

Gesundheitsökonomische Aspekte der Prävention:

Kostenreduktion durch Prävention?

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Agenda

- Spart Prävention Kosten?
- Ist Prävention ökonomisch effizienter als Therapie?
- Einschränkungen der vorliegenden Evidenz

Der Glaubenssatz „Prävention spart Geld“ ist weitverbreitet

„Mehr Prävention (...) erfordert kurzfristig höhere Ausgaben, spart aber längerfristig. Wenn ich zum Beispiel durch eine richtige Prävention das Auftreten der Krankheit hinausschieben kann, dann spart das Geld. Zwar kostet es erstmal etwas, die Programme auf den Weg zu bringen, aber langfristig ist damit zu sparen.“

Ärzte Zeitung, 27.04.2001

Kosten-Nutzen-Bewertungen =

Berechnung von Kosten und Nutzen der Intervention B im Vergleich zur besten Alternative A

$$\text{Kosten-Nutzen-Verhältnis} = \frac{\text{Kosten}_{(b)} - \text{Kosten}_{(a)}}{\text{Nutzen}_{(b)} - \text{Nutzen}_{(a)}}$$

$$\frac{\text{Kosten}_{(b)} - \text{Kosten}_{(a)}}{\text{Nutzen}_{(b)} - \text{Nutzen}_{(a)}} < 0 \quad \text{> 0} \quad \longrightarrow \quad \text{Intervention B ist kostensparend bzw. dominant}$$

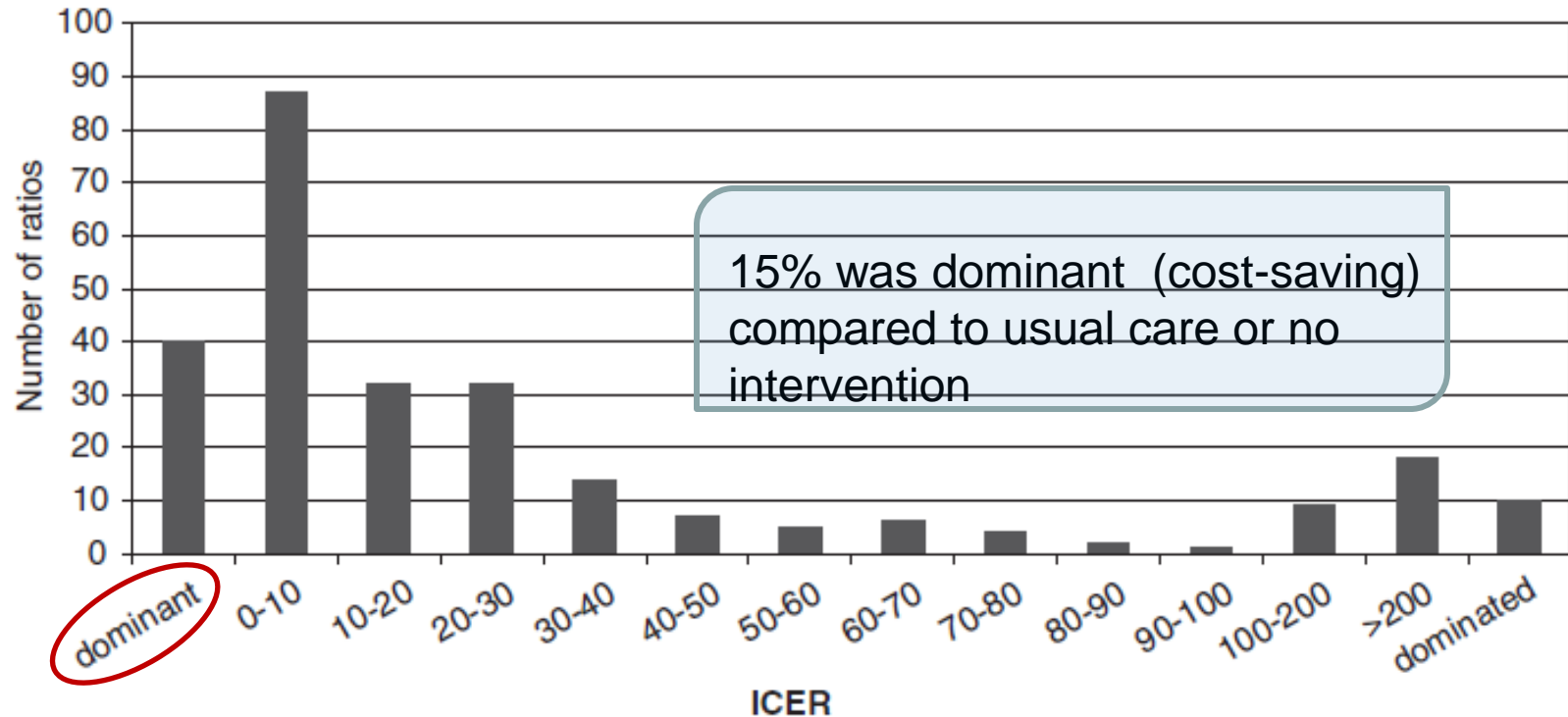
Nettokosten durch Prävention = Präventionskosten - Δ Folgekosten

