

Comprehensive Post-Test

Solve the following calculation problems. Remember to apply the principles learned in the text relating to dosages. Use labels where provided. Shade in the dosage on the syringe where indicated.

- Order: Amoxicillin and clavulanate potassium 300 mg p.o. q8h (ordered according to dose of amoxicillin).

Available:

NDC 0093-2277-73
AMOXICILLIN AND CLAVULANATE POTASSIUM
for Oral Suspension USP
200 mg/28.5 mg per 5 mL *

* When reconstituted, each 5 mL contains:
 amoxicillin, as the trihydrate 200 mg
 clavulanate acid, as clavulanate potassium 28.5 mg

Usual Dosage: Administer every 12 hours.
 See package insert for full prescribing information.

Rx only

100 mL (when reconstituted)

TEVA

When reconstituted, each 5 mL suspension contains 0.14 meq potassium. Directions for mixing: Tap bottle until all powder flows freely. Add approximately 2/3 of total water for reconstitution (total = 92 mL), shake vigorously to wet powder. Add remaining water; again shake vigorously. Keep tightly closed. Shake well before using. Store reconstituted suspension under refrigeration. Discard unused suspension after 14 days. Phenolphthalein: Contains phenolphthalein 0.67 mg per 5 mL. Net contents: Equivalent to 4 g amoxicillin and 0.57 g clavulanate acid. Use only if inner seal is intact. Store dry powder at 20° to 25°C (68° to 77°F) [See USP Controlled Room Temperature].

KEEP THIS AND ALL MEDICATIONS OUT OF THE REACH OF CHILDREN.

Manufactured in Canada by:
 NOVOPHARM LIMITED
 Toronto, Canada M1B 2J9
 Manufactured for:
 TEVA PHARMACEUTICALS USA
 SIMI VALLEY, PA 19380
 895814-4 88 800 3 V R . 06/0002

N 0093-2277-73 1

- Order: Campral DR (delayed-release) 666 mg p.o. t.i.d.

Available:

Rx only NDC 0456-3330-01

Campral
 (acamprosate calcium)
 Delayed-Release Tablets

333 mg

180 Tablets

FOREST PHARMACEUTICALS, INC.
 A Division of Forest Laboratories, Inc.
 © 2004 Forest Laboratories, Inc.

Each tablet contains 333 mg of acamprosate calcium. Keep this and all drugs out of the reach of children. Dispense in a tightly closed container as described in the USP. Store at 25°C (77°F) — excursions permitted to 15–30°C (59–86°F) [see USP Controlled Room Temperature]. See package insert for dosing and full prescribing information. Campral is a registered trademark of Marek Sanit s.a.s. Licensed from: Marek Sanit s.a.s. Subsidiary of Marek KGaA, Dierstadt, Germany.

LOT NO. 3 0456333001 8
 EXP. DATE 07/04

3. Order: Septra DS 1 tab p.o. q12h for 14 days.

Available:

100 Tablets NDC 0173-0852-55

SEPTRA® TABLETS
(trimethoprim and sulfamethoxazole)

Each scored tablet contains
80 mg trimethoprim and
400 mg sulfamethoxazole.

CAUTION: Federal law prohibits
dispensing without prescription.

Glaxo Wellcome Inc.
Research Triangle Park, NC 27709
Rev. 2/96 596154

LOT
EXP

3 0173-0852-55 7

6505-00-501-6452

For indications, dosage, precautions, etc., see accompanying package insert.
Store at 15° to 25°C (59° to 77°F) in a dry place. Dispense in a tight, light-resistant container as defined in the U.S.P.
Made in U.S.A. U.S. Patent No. 4,209,513 (tablet)

100 Tablets NDC 0173-0853-55

SEPTRA® DS
Double Strength
(trimethoprim and sulfamethoxazole)

Each scored tablet contains
160 mg trimethoprim and
800 mg sulfamethoxazole.

CAUTION: Federal law prohibits
dispensing without prescription.
U.S. Patent No. 4,209,513 (Tablet)

Glaxo Wellcome Inc.
Research Triangle Park, NC 27709
595493

LOT
EXP

3 0173-0853-55 4

Store at 15° to 25°C (59° to 77°F) in a dry place. Dispense in tight, light-resistant container as defined in the U.S.P.
For indications, dosage, precautions, etc., see accompanying package insert.
Rev. 5/96 Made in U.S.A.

