

SNS COLLEGE OF ALLIED HEALTH SCIENCE
Affiliated to The Tamil Nadu Dr. M.G.R Medical University, Chennai



DEPARTMENT OF PHYSICIAN ASSISTANT

COURSE NAME : PHARMACOLOGY

UNIT : BASIC DRUG EFFECT

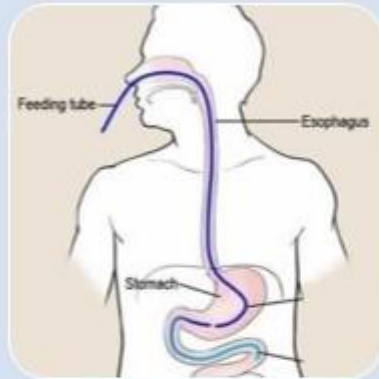
TOPIC : ROUTE OF DRUG ADMINISTRATION

FACULTY NAME : Ms. SINEKA M

INTRODUCTION (Define)

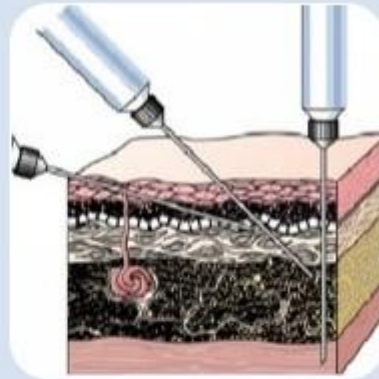
- Routes of drug administration determine **how medicines enter the body**, including oral, intravenous, inhalation, and topical methods.
- The route of administration affects the **onset, intensity, and duration** of drug action.





Enteral

Oral
Sublingual/Buccal
Rectal



Parenteral

Injection



Topical

Enepidermic
Epidermic
Insufflations
Instillation
Irrigation/Douching
Painting/Swabbing

