PRINCIPLES OF PHARMACOECONOMICS

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Should clinicians check the blood pressure of each adult who walks into their offices?

Should individuals be encouraged to request annual check-ups?

Should hospital administers purchase each and every piece of new diagnostic equipment?

Should a new, expensive drug be listed on the formulary?

BACKGROUND

Assessing the clinical effectiveness of any new health care intervention, including medications, is a paramount in determining the role of the new intervention in clinical practice.

But the new interventions may provide only a modest advantage (or no advantage) over existing treatment, usually at a higher cost.

BACKGROUND

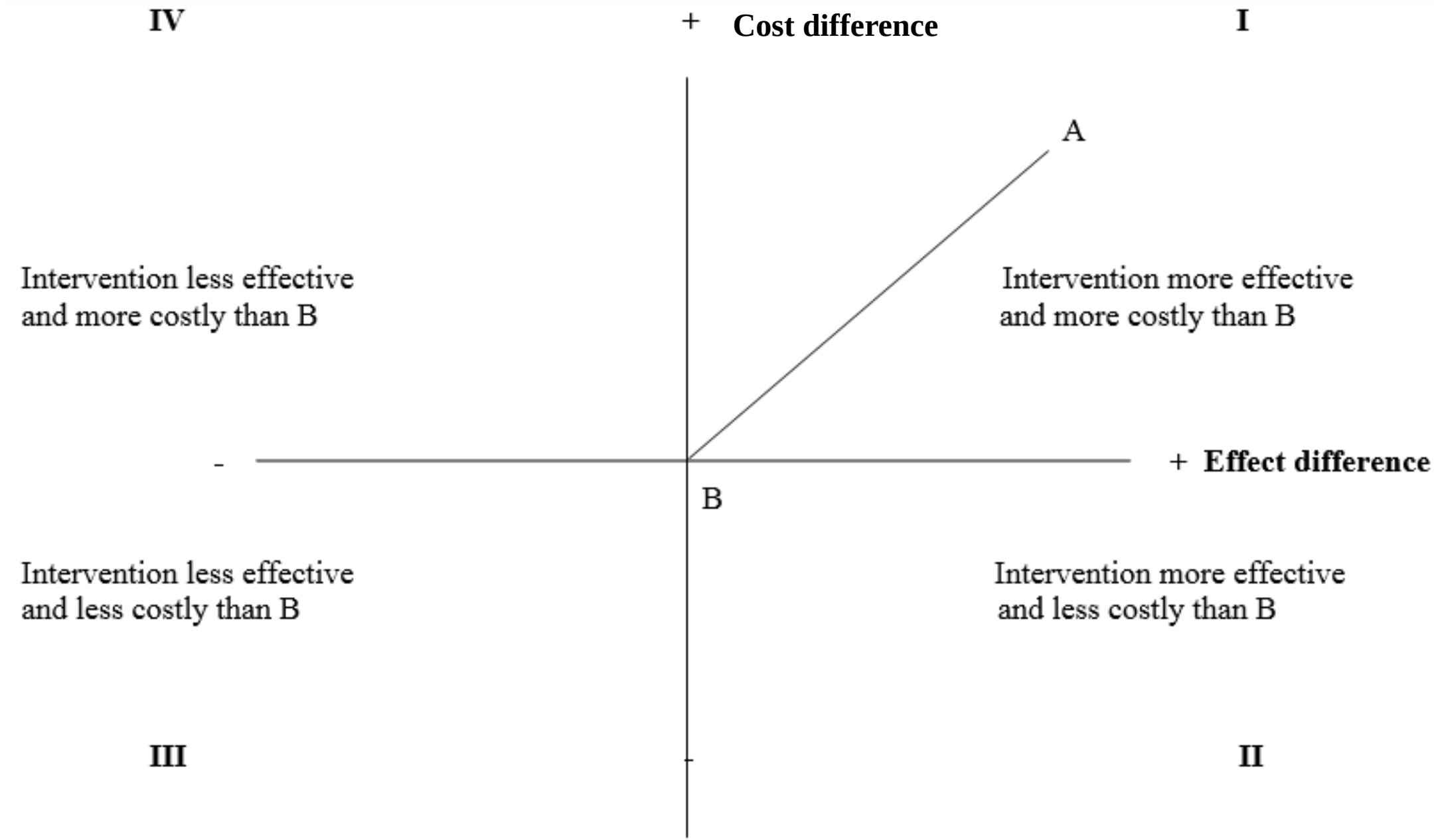
In the case of pharmaceutical interventions, pharmacoeconomics attempts to measure if the added benefit of one intervention is worth the added cost of that intervention.

