

Practice Problem Set #10

Heparin is a blood thinner commonly dosed at 70 – 100 units/kg bolus, followed by an infusion of 15-25 units/kg/hr. The lower end of the dosing range is used for patients with DVT (deep vein thrombosis: blood clots in the legs) and the higher end is used for patients with PE (pulmonary embolism: blood clots in the lungs).

1. A 64 year old, 130-pound, 5'5" female is admitted to the emergency room and diagnosed with DVT. The heparin that the nurse will use to administer the bolus dose is available in a concentration of 1,000 units/ml. Calculate how many milliliters (round to the nearest 0.2 ml) the nurse will need to draw up and inject for bolus administration.

_____ ml

2. Heparin comes premixed in a bag containing 25,000 units in 500ml of NS. Determine the flow rate in ml/hr that the nurse will need to program the pump to run.

_____ ml/hr

Standing orders for heparin call for a blood test, called an aPTT, to be drawn at 6 hours after the infusion begins. Depending upon how the number for this blood test compares to baseline, the dose for heparin will be adjusted as follows:

1.0 – 1.2 x baseline	Bolus 25 units/kg, increase infusion by 3 units/kg/hr
1.2 – 1.3 x baseline	Bolus 15 units/kg, increase infusion by 2 units/kg/hr
1.3 – 1.5 x baseline	No bolus; increase infusion by 1 unit/kg/hr
1.5 – 2.0 x baseline	No bolus; no change in infusion rate
2.0 – 2.5 x baseline	Decrease infusion by 1 unit/kg/hr
2.5 – 3.5 x baseline	Stop infusion for 1 hr, then decrease rate by 3 units/kg/hr

3. The patient's baseline aPTT was 30 seconds. After 6 hours, of heparin, her aPTT had risen to 42 seconds. Please outline what should happen now:

The patient should receive a bolus dose containing _____ ml of heparin 1,000 units/ml,

and the infusion rate should be increased to _____ ml/hr.

4. You are reading a study printed in a European journal and notice that the target peak range and trough for tobramycin (an antibiotic) are: peak 8.4 – 16.7 $\mu\text{Mol/L}$ and trough $< 4.4 \mu\text{Mol/L}$. The US units are $\mu\text{g/ml}$. Please determine the target peak range and trough in US units (tobramycin MW = 468).

peak range: _____ $\mu\text{g/ml}$ trough: $<$ _____ $\mu\text{g/ml}$

5. A process for shipping vaccines overseas was described in a recent journal article. Depending on what country the bags were being shipped to, a combination of gel packs were used to keep the temperature in the shipping container at an acceptable level. The two temperature levels of gel packs were -8°C and 2°C . If these were kept in a standard refrigerator/freezer with Fahrenheit settings, what should the setting for the freezer and the refrigerator be?

The refrigerator should be set at: _____ $^{\circ}\text{F}$, and the freezer at: _____ $^{\circ}\text{F}$

6. The newest way to determine if a person is overweight is to calculate their body mass index (BMI). This is done using the following equation:

$$\frac{\text{weight in kg}}{(\text{height in m})^2}$$

Under new guidelines, a patient with a BMI of 25 – 29.9 is considered overweight, and a patient with a BMI of ≥ 30 is considered obese. Please calculate the BMI for a 190-pound, 5'11" male patient and categorize his weight status.

BMI: _____; this patient is (circle 1): healthy overweight obese

7. A 53-pound child is to receive acetaminophen with codeine for pain post-operatively. The recommended dosing range is 0.5 mg/kg or 15 mg/m² po q4-6h prn pain. The product you have contains 12mg of codeine in each 5ml of syrup. Please write out the directions you will place on the prescription label. Please round to the nearest half-teaspoonful.

Take _____ teaspoonfuls every 4-6 hours as needed for pain.

8. Piperacillin/tazobactam is an antibiotic given to patients who are hospitalized with serious infections. The usual recommended dosage for a patient with good kidney function is 3.375g IV q6h. The following dosing recommendations are given for patients with decreased kidney function:

Creatinine clearance (ml/min)	Recommended dosage regimen
> 40 – 90	3.375g IV q6h
20 – 40	2.25g IV q6h
< 20	2.25g IV q8h

A 65 year-old, 212-pound, 5'5" female with a SCr of 2.6 mg/dL is to be given piperacillin tazobactam. Please determine a suitable dose for her.

_____ g IV q_____ h

Use the following information for questions 9 and 10: A patient has been receiving prednisone 40mg daily for a month. The physician now wants to slowly taper the patient down to 5mg daily. Today, November 19, the patient is presenting you with the following prescription:

prednisone 30mg x 3 days, 20mg x 3 days, 15mg x 3 days, 10mg x 3 days, then 5mg po qd thereafter

9. You carry prednisone 1mg, 5mg, 10mg, and 20mg tablets in your pharmacy. All of these tablets are scored, so it is possible to cut them in half (but avoid if possible). You may only dispense one strength. What strength will you use and what directions will you type on the label? (assume that the patient will start the first dose tomorrow morning)

Prednisone _____ mg tablets. You will type on the label:

Take _____ tablet(s) on 11/20, 21 & 22; then take _____ tablet(s) on 11/23, 24, & 25;

then _____ tablet(s) on 11/26, 27, & 28; then _____ tablet(s) on 11/29, 30, & 12/1;

then _____ tablet(s) daily thereafter.

10. How many tablets will you dispense so that the patient has enough to last exactly 30 days from her start date of tomorrow?

_____ tablets