



Pharmaceutics-I

UNIT-I

① Historical background and development of profession of pharmacy :-

→ Mahadeva Lal Schroff who is known as the Father of Indian Pharmacy. He was the first person who introduced a 3-year course in pharmacy in Banaras Hindu University.

→ Pharmacy :- Pharmakon = Drug (Greek)

→ Pharmacy is the health profession that links the health sciences with the Chemical Sciences, and it is charged with ensuring the safe and effective use of medication.

Pharmacy As a Career :-

Pharmacist
(Job opportunity)

Practice Setting

- Community
- Hospital
- Clinical
- Veterinary Pharmacy

Industry

- Production
- Quality assurance
- Quality Control
- R & D
- Packaging
- Sales & Marketing

Other settings

- Clinical research
- Regulatory
- Teaching

Types of pharmacy practice areas:-

- ① Wholesale pharmacy
- ② Industrial pharmacy
- ③ Marketing & Sales
- ④ Clinical trials
- ⑤ Pharmacy education (Academics)
- ⑥ Community pharmacy
- ⑦ Hospital pharmacy
- ⑧ Clinical pharmacy

★ Introduction to Pharmacopoeia.

- Derived from Greek words "pharmakon" means "Drug" and 'poeia' means to make.
- It is a legal and official book issued by recognized authorities usually appointed by Government of each country.
- It comprises list of pharmaceutical substance, formulae along with their description and standard.

Indian Pharmacopoeia :-

- First official pharmacopoeia of India appeared in 1868 which was edited by Edward John Waring.
- In 1946 Government of India issued one list known as "The Indian Pharmacopoeial List".
- Committee under chairmanship of Sir R.N Chopra along with other nine members prepared "The Indian Pharmacopoeial List".
- In 1948 Govt. of India appoint a Committee for preparing I.P.



Pharmaceutics-I

- Indian Pharmacopoeia Committee Under Chairmanship of Dr. B.N Ghosh published first edition of IP in 1955.
- It is written in English & titles in Latin.
- It covers 986 monographs.
- Second edition of IP was published in 1966 (Dr B. Mukherji)
- Second edition Addendum in 1975.
- 3rd edition - 1985, Addendum in - 1989, 1999.
- 4th edition - 1996, Addendum in - 2000, 2005, 2002
- 5th edition - 2007, Addendum in - 2008
- 6th edition - 2010, Addendum in - 2012, ~~2015~~
- 7th edition - 2014, Addendum in - 2015, 2016
- 8th edition - 2018, Addendum in - 2019

British Pharmacopoeia :-

- > First edition of BP was published in 1864.
- > It consists of two sections.
- > Part I :- *Materia Medica* & Part-II :- *Preparations & Compounds*
- > 2nd edition of BP was published in 1867.
- > 3rd edition of BP was published in 1884.
- > 4th edition of BP was published in 1898.
- > 5th edition of BP was published in 1914.
- > 6th edition of BP was published in 1953.

→ In this edition titles of drugs & preparation were in English instead of Latin and metric system. (11)

United State Pharmacopoeia:

- USP23 has ten Supplements.
- First Supplement was published in January 1995 & last in 1999.
- USP24 - NF19, appeared from first January 2000.
- USP30 - NF25, appeared from May 2007.
- It contains scientific standards for drugs, dietary substance, biological products & excipients used in dosage forms.
- It contains 4100 monographs and 200 general chapters.
- It has been printed in three volume set.
- Volume I contains general chapters & volume II & III contain monograph.
- From 2006, Spanish edition of USP is also being published.
- Current edition of USP 2014 is in process.

Extra Pharmacopoeia:

- The Extra pharmacopoeia was first produced in 1883 by William Martindale and is still known as "Martindale".
- This is an authorized reference book on drugs and is used throughout the world.
- It provides all sorts of latest information on drug and medicine.
- The 28th edition was published in December 1982.
- The 29th edition was published in January 1989.

