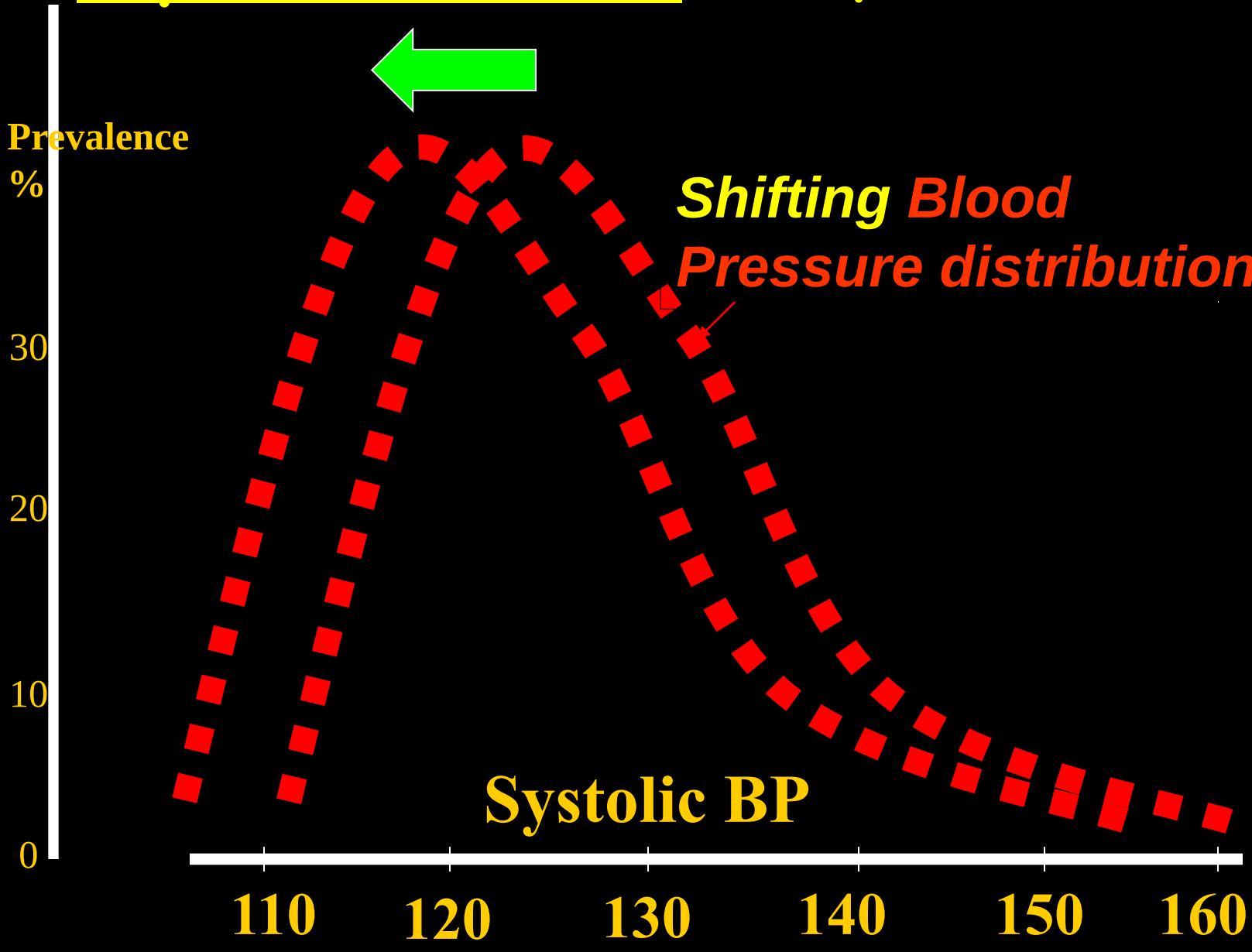
CVD prevention approaches



