Drug Calculations

- A. 1:100 Solution contains 1 **GRAM** solute and **100 mL** solvent.
- B. 1:400 solution contains **1 GRAM** solute and **400 mL** solvent.
- C. 1:1000 solution contains **1 GRAM** solute and **1000 mL** solvent.
- D. A 10% solution contains 10 GRAMS solute and 100 mL solvent.
- E. A 40% solution contains 40 GRAMS solute and 100 mL solvent.
- F. A 2:600 solution contains 2 GRAMS solute and 600 mL solvent.
- G. The doctor ordered 0.5 mL of a 1:400 solution. How many mg are there in 0.5 ml? 0.5 mL x .25% x 10 = 1.25 mg
- H. The doctor ordered 250 mg of a 5% solution of Lidocaine to be nebulized for a bronchoscopy. How many mL would you draw up?
 250 mg = ? mL x 5 x 10
 250 = ? mL x 50
 5 mL
- I. The doctor ordered 20 mg of Vaponephrine (2.25% solution). How many mL would you draw up?
 20 mg = ?mL x 2.25 x 10
 20 = ? mL x 22.5
 0.89 mL
- J. The doctor ordered 5 mg of a 1:100 solution of Isuprel. How many mL would you draw up?
 5 mg = ? mL x 1% x 10
 5 = ? mL x 10
 0.5 mL
- K. How many mg are in 4 mL of 20% mucomyst?
 ? mg = 4 mL x 20% x 10
 ? mg = 4 x 20 x 10 = 800 mg
- L. You are requested to give an aerosol treatment with 10 mL of a 1:200 solution of Isuprel. How many mg of Isuprel would you be administering to the patient?
 ? mg = 10 mL x 0.5% x 10
 ? mg = 10 x 0.5 x 10 = 50 mg
- M. You are asked to administer 4 mL of 10% Mucomyst and all that is available is 20% Mucomyst. How much of the 20% solution would you use to give the same dose? $V_1C_1 = V_2C_2$ $(4 \text{ mL})(10\%)=(V_2)(20\%)$ $40 = (V_2)(20)$ $2 \text{ mL} = (V_2)$

- N. Given 25 mL of a 4% solution, dilute to a concentration of 0.5%. $V_1C_1 = V_2C_2$ (25 mL)(4%)=(V₂)(0.5%) 100mL = V₂ x 0.5 200 mL. You can accomplish a 0.5% concentration by adding 175 mL
- O. 100 mL of water is added to 350 mL of a 5% solution. Calculate the new concentration.
 V₁C₁ = V₂C₂
 (350 mL)(5%)=(450 mL)(C₂)
 1750 = (450)(C₂)
 3.9% = C₂
- P. What volume of saline should be added to 100 mL of a 20% solution to dilute it to a 5% solution?
 V₁C₁ = V₂C₂

 $V_1C_1 = V_2C_2$ (100 mL)(20%) = (V₂)(5%) 2000 = (V₂)(5) 400 mL = V₂ You need to add an additional 300 mL to get to a 5% solution

Q. If 10 mL is added to 6 mL of a 20% solution, what is the solutions final concentration?

 $V_1C_1 = V_2C_2$ (6 mL)(20%) = (16 mL)(C₂) 120 = (16)(C₂) 7.5% = C₂

- R. Given 40 mL of a 60% solution, dilute to a 35% solution. $V_1C_1 = V_2C_2$ (40 mL)(60%) = (V₂)(35%) 2400 = (V₂)(35) 68.6 mL = V₂ You need to add 28.6 mL to get to a 35% solution
- S. If 25 mL is added to 10 mL of a 40% solution, what is the solutions final concentration?
 V₁C₁ = V₂C₂
 (10 mL)(40%) = (35 mL)(C₂)
 400 = (35)(C₂)
 11.43%

SOLUTIONS AND DRUG CALCULATIONS

- T. Bronkosol 0.5% solution contains **5** mg in 1 mL of solution? **0.5% = 0.5g/100 mL = 500 mg/100 mL = 5 mg/mL**
- U. Alupent 5% solution contains **50** mg in 1 mL of solution? **5% = 5g/100 mL = 5000 mg/100 mL = 50 mg/mL**
- V. How many mg are in 0.6% Alupent unit dose containing 2.5 mL of normal saline? # mg = 2.5 mL x 0.6% x 10 # mg = 2.5 x .6 x 10 # mg = 15 mg
- W. Isuprel 1:200 solution contains 5 mg in 1 mL of solution? # mg = 1 mL x 0.5% x 10 # mg = 1 x 0.5 x 10 # mg = 5
- X. You have a 2.25% Vaponephrine solution:
 - a. How many grams are in 100 mL? # mg = 100 mL x 2.25% x 10 # mg = 100 x 2.25 x 10 # mg = 2,250 mg = 2.25 grams
 - b. How many mg are in 1 mL? # mg = 1 mL x 2.25% x 10 # mg = 1 x 2.25 x 10 # mg = 22.5 mg
 - c. How much would you draw up to give 5.6 mg? 5.6 mg = # mL x 2.25% x 10 5.6 = # mL x 22.5 0.25 mL
- Y. You have a 20% Mucomyst solution:
 - a. How many grams are in 100 mL? # mg = 100 mL x 20% x 10 # mg = 20,000 mg = 20 grams
 - b. How many mg are in 1 mL? # mg = 1 mL x 20% x 10 # mg = 200 mg
 - c. How much solution would you draw up if the physician ordered 300 mg?
 300 mg = # mL x 20% x 10
 300 = # mL x 200
 1.5 mL

- Z. You have a 1:200 Isuprel solution.
 - a. How much would you draw up if the physician ordered 2.5 mg?
 2.5 mg = # mL x 0.5% x 10
 2.5 = # mL x 5
 0.5 mL