Infusion Rate Calculations

1. The order reads: Over the next 4 hours, infuse 500 mL of 5% Dextrose in normal saline. Add 20 MEq of KCI to solution. You know that the IV tubing is calibrated to deliver 10 gtt/mL. In drops per minute, what is the rate of flow? (*Answer in gtt/min rounded to the nearest whole number*).

   a. 12 gtt/min
   b. 21 gtt/min
   c. 31 gtt/min
   d. 40 gtt/min

2. The doctor orders an IV infusion of D5W 1000 mL to infuse over the next 4 hours. The IV tubing that you are using delivers 20 gtt/mL. What is the correct rate of flow? (*Answer in gtt/min rounded to the nearest whole number*).

   a. 42 gtt/min
   b. 60 gtt/min
   c. 72 gtt/min
   d. 83 gtt/min

3. A 500 cc solution of D5NS with 20,000 units of Heparin is infusing at 20 mL per hour. The IV set delivers 60 gtt per cc. How many units of Heparin is the patient receiving each hour?

   a. 400 units/h
   b. 600 units/h
   c. 800 units/h
   d. 900 units/h

4. The order reads: Over the next 4 hours, infuse 500 mL of 5% Dextrose in normal saline. Add 20 MEq of KCI to solution. You know that the IV tubing set is calibrated to deliver 10 gtt/mL. In drops per minute, what is the correct rate of flow? (*Answer in gtt/min rounded to the nearest whole number*).

   a. 17 gtt/min
   b. 21 gtt/min
   c. 27 gtt/min
   d. 33 gtt/min

5. In checking your patient's 10 am medications, you notice that you have orders to infuse 50 mg of Chloramphenicol in 100 mL of 5% Dextrose in water over 30 minutes. The IV tubing delivers 15 gtt/mL. What is the correct rate of flow?

   a. 50 gtt/min
   b. 40 gtt/min
   c. 30 gtt/min
   d. 60 gtt/min

6. A female patient is receiving Hartmann's solution at a rate of 125 mL/h. How much solution will she receive over 3 hours?

   a. 500 mL
   b. 375 mL
   c. 250 mL
   d. 125 mL

7. A boy is to be given dextrose 5% via an infusion pump. If the pump is set at 60 mL/h, how much dextrose will he receive in 2.5 hours (2 hours and 30 minutes)?

   a. 75 mL
   b. 150 mL
   c. 175 mL
   d. 125 mL

8. Half a litre of normal saline with 2 g potassium chloride is to be given a patient I.V. How long will this take if the infusion pump is set at 75mL/h?

   a. 6 hours and 40 minutes
   b. 3 hours and 20 minutes
   c. 7 hours and 15 minutes
   d. 5 hours and 30 minutes

9. What is the required flow rate of a volumetric infusion pump to deliver 500 mL of Hartmann's solution over 7 hours? (*Answer in mL/h rounded to the nearest whole number*).

   a. 36 mL/h
   b. 71 mL/h
   c. 87 mL/h
   d. 93 mL/h

10. What is the required flow rate of a volumetric infusion pump to deliver one litre of dextrose 4% in 1/5 normal saline over 16 hours? (*Answer in mL/h rounded to the nearest whole number*).

    a. 126 mL/h
    b. 86 mL/h
    c. 63 mL/h
    d. 56 mL/h

11. What is the correct setting for a burette pump to administer 40 mL of fluid containing 600 mg of penicillin in 20 minutes? (*Answer in mL/h rounded to the nearest whole number*).

    a. 120 mL/h
    b. 80 mL/h
    c. 60 mL/h
    d. 40 mL/h

12. What is the correct setting for a burette pump to administer 60 mL of fluid containing 75 mg of ranitidine in 35 minutes? (*Answer in mL/h rounded to the nearest whole number*).

    a. 75 mL/h
    b. 113 mL/h
    c. 96 mL/h
    d. 103 mL/h

13. An infant is ordered 150 mL of Hartmann's solution to run over 6 hours. The microdrip delivers 60 drops per millilitre. What is the required drip rate in drops per minute? (*Round answer to the nearest whole number*).

    a. 25 gtt/min
    b. 3 gtt/min
    c. 35 gtt/min
    d. 20 gtt/min

14. An adult female is to be given half a litre of normal saline over 5 hours using an I.V. set which gives 20 drops per millilitre. What is the required drip rate in drops per minute? (*Round answer to the nearest whole number*).

    a. 27 gtt/min
    b. 33 gtt/min
    c. 37 gtt/min
    d. 43 gtt/min

15. An anemic patient must be given one unit of packed cells over 4 hours. The unit of packed cells holds 250 mL. The I.V. set delivers 20 drops per mL. What is the required drip rate in drops per minute for the blood infusion? (*Round answer to the nearest whole number*).

    a. 28 gtt/min
    b. 18 gtt/min
    c. 21 gtt/min
    d. 24 gtt/min

16. One unit of packed red cells is to be run over 3 hours. The unit of packed cells contains 350 mL. An I.V. set which emits 15 drops/mL is to be used. What is the required drip rate in drops per minute for the blood infusion? (*Round answer to the nearest whole number*).

    a. 29 gtt/min
    b. 33 gtt/min
    c. 27 gtt/min
    d. 36 gtt/min

17. A patient has two intravenous lines inserted. One line is running at 45 mL/h while the other one at 30 mL/h. What volume of fluid would the patient receive in a 24 hour period?

    a. 900 mL
    b. 1800 mL
    c. 2400 mL
    d. 2000 mL

18. A patient is to receive half a litre of dextrose 5% I.V. A flask is set up at 0800 hours running at 60 mL/h. After 5 hours the rate is increased to 80 mL/h. At what time will the I.V. be completed?

    a. 1230 h
    b. 1530 h
    c. 1640 h
    d. 1750 h

19. A male patient is receiving dextrose 5% at a rate of 55 mL/h. How much fluid will he receive in 2 hours?

    a. 55 mL
    b. 120 mL
    c. 84 mL
    d. 110 mL

20. 1.5 litres of dextrose 5% in 1/5 normal saline is to be given to a patient over 20 hours. What is the required flow rate setting for a volumetric infusion pump?

    a. 80 mL/h
    b. 75 mL/h
    c. 70 mL/h
    d. 65 mL/h

21. One unit of packed cells is to be given a patient over 3 hours. The giving set delivers 20 drops/mL. What is the required drip rate in drops/min if one unit of packed cells contains 250 mL? (*Answer to the nearest whole number*).

    a. 14 gtt/min
    b. 26 gtt/min
    c. 28 gtt/min
    d. 36 gtt/min

22. At 0700 hours, half a litre of dextrose 5% is set up to run at 40 mL/h. At what time will the flask be finished?

    a. 1740 h
    b. 1930 h
    c. 2100 h
    d. 2230 h

23. The order is for D5W 1000 mL IV over a 24 hour period. The drop factor is 60 gtt/mL. What is the correct flow rate? (*Answer to the nearest whole number*).

    a. 42 gtt/min
    b. 41 gtt/min
    c. 36 gtt/min
    d. 60 gtt/min

24. The order is for D5W IV infusing at 150 mL/h for 2 hours? The drop factor is 60 gtt/mL. What is the total volume that will be required?

    a. 150 mL
    b. 75 mL
    c. 300 mL
    d. 425 mL

25. The order is for D5 Lactated Ringer's 800 mL at 125 mL/h. The drop factor is 15 gtt/mL. Calculate the infusion time in hours and minutes.

    a. 6 hrs. 24 min
    b. 6 hrs. 40 min
    c. 6 hrs. 12 min
    d. 4 hrs. 12 min

Answer Key to Infusion: Quiz 4

Q01	b	(500 mL x 10 gtt/mL) ÷ (4 hrs. x 60 min) = 20.83 --> 21 gtt/min
Q02	d	(1000 mL x 20 gtt/mL) ÷ (4 hrs. x 60 min) = 83.33 --> 83 gtt/min
Q03	c	(20,000 units ÷ 500 cc) x 20 mL/h = 800 units/h
Q04	b	(500 mL x 10 gtt/mL) ÷ (4 hrs. x 60 min) = 20.83 --> 21 gtt/min
Q05	a	(100 mL x 15 gtt/mL) ÷ 30 min = 50 gtt/min
Q06	b	125 mL/h x 3 hrs. = 375 mL
Q07	b	60 mL/h x 2.5 hrs. = 150 mL
Q08	a	500 mL ÷ 75 mL/h = 6 2/3 hours or 6 hours and 40 minutes
Q09	b	500 mL ÷ 7 hrs. = 71.4 --> 71 mL/h
Q10	c	1000 mL (1 litre) ÷ 16 hrs. = 62.5 --> 63 mL/h
Q11	a	40 mL x (60 min ÷ 20 min) = 120 mL/h
Q12	d	60 mL x (60 min ÷ 35 min) = 102.9 -->103 mL/h
Q13	a	(150 mL x 60 gtt/mL) ÷ (6 hrs. x 60 min) = 25 gtt/min
Q14	b	(500 mL x 20 gtt/mL) ÷ (5 hrs. x 60 min) = 33.3 --> 33 gtt/min
Q15	c	(250 mL x 20 gtt/mL) ÷ (4 hrs. x 60 min) = 20.8 --> 21 gtt/min
Q16	a	(350 mL x 15 gtt/mL) ÷ (3 hrs. x 60 min) = 29.1 --> 29 gtt/min
Q17	b	(45 mL/h + 30 mL/h) = 75 mL/h x 24 hrs. = 1800 mL
Q18	b	60 mL/h x 5 hrs. = 300 mL; 500 mL - 300 mL = 200 mL remaining; 200 mL ÷ 80 mL = 2.5 hours to use up; total time = 5 + 2 hours and 30 minutes plus 0800 = 1530 h is when I.V. is completed
Q19	d	55 mL/h x 2 hrs. = 110 mL
Q20	b	1.5 L x 1000 =1500 mL; 1500 mL ÷ 20 hrs. = 75 mL/h
Q21	c	(250 mL x 20 gtt/mL) ÷ (3 hrs. x 60 min) = 27.7 --> 28 gtt/min
Q22	b	500 mL ÷ 40 mL/h = 12.5 hours or 12 hours and 30 minutes; 0700 h + 12 hrs. 30 minutes = 1930 h
Q23	a	(1000 mL x 60 gtt/mL) ÷ (24 hrs. x 60 min) = 41.7 --> 42 gtt/min
Q24	c	150 mL/h x 2 hrs. = 300 mL
Q25	a	800 mL ÷ 125 mL/h = 6.4 hours or 6 hours and 24 minutes