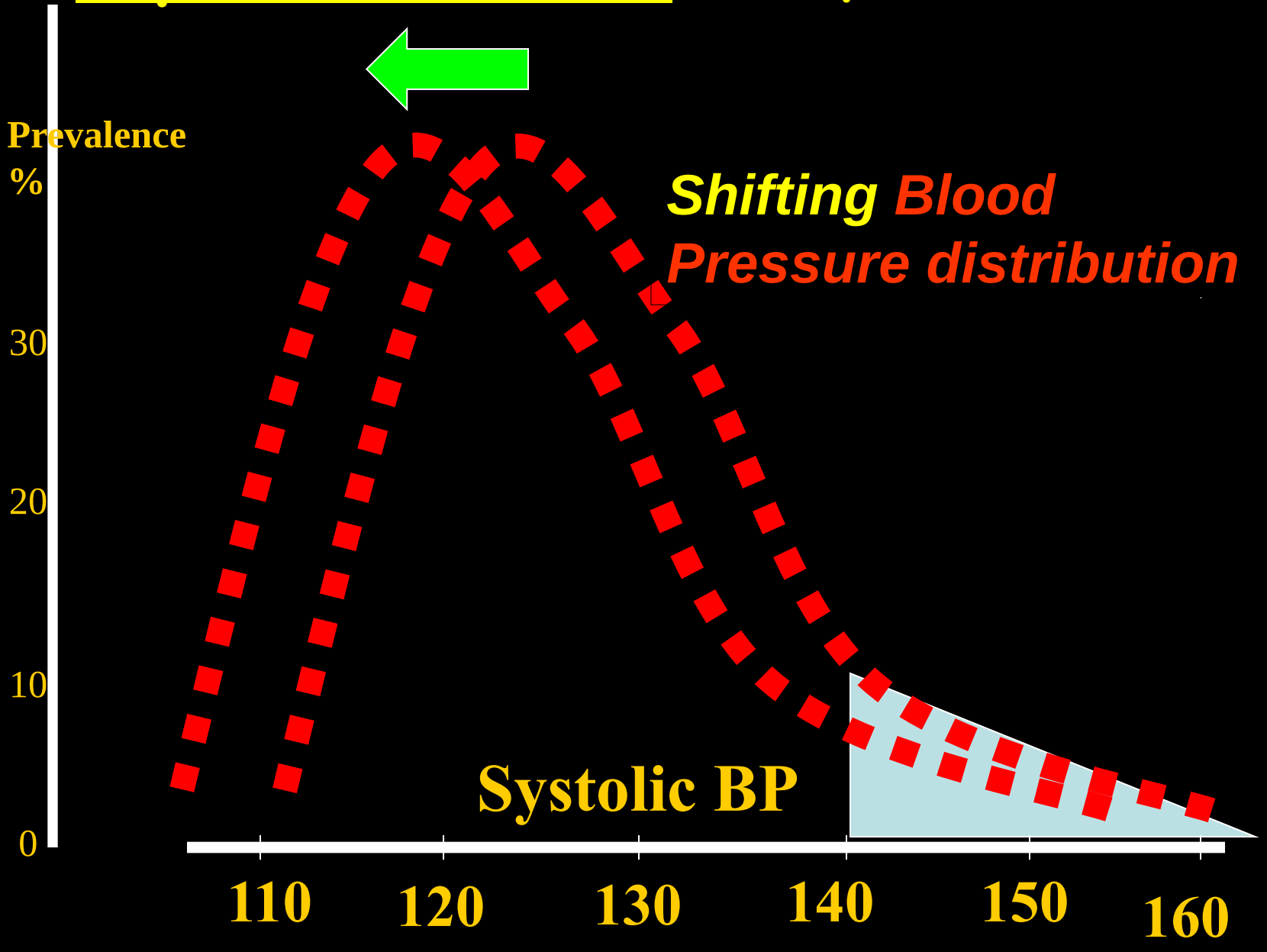
CVD prevention: *High risk individual approach*