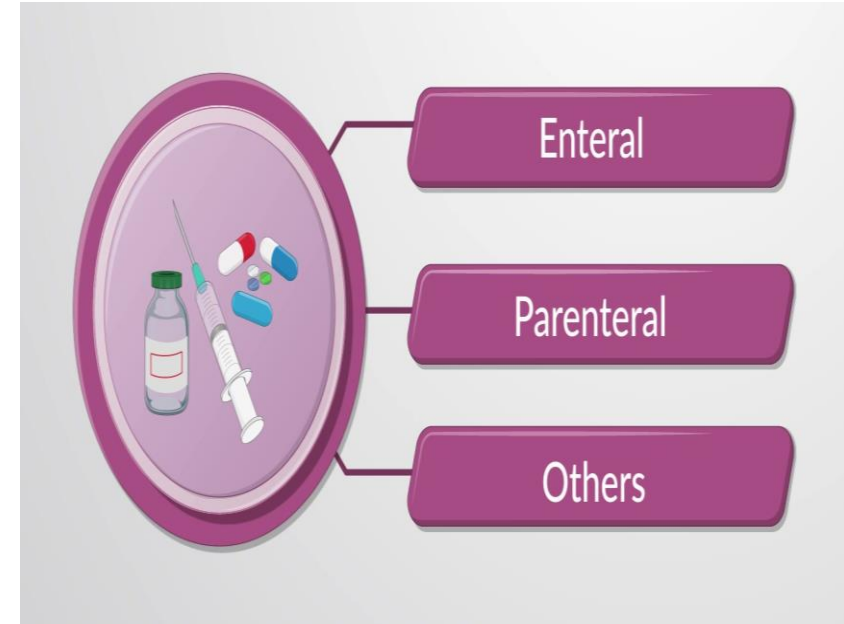


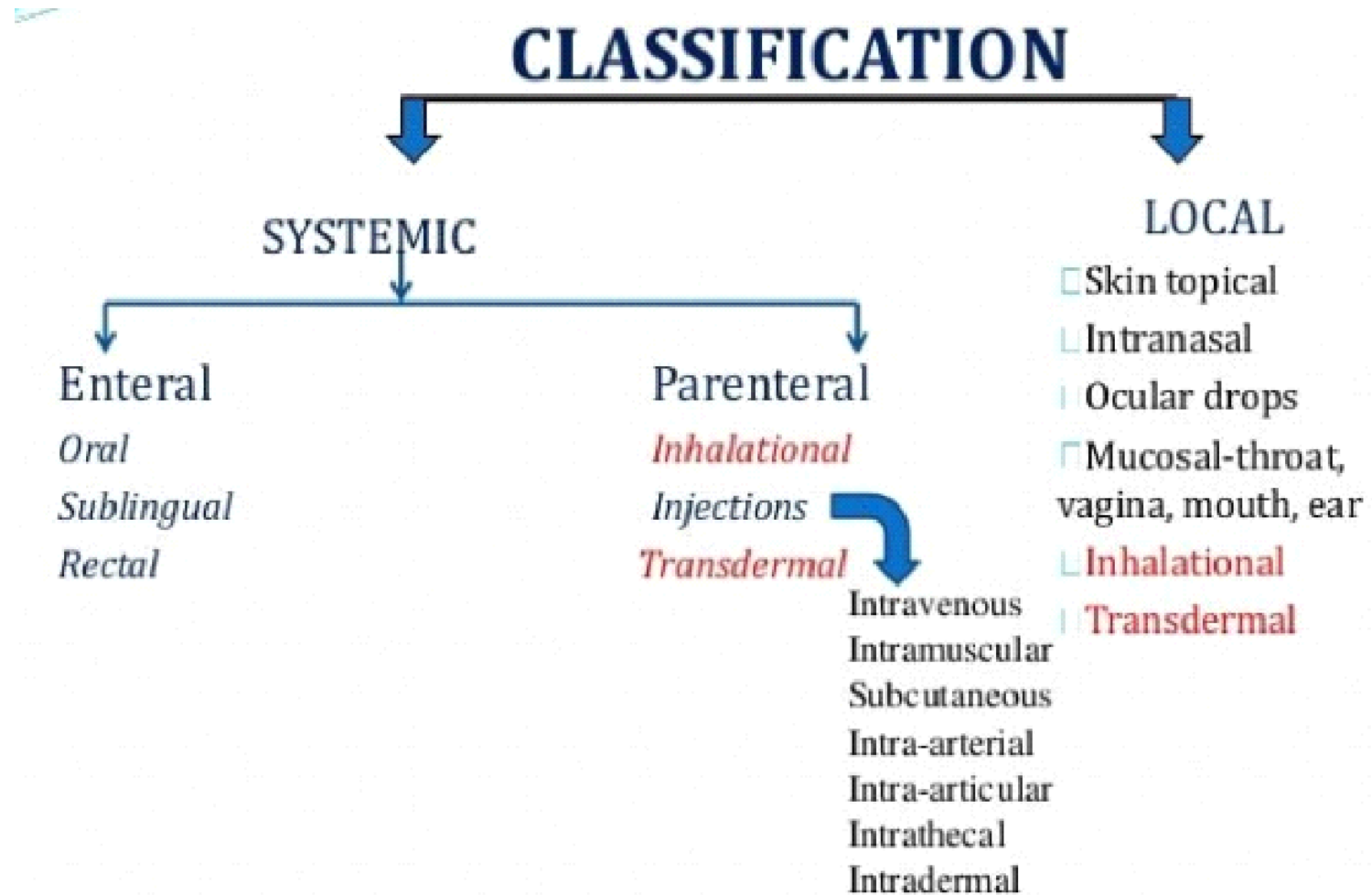
Inhalation

Vaporization
Gas Inhalation
Nebulization

CLASSIFICATION

- **Systemic Routes:** Drug absorbed into blood for distribution body-wide.
 - **Enteral:** Via gastrointestinal (GI) tract.
 - **Parenteral:** Bypasses GI tract.
- **Local Routes:** Drug acts at or near application site.



