

Introduction to Pharmacoeconomics

Introduction to Pharmacoeconomics

Key concepts, methods, and applications for health?care decision?making

1. What Is Pharmacoeconomics?

Definition	Scope
Pharmacoeconomics is the branch of health economics that evaluates the costs and outcomes of pharmaceutical products and therapies.	- Assesses value of drugs relative to alternatives. - Supports resource allocation, pricing, reimbursement, and formulary decisions. - Integrates clinical efficacy, safety, quality of life, and budget impact.

2. Why It Matters

Stakeholder	Primary Concern
Payers / insurers	Affordability, sustainability of drug coverage.
Policy makers	Efficient allocation of limited health?care resources.
Clinicians	Choosing therapies that provide the best health benefit per dollar.
Patients	Access to effective, affordable medicines.
Pharmaceutical industry	Demonstrating economic value to gain market access.

3. Core Economic Concepts

Concept	Description	Typical Metric
Cost	Monetary value of resources used (direct, indirect, intangible).	Currency (e.g., USD).
Effectiveness	Clinical benefit (e.g., life?years gained, symptom improvement).	Clinical endpoints, QALYs.

Introduction to Pharmacoeconomics

Concept	Description	Typical Metric
Cost?Effectiveness	Ratio of incremental cost to incremental effectiveness.	ICER = ?Cost / ? Effectiveness.
Cost?Utility	Incorporates patient preferences via utility weights.	Cost per QALY (or DALY).
Cost?Benefit	Both costs and benefits expressed in monetary terms.	Net monetary benefit (NMB).
Budget Impact	Financial effect of adopting a new drug on a specific budget.	Annual budget change (USD).

4. Types of Economic Analyses

Analysis	When Used	Key Features
Cost?Minimization Analysis (CMA)	Outcomes proven equivalent.	Focuses only on cost differences.
Cost?Effectiveness Analysis (CEA)	Outcomes measured in natural units (e.g., mmHg reduction).	Produces ICER (cost per unit of effect).
Cost?Utility Analysis (CUA)	Outcomes expressed as utilities (QALYs, DALYs).	Preferred for comparing across disease areas.
Cost?Benefit Analysis (CBA)	Benefits can be monetized.	Provides net monetary gain/loss.
Budget Impact Analysis (BIA)	Decision about adoption within a defined budget horizon.	Estimates total cost change, not cost?effectiveness.

5. Measuring Costs

Category	Examples
Direct Medical	Drug acquisition, administration, monitoring, hospital stays, physician visits.
Direct Non?Medical	Transportation, caregiver time, home health services.
Indirect	Lost productivity (absenteeism, presenteeism), premature mortality.
Intangible	Pain, suffering, reduced quality of life (often captured via utilities).

Introduction to Pharmacoeconomics

Costing approaches

- **Micro-costing** (bottom-up): Itemize each resource unit.
 - **Gross-costing** (top-down): Use average costs from aggregate data.
-

6. Measuring Outcomes

Method	Description
Clinical endpoints	Blood pressure, tumor response, infection cure rate.
**Health-Related Quality of Life (HRQoL)	