

# Who is driving the ~~NO~~ change?

Workshop  
“Cardiovascular Diseases and Lifestyle”

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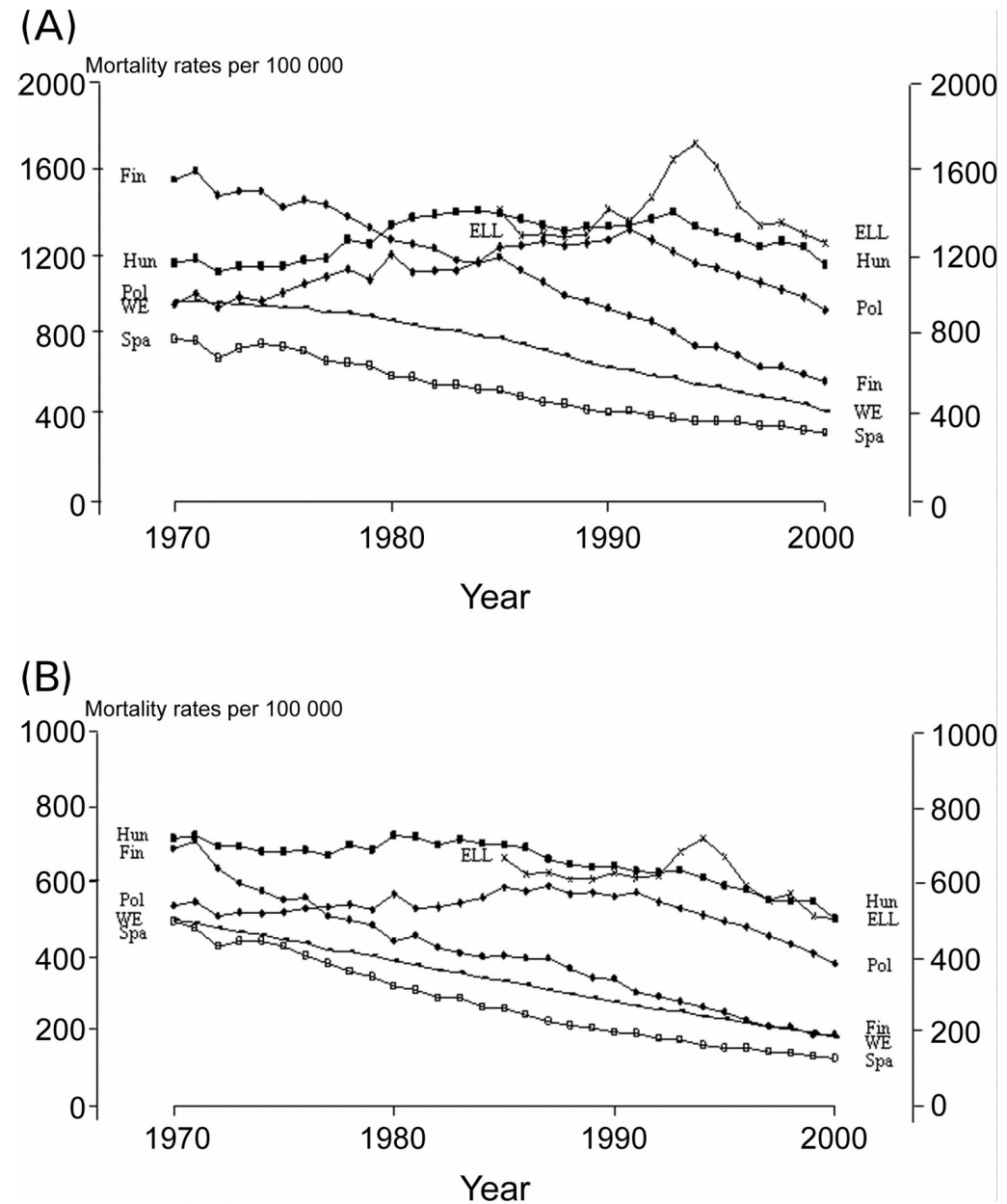
European Parliament, Brussels

09 10 2018

# Plan

- Current status/ do we still have an issue?:
  - Longevity – CVD related deaths
  - Quality of life – CVD related loss of quality years:
  - Multimorbidity- many are driven by same lifestyle choices, such as diabetes, cancer, IHD
- What do we know? Smoking, diet, physical activity
- Why what we know does not work?
- Quality indicators vs. quantity indicators