A

B

a. Indicate by letter which tablets the nurse would choose to administer to the client based on the order.

b. State why.

4. Order: Heparin 6,500 units subcut daily. (Express your answer in hundredths.)

Available:

NDC 63323-542-01

Heparin
Sodium Injection, USP

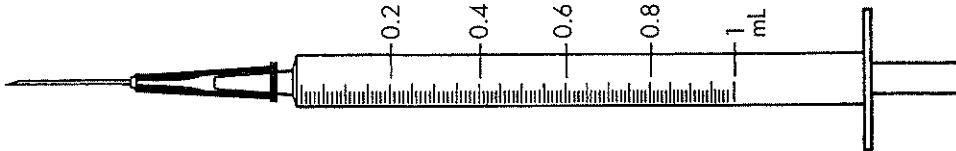
10,000
USP units per mL

For IV or SC use
Multi-Dose Vial
Rx only

NOT FOR LOCK FLUSH
From Parke-Davis Division, Wyeth
This container closure is not made
from natural rubber latex.
Sterile, Nonpyrogenic.
Each 10 mL vial contains sodium
heparin 10,000 USP units (1000 units/mL).
1.5 mg (15 units) preservative.
Water for Injection, USP, and sodium
hydroxide may have been added
for pH adjustment.
Usual Dosage: See insert.
Store at 20° to 25° C (68° to 77° F).
See USP Controlled Room
Temperature.
Frodoxplus Kabi USA, LLC
Schramm, IL 60174
42588J

25 Vials

3 63323-542-01 6



5. Order: Cipro 0.75 g IV q12h for 7 days.

Available: Cipro labeled
400 mg per 40 mL

6. Order: Amphotericin B 75 mg in 1,000 mL D5W to infuse over 6 hr daily. The reconstituted solution contains 50 mg per 10 mL.

Available:



- a. How many milliliters will the nurse add to the IV solution? _____
- b. The IV is to infuse in 6 hr. The administration set delivers 10 gtt/mL. At what rate in gtt/min should the IV infuse? _____
7. The recommended dose of Retrovir for adults with symptomatic HIV infection is 1 mg/kg infused over 1 hour q4h. Determine dosage for a client weighing 110 lb. _____

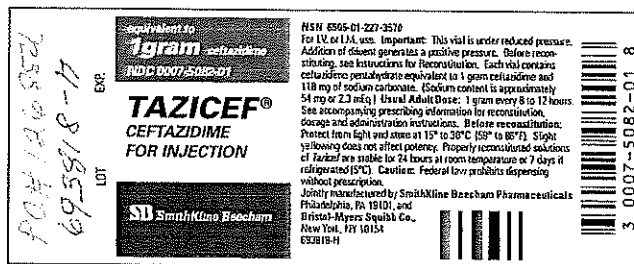
8. Order: Epivir 0.3 g p.o. every day.

Available: Epivir tablets labeled 150 mg

How many tablets will the nurse administer? _____

9. Order: Tazicef 0.25 g IV q12h.

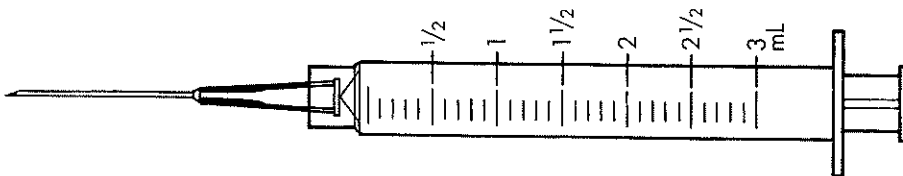
Available:



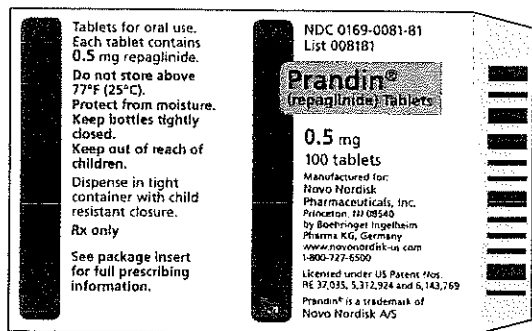
Directions for reconstitution state the following for IV infusion: 1-g vial, add 10 mL sterile water to provide 95 mg per mL; 2-g vial, add 10 mL sterile water to provide 180 mg per mL.

