Childhood immunisation: progress, challenges and priorities for further action, Luxembourg, 16-17 October 2012

The economic case for strengthening immunisation programmes

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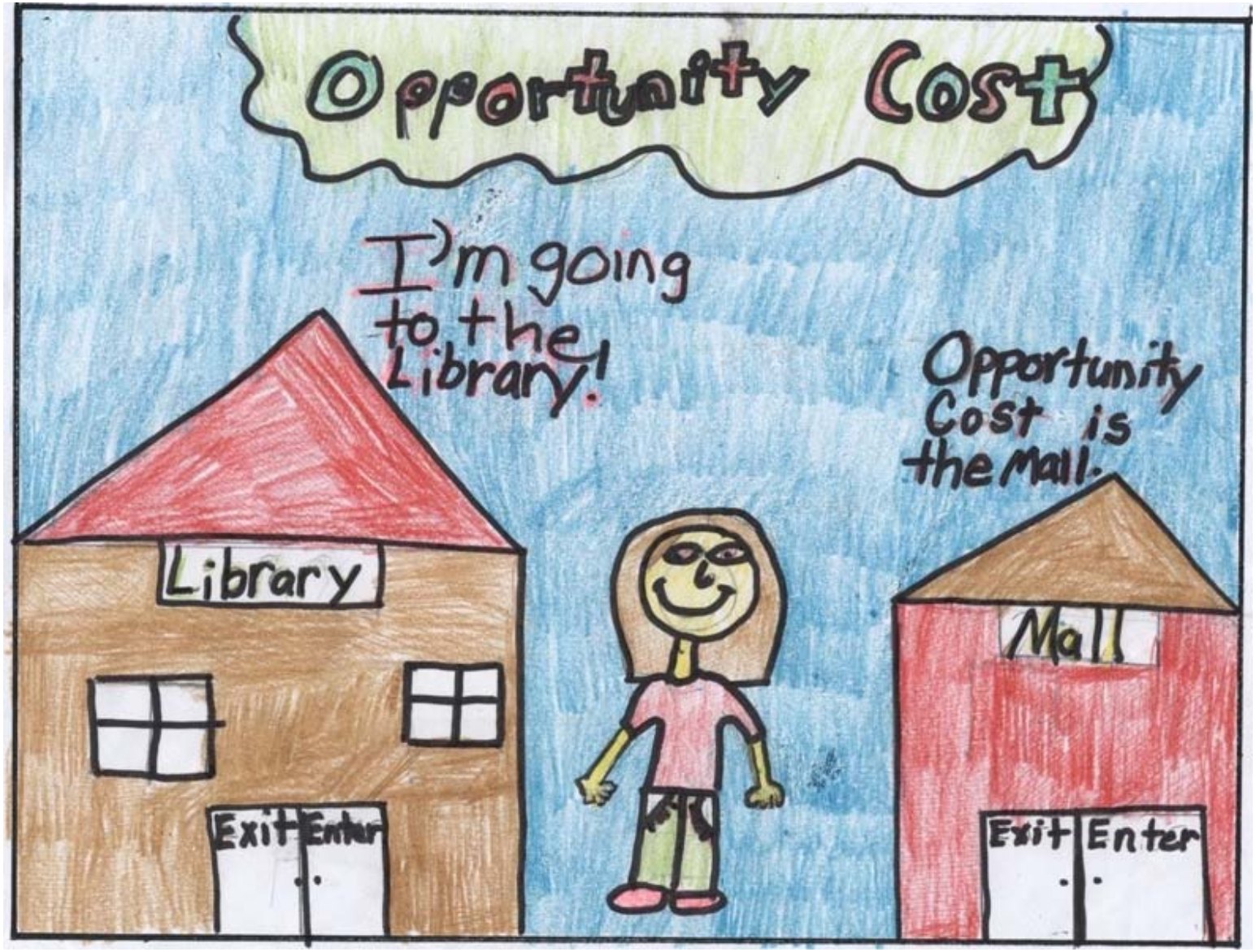
I have no conflicts of interest to declare.

