3rd stage

Lect. Huda K.K.

Practical Pharmacology

Drug Dosage Calculation

Definition:

●**Dose:** Is the amount of medication measured (mg, mL).

●**Dosage:** Is the amount of medication based on units per weight of the animal (50 mg/kg, 10 mL/kg)

● **The concentration** of the drug is calculated by the manufacturer (mg/mL, mg/tablet)

METRIC CONVERSIONS

Metric weights and measurements involve a step-by-step conversion from one unit to another. With weight we often convert to smaller (and more numerous units) thus:

(1)Kg— gm —mg—mcg …… Ex, Augmentin 1.2gm = ?mcg …….Sol. =1,200,000mcg

Lbs./ 2.2 = Kg…… Kg x 2.2 = Lbs. or • (Kg x 2) + 10% = Lbs.

(2) L. ---- ml ……..1 Liter = 1000ml.

(3) Units & Millequivalents: As mg and gm were quantities to measure the weight of medicine , unit (U,u) and mEq also represent a measurement of a given medicine.

●1 Grain (gr.) = 60 Milligrams (mg)

– To convert gr. to mg multiply gr. by 60 – To convert mg to gr. divide mg. by 60 .

●1ml = 1 cc.

• 1 ounce = 30 ml.

• 1 tablespoon (T or tbsp) = 15 ml.

• 1 teaspoon (t or tsp) = 5 ml.

• 2.2 lb = 1 kg.

- To convert pounds to kg divide pounds by 2.2 ,To convert kg to pounds multiply by 2.2

Abbreviations:

• cc- cubic centimeter.

• DD- Desired Dose.

• gm- gram.

• gtt- drop/drops.

Desired Dose: The amount of a particular medication to be administered.

Ex;1: A hypotensive patient needs to be given Dopamine at 10 µg/kg/minute. The patient weight is 220 Lbs.

1,000 µg/min is the desired dose.

2: A physician orders 25 mg of Benadryl to a patient with itching and hives. Benadryl is supplied 50 mg/ 2 cc. What is the DD? **…… 25 mg**

3: A pediatric patient is to receive Atropine .02 mg/kg. The patient weight is 18 Kg. What is the DD? **…… .36 mg**

Concentration: The conc. is found by dividing the weight by the volume. **(Ex: 50 mg/2 mL)**

Ex; 1: Phenergan is ordered 12.5 mg. It is supplied 25 mg/ 2 mL. What is the Concentration?
- **12.5 mg/mL**

2: Diazepam is ordered 5 mg. It is supplied 10 mg/ 2 mL. What is the concentration?

- **5mg/mL**

There are 10,000 U in 1 cc.

Calculating the (mL,mg) to be given

Ratio- Proportion Formula:

Dosage on hand = Dosage desired

$$\frac{\text{Active Ingredient in dose on hand}}{\text{Vehicle of dose on hand}} = \frac{\text{Active Ingredient in desired dose}}{\text{Vehicle of desired dose}}$$

Ex: Morphine each ml contain 8 mg, and you must administer 2 mg. how much fluid volume will you draw to syringe to administer this dose?

- There is a very simple mathematical equation to calculate the mL, mg to be given:

(D/H) x Q

- **Dose** you want to give **(mg/mcg)**
- What do you **Have** it supplied in **(mg/mcg)**

• What **Quantity** does it come in **(mL)**

Phenergan is ordered 12.5 mg. It is supplied 25 mg/ 2 mL. How many mL will you need to give? • (12.5mg/ 25 mg) x 2 mL • .5 mg x 2 mL • 1 mL

Ex;1: Lidocaine is ordered 1 mg/kg to a patient that weighs 150 Lbs. It is supplied 100 mg/5 mL. How many mL will you need to give? **…… • 3.4 mL**

Ex;2: Lasix is ordered 40 mg IVP. It is supplied 100 mg/ 3 mL. How many mL will you need to give? **……• 1.2 mL**

Ex;3: Physician orders 500 mg of ibuprofen (desired Dose) for a patient and you have 250 mg (Quantity on Hand) tablets (Quantity of solution) on hand.

Solution: D ÷ H x Q = X 500mg ÷ 250 mg x 1 tablet = 2 tablets Answer: 2 tablets.

Ex;4: Physician orders 1500 mg of liquid ibuprofen for a patient. Quantity of Ibuprofen is 500 mg in 1 cc, how much will you administer?

Solution: 1500 mg ÷ 500 mg x 1cc = 3 cc Answer: 3 cc

GOOD LUCK