# Cardiovascular mortality in 1970–2000 in Europe

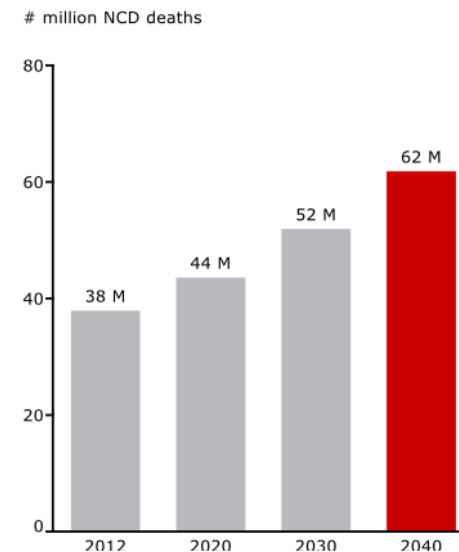


# 2016

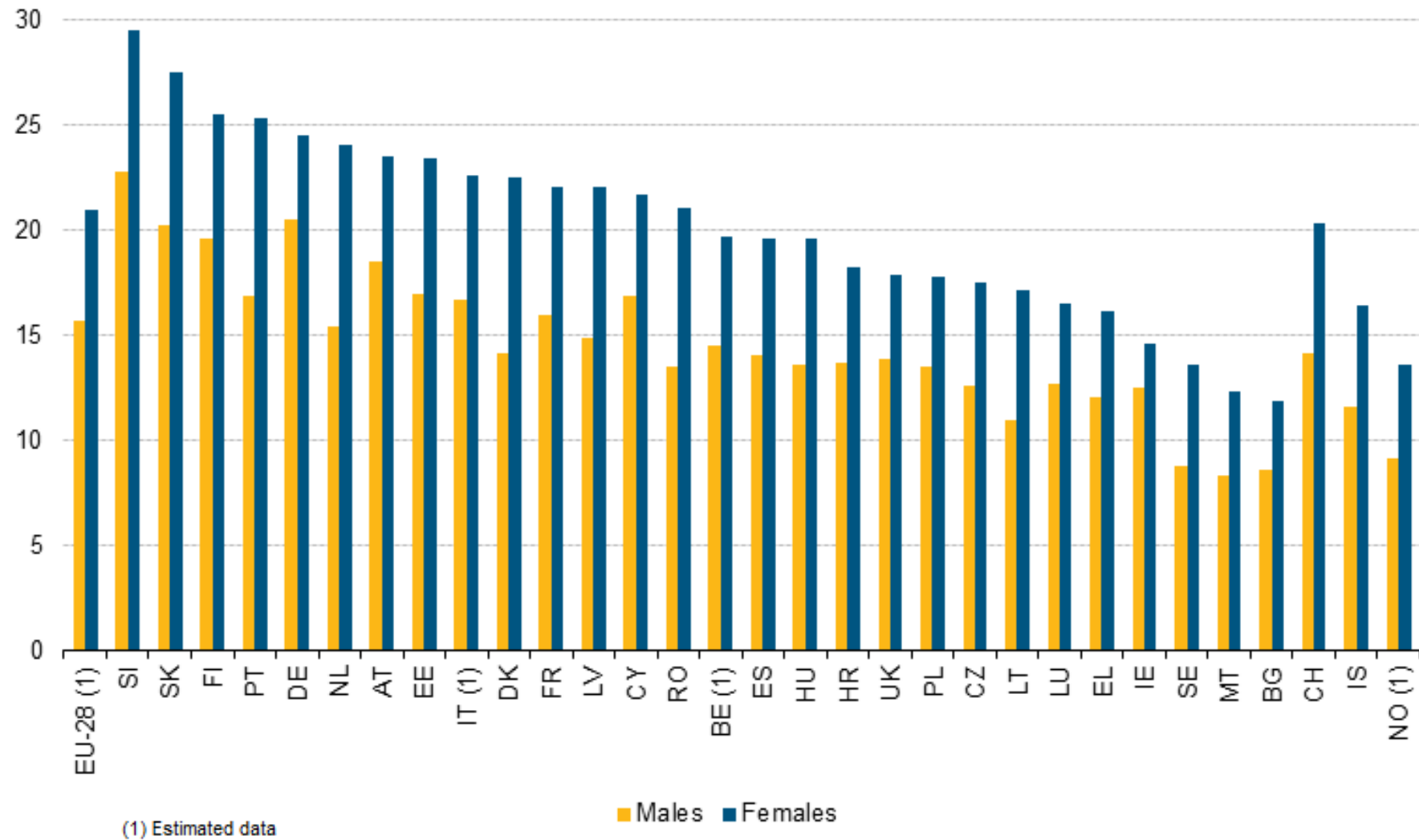
## Technological Innovations for Health and Wealth for an Ageing Global Population

Expected that children under the age of five will be outnumbered by individuals aged 60 or more by 2020