Implementierungskosten

- + Kosten der Intervention
(medizinisch und nicht medizinisch)
 - Δ Kosten der Zielerkrankung (z. B. KHK)
 - + Kosten konkurrierender Erkrankungen (z. B. Demenz)
als Folge der Lebensverlängerung
 - Δ Produktivitätskosten (Arbeitsausfall)
- = Ersparnisse?**

Spart Prävention Kosten?

Distribution of cost-effectiveness ratios for preventive interventions



Data are from studies published in 2008

Van Gils et al. European Journal of Public Health 2010

Spart Prävention Kosten?

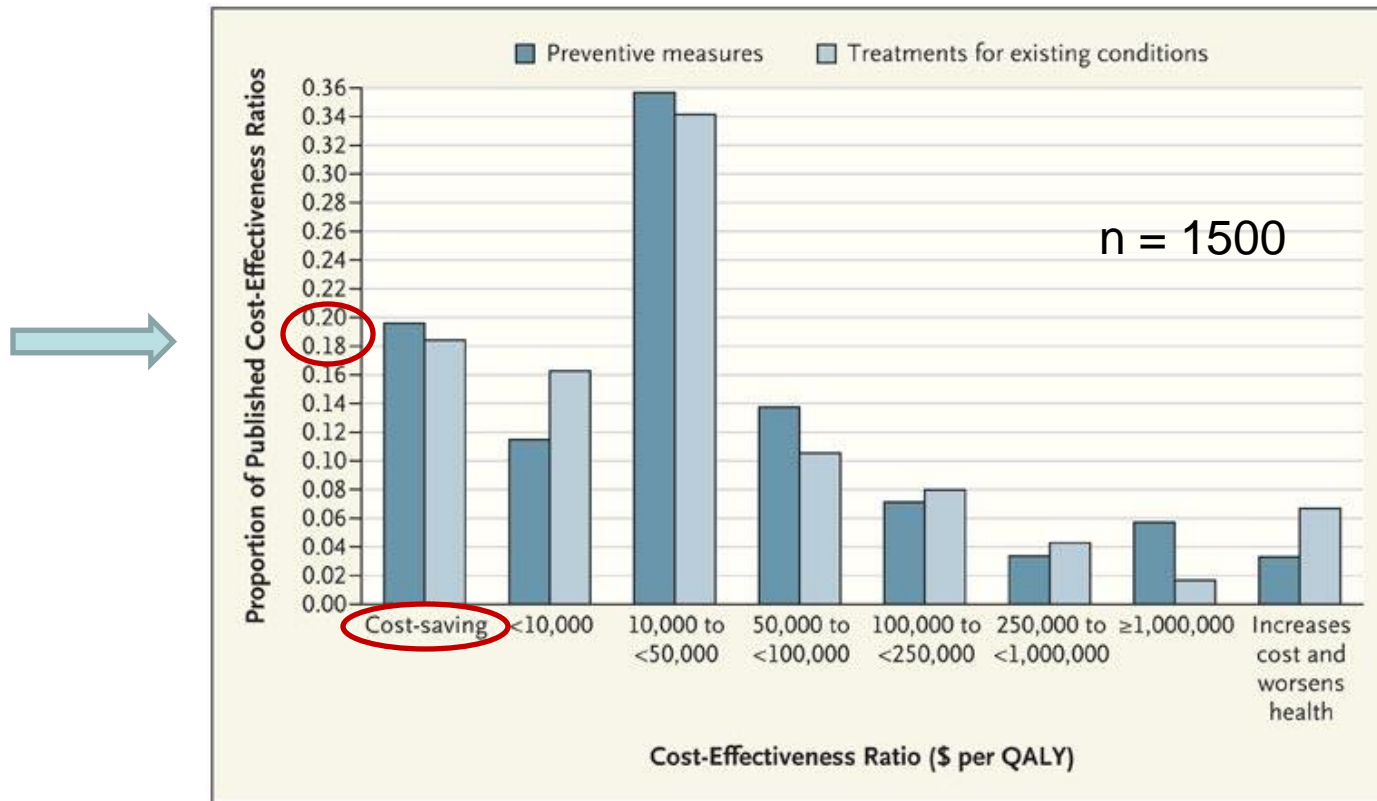
Cost-effectiveness results for preventive interventions by topic area

