

Practice Problem Set #4

1. Cefixime is an oral antibiotic often used for ear infections in children. The recommended dose is 8mg/kg/day given as a single daily dose. Cefixime is available as an oral suspension containing 100mg/5ml. What dose in ml would you recommend be given to a 19-pound child? (please round to the nearest 0.2ml)

_____ml

2. Ceftizoxime is a medication commonly prescribed for lower respiratory tract infections. A 160-pound, 68-year-old female patient with a serum creatinine of 1.2mg/dl was prescribed ceftizoxime 2gm IV q8h. Facts and Comparisons makes the following recommendations for patients with renal insufficiency:

<u>CrCl</u>	<u>dose</u>
50-79 ml/min	1/2 dose q8h
5-49	1/4-1/2 dose q12h
dialysis pts	1/4 dose q24-48hours

Please calculate this patient's creatinine clearance and recommend any needed dosing adjustments.

CrCl: _____ml/minute

I recommend ceftizoxime _____g IV q_____h.

3. Nitroglycerin is a medication often given intravenously in the acute care setting to control angina (chest pain). The usual recommended starting dose is 5µg/min. A standard nitroglycerin drip contains 50mg nitroglycerin in 250ml of D5W. What infusion rate, in ml/hr, should the nurse program the pump to deliver the medication for a standard initial dose?

_____ml/hr

4. A drug is said to reach "steady state" when 5 half-lives have elapsed. In the case of warfarin (a blood thinner), however, the steady state is dependent not upon the drug's half-life, but upon the half-life of the clotting factors it inhibits. The clotting factors inhibited by warfarin have the following half-lives:

Factor II - 50 hours

Factor VII - 6 hours

Factor IX - 24 hours

Factor X - 36 hours

Based on this information, how long will it take a patient to reach maximal anticoagulation?

_____ days

5. Clarithromycin (trade name: Biaxin) is a new antibiotic often given for sinusitis (sinus infection). A 3-year-old, 34-pound child has been prescribed a three-week course of therapy. Pediatric dosing recommendations are 7.5mg/kg po BID, with a maximum of 500mg/dose. The drug is available in a 125mg/5ml strength, 100ml and 200ml bottles, and a 250mg/5ml strength, 100ml bottle. When reconstituted, each bottle has a shelf life of 14 days. Please calculate how many milliliters the child should receive for each dose (round to the nearest 0.2ml), identify what strength and size of bottle you will dispense, and how many bottles you will dispense (assume that you will also dispense enough water to reconstitute more than one bottle at the appropriate time).

Directions: Give _____ml twice daily for 3 weeks.

I will dispense _____ bottle(s) of the _____mg/5ml strength. Amount in each bottle: _____ml when reconstituted.

6. A physician has written the following order for a patient:

Insulin drip 3u/hr

The standard insulin drip that you mix in your pharmacy is 50 units of regular insulin in 250ml NS. The nurse would like you to calculate an infusion rate at which she should set the pump.

_____ml/hr

7. A 48-year-old, 5'9", 170-pound male patient with a serum creatinine of 1.1 has been prescribed vancomycin, an antibiotic. Population pharmacokinetic parameters state that the volume of distribution for vancomycin is 0.7 L/kg and that the clearance is $(0.65)(CrCl)$. You remember from your notes that

$$\text{half-life} = \frac{(0.693)(V)}{Cl}$$

Please calculate this patient's expected vancomycin half-life.

_____ hrs

8. For the patient in question 7, you have targeted a vancomycin trough (i.e. the lowest plasma concentration reached in the dosing interval) of 5-10 mg/L. Prior medical records from a hospital in Vancouver, B.C., indicate that this patient was previously treated there with vancomycin at the same dose and frequency that the doctor has prescribed here. This patient had a trough of 2.7 $\mu\text{Mol/L}$. Please determine whether or not this trough will be within your desired range. (vancomycin MW: 3300)

_____ mg/L

9. Prostaglandin E2 (dinoprostone) is a vaginal suppository which is supposed to be stored at -20°C . What temperature would this be in $^{\circ}\text{F}$?

_____ $^{\circ}\text{F}$

10. The suppositories in question 9, which contain 20mg of prostaglandin E2, are mainly used to create a lower-strength vaginal gel used for cervical ripening of pregnant women who are at term or post-term. The one commercial product available contains 0.5mg of prostaglandin E2 in 2.5ml of methylcellulose gel. If you were asked to compound this product extemporaneously, how many suppositories would you triturate, how much methylcellulose would you use, and how many 3ml syringes could you fill? (each syringe will contain 2.5ml)

_____ suppository(ies)

_____ ml methylcellulose gel

_____ total 3ml syringes of prostaglandin E2 0.5mg/2.5ml