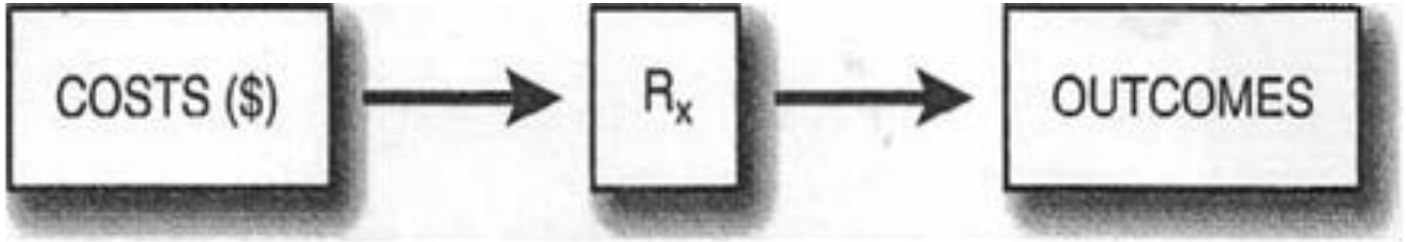
Pharmacoeconomics has been defined as the description and analysis of the costs of drug therapy to health care systems and society.

It identifies, measures, and compares the costs and consequences of pharmaceutical products and services.

BACKGROUND

Clinicians and other decision makers can use these methods to evaluate and compare the total costs of treatment options and the outcomes associated with these options.


IV
+ Cost difference
I
A
Intervention less effective
and more costly than B
Intervention more effective
and more costly than B
-
+ Effect difference
B
Intervention less effective
and less costly than B
Intervention more effective
and less costly than B
III
-
II



Basic pharmacoeconomics 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.

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).

BASIC PHARMACOECONOMICS EQUATION

To be a true pharmacoeconomics 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.

For example, 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 AND OTHER RESEARCHES

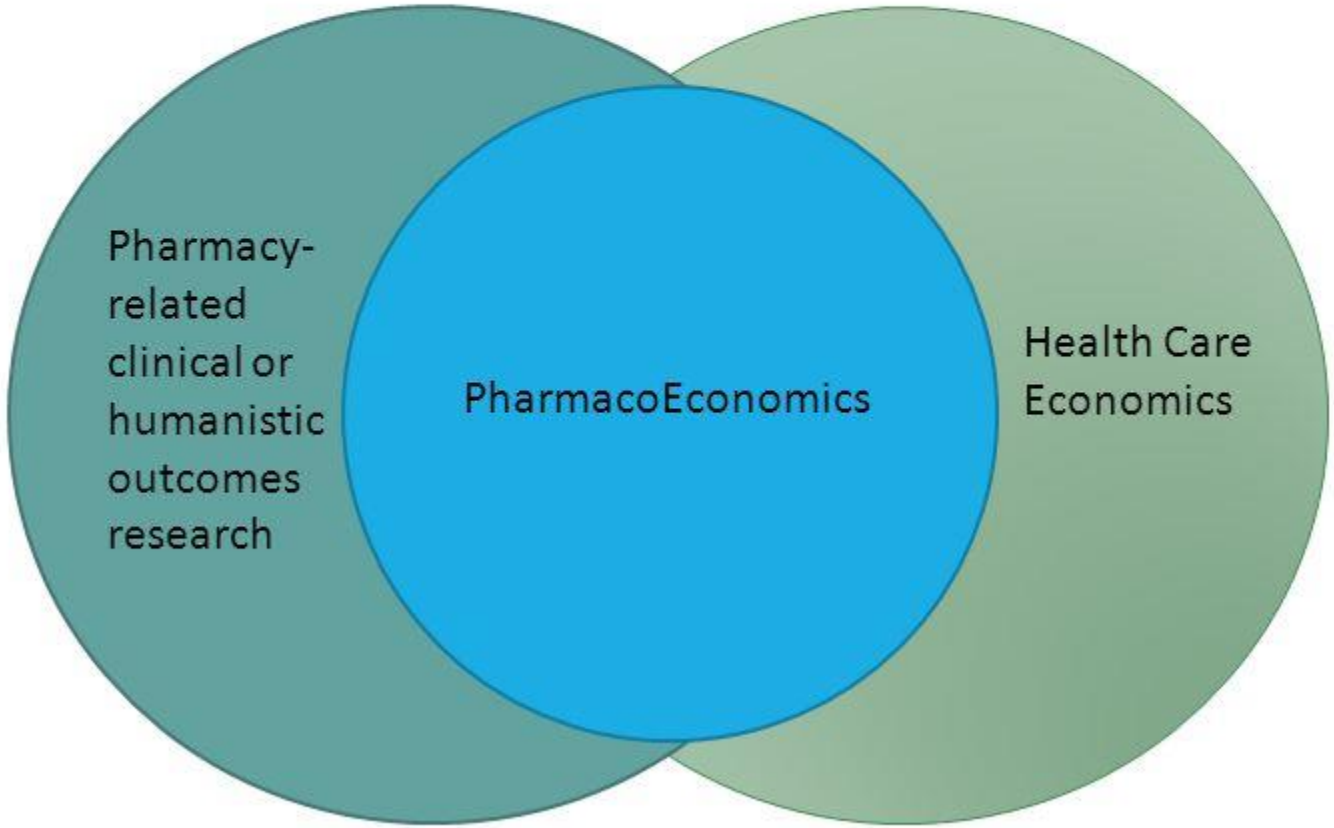
Unlike in other scientific fields, there is no standardized training for pharmacoeconomists, it is a multidisciplinary field.

The specific field of pharmacoeconomics is relatively new—the term first appeared in the literature in the mid-1980s—yet the concepts and methods are borrowed from other, more established disciplines and research areas.

Pharmacoeconomics overlaps with both health care economics and pharmacy-related clinical or humanistic outcomes research.

RELATIONSHIP OF PHARMACOECONOMICS TO OTHER RESEARCH

Identify, measure, and evaluate the end results of health care services.



supply and demand for health care resources, the effects of health insurance, and manpower supply

PHARMACOECONOMICS AND OTHER RESEARCHES

Health care economics encompasses a broad range of topics, including supply and demand for health care resources, the effects of health insurance, and manpower supply.

PHARMACOECONOMICS AND OTHER RESEARCHES

Clinical or humanistic outcomes research It may include not only clinical and economic consequences but also outcomes such as patients' health status and satisfaction with their health care.

PHARMACOECONOMICS AND OTHER RESEARCHES

Pharmacoeconomics is a type of outcomes research

but not all outcomes research is pharmacoeconomics research

CONSEQUENCES

Similar to costs, the outcomes or consequences of a disease and its treatment are an equally important component of pharmacoeconomics analyses.

The manner in which consequences are quantified is a **key distinction** among pharmacoeconomics methods because the assessment of costs is relatively standard.

Depending on perspective, the outcomes of health care are multidimensional. The **clinician** has traditionally been most concerned with **clinical outcomes** of treatments.

CONSEQUENCES

More recently, **healthcare payers** and **administrators** have focused on the resource use or economic outcome of healthcare decisions.

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.

CONSEQUENCES

Accordingly, the consequences (or outcomes) of medical care also can be categorized.

One approach is to separate outcomes into three categories:

- ***Economic***
- ***Clinical***
- ***Humanistic***

CONSEQUENCES

Economic outcomes

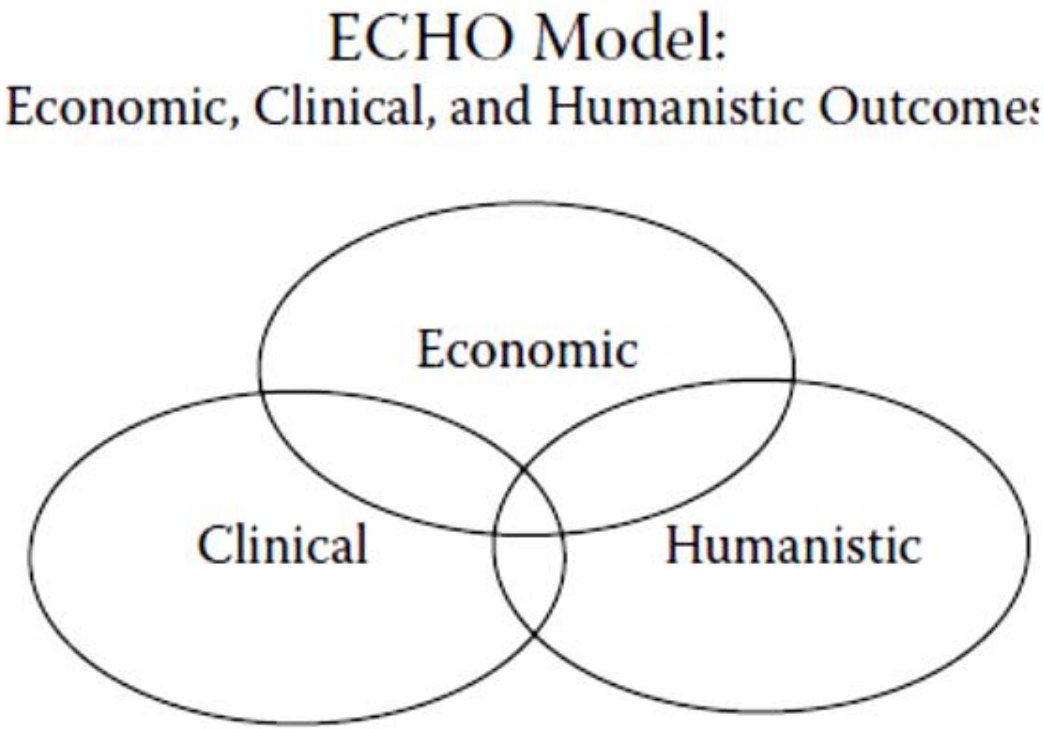
- *Direct costs*
- *Indirect costs*
- *Intangible costs*

Clinical outcomes *are the medical events that occur as a result of disease or treatment (e.g., safety and efficacy end points).*

Humanistic outcomes *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).*

CONSEQUENCES

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



CONSEQUENCES

Clearly, cost-containment is an important objective.

However, successful healthcare management as measured by the objectives of patients, physicians, and other 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 VERSUS 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..

A 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.

POSITIVE VERSUS NEGATIVE CONSEQUENCES

Pharmacoeconomics 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 pharmacoeconomics evaluation.

IDENTIFYING COSTS

It is important to take into account all the costs associated with an intervention, not just acquisition market prices.

Calculation of true economic cost is difficult, but it is essential to make sure that cost information reflects true economic cost as closely as possible.

This is not usually straightforward in healthcare because normal markets and pricing mechanisms are not necessarily operating.