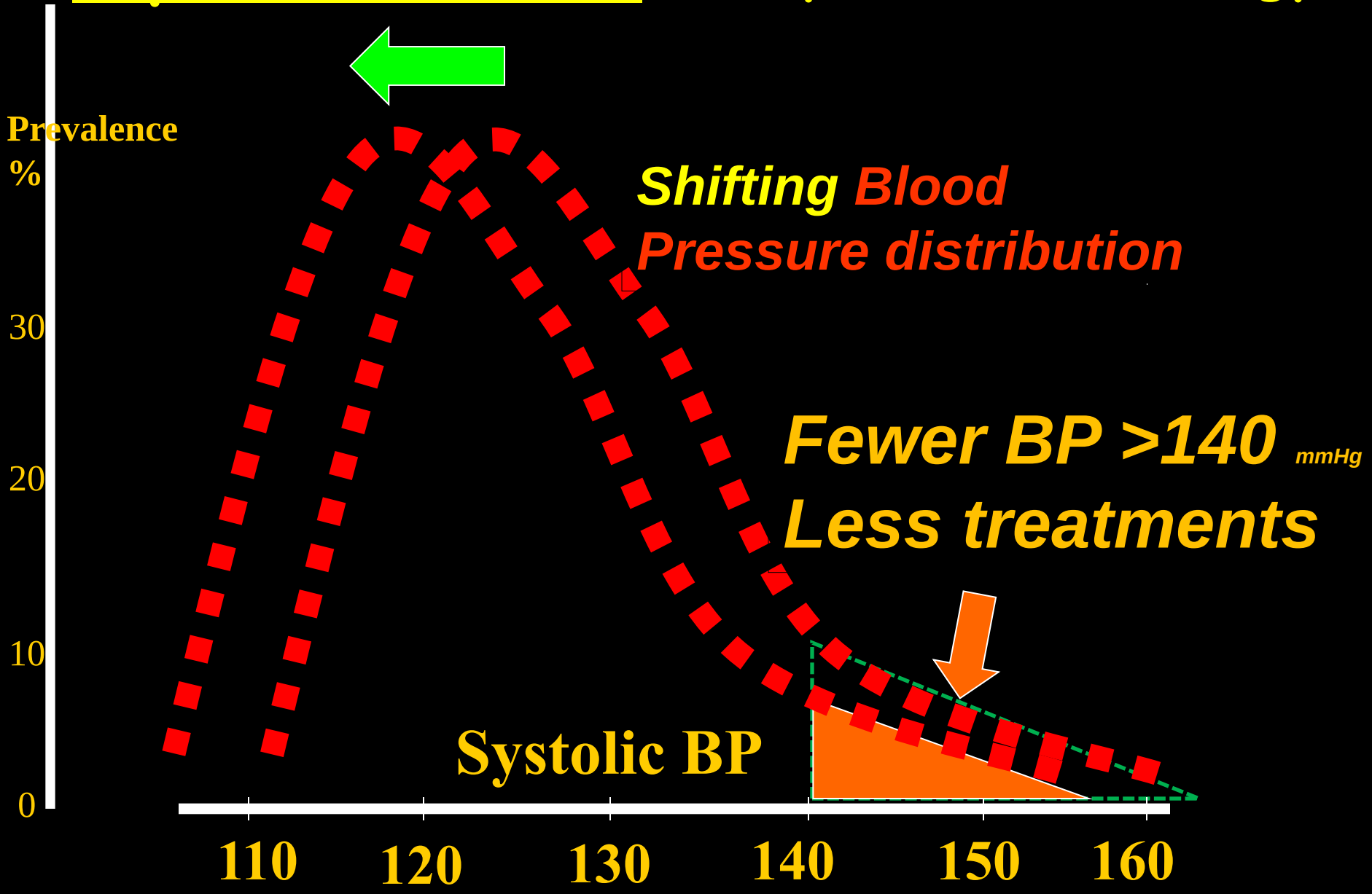
Population-based CVD prevention strategy