The role of health economics



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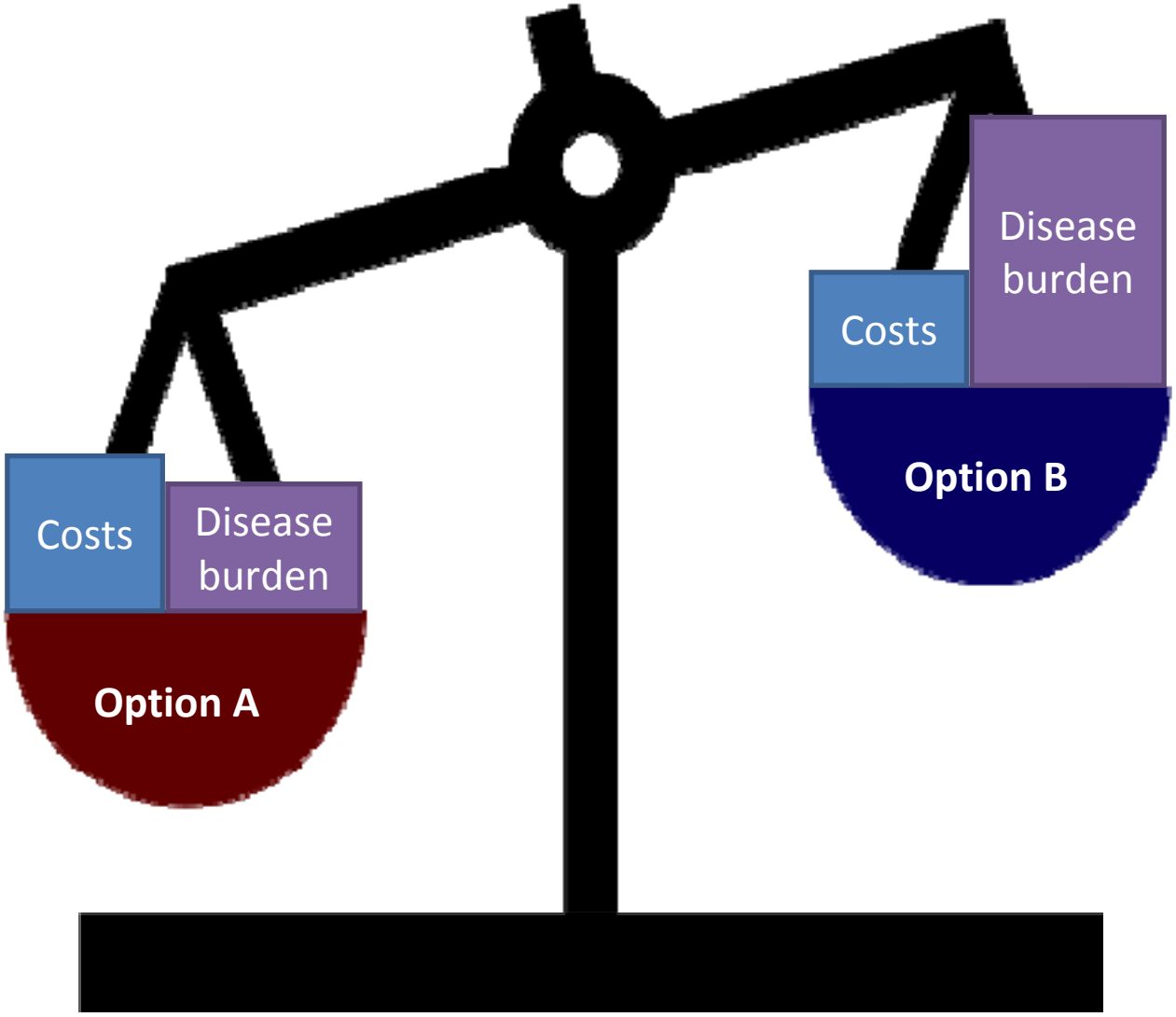
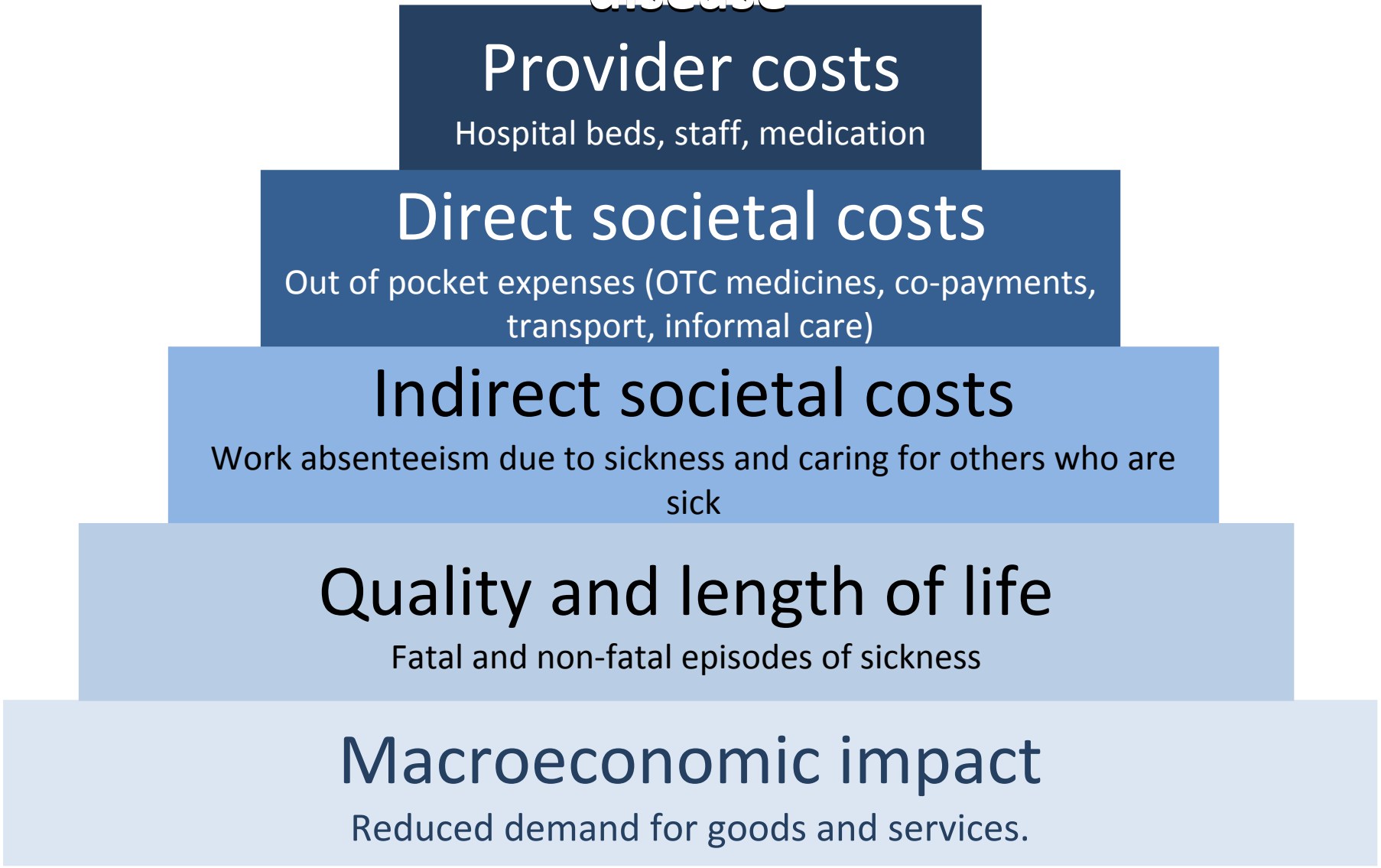
Economic evaluation

