

Al-Mustaqbal University College
Department of Pharmacy
5th Stage
Pharmacoeconomics
Lecture: 1



PHARMACOECONOMICS

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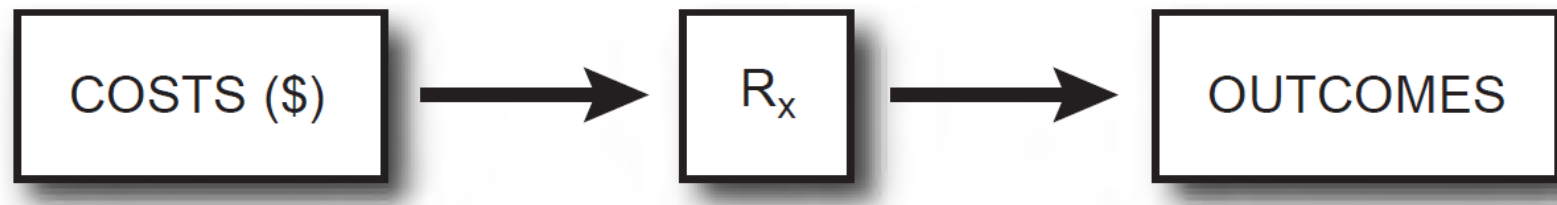
PHARMACOECONOMICS

- Pharmacoeconomics has been defined as **the description and analysis of the costs of drug therapy to health care systems and society.**
- It identifies, measures, and compares the **costs** and **consequences** of pharmaceutical products and services.
- **Decision makers** can use certain methods to **evaluate and compare** the total **costs** of treatment options and the **outcomes** associated with these options.



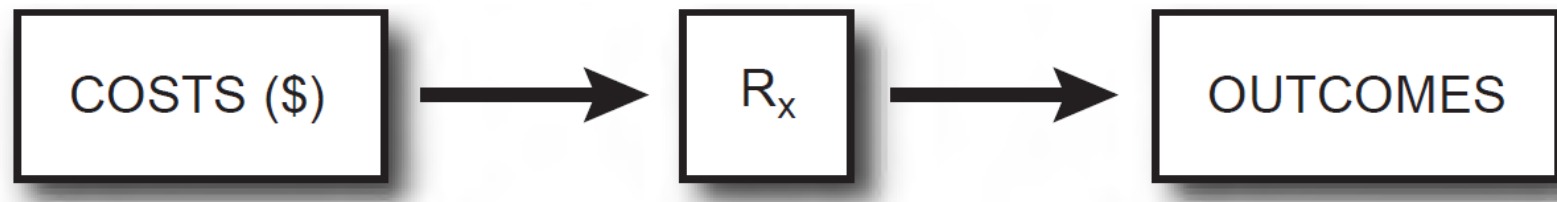
PHARMACOECONOMICS

- To show this **graphically**, think of **two sides** of an equation.
- **The left-hand side** of the equation represents the **inputs (costs)** used to obtain and use the pharmaceutical product or service.
- **The right-hand side** of the equation represents the **health-related outcomes** produced by the pharmaceutical product or service.
- **The center** of the equation, the **drug product** or **service** being assessed, is symbolized by Rx.



PHARMACOECONOMICS

- If just the **left-hand side** of the equation is measured without regard for outcomes, it is a **cost analysis** (or a **partial economic analysis**).
- If just the **right-hand side** of the equation is measured without regard to costs, it is a **clinical or outcome study** (**not an economic analysis**).
- To be a **true** pharmacoeconomic analysis, **both** sides of the equation must be considered and compared.
- Theoretically, **at least two options** must be compared in pharmacoeconomics, but **some assessments** consist of a “**with or without**” comparison, estimating what would occur if the product or service was **provided** (e.g., immunization or pharmacy clinic services) compared with **no provision** of the product or service.



PHARMACOECONOMICS IMPORTANCE

- **Health care costs** have been **increasing** each year more than the average **rate of inflation**.
- This continued increase in costs has resulted in a need to **understand** how limited **resources** can be used most **efficiently** and **effectively**.
- **Healthcare providers** want their patients to **receive the best care and outcomes available**, and **payers** want to **manage rising costs**.
- **Pharmacoeconomics combines** these objectives by estimating the value of patient **outcomes** received for the **expenditures spent** on medications and other healthcare products and services.

TYPES OF PHARMACOECONOMIC STUDIES

- There are **four** basic types of pharmacoeconomic studies:
 1. **Cost-Minimization Analysis (CMA)**
 2. **Cost-Effectiveness Analysis (CEA)**
 3. **Cost-Utility Analysis (CUA)**
 4. **Cost-Benefit Analysis (CBA)**
- **Each** method measures costs in dollars, but they **differ** regarding how health outcomes are measured and compared.

COST-MINIMIZATION ANALYSIS (CMA)

- Cost minimisation analysis is a method of **comparing** the **costs** of alternative interventions (including the costs of managing any consequences of the intervention), which are **known**, or **assumed**, to have an **equivalent** medical effect.
- Cost-minimization analysis (CMA) has the **advantage** of being the simplest to conduct because the outcomes are assumed to be equivalent; thus, only the costs of the intervention are compared.
- The advantage of the CMA method is also its **disadvantage** as CMA cannot be used whether the outcomes of interventions are different.

COST-MINIMIZATION ANALYSIS (CMA)

- A **common example** of a cost-minimization analysis is comparing **two generic medications** that are rated as equivalent by the Food and Drug Administration (FDA).
- If the drugs are **equivalent** to each other (but manufactured and sold by different companies), **only the differences in the cost** of the medication are used to choose the one that provides the best value.

COST-EFFECTIVENESS ANALYSIS (CEA)

- Cost-effectiveness analysis is a way to **examine both the costs and health outcomes** of **one** or **more** interventions.
- Cost-effectiveness analysis (CEA) measures outcomes in **natural units** (e.g., mmHg, cholesterol levels, symptom-free days [SFDs], or years of life saved).
- The main **advantages** of this approach are:
 1. The outcomes are **easier** to quantify when compared with a CUA or a CBA, and
 2. Healthcare providers are **familiar** with measuring these types of health outcomes **because** these outcomes are routinely collected in clinical trials and in clinical practice.
- One **disadvantage** of CEA is that programs with different types of outcomes cannot be compared.

COST-EFFECTIVENESS ANALYSIS (CEA)

- For example, it would **not be possible** to compare the cost-effectiveness of implementing an **anticoagulation** clinic with implementing a **diabetes** clinic because the clinical **outcomes** measured would be valued in **different units** (e.g., prothrombin time versus blood glucose measures).

COST-UTILITY ANALYSIS (CUA)

- For some **CEA** comparisons, such as evaluations of chemotherapy agents, the primary clinical unit measure of effectiveness is the **number of years** of life **gained** because of treatment.
- But just measuring a patient's length of life because of treatment **does not take** into account the **“quality” or “utility”** of those years.
- Cost-utility analysis (CUA) measures outcomes based on years of life that are **adjusted by “utility” weights**, which range from 1.0 for “perfect health” to 0.0 for “dead.”
- When **morbidity** and **mortality** are both important outcomes of a treatment, CUA should be used to incorporate both **into one unit of measure**.

COST-BENEFIT ANALYSIS (CBA)

- Cost-Benefit Analysis (CBA) is unique in that **not only** are **costs** valued in monetary terms; but so are the **benefits**.
- Measuring both **costs and benefits** in monetary terms has two major advantages:
- **First**, decision-makers can determine whether the **benefits** of a program or intervention **exceed** the **costs** of implementation.
- **Second**, decision-makers can compare **multiple** programs or interventions with similar or unrelated outcomes.
- The major **disadvantage** of CBA is that it is **difficult** to place a monetary value on health outcomes.

CONSEQUENCES

- Similar to costs, the **outcomes** or **consequences** of a disease and its treatment are an equally **important** component of **pharmacoeconomic analyses**.
- The manner in which consequences are **quantified** is a **key distinction** among pharmacoeconomic methods because the assessment of costs is relatively standard.
- Depending on perspective, the outcomes of health care are **multi-dimensional**.
- Healthcare providers have **traditionally** been most concerned with the **clinical outcomes** of treatments.
- More **recently**, healthcare payers and administrators have focused on the **resource use** or **economic outcome** of healthcare decisions.

CONSEQUENCES

- **Patients**, on the other hand, are becoming **increasingly knowledgeable** and **involved** in decisions regarding their own health care and are **seeking more information** regarding the humanistic outcomes of therapy.
- Patients want **to know** how their quality of life will be affected or how **satisfied** other patients with their condition have been with various treatments.
- Accordingly, the **consequences** (or outcomes) of medical care also can be **categorized**.
- One approach is to separate outcomes into **three** categories: **economic, clinical,** and **humanistic**.

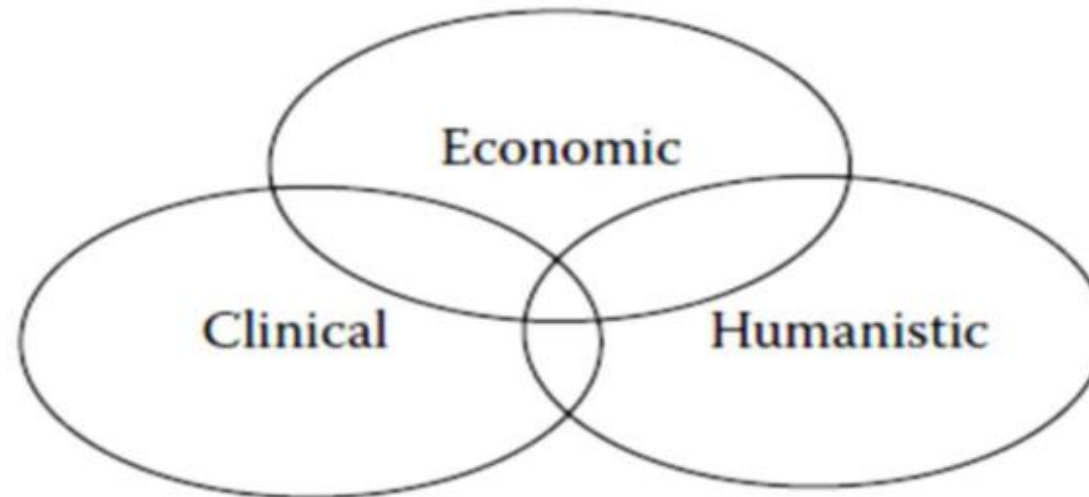
CONSEQUENCES

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

CONSEQUENCES

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

ECHO Model:
Economic, Clinical, and Humanistic Outcomes



CONSEQUENCES

- Clearly, **cost containment** is an **important** objective.
- However, **successful** healthcare management as measured by the **objectives** of **patients**, and **healthcare providers**, as well as by **societal expectations**, requires that the quality of care also be maintained.
- Outcomes measurement must take into account **economic** considerations while recognizing that acceptable **clinical** and **humanistic** outcomes are also **important** objectives.
- The **true value of healthcare interventions, programs, and policy** can be **assessed** only if **all three dimensions** of outcomes are measured and considered.

POSITIVE VS NEGATIVE CONSEQUENCES

- These consequences (outcomes) can be further categorized as **positive** or **negative**.
- An example of a **positive outcome** is a **desired** effect of a drug (efficacy or effectiveness measure), possibly manifested as cases cured, life-years gained ...etc.
- Since all drugs have adverse effects, **negative consequences** also can occur with their use.
- A **negative outcome** is an **undesired** or **adverse effect** of a drug, possibly manifested as a treatment failure, an adverse drug reaction (ADR), drug toxicity, or even death.

POSITIVE VS NEGATIVE CONSEQUENCES

- Pharmacoeconomic evaluations should include assessments of **both** types of outcomes.
- Evaluating **only positive** outcomes may be **misleading** because of the potential detriment and expense associated with negative outcomes.
- Thus the **balancing** of positive and negative consequences is **important** in any pharmacoeconomic evaluation.



**THANK YOU FOR
YOUR ATTENTION**