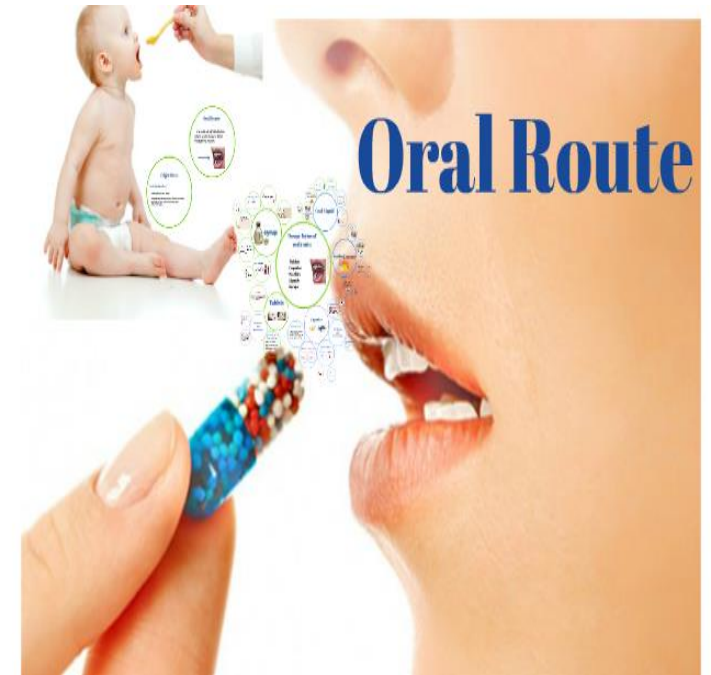




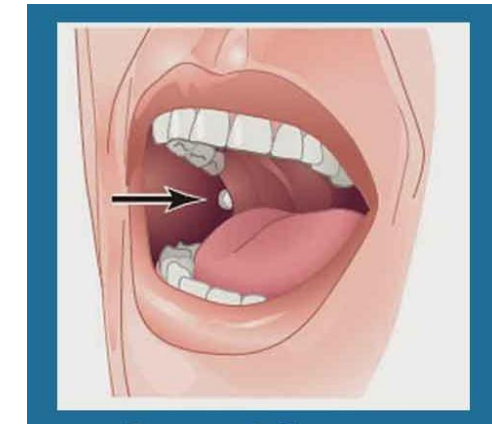
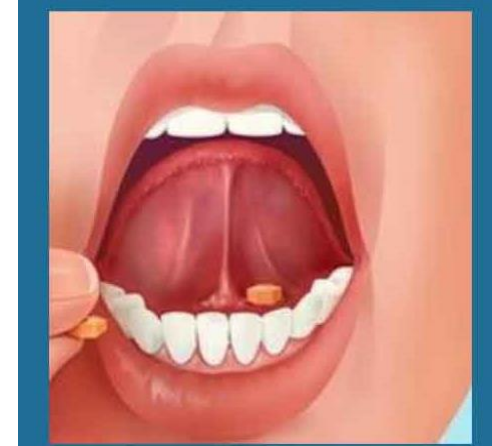
ENTERAL ROUTES

Oral (PO):

- Most common, convenient, cost-effective. Drug is swallowed and absorbed in the GI tract.
- Limitations include first-pass metabolism, slower onset, and potential irritation.
- Not suitable for unconscious patients.

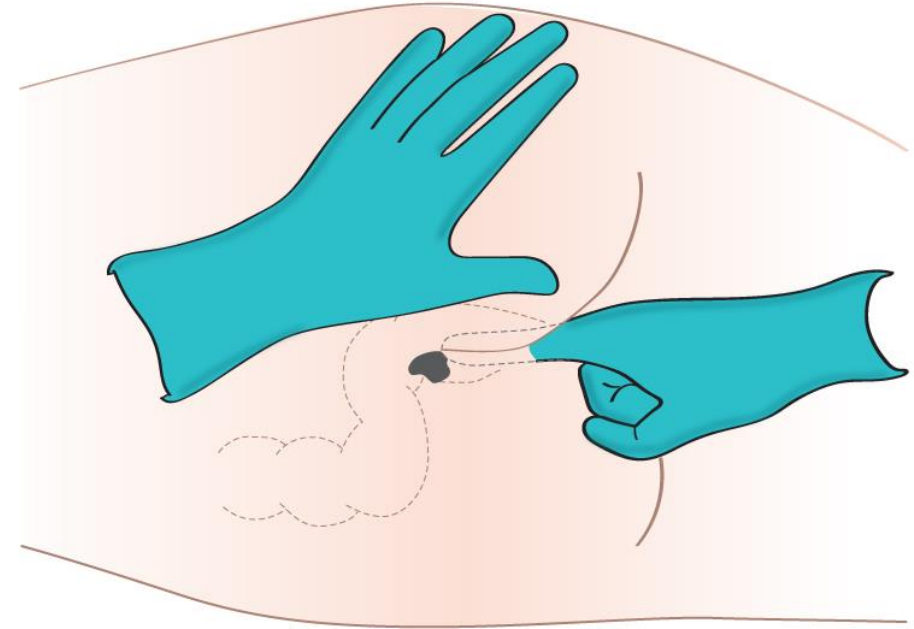


- **Sublingual:** Placed under the tongue for rapid absorption via oral mucosa, bypassing first-pass effect. Used for drugs like nitroglycerin.
- **Buccal:** Drug administered between gum and cheek, slower absorption than sublingual.



