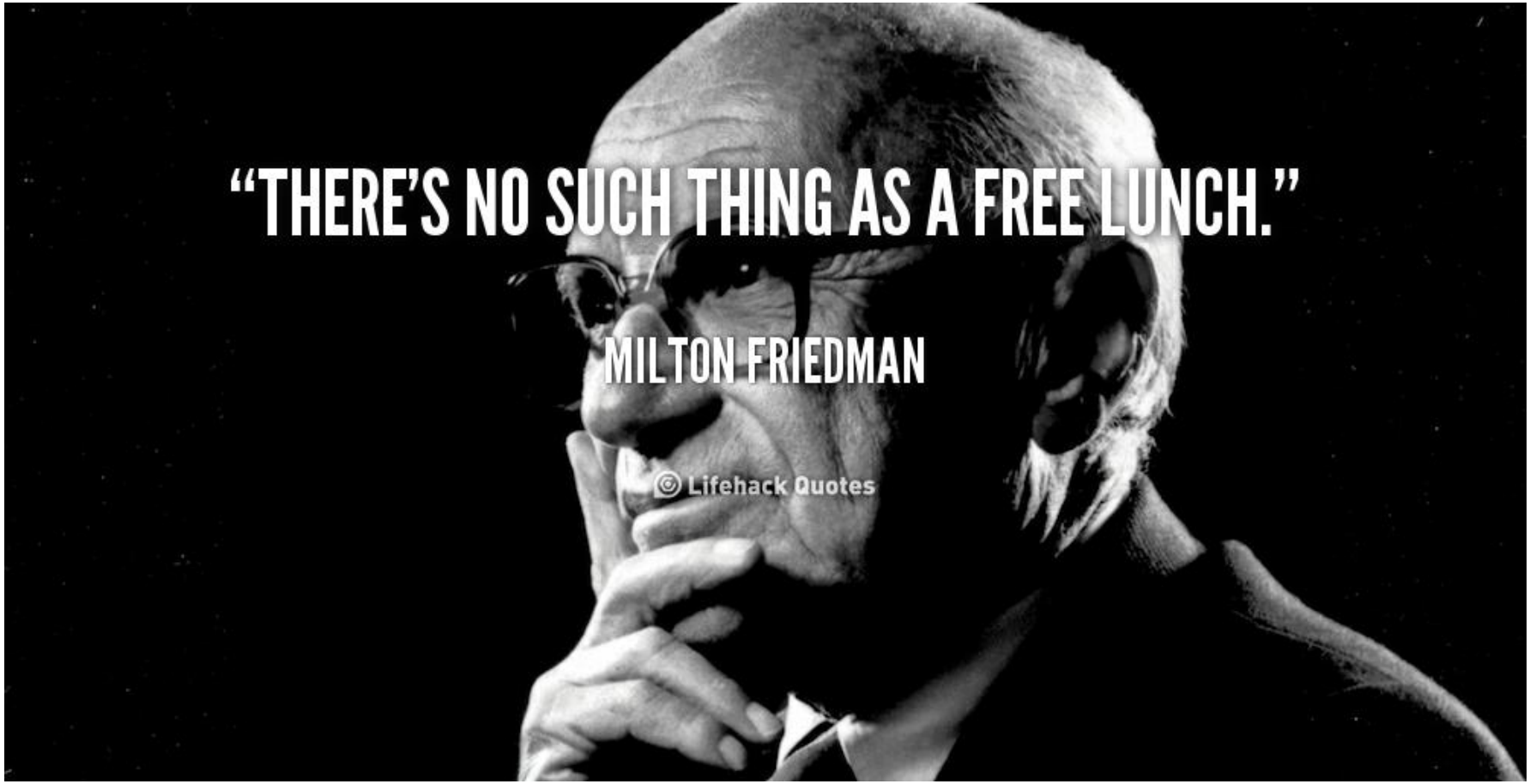
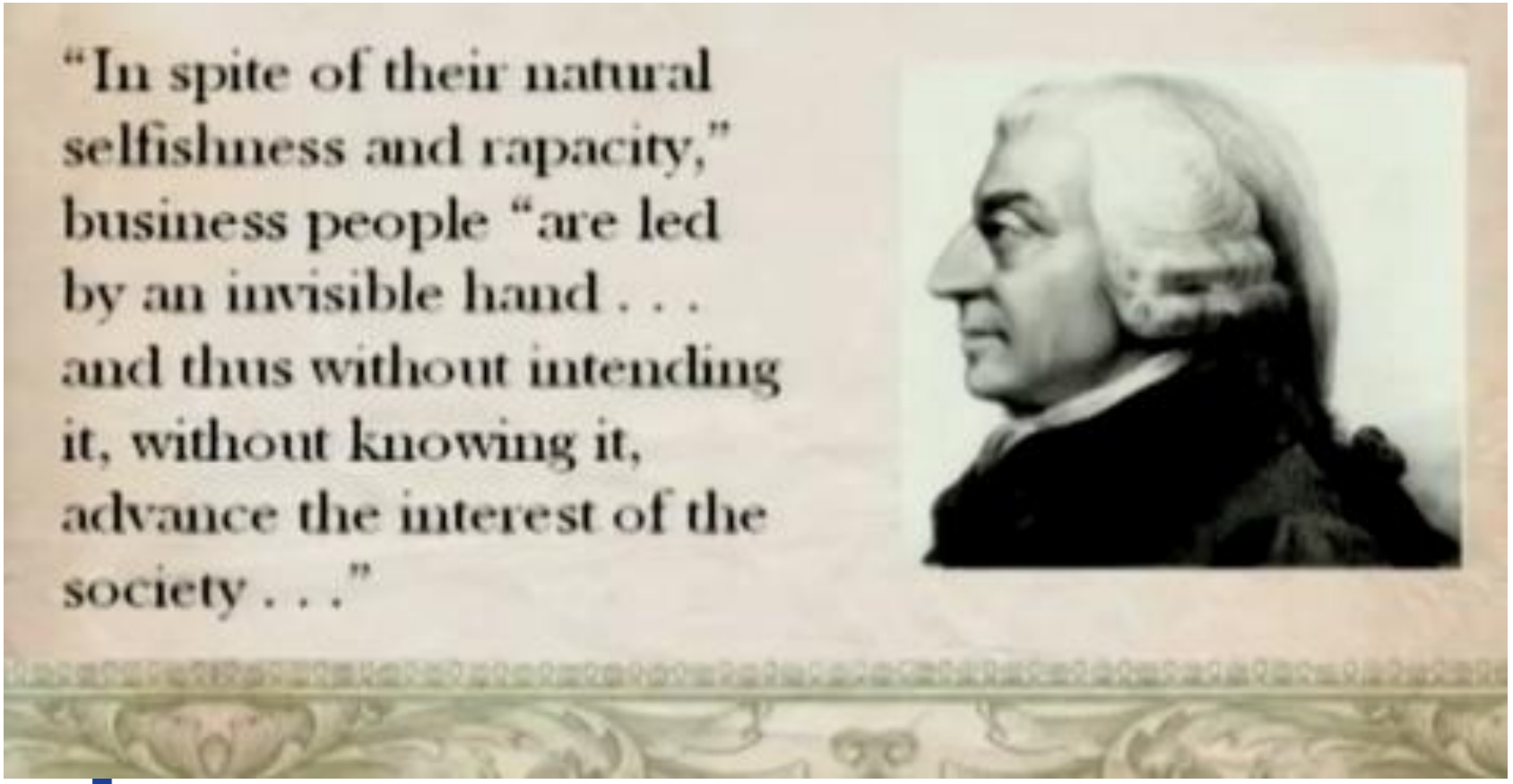
Federaal Kenniscentrum voor de Gezondheidszorg
Centre Fédéral d'Expertise des Soins de Santé
Belgian Health Care Knowledge Centre