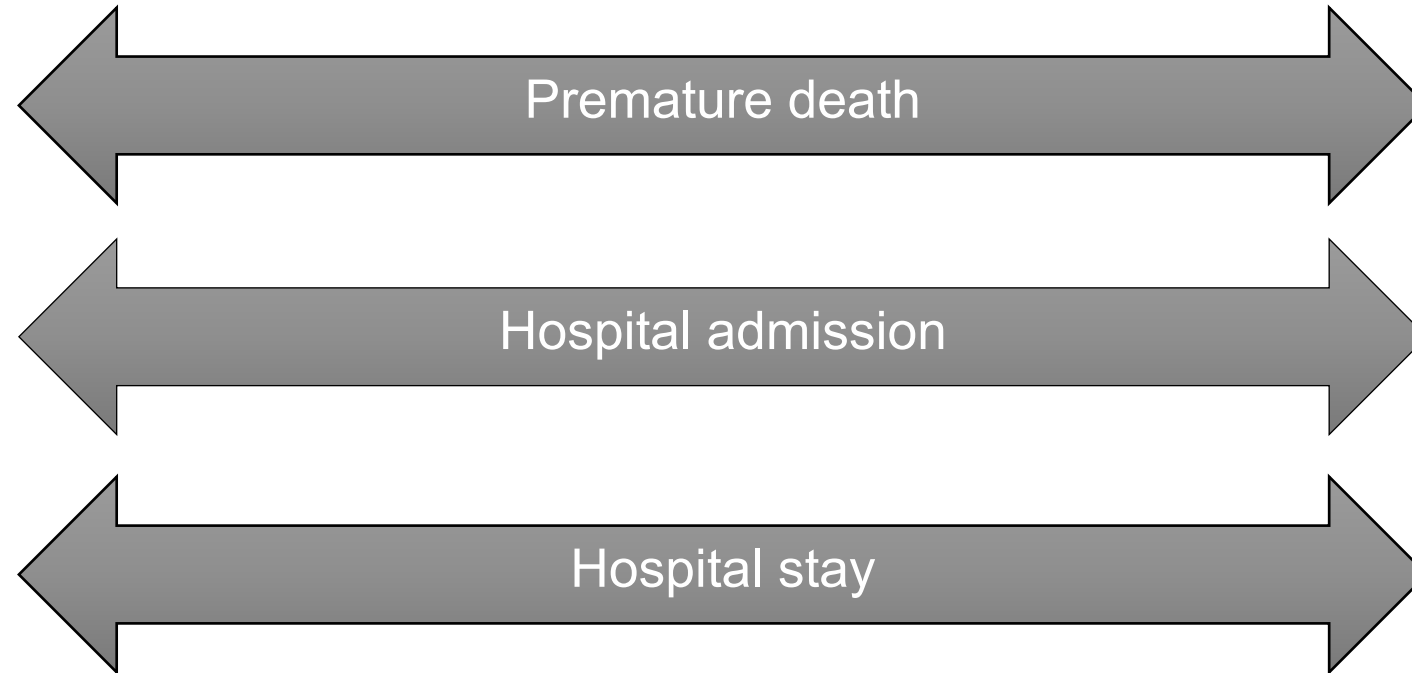
**Figure 1:** Projected NCD deaths globally (Source: WHO; Bain)



“Life expectancy” – “healthy years” =



# Multimorbidity vs. single chronic condition



- + Vogeli C, Shields AE, Lee TA, Gibson TB, Marder WD, Weiss KB, et al. Multiple chronic conditions: prevalence, health consequences, and implications for quality, care management, and costs. J Gen Intern Med 2007;22(suppl 3):391-5.
- + Menotti A, Mulder I, Nissinen A, Giampaoli S, Feskens EJ, Kromhout D. Prevalence of morbidity and multimorbidity in elderly male populations and their impact on 10-year all-cause mortality: the FINE study (Finland, Italy, Netherlands, Elderly). J Clin Epidemiol 2001;54:680-6.

## Maximizing Healthy Life Years: Investments that Pay Off

An Insights Report from the World Economic Forum's "Future of Healthy" Project  
Prepared in collaboration with Bain & Company