Population-based CVD prevention strategy

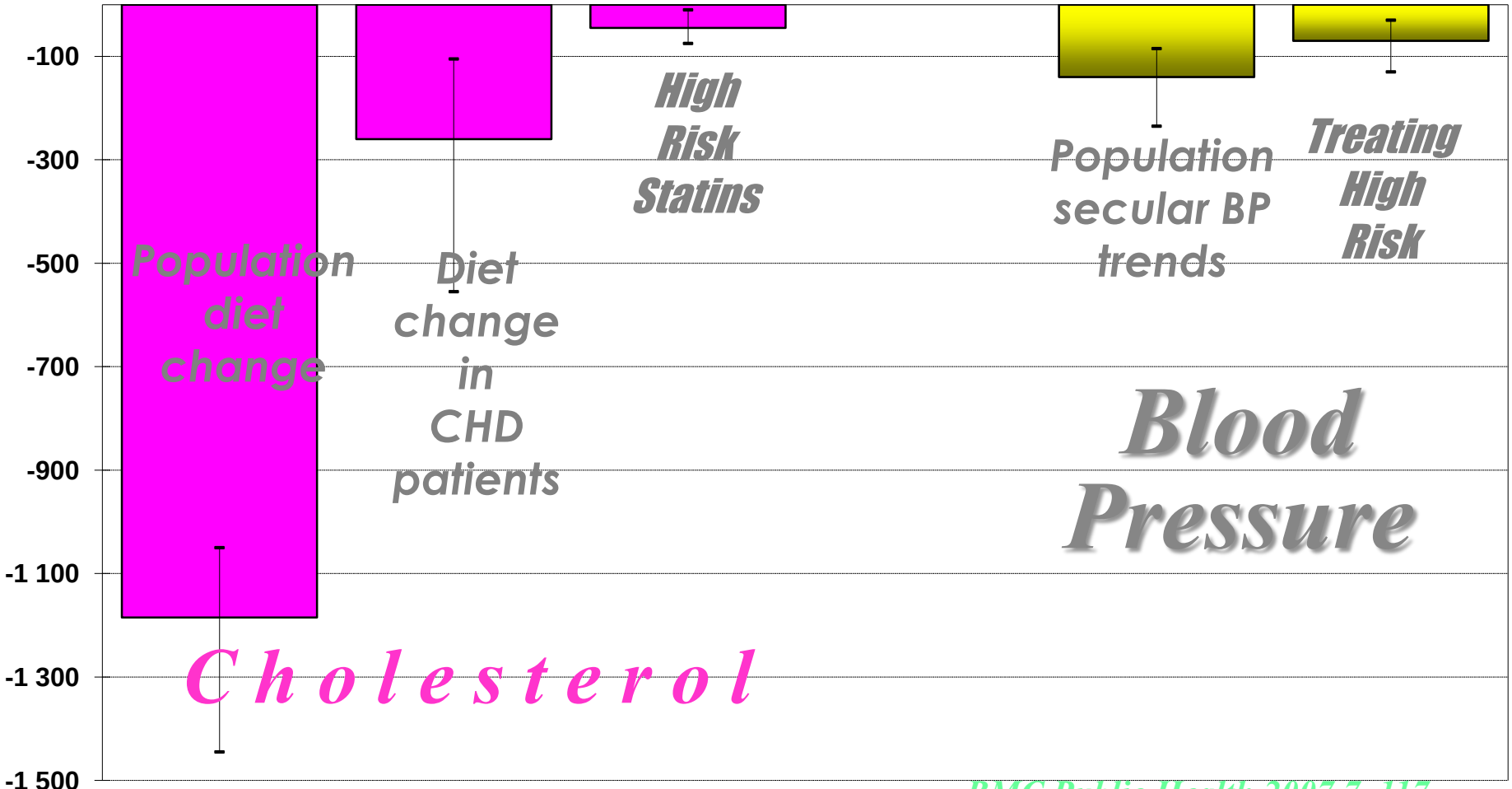


Population-based CVD prevention strategy



CHD prevention in Ireland 1985-2000: Population v. *High Risk Strategies*

Deaths prevented or postponed (Sensitivity analysis)



