Proficiency Test:

PROFICIENCY TEST   **Basic IV Problems**

Name: _____

There are 14 questions related to IV and IVPB and enteral feeding calculations. Answers are given in Appendix A. Round the infusion rate/drip rate to the nearest whole number.

1. Order: 1000 mL D5NS; run 150 mL/hour IV
   Supply: IV bag of 1000 mL D5NS
   a. Approximately how many hours and minutes will the IV run?
   b. How many drops per minute (macrodrip 10 gtt/mL or microdrip 60 gtt/mL)?
   c. What size tubing will you use?

2. Order: 100 mL LR 12 NOON–6 PM IV
   a. What are the drops per minute (macrodrip 10 gtt/mL or microdrip 60 gtt/mL)?
   b. What size tubing will you use?

3. Order: 150 mL NS IV over 3 hours
   Supply: bag of 250 mL NS for IV and macrotubing, 15 gtt/mL; microtubing, 60 gtt/mL
   a. What would you do to obtain 150 mL NS?
   b. What are the drops per minute?
   c. What size tubing will you use?

4. Order: 500 mL D5W IV KVO. Solve for 24 hours. An infusion pump is available. What should be the setting on the infusion pump?

5. Order: doxycycline 100 mg IVPB daily
   Supply: 125 mL/D5W to infuse over 1 hour. Macrodrip tubing, 10 gtt/mL.
   a. How many drops per minute?
   b. What is the rate on an infusion pump?

6. Order: aminophylline 500 mg in 250 mL D5W to run over 8 hours IV
   Available: vial of aminophylline labeled 1 g in 10 mL; microdrip tubing
   a. How much aminophylline is needed?
   b. What is the drip rate?

7. A client is receiving a primary IV at the rate of 125 mL/hour. The doctor orders cefoxitin 1 g in 75 mL D5W q6h to run over 1 hour. Calculate the 24-hour parenteral intake.

8. Order: 1000 mL D51/2NS to run at 90 mL/hour; infusion pump available
   a. What will be the pump setting?
   b. Approximately how many hours and minutes will the IV run?

9. A healthcare provider orders aminophylline 0.5 g in 500 mL. How many mg of aminophylline is in 1 mL? (Hint: Convert g to mg; take fluid and divide by amount of drug.)

10. Order: trimethoprim and sulfamethoxazole 5 mL IVPB q6h
    Supply: vial of 5 mL; one 5-mL vial per 75 mL D5W run over 60 to 90 minutes. The main IV line is connected to an infusion pump. What will you do?
    a. State the type and amount of IV fluid you would use and the time for infusion.
    b. How would you program the infusion pump?

PROFICIENCY TEST — Basic IV Problems (*continued*)

11. Prepare ¾ strength Isocal. Total volume is 150 mL. How much Isocal is to be mixed with how much water?

    112.5 Isocal + 37.5 H_2O

12. Prepare ½ strength Vivonex. Total volume is 500 mL. How much Vivonex is to be mixed with how much water?

    250 / 250

13. Order: cefazolin 2 g in 100 mL D5W IVPB q4h, infuse over 30–60 minutes
    Supply: IVPB dilution of cefazolin. Reconstitute with 50 mL to yield 1 g in 50 mL.

    0.25@
    2000 mg/100 mL
    20 mg/1 mL

    a. State the amount of IV fluid you would use. 100 mL

    b. What is the rate on the infusion pump? (Calculate for 30 minutes and 60 minutes.)

    100/30 = 3.3 mL/min × 60 = 100 mL/hr   Ans 200 mL/hr

14. An IV solution of 1000 mL is to infuse at 100 mL/hour. The infusion starts at 10 AM. When will the infusion be completed?

    8 PM 2000

    10 hr

    Supply
    1000 mg/50 mL
    20 mg/1 mL

= 15 mL/hour

SOLUTION FOR BOTH
PROPORTION METHODS

$125 \times 15 = 125x$

$\frac{1875}{125} = x$

15 mL/hour = x

How many hours will the IV run?

$\frac{\text{Number of milliliters}}{\text{Number of milliliters per hour}}$

$\frac{125\,\text{mL}}{15\,\text{mL/hour}} = 8.3$ (8 hours 18 minutes)

SELF-TEST 1   Infusion Rates

Solve the following problems. Answers appear at the end of this chapter. Round the rate to the nearest whole number.

$\left(\frac{800}{25000}\right) \times 250 = \left(\frac{8\,\text{mL/hr}}{}\right)$ for 1hr

1. Order: heparin 800 units/hour IV
   Supply: infusion pump, standard solution of 25,000 units in 250 mL D5W

   a. What is the rate?
   b. How many hours and minutes will the IV run?

2. Order: acyclovir 500 mg in 100 mL D5W IV over 1 hour
   Supply: infusion pump, acyclovir 500 mg in 100 mL D5W

   What is the rate?

   100 mL/hr   for 1hr

3. Order: aminocaproic acid 24 g over 24 hour IV
   Supply: infusion pump, aminocaproic acid 24 g in 1000 mL D5W

   What is the rate?

   1000 mL/hr

   1000/24

   = 41.7 mL/1hr

Self Test 1:

LF-TEST 1   Infusion Rates (continued)

1. Order: diltiazem 10 mg/hour IV

Supply: infusion pump, diltiazem 125 mg in 100 mL D5W $\left(\dfrac{10}{125}\right) \times 100$ *8 mL/hr*

What is the rate?

5. Order: furosemide infuse 4 mg/hour

Supply: infusion pump, furosemide 100 mg in 100 mL D5W   *4 mL/hr   for 25 hr*

What is the rate?

10%/25 hr

6. Order: regular insulin 15 units/hour IV

Supply: infusion pump, standard solution of 125 units in 250 mL NS   *30 u/hr for 4.2 hrs*

a. What is the rate?

b. How many hours and minutes will this IV run?   *16.7 hr or 16 H 42*

7. Order: nitroglycerin 50 mg in 250 mL D5W over 24 hour via infusion pump   *10.42 mL/hr*

What is the rate?   *25/.24 =*

8. Order: heparin 1200 units/hour IV

Supply: infusion pump, standard solution of 25,000 units in 500 mL D5W   *24 mL/hr or 20.83 hrs   or 20 H 48*

a. What is the rate?

b. How many hours and minutes will the IV run?

9. Order: regular insulin 23 units/hour IV   *1 u/1 mL conc*

Supply: infusion pump, standard solution of 250 units in 250 mL NS   *23 mL/hr*

a. What is the rate?

b. How many hours and minutes will the IV run?   *for 10.9 hrs or 10 H 54*

10. Order: streptokinase 100,000 international units/hour for 24 hour IV

Supply: infusion pump, standard solution of 750,000 international units in 250 mL NS   *750 000/250 = 3000 u/n (conc.)*

What is the rate?

$$\dfrac{100.000}{3000} = 33.33\ mL$$ *1.4 mL/hr*

$$\overline{24 hr}$$ *for 24 hrs*

mg/minute—Calculation of Rate

The order will indicate the amount of drug added to IV fluid and also the amount of drug to administer. These medications are administered through an IV infusion pump in milliliters per hour.

Note: The dimensional analysis method will combine all of the calculation steps into one equation.