- a. Using the information provided, what concentration will the nurse prepare? _____

- b. How many milliliters will the nurse administer?



10. Order: Prandin 3 mg p.o. b.i.d.



How many of which tablets would be best to administer to the client?

11. Order: Transfuse 1 unit packed red blood cells (250 mL) over 3 hr. The administration set delivers 20 gtt/mL. At what rate in gtt/min should the IV infuse?

12. A client is receiving 500 mg of Flagyl IVPB q8h. The Flagyl has been placed in 100 mL D5W to infuse over 45 minutes. The administration set delivers 10 gtt/mL. At what rate in gtt/min should the IV infuse?

13. Calculate the infusion time for an IV of 1,000 mL of D5NS infusing at 60 mL/hr. Express time in hours and minutes.

14. The prescriber orders Septra Suspension 60 mg p.o. q12h for a child weighing 12 kg. The pediatric medication reference states that Septra Suspension contains trimethoprim (TMP) 40 mg and sulfamethoxazole (SMZ) 200 mg in 5 mL oral suspension, and the safe dosage of the medication is based on trimethoprim. The safe dosage is 6 to 12 mg/kg/day of TMP given q12h. Is the dosage ordered safe?

15. A medicated IV of 100 mL is to infuse at a rate of 50 mL/hr.

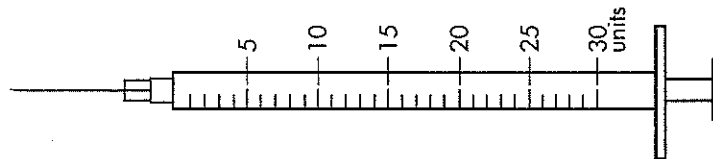
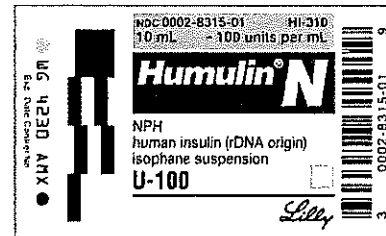
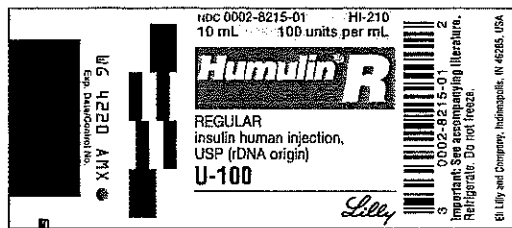
a. Determine the infusion time. _____

b. The IV was started at 10:00 AM.
When will it be completed?
(State time in military and
traditional time.) _____

16. A client is to receive 10 mcg/min
nitroglycerin IV. The concentration
of solution is 50 mg in 250 mL D5W.
What should the flow rate be (in mL/hr)
to deliver 10 mcg/min? _____

17. Order: Humulin Regular U-100 6 units and Humulin NPH U-100 16 units subcut at
7:30 AM.

What is the total units the nurse will
administer? _____



18. A dosage of 500 mg in a volume of 3 mL is to be diluted to 55 mL to infuse over 50
minutes. A 20-mL flush is to follow.

a. What is the dilution volume? _____

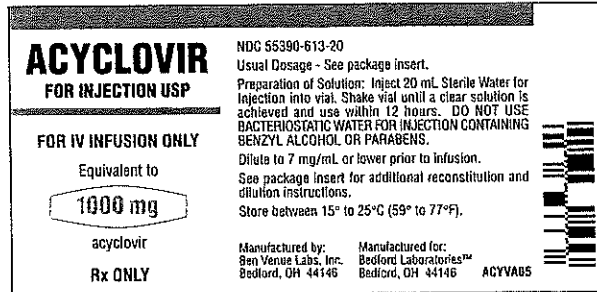
b. At what rate in gtt/min should the
IV infuse? (Administration set is a
microdrop.) _____

c. Indicate the rate in mL/hr. _____

19. Calculate the body surface area (BSA),
using the formula, for a child who weighs
102 lb and is 51 inches tall. Calculate
the BSA to the nearest hundredth. _____

20. Acyclovir IV is to be administered to a child who has herpes simplex encephalitis. The child weighs 13.6 kg and is 60 cm tall. The recommended dosage is 500 mg/m². Use the formula to calculate the BSA.

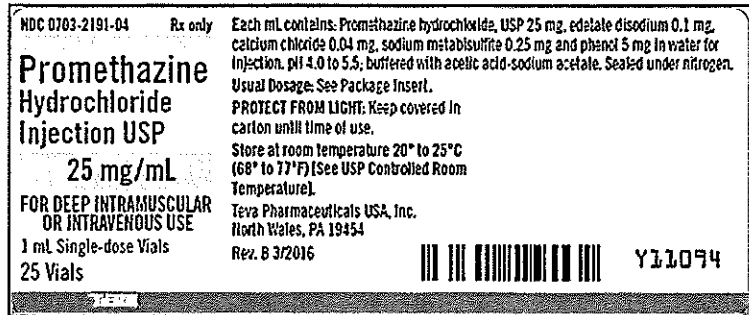
Available:



- a. What is the BSA? (Express your answer to the nearest hundredth.) _____
- b. What will the dosage be? _____
- c. The reconstituted Zovirax provides 50 mg per mL. Calculate the number of milliliters to administer. _____
21. Prepare the following strength solution:
2/5 strength Ensure Plus 250 mL. _____
22. A child weighing 21.4 kg has an order for 500 mg of a medication in 100 mL D5W q12h. The normal daily dosage range is 40 to 50 mg/kg. Determine if the dosage is within normal range, and state the course of action. _____
23. Calculate the amount of dextrose and NaCl in 2 L of D5 1/4 NS.
- a. Dextrose _____ g
- b. Sodium chloride _____ g
24. 500 mL D5W was to infuse in 3 hours at 28 gtt/min (28 macrogtt/min). The drop factor is 10 gtt/mL. After 1 1/2 hours, you notice 175 mL has infused.
- a. Recalculate the IV flow rate. _____
- b. Determine the percentage of change. _____
- c. State the course of action. _____
25. Order: Infuse D5W 500 mL with 20,000 units heparin at 25 mL/hr. Determine the following:
_____ units/hr

26. Order: Phenergan (promethazine hydrochloride) 25 mg IV push before surgery. The literature states: Do not give at a rate above 25 mg/min.

Available:

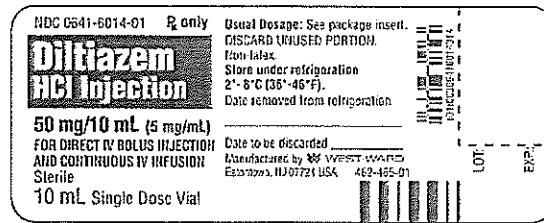


- a. How many milliliters will the nurse prepare? _____
- b. What is the number of minutes the medication should be administered? _____
27. Order: Morphine sulfate 80 mg in 250 mL of IV fluid to infuse at a rate of 20 mL/hr.

Determine the dosage in mg/hr the client is receiving. _____

28. Order: Diltiazem HCl (cardizem) 25 mg IV over 2 minutes.

Available:



- a. How many milliliters will the nurse add to the IV? _____
- b. How many milliliters will the nurse infuse per minute? _____
29. Order: Cipro 0.5 g p.o. q12h.

Available: Cipro tablets labeled 250 mg

How many tablets will be needed for 10 days of therapy? _____

30. Order: Lanoxin (digoxin) tablets 0.375 mg p.o. stat.

Available: Scored tablets labeled 125 mcg, 250 mcg, and 500 mcg.

- a. Which Lanoxin tablet(s) will the nurse use to prepare the dosage? _____
- b. How many tablets should the client receive? _____

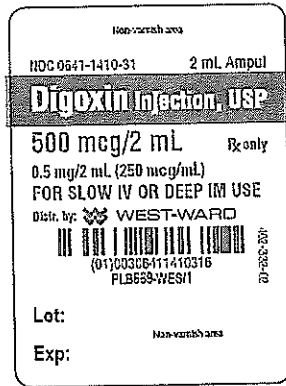
31. Order: Infergen 12 mcg subcut stat.

Available: Infergen 15 mcg per 0.5 mL.

How many milliliters will the nurse administer? _____

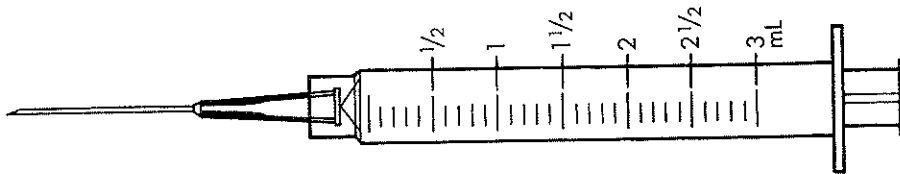
32. Order: Digoxin 0.125 mg IV daily for 7 days.

Available:



a. How many milliliters will the nurse administer? _____

b. Shade the dosage in on the syringe provided.



For problems 33-34, round weight to the nearest tenth as indicated.

33. The heparin protocol at an institution is: Bolus client with 80 units/kg of body weight and start drip at 14 unit/kg/hr. Using the heparin protocol, determine the following for a client weighing 242 lb.

a. Heparin bolus dosage _____

b. Infusion rate for the heparin IV drip _____

34. Order: 20 units/kg/hr heparin IV. The client weighs 88 kg.

How many units will the client receive per hour? _____

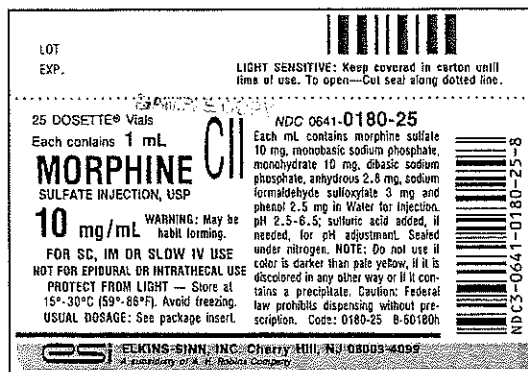
35. Order: Digoxin 0.375 mg IV push (infused slowly over 5 minutes).

Available: Digoxin 0.25 mg per mL

- a. How many milliliters should the nurse administer? _____
- b. At what rate in mL/min should the IV infuse? _____

36. Order: Morphine 8 mg IV q4h p.r.n. (infusion not to exceed 10 mg/4 min).

Available:



- a. How many milliliters will the nurse administer? _____
- b. How many minutes will it take for the IV to infuse? _____

37. Refer to the chart below and calculate the client's fluid intake in milliliters.

ORAL INTAKE	IV INTAKE
4 oz gelatin	100 mL
2 oz water	
12 oz apple juice	

What is the client's intake in mL? _____

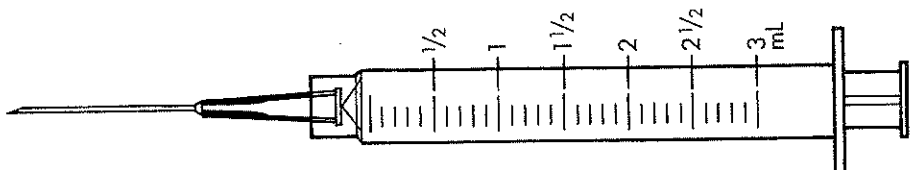
Refer to the Heparin Weight-Based Protocol provided below to answer question 38.

1. Bolus heparin at 80 units/kg.
2. Begin intravenous infusion of heparin at 18 units/kg/hr using 25,000 units heparin in 250 mL D5W for 1,000 units per mL.
3. Adjust intravenous heparin daily based on APTT results.
 - APTT less than 35 sec: Rebolus with 80 units/kg and increase rate by 4 units/kg/hr.
 - APTT 35-45 sec: Rebolus with 40 units/kg and increase rate by 2 units/kg/hr.
 - APTT 46-70 sec: **No change.**
 - APTT 71-90 sec: Decrease rate by 2 units/kg/hr.
 - APTT greater than 90 sec: **Stop heparin** infusion for 1 hour and decrease rate by 3 units/kg/hr.

38. Client weighs 187 lb. Determine the bolus dose of heparin and the initial intravenous rate of heparin. The APTT is reported as being 43 seconds. Determine the rebolus and adjust the intravenous rate based on the APTT results.
39. A client is ordered to begin Levophed (norepinephrine bitartrate) at 4 mcg/min to maintain blood pressure and titrate to maintain systolic blood pressure greater than 100 mm Hg to a maximum of 12 mcg/min. Available solution is Levophed 8 mg in 1,000 mL D5W. Develop a titration table from minimum to maximum dose in 2 mcg/min increments. (The IV pump is calibrated in whole mL.)
40. Versed (midazolam) 10 mcg/kg IV is ordered for sedation of a client. The client weighs 127.2 lb. How many mcg should the client receive? _____
41. Order: Kantrex 32 mg IV q8h for an infant.

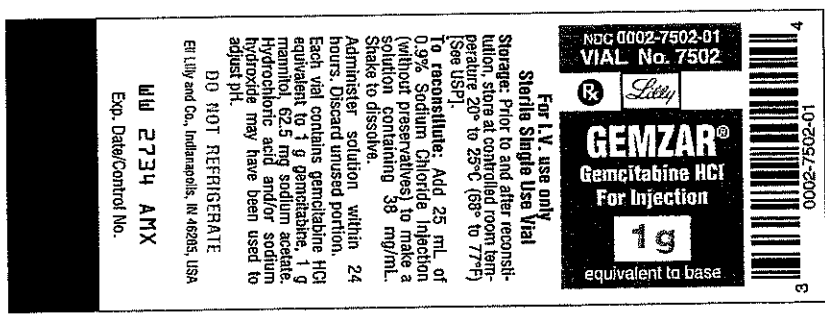
Available: Kantrex labeled 75 mg per 2 mL

- a. How many mL will the nurse add to the IV? _____
- b. Shade the dosage in on the syringe provided.



42. Order: Gemzar 900 mg IV weekly

Available:



How many mL will the nurse add to the IV? _____

43. Using a full strength hydrogen peroxide (3%) solution, prepare 180 mL of 1/3 strength hydrogen peroxide solution for wound care, using normal saline as the diluent.
Answer _____

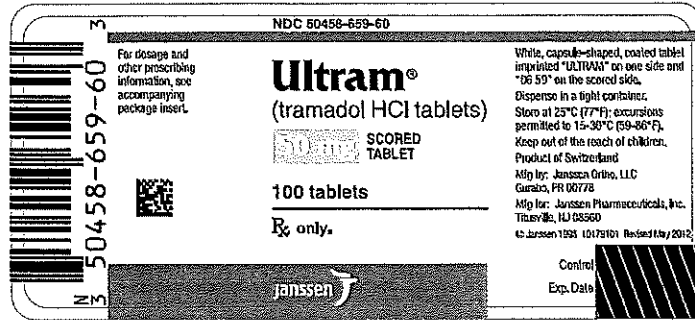
44. Refer to the following medication orders and correct them according to the ISMP published list of Error Prone Abbreviations and Symbols.

a. MS 4 mg sc q4h prn pain _____

b. Digoxin .375 mg p.o. qd _____

45. Order: Ultram 0.1 g po q6h prn for pain.

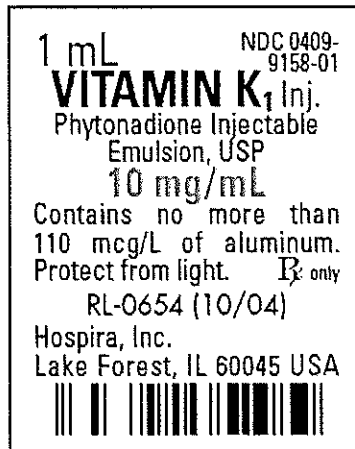
Available:



How many tab(s) will the nurse administer? _____

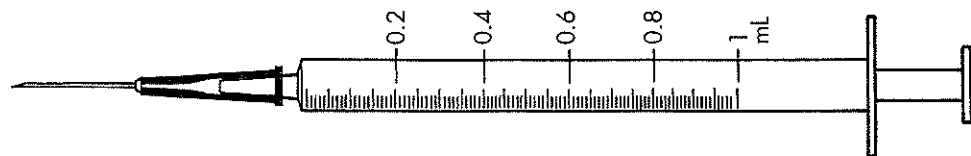
46. Order: Vitamin K 2.5 mg subcut stat.

Available:



a. How many mL will the nurse administer? _____

b. Shade the dosage on the syringe provided.



47. Order: Unasyn 1,550 mg IV q6h

Available: Refer to label and portion of the package insert.

NDC 0049-0014-83

Unasyn®
(ampicillin sodium/sulbactam sodium)

Sterile
3 g

For IM or IV use
equivalent to 2 g of ampicillin plus 1 g of sulbactam

Pfizer **Roerig**
Division of Pfizer Inc., NY, NY 10017

READ ACCOMPANYING PROFESSIONAL INFORMATION.
STORAGE Before Reconstitution: Store at or below 86°F (30°C).
USUAL ADULT DOSE: 1.5 g to 3 g every six hours, corresponding to 1 g ampicillin/0.5 g sulbactam in 2 g of reconstituted sulbactam. Should not exceed 4.0 per day.
FOR IV USE: First reconstitute with appropriate amount of diluent as cited in the package insert. Withdraw the entire contents of the vial and further dilute with a recommended diluent. Administer over 15-30 minutes.
STORAGE After Reconstitution: Depending on diluent used for reconstitution, solutions may be stored from 2-8 hours at room temperature or from 2-24 hours at 2-8°C. Do not refrigerate. Discard ampoules stored beyond periods recommended in accompanying professional information.
FOR IM USE: See RECONSTITUTION section of package insert.
CAUTION: Federal law prohibits dispensing without prescription.

Unasyn Vial Size	Volume of Diluent to Be Added	Withdrawal Volume
1.5 g	3.2 mL	4 mL
3 g	6.4 mL	8 mL

How many mL will the nurse administer? _____

48. Order: Morphine Sulfate 6 mg IM and Phenergan (promethazine HCl). 20 mg IM q6h prn for pain post operatively.

Available:

NDC 10019-178-82

Morphine Sulfate Injection, USP

10 mg/mL R only

FOR SC, IM OR SLOW IV USE
NOT FOR EPIDURAL OR INTRATHECAL USE

10 mL Multiple Dose Vial
Baxter

Each mL contains morphine sulfate 10 mg, monobasic sodium phosphate, monohydrate 10 mg, sodium sodium phosphate, anhydrous 2.8 mg, sodium formalinolate, polycyclic 3 mg and ethanol 2.5 mg in Water for Injection, pH 2.5-6.5; contains 200 mg/mL of resorcinol for pH adjustment. Sealed vials are sterile. Usual Dosage: See package insert. **PROTECT FROM LIGHT. Store at 15°-30°C (59°-86°F). Avoid freezing.** NOTE: Do not use if color is darker than pale yellow, if it is discolored in any other way or if it contains a precipitate.

NDC 0611-6065-25

Phenergan Injection
(Promethazine HCl Injection, USP) R only

50 mg/mL 25 x 1 mL Vials

FOR DEEP INTRAMUSCULAR USE ONLY

Each mL contains promethazine HCl, succinylate 50 mg, sodium chloride 0.5 mg, calcium chloride 0.5 mg, sodium hydroxide 0.5 mg and alcohol 5 mg in Water for Injection, pH 4.5-9.5; buffered with sodium acetate-sodium acetic acid.

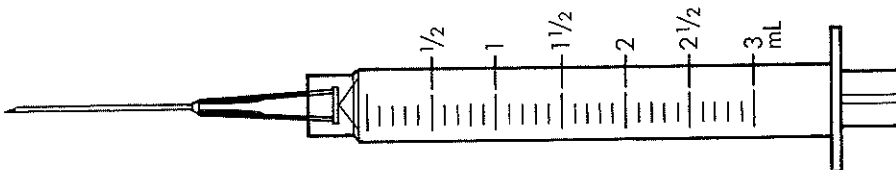
Usual Dosage: See package insert.

