

# INTRODUCTION TO PHARMACOLOGY

## DRUGS DOSAGE

- **Dose:** Amount to administered  
↳ 1g of Paracetamol

- **Dosage:** dose and frequency  
↳ 1g of Paracetamol;  
Q4-6hr

## DOSAGE FORMS

- **Enteral** → GI Tract
- **Parenteral** → IV, IM, IO, subq
- **Pulmonary** → Inhalation
- **Topical** → Skin, Mucous membrane

## PHARMACOKINETIC

- **Absorption**
- **Distribution**
- **Metabolism** → Liver
- **Excretion**

## FIRST PASS EFFECT (METABOLISM):

↳ How a drug is processed before it reaches systemic circulation.

- Stomach/intestine → absorb drug
- Travel → Portal vein → Liver
- Into liver first
- Liver → Breakdown part of the drug  
↳ 1g → Liver ÷ Drug by 2 = 500mg
- Only remaining 1/3 reaches systemic circulation.

## BIOAVAILABILITY:

↳ The amount (fraction) of a drug that reaches the bloodstream in it's active form.

↳ How much of a drug actually works in the body

- Eating a drug, not all of it reaches blood circulation.
- Some is:
  - Not absorbed
  - Broken down (First pass effect)

## DRUG-INTERACTION:

- **Drug - Drug** interaction
- **Drug - Food** interaction
- **Drug - Herb** interaction

## EDUCATION:

- Minimize no. of drug patient received.
- Be aware of OTC drug use
- Consult a doctor or pharmacist
- Adjust timing of administration
- Monitor sign of toxicity
- Be aware of patient consuming drug with low TI.

↳ Route: Bioavailability:

IV → 100%

PO → < 100%

Sublingual → Higher (Bypass Liver)

## THERAPEUTIC INDEX:

↳ A measure of a drug's safety  
↳ Dose that causes toxicity

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Dose that produces therapeutic effect

- ↳ High TI: Safer drug
- ↳ Low TI: Dangerous, need close monitoring.
- ↳ Digoxin; warfarin; Lithium

# DRUG CALCULATIONS / MATH:

## CONVERSIONS: (Large to Small: Right) (Small to Large: Left)

- 1mg = 1,000mcg (1000)
- 1g = 1,000mg (1000)
- 1oz = 30mL
- 8oz = 1cup (240mL)
- 1dram = 5mL
- 1tsp = 5mL
- 1tbsp = 15mL
- 1tbsp = 3tsp
- 1L = 1,000mL
- lb → Kg (÷2.2)
- Kg → lb (×2.2)

## FORMULA METHOD:

$$\frac{D}{H} \times V = A$$

D = Desired; Dr's order (120mg)

H = On Hand that is available

↳ 100mg/5mL

V = Volume available (5mL)

A = Amt of medication required to be administer

$$\frac{120}{100} \times 5 = 6\text{mL}$$

## IV FLOW RATES:

• Infusion (hours) → Q: 1,000mL over 24hrs

$$\frac{\text{mL of Solution}}{\text{Total hours}} = \text{mL/Hr} \quad \frac{1,000}{24\text{hrs}} = 41.7\text{mL/Hr}$$

• Infusion (Min) → Q: 500mL in 30mins

$$\frac{\text{mL of Solution}}{\text{Min}} \times 60\text{min} = \text{mL/Hr} \quad \frac{500}{30\text{min}} \times 60\text{min} = 1000\text{mL/Hr}$$

• Drops Per Minute: → Q: 1,500mL over 24hrs

$$\frac{\text{mL of Solution}}{\text{Total Min}} \times \text{Drop Factor} = \text{gtt/min} \quad \frac{1,500}{24 \times 60\text{min}} \times \text{DF: } 21 = 22\text{gtt}$$

## NO. OF BAG & NO. OF HOURS TO CHANGE:

- 1 O; Pint = 500mL
- 1L = 2O; Pint

$$\frac{\text{Dr's order in mL}}{500\text{mL}} = \frac{\text{No. of bag/}}{\text{Pint}} \quad \frac{1500}{500} = 3\text{ bag}$$

$$\frac{\text{Time in Hr}}{\text{No. of bag/Pint}} = \frac{\text{No. of hours to}}{\text{change}} \quad \frac{24\text{Hr}}{3\text{ bag}} = 8\text{hr (Frequency to change)}$$

# ANDRENALINE DOSE

↳ 1mg/mL (1:1,000)

