Students must review related reading in dosage calculation text prior to attempting to calculate practice questions. All content covered in NR20 and NR33/36 lecture and clinical are source questions for the exam including IV calculations, conversions, weight-adjusted dosing for PO, IV, IM routes.

NOTE: answers must include specific measures: i.e.; units, ml, ml, tabs, ml/hr, gtts/min etc. in order to receive credit for a correct answer. Record your results in the black space available.

If the calculation is for an infusion pump, remember that the infusion pump can be programmed to the nearest tenth in the case of administration of medicated drips.

1. ORDER: Lopressor 25 mg PO
   AVAILABLE: Lopressor 50 mg/tablet
   ADMINISTER: _________________________________

2. ORDER: Lopressor 2.5 mg IV push
   AVAILABLE: Lopressor 5 mg/5 ml’s
   ADMINISTER: _________________________________

3. ORDER: 1000 ml 0.45% NS at 42 ml/hr
   AVAILABLE: 60-gtts/ml administration set
   ADMINISTER: _________________________________

4. ORDER: Fortaz 1 gm in 100 ml D5W infused over 30 minutes
   AVAILABLE: programmed on infusion pump
   ADMINISTER: _________________________________

5. ORDER: Kdur 40 meq PO
   AVAILABLE: Kdur 20 meq PO
   ADMINISTER: _________________________________

6. ORDER: Lanoxin 0.375mg IV push
   AVAILABLE: 250-mcg/1 ml
   ADMINISTER: _________________________________
7. ORDER: Dilantin elixir 200 mg PO
   AVAILABLE: Dilantin elixir 125mg/5 ml’s
   ADMINISTER: ________________________________ ________________________________ ______

8. ORDER: Heparin 1450 units/hour
   AVAILABLE: Heparin 25000 units in 250 ml D5W administered on an infusion pump
   ADMINISTER: ________________________________ ________________________________ ______

9. ORDER: 1000 ml 0.45 % NS q 6 hours
   AVAILABLE: administered on an infusion pump
   ADMINISTER: ________________________________ ________________________________ ______

10. ORDER: Vasotec 1.25 mg /50 ml’s D5W over 15 minutes
    AVAILABLE: 12-gtts/ ml administration set
    ADMINISTER: ________________________________ ________________________________ ______

11. ORDER: Claforan 2 gm in 100 ml D5W infused over 20 minutes
    AVAILABLE: programmed on infusion pump
    ADMINISTER: ________________________________ ________________________________ ______

12. ORDER: Hyperstat 2 mg/kg IV push
     Client weighs 165 lbs.
     AVAILABLE: 15 mg/ml
     How many milligrams would you administer? ________________________________
     How many milliliters would you administer? ________________________________

13. ORDER: Hyperstat 1 mg/kg IV push
     Client weighs 165 lbs.
     AVAILABLE: 15 mg/ml
     How many milligrams would you administer? ________________________________
     How many milliliters would you administer? ________________________________

14. ORDER: Lidocaine 1mg/kg IV push
     Client weighs 154 lbs.
     AVAILABLE: 15 mg/ml
     How many milligrams would you administer? ________________________________
     How many milliliters would you administer? ________________________________
15. ORDER: Lidocaine 1mg/kg IV push  
Client weighs 220 lbs.  

AVAILABLE: 10 mg/ml  

How many milligrams would you administer? ________________________________  

How many milliliters would you administer? ________________________________  

16. ORDER: Heparin 950 units/hour  

AVAILABLE: Heparin 25000 units in 250 ml D5W administered on an infusion pump  

ADMINISTER: ________________________________  

17. ORDER: Heparin 700 units/hour  

AVAILABLE: Heparin 25000 units in 500 ml D5W administered on an infusion pump  

ADMINISTER: ________________________________  

18. ORDER: Heparin 1200 units/hour  

AVAILABLE: Heparin 25000 units in 250 ml D5W administered on an infusion pump  

ADMINISTER: ________________________________  

19. ORDER: Dilantin elixir 300 mg PO  

AVAILABLE: Dilantin elixir 125mg/5 ml's  

ADMINISTER: ________________________________  

20. ORDER: Heparin 1250 units/hour  

AVAILABLE: Heparin 25000 units in 500 ml D5W administered on an infusion pump  

ADMINISTER: ________________________________  

21. ORDER: 1000 ml D5W q 12 hours  

AVAILABLE: administered on an infusion pump  

ADMINISTER: ________________________________  

22. ORDER: nitroglycerin 0.4 mg SL  

AVAILABLE: nitroglycerin grains 1/150/tablet, grains 1/200 /tablet, grains 1/100 /tablet  

