

# ***Cost-effectiveness of AT – applications and importance in policy development***

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# *On cost-effectiveness*

Incremental cost-effectiveness ratio (ICER)

Comparison between two alternatives A and B:

$$\text{ICER} = (\text{Cost}_A - \text{Cost}_B) / (\text{Effect}_A - \text{Effect}_B)$$

# *Survey of incremental cost-effectiveness ratios (ICER) of ATs (2007)*

examples	ICER (EUR) cost/QALY
■ safety alarm	cost saving
■ electric wheelchair vs manual (1 study)	12 000
■ walker (1 study)	2 614
■ hip prostheses (several studies)	946 - 1506
■ hearing aid fitting, new regimen (1 study)	2 149
■ hearing aids(1 study)	8 300 (EQ-5D) 1 800 (HUI3)
■ cochlea implants (several studies)	21 000 – 31 000

# *No fix C/E threshold*

Cost per QALYs gained

## **LOW**

< 10 000 Euro/QALY or life-year gained

## **MODERATE**

< 50 000 Euro/QALY or life-year gained

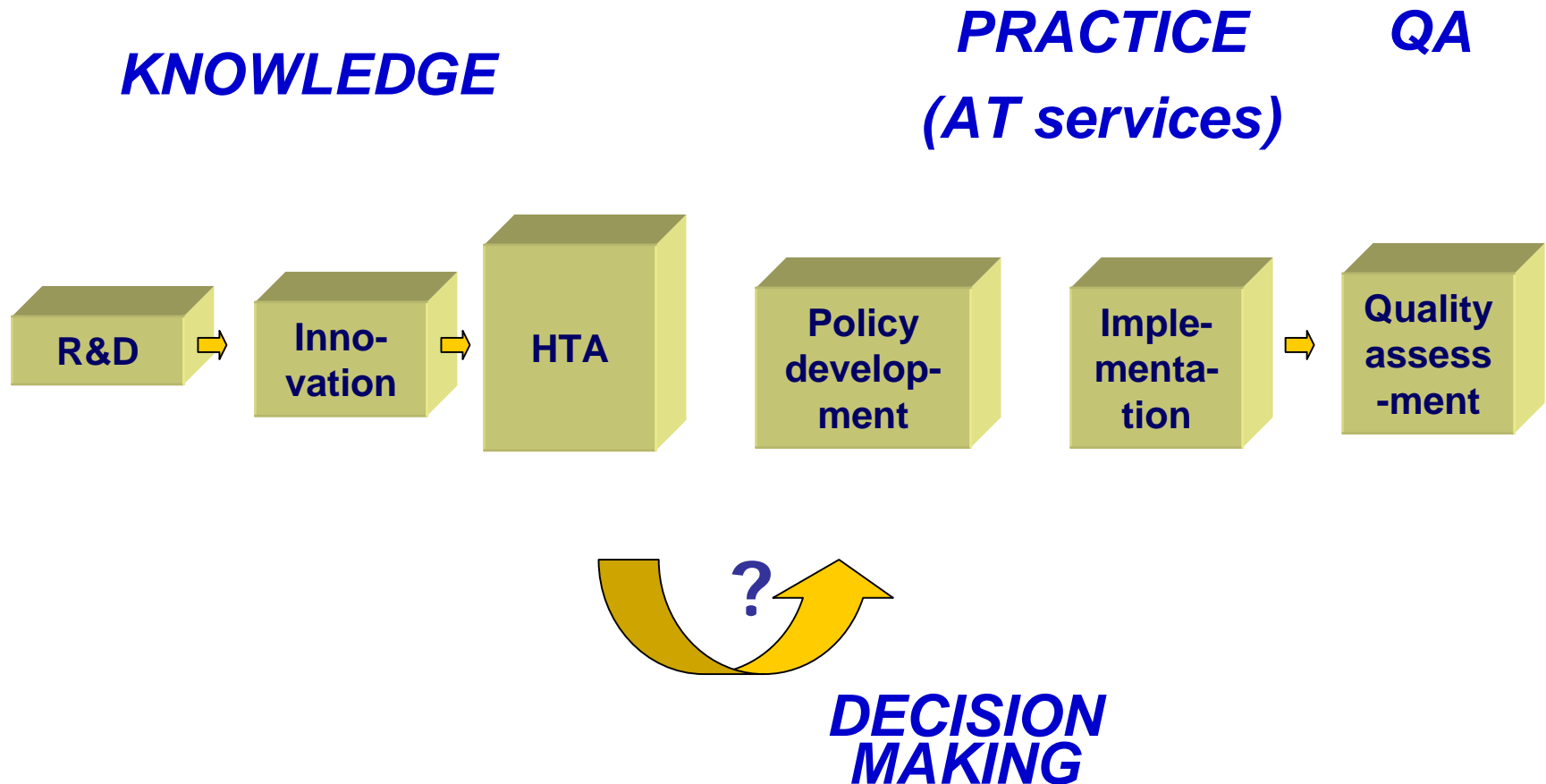
## **HIGH**

$\leq$  100 000 Euro/QALY or life-year gained

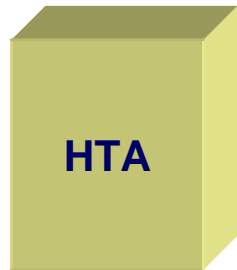
## **VERY HIGH**

> 100 000 Euro/QALY or life-year gained

# *Innovation, diffusion and implementation*



# HTA and Policy Making



## Outcomes

efficacy  
safety (risks)  
effectiveness  
costs  
cost-effectiveness  
ICER (alternatives)  
strength of evidence

