


WORK SHEET 

DIRECTIONS: The IV fluid or medication order is listed in each problem. Calculate the IV flow rates. Show your work. Follow your instructor's rules on rounding final answers.

1. The licensed prescriber orders 500 mL of dextran to be infused over 24 hours. How many milliliters per hour should the IV pump be programmed for? _____

2. A patient with genital herpes has an order for acyclovir 400 mg IV q 8 h. The acyclovir is dissolved in 100 mL 0.9% NS and is to be infused over 1 hour. How many milliliters per hour should the IV pump be programmed for? _____

3. Amikacin 80 mg is ordered IV q 12 h. The amikacin is dissolved in 100 mL D₅W and is to be infused over 30 minutes. With a tubing drop factor of 15 gtt/mL, how many drops per minute should be given? _____

4. The licensed prescriber orders 3000 mL of total parenteral nutrition (TPN) to be infused from 1900 to 0700. How many milliliters per hour should the IV pump be programmed for? _____

5. A patient with peptic ulcer disease has famotidine 20 mg in 100 mL D₅W ordered q 12 h. The famotidine is to be infused over 30 minutes. With a tubing drop factor of 10 gtt/mL, how many drops per minute should be given? _____

6. A malnourished patient has an order for 500 mL of fat emulsion 10% to be infused over 6 hours. How many milliliters per hour should the IV pump be programmed for? _____

7. An order is received to infuse penicillin G 4,000,000 units in 100 mL of D₅W q 12 h. The tubing drop factor is 10 gtt/mL. The penicillin should be infused over 60 minutes. How many drops per minute should be given? _____
8. A patient with hypokalemia has orders for potassium 60 mEq in 250 mL of D₅W. The facility's policy states to infuse the potassium at 20 mEq/h. How many milliliters per hour should the IV pump be programmed for? _____
9. A postoperative patient has ceftriaxone 1 g ordered q 8 h. The ceftriaxone is dissolved in 50 mL of D₅W and is to be infused over 30 minutes. The tubing drop factor is 60 gtt/mL. How many drops per minute should be given? _____
10. A STAT dose of piperacillin/tazobactam 3.375 mg in 100 mL of 0.9% NS is ordered to be given over 15 minutes. How many milliliters per hour should the nurse program the IV pump for? _____
11. A patient with sepsis has an order for cefazolin 1 g in 50 mL of D₅W IV over 15 minutes. The drop factor is 60 gtt/mL. How many drops per minute should be given? _____
12. A patient with a methicillin-resistant *Staphylococcus aureus* infection has ciprofloxacin 400 mg in 200 mL D₅W ordered. The pharmacy recommends that the ciprofloxacin be infused at a rate of 200 mg/h with an IV pump. How many milliliters per hour should the IV pump be programmed for? _____

200 mL 218136
NDC 0930-0930-37

Ciprofloxacin INJECTION, USP
(in 5% Dextrose)
400 mg (2 mg/mL)
400 mg in 200 mL 5% Dextrose

INFUSE OVER A PERIOD OF 60 MINUTES

13. A patient with anuria has an order for 1000 mL of 0.9% NS to be infused over 1 hour. The tubing drop factor is 10 gtt/mL. How many drops per minute should be given? _____

LOT EXP

— ○ ○ 281324
HOC 0218-0150-04
 0216050208 1

0.9% Sodium Chloride Injection USP 2

— 3

— 4

1000 mL 5

EACH 100 mL CONTAINS 900 mg Sodium Chloride USP
 pH 5.0 (4.5 TO 7.0) mEq/L Sodium Chloride 154
 Osmolality 308 mOsm/L (285-345) STERILE
 Nonpyrogenic Single Dose Container Additives may be
 present. Consult with pharmacist if available. When
 introducing additives use aseptic technique. Mix
 thoroughly. Do not store. Dosage intravenously as
 directed by a physician. See directions. Caution:
 Squeeze and inspect inner bag which contains product
 sterility. Discard if leaks are found. Must not be used
 if sterile container is damaged. Do not use unless solution is
 clear. Federal (USA) Law Prohibits Dispensing Without
 Prescription. Store Unit in Moisture Barrier Overwrap at
 Room Temperature (25°C/77°F) Until Ready to Use. Avoid
 Excessive Heat. See insert.

Baxter 8

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 DEERFIELD, ILL. 60015 USA
 MADE IN USA
 DISTRIBUTED BY CANADA BY
 BAXTER CORPORATION
 TORONTO, ONTARIO, CANADA VALISeal® CONTAINER
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— ○ ○

14. After surgery, a patient has an order for 500 mL of D₅W 0.45 NS to be infused over 4 hours. How many milliliters per hour should the IV pump be programmed for? _____

LOT EXP

— ○ ○ 281073
HOC 0338-0150-03 1

5% Dextrose and 0.45% Sodium Chloride Injection USP 2

— 3

500 mL 4

EACH 100 mL CONTAINS 5 g Dextrose Monohydrate USP 450 mg Sodium
 Chloride USP (M 43 (13.0 to 13.5) mEq/L Sodium 77 Chloride 77
 Hyperosmotic Osmolality 408 mOsm/L (345-465) STERILE
 Nonpyrogenic Single Dose Container Additives may be present.
 Consult with pharmacist if available. When introducing additives use
 aseptic technique. Mix thoroughly. Do not store. Dosage
 intravenously as directed by a physician. See directions. Caution:
 Squeeze and inspect inner bag which contains product sterility.
 Discard if leaks are found. Must not be used if sterile container
 is damaged. Do not use unless solution is clear. Federal (USA) Law Prohibits
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15. After a total hip replacement, a patient has an order for ketorolac 60 mg IV q 6 h over 15 minutes. The ketorolac is diluted in 25 mL of D₅W. The tubing drop factor is 15 gtt/mL. How many drops per minute should be given? _____

16. A terminal patient has an order for hydromorphone at 0.5 mg/h by continuous drip. Given a bag with a concentration of 20 mg hydromorphone in 100 mL of D₅W, how many milliliters per hour should the IV pump be programmed for? _____

17. A patient with peptic ulcer disease has an order for famotidine 20 mg IV q 12 h over 15 minutes. The famotidine is diluted in 25 mL of D₅W. The tubing drop factor is 20 gtt/mL. How many drops per minute should be given? _____

18. A patient with alcoholism has an order for magnesium sulfate 2 g in 100 mL of D₅W. The pharmacy recommends that the magnesium be infused at a rate of 1 g/h with an IV pump. How many milliliters per hour should the IV pump be programmed for? _____
19. A patient with aplastic anemia has an order for 1 unit of packed red blood cells (250 mL) to be infused. The facility's policy states to infuse the blood over 4 hours. The tubing drop factor is 20 gtt/mL. How many drops per minute should be given? _____
20. A patient has an order for Ofirmev 1000 mg in 100 mL of normal saline over 15 minutes for pain. How many milliliters per hour should be given? _____
21. A patient with hypokalemia has an order for 40 mEq of potassium to be infused intravenously now. The potassium is diluted in 200 mL of D₅W. The facility's policy states to infuse IV potassium at a rate of 10 mEq/h. How many milliliters per hour should the IV pump be programmed for? _____
22. A patient with Crohn's disease has an order for TPN from 2200 to 0800. The total volume of the TPN bag is 1350 mL. How many milliliters per hour should the IV pump be programmed for? _____
23. A patient with hypomagnesemia has an order for magnesium sulfate 2 g in 50 mL D₅W IV. The pharmacist recommends that the magnesium be infused at 1 g/h. How many milliliters per hour should the IV pump be programmed for? _____
24. A patient with herpes simplex virus 1 has acyclovir 700 mg in 200 mL of D₅W ordered to infuse over 1 hour. How many milliliters per hour should the IV pump be programmed for? _____
25. A patient with anasarca has albumin 25% 100 mL ordered over 30 minutes. The tubing drop factor is 20 gtt/mL. How many drops per minute should be given? _____

NDC 0053-7680-33

25%

100 mL

Albuminar®-25
Albumin (Human)
USP 25%

For Intravenous
Administration Only.