An economic evaluation compares the incremental costs and consequences of an intervention compared to a comparator



The economic burden of vaccine-preventable disease



Cost-effectiveness analysis

Cost of intervention (eg. vaccination) - Cost savings due to intervention

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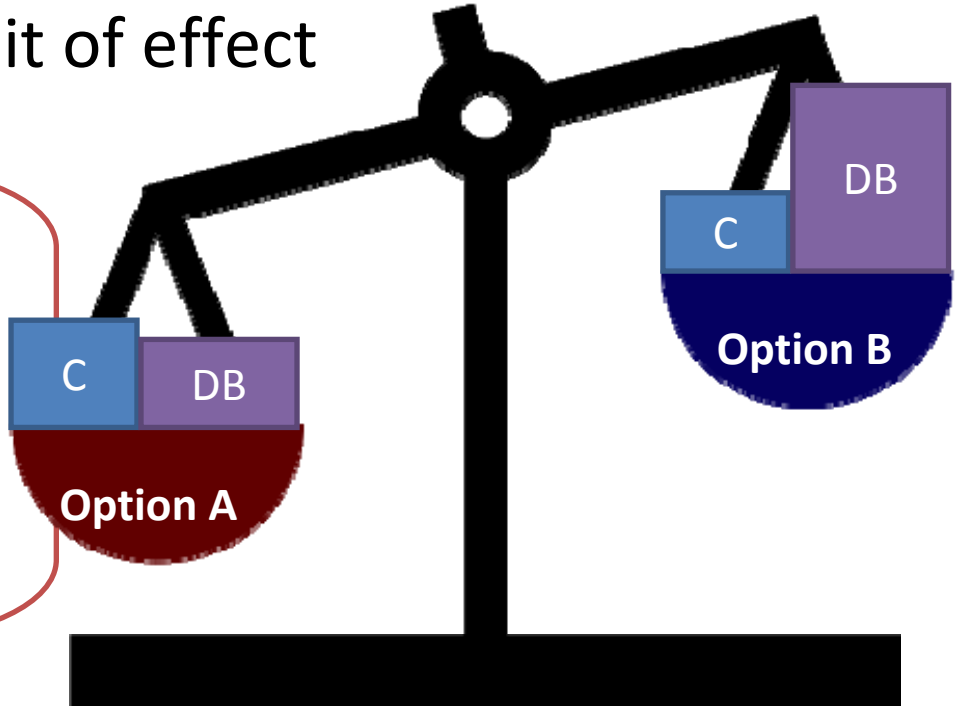
Beneficial effects of intervention

= $ per unit of effect

Measured in quantities like:
episodes of flu prevented
life years gained
QALYs or DALYs gained



Decision making

How do we pick the best option?
We need a decision rule …

Country	Decision making body	Willingness to pay for a QALY or DALY
Australia	PBAC	A$30,000-A$50,000
Netherlands	CVZ	€20,000
UK	JCVI	£20,000 - £30,000
USA	ACIP	$50,000 - $100,000
Global	WHO	1-3 x GNI per capita

So health economics at its best supports evidence-based decision making.

