BP404T · B.PHARM THEORY

BP404T Social Pharmacy and Public Health

Unit V — Pharmacoeconomics, RUM & Future Trends

Pills & Python Notes

From-zero teaching standard: every technical term is defined before use.

Syllabus coverage: Unit V (6 hours).

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CHAPTER 5 — UNIT V: Pharmacoeconomics, Rational Use of Medicines, Professional Roles, and Future Trends (6 Hours)

5.1 Learning Objectives

1. Define pharmacoeconomics and explain its significance.
2. Differentiate CBA, CEA, and CUA.
3. Define rational use of medicines; explain its importance, problems of irrational use, and the pharmacist's role.
4. Describe factors affecting medication adherence, consequences of non-adherence, and improvement strategies.
5. Describe drug misuse and abuse (alcohol, tobacco, opioids, prescription drugs) and the pharmacist's role.
6. Discuss professionalism, ethics, and ethical dilemmas in social pharmacy.
7. Explain the pharmacist's role in disaster management.
8. Describe emerging trends: telepharmacy, digital health, personalized medicine, expanding public health roles.

5.2 Definitions

- **Pharmacoeconomics:** The study of the costs and benefits (value for money) of drug therapy. Simple meaning: "Which treatment gives the most health for each rupee spent?"
- **Rational use of medicines (WHO):** Patients receive medications appropriate to their clinical needs, in doses that meet their individual requirements, for an adequate period of time, and at the lowest cost to them and their community.
- **Medication adherence:** The extent to which a patient takes medicines as prescribed (right drug, dose, time, duration).
- **Drug abuse/misuse:** Using a drug in a way it was not intended — wrong dose, wrong purpose, or a harmful substance.
- **Telepharmacy:** Providing pharmacy services (counselling, dispensing supervision) through phones, video, and the internet.

5.3 Terminology

Term	Simple Meaning
CBA (Cost-Benefit Analysis)	Compares costs and benefits, both in money
CEA (Cost-Effectiveness Analysis)	Compares cost per unit of health effect (e.g., per life saved)
CUA (Cost-Utility Analysis)	Compares cost per QALY (quality-adjusted life year)
QALY	One year of life in perfect health
Polypharmacy	Use of many medicines at once
Self-medication	Taking medicines without a doctor's advice
Disaster management	Organized response before, during, and after disasters

5.4 Explanation

5.4.1 Pharmacoeconomics: introduction, significance; CBA, CEA, CUA

> **Technical concept:** Health budgets are limited. Pharmacoeconomics helps decision-makers choose treatments that give maximum health per rupee — essential for national programs, insurance, and hospital formularies.

> **Simple explanation:** A hospital has ₹10 lakh for diabetes care. Drug A costs more but prevents complications; Drug B is cheap but patients end up in hospital. Which is truly cheaper? Pharmacoeconomics does this full calculation — not just the tablet's price, but hospital stays, lost workdays, and lives improved.

The three methods:

Method	What it compares	Example question
CBA (Cost-Benefit)	Money vs money	"Does the vaccination program's money benefit exceed its cost?"
CEA (Cost-Effectiveness)	Money vs health effect (natural units)	"Cost per TB case cured — which regimen is cheaper per cure?"
CUA (Cost-Utility)	Money vs QALYs	"Cost per quality-adjusted life year — which cancer drug is worth it?"

Analogy: CBA is like asking "Did this shop give profit in rupees?"; CEA asks "How many rotis per rupee?"; CUA asks "How many *tasty, healthy* years per rupee?"

5.4.2 Rational use of medicines: definition, importance, problems of irrational drug use; pharmacist's role

Technical concept (WHO definition): patients receive medications appropriate to their clinical needs, in doses meeting individual requirements, for an adequate period, at the lowest cost to them and the community.

> **Simple explanation:** Right drug, right dose, right duration, right price — for the right patient. Anything else is irrational.

Problems of irrational drug use: unnecessary antibiotics (causes resistance), injections when tablets would do, polypharmacy in elderly, self-medication, stopping TB/diabetes medicines early, brand prescribing when generics work.

Consequences: treatment failure, side effects, drug resistance (AMR), wasted money, and deaths.

Pharmacist's role: dispense only with valid prescriptions, counsel on correct use, promote generic medicines, educate against self-medication, report irrational prescribing patterns, support hospital drug committees and essential drug lists.

5.4.3 Medication adherence: factors, consequences, improvement strategies

> **Technical concept:** WHO notes adherence in chronic diseases is poor in many settings; improving it may help more than new drugs.