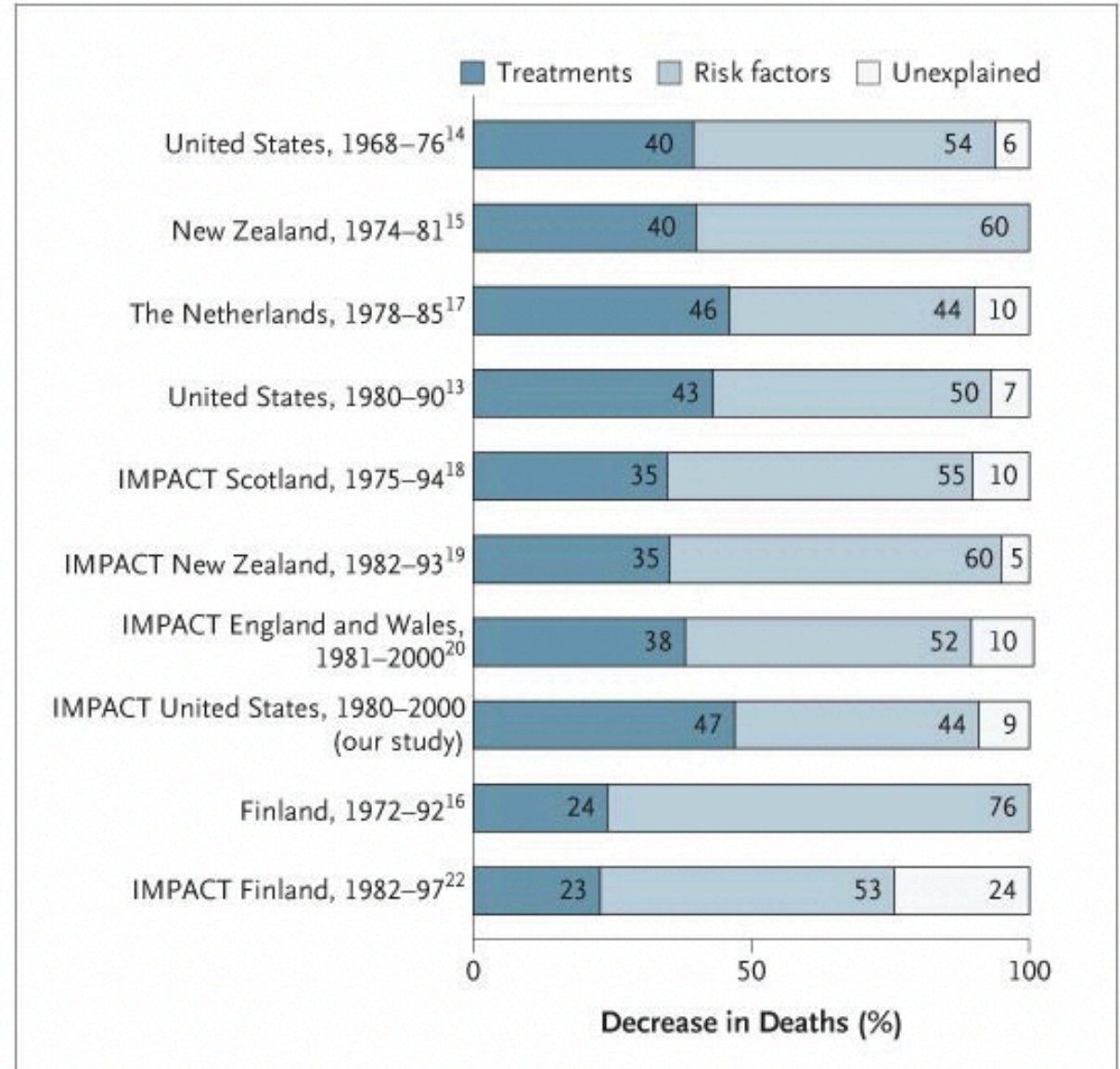
January 2015

**Maximizing Healthy Life Years (MHLY) are investments** in preventing non-communicable diseases (NCDs)...

Hence, preventing NCDs will **not only avert deaths but also maximize healthy life years** by avoiding prolonged periods of disability..

The Lancet Commission estimated that between 2000 and 2011, about **24% of the growth in full income** in low-income and middle-income **countries resulted from the value of additional life years** gained.

# Causes of CVD mortality decline





# Prevalence of multimorbidity

Prevalence of multimorbidity by age group: overall (a) and by sex (b).



Violan C, Foguet-Boreu Q, Flores-Mateo G, Salisbury C, Blom J, et al. (2014) Prevalence, Determinants and Patterns of Multimorbidity in Primary Care: A Systematic Review of Observational Studies. PLoS ONE 9(7): e102149. doi:10.1371/journal.pone.0102149

1990		2010		
Mean rank (95% UI)	Disorder	Disorder	Mean rank (95% UI)	% change (95% UI)
1.0 (1 to 2)	1 Lower respiratory infections	1 Ischaemic heart disease	1.0 (1 to 2)	29 (22 to 34)
2.0 (1 to 2)	2 Diarrhoea	2 Lower respiratory infections	2.0 (1 to 3)	-44 (-48 to -39)
3.4 (3 to 5)	3 Preterm birth complications	3 Stroke	3.2 (2 to 5)	19 (5 to 26)
3.8 (3 to 5)	4 Ischaemic heart disease	4 Diarrhoea	4.9 (4 to 8)	-51 (-57 to -45)
5.2 (4 to 6)	5 Stroke	5 HIV/AIDS	6.6 (4 to 9)	351 (293 to 413)
6.3 (5 to 8)	6 COPD	6 Low back pain	6.7 (3 to 11)	43 (34 to 53)
8.0 (6 to 13)	7 Malaria	7 Malaria	6.7 (3 to 11)	21 (-9 to 63)
9.9 (7 to 13)	8 Tuberculosis	8 Preterm birth complications	8.0 (5 to 11)	-27 (-37 to -16)
10.2 (7 to 14)	9 Protein-energy malnutrition	9 COPD	8.1 (5 to 11)	-2 (-8 to 5)
10.3 (7 to 15)	10 Neonatal encephalopathy*	10 Road injury	8.4 (4 to 11)	34 (11 to 63)

Murray CJL et al. Lancet 2012;380:2197–2223.