Vaccines

Yet some vaccines are among the most cost-effective interventions available …

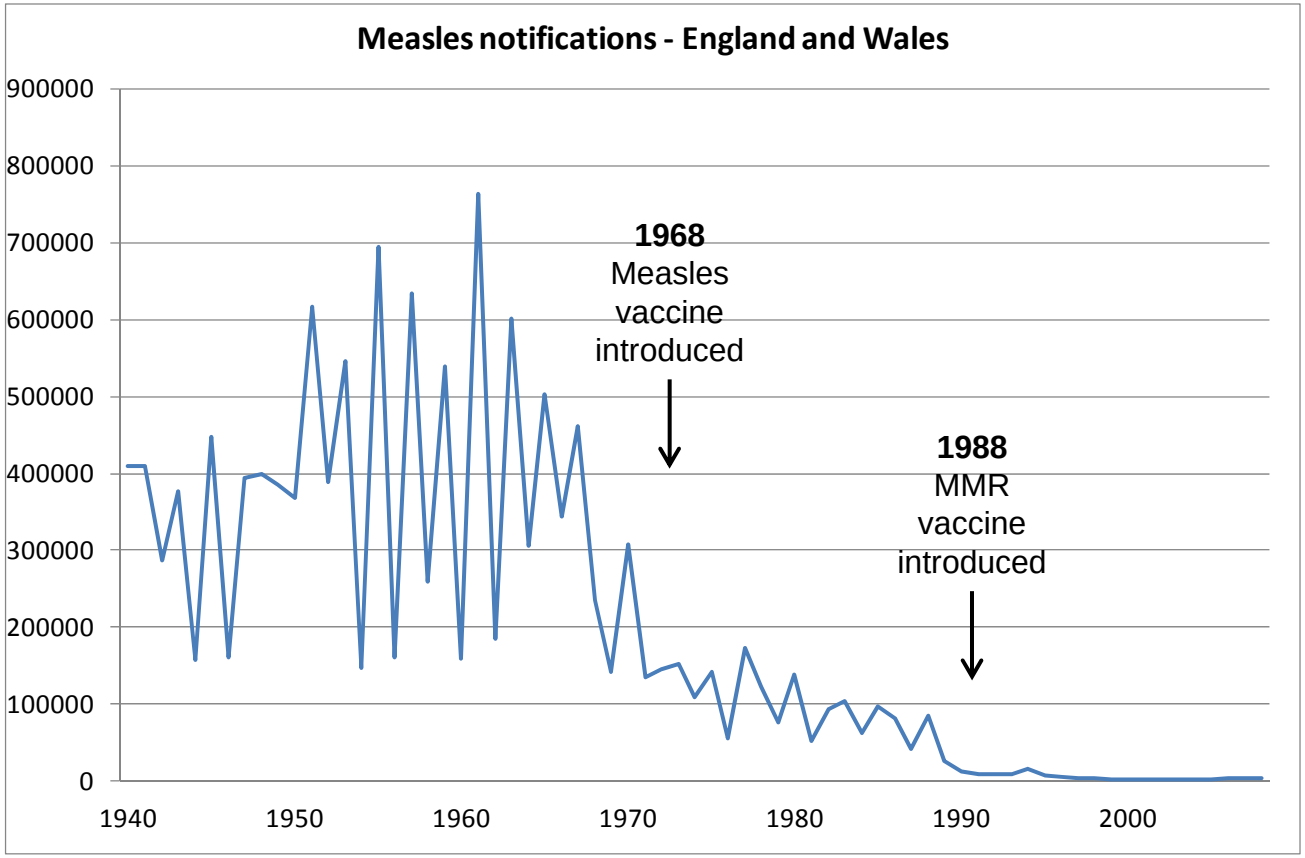
Evaluation of the traditional vaccination programme by region:

Strategy	East Asia and the Pacific	Europe and Central Asia	Latin American and the Caribbean	Middle East and North Africa	South Asia	Sub-Saharan Africa
Cost per fully immunised child	13	24	18	22	17	14
% of children fully immunised	78	94	86	91	59	50
Immunization cost	316	131	174	152	227	172
Deaths averted	728	37	174	153	1 109	867
Cost/death averted	434	3540	1030	993	205	205
Cost/DALY prevented	85	395	438	166	16	7

Source: Brenzel et al. (2006). Vaccine-Preventable Diseases. In: Disease Control Priorities in Developing Countries (2nd Edition). Costs given in 2001 US$.