Factors affecting adherence:

- Patient-related: forgetfulness, beliefs ("I feel fine, why take?"), low health literacy
- Therapy-related: many tablets, frequent doses, side effects, long duration
- Economic: cost of medicines
- Healthcare-related: poor counselling, long waiting times, no follow-up

Consequences of non-adherence: treatment failure, complications (stroke, kidney failure), drug resistance (TB, HIV), hospitalizations, higher costs, deaths.

Improvement strategies: simple regimens (once-daily), pill boxes/alarms, clear counselling in local language, written instructions with pictures, family involvement, refill reminders (SMS/phone), follow-up visits, addressing cost (generics).

> **Simple explanation:** The best medicine in the world fails if it stays in the strip. Adherence is the *bridge* between the prescription and the cure — and the pharmacist is the bridge-keeper.

5.4.4 Drug misuse and abuse: alcohol, tobacco, opioids, prescription drug abuse; pharmacist's role

> **Technical concept:**
>
> - **Alcohol:** liver disease, accidents, dependence; pharmacist counsels on risks and refers to de-addiction services.
> - **Tobacco:** cancer, heart disease, COPD; pharmacist offers cessation counselling (quitlines, nicotine replacement guidance).
> - **Opioids:** painkillers like morphine/tramadol misused → dependence and overdose; pharmacist watches for forged prescriptions, early refills, "doctor shopping."
> - **Prescription drug abuse:** sedatives, cough syrups with codeine misused; pharmacist refuses sale without prescription and reports.

Pharmacist's role: gatekeeper — verify prescriptions, refuse suspicious sales, counsel on harms, maintain records of habit-forming drugs, refer addicts to treatment, support tobacco/alcohol cessation.

> **Simple explanation:** The pharmacist's shop is where abused drugs are *bought*. So the pharmacist is the *gatekeeper* — the one person who can say "no" before harm happens.

5.4.5 Professionalism and ethics in social pharmacy: ethical dilemmas

> **Technical concept:** Professionalism = putting the patient's interest first, with competence, honesty, confidentiality, and accountability. Ethics in social pharmacy involves dilemmas: e.g., a poor patient cannot afford the full course — do you sell a half course (irrational) or refuse (patient gets nothing)? Dispensing without prescription in an emergency vs the law. Confidentiality vs warning a family about a contagious disease.

> **Simple explanation:** Ethics is doing the right thing when the right thing is *not obvious*. The pharmacist must balance law, patient need, and honesty — and choose the path that helps the patient most without breaking trust or law.

5.4.6 Disaster management: role of pharmacists

Technical concept: Disasters (floods, earthquakes, epidemics, industrial accidents) need medicines, clean water, and first aid — fast. Pharmacists' roles: maintain emergency drug stocks, ensure cold chain for vaccines/insulin, dispense in relief camps, prevent disease outbreaks (chlorination, ORS), counsel the displaced, coordinate with health authorities, manage drug donations properly.

Simple explanation: When floods come, roads close and shops shut. The pharmacist who kept an emergency stock of ORS, antibiotics, bandages, and insulin saves lives. In disasters, the pharmacist becomes a *field medic with a medicine box*.

5.4.7 Emerging trends: telepharmacy, digital health, personalized medicine, expanding public health responsibilities

Technical concept:

- **Telepharmacy:** counselling, prescription verification, and adherence support via phone/video/internet — reaching remote areas.
- **Digital health:** e-prescriptions, health apps, electronic health records, AI-assisted screening.
- **Personalized medicine:** choosing drugs based on a patient's genes and characteristics (pharmacogenomics) — "the right drug for the right person."
- **Expanding public health responsibilities:** pharmacists increasingly vaccinate, screen, run NCD clinics, support surveillance, and lead health-promotion campaigns.

Simple explanation: The future pharmacist may counsel a village patient over video call, check her digital prescription, remind her by SMS, and choose her dose based on her genes — all from one pharmacy. The white coat is going digital, but the heart of the job — caring for people — stays the same.

Key takeaway: Every rupee in health must buy maximum health (pharmacoeconomics); the right drug at the right dose for the right time is rational use; adherence is the bridge to cure; the pharmacist guards against abuse, acts ethically, responds in disasters, and embraces the digital future.

5.5 Infographic Concept Box — Chapter 5

Title: "Value, Reason, and the Future" — Three panels: (1) "Pharmacoeconomics" — a balance scale: rupees on one side, health (heart + years) on the other; three badges CBA/CEA/CUA. (2) "Rational use" — a prescription with four green ticks: right drug, right dose, right duration, right price; red crosses over self-medication, half-courses, unnecessary injections. (3) "Future pharmacist" — a pharmacist with a video-call screen, a DNA helix, and a disaster-relief kit, labelled "telepharmacy, personalized medicine, disaster response." Bottom ribbon: "Adherence = the bridge between prescription and cure."