Topic area	Total	Dominant	Very cost-effective (\$0–10,000/DALY)	Cost-effective (\$10,000–50,000/DALY)	Not cost-effective (>\$50,000/DALY)	Dominated	Insufficient evidence
Preventive interventions							
Alcohol	9	4	3	2	–	–	–
Tobacco	8	2	3	–	–	–	–
Physical activity	6	2	2	2	–	–	–
Nutrition	26	3	1	3	19	–	–
Body mass	9	1	1	2	4	–	1
Blood pressure/ cholesterol	13	2	2	7	–	2	–
Osteoporosis	3	1	–	1	1	–	–
Illicit drugs	2	–	–	1	1	–	–
Cancer	9	–	–	5	3	1	–
Diabetes	7	–	–	5	1	1	–
Kidney disease	2	1	–	1	–	–	–
Mental disorders	11	2	5	2	1	–	1
Cardiovascular disease	1	–	–	–	–	–	1
Other prevention	11	4	1	–	5	–	1
Infectious disease	6	1	2	–	3	–	–
Total	123	23	20	31	38	4	4

Vos et al. 2010. Assessing Cost-Effectiveness in Prevention: Final Report. University of Queensland, Brisbane and Deakin University, Melbourne

Spart Prävention Kosten?

Distribution of cost-effectiveness ratios for preventive and treatment interventions



Data are from 599 studies published between 2000 and 2005.

Cohen et al. N Engl J Med 2008

Kosten-Nutzen-Bewertungen =

Berechnung von Kosten und Nutzen der Intervention B im Vergleich zur besten Alternative A

