

Case Study 3
PHA 5127
2007

1. A drug is given as an iv bolus dose of 420 mg. The concentration two hours after administration is 23mg/L and the concentration 4 hours after administration is 15 mg/L.
 - a. Calculate the k_e and half-life of the drug.
 - b. How long does it take for the concentration to drop below 8mg/L, the lower limit of the therapeutic window?
 - c. Calculate the volume of distribution.
 - d. If this is a lipophilic drug that is 80% bound in plasma what is the fraction bound in tissue?

2. Patient AM and patient CS are both given the same dose of a drug. The resulting starting concentration for patient AM is lower than that of patient CS. For this question you may want to look at the course website under simulations. Use the one-compartment model for a single IV bolus dose.
 - a. What pharmacokinetic parameter is different between the two patients?
 - b. Please give three reasons for the difference in V_d between patients.
 - c. Patient AM and patient CS are given the same dose of a different drug. They have the same starