Health economics of cancer

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The key principles of a good health care system

Wise investments, no waste, no exuberant profits

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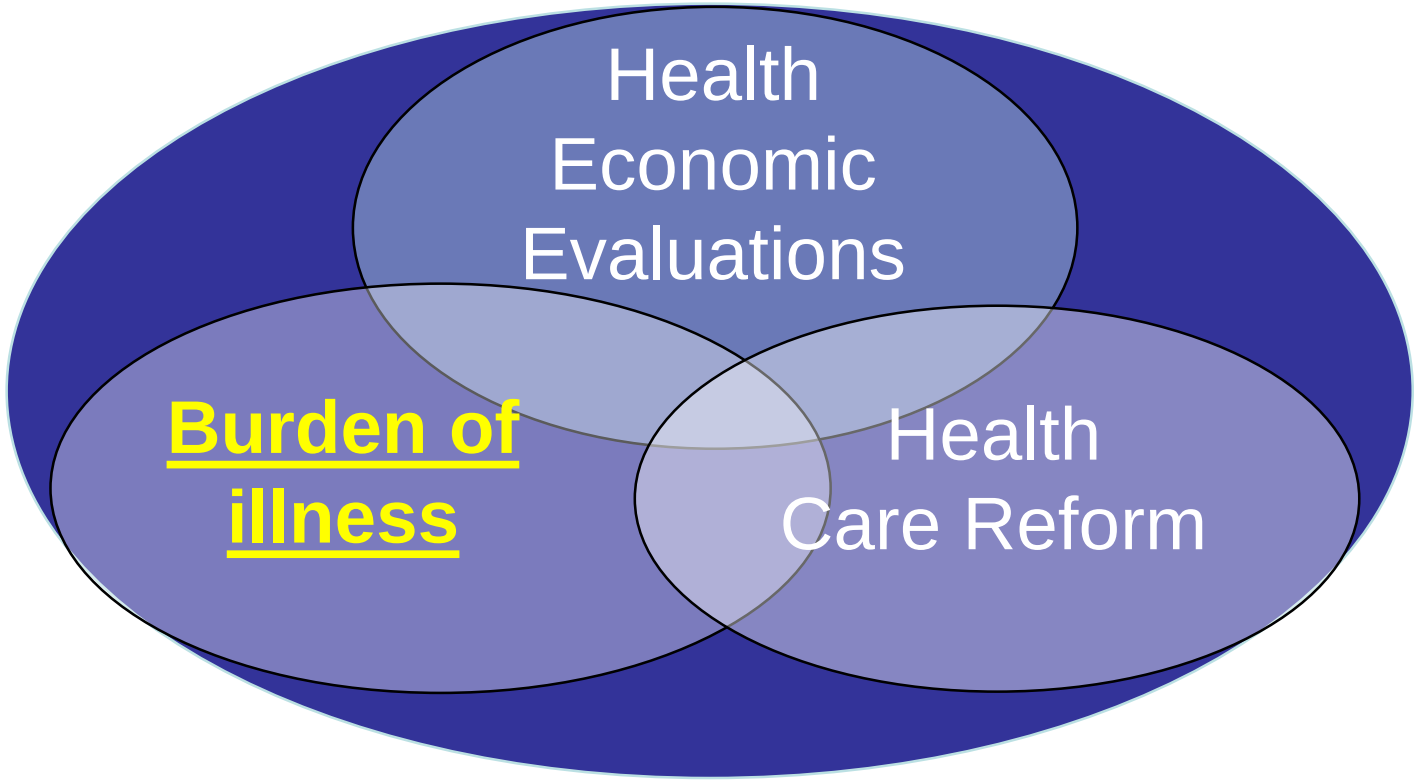
What health economists do



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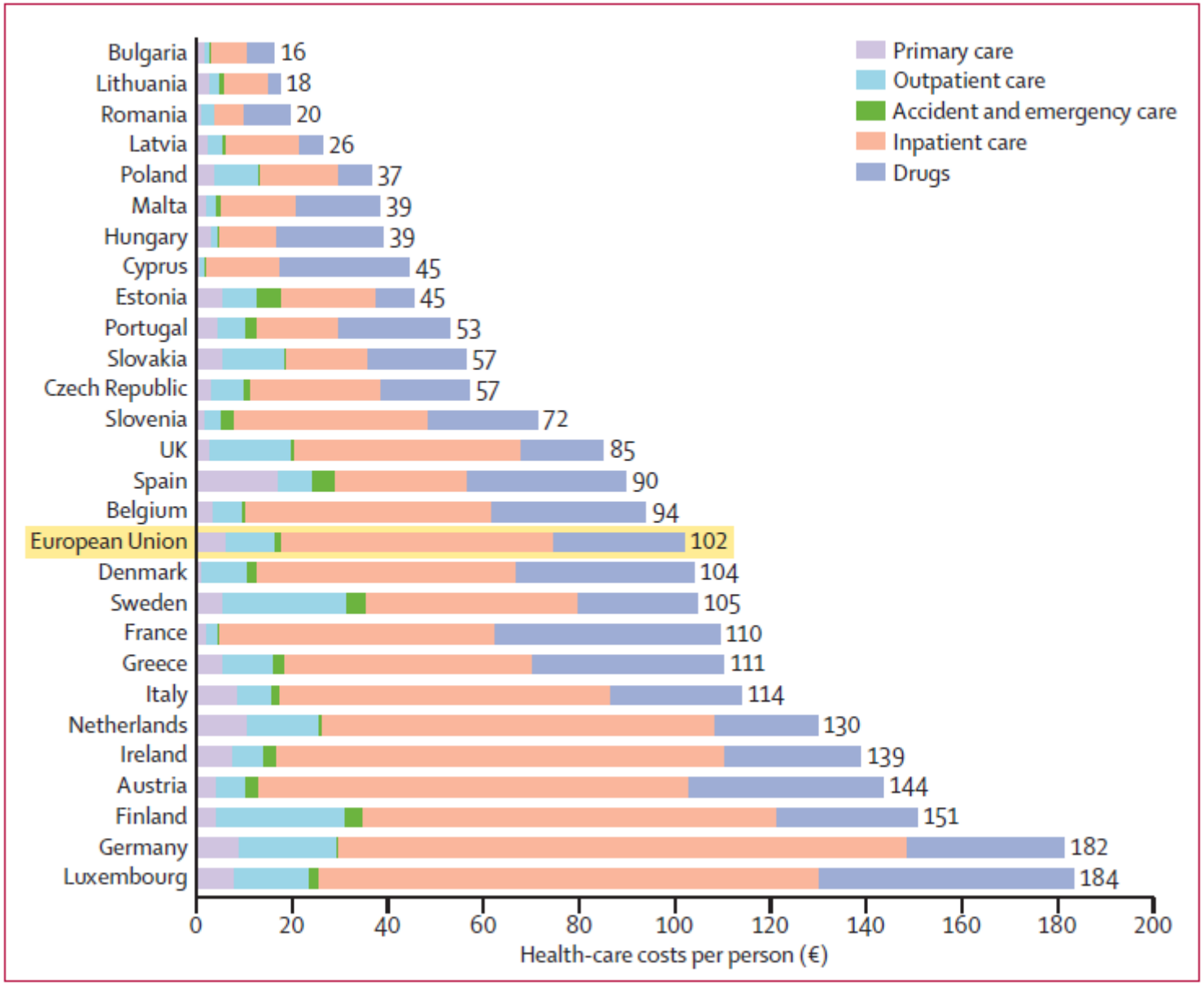
Example: cost per capita of cancer care



Ramon Luengo-Fernandez, Jose Leal, Alastair Gray, Richard Sullivan. Lancet Oncology October 2013

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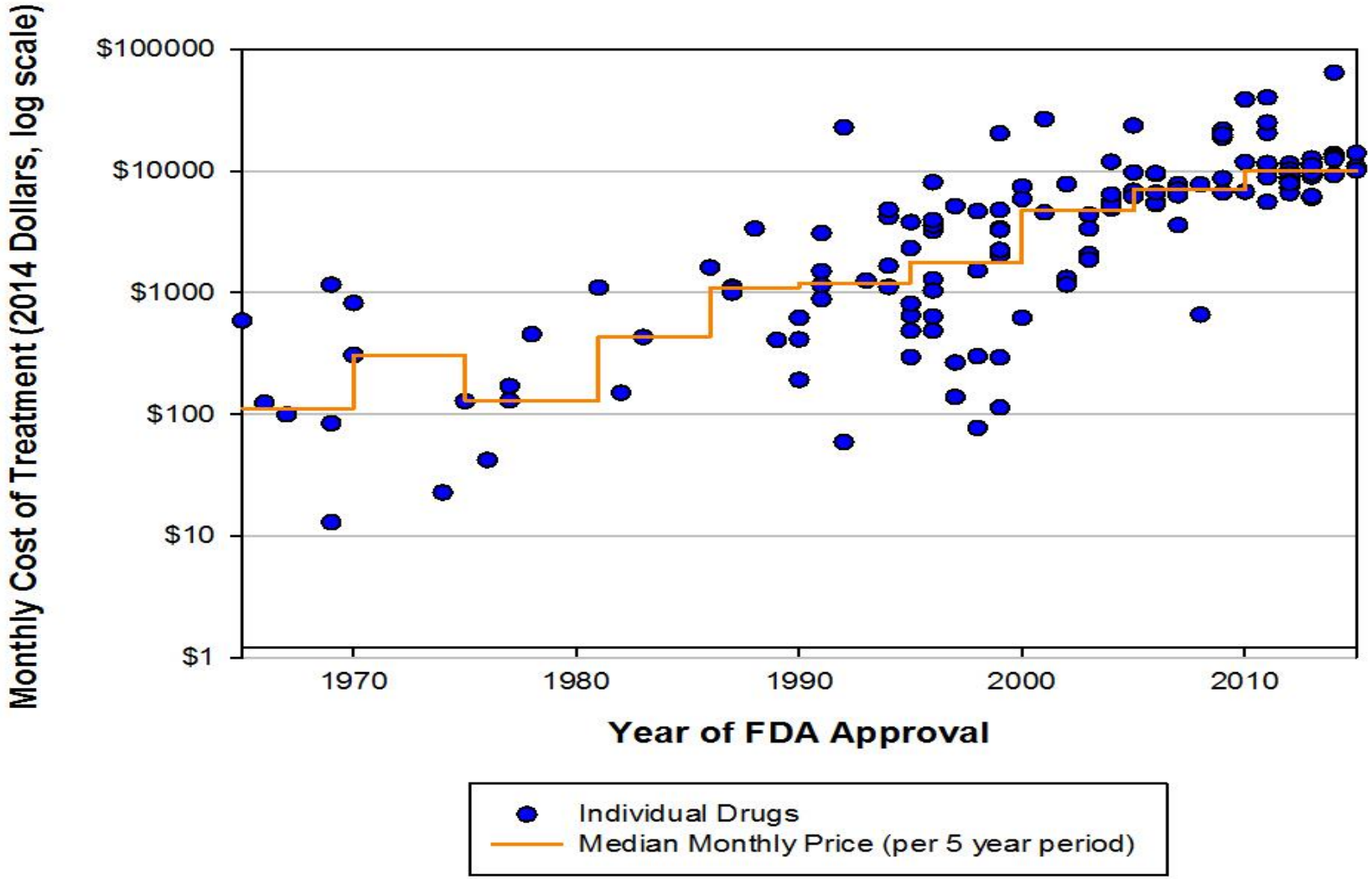
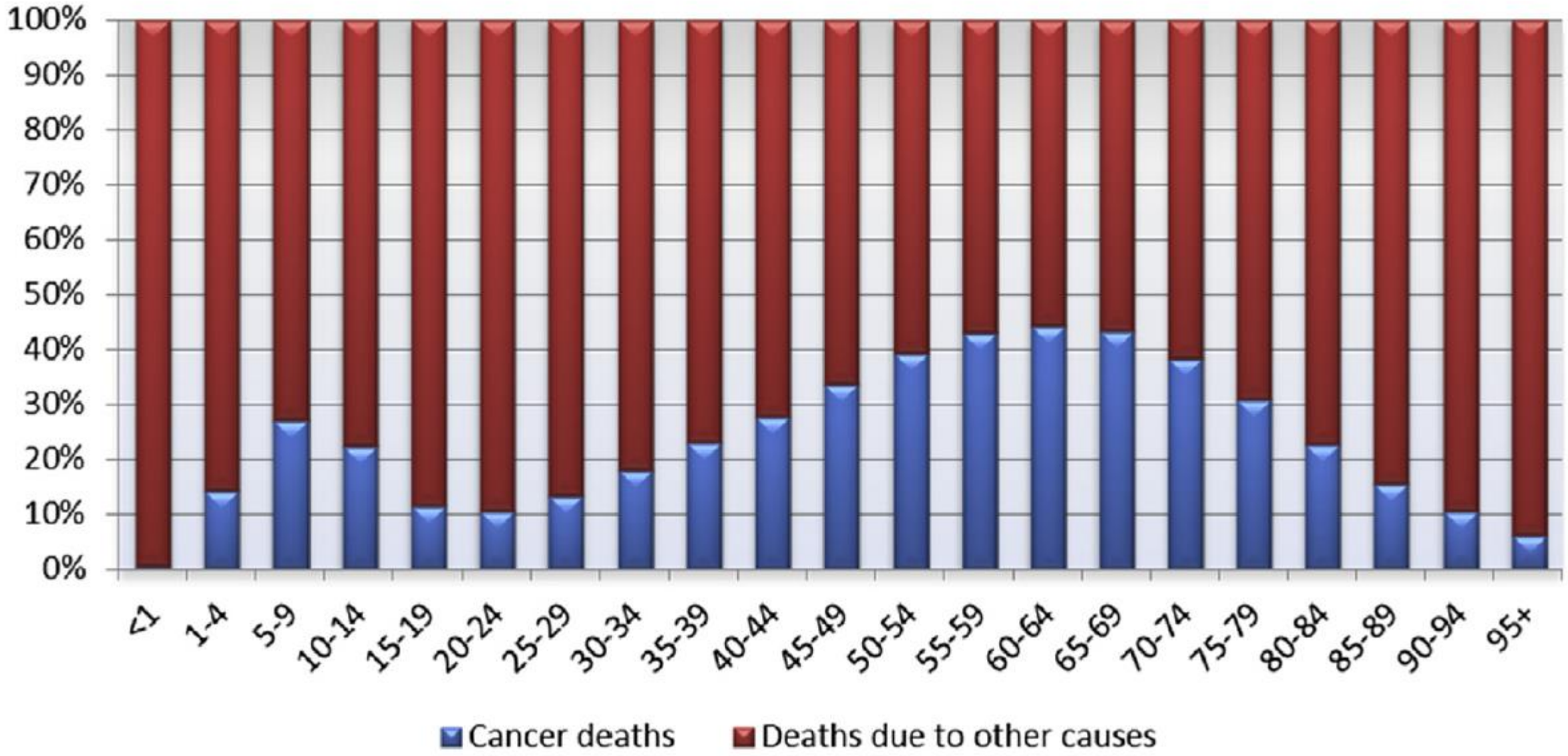
Monthly and Median Costs of Cancer Drugs at the Time of FDA Approval 1965-2015



Source: Peter B. Bach, MD, Memorial Sloan-Kettering Cancer Center

Source : ASCO 2015, Leonard B. Saltz, MD, Chief of Gastrointestinal Oncology at Memorial Sloan Kettering Cancer Center, NY, USA; http://knowledge.Wharton.upenn.edu/article/solvalid-whos-blame-1000-day-cure/#



B. Jönsson et al. European Journal of Cancer 66 (2016)

The current ‘debate’ about cancer therapies

The difficult exercise:

Sustainability of the healthcare system

Stimulate innovation

Healthcare access for all

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Highly specialized therapies (HST)

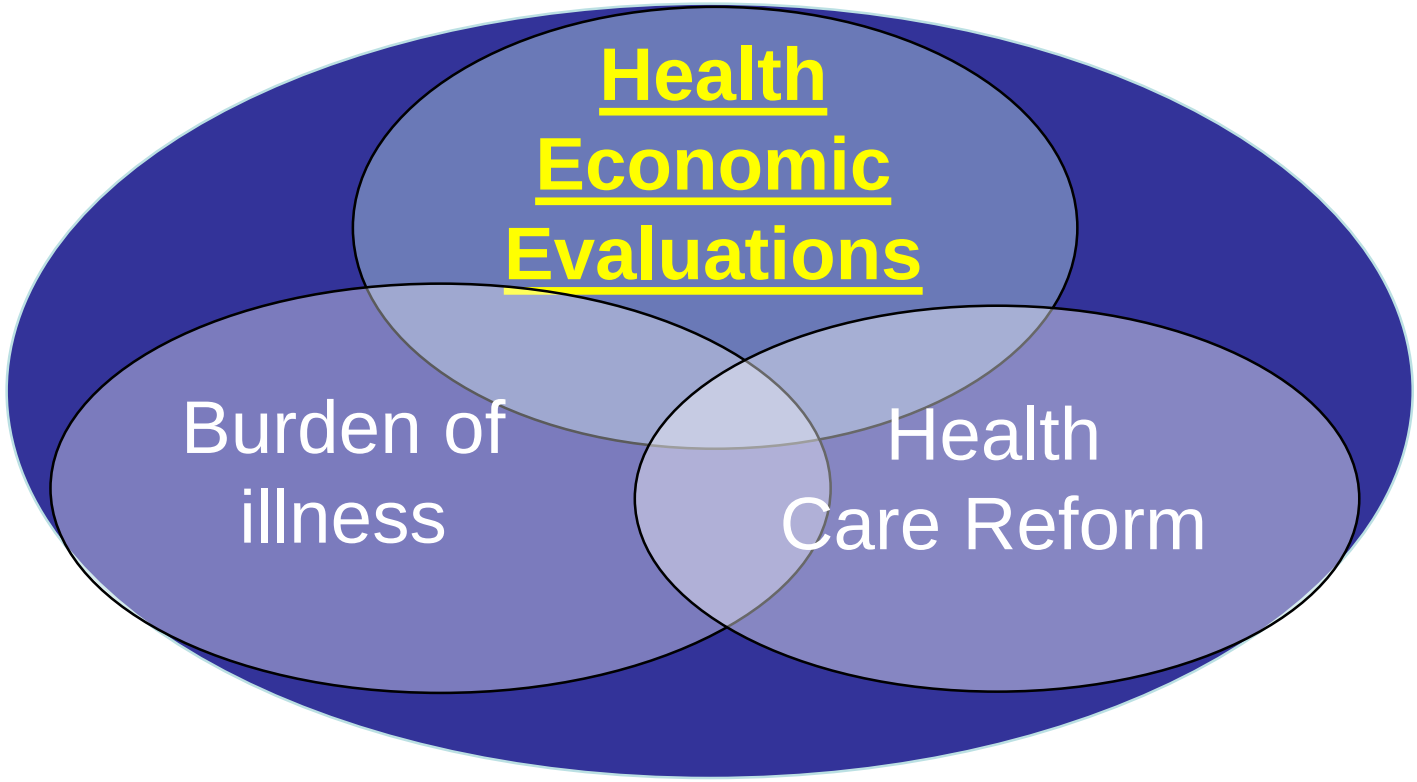
i. constitute a public good, because they prevent or cure diseases and/or improve quality of life and because healthy people function better as members of society than sick ones do

ii. carry a moral weight that most privately traded goods do not, for there is a widespread belief that people have a right to health care (art. 25 human rights) that they do not have to smartphones or trainers

iii. are developed by firms aiming at profit maximization

Adapted from The Economist, January 2014

What health economists do



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Public Pricing of cancer medicines = basically two options

- **“cost+”** price → price justified by costing structure.
  - ☺acceptable mark-up as compensation for the costs of investment in R&D
  - – difficult to assess the true cost of R&D (what about failures?)
  - – wrong incentives (‘spend a lot on R&D’)
  - – *added value not sufficiently recognized*
- **Value based** pricing
  - ☺Better added value is recognized by better rewarding
  - – *profit margin may not be in reasonable proportion to the cost structure*
  - – *evidence may not be sufficiently convincing at launch*

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Proposal Uyl - de Groot - Löwenberg

20%
30%
40%

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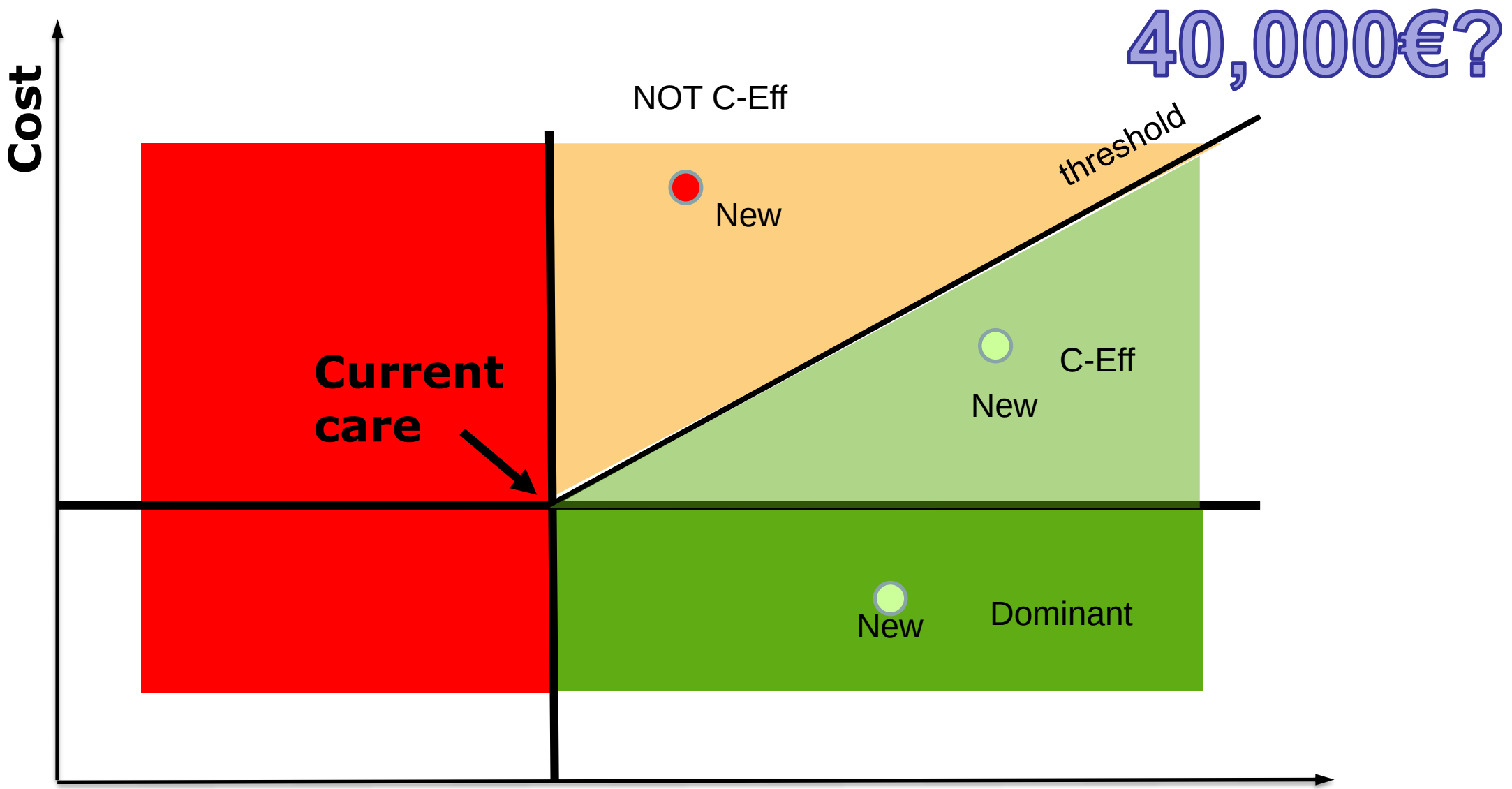
Nature Reviews Clinical Oncology May 2018

Value based → Cost-effectiveness



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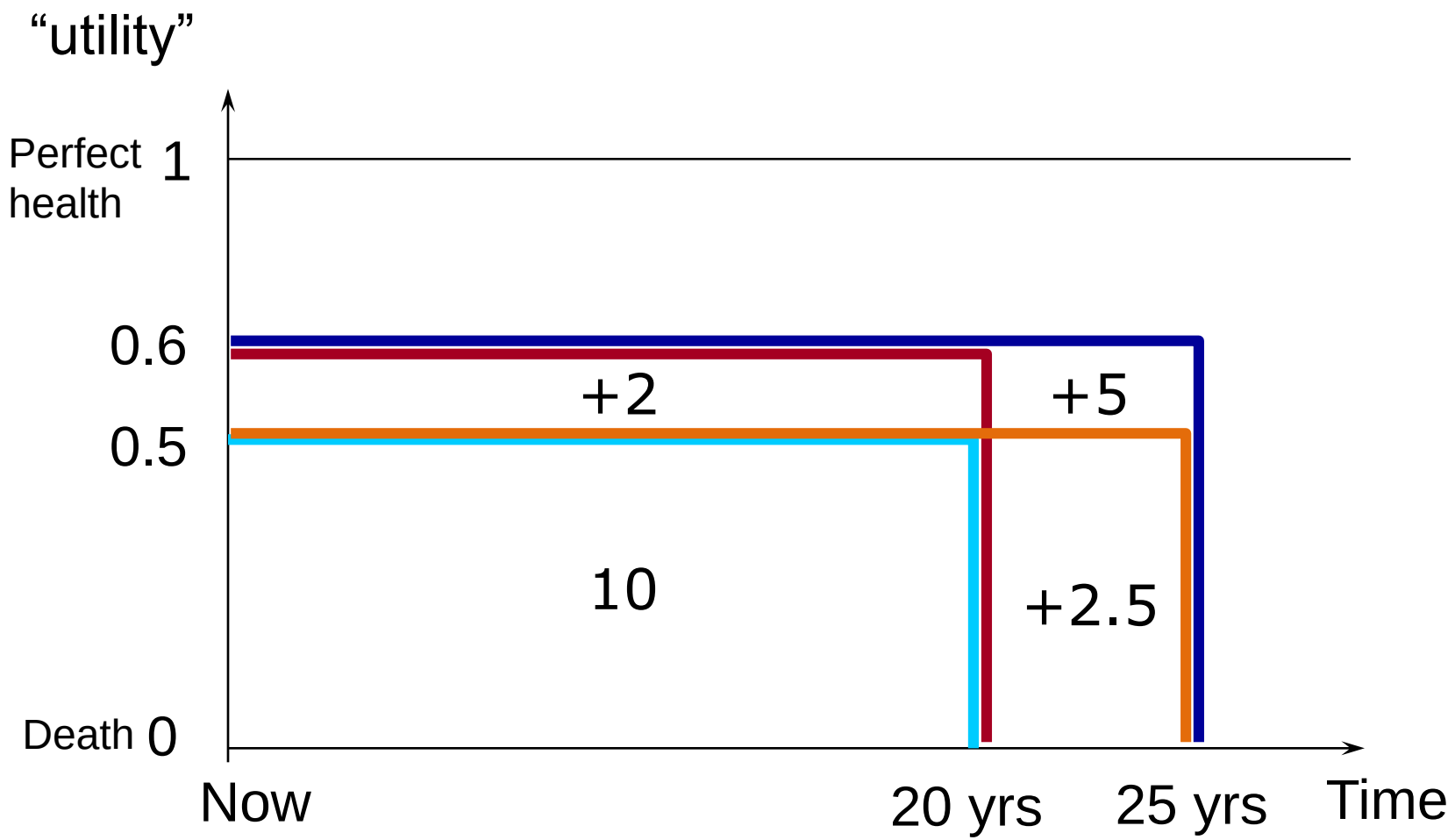
Annemans L. Gezondheidseconomie voor niet-economen. Pelckmans Pro Mei 2018
Annemans L. Health economics for non-economists. Pelckmans Pro June 2018

QALY = Quality Adjusted Life Years



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How much are we willing to pay for a QALY?

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suppose: a new therapy

COST

60,000€

EFFECTS

3 QALYs

20,000€/QALY

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Suppose a new therapy (2)

COST

100,000€

EFFECTS

0.5 QALYs

200,000€/QALY

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Cost–effectiveness thresholds: pros and cons

Melanie Y Bertram,[a] Jeremy A Lauer,[a] Kees De Joncheere,[a] Tessa Edejer,[a] Raymond Hutubessy,[a] Marie-Paule Kieny[a] & Suzanne R Hill[a]

Bull World Health Organ **2016;94:925–930**

Cost–effectiveness information s**hould be used alongside other considerations** in a transparent decision-making process, **rather than in isolation based on a single threshold value.**

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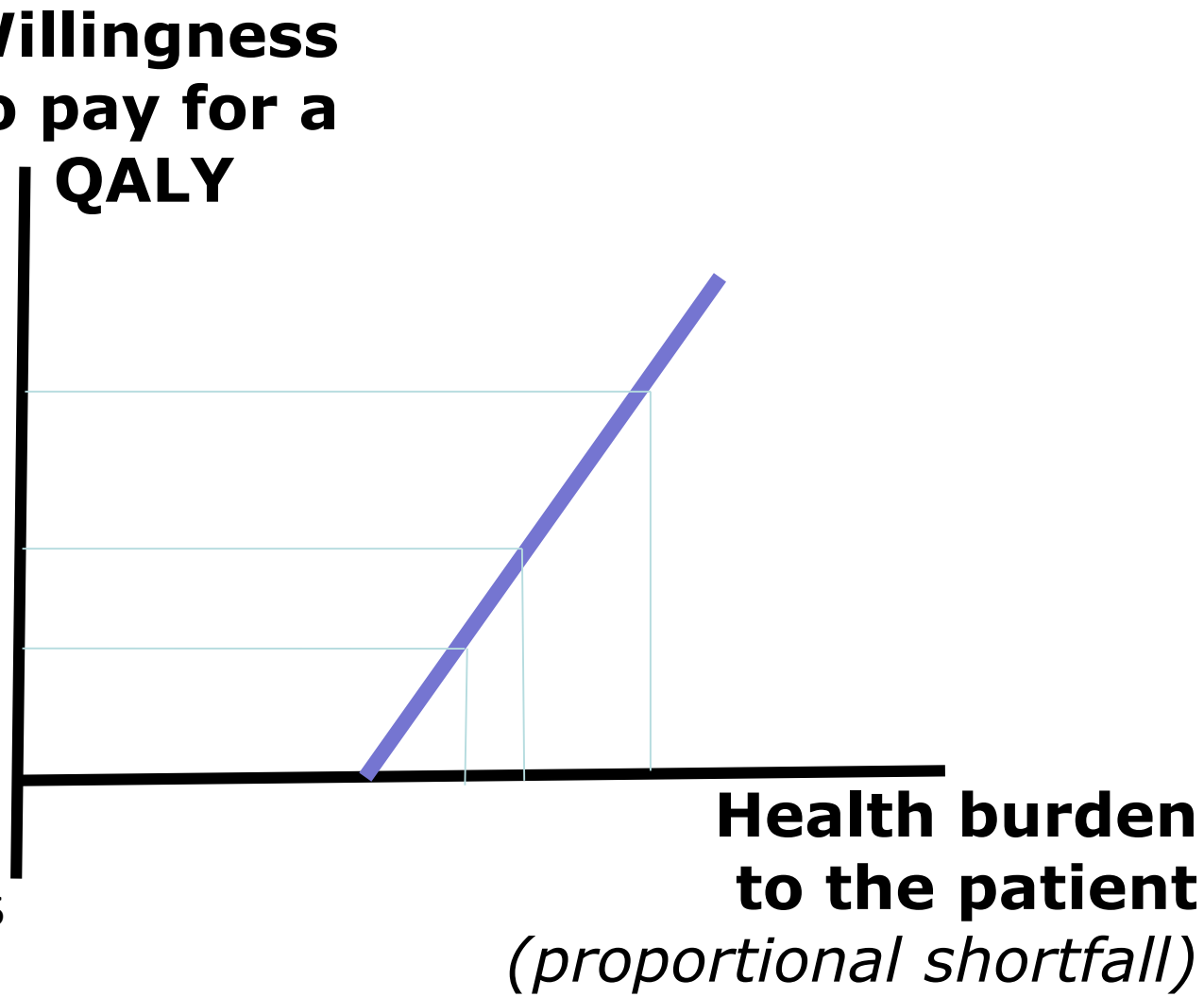
Many possible criteria in HTA

1. Efficacy (can it work?)
2. **Effectiveness (does it work?)**
3. Safety/toxicity
4. Patient reported outcomes
5. Epidemiology (n of people suffering)
6. **Unmet medical/therapeutical need**
7. Current (issues with) management of the disease
8. **Cost-effectiveness**
9. **Budget impact**
10. Organisational aspects

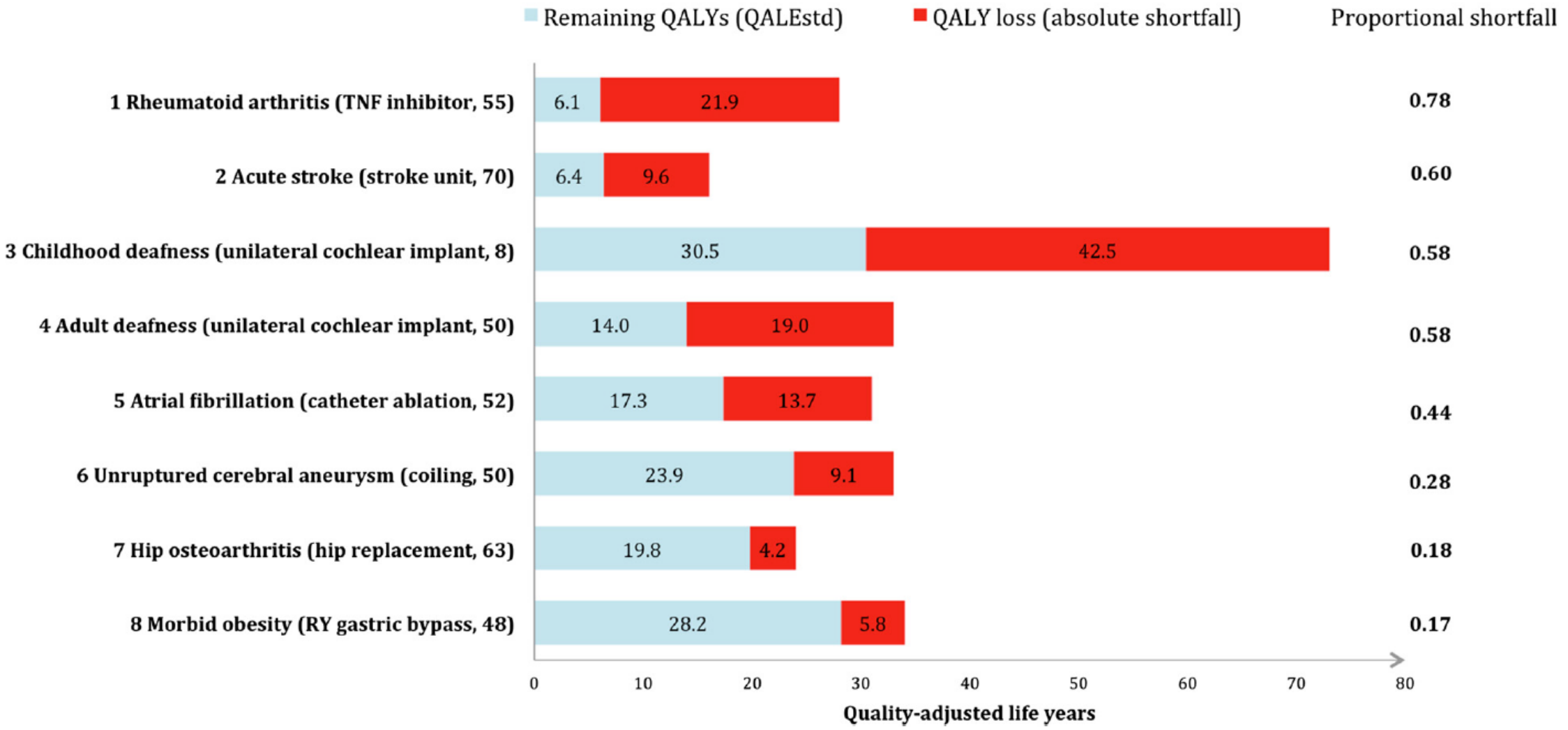
NL: first attempt for adapted thresholds

Zorginstituut Nl (ZIN): variable threshold

- €80,000 per QALY for severe condition, even up to €100,000 at end-of life
- €50,000 per QALY for moderate burden
- €20,000 per QALY for mild burden



Prospective health and expected health losses



Linemark et al. July 2014. Cost Effectiveness and Resource Allocation 12(1):16

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BUT: Cost-effectiveness of some orphan drugs

Table 1. Preliminary cost per quality-adjusted life year incremental cost–effectiveness ratio estimates by NICE (2008).

Condition	Prevalence (England)	Product	ICER (preliminary estimated £ per QALY)
M. Gaucher type I and III	270	Imiglucerase (Ceredase®)	391,200
MPS type 1	130	Laronidase (Aldurazyme®)	334,900
M. Fabry	200	Agalsidase beta (Fabrazyme®)	203,000
Hemophilia B	350	Nonacog alpha (BeneFIX®)	172,500
M. Gaucher type I	270	Miglustat (Zavesca®)	116,800

These examples from England illustrate the mismatch between ultra-orphan drug cost and conventional cost–effectiveness benchmarks as adopted by NICE (i.e., £20,000 to £30,000 per QALY gained) [8].
ICER: Incremental cost–effectiveness ratio; MPS: Mucopolysaccharidosis; QALY: Quality-adjusted life year.

Schlander et al, ***J. Comp. Eff. Res.*** (2014) 3(4), 399–422

Budget impact

"The economic and equity rationale for carrying out budget impact analyses is opportunity cost = benefits forgone by using resources in one way rather than another" Cohen et al (2008)

→ There is a need for economic evaluations to address the issue on how to allocate resources *efficiently*, and for budget impact studies to address the issue of *affordability*

→ Need for well documented estimates at population level!
→ Need for very clear description of the target population
→ Need for a stratified approach wherever possible

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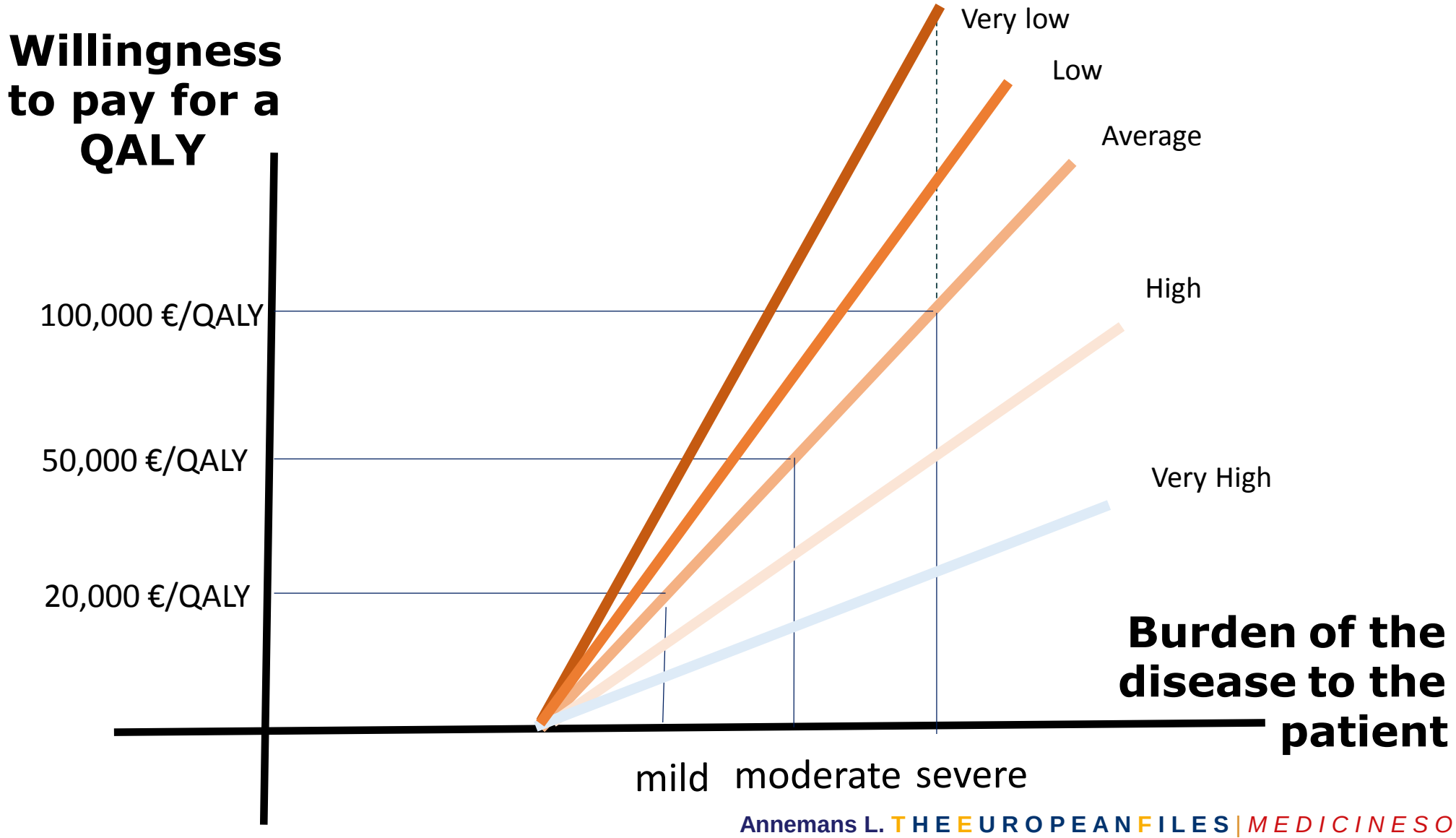
Value Informed & Affordable Prices

VIA



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15 March 2017

NICE gets go-ahead to fast-track more drug approvals

Share

Treatments deemed to provide significant QALY benefits could benefit from being assessed against a maximum threshold of **£300,000 per QALY.**

This upper limit is ten times higher than the standard NICE threshold and is being considered in order to reflect the transformational health benefits they can offer to patients.

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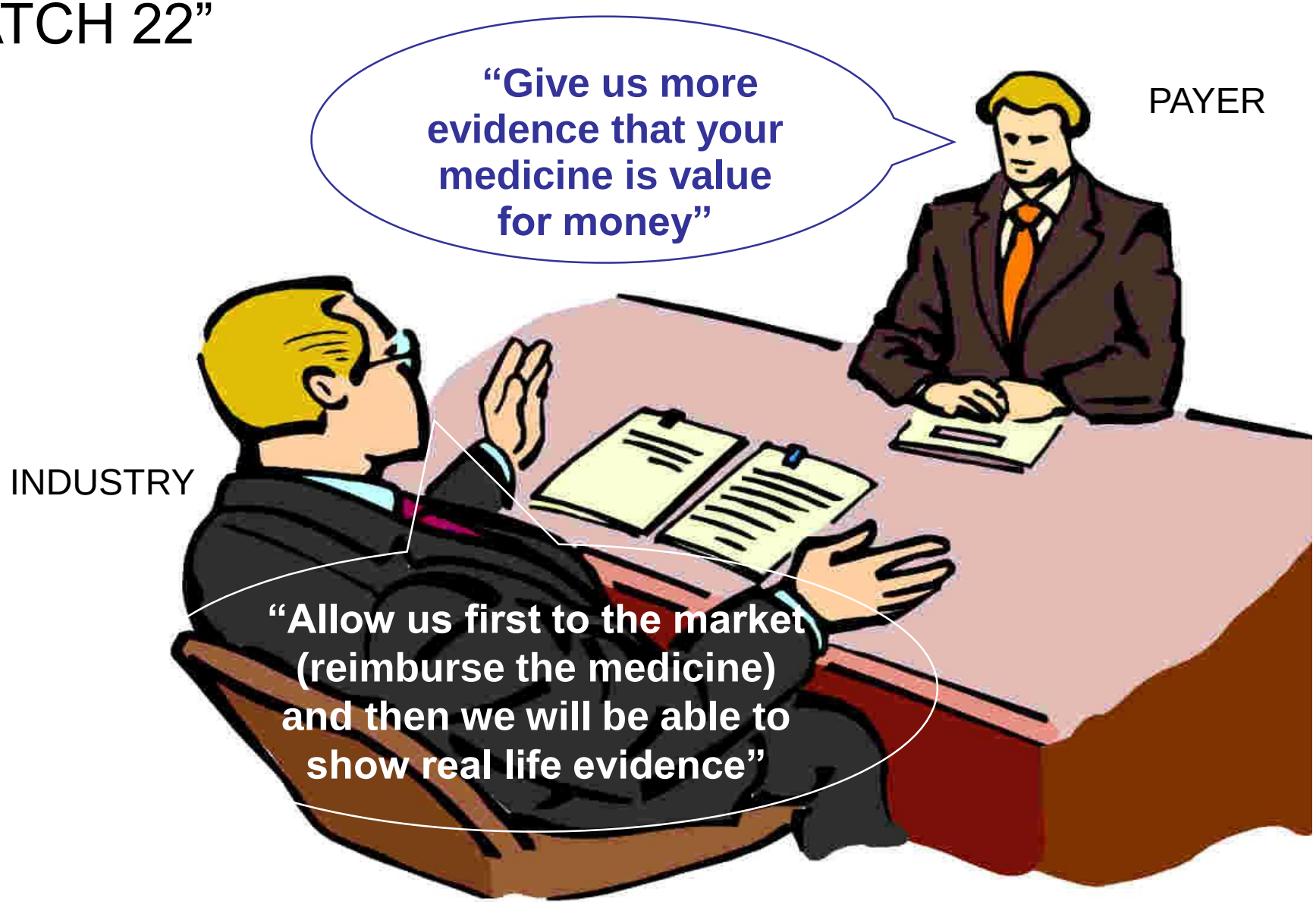
Many possible criteria in HTA

1. Efficacy (can it work?)
2. Effectiveness (does it work?)
3. Safety/toxicity
4. Patient reported outcomes
5. Epidemiology (n of people suffering)
6. Unmet medical/therapeutical need
7. Current management of the disease (and the issues with current management)
8. Cost-effectiveness
9. Budget impact
10. Organisational aspects

Uncertainty

→ “CATCH 22”



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Current solution: secret deals

version 1

PAYER

INDUSTRY

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version 2

PAYER

INDUSTRY

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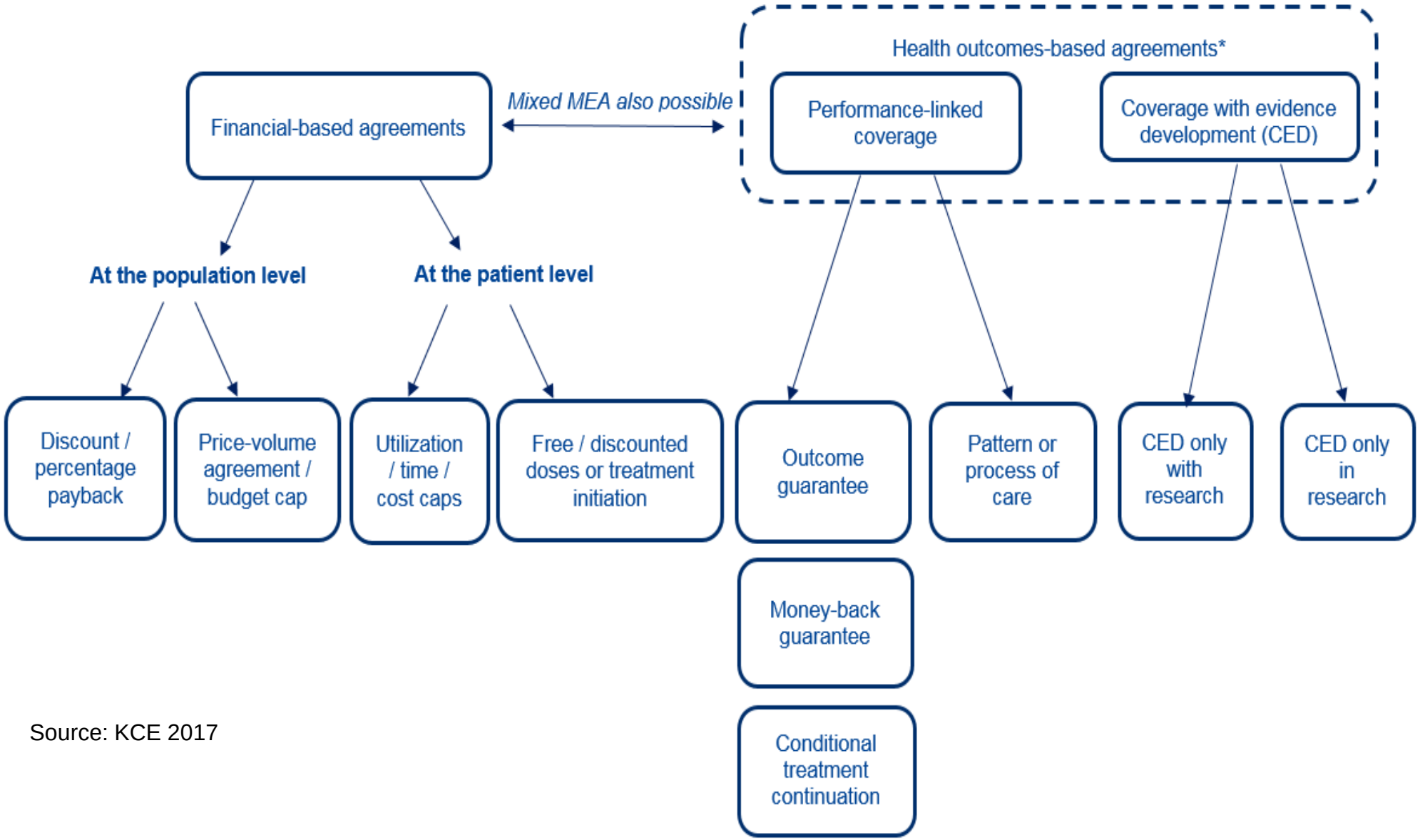
better: outcomes based agreements



Source: KCE 2017

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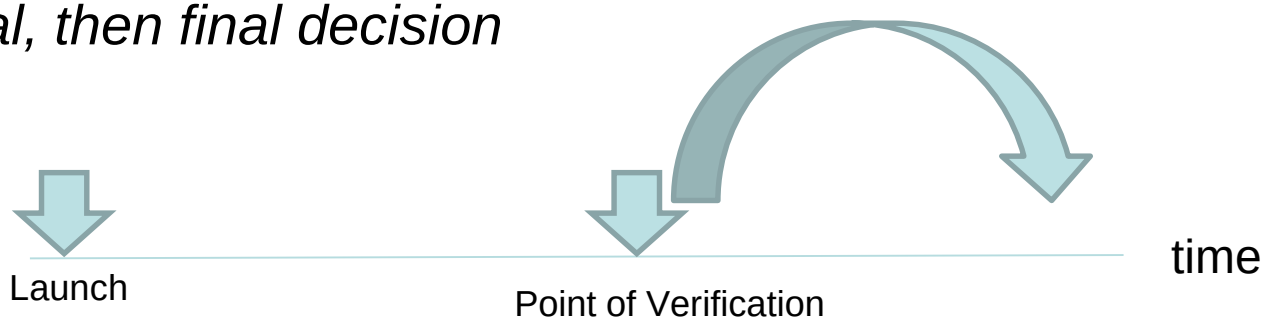
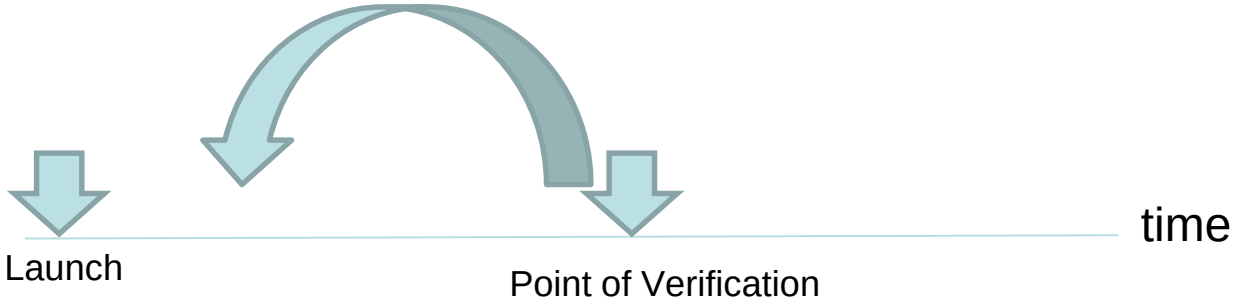
Key approaches

1. Coverage upon evidence development
   - *Temporary approval, then final decision*



2. Performance Linked Reimbursement (outcomes guarantee)
   - *Not as good as promised → industry pays back*



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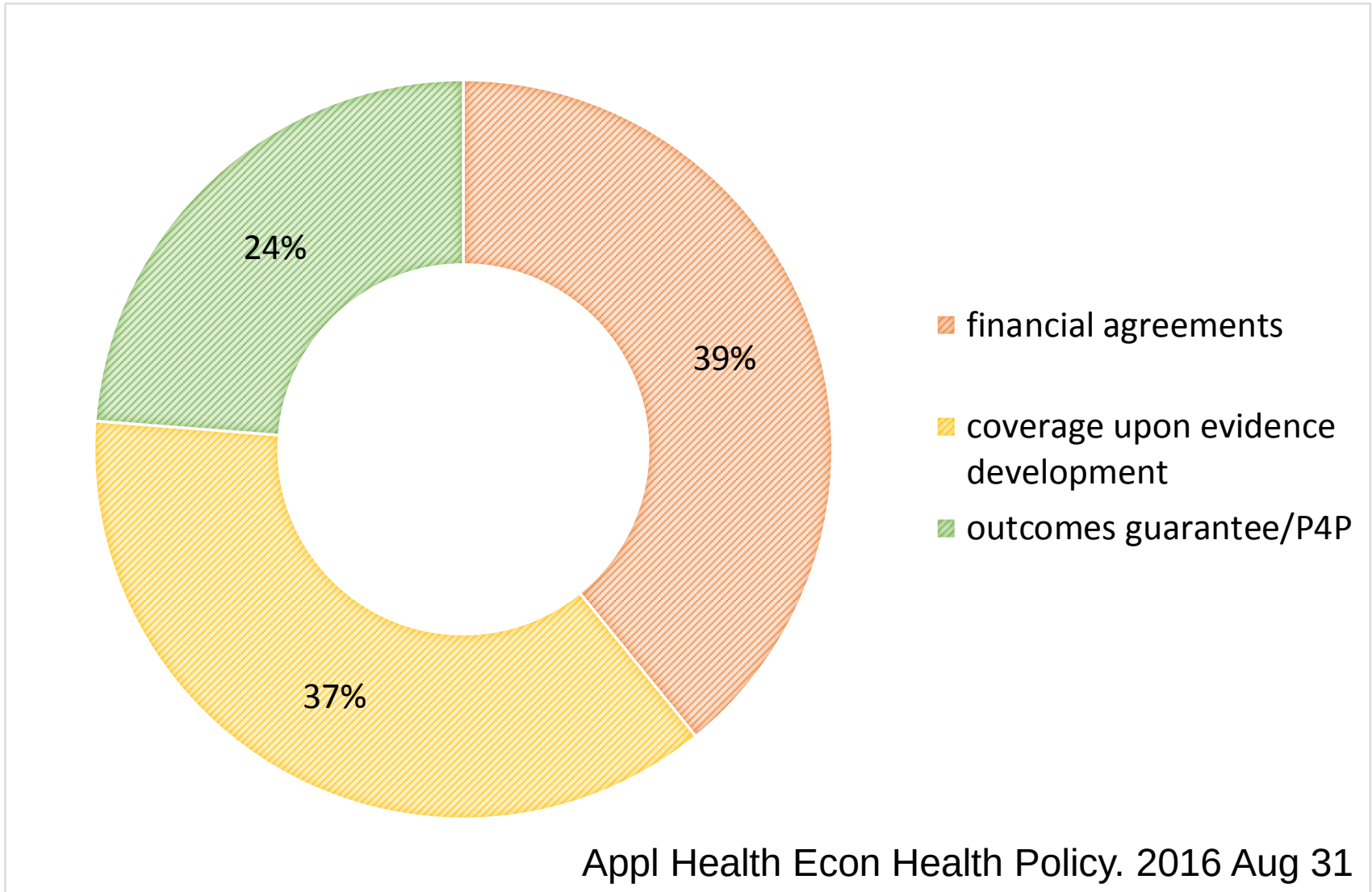
Types of agreements (Toumi et al 2016; n = 143)



Appl Health Econ Health Policy. 2016 Aug 31

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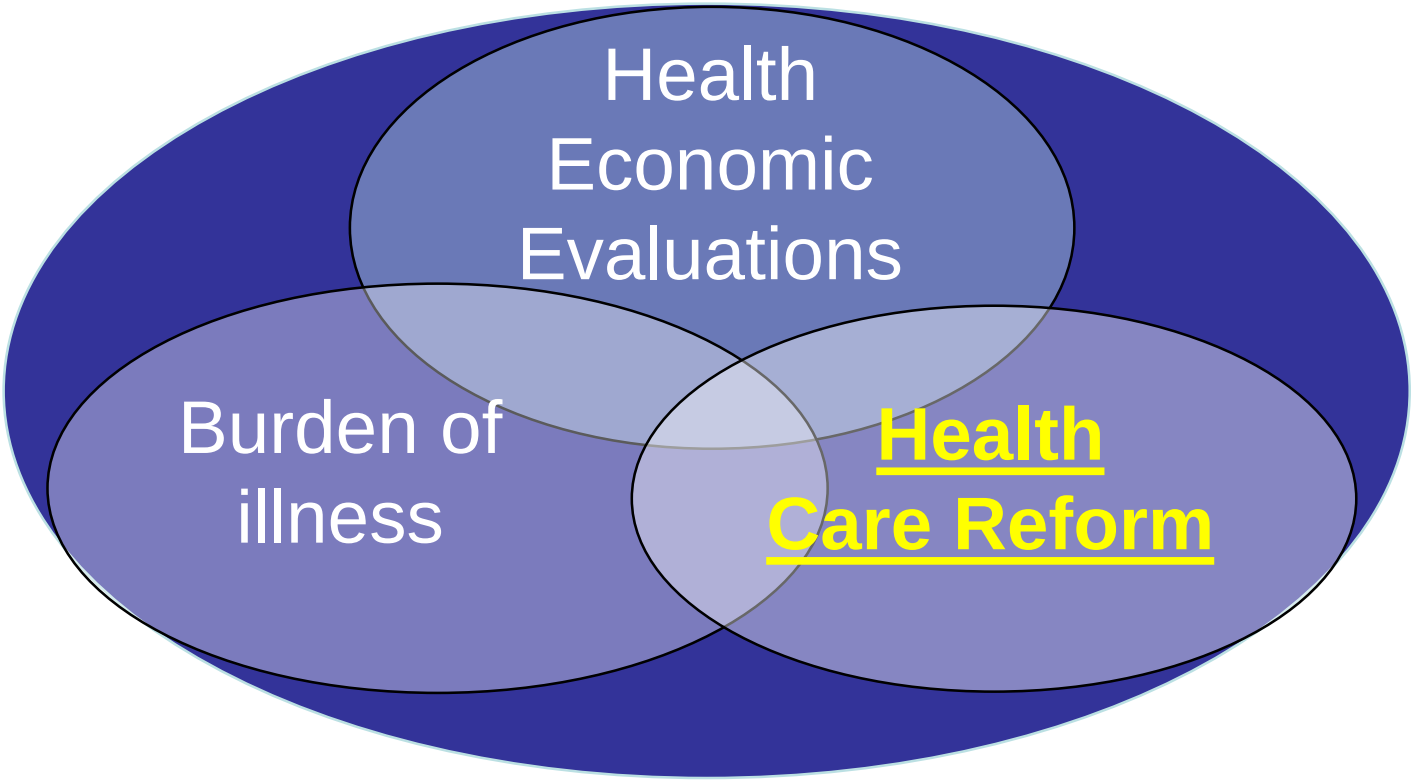
What health economists do



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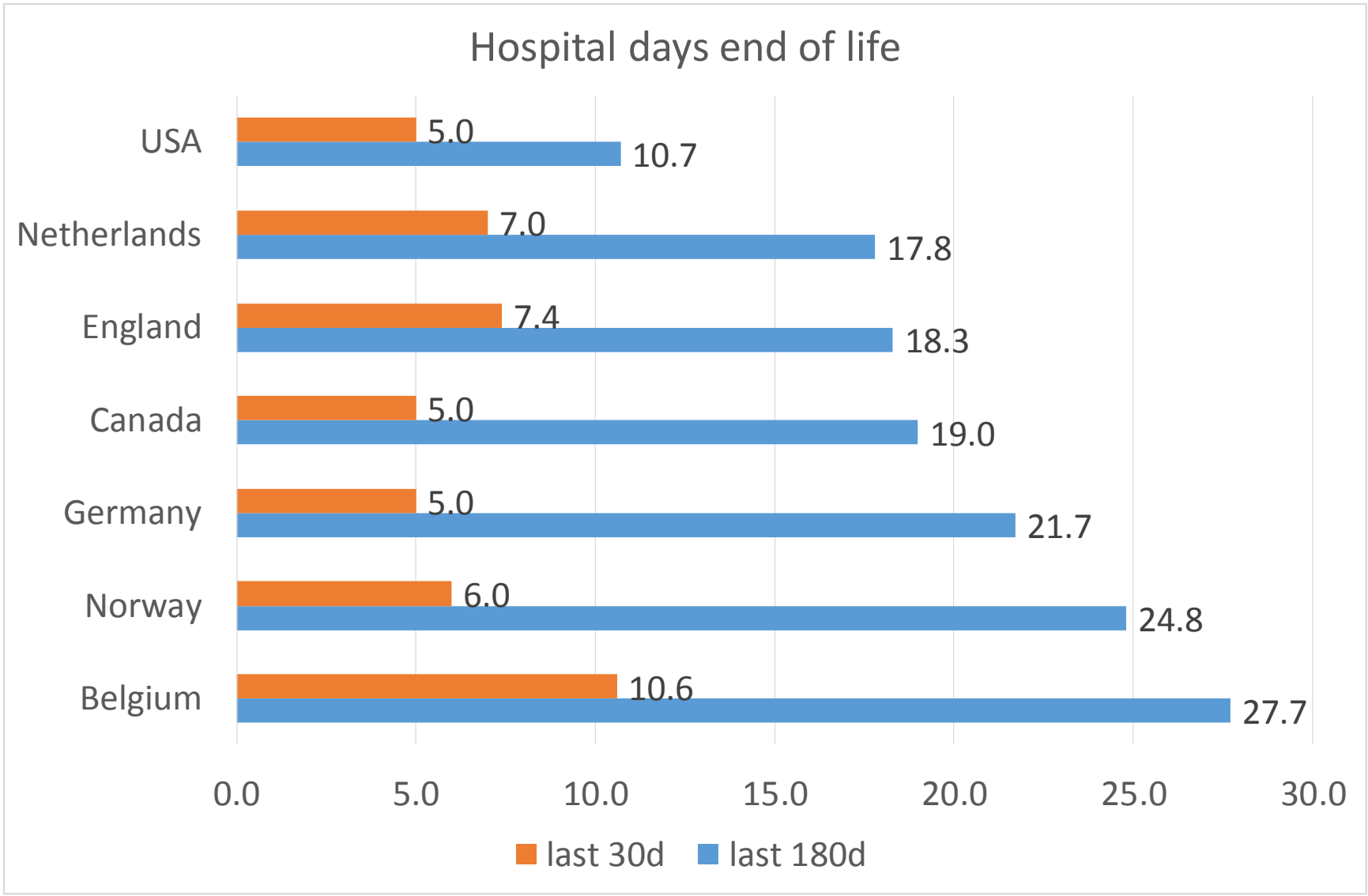
Overtreatment



Bekelman et al, JAMA, January 2016

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Introduce more episodic payments

Fixed amount per patient/insured per time period:

pay to maintain health

+ decreased risk for overconsumption
+ improved access
+ more focus on prevention
+ *improved quality of life health professional*

Undertreatment

Postpone or cancel treatment for financial reasons

Total population

AROP

AROP = At-risk-of-poverty = income < 60% of national median

15% of the Belgian population is AROP

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De medische en niet-medische kosten van kankerpatiënten

250€/mo acute; 60€/mo chronic

Jozef Pacolet, Annelies De Coninck, Georges Hedebouw, Sofie Cabus & Nele Spruytte

Projectleiding: Prof. dr. Jozef Pacolet

(2011)

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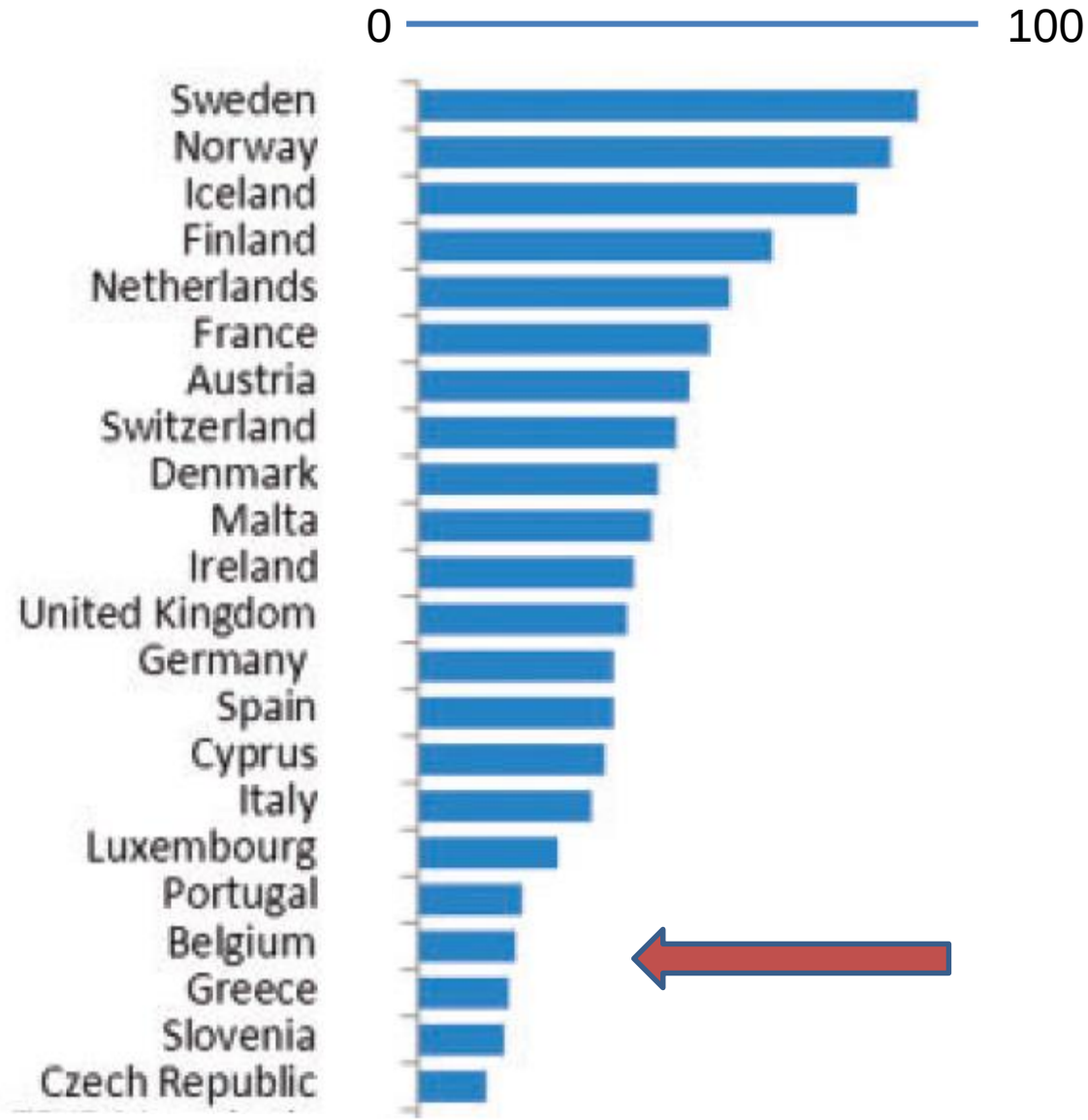
Too little prevention

- Tobacco
- Alcohol
- Nutrition
- Fertility
- Mother and child
- Infectious diseases
- Hypertension
- Cancer screening
- Traffic
- Air pollution

Mackenbach & MacKee. European Journal of Public Health, Vol. 23, No. 2, 195–344, **2013**

Quality of preventive policy



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example: screening colorectal cancer (per 10.000 men)

Net cost:	230,000 €
Gained QALYs:	120
→ cost-effectiveness =	+/- **1,900 €/QALY**

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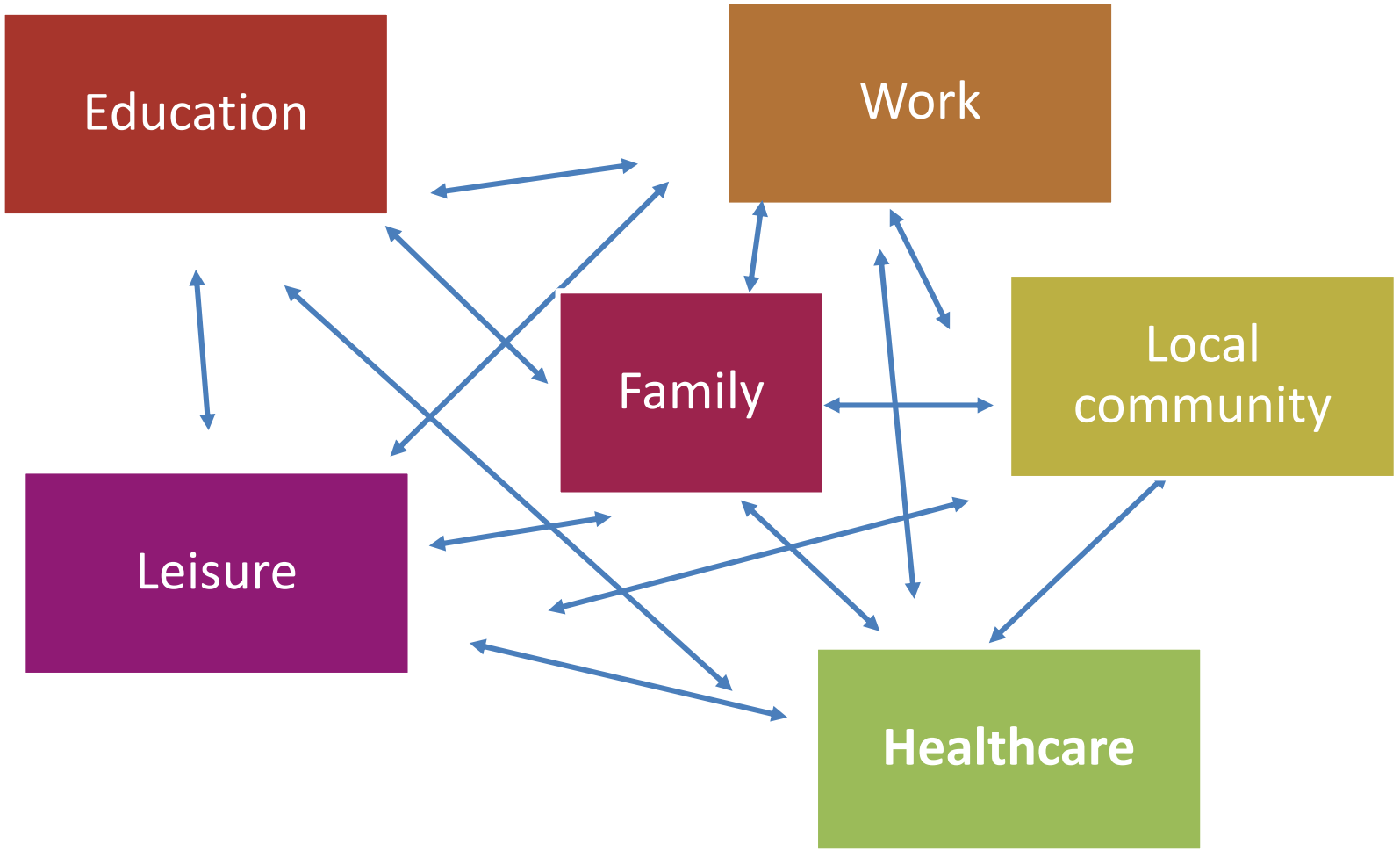
Invest much more in health promotion

Health is in all policies



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Discussion

- Stick to the key pillars: quality, solidarity, sustainability
- Thresholds for societal willingness to pay needed
- Importance of medical need and budget impact in the assessment of innovations
- Dealing with uncertainty: outcomes based managed entry agreements
- Change incentives in the system to encourage health maintenance and avoid overuse
- No patient co-payments for effective and important health interventions
- Extra-proportional investment in health promotion: health in all policies

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