Disability-adjusted life-years  
(DALYs)

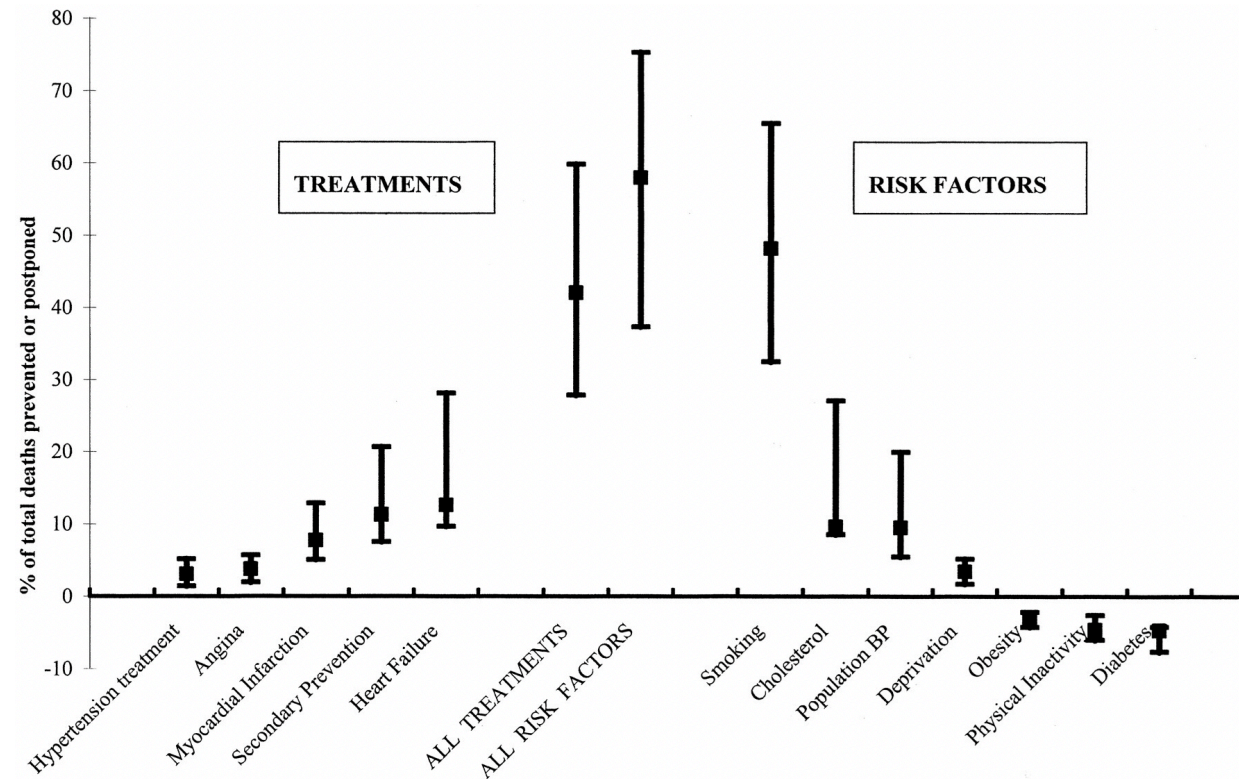
Global Disability-Adjusted Life-Year (DALY) ranks for the top 10 causes in 1990 and 2010, and the percentage change between 1990 and 2010

Murray CJL et al. Lancet 2012;380:2197–2223.