Which concentration of nitroglycerin would you select? ________________________________  

What would you administer? ________________________________  

23. ORDER: Vasotec 1.25 mg /50 ml’s D5W over 15 minutes
   AVAILABLE: 10-gtts/ ml administration set
   ADMINISTER: ________________________________

24. ORDER: levothyroxine 0.125 mg IV push
   AVAILABLE: 250-mcg/10 ml’s
   ADMINISTER: ________________________________

25. ORDER: levothyroxine 2 mcg/kg IV push
   Client weight is 330 lbs.
   AVAILABLE: vials containing either 250-mcg/10 ml’s or 500-mcg/10ml’s.
   Which concentration of Synthroid would you select? __________________
   How many micrograms would you administer? ________________________
   How many milliliters would you administer? _________________________

26. ORDER: Reglan 10 mg /50 ml’s D5W over 15 minutes
   AVAILABLE: 15-gtts/ ml administration set
   ADMINISTER: ________________________________

27. ORDER: Nitroglycerin 10 mcg/min as a continuous infusion
   AVAILABLE: Nitroglycerine 50 mg/ 250 ml D5W administered on an infusion pump
   ADMINISTER: ________________________________

28. ORDER: Lidocaine 2mg/min as a continuous infusion
   AVAILABLE: Lidocaine 4 grams/ in 500 ml D5W administered on an infusion pump
   ADMINISTER: ________________________________

29. ORDER: Dopamine 2.5mcg/kg/min as a continuous infusion
   Patient’s weight 176 lbs.
   AVAILABLE: Dopamine 400mg in 500 ml D5W administered on an infusion pump
   ADMINISTER: ________________________________

30. ORDER: Nitroglycerin 15 mcg/min as a continuous infusion
   AVAILABLE: Nitroglycerine 50 mg/ 250 ml D5W administered on an infusion pump
   ADMINISTER: ________________________________
31. ORDER: Lidocaine 1mg/min as a continuous infusion
   AVAILABLE: Lidocaine 2 grams/ in 250 ml D5W administered on an infusion pump
   ADMINISTER: ________________________________

32. ORDER: Dopamine 5mcg/kg/min as a continuous infusion
   Patient’s weight 176 lbs.
   AVAILABLE: Dopamine 400mg in 500 ml D5W administered on an infusion pump
   ADMINISTER: ________________________________

Use the following physician orders to answer questions.

33. You are caring for a client who has the above orders placed on their chart. The morning results of the client’s baseline PTT is 25 seconds. The INR 1.0. What would you do next?

34. You are preparing to administer the bolus and have available heparin 10000 units/ml. How much would you administer? _________________

35. The client weighs 218 pounds. How many units per hour would you initiate? ____________

36. What would you program the infusion pump at? _____________________

37. The IV infusion is initiated at 8 am. A PTT result of 28 seconds is released at 12pm. What action would you take?
38. The client has a PTT result of 44 seconds released at 4 pm. What would you prepare to perform? (check all that apply)
   a. Stop infusion for one hour
   b. Bolus 3000 units of heparin
   c. Increase infusion by 50 units/Hr
   d. Repeat the PTT at least five hours later
   e. Repeat the PTT in the morning.

39. The client has a PTT result of 39 seconds released at 12am. What would you prepare to perform? (check all that apply)
   a. Stop infusion for one hour
   b. Bolus 3000 units of heparin
   c. Increase infusion by 50 units/hr
   d. Increase the infusion by 100 units/hr
   e. Repeat the PTT at least five hours later
   f. Repeat the PTT in the morning.

