Health Technology Assessment (HTA) -examples-

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EX 1: "analysis prospective"

After an ICTUS, a patient can be prescribed two treatmetns*:

1. **Hospital monitoring (10 days):**

   - **10 days (£200/day)**   *£2000*

   - **10 lost working days of the patient (£100/day)**   *£1000*

2. **Home visits (10 days):**

   - **10 Specialist medical doctor visits (£50/visit)**   *£500*

   - **10 Nurse visits (£25/visit)**   *£250*

   - **2h per day of a social assistant (£25/hour)**   *£500*

   - **7 lost working days of a relative (£100/day)**   *£700*

   - **10 lost working days of the patient (£100/day)**   *£1000*

Which treatment is more convenient for:

HOSPITAL	LOCAL SERVICES	NHS	SOCIAL

*Hypotheses and remarks:
- We are assuming all the other costs are the same (i.e. *drugs*)
- Those cost are just the didactic purposes and not real

Ex 2:

Goal:

«Innovative oral drug therapy (home)» vs «traditional intravenouse (hospital)»

Clinical trials demonstrated: **Same efficacy.**

Which analisys would you suggest?
Which drug would you recoment?
(see the data on the next slide)

Ex 2:

Prospective: NHS

COST DIFFERENCES:

- **Drug cost**
    - **ORAL: 1 dose costs £400, 7 doses are needed**
    - **Benchmark: 1 dose costs £40, 5 doses are needed**
- **Administration cost**
    - **ORAL: administering 1 dose costs £150**
    - **Benchmark: administering 1 dose costs £800**
- **Side effects**
    - **ORAL: mean cost per patient £280**
    - **Benchmark: mean cost per patient £350**

Goal: compare two competitive HTs for Acute Myocardial Infarction (AMI)*

«tissue plasminogenactivator (t-PA)» vs «streptokinase (gold standard)»

Clinical trials demonstrated: t-PA is more effective in reducing mortailty.

Which analisys would you suggest?
Which healthcare technology would you recomend?
(see the data on the next slide)

* Adapted from: Mark B. 1995, The New England Journal of Medicine: http://www.nejm.org/doi/full/10.1056/NEJM199505253322106

STREPTOKINASE:	t-PA:

• **Treatmens costs £100/year per patient**
 	
• **AMI incidence per year 5%**
 	
• **AMI:**
    • **treatment cost £10.000 per IMA**
    • **mortality: 20%**
	• **Treatmens costs £500/year per patient**
	
	• **AMI incidence per year 2%**
	
	• **AMI:**
	    • **treatment cost £10.000 per IMA**
	    • **mortality: 20%**

Ex 4:

Goal: compare two competitive drugs ("A" vs "B"): "A" increases the mobility and the reduce pain more than "B", but "A" costs more than "B".

Which analisys would you suggest?

Ex 5:

Goal: compare two competitive healthcare technologies ("A" vs "B"): "A" increases the mobility and the reduce pain more than "B", but "A" costs more than "B".

In particular, a randomised Control Trials proved that:

1. The group treated with "A", gained 2 years of life with Utility 0.5 and 2 years with Utility 1

2. The group treated with "B", gained 4 years of life with Utility 0.7

Questions:

a. Calculate ΔU.
b. Assuming "A" costs (in 4 years) £5000 more than "B" (ΔC=£5k), calculate the iCUR.
c. Which Drug would you recommend?
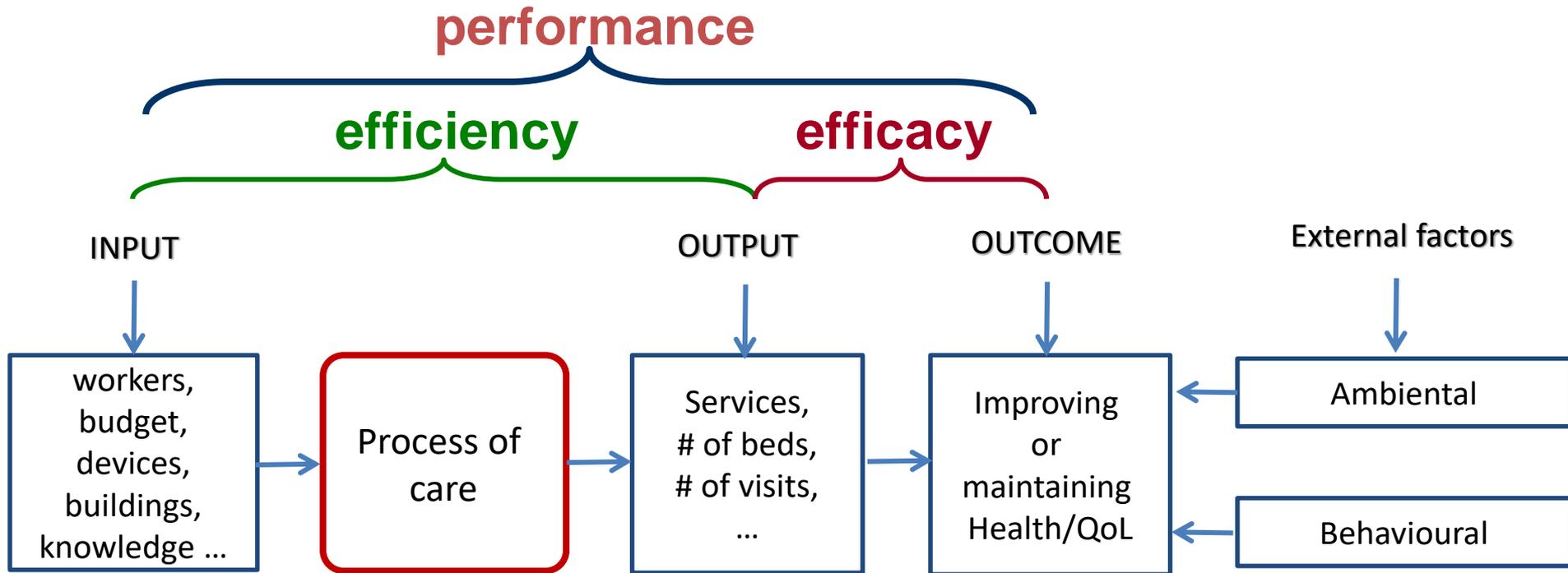
Health Technology Assessment (HTA) -theory summary-

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Performance, efficiency, efficacy

performance

efficiency **efficacy**

INPUT OUTPUT OUTCOME **External factors**

| workers, budget, devices, buildings, knowledge … | → | Process of care | → | Services, # of beds, # of visits, … | → | Improving or maintaining Health/QoL | ← | Ambiental |

Behavioural

$$Efficiency = \frac{output}{input} \quad Efficacy = \frac{outcome}{output} \quad Performance = \frac{outcome}{input}$$

Analysis	Resources (Input)	Consequences (outcome)	How we measure the outcome?	Advantages	Limits
Cost Minim.	£	• 1 result • assumed equally for each alternative	Not needed -ΔC-	• Univocal result • First step for the other analyses	•No effect measured
Cost Eff.	£	• 1 result • 1 technology perform better	Physical units (ages gained, pain) -iCER-	• Can measure univocally clinical results as far as are it is the same for all the technologies	• non heterogeneous effects • efficacy≠effectiveness; • no universal scales can measure the iCER
Cost Util.	£	• >1 results • 1 technology perform better	QALY -iCUR-	• Measure heterogeneous clinical results, by introducing an objective function (i.e. QALY)	• only clinical results • no universal scales to measure the iCUR
Cost Ben.	£	• >1 results not only medical • 1 technology perform better	£ -iCBR-	• Measure heterogeneous results (not only clinical), by converting their impact in £	• difficult to quantify the value of results in £ • less than the 4% of studies

How to chose the analysis?

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                        ┌─────────────────────┐
                        │   Consequences      │
                        │     A vs B?         │
                        └─────────────────────┘
                    ┌──────────────┴──────────────┐
              ┌───────────┐                 ┌───────────┐
              │   A = B   │                 │   A ≠ B   │
              └───────────┘                 └───────────┘
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• same domain (clinical) • same quantitative results	• same domain (clinical) • homogeneous results	• same domain (clinical) • heterogeneous results • interest in QUALY	• different domains • homogeneous results • interest in saved costs
COST-MINIMIZATION	COST-EFFECTIVENESS	COST-UTILITY	COST-BENEFITS