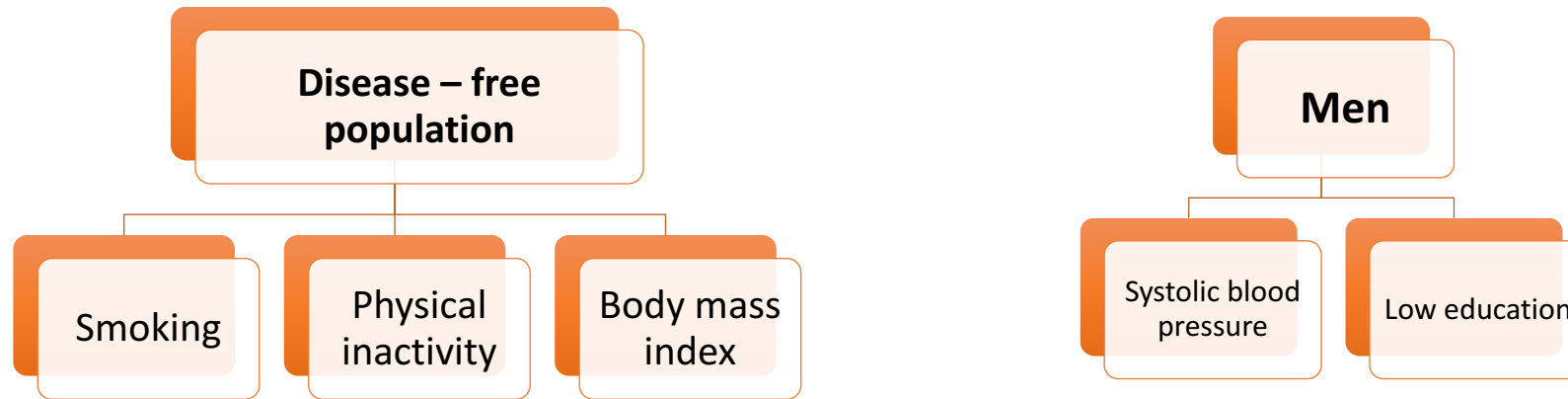
# What caused the decline in mortality?

Treatments responsible for **42%** of the total mortality decrease between 1981 and 2000

Risk factors responsible for **58%** of the total mortality decrease between 1981 and 2000



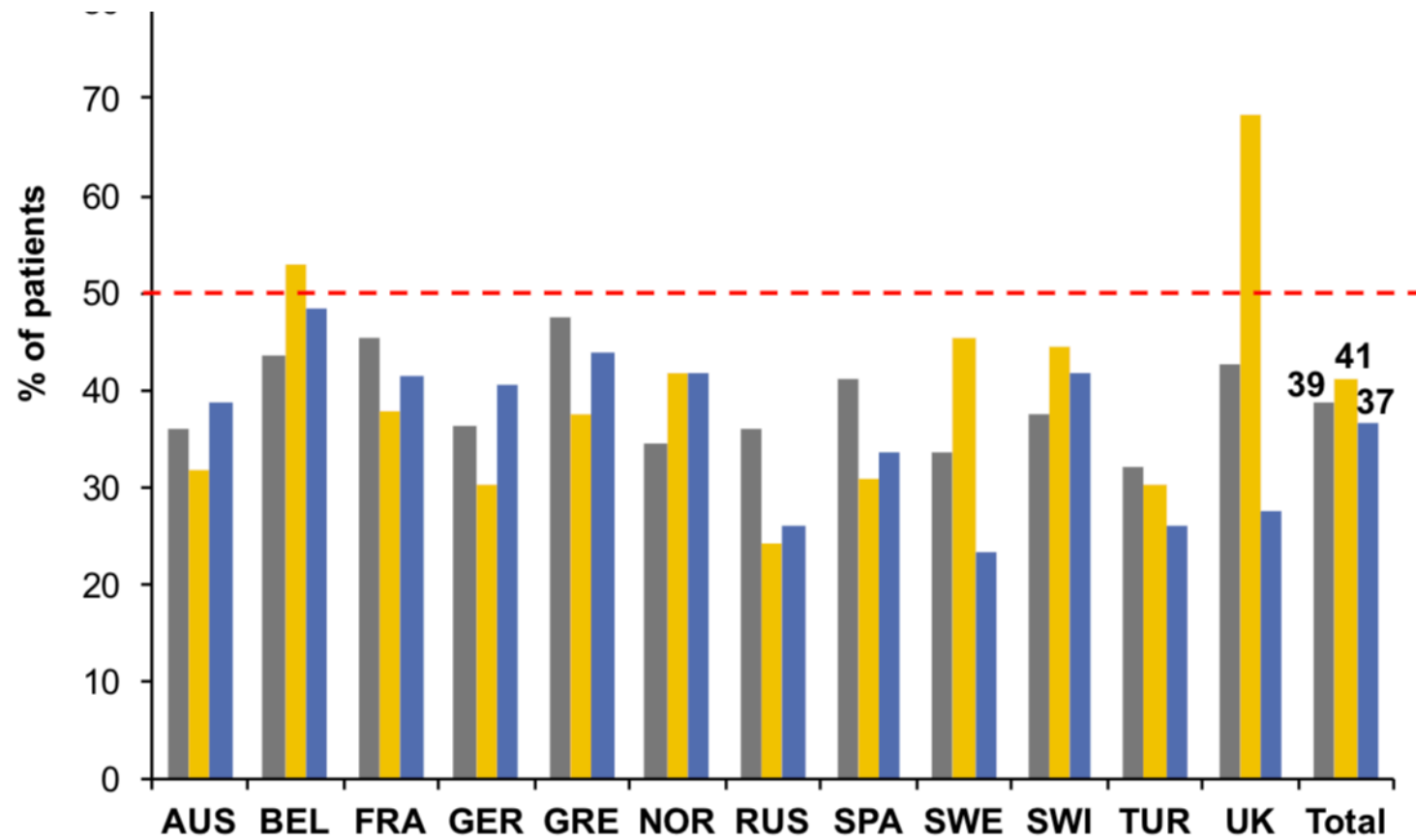
# Risk factors for multimorbidity



Prospective association of risk factors with incident multimorbidity during 10-year follow-up among men (n = 586) and women (n = 663) with diabetes at baseline.