40. The client has a PTT result of 87 seconds released at 6am. What would you prepare to perform? (check all that apply)
   a. Stop infusion for 30 minutes
   b. Stop infusion for 60 minutes
   c. Bolus 3000 units of heparin
   d. Decrease infusion by 50 units/hr
   e. Decrease the infusion by 100 units/hr
   f. Repeat the PTT at least five hours later
   g. Repeat the PTT in the morning.

41. The client has a PTT result of 77 seconds released at 2 pm. What would you prepare to perform? (check all that apply)
   a. Stop infusion for 30 minutes
   b. Stop infusion for 60 minutes
   c. Bolus 3000 units of heparin
   d. Decrease infusion by 50 units/hr
   e. Decrease the infusion by 100 units/hr
   f. Repeat the PTT at least five hours later
   g. Repeat the PTT in the morning.

42. The client has a PTT result of 67 seconds released at 8 pm. What would you prepare to perform? (check all that apply)
   a. Stop infusion for 30 minutes
   b. Stop infusion for 60 minutes
   c. Bolus 3000 units of heparin
   d. Increase infusion by 50 units/hr
   e. Increase the infusion by 100 units/hr
   f. Repeat the PTT at least five hours later
   g. Repeat the PTT in the morning.
Use the following physician orders to answer questions

### WEIGHT-BASED HEPARIN PROTOCOL

**PROTOCOL FOR TNK OR EPTIFIBATIDE (INTEGRILIN)**

1. Draw baseline PTT.
2. Make calculations using actual body weight: \( \text{lb} = \frac{\text{kg}}{2.2} \) (see chart).
   
   Conversion from lb to kg: \( 2.2 \text{ lb} = 1 \text{ kg} \)
   
   **Example:** \( 110 \text{ lbs} = 50 \text{ kg} \)

3. **Bolus** heparin, 60 units/kg x \( \frac{\text{kg}}{2.2} \) kg = _________ units (see chart).
   
   Round all bolus calculations to the nearest 1000 units.
   
   **Maximum bolus dose is 4000 units.**

4. **Maintenance** IV heparin, 12 units/kg/hour x \( \frac{\text{kg}}{2.2} \) kg = _________ units/hr (see chart).
   
   Standard heparin solution is 25,000 units in 500 ml DSW (50 units/ml).
   
   Round all maintenance rate calculations up to the nearest 50 units.
   
   **Maximum initial drip rate is 1000 units/hour (20 ml/hr).**

5. Do stat PTT 6 hours after heparin bolus.

6. Adjust heparin infusion based on sliding scale below:

<table>
<thead>
<tr>
<th>PTT (Seconds)</th>
<th>Bolus</th>
<th>Infusion</th>
<th>Next PTT</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;40</td>
<td>Bolus 3000 units</td>
<td>Increase 100 units/hr</td>
<td>6 hrs</td>
</tr>
<tr>
<td>&lt;40 confirmed</td>
<td>0</td>
<td>Increase 50 units/hr</td>
<td>6 hrs</td>
</tr>
<tr>
<td>40-49</td>
<td>0</td>
<td>No change</td>
<td>6 hrs; after second therapeutic reading order qAM</td>
</tr>
<tr>
<td>50-70</td>
<td>0</td>
<td>Decrease 50 units/hr</td>
<td>6 hrs</td>
</tr>
<tr>
<td>71-80</td>
<td>0</td>
<td>Decrease 100 units/hr</td>
<td>6 hrs</td>
</tr>
<tr>
<td>81-90</td>
<td>0</td>
<td>Decrease 150 units/hr</td>
<td>6 hours</td>
</tr>
<tr>
<td>91-110</td>
<td>0</td>
<td>Hold infusion for 1 hour</td>
<td>Decrease 300 units/hr 4 hrs</td>
</tr>
<tr>
<td>&gt;110</td>
<td>Hold infusion for 1 hour</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7. Order a PTT six (6) hours after any dosage change (4 hours after PTT > 110), adjusting heparin infusion by the sliding scale until PTT is therapeutic (50-70 seconds). When two (2) consecutive PTTs are therapeutic, order PTT (and readjust heparin drip as needed) every 24 hours.