## Consequences

economic  
organisational  
ethical

## Ongoing HTAs

## Policy issues

*For each pair (disability / AT):*  
severity and need  
ethical criteria  
quality of evidence  
local preferences, priorities



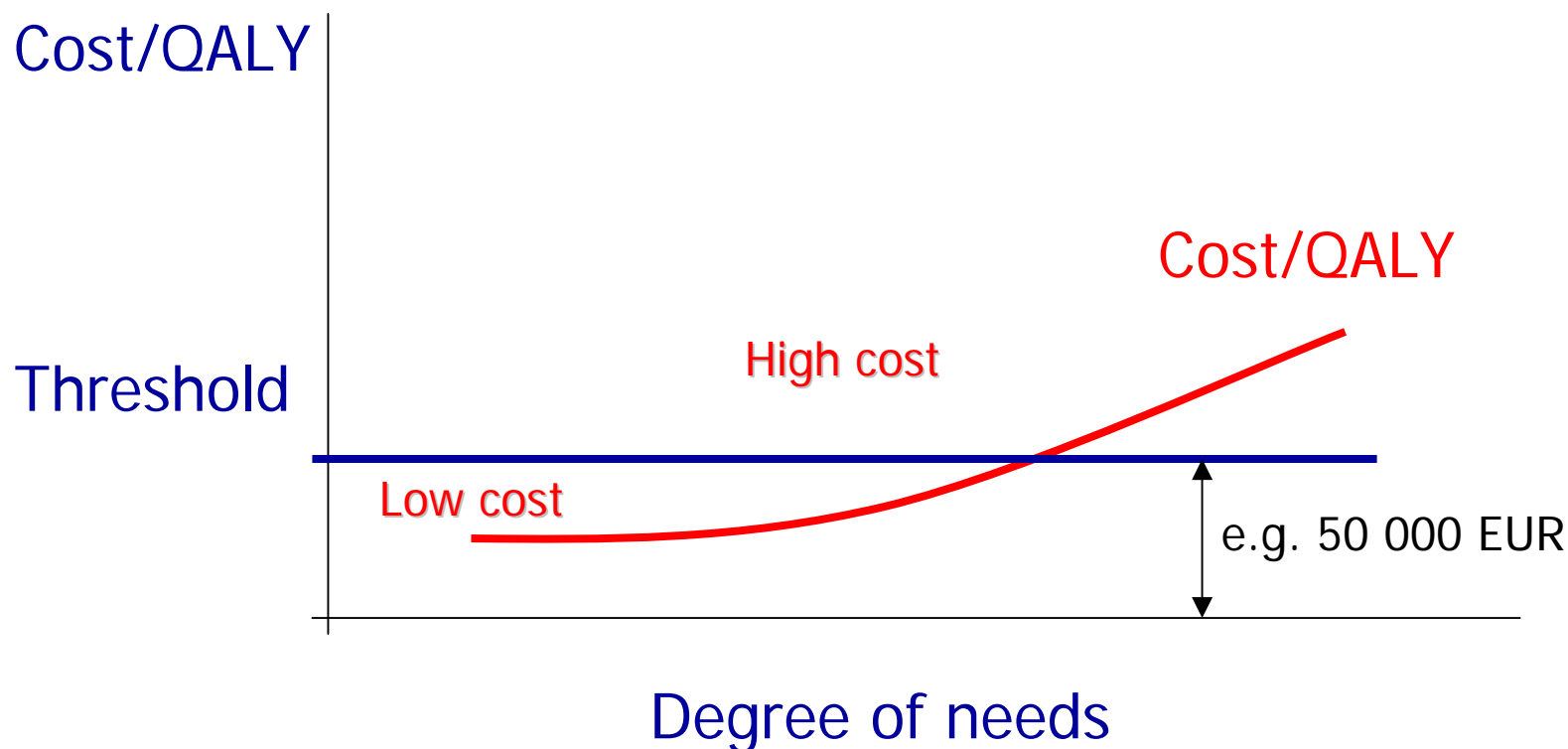
# *Principles for priority setting*

*(Example: Swedish Governmental Invest. 1995:5,  
Law 1997)*

- *First (principle of human dignity):*  
all human beings have equal dignity and the same rights
- *Second (principle of needs and solidarity):*  
resources should be committed ... where needs are greatest ... paying special attention to those who have less chance of exercising their rights
- *Third (principle of cost-effectiveness):*  
one should aim for a reasonable relationship between cost and effect

# *Cost/QALY and needs*

## *Is a fix threshold reasonable?*





# *Concepts and methods – vertical and horizontal priority setting*

Responsibility  
for providers/  
AT professio-  
nals

**Vertical  
priority  
setting**

**Ranking  
1-10**

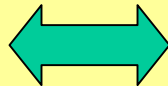


## **The object for priority setting**

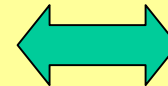
Combinations of disability  
conditions and AT or other action,  
e.g.