IDENTIFYING COSTS

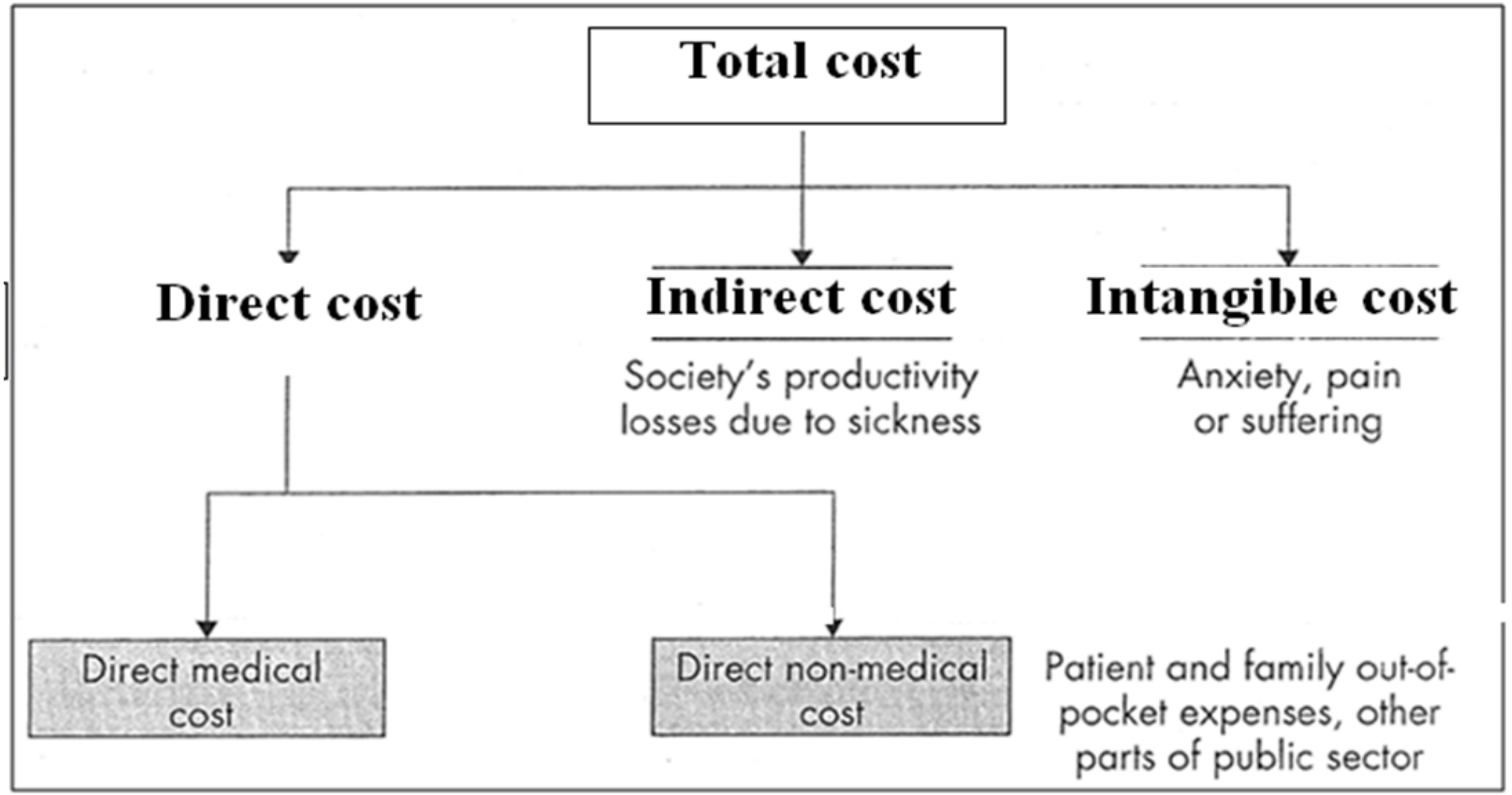
For example, prescribing the highly effective antipsychotic drug clozapine for a person with schizophrenia does not only incur the costs of buying the drug.

Clozapine can have serious side effects, and so regular blood monitoring tests have to be carried out in all patients.

Therefore, these monitoring costs must be taken into account when the economic implications of using clozapine are being assessed.

A very small number of patients go on to experience serious side effects that require hospitalization and treatment, and these costs must also be identified and measured.

TYPES OF COSTS



TYPES OF COSTS

Cost Category	Examples
Direct medical costs	• Medications, medication monitoring, medication administration, Patient counseling and consultations, diagnostic tests, hospitalizations, ambulance services, nursing services
Direct nonmedical costs	• Travel costs to receive health care (bus, taxi) • Hotel stays for patient or family for out-of-town care • Child care services for children of patients
Indirect costs	• Lost productivity for patient • Lost productivity for unpaid caregiver (e.g., family member, neighbor, friend) • Lost productivity because of premature mortality
Intangible costs	• Pain and suffering, fatigue, anxiety

DIRECT MEDICAL COSTS

Direct medical costs are the most obvious costs to measure.

These are the medically related inputs used directly to provide the treatment.

Examples of direct medical costs include the costs associated with the pharmaceuticals, diagnostic tests, physician visits, pharmacist visits, emergency department visits, and hospitalizations.

Example: during chemotherapy treatment, direct medical costs may include the chemotherapy products themselves, other medications given to reduce side effects of the chemotherapy, intravenous supplies, laboratory tests, clinic costs, and physician visits

DIRECT NONMEDICAL COSTS

Direct nonmedical costs are costs to patients and their families that are directly associated with treatment but are not medical in nature.

Examples of direct non-medical costs include the cost of traveling to and from the physician's office, clinic, or the hospital; child care services for the children of a patient; and food and lodging required for the patients and their families during out-of-town treatment.

Using the example of chemotherapy treatment, patients may have increased travel costs related to traveling to the clinic or hospital. They may also have to hire a babysitter for the time they are undergoing treatment.