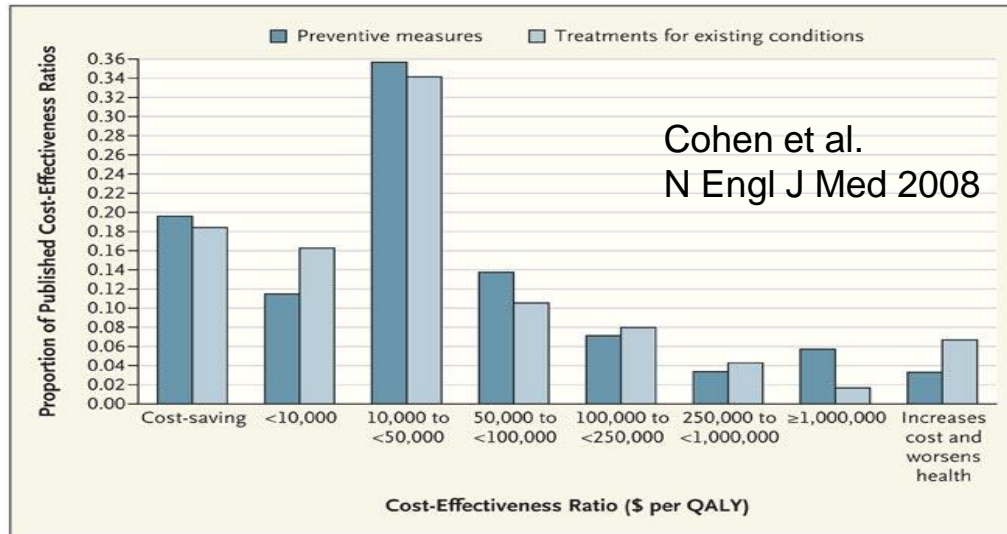
$$\text{Kosten-Nutzen-Verhältnis} = \frac{\text{Kosten}_{(b)} - \text{Kosten}_{(a)}}{\text{Nutzen}_{(b)} - \text{Nutzen}_{(a)}}$$

$$\frac{\text{Kosten}_{(b)} - \text{Kosten}_{(a)}}{\text{Nutzen}_{(b)} - \text{Nutzen}_{(a)}} > 0$$



**Abwägung zwischen
Kosten- und
Nutzensteigerung**

Ist Prävention ökonomisch effizienter als Therapie?



Gemessen an Kosten pro gewonnenes QALY:

- Prävention ist im Durchschnitt nicht effizienter als Therapie
- Präventionsmaßnahmen variieren erheblich hinsichtlich ihrer Effizienz (Kosten-Effektivität)



Differenzierte Aussagen erforderlich

Einschränkungen der vorliegenden Evidenz (1)