8. Notify physician for signs of bleeding and/or change in vital signs, i.e., hypotension and/or tachycardia.

9. Notify physician if PTT > 110 seconds
   
   □ YES □ NO

43. You are caring for a client receiving TNK for an acute myocardial infarction, who has the above orders placed on their chart. A baseline PTT/INR has been sent to the lab. The client weighs 154 lbs. What is the client’s dose based on the orders provided?

44. You are preparing to administer the bolus and have available heparin 5000 units/ml. How much would you administer? ________
45. Based on the client’s weight, how many units per hour would you initiate? __________

46. What would you program the infusion pump at (be sure to consider max dose ranges)? ______________

47. The IV infusion is initiated at 8 am. A PTT result of 39 seconds is released at 2pm. What action would you take?

48. The client has a repeat PTT result of 39 seconds released at 3 pm. What would you prepare to perform? (check all that apply)
   a. Stop infusion for one hour
   b. Bolus 3000 units of heparin
   c. Increase infusion by 0.5 ml/Hr
   d. Increase infusion by 1 ml/Hr
   e. Increase infusion by 2 ml /Hr
   f. Increase infusion by 1.5 ml/Hr
   g. Increase infusion by 2.5 ml/Hr
   h. Increase infusion by 3 ml /Hr
   i. Repeat the PTT in four hours
   j. Repeat the PTT in six hours
   k. Repeat the PTT in the morning.

49. The client has a PTT result of 111 seconds released at 10 pm. What would you prepare to perform? (check all that apply)
   a. Stop infusion for one hour
   b. decrease infusion by 0.5 ml/Hr
   c. decrease infusion by 1 ml/Hr
   d. decrease infusion by 2 ml /Hr
   e. decrease infusion by 1.5 ml/Hr
   f. decrease infusion by 2.5 ml/Hr
   g. decrease infusion by 3 ml /Hr
   h. decrease infusion by 4 ml/Hr
   i. decrease infusion by 5 ml/Hr
   j. decrease infusion by 6 ml /Hr
   k. Repeat the PTT in four hours
   l. Repeat the PTT in six hours
   m. Repeat the PTT in the morning.

50. The client has a PTT result of 87 seconds released at 6am. What would you prepare to perform? (check all that apply)
   a. Stop infusion for one hour
   b. decrease infusion by 0.5 ml/Hr
   c. decrease infusion by 1 ml/Hr
   d. decrease infusion by 2 ml /Hr
   e. decrease infusion by 1.5 ml/Hr
   f. decrease infusion by 2.5 ml/Hr
   g. decrease infusion by 3 ml /Hr
   h. decrease infusion by 4 ml/Hr
   i. decrease infusion by 5 ml/Hr
   j. decrease infusion by 6 ml /Hr
   k. Repeat the PTT in four hours
   l. Repeat the PTT in six hours
   m. Repeat the PTT in the morning.
51. The client has a PTT result of 67 seconds released at 2 pm. What would you prepare to perform? (check all that apply)

- a. Stop infusion for 30 minutes
- b. Stop infusion for 60 minutes
- c. No bolus to be given
- d. Bolus 3000 units of heparin
- e. Continue infusion at current rate
- f. Increase infusion by 1 ml/hr
- g. Increase the infusion by 2 ml/hr
- h. Repeat the PTT in four hours
- i. Repeat the PTT in six hours
- j. Repeat the PTT in the morning.

52. The client has a PTT result of 67 seconds released at 8 pm. What would you prepare to perform? (check all that apply)

- a. Stop infusion for 30 minutes
- b. Stop infusion for 60 minutes
- c. No bolus to be given
- d. bolus 3000 units of heparin
- e. Continue infusion at current rate
- f. Increase infusion by 50 units/hr
- g. Increase the infusion by 100 units/hr
- h. Repeat the PTT in four hours
- i. Repeat the PTT in six hours
- j. Repeat the PTT in the morning.