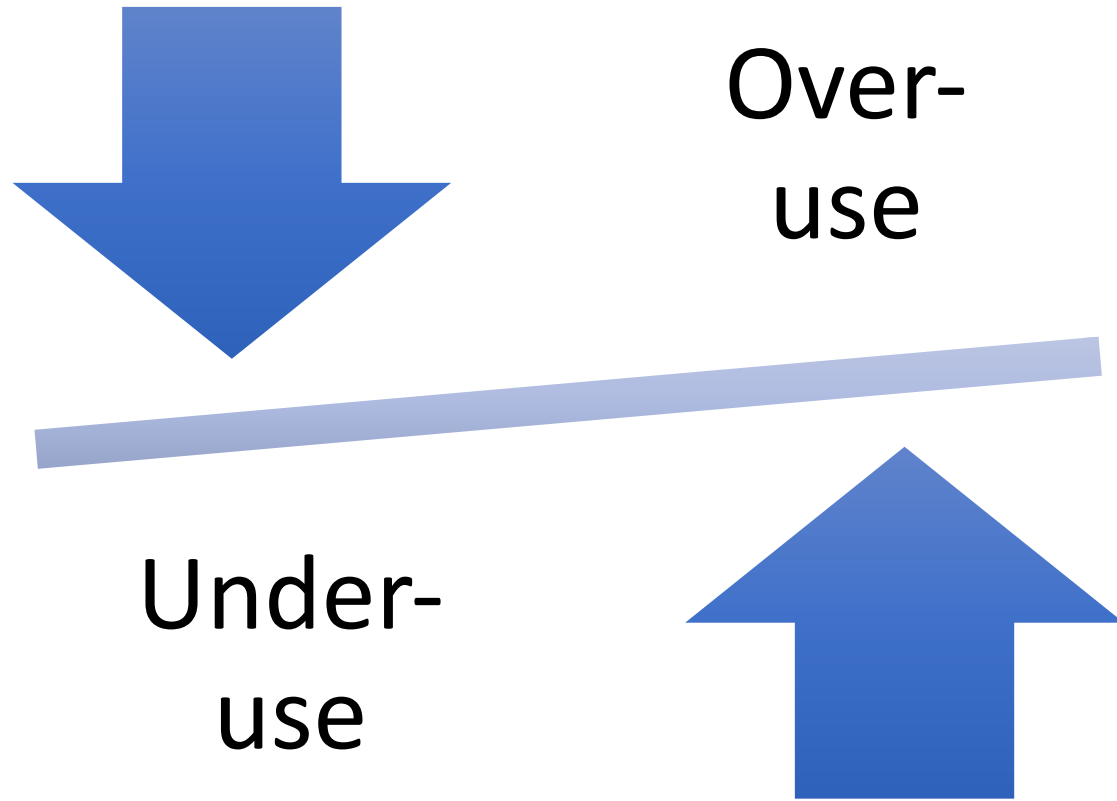
	Men <sup>a</sup>		Women <sup>a</sup>	
	Univariate model <sup>b</sup>	Multivariate model <sup>b</sup>	Univariate model <sup>b</sup>	Multivariate model <sup>b</sup>
Blood pressure, mm Hg ( $\geq 140/90$ mm Hg vs. $< 140/90$ mm Hg)	<b>1.43 (1.02–2.00)</b>	<b>1.75 (1.19–2.57)</b>	1.04 (0.72–1.48)	0.96 (0.66–1.40)
Cholesterol, mmol/l ( $\geq 5$ mmol/l vs. $< 5$ mmol/l)	0.88 (0.62–1.25)	0.77 (0.53–1.12)	0.98 (0.61–1.56)	0.96 (0.58–1.58)
Body mass index, kg/m <sup>2</sup> ( $\geq 27$ kg/m <sup>2</sup> vs. $< 27$ kg/m <sup>2</sup> )	1.32 (0.94–1.84)	1.20 (0.83–1.73)	<b>1.67 (1.13–2.46)</b>	<b>1.60 (1.06–2.43)</b>
Current smoker (yes vs. no)	<b>1.65 (1.20–2.26)</b>	<b>1.57 (1.12–2.19)</b>	<b>2.10 (1.37–3.22)</b>	<b>2.14 (1.38–3.33)</b>
Physical activity <sup>c</sup> (low vs. high)	<b>1.84 (1.35–2.52)</b>	<b>1.80 (1.29–2.53)</b>	<b>1.45 (1.03–2.06)</b>	1.35 (0.93–1.95)
Fruit and vegetable consumption <sup>d</sup> (low vs. high)	1.27 (0.94–1.73)	1.20 (0.86–1.67)	1.02 (0.73–1.43)	0.87 (0.60–1.27)
Education <sup>e</sup> (low vs. high)	0.80 (0.55–1.16)	0.71 (0.47–1.05)	1.15 (0.76–1.75)	1.10 (0.70–1.73)