- Patientenzeit selten berücksichtigt

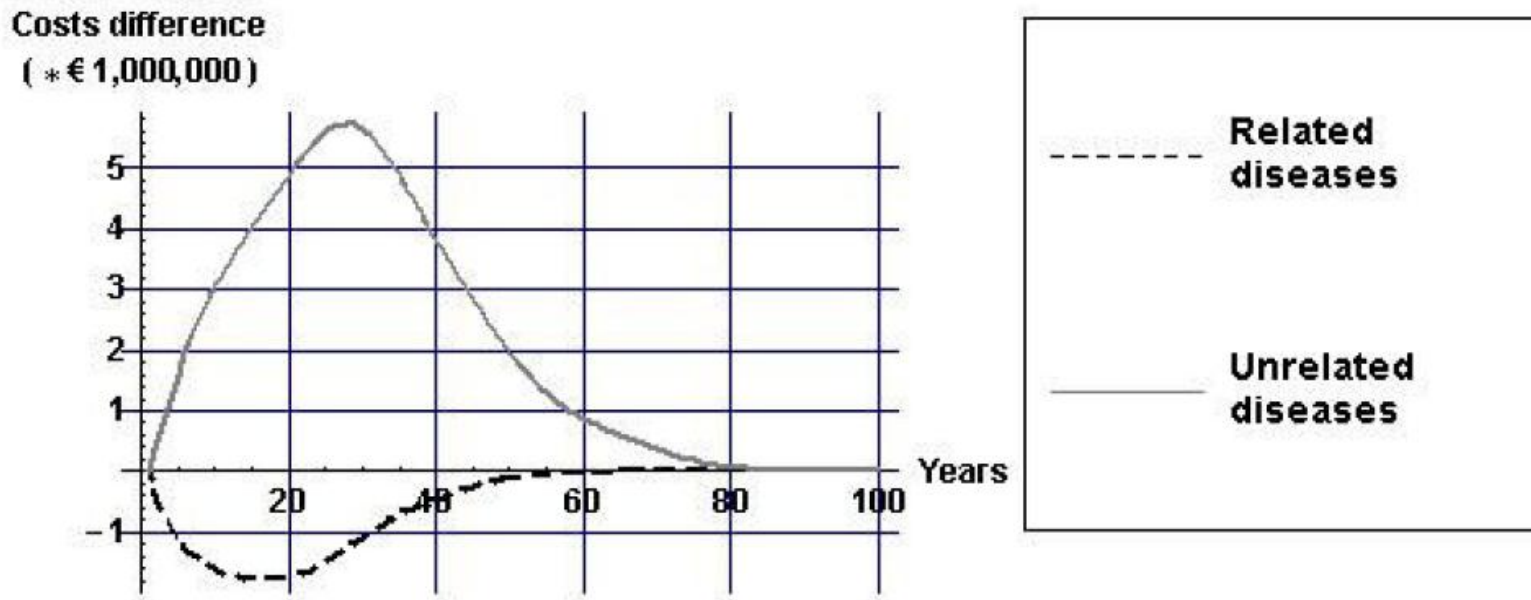
Intervention	Cost Per Quality-Adjusted Life-Year	
	Without Patient Time	With Patient Time
Smoking cessation ⁶	1995 dollars	
Group intensive counseling, no nicotine replacement	1108	3446
Full counseling by physician, no nicotine replacement	1515	1975
Screening colonoscopy ⁷	2005 dollars*	
Clinic and travel time only	13,100	15,400
Beginning of prep to back home	13,100	22,000
Beginning of prep to back to routine	13,100	28,000
Total time	13,100	42,600
Self-monitoring of blood glucose ⁸	2006 dollars	
Once daily	7856	41,720
3 times daily	6601	38,619

*Cost per life-year includes time of required companion to and from the clinic.

Russell 2009

Einschränkungen der vorliegenden Evidenz (2)

- Kosten konkurrierender Erkrankungen als Folge der Lebensverlängerung selten berücksichtigt



Costs differences due to alcohol tax increases in the Dutch scenario (discounted by 4%).

Einschränkungen der vorliegenden Evidenz (3)

- Relative Knappheit nicht-klinischer Interventionen im Vergleich zu klinischer Primärprävention

	Overall (n = 195) No. (%) of studies	% of studies within category
Health Promotion	20 (10)	100
Education	7 (4)	35
Advertising	4 (2)	20
Legislation	8 (4)	40
Other Health Promotion*	1 (1)	5
Screening	5 (3)	100
Clinical Prevention	170 (87)	100
Health Education	35 (18)	21
Pharmacotherapy	110 (56)	65
Surgery	1 (0.4)	1
Practitioner Education	13 (7)	8
Screening and Clinical Intervention	11 (6)	7

Economic evaluations of primary prevention of cardiovascular disease by prevention category (1995–2005)

Schwappach et al. 2007

Einschränkungen der vorliegenden Evidenz (4)

- Schwache Evidenz für Effekte der nicht-klinischen Interventionen (keine RCTs, nicht vergleichende Studien)
- Extrapolation der Ergebnisse über längere Zeiträume



Unsicherheit im Kosten-Nutzen Verhältnis

Vielen Dank für Ihre Aufmerksamkeit !

“Those who argue that prevention is better than cure need to prove it and certainly economic evaluation is one way to do this. But they need to recognise better first the costs of necessary changes in life style; second the frailty of human nature; and third that the source of so many of the problems of public ill health is the search for more and bigger profits by the junk food and other industries.”