BMC Public Health 2007 7 117

RESCAP-MED
Research Capacity for public health in the Mediterranean

Will CVD prevention widen health inequalities?

Capewell & Graham PLoS Medicine 2010

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The *UK high risk approach* for preventing CVD

UK Department of Health programme:

NHS Health Checks

- All adults aged 40+ screened for CVD risk
- If 20%+ risk CVD event in the next ten years, treat with:
  - lifestyle advice plus
  - tablets to reduce cholesterol & blood pressure

Capewell & Graham PLoS Medicine 2010

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Evidence that high risk approach may increase social inequalities

Prescribing gradients

Long term adherence

Smoking cessation

Nutrition interventions in individuals

Oldroyd J. JECH 2008; 62:573. Thomsen R W, Br J Clin Pharm. 2005; 60;534; Ashworth, M, QJof Amb Care Management: 2008; 31; 220; Vrijens B, BMJ 2008;336:1114; Morisky D. Clin Hypertension 2008; 10; 348 Johnell K BMC Public Health 2005, 5:17 Chaudhry HJ. Current Ather. Rep 2008; 10; 19; Bouchard MH, Br J Clin Pharmacol. 2007 63(6): 698

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Evidence that whole POPULATION CVD prevention reduces social inequalities

Kivimaki, Marmot et al *Lancet 2008*

15 year risk of CHD death

- **calculated in British men aged 55**
- **quantified the benefits of decreasing risk factors uniformly across population**

  [systolic blood pressure ⇓10mmHg
  total cholesterol⇓ 2mmol/l & glucose ⇓ 1 mmol/l]
- **Would reduce the *absolute* mortality gap between affluent & deprived by ≈70%**

Evidence that whole POPULATION CVD prevention reduces social inequalities

Diet interventions

Folic acid fortification of cereals (USA population1996)

Blood folate levels: Social gradients ⇓⇓ ≈ 70%

Dowd IJE 2008; 37(5):1059

Evidence that whole POPULATION CVD prevention reduces social inequalities

- **cigarette price increases more effective in deprived groups** Townsend BMJ 1994; 309; 923

"increase in tobacco price may have the potential to reduce smoking related health inequalities"

Main Meta-analysis. BMC Public Health 2008; 8; 178

CVD prevention & health inequalities

VERDICT

- High Risk Strategies to screen & treat individuals typically widen social inequalities
- Population wide policy interventions usually narrow the inequalities gap

Capewell & Graham PLoS Medicine 2010

SEVENTH FRAMEWORK PROGRAMME

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Whole-population approach for preventing CVD: successful policies

- ***Farmers' subsidies to stop dairy & beef , start fruit & berry production*** *(Finland)*
- ***Support food reformulation*** *(All)*
- ***Banning transfats*** *(Denmark, Switzerland, Austria)*
- ***Slashing dietary salt*** *(Finland)*
- ***Promoting smoke-free public spaces*** *(Ireland, UK ,Italy etc)*

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ACADEMY OF
MEDICAL ROYAL
COLLEGES