5.6 Analogies

- Pharmacoeconomics is *shopping wisely* for health — most health per rupee.
- Adherence is the bridge between prescription and cure; the pharmacist is the bridge-keeper.
- The pharmacist in drug abuse is the gatekeeper at the shop door.

5.7 Pharmacy Relevance

Every concept here is daily pharmacy work: cost counselling, generic substitution, adherence support, refusing irrational sales, ethical decisions, emergency stocks, and digital services.

5.8 India Context

Jan Aushadhi (affordable generics), AMR concerns from antibiotic misuse, tobacco/alcohol burden, flood and disaster-prone regions, and Digital India health initiatives make these topics urgent for Indian pharmacists.

5.9 Key Points

1. Pharmacoeconomics: value for money; CBA (money vs money), CEA (cost per health effect), CUA (cost per QALY).
2. RUM (WHO): right drug, dose, duration, cost; irrational use → resistance, harm, waste.
3. Adherence: factors (patient, therapy, economic, system); consequences; strategies (simplify, remind, counsel, follow up).
4. Drug abuse: alcohol, tobacco, opioids, prescription drugs; pharmacist as gatekeeper.
5. Ethics: patient first; dilemmas need balanced judgment.
6. Disaster management: emergency stocks, cold chain, relief camps, disease prevention.
7. Future: telepharmacy, digital health, personalized medicine, bigger public-health roles.

5.10 Common Confusions

> - **CBA vs CEA vs CUA:** CBA = money vs money; CEA = money vs natural health units; CUA = money vs QALYs.
> - **Misuse vs abuse:** misuse = wrong use (often unintentional); abuse = intentional harmful use.
> - **Adherence vs compliance:** adherence = patient agrees and follows (partnership); compliance = patient obeys orders.

5.11 Common Mistakes

> 1. Defining RUM without all four WHO elements (appropriate, individual dose, adequate period, lowest cost).
> 2. Writing "pharmacoeconomics = cheap drugs" — it means *value*, not lowest price.
> 3. Forgetting the pharmacist's gatekeeper role in drug abuse questions.

5.12 Mnemonics

- RUM: "**R**ight drug, **R**ight dose, **R**ight duration, **R**ight price" — "4 Rights."
- CBA/CEA/CUA: "**C**ash vs **C**ash; **C**ash vs **C**ure; **C**ash vs **Q**uality years."
- Disaster role: "**S**tock, **C**old chain, **C**amps, **C**oordination" — "SCCC."

5.13 Exam Summary

Pharmacoeconomics: significance (limited budgets, maximum health); CBA, CEA, CUA with examples. RUM: WHO definition (4 elements), importance, problems of irrational use (antibiotic misuse, polypharmacy, self-medication, incomplete courses), pharmacist's role. Adherence: factors, consequences (failure, resistance, cost), strategies. Drug misuse/abuse: alcohol, tobacco, opioids, prescription drugs; pharmacist as gatekeeper. Professionalism/ethics: patient-first, confidentiality, ethical dilemmas. Disaster management: pharmacist's roles. Emerging trends: telepharmacy, digital health, personalized medicine, expanding public-health responsibilities.

5.14 One-Minute Revision

Value per rupee: CBA/CEA/CUA. RUM = 4 Rights. Adherence = bridge to cure. Gatekeeper against abuse. Ethics = patient first. Disasters: stock, cold chain, camps. Future: video, digital, genes.

5.15 Exam Questions

Long answer:

1. Define pharmacoeconomics. Differentiate CBA, CEA, and CUA with examples.
2. Define rational use of medicines. Discuss problems of irrational drug use and the pharmacist's role.
3. Discuss factors affecting medication adherence, its consequences, and improvement strategies.
4. Describe the pharmacist's role in disaster management.

Short answer:

1. What is a QALY?
2. List four problems of irrational drug use.
3. Name three emerging trends in pharmacy.

MCQs:

1. Cost per QALY is studied in: (a) CUA (b) CBA (c) CEA (d) None — Ans: (a)
2. Rational use of medicines was defined by: (a) WHO (b) FDA (c) IPC (d) UNESCO — Ans: (a)
3. Telepharmacy means: (a) Pharmacy services via phone/internet (b) TV ads for drugs (c) Telephone orders only (d) Radio pharmacy — Ans: (a)
4. Which is a sign of prescription drug abuse the pharmacist should watch? (a) Early refills and forged prescriptions (b) Buying vitamins (c) Asking about generics (d) Requesting a bill — Ans: (a)

Viva / application-based:

1. A patient wants half a strip of antibiotics "to save money" — your response? (Explain resistance and treatment failure; suggest generics/Jan Aushadhi instead.)
2. Two diabetes drugs: one cheaper per tablet but causes more hospitalizations — which concept helps choose? (Pharmacoeconomics — CEA.)

5.16 References

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