Measles vaccination

The traditional (EPI) vaccines are mostly “no brainers” in terms of value for money …



Average measles cases (1950 – 1968)
400,000

Average measles cases (2000 – 2010)
3,000

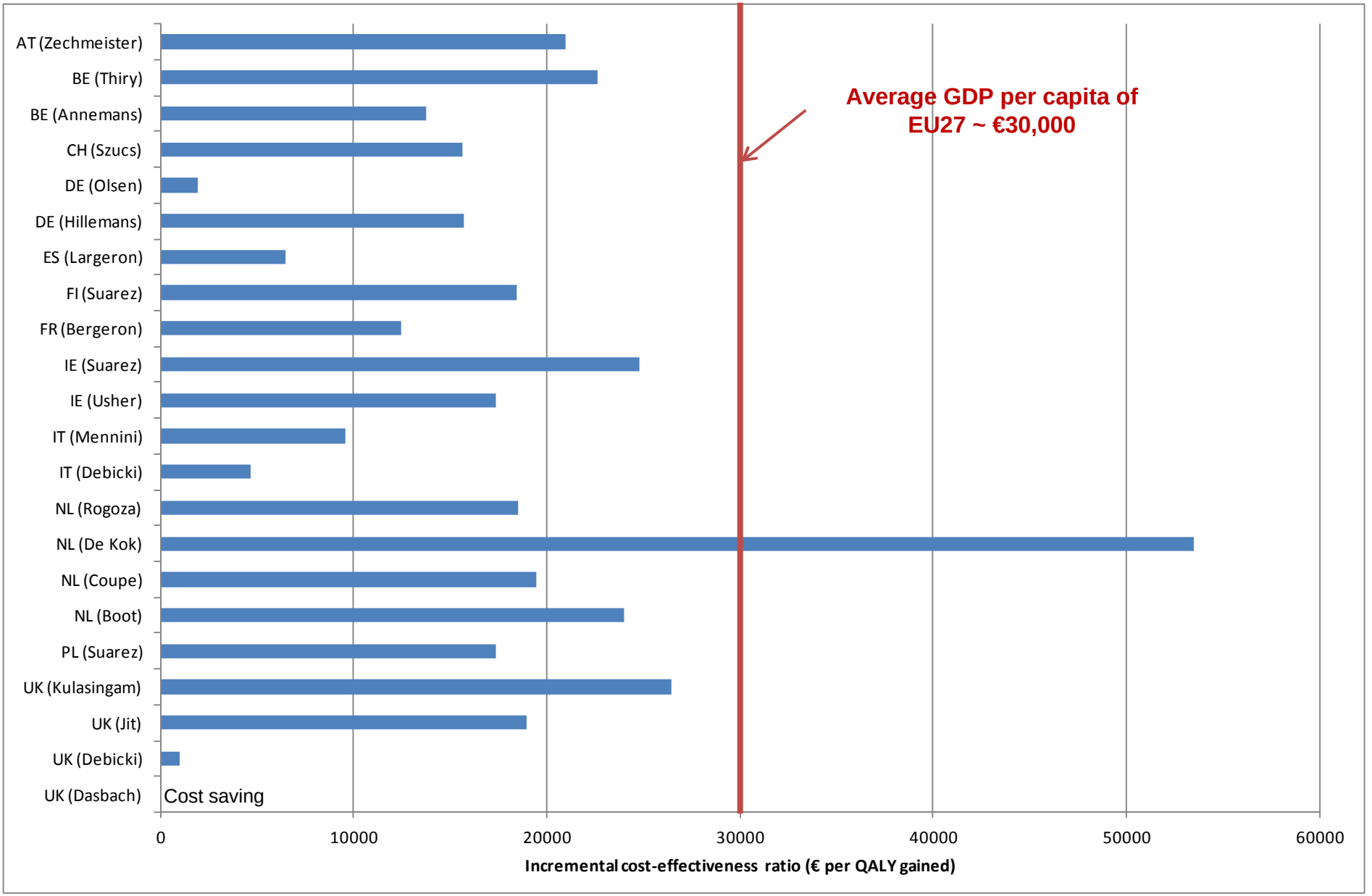
Number of FICs in 2010
700,000

Number to vaccinate to prevent one case
1.75

Direct cost of measles case
$300 (2002)[1]

