

Elizabeth
Orosco

Medication Calculation Worksheet #3

1. Medication order: Heparin 25,000 units in 500 mL, infuse 4000 units/hr. How many mL per hour do you need to infuse to deliver 4000 units/hr?

$$\frac{500 \text{ mL}}{25,000 \text{ units}} \times \frac{4000 \text{ units}}{?} = \frac{2,000,000 \text{ mL}}{25,000} = 80 \text{ mL}$$

2. Medication order: Lidocaine 8 mg in 250 mL, infuse at 10 mcg/min. How many mL per hour do you need to infuse to deliver 10 mcg/min?

8 mg \rightarrow 8000 mcg

$$\frac{10 \text{ mcg}}{8,000 \text{ mcg}} \times 250 \text{ mL} = 0.3125 \times 60 \text{ min} = 18.75 \text{ mL/hr}$$

3. Medication order: Aminophylline 1 gram in 250 mL, infuse 25 mg/hr.

How many mL per hour must you infuse to deliver 25 mg/hr?

1 gram \rightarrow 1000 mg

$$\frac{250 \text{ mL}}{1000 \text{ mg}} \times \frac{25 \text{ mg}}{?} = \frac{6,250 \text{ mL}}{1000} = 6.25 \text{ mL/hr}$$

4. Medication on hand: Insulin 75 units in 125 mL. How many units per mL?

$$75 \div 125 = 0.6 \text{ units}$$

5. Medication order: Unipen 750 mg IM q6h. Available: Unipen 1 g/2.5 mL after it has been reconstituted. How many mL of the reconstituted solution will you administer? Round answer to the nearest tenth.

$$\frac{DV}{H} = \frac{750 \text{ mg} \times 2.5 \text{ mL}}{1000 \text{ mg}} = \frac{1,875 \text{ mL}}{1000} = 1.875 \text{ or } 1.9 \text{ mL}$$

6. A nurse is administering an antibiotic via IVPB. The pharmacy dispenses 150 milligrams (mg) of antibiotic mixed in 250 milliliters (mL) of normal saline to infuse over 30 minutes. The nurse will set the infusion pump at _____ mL/hour to administer the IVPB.

$$\frac{250 \text{ mL}}{30 \text{ min}} \times \frac{60 \text{ min}}{1 \text{ hr}} = \frac{15,000 \text{ mL}}{30} = 500 \text{ mL/hr}$$

7. Administer 3.5 mL of aminophylline liquid (250 mg/2.5mL) PO for pain now. The nurse will administer 1 milligrams.

$$\frac{DV}{H} = \frac{3.5 \text{ mL}}{2.5 \text{ mL}} \times 250 \text{ mg} = 350 \text{ mg}$$

8. Order: Administer cephazolin 60 mg IM daily. Available is a 5 mL vial of cephazolin 100 mg/mL. The nurse should administer how many mL?

$$\frac{DV}{H} = \frac{60 \text{ mg} \times 1 \text{ mL}}{100 \text{ mg}} = 0.6 \text{ mL}$$

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9. From 0700 to 1600 the nurse calculates the patient's total intravenous fluid intake as 1 milliliters. An IV is infusing at 150 mL/hour. At 1200, the patient will receive IVPB of 75 mL for 30 minutes. What is the total amount the patient will receive during this time?

$$0700 - 1600 \rightarrow 9 \text{ hours. } 9 \times 150 = 1,350 \\ + 75 \text{ mL} = \boxed{1,425 \text{ mL}}$$

10. Administer 5 milligrams of acyclovir in 75 milliliters of normal saline over 15 minutes. The nurse will set the IV pump at 1 mL/hour.

$$\frac{75 \text{ mL}}{15 \text{ min}} \times \frac{60 \text{ min}}{1 \text{ hr}} = \frac{4,500}{15} = \boxed{300 \text{ mL/hr}}$$

11. Phenytoin (Dilantin), 7,000,000 mcg PO, is ordered to be given through a nasogastric tube. Phenytoin is available as 5,000 mg / 18 mL. How much would the nurse administer? Round to a whole number.

$$7,000,000 \text{ mcg} = 7,000 \text{ mg} \\ DV = \frac{7,000 \text{ mg} \times 18 \text{ mL}}{5,000 \text{ mg}} = \frac{126,000}{5,000} = 25.2 \text{ or } \boxed{25 \text{ mL}}$$

12. Solumedrol 1.5 mg/kg is ordered for a patient weighing 74.8 lb.

Solumedrol is available as 125 mg / 2mL. How many mL should the nurse administer?

$$74.8 \div 2.2 = 34 \text{ kg} \\ 1.5 \text{ mg} / 34 \text{ kg} = 51 \text{ mg} \\ DV = \frac{51 \text{ mg} \times 2 \text{ mL}}{125 \text{ mg}} = \frac{102}{125} = 0.816 = \boxed{0.82 \text{ mL}}$$

13. Give patient 24.4 mg of dopamine in 363 mL of D5W to be infused at a rate of 9,818 mcg/hr. Calculate the flow rate in mL/hr.

$$\frac{9,818 \text{ mcg/hr}}{24.4 \text{ mg}} \times 363 \text{ mL} = \boxed{146.1 \text{ mL/hr}}$$

14. Give patient 10.1 mg of dopamine in 251 mL of D5W to be infused at a rate of 6 mg/hr. Calculate the flow rate in mL/hr.

$$\frac{6 \text{ mg/hr}}{10.1 \text{ mg}} \times 251 \text{ mL} = \boxed{149.1 \text{ mL/hr}}$$

15. Ordered Lasix 12,000,000 mcg IV push now. Available: 0.025 kg in 15 mL. How much will the nurse draw up?

$$DV = \frac{12,000,000 \text{ mcg}}{25,000,000 \text{ mcg}} \times 15 \text{ mL} = \boxed{7.2 \text{ mL}}$$

$$0.025 \text{ kg} = 25,000,000 \text{ mcg}$$

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16. Order: Zithromax 250 mg p.o. daily. Available:

FOR ORAL USE ONLY. Store dry powder below 30°C (86°F). PROTECT FROM FREEZING. DOSAGE AND USE See accompanying prescribing information. MIXING DIRECTIONS: Tap bottle to loosen powder. Add 9 mL of water to the bottle. After mixing, store suspension at 5° to 30°C (41° to 86°F). Oversized bottle provides extra space for shaking. After mixing, use within 10 days. Discard after full dosing is completed. SHAKE WELL BEFORE USING. Contains 300 mg azithromycin.

300 mg (15 mL when mixed)

Zithromax®
(azithromycin for oral suspension)

CHERRY FLAVORED

100 mg* per 5 mL

Pfizer Pfizer Labs
Division of Pfizer Inc. NY, NY 10017

www.zithromax.com

3 0069-3110-19 3

*When constituted as directed, each 5 mL (15 mL) contains azithromycin dihydrate equivalent to 100 mg of azithromycin.

6415
MADE IN USA

05-5012-32-2
Rx only

- How many milliliters of diluent must be added to the bottle?
9 mL
- What is the final concentration of the prepared solution?
15 mL
- How many mL should the nurse administer?

$$\frac{DV}{H} = \frac{250 \text{ mg} \times 5 \text{ mL}}{100 \text{ mg}} = \frac{1250}{100} = 12.5 \text{ mL}$$

17. Scenario: Order: Tazicef 250 mg IM q8h. The nurse reconstituted the medication with 10.6 mL of diluent and administered 2.6 mL to the patient.

NSN 6505-01-227-3578
For I.V. or I.M. use. Important: This vial is under reduced pressure. Addition of diluent generates a positive pressure. Before reconstituting, see Instructions for Reconstitution. Each vial contains ceftazidime pentahydrate equivalent to 1 gram ceftazidime and 119 mg of sodium carbonate. (Sodium content is approximately 54 mg or 2.3 mEq.) Usual Adult Dose: 1 gram every 8 to 12 hours. See accompanying prescribing information for reconstitution, dosage and administration instructions. Before reconstitution: Protect from light and store at 15° to 30°C (59° to 86°F). Slight yellowing does not affect potency. Properly reconstituted solutions of Tazicef are stable for 24 hours at room temperature or 7 days if refrigerated (5°C). Caution: Federal law prohibits dispensing without prescription. Jointly manufactured by SmithKline Beecham Pharmaceuticals Philadelphia, PA 19101, and Bristol-Myers Squibb Co., New York, NY 10154 603818-H

TAZICEF®
CEFTAZIDIME FOR INJECTION

SB SmithKline Beecham

256921 H07
4-8/8569

3 0007-5082-01 8

$$\frac{250 \text{ mg} \times 50}{1000 \text{ mg}}$$

RECONSTITUTION

Single Dose Vials:
For I.M. injection, I.V. direct (bolus) injection, or I.V. infusion, reconstitute with Sterile Water for injection according to the following table. The vacuum may assist entry of the diluent. SHAKE WELL.

Table 5

Vial Size	Diluent to Be Added	Approx. Avail. Volume	Approx. Avg. Concentration
Intramuscular or Intravenous Direct (bolus) Injection			
1 gram	3.0 ml.	3.6 ml.	280 mg./ml.
Intravenous Infusion			
1 gram	10 ml.	10.6 ml.	95 mg./ml.
2 gram	10 ml.	11.2 ml.	180 mg./ml.

Withdraw the total volume of solution into the syringe (the pressure in the vial may aid withdrawal). The withdrawn solution may contain some bubbles of carbon dioxide.

NOTE: As with the administration of all parenteral products, accumulated gases should be expressed from the syringe immediately before injection of Tazicef.

These solutions of Tazicef are stable for 18 hours at room temperature or seven days if refrigerated (5°C). Slight yellowing does not affect potency.

For I.V. infusion, dilute reconstituted solution in 50 to 100 ml. of one of the parenteral fluids listed under COMPATIBILITY AND STABILITY.

*nurse used the wrong constitution/diluent

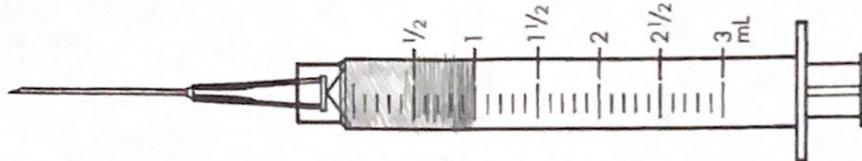
- What error occurred here?
The nurse used the information for reconstitution for an intravenous not for an intramuscular
- What concentration should have been made?
intramuscular / 280 mg/mL

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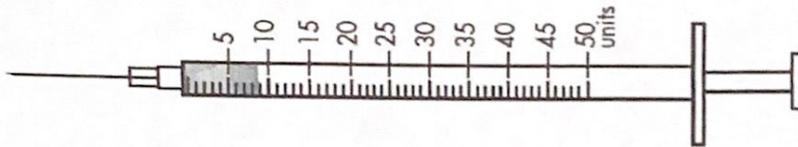
18. Order: Kefzol 250 mg IM q4h. Available is Kefzol 500 mg that must be reconstituted with 2 mL sterile water. The nurse now has 2.2 mL (225 mg/mL).

$$\frac{DV}{H} = \frac{250 \text{ mg} \times 2}{500 \text{ mg}}$$

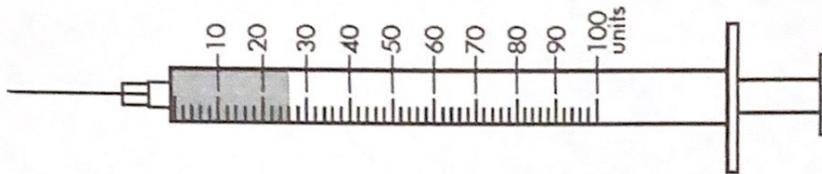
- a. How many milliliters will you administer to provide the ordered dosage? 1 mL
- b. Shade the dosage in on the syringe provided.



19. Order: Novolin R U-100 9 units subcut daily. Shade in the correct dosage.



20. How many units are measured? 26 units



21. Administer an IV medication of 50 mL NS in 20 min. Drop factor: 60 gtt/mL. At what rate in gtt/min should the IV be regulated?

$$\frac{50 \text{ mL} \times 60 \text{ gtt}}{20 \text{ min}} = \frac{3,000}{20} = \boxed{150 \text{ gtt/min}}$$

22. Administer 1,000 mL D5W to infuse in 12 hr. Drop factor: 20 gtt/mL. At what rate in gtt/min should the IV be regulated? Round answer to a whole number.

$$\frac{1,000 \text{ mL} \times 20 \text{ gtt}}{720 \text{ min}} = \frac{20,000}{720} = 27.77 \text{ or } \boxed{28 \text{ gtt/min}}$$

23. Administer 10 units of Humulin regular insulin per hour. 50 units of insulin is placed in 250 mL NS. How many mL/hr should the IV infuse?

$$\frac{10 \text{ units}}{1 \text{ hr}} \times \frac{250 \text{ mL}}{50 \text{ units}} = \frac{2,500 \text{ mL}}{50 \text{ hr}} = \boxed{50 \text{ mL/hr}}$$

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24. Ativan 3 mg IV push stat. Available: Ativan 4 mg per mL. The literature states not to exceed 2 mg/min.

1. How many mL of Ativan should the nurse prepare? (Express in hundredths.)

$$\frac{DV}{H} = \frac{3 \text{ mg} \times 1 \text{ mL}}{4 \text{ mg}} = \boxed{0.75 \text{ mL}}$$

2. Over how many min should the nurse administer the medication?

$$\frac{2 \text{ mg}}{1 \text{ min}} \times \frac{3 \text{ mg}}{?} = \frac{3}{2} = \boxed{1 \frac{1}{2} \text{ min}}$$

25. A patient is receiving Pronestyl 60 mL/hr. Available is Pronestyl 2 g in 500 mL D5W. Calculate: (1) the mg/hr and (2) the mg/min the patient will receive.

$$\frac{DV}{H} = \frac{60 \text{ mL}}{500 \text{ mL}} \times \overset{2 \text{ g} \rightarrow 2000 \text{ mg}}{2,000 \text{ mg}} = \boxed{240 \text{ mg/hr}}$$

$$240 \div 60 \text{ min}$$

$$\frac{240 \text{ mg}}{1 \text{ hr}} \times \frac{1 \text{ hr}}{60 \text{ min}} = \boxed{4 \text{ mg/min}}$$