Calculating weight adjusted boluses

Calculate the weight adjusted bolus dose of 64 units/kg and round to the nearest 100 units. (NO MAXIMUM DOSE PROVIDED)

53. ORDER: 64 units/kg and round to the nearest 100 units.

WEIGHT: 110 lbs

AVAILABLE: Heparin 10000 units/1 ml

ADMINISTER: ________________________________

54. ORDER: 64 units/kg and round to the nearest 100 units.

WEIGHT: 165 lbs

AVAILABLE: Heparin 10000 units/1 ml

ADMINISTER: ________________________________
55. ORDER: 64 units/kg and round to the nearest 100 units.
WEIGHT: 150 lbs
AVAILABLE: Heparin 10000 units/1 ml
ADMINISTER: ____________________________

56. ORDER: 64 units/kg and round to the nearest 100 units.
WEIGHT: 200 lbs
AVAILABLE: Heparin 10000 units/1 ml
ADMINISTER: ____________________________

57. ORDER: 32 units/kg and round to the nearest 100 units.
WEIGHT: 110 lbs
AVAILABLE: Heparin 10000 units/1 ml
ADMINISTER: ____________________________

58. ORDER: 32 units/kg and round to the nearest 100 units.
WEIGHT: 150 lbs
AVAILABLE: Heparin 10000 units/1 ml
ADMINISTER: ____________________________

59. ORDER: 32 units/kg and round to the nearest 100 units.
WEIGHT: 165 lbs
AVAILABLE: Heparin 10000 units/1 ml
ADMINISTER: ____________________________
1. ADMINISTER: \( \frac{1}{2} \) tablet
2. ADMINISTER: 2.5 mls
3. ADMINISTER: 42 gtts/min
4. ADMINISTER: 200 ml/hr
5. ADMINISTER: 2 tablets
6. ADMINISTER: 1.5 mls
7. ADMINISTER: 8 mls
8. ADMINISTER: 14.5 ml/hr
9. ADMINISTER: 167 ml/hr 10. ADMINISTER: 40 gtts/min
11. ADMINISTER: 300 ml/hr 12. How many milligrams would you administer? 150 mgs

   **How many milliliters would you administer?** 10 mls

13. How many milligrams would you administer? 75 mgs

   **How many milliliters would you administer?** 5 mls

14. How many milligrams would you administer? 70 mgs

   **How many milliliters would you administer?** 7 mls

15. How many milligrams would you administer? 100 mgs

   **How many milliliters would you administer?** 10 mls

16. ADMINISTER: 9.5 ml/hr
17. ADMINISTER: 14 ml/hr
18. ADMINISTER: 12 ml/hr
19. ADMINISTER: 12 mls
20. ADMINISTER: 25 ml/hr
21. ADMINISTER: 83 ml/hr
22. Which concentration of nitroglycerin would you select? Grains 1/150

   **What would you administer?** One tablet

23. ADMINISTER: 33 gtts/min
24. ADMINISTER: 5 mls
25. Which concentration of Synthroid would you select? 500 mcg/10ml vial

   How many milligrams would you administer? 300 mcg

   **How many milliliters would you administer?** 6 mls

26. ADMINISTER: 50 gtts/min
27. ADMINISTER: 3 ml/hr
28. ADMINISTER: 15 ml/hr
29. ADMINISTER: 15 ml/hr
30. ADMINISTER: 4.5 ml/hr
31. ADMINISTER: 7.5 ml/hr
32. ADMINISTER: 30 ml/hr
33. ADMINISTER HEPARIN 5000 UNITS iv BOLUS and initiate a heparin drip
34. 0.5 ml
35. 1000 units/hr
36. 10 ml/hr
37. Continue current infusion and put the client in for a PTT at 2 pm
38. c, d
39. b, d, e
40. a, e, f
41. d, f
42. g
43. 4000 units.
44. 0.8 ml
45. 850 units/hr
46. 17 ml/hr
47. redraw the PTT
48. b, e, j
49. a, j, k
50. d, l
51. c, e, i
52. c, e, j
53. 0.32 ml
54. 0.48 ml
55. 0.44 ml
56. 0.59 ml
57. 0.16 ml
58. 0.22 ml
59. 0.24 ml