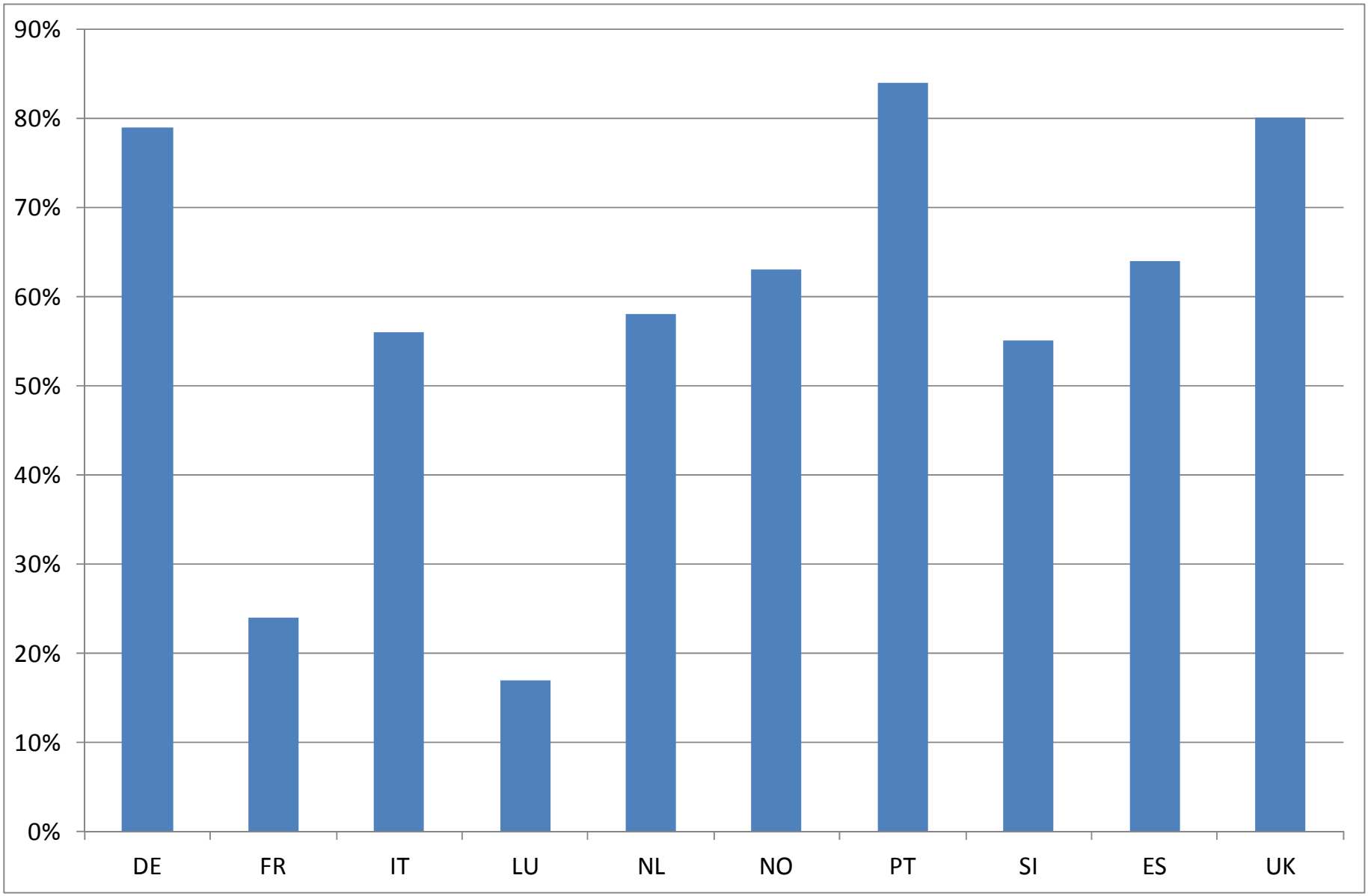
[1]Carabin et al. BMC Public Health 2002; 2:22)

HPV vaccination: cost-effectiveness ratios



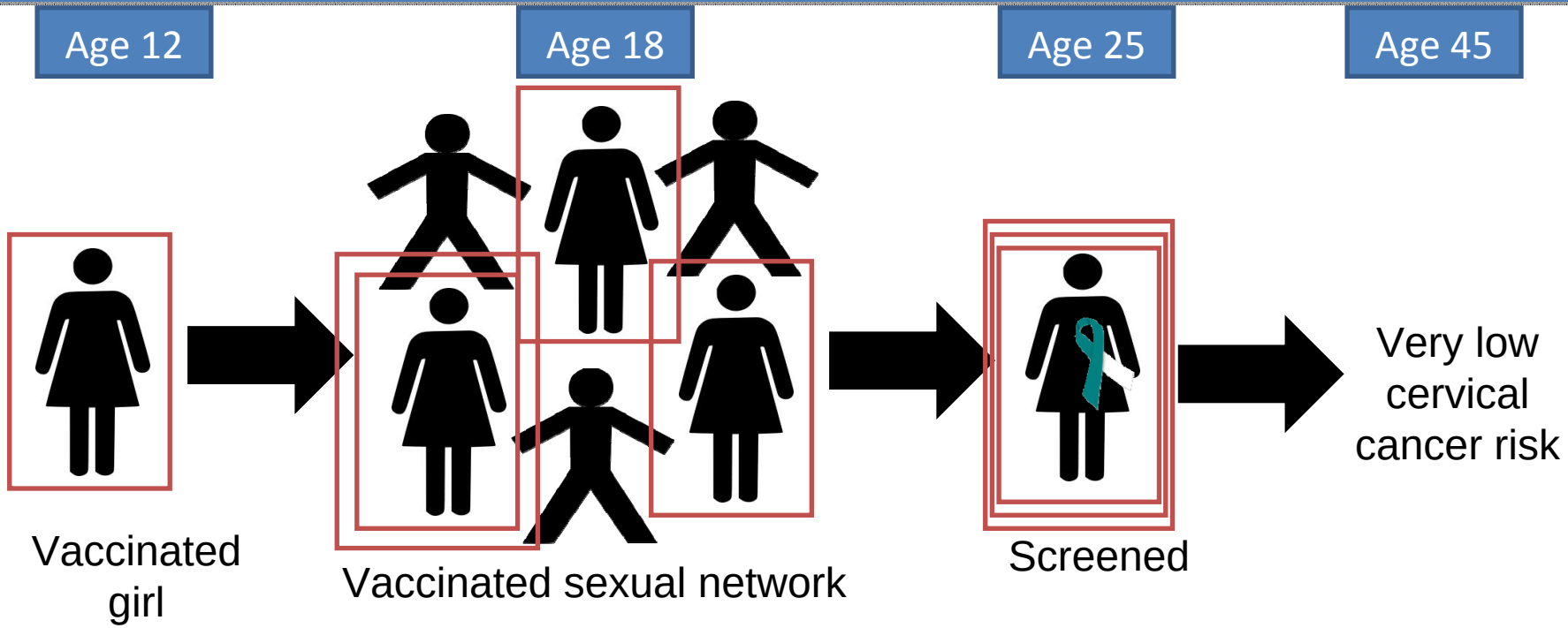
Using base case assumptions in the published article, but taking the discount rate to be as close to 3% as possible.

