Calculation of safe drugs dosage

Calculation of safe drugs dosage:

1. ### Clark's Rule:

   A. Child's dose=adult dose x (child weight in kg÷ 70)

   B. Child's dose= adult dose x (child weight in pound÷ 150)

Example: Calculate dose of drug for child of 7 years weighing 22.7 kg. adult dose is 200 mg.

Child's dose= 200 x (22.7÷ 70) = 64.9 mg

2. ### Young's Rule:

   A. Child's Dose=   Adult Dose X (child age ÷ (child age+12))

Example: Calculate dose of drug for a child who is 7 years. Adult dose is 200mg.

Child's dose = 200 mg X (7÷(7+12))= 73mg

How to estimate amount of drug to be given?

The following formulas can be applied when preparing solid or liquid forms of medication:

Dose ordered (D) ÷ Dose on hand (H) x Amount on hand (Q) = Amount to administer (ml)

N.B

o ☐ The dose ordered is the amount of pure drug that the physician prescribes for a client.

- ○ □ The dose on hand is the weight or volume of drug available in units supplied by the pharmacy, it may be expressed on the amount of drug dissolved per unit volume of liquid.
- ○ □ The amount on hand is the basic unit of quantity or drug containing the dose on hand.

Example: A child is to be given 180 mg of paracetamol . stock elixir contains 120 mg/ 5 ml . calculate the volume to be given orally?

Dose ordered (D) ÷ Dose on hand (H) x Amount on hand (Q) =
(180÷120) X 5= 7.5 ml

Daily Fluid Maintenance calculation:

Given the weight of a child or infant, calculate the necessary amount of fluid per day. Different hospitals may have different policies, but for learning how to perform these pediatric dosage calculations, the following commonly used table of fluid requirements may be used.

Weight Range	Required Daily Fluid
0-10 kg	100 mL per kg
10-20 kg	1,000 mL + 50 mL per each kg above 10 kg
20-70 kg	1,500 mL + 20 mL per each kg above 20 kg
Over 70 kg	2,500 mL (adult requirement)

Example: An infant weighs 4 kg. What is the required amount of fluid per day in mL?

0 - 10 kg -------- 100 mL per kg

Total fluid amount per day = 4 kg x 100 mL/kg = $\boxed{\textbf{400 ml/ day}}$

Example: An infant weighs 30.8 lb. What is the required amount of fluid per day in mL?

Convert 30.8 lb to kg.

lb → kg (÷ by 2.2) =   30.8 lb ÷ 2.2 = 14 kg 0 - 10 kg -------- 100 mL per kg

10 – 20 kg -----→ 1,000 mL + 50 mL per each kg above 10kg (14 kg) 10 kg = 4 kg (There are 4 kg over 10 kg).

1,000 mL + (50 mL/kg x 4 kg) = 1,200 mL/day.

Calculate the amount to be given per hour = Daily amount ÷ 24 hours = Y ml/hrs.

Example : 1200 ÷ 24 hrs = 50 ml/hrs.

Common administration sets:

1. Burette-set macrodrips 15 drop/ ml.
2. Hemo- set gives 10 drop/ ml.
3. Solue- set microdrip gives 60 drop/ ml.

Calculation infusion flow rate:

A. <u>**Using drop factor method:**</u>

Flow rate = Total volume of infusion fluid x Drop factor ÷ Total time of infusion in minutes = drop/ minute.

Example: Ahmad is 6 month old infant has severe diarrhea and vomiting , admitted to pediatric hospital in dehydration unit, the physician prescribed I.V. infusion set solue- set as follow : 50 ml normal saline and 50 ml 5% D.W to be taken in 8 hours. Calculate the flow rate of infusion for this child ?

Flow rate = 100 ml x 60 ÷ 8 x 60 = 6000 ÷ 480 = 12 drop / minute

B. <u>**Using the total fluid volume:**</u>

Flow rate = Total fluid volume ÷ Total hours

Example: Ordered 1000 mL D5W IV to infuse in 10 hours by infusion pump.

Flow rate = 1000 ml ÷ 10 hrs = 100 ml / hour

Example: Infuse 250 mL over the next 120 minutes by infusion pump. Convert 120 minutes to hours.

min → hr ÷ by (60)

120 min ÷ 60 = 2 hr

Flow rate = 250 ml ÷ 2 hrs = 125 ml / hour