RASMUSSEN COLLEGE
PHARMACOLOGY LAB
CHEAT SHEET FOR DOSAGE CALCULATIONS

Remember to convert all units to the same system and all units to the same size for all formulas.

**Basic Formula (tablets, capsules, etc.)**

\[ \text{Desired (mg)} = \text{number of tablets to give} \]
\[ \text{Have (mg)} \]

**Basic Formula (liquids)**

\[ \text{Desired (mg)} \times \text{Volume of have in mLs} = \text{amount in mLs to give} \]
\[ \text{Have (mg)} \]

**IV Rate per Hour**

If necessary, convert liters to mLs. Then:

\[ \text{Volume to be infused} = \text{mL/hour} \]
\[ \text{Hours of infusion} \]

**IV Rate per Drops per Minute (gtts/min)**

*Remember that the drip factor has to be supplied since it varies among types of tubing.

Convert the hourly rate to minutes

Hourly rate \( \times \) 60 minutes = total minutes for infusion

Then:

\[ \text{Volume in mL} \times \text{drip factor} = \text{rate in gtts/minute} \]
\[ \text{Time in minutes} \]
Safe IV Heparin Flow Rate

To calculate IV heparin flow rate in mL/hr:

\[
\frac{D \text{ (units desired)}}{H \text{ (units available)}} \times \text{Volume (mL on hand)} = R \text{ (rate in mL/hour)}
\]

Example:
Ordered: 500mL NS with heparin 25,000 units at 1,000 units/hr
What is flow rate in mL/hour?

\[
\frac{1000 \text{ units/hr}}{25,000 \text{ units}} \times 500\text{mL} = 20\text{mL/hr}
\]

Calculating doses as mcg/kg/minute when dose is ordered in mg/hr

1. Change lbs to kgs if needed.
2. Calculate the microgram per minute dose by using the following formula

\[
\text{Ordered mcg} \times \text{kgs} = \text{mcg/minute}
\]

3. Change mcg to mg by dividing mcg by 1000.

4. Fill in the following formula to calculate your dose per hour.

\[
\frac{\text{Desired (mg)}}{\text{Volume (mLs)}} \times 60 \text{ minutes} = \text{mg/hr}
\]

Have (mg)

Calculating doses as mcg/min when weight (kg) is not involved

1. Calculate the microgram/hour dose by using the following formula.

\[
\text{Ordered mcg} \times 60 \text{ minutes} = \text{mcg/hr}
\]

2. Change mcg to mg by dividing mcg by 1000.

3. Fill in the following formula to calculate your dose per hour.

\[
\frac{\text{Desired (mg)}}{\text{volume (mLs)}} = \text{mg/hr}
\]

Have (mg)
Calculating safe pediatric (or adult) dosages

1. Convert the weight from lbs to kgs (round to the nearest tenth).

2. Convert the ordered dosage to its equivilancy in the have dosage (e.g., change ordered mcgs to have mgs if necessary).

3. Calculate the safe high and low range based on a reputable drug reference.

   Low mg recommended dose X weight in kgs
   High mg recommended dose X weight in kgs

4. Compare the ordered dosage to the recommended dosage and decide if the dosage is safe.

Calculating dosages based on body surface area

1. You may use either combination of height and weight. Remember to use the correct formula for either combination.
   a. lbs and inches OR
   b. cm and kg

   \[ \text{Metric Body Surface Area (BSA):} \quad m^2 = \sqrt{\frac{Ht \ (cm) \times wt \ (kg)}{3600}} \]

   \[ \text{Household Body Surface Area (BSA):} \quad m^2 = \sqrt{\frac{Ht \ (in) \times wt \ (lbs)}{3131}} \]

2. Then multiply the \( m^2 \) by the ordered dose to get your individual dose (mg or mcg)

Calculating daily volume for maintenance fluids

1. Change lbs to kgs (if needed).
2. 100mL X first 10kg of body weight.
3. 50mL X second 10kgs of body weight
4. 20mL X remaining kg of body weight.
5. Add together to get a 24-hour total