10 Recommendations

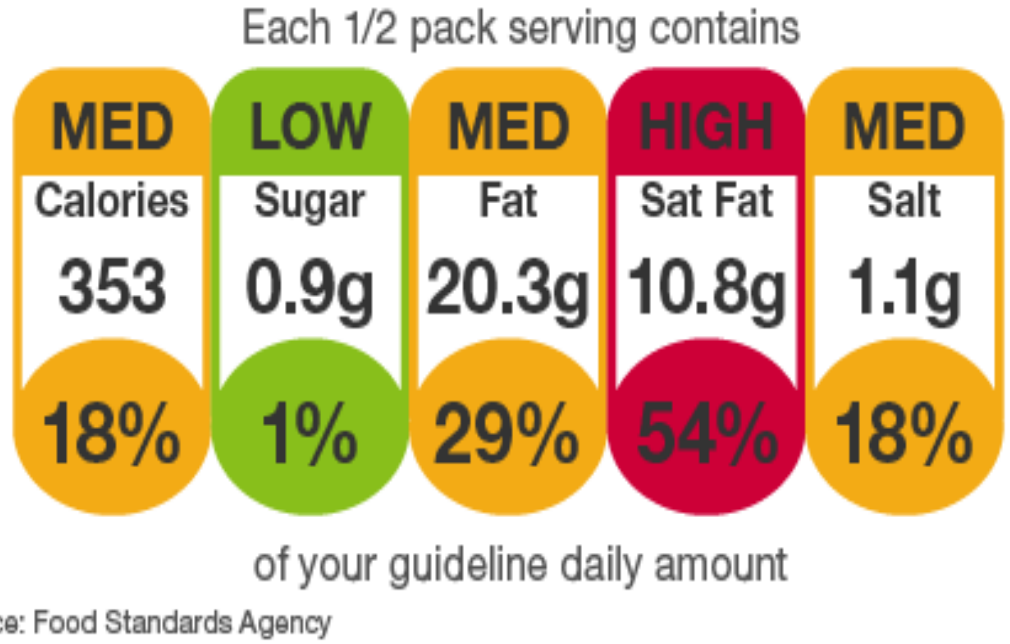
B. The oBesogenic environment

↑ **Standards & lessons in schools**
↓ **Fast food outlets near schools**
↓ **Junk food advertising**

10 Recommendations

C. Make the healthy Choice the easy Choice

↑ **Food labelling**
↓ **Sugary drinks**
↓ **Built environment**



Source: Food Standards Agency

92 litres of sugary drinks consumed per person in UK every year.

- 2% of adult calories
- **10% of childrens' calorie intake**

- **Increasing tobacco & alcohol prices successfully reduces consumption**
- **160 modelling studies suggest a 10% price increase in soft drinks will reduce consumption by 8%**
- **Successful precedents for similar duties** *(Finland, France, Hungary & US states)*
- **Small changes ⟶ big public health gains**

Biggest health gains in lower income groups = a <u>progressive</u> policy

An EU-wide €0-20 per litre sugary drinks duty could raise around €8,000,000,000 a year…

…to pay for programmes to improve children's health & the environment they grow up in:

- ***Providing free & high quality school meals***
- ***Improving food education & skills***
- ***Free fruit and vegetable snacks in schools***
- ***Installing fresh drinking water fountains in school***

Ring-fencing of revenue from duties is popular - public support can double if it is spent on vital public services (eg **education / health services)**

Lancet February 2013
Non-Communicable Diseases 4

SUPPORT: Implementation path for effective public health interventions

(eg. clean water, sanitation, pollution, immunisation, seatbelts, smokefree etc)

- **S**CIENCE evidence emerges
- **U**NDERSTANDING spreads
- **P**ROFESSIONALS accept paradigm
- **P**UBLIC & POLITICIANS become aware, then supportive
- **O**PPOSITION from vested interests is slowly overcome
- **R**EGULATION is introduced, often strengthened by
- **T**AXATION reinforces regulations (eg. Tobacco & alcohol control)