Wikström K, Lindström J, Harald K, Peltonen M, Laatikainen T. Clinical and lifestyle-related risk factors for incident multimorbidity: 10-year follow-up of Finnish population-based cohorts 1982–2012. Eur J Intern Med. 2015 Apr;26(3):211–6.



- CVD risk factors  
REMAIN  
UNCONTROLLED

# Evidence-practice gaps

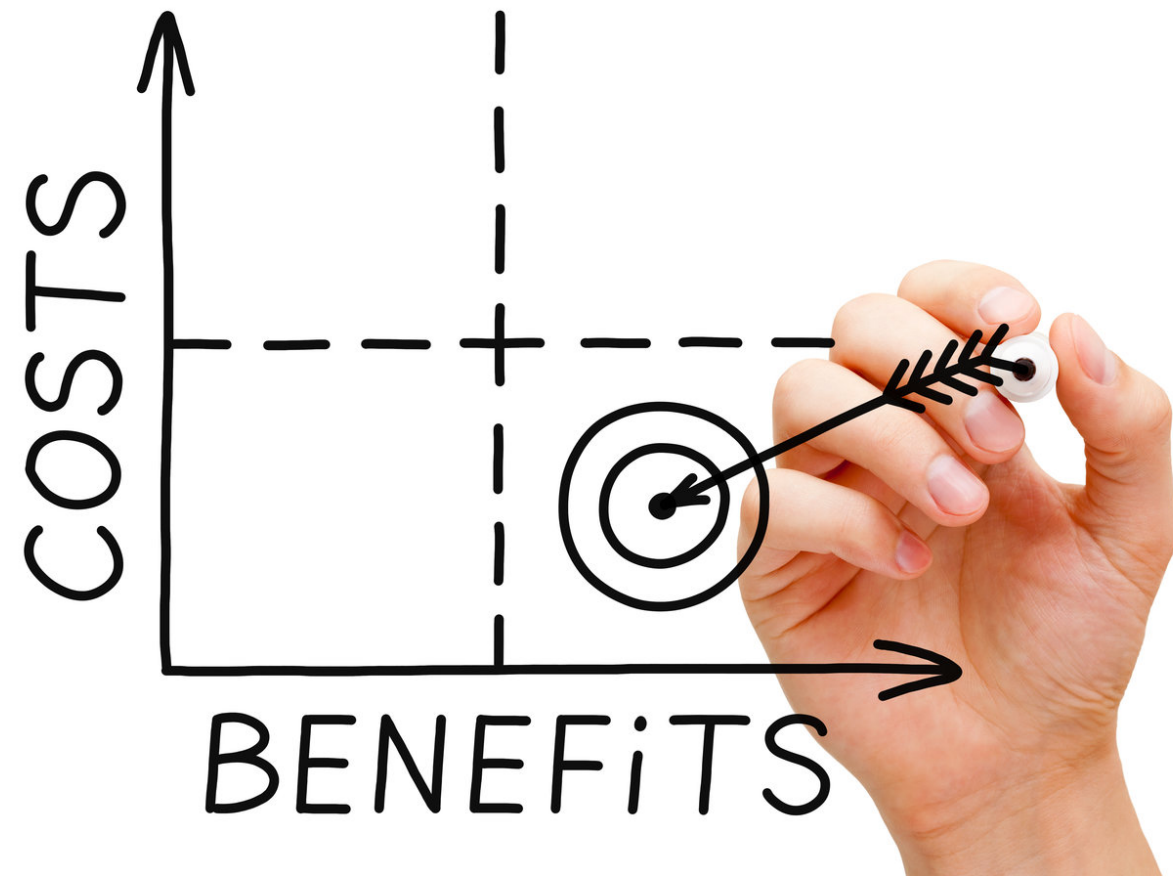


- Over-use:  
Inappropriate use of strategies with strong evidence against, or insufficient evidence for their effectiveness and safety
- Under-use:
- Lack of implementation of proven effective strategies

Reducing evidence-practice gaps would likely lead to greater population benefits than the potential benefits of most novel treatments\*



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\* Woolf SH et al. Ann Fam Med 2005;3:545-552