



# PHARMACOECONOMICS

Lecture 4  
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# Outcomes (Consequences)

Assessing the economic, clinical, and humanistic outcomes (ECHO) associated with a treatment alternative provides a complete model for decision making.

- **Economic**: the direct, indirect, and intangible costs compared with the consequences of medical treatment alternatives
- **Clinical** : the medical events that occur as a result of disease or treatment (e.g., safety and efficacy end points)
- **Humanistic**: are the consequences of disease or treatment on patient functional status or quality of life along several dimensions (e.g., physical function, social function, general health and well-being, and life satisfaction)

# Positive and negative outcomes

Pharmacoeconomic evaluations should include assessments of both types of outcomes and balancing them.

- **Positive outcome:** is a desired effect of a drug (efficacy or effectiveness measure), possibly manifested as cases cured, reductions in hemoglobin A<sub>1c</sub>, life-years gained, or improved health-related quality of life (HRQOL).
- **Negative outcome:** is an undesired or adverse effect of a drug, possibly manifested as a treatment failure, an adverse drug reaction (ADR), a drug toxicity, or even death.

# Cost minimization analysis (CMA)

- Measures input costs and assumes that outcomes to be equivalent

- **Advantages:-**

- The simplest to conduct.
- Only the costs of the of the interventions are compared

- **Disadvantages:**

- cannot compare different classes of medications.
- Types of interventions that can be evaluated are limited.

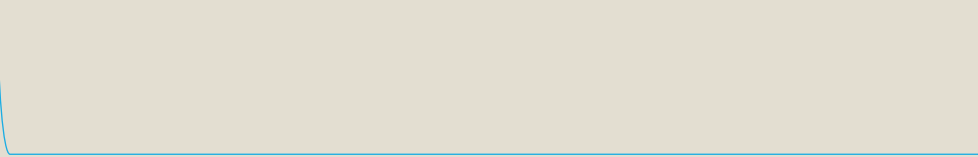


# What is being compared ?

**Two generic medications that are rated equivalent by the FDA**  
**Same chemical drug entity**  
**Same dose (not number of doses)**

Antibiotic X

Antibiotic Y



Treats infections equally and from the same class

**(inputs) Costs**

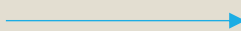
**RX**

**Equivalent Outcomes**

# Cost effectiveness analysis (CEA)

- comparing programs or treatment alternatives with different safety and efficacy profiles.
- Measures outcomes in natural units (mmHg, lives saved, cases cured, life expectancy, or drop in blood pressure, symptoms free days)
- Advantages: Easier to quantify because outcomes are usually collected in clinical trials and clinical practice.
- Outcomes do not need to be converted to monetary values
- Disadvantage: Different types of outcomes can't be compared.

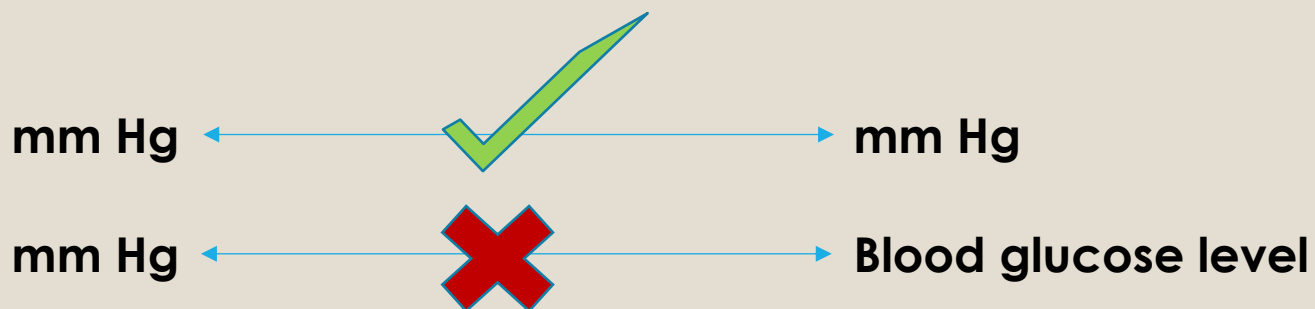
Comparing Anticoagulant with diabetes drug



**Wrong  
Units are different**

# CEA

**Outcome X similar to outcome Y  
Same clinical value**



**(inputs) Costs**

**RX**

**Outcomes  
Same clinical value**

# Presentation of costs and effectiveness

- Cost consequence analysis: Costs and various outcomes are listed without ratios conducted
- Average cost effectiveness analysis :Ratio of resources used per unit of clinical benefit
- Incremental cost effectiveness ratios : Ratio of difference in costs divided by the difference in outcomes



# Cost consequence analysis

The following is a measure of the costs and outcomes of using three medications used to treat stomach ulcers (A,B,C) using two outcome measures SFD and % healed.

Results are based on follow up endoscopies

	<i>Drug A</i>	<i>Drug B</i>	<i>Drug C</i>
<i>Method 1: Cost-consequence analysis (CCA)</i>			
Cost	\$600 per year	\$210 per year	\$530 per year
Outcomes			
GI SFDs	130	200	250
% Healed	50%	70%	80%

**SFD:** symptoms free days(How many days on average patients didn't have symptoms during the year )

**%healed:** patients in whom endoscopy indicated that the ulcer was healed

# Average cost effectiveness ratio analysis

## Calculate the following:-

Average cost effectiveness ratio per SFD

Average cost effectiveness ratio per % healed

	Drug A	Drug B	Drug C
<i>Method 2: Average cost-effectiveness ratios</i>			
	$\$600/130 = \$4.61$ per SFD	$\$210/200 = \$1.05$ per SFD	$\$530/250 = \$2.12$ per SFD
	$\$600/0.5 = \$1200$ per cure	$\$210/0.7 = \$300$ per cure	$\$530/0.8 = \$662$ per cure