Gavin Mooney Int J Public Health 2007

Dominant (cost-saving) preventive interventions for non-communicable disease

Topic area	Intervention	Lifetime health impact ^a	Annual intervention cost ^b	Strength of evidence
Alcohol	Volumetric tax	++	+	Likely
	Tax increase 30%	+++	+	Likely
	Advertising bans	+	+	Limited
	Raise minimum legal drinking age to 21	+	+	Limited
Tobacco	Tax increase 30% (with or without indexation)	+++	+	Likely
Physical activity	Pedometers	++	++	Sufficient
	Mass media	++	++	Inconclusive
Nutrition	Community fruit and vegetable intake promotion	+	++	May be effective
	Voluntary salt limits	+	+	Likely
	Mandatory salt limits	+++	+	Likely
Body mass	10% tax on unhealthy food	+++	+	May be effective

Health impact (lifetime)	+ Small 0–10,000 DALYs	++ Medium 10,000–100,000 DALYs	+++ Large >100,000 DALYs
Intervention cost (annual)	+ Small <\$10 million	++ Medium \$10–100 million	+++ Large >\$100 million
Strength of evidence (Table 2.2)	Comparative evidence:		No comparative evidence:
	<ul style="list-style-type: none"> • sufficient; • limited; or • inconclusive; 		<ul style="list-style-type: none"> • likely; • maybe; or • no evidence

Vos et al 2010



Dominant (cost-saving) preventive interventions for non-communicable disease

Topic area	Intervention	Lifetime health impact ^a	Annual intervention cost ^b	Strength of evidence
Blood pressure and cholesterol	Community heart health program	++	+	May be effective
	Polypill \$200 for >5% CVD risk	+++	+++	Likely
Osteoporosis	Screen women aged 70+ and alendronate	++	++	Sufficient
Hepatitis B	Vaccine and immunoglobulin to infants born to carrier or high-risk mothers	+	+	Sufficient
	High-risk infant vaccination	+	+	Sufficient
	Selective vaccination of infants with mothers from highly endemic countries	+	+	Sufficient
Kidney disease	Proteinuria screen and ACE inhibitors for diabetics	++	+	Sufficient
Mental disorders	Problem-solving post-suicide attempt	+	+	Sufficient
	Treatment for individuals at ultra-high risk for psychosis	+	+	Likely
Oral health	Fluoridation drinking water, non-remote	+	+	Limited

Health impact (lifetime)	Small 0–10,000 DALYs	Medium 10,000–100,000 DALYs	Large >100,000 DALYs
Intervention cost (annual)	Small <\$10 million	Medium \$10–100 million	Large >\$100 million
Strength of evidence (Table 2.2)	Comparative evidence: <ul style="list-style-type: none"> sufficient; limited; or inconclusive; 		No comparative evidence: <ul style="list-style-type: none"> likely; maybe; or no evidence

Vos et al 2010

Health outcomes, intervention costs and cost offsets for the most cost-effective preventive interventions with the largest population health impact

Intervention	(Lifetime, discounted)		
	DALYs prevented	Intervention costs (A\$ billion)	Cost offsets (A\$ billion)
Taxation			
Tobacco tax 30%	270,000	0.02	-0.7
Alcohol tax 30%	100,000	0.02	-0.5
Alcohol volumetric tax 10% above current excise on spirits	110,000	0.02	-0.7
Unhealthy foods tax 10%	170,000	0.02	-3.5
Regulation			
Mandatory salt limits on processed food	110,000	0.07	-1.5
Preventive treatments			
Three blood-pressure-lowering drugs to replace current practice of preventive drug treatments	20,000	-1.9 [†]	-0.3
Polypill to replace current practice [†]	60,000	-7.0 [†]	-0.8
Laparoscopic gastric banding (body mass index >35)	140,000	3.7	-2.9
Health promotion			
Intensive SunSmart	120,000	2.0	-0.3

Vos et al (2010). Assessing Cost-Effectiveness in Prevention: Final Report. University of Queensland, Brisbane and Deakin University, Melbourne