What is a life year worth?

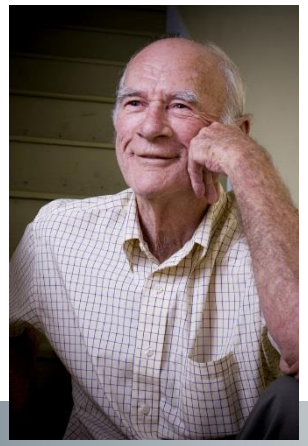
Defining the boundaries of public willingness to pay for better health

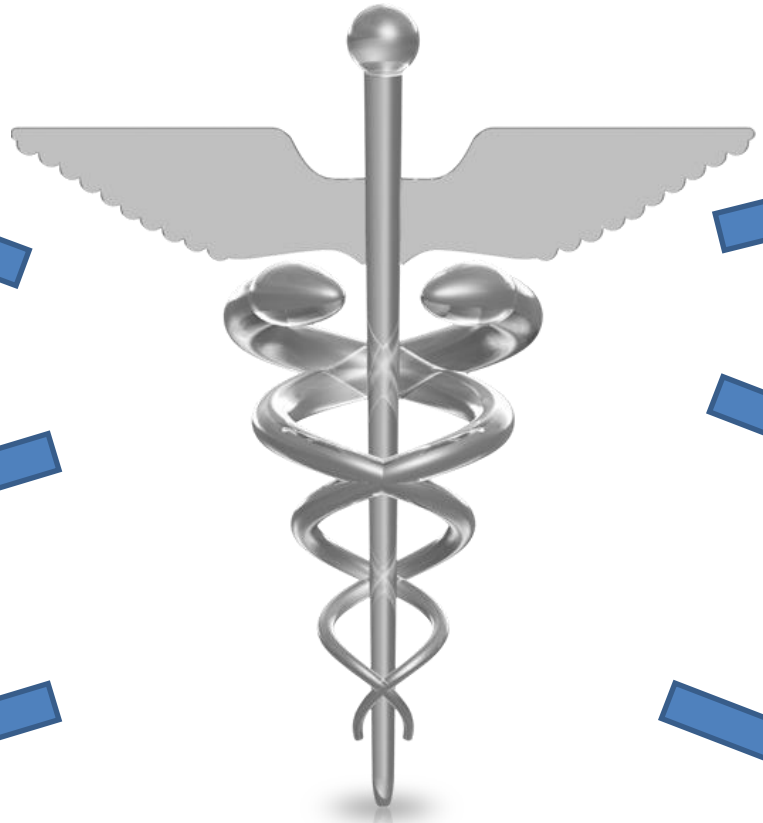

“THERE’S NO SUCH THING AS A FREE LUNCH.”
MILTON FRIEDMAN
© Lifehack Quotes

The invisible hand
(Adam Smith, 1759)



PUBLIC BUDGET





Primary care

Secondary care

Tertiary care

Rehabilitat

Palliative c

Prevention

....

Incremental cost-effectiveness analysis

- **What?**
  - **Analysis of the difference in costs and outcomes of at least two alternative treatments for the same condition.**
- **Result?**
  - **Incremental cost-effectiveness ratio**