★ Dosage forms :-

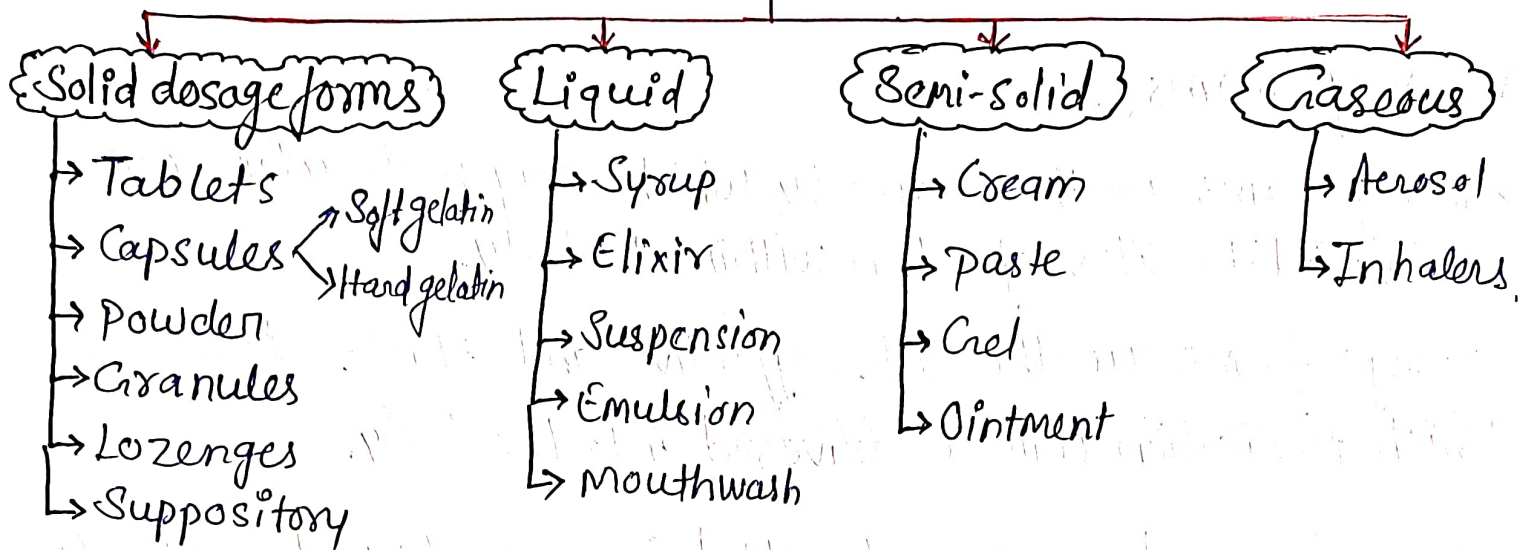
- Dosage forms are the means by which drug molecules are delivered to sites of action within the body.
- Dosage forms are the safe, effective and stable forms in which medication will be delivered into the body.
- These dosage forms are classified in a number of ways as mentioned below by which drug molecules are delivered to the site of action.

1. Form wise : (i) Solid dosage form
(ii) Liquid dosage form
(iii) Semi-solid dosage form

2. Route wise : (i) oral dosage form
(ii) Topical dosage form
(iii) parenteral dosage form

3. Release rate : (i) Sustained release
(ii) prolonged release
(iii) Controlled release
(iv) Targetted drug delivery

Classification of dosage forms



★ Prescription :-

Defination : A prescription is a written order from Registered Medical practitioner or a physician to a pharmacist to compound and dispense a specific medication for the patient.

part of the prescription :-

1. Date
2. Patient Information
3. Superscription
4. Inscription
5. Subscription
6. Signa. or Signature
7. Renewal instruction
8. Signature, address and registration number of the prescriber.



Pharmaceutics-I

① Date :- All prescription expire after one year. In case of narcotics and other habit forming drugs the date prevents the misuse of the drugs by the patient.

② patient information :-

- Name
- Age
- weight (in paediatrics case)
- Address
- Sex
- -

③ Superscription :-

It is represented by Rx symbol. It's Latin word, It mean 'you take' → (Sign of Jupiter, god of healing).

④ Inscription :-

This is the main part of the prescription order, contains the names and quantities of the prescribed ingredients.