26. After the patient in question 25 receives her albumin, the licensed prescriber orders furosemide 100 mg in 50 mL of D₅W to be given over 30 minutes. How many milliliters per hour should the IV pump be set for? _____
27. A patient with multiple antibiotic allergies has a urinary tract infection. Amikacin 250 mg IV q 8 h is ordered over 1 hour. The amikacin is dissolved in 200 mL of D₅W. The drop factor is 20 gtt/mL. How many drops per minute should be given? _____
28. After surgery, a patient is hemorrhaging and has Amicar 8 g over 8 hours ordered. The Amicar is diluted in 500 mL of 0.9% NS. How many milliliters per hour should the IV pump be set for? _____
29. A patient with rapid atrial flutter has an order for diltiazem at 5 mg/h. The diltiazem concentration is 200 mg in 250 mL of 0.9% NS. How many milliliters per hour should the IV pump be set for? _____
30. A malnourished patient has folic acid 1 mg in 50 mL of 0.9% NS ordered to infuse over 30 minutes. An IV pump is not available. The nurse chooses a tubing with a 60 gtt/mL drop factor. How many drops per minute should be given? _____
31. Vancomycin 1250 mg in 250 mL of D₅W is ordered to infuse over 2 hours. How many milliliters per hour should the IV pump be set for? _____
32. A patient has a blood urea nitrogen level of 52 with oliguria and a blood pressure of 90/50 mm Hg. The licensed prescriber orders 1000 mL of 0.9% NS to be infused over 10 hours. How many milliliters per hour should the IV pump infuse? _____
33. Using the Parkland formula, the fluid requirements for a patient with severe burns reveal that 9600 mL should be infused over 8 hours. How many milliliters per hour should the IV pump be set for? _____
34. A patient has IV immunoglobulin G (IgG) 100 mL ordered over 3 hours. How many milliliters per hour should the IV pump be set for? _____

35. A patient with rapid atrial fibrillation has an order for diltiazem at 20 mg/h. The diltiazem concentration is 100 mg in 100 mL of 0.9% NS. How many milliliters per hour should the IV pump be set for? _____

36-38. *Patient Situation:* A patient is admitted with osteomyelitis of the right foot. The patient reports right foot pain 6/10 and has a temperature of 102.4° F, heart rate of 114 beats per minute, respiratory rate of 26 breaths per minute, and a blood pressure of 100/60. The patient weighs 60 kg. The white blood cell count is $15.2 \text{ cells} \times 10^3 / \mu\text{L}$ ($15.2 \times 10^9 / \text{L}$). The nurse is preparing the initial dose of antibiotic by calculating the rate of administration in milliliters per hour.

Logout

Pt name: Ray Davis		Room: 3201		Allergies: be stings					
DOB: 06/14/19XX		Admit date: 09/30/20XX		Attending: Dr. Phillips					
MRN: 678				Close X					
MAR									
All Scheduled PRN									
◀		0800	0900	1000	1100	1200	1300	▶	
Linezolid (ZYVOX) : 600 mg/300 mL : Dose 600 mg : Intravenous every 12 hours : over 2 hours									
		Now							

NDC 0009-5140-01
Rx only

ZYVOX®
(linezolid) injection
600 mg/300 mL


Store at 25°C (77°F); excursions permitted to 15-30°C (59-86°F) [see USP Controlled Room Temperature]. Do not freeze. Each mL contains:

linezolid	2 mg
dextrose, USP	60.24 mg
sodium citrate, USP	1.64 mg
citric acid, USP	0.85 mg
water for injection, USP	qs


pH adjusted to 4.6 with sodium hydroxide or hydrochloric acid. Sterile and nonpyrogenic. Single dose container.
LOT 09C07Z.15

Do not use in series connections. For intravenous administration Check for leaks by squeezing container. If leaks are found, discard, as sterility may be impaired. Linezolid is sensitive to light. Retain overwrap prior to use. **DOSAGE AND USE:** See accompanying prescribing information.

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NY, NY 10017

577025 PIZ 0703 01-70-25-0030
03110300305140016

OTHER  EXP 03/2012

Complete the following statement by selecting from the lists of options provided.

The information needed to calculate the rate of administration includes _____,
_____, and _____.

Options	
Vancomycin-resistant enterococci	How many milliliters per hour
linezolid 600 mg	600 mg/300 mL
over 2 hours	300 mL
every 12 hours	

ANSWERS ON PP. 469-470 AND 471-474.