- impaired hearing
- qualified multiprofessional hearing  
rehabilitation OR hearing aid  
delivery

**Mental  
disorders**



**AT**



**Diseases in  
urinary tract**

**Horizontal priority setting**

Responsibility for health care politicians

# *What problems do we encounter?*

- type of studies
- grading of evidence
- sample size in trials
- small companies/manufacturers

# *Evidence grading*

- 1 – strong scientific basis: at least two independent studies of high evidence value
- 2 – moderately strong scientific basis: one study of high evidence value plus at least two with average value
- 3 – limited scientific basis: at least two studies with average evidence value
- 4 – insufficient scientific basis: studies of low evidence value or no studies available

# *What's on?*

*EBM can hamper innovation of AT **but promising are***

- more studies of AT yield more credible data on cost-effectiveness
- manufacturers demonstrate increased awareness
- use of conditional implementation
- revision of evidence criteria
- probabilistic decision modelling

## *Revision of evidence grading (see, e.g., NICE "Reviewing and grading the evidence")*

The GRADE system is one of several suggestions.

- RCTs – still a high strength of evidence
- Observational studies still have low strength of evidence
- Grading up or down is done based on study quality

## *GRADE – quality aspects*

- **Study design** (RCT, observational study, case studies, ...)
- **Quality** (blinding, drop-outs, control for case mix, background factors)
- **Consistency** (agreement between studies)
- **Relevance** (representativity in the study population and control group, choice of outcomes)

Brodtkorb, Henriksson, Johannesen-Munk, Thidell: *Cost-effectiveness of C-Leg compared to non microprocessor controlled knees*. Archives of Physical Medicine and Rehabilitation 89, 2008, 24-30.



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### C-leg

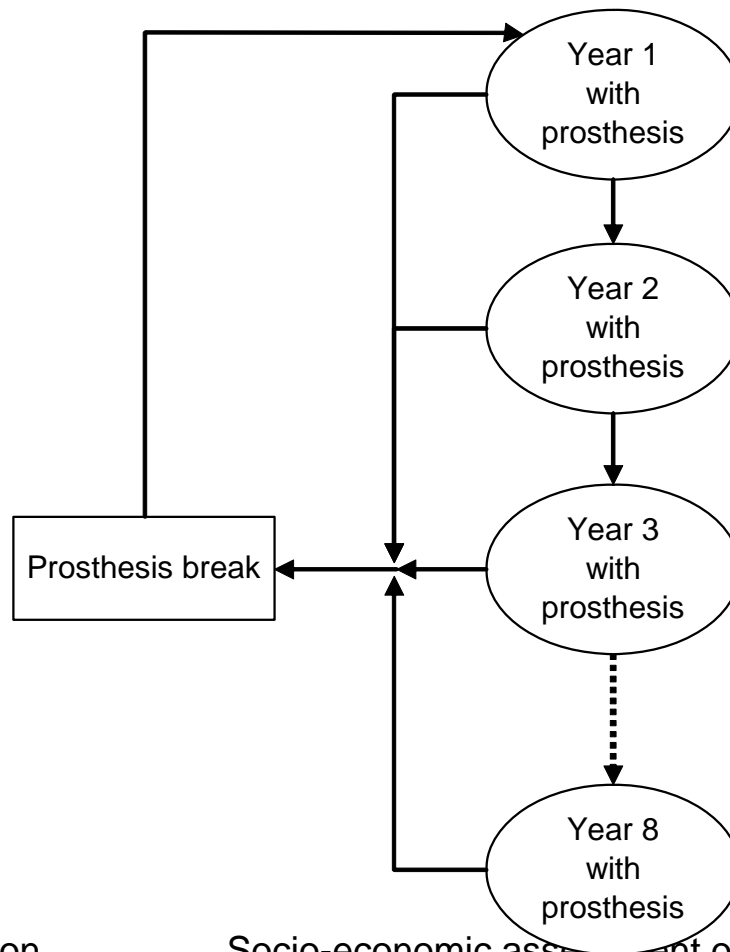
- Dynamic control
- Controlled resistance for different conditions
- Guaranteed survival of 8 years



### NMC

- Passive
- Stabilized by the patient

# *Model structure*





# *Conclusions*

*"It is better to be vaguely right than exactly wrong"*

*(Ezra Mishan on valuation of life and limb)*

*"It is better to have an imprecise estimate of the right concept than a precise estimate of the wrong concept"*

*(Bengt Jönsson, CMT's 20th anniversary 2005)*

*"Economic evaluation for assistive technology policy decisions"*

*(Philip Jacobs, David Hailey, and Allyson Jones, University of Alberta, Canada. Journal of Disability Policy Studies, 14, 2003, 120-126. )*