⑤ Subscription :-

This comprises direction to the pharmacists for preparing the prescription and number of doses to be dispensed.

⑥ Signatura or Signa :-

This consists of the direction to be given to the patient regarding the administration of drug.

⑦ Renewal instruction :-

The prescriber indicate on every prescription order, whether it may be renewed and if so, how many times.

⑧ Signature, address, registration no. of the prescriber :- must bear on the prescription



Dr. John Dave
Consulting Physician
MBBS, MD (Medicine)
Regn. No. XXXXX

Address: _____
Phone no. XXXXXXXXXXX. Email: _____

Date:

Patient name:

Age/date of birth:

Address/Phone:

Gender:

Diagnosis:

R_x

1. Cap. AMOXICILLIN 500 mg, tid X 7 days

Take after breakfast, lunch and dinner

Signature

Regn. No. _____

Order to pharmacist:

Dispense 21 capsules, no refills



Handling of prescription :-

The following procedures should be adopted by the Pharmacist while handling the prescription for Compounding and dispensing.

1. Receiving
2. Reading and checking
3. Collecting and weighing the materials.
4. Compounding, Labelling and packaging.

Sources of Errors In prescriptions :-

• Abbreviation :-

- Abbreviation presents a problem in understanding parts of the prescription orders.
- Extreme care should be taken by a pharmacist in interpreting the Abbreviation.

• Name of the drug :-

- There are certain drugs whose name look or sound like those of other drugs. Ex- Digitoxin and Digoxin

• Strength of preparation :-

- The strength of the preparation should be stated by the prescriber.
- It is essential when various strengths of a product are available in market.

• Dosage form of the drug prescribed :-

→ Many medicines are available in more than one dosage form like as liquid, tablet, capsule etc.

• Dose :-

→ Unusually high or low doses should be discussed with the prescriber. pediatric dosage may present.

• Instruction for the patient :-

→ The instruction for the patient which are given in the prescription are incomplete or omitted.

→ quantity of drug, timing, route of administration.

• Incompatibilities :-

- It is essential to check that there are no pharmaceutical or therapeutic incompatibilities in a prescribed preparation and that different medicines prescribed for the same patient do not interact with each other to produce any harm to patient.

Kataria Pharmacy



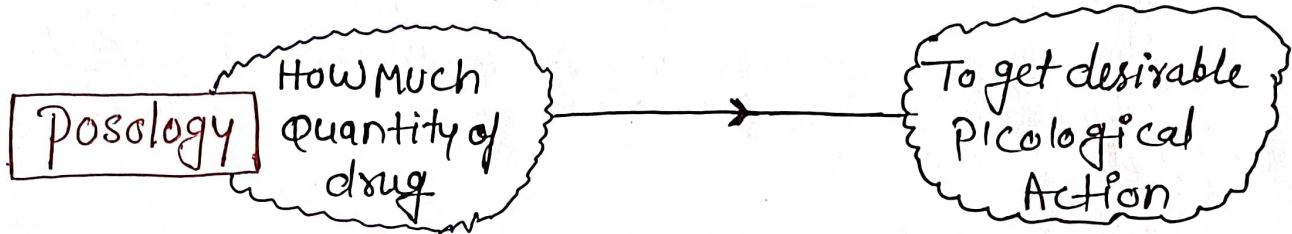
Abbreviation used in prescription :-

- > TID = Thrice a Day
- > QID = Four times a day
- > OD = Once a Day
- > BT = Bed Time
- > BBF = Before Breakfast
- > BD = Before Dinner
- > Tw = Twice a week
- > SQ = sub cutaneous
- > IM = Intramuscular
- > ID = Intradermal
- > IV = Intravenous
- > QAM = (every morning)
- > QPM (every night)
- > Q4H = (every 4 hours)
- > QOD = (every other day)
- > HS = (at bedtime)
- > PRN = (as needed)
- > AC (before meals)
- > PC = (after meals)
- > Mg = (milligrams)
- > Mcg/ug = (micrograms)
- > G or Gm = (grams)
- > 1TSF (Teaspoon) = 5 ml
- > 1 Tablespoonful = 15ml

★ Posology :-

→ (Derived from the Greek → Posos → How much, and logos → Science) is the branch of pharmacology dealing with doses.

Dose :- It is the quantitative amount administered or taken by a patient for the intended medicinal effect.



Factors affecting posology :-

The following are some of the factors which influence the dose.

1. Age
2. Sex
3. Body weight
4. Route of administration
5. Time of administration
6. Environmental factors
7. Emotional factors
8. Presence of disease
9. Accumulation
10. Additive effect
11. Synergism
12. Antagonism
13. Idiosyncrasy
14. Tolerance
15. Tachyphylaxis
16. Metabolic disturbance

Kataria Pharmacy



① Age:

- The pharmacokinetics of drugs to be altered with age.
- Hence age plays an important role when prescribing the medicines.

Ex. pcm - 500mg is adult dose not for children

② Sex:

- Women do not always ~~respond~~ respond to the action of drug in same manner as it is done in men.

Ex. - Antihistamine, morphine and tetracycline not given to the lactation mother, because these drugs are excreted in milk.

③ Body weight:

- The dose is refer as dose for adults body weight b/w 50-100kg.
- But in case of children or obese patient, the dose of drug calculated according to body weight.

④ Route of administration:

- In oral route need high dose than intravenous; because i.v administration of drug directly goes to blood stream.

⑤ Time of administration:

- Absorption of drug may decrease in presence of food in stomach. (Antacid taken before 1hr of meal for better effect).

⑥ Environmental factor:

- In day time the effect of stimulant drugs are more.
- whereas sedative drugs are more effective at night.

⑦ Emotional factors:-

- personality and behavior of doctor may affect the effect of drug if he prescribed drug for psychosomatic disorder.

⑧ Presence of disease:-

If patient have liver cirrhosis, then Chlorpromazine produce Prolong effect.

⑨ Accumulation:-

If the drugs are repeatedly taken at short time drug become accumulate into body, it will slowly excrete out and may cause toxic effect.

⑩ Additive effect:-

When two or more drugs taken together, the total action of drugs become more than their sum of individual action.

⑪ Synergism:-

- when drug taken in combination, their action become increase.

Ex. PCM + Aceclofenac + Seratopeptidase

⑫ Antagonism:-

Action of one drugs opposed by another drug if administrated together.

-> This kind of effect to be useful in poisoning case.

⑬ Idiosyncrasy:-

- It is a extra effect of drug, which different from its actual effect. The idiosyncrasy word now replaced by allergy.

⑭ Tolerance:-

Large dose of drug is need to obtain a effect produced by normal dose of drug are called as drug tolerance.

⑮ Tachyphylaxis:-

→ If drug administered repeatedly at short interval then the action of drug decrease due to blocking of cell receptor and this decrease response can not reversed by increasing dose.

⑯ Metabolic disturbance:-

- In which the effect of drug changed due to change in body temperature, electrolyte balance, acid base balance.
Ex. Salicylic acid - act in fever patient only not in normal.

Pediatric dose Calculations:-

- The administration of average dose for adult within 24 hr by oral route are represent in official book.

→ Whenever other route is used then the dose is adjusted accordingly.

→ Actually, the doses are calculated in proportion to Age, body weight and Surface area of patient.

⑰ Doses proportion to age:-

In which child dose calculated from adult dose by using following formula.

(A) Young's Formula:-

For under 12 years age child

(16)

$$\text{Dose for child} = \frac{\text{Age in year}}{\text{Age in year} + 12} \times \text{Adult dose}$$

(B) Dilling's Formula:-

For children between 4 to 20 years old

$$\text{Dose for child} = \frac{\text{Age in year}}{20} \times \text{Adult dose}$$

② Dose proportionate to body weight:-

Calculating dose for child by using body weight

$$\text{Dose for child} = \frac{\text{Child's weight in kg}}{70} \times \text{Adult dose}$$

③ Doses proportionate to Surface Area (S.A):-

- child dose can calculate according to surface area its more satisfactory and complicated than method based on age.

$$\% \text{ of adult dose} = \frac{\text{S.A of child}}{\text{S.A of Adult}} \times 100$$

Kataria Pharmacy