Rectal:

- Used when oral is not feasible.
- Partial avoidance of first-pass metabolism.
- Useful for local or systemic effects.



PARENTERAL ROUTES

Intravenous (IV):

- Delivers drug directly into the bloodstream.
- Rapid onset, 100 Percent bioavailability, but higher risk of adverse reactions.
- Used in emergencies and unstable patients.

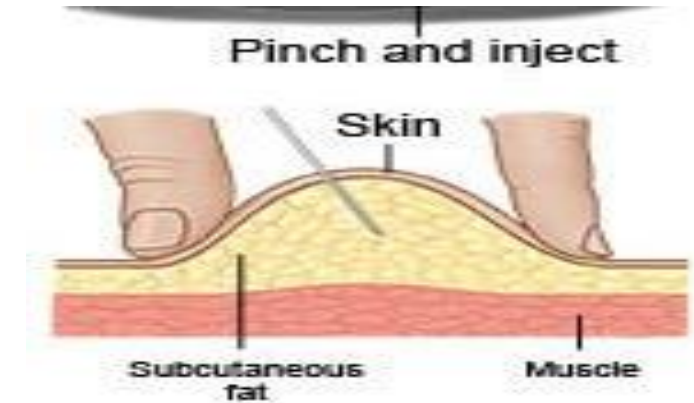


Intramuscular (IM):

- Injection into muscle tissue causing moderate absorption speed.
- Absorption depends on blood flow to the muscle.
- Depot forms allow prolonged release (e.g., vaccines).