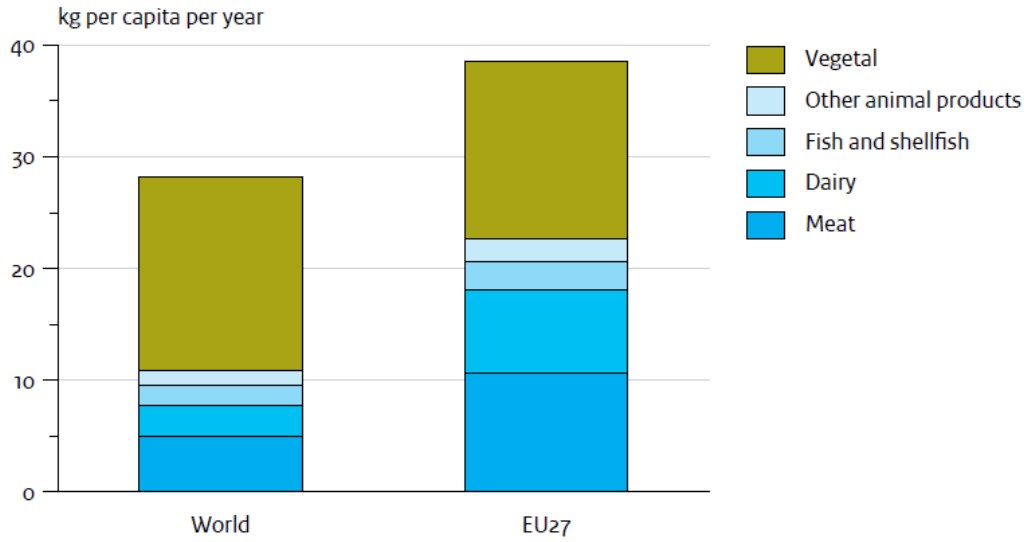
Professor **Simon Capewell** *UK Faculty of Public Health & University of Liverpool*

Within EU the CAP has caused:

- over-consumption of saturated fat-rich beef,
- over-consumption of saturated fat-rich dairy products,
- consumption of saturated fat-rich cakes, pies, pastries, etc.,
- under-consumption of fruit, vegetables and cereals,
- under-consumption of vegetable protein products containing “healthy” fats,
- overproduction of high tar tobacco (exported to developing countries), and
- high incidence and death rate from CVDs and cancers, both in EU and beyond.

The Protein Dietary Marker

Figure 3.1
Protein supply, 2007



Source: FAO (2010)

EU per-capita consumption of proteins from animal food products is more than double the world's average.

European Commission, 18th November 2010: "The Reform of the CAP towards 2020"

"Creating the conditions for easy access to healthy, sustainable and nutritious diet has clear public health benefits as diet is one of the major modifiable risk factor for chronic non-communicable diseases (obesity, diabetes, cardiovascular disease, cancer). The number of overweight children increases by 1.2 million per year and (with increase in child obesity 400,000 per year) in the EU. From a public health perspective, access to nutritious-effective food remains insufficient for some groups of EU citizens (e.g. the most deprived), availability of local and directly marketed food stuffs is limited, and acceptability is largely influenced by mass media which is biased towards unhealthy food stuffs (soft drinks, highly processed foods). Finally, there are concerns as regards other qualities of the food, which include the ethical factors related to production and the way animals are treated."


EPHAC

Commissioner Cioloş: ***"The Common Agriculture Policy has a clear contribution to health policies, providing safe and diverse food, at affordable prices for consumers and in sufficient quantity, promoting a balanced nutrition, based on quality products. But we can do more to create synergies between agriculture, education and health, to ensure that European policies address the challenges of diet related chronic diseases"***

EPHAC Policy Debate Public Health's role in the CAP, European Parliament , June 16th 2011

One can conclude therefore that:

- **while public health nutrition is identified as a very important and desirable objective (the rhetoric is fine!),**
- **its provision is still not yet awarded high priority within CAP reform discussions (the actions are minimal!).**

Any questions?

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