Manufactured by **WESTWARD**
Eastman, NJ 07724 USA

PROTECT FROM LIGHT Keep vials in cardboard carton. Store at 20°-25°C (68°-77°F) in a USP Controlled Room Temperature.

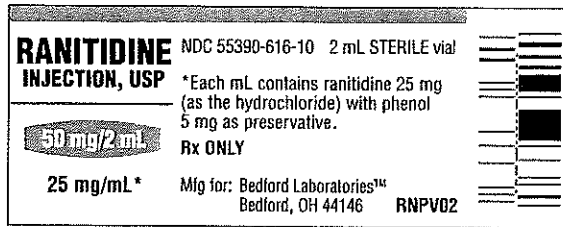
a. What is the total dose in mL the nurse will administer? _____

b. Shade the dosage on the syringe provided.



49. Order: Zantac (ranitidine) 15 mg IV q8h for a child weighing 33 lb. According to *The Harriet Lane Handbook*, the recommended dosage of ranitidine is 2-4 mg/kg/24hr ÷ q6-8hr.

Available:

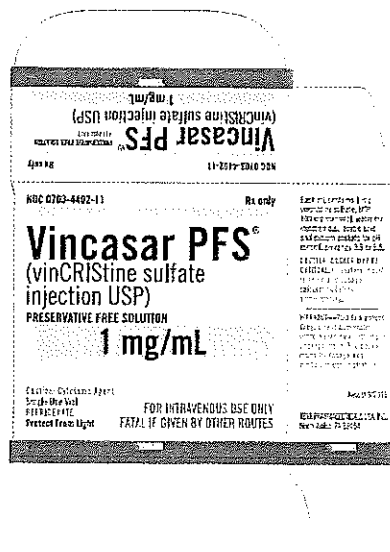


- a. Is the dosage ordered safe? (prove mathematically)
- b. If the dosage ordered is safe, calculate the mL the nurse would administer _____.

If not safe, explain why and describe what the nurse should do. _____

50. Order: Vincristine 4 mg IV q Thursday for a child who weighs 45 kg and is 155 cm. The recommended dose of Vincristine is 1.5-2 mg/m² in a single dose weekly. (Use the BSA Formula.) Round dosage to nearest tenth.

Available:



- a. Is the dose ordered safe? (Prove mathematically)
- b. If the dosage ordered is safe, calculate the mL you would administer _____.

If not safe, explain why and describe what you should do. _____

51. Calculate the I & O from 7 am–3 pm

A client has IV fluids D₅ ½ NS with 20 meq potassium chloride (KCl) infusing at 75 mL/hr at 7 am. An order is received to increase the IV fluid to 100 mL/hr at 10 am. The IV fluids are held for 1 hour while Ampicillin 1 g in 100 mL of 0.9% NS is infused from 12pm to 1pm. The client consumes the following:

Breakfast: 1½ glasses of cranberry juice (glass = 6oz)

2½ cups of tea (cup = 8oz)

Lunch: ¾ can of gingerale (can = 12oz)

½ bowl of broth (bowl = 6oz)

4oz ice cream

The client voids four times during the shift for 375 mL, 250 mL, 400 mL, and 300 mL of urine.

Intake _____ mL

Output _____ mL

52. A continuous heparin infusion is to begin at 15 units/kg/hr for a client weighing 82 kg. Available: 25,000 units in 250 mL D₅W. Calculate the mL/hr (the pump is capable of delivering in tenths of a mL).

_____ mL/hr

For questions 53-55, calculate the daily fluid maintenance and hourly IV rate using the following formula:

100 mL/kg/day for the first 10 kg of body weight

50 mL/kg/day for next 10 kg of body weight

20 mL/kg/day for each kg of body weight above 20 kg

53. Child weighs 32 kg

Infuse _____ mL of _____ mL/hr (pump delivers in tenths of a mL).

54. Infant weighs 2,500 g

Infuse _____ mL at _____ mL/hr (pump delivers in tenths of a mL)

55. Child weighs 78 lb (round weight to the nearest tenth)

Infuse _____ mL at _____ mL/hr (pump delivers in whole mL)

Answers on pp. 734-741