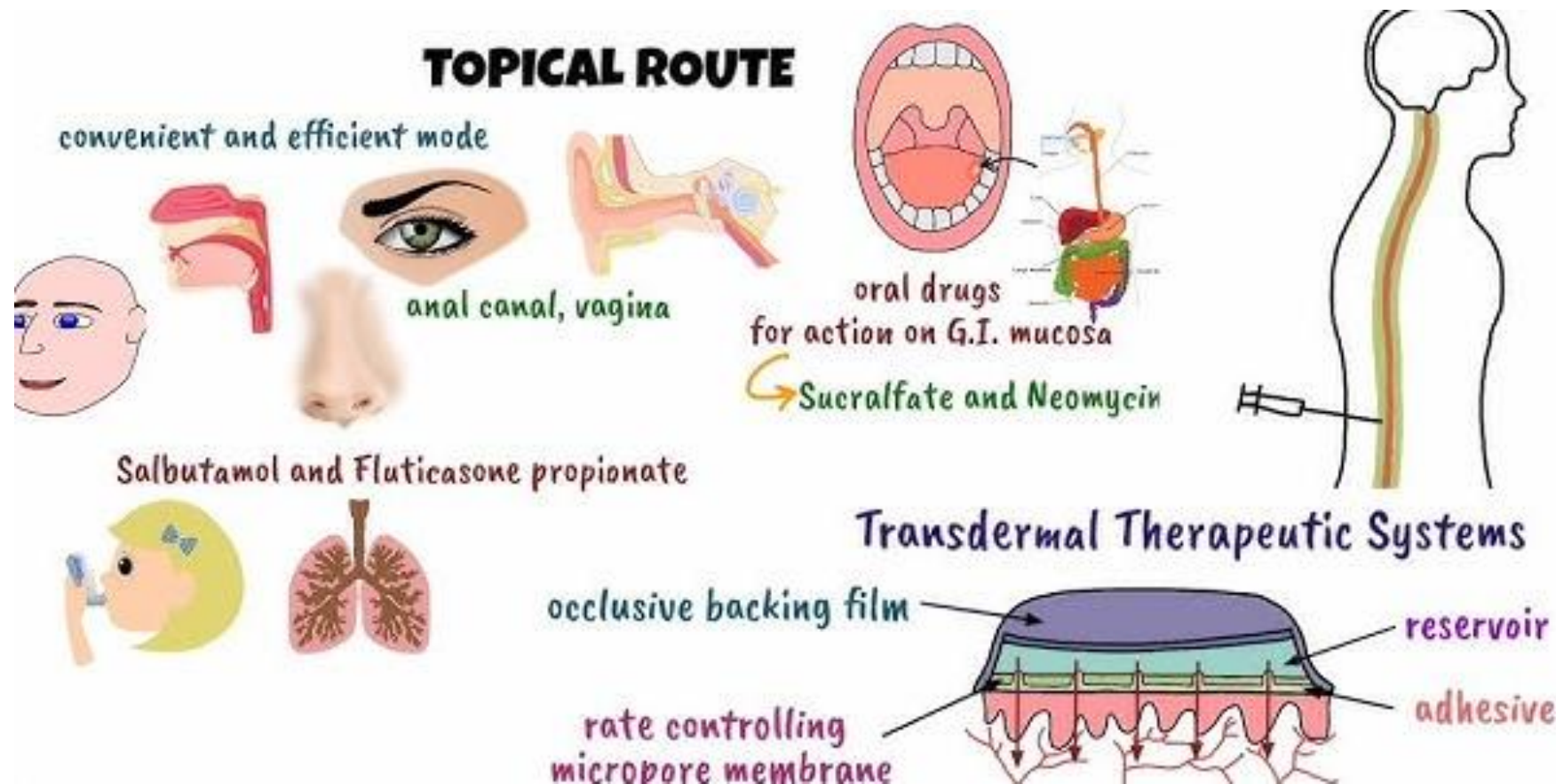


- **Subcutaneous (SC):** Injection under the skin; slow and sustained absorption, used for insulin and heparin.
- **Intraosseous:** Injection into bone marrow, used in emergency pediatric care when IV access is difficult.



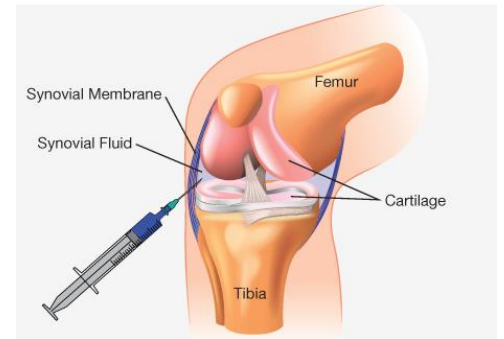
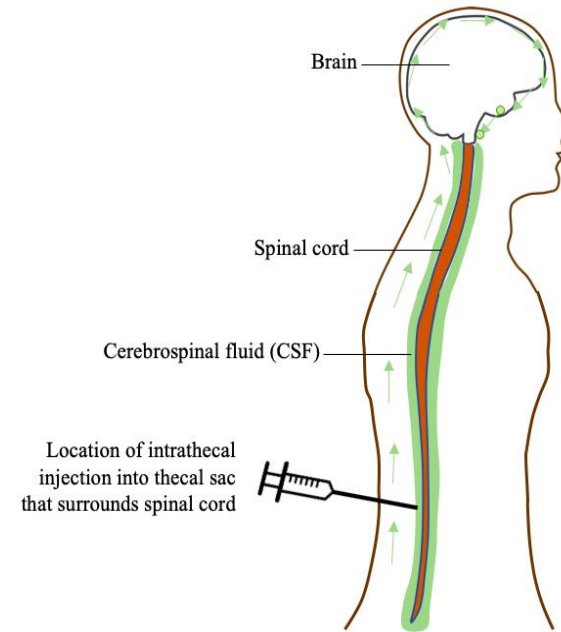
TOPICAL OR LOCAL ROUTES

- **Cutaneous:** Applied to the skin for local effect (creams, ointments).
- **Transdermal Patches:** Systemic effect through skin absorption (e.g., nicotine patch).
- **Inhalation:** Rapid absorption via the pulmonary route (e.g., bronchodilators).
- **Mucosal Routes:** Drops for eye/ear/nasal issues, vaginal administration, etc.



OTHER SPECIALIZED ROUTES

- **Intrathecal** (into cerebrospinal fluid)
- **Intra-articular** (into joints)
- **Intraperitoneal, vaginal, etc**



FACTORS INFLUENCING ROUTE SELECTION



- Desired speed of action.
- Site of action.
- Patient condition (conscious/unconscious).
- Drug properties (e.g., stability, [solubility](#)).

SUMMARY



References

- KD Tripathi Essentials of Medical Pharmacology
- <https://www.firsthope.co.in/routes-of-drug-administration/>
- <https://www.medicalnewstoday.com/articles/routes-of-administration>
- <https://www.msmanuals.com/home/drugs/administration-and-kinetics-of-drugs/drug-administration>