HPV 3-dose vaccine coverage

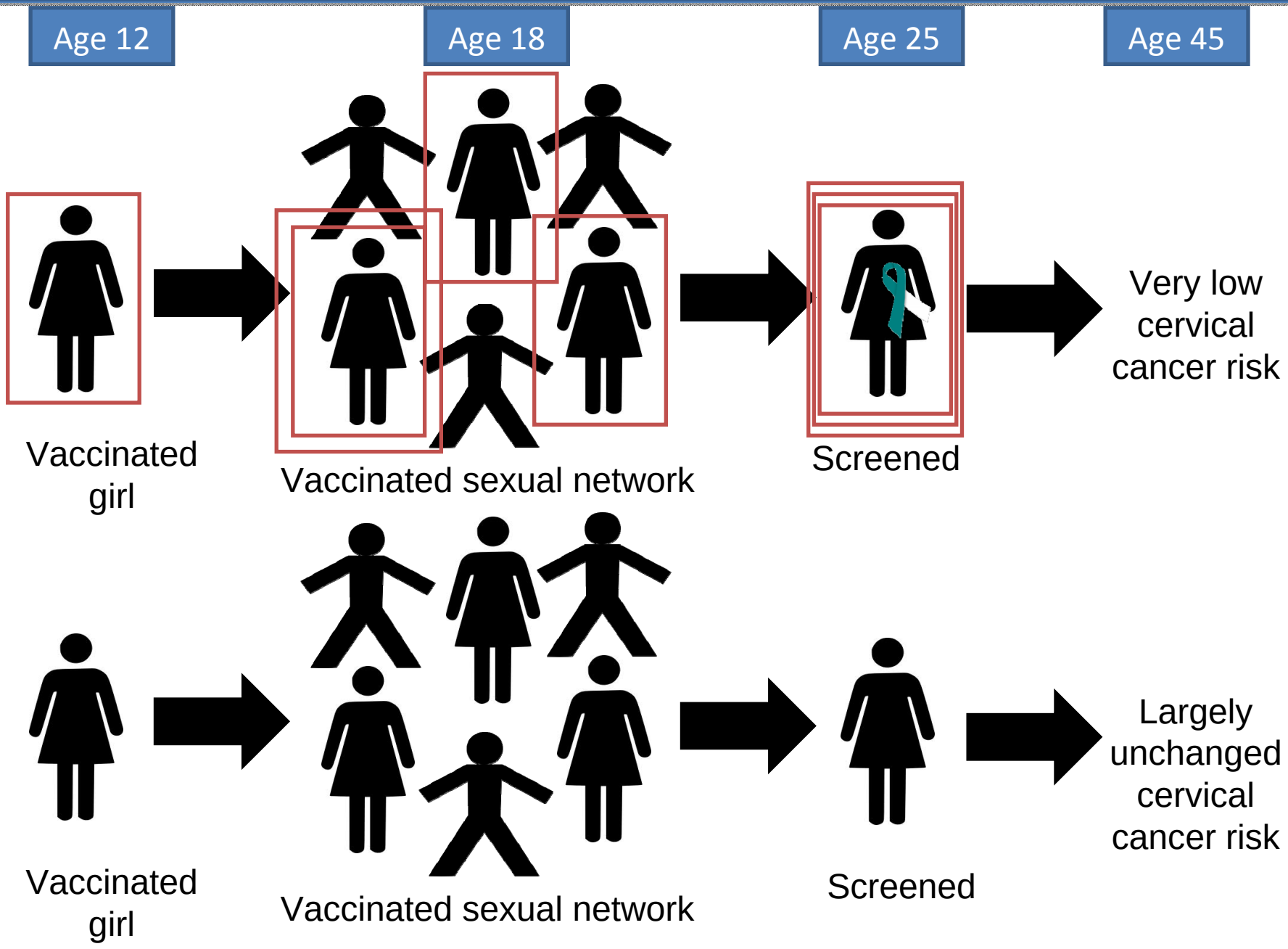


Source: ECDC. Introduction of HPV vaccines in European Union countries - an update.
http://ecdc.europa.eu/en/publications/Publications/20120905_GUI_HPV_vaccine_update.pdf

A tale of two women: it matters who is vaccinated

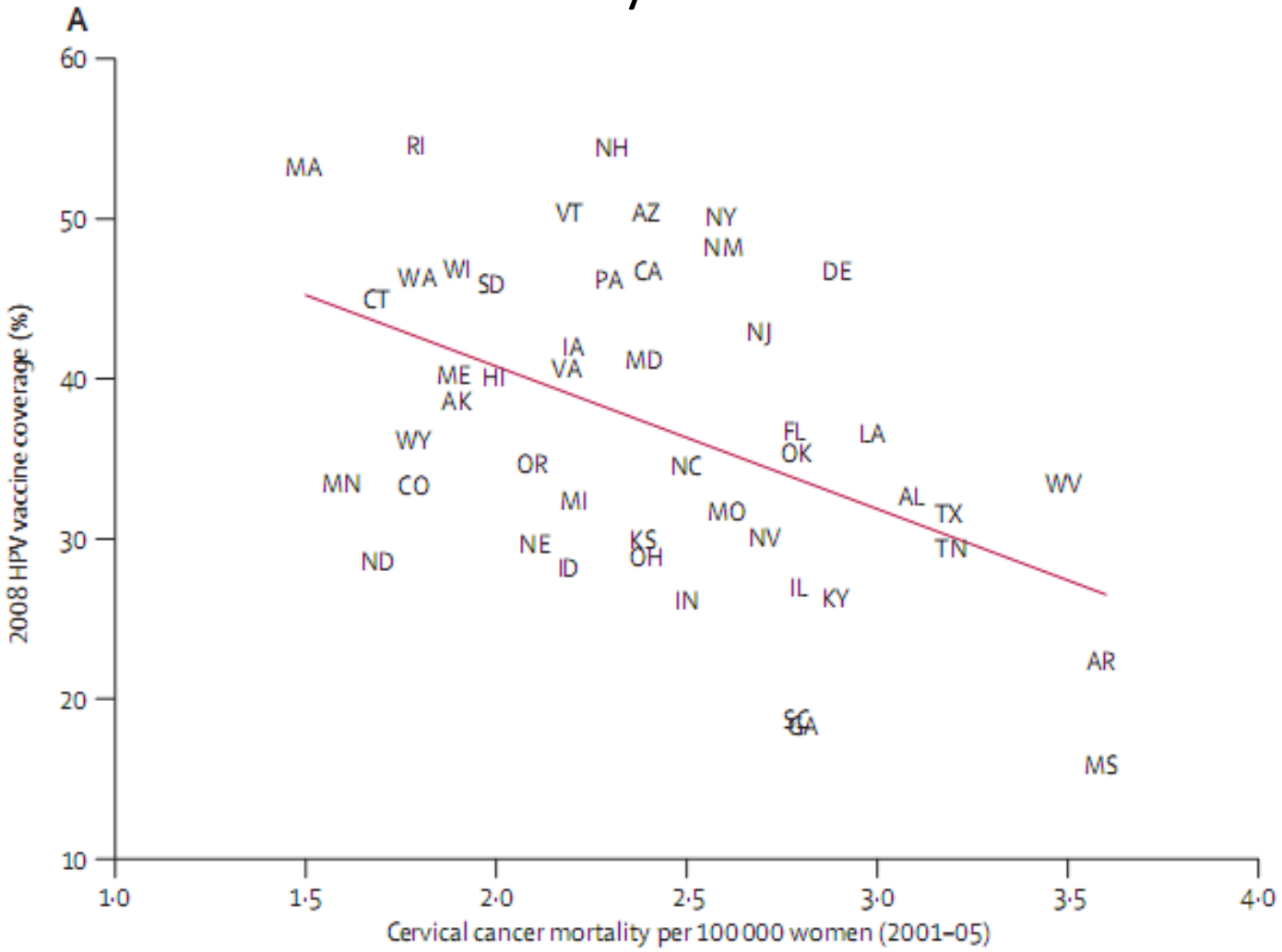


A tale of two women: it matters who is vaccinated



HPV 3-dose vaccine coverage

Quadrivalent HPV vaccine coverage rates in girls 13-17 years and cervical cancer mortality rates in American states



Bach. Gardasil: from bench, to bedside, to blunder. Lancet 2010; 375:963.

Conclusions

- Health economics is most useful when used to make better decisions about health care resource allocation.
- Health economic evaluations suggest that many vaccines (including both traditional vaccines and many new vaccines) are highly cost-effective.
- But to obtain the full economic benefits, equitable coverage is needed.