- When drug is administered to a large population may lead to some variation, this variation is due to wide interpatient variability, although drug is administered in similar dose level and dosage regimen.

- Interpatient and intrapatient variability in the concentration of drug in plasma caused by many factors:

1. Variation in absorption
2. Presence of other drugs
3. Drug interactions
4. Genetic differences
5. Disease states
6. Physiologic differences

1. Variation in absorption:

The rate and extend of absorption of drug is

seen different due to variation in physicochemical and physiological factors like:

- GI motility
- pH of GIT
- Gastric emptying
- GI secretions
- Presence or absence of food in GIT
- Blood vessels of GI System
- Presence of bacteria in GIT

2. Drug interactions:

DI is the phenomenon which occurs when effects of one drug is modified by the presence of another drug.

- One drug alters the expected therapeutic response of another drug that has been administered just prior to, simultaneously, or

just after another drug.

- Self-medication is another reason for variability as surveys done have shown those drugs prescribed by physicians are entirely different from self-medications taken for the same ailment.

3. Genetic differences:

Changes in metabolism and elimination, result in difference in metabolism and elimination of some drugs; therefore causes differences in:

- Duration of action
- Biological half-life of drug

} in different individuals.

4. Presence of drugs:

Concomitant administration of certain drugs or presence of drugs in GIT, influences the rate

and extent of absorption and elimination.
Eg: Concomitant use of drugs causing acidosis and alkalosis of urine influence the elimination of weakely acidic and weak basic drugs.

5. Physiological differences:

It refers to:

- Age
- Gender
- Weight
- Nutritional status

E.g: Drugs with strong affinity for lipids will have tendency to bind to the lipids to greater extend in obese patients than in lean individual with very little fatty tissue. Such binding may necessiate administration of large dose of drug to an obese person in order to

achieve desired therapeutic level of free or unbound drug in plasma.

6. Disease States:

Disease State in patient affect ADME of administered drug.

Several disease states which affect stomach emptying time, these disease affect rate and extent of absorption and also distribution of drug in various body fluids and tissues.

Condition ⊆ cause hepatic and renal failure may also affect elimination of drugs.