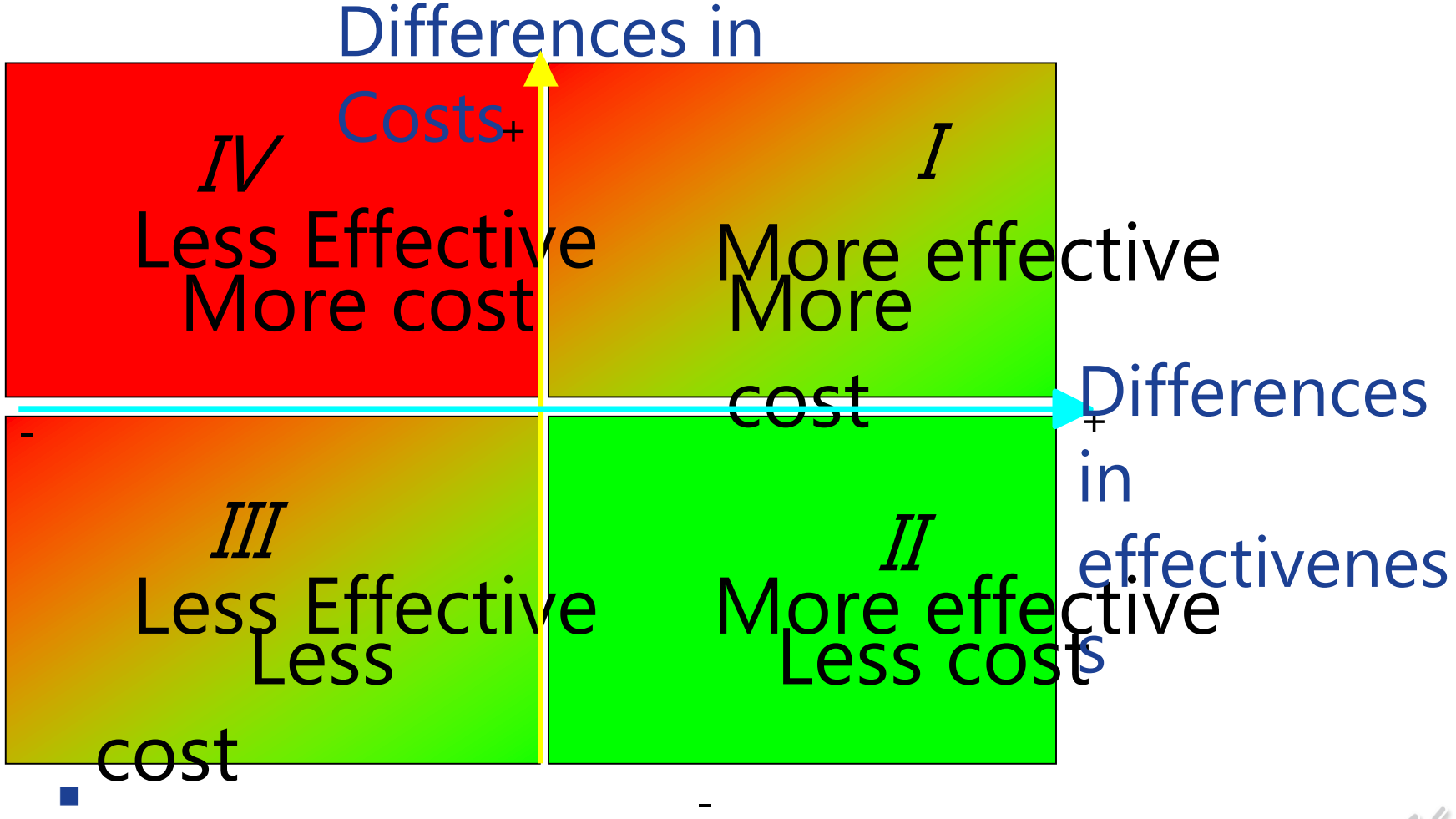
What is an ICER?

- **Incremental Cost-Effectiveness Ratio**

$$\frac{Incremental\ Cost}{Incremental\ Effect} = \frac{\Delta C}{\Delta E} = \frac{C_2 - C_1}{E_2 - E_1}$$

- **Represents the extra cost per extra unit of health outcome (in terms of life-years or QALYs).**

Incremental cost-effectiveness ratio (ICER)



Why do we need ICERs?

How to make choices?

Ad hoc: no guarantees for optimal outcomes

Rational: trying to maximise benefits given the resources available

How can ICERs be used?

- **The ICER is intended to support policy makers to allocate resources efficiently**

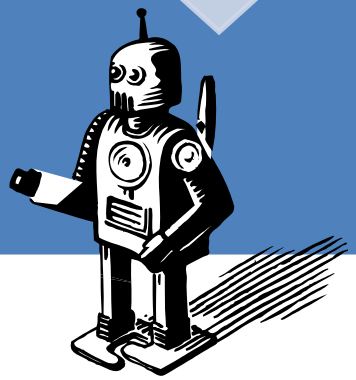
- **Assumption:**

Health care policy makers are first and foremost interested in maximising health in terms of Life Years or QALYs gained

If health maximisation is our primary concern

Then the ICER could serve as a sole decision criterion and

Making decisions becomes easy



Else,

ICERs will not be enough, (but will help!)

What's next (in this presentation)

- **Explore what is needed for the ICER approach.**
- **Theoretical use of ICER threshold values**
- **Issues with ICER thresolds**
- **Practical use of ICER threshold values**
- **Possible extension**

What is needed?

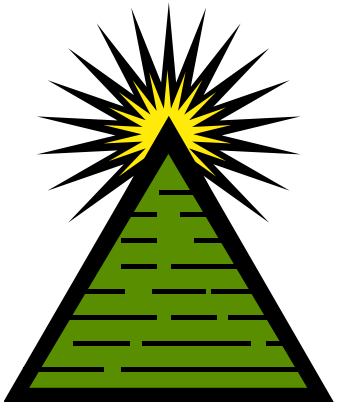
- **The ICER *as such* does not suggest whether investment in an intervention is efficient**
- **For this, ICERs need to be compared to a reference value ("threshold value") :**

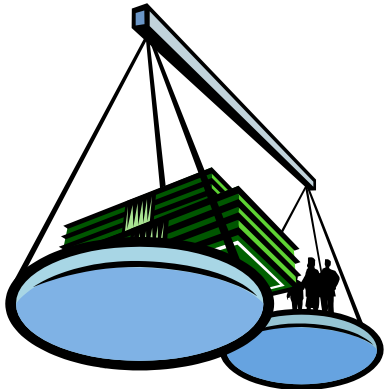
  ICER < threshold: efficient

  ICER > threshold: not efficient

What is the ICER threshold value?

- **It is the maximum amount society can pay per QALY, given its budget, if it wants to maximise the aggregate number of QALYs**





How to find the ICER threshold value (theory)?

	ΔC/ΔE	Budget impact in current year
A	10.000	200.000
B	16.666	800.000
C	20.000	150.000

- **Suppose available budget = €700.000**
- **ICER threshold = 16.667 €/LYG**

What do we need?

- **Complete information on incremental costs and outcomes of all interventions (at the same time)**
- **Fixed budget?**
- **Independence of programmes**

Suppose:
new intervention appears …

	ΔC/ΔE	Budget impact current year
D	15.556	700.000

New intervention's position

	ΔC/ΔE	Budget impact in current year
A	10.000	200.000
D	15.556	700.000
B	16.666	800.000
C	20.000	150.000

In a fixed budget situation, the ICER threshold changes if a new intervention appears with an ICER < current threshold value

What do we learn from this?

- **Fixed ICER threshold >< fixed budget**

  If the health care budget is strictly fixed, the ICER threshold value must be revised with every positive decision for reimbursement.

The “fixed” health care budget in a system with co-payments?

Which health care budget needs to be allocated efficiently in a system with co-payments?

Public health care budget

Patients’ HC expenditures

Fixed budget?

- **What is the total fixed budget in this case?**
- **The ICER threshold is the maximum acceptable cost per LYG or QALY; *who* pays does not matter for the approach**
  - **➔ equity concerns**

Risk of inconsiderate use of an ICER threshold value

Hypothetical example:

	ΔC/ΔE	Budget impact current year
A	10.000	400.000
Flu	15.000	4.200.000
Cancer	16.667	800.000

- Flu treatment reimbursed at 40%
- Cancer treatment reimbursed at 100%

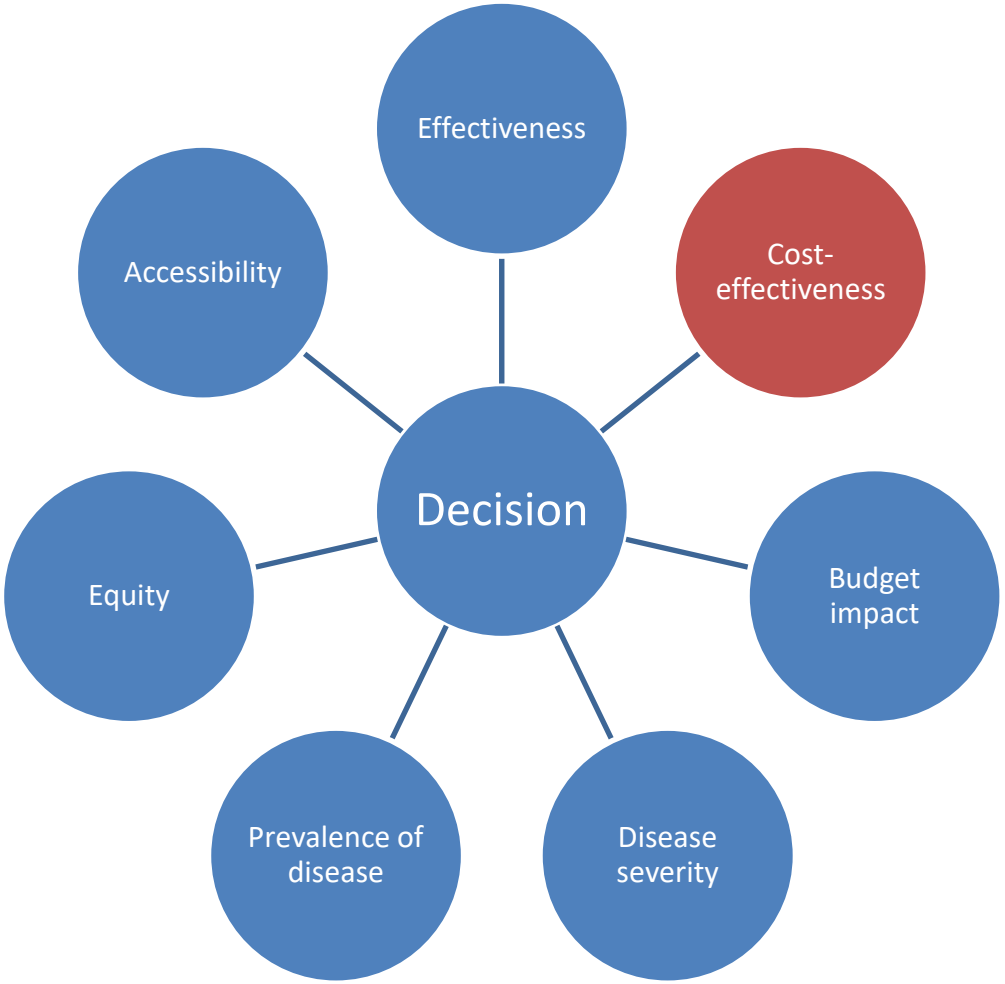
Usefulness of the *theoretical* ICER threshold

- **Assumptions of the ICER threshold approach:**
  - **Strictly fixed budget**
  - **Complete information**
  - **Maximisation of life years or QALYs**
  - **Programmes are independent**
  - **Perfect divisibility of programmes**
  - **Constant returns to scale**

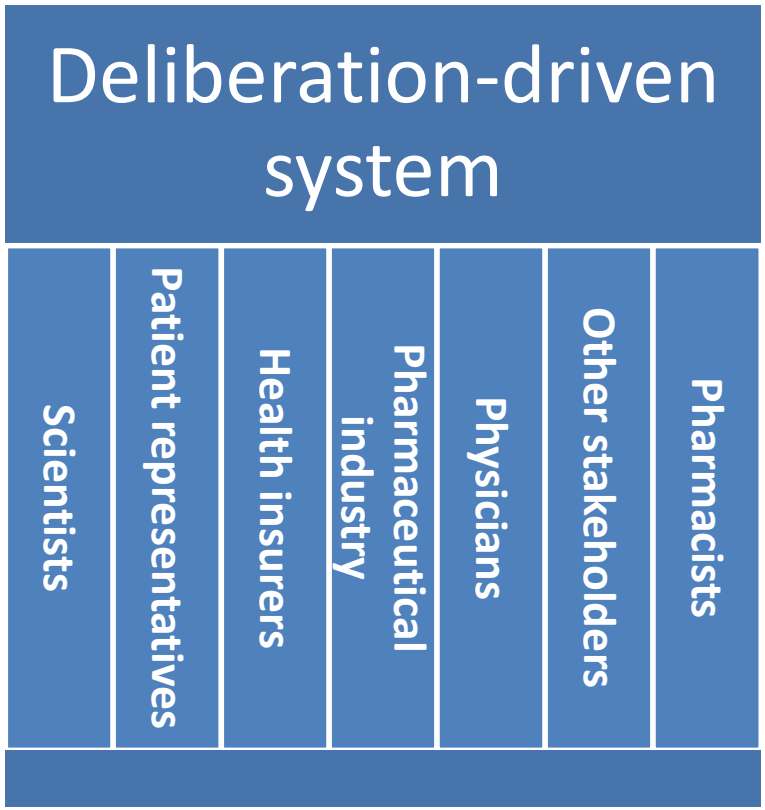
Alternative definitions of the ICER threshold?

- **Threshold value as societal WTP/QALY**
  - **Can vary depending on the disease (e.g. higher for cancer than for flu)**
  - **Issues:**
    - **Measurement of WTP for *a* LY or QALY?**
    - **Requires flexible budget**
- **Relative to other interventions' ICERs**
- **Cost-consequences analysis**

The broader picture



Expert committees



Societal preferences?

Question	Possible criteria
Does the product target a medical, therapeutic and societal need?	Disease severity, prevalence, availability and effectiveness of alternative treatments
Are we, as a society, prepared to pay for *a* treatment that will improve this indication out of public resources?	Own financial responsibility, life-style
Are we, as a society, prepared to pay for *this* particular treatment?	Relative effectiveness, safety, side effects, ease of use
Are we prepared to pay *more* for this treatment than for the best alternative?	Added therapeutic value, savings elsewhere in the HC sector, quality of evidence, uncertainty
How much more are we willing to pay out of public resources for this treatment (P&R)?	Added therapeutic value, budget impact, ICER, disease severity, savings elsewhere, feasibility, quality of evidence

Multi-criteria decision analysis

- **“A set of methods and approaches to aid decision making, where decisions are based on more than one criterion, which make explicit the impact on the decision of all the criteria applied and the relative importance attached to them.”(Devlin, 2011)**
- ***Supports* decision making, does not replace it.**

Degrees of determinism

Direct participation of all stakeholders in decisions making processes, implicit values

(pure **deliberation**)

Stakeholder involvement + use of external source of preference values from general public to *guide* DM process

Consistency

Input of quantified "generic" preference values from the general public, in a **Multi-Criteria Decision model**

Degree of determinism

How would such a tool work?

New technology

HTA

Criteria	Score 0	Score 1	Score 2	Score 3
C1: disease severity	minor inconvenience	affecting quality of life	causing disability	life threatening
C2: size of population	X < 1/100,000	1/100,000 < X X < 1/1,000	1/1,000 < X < 1/100	X > 1/100
C3: budget impact of condition	minor	moderate	high	very high

Criteria scoring
(policy makers)

$$W_1.C_1 + W_2.C_2 + W_3.C_3 + \ldots$$

Score weighing
(using criterion-specific but intervention-independent weights obtained from public)

Priority score

Summary

- **How can ICERs be used in theory?**
  - **As an absolute decision criterion, by comparing the ICER to a threshold value**
- **How could ICERs be used in practice?**
  - **As a measure of an intervention's relative economic value for money**
  - **A unique ICER threshold value cannot be identified (fixed budget – league table) or measured (variable budget – WTP)**

Conclusion

- **Be careful when looking at ICERs**
- **Be aware of additional criteria that are important**
- **But do not discard them as useless**
- **Because, not taking cost considerations into account in resource allocation decisions is unethical**

Therefore …

- **Efficiency *should* be a decision criterion**
- **Transparency + control of economic models**

  ➔ credibility
- **Disaggregated presentation of economic elements + ICER, calculated following methodological standards**

  ➔ open the “black box”
- **Transparency in criteria used in decision making + relative ‘weight’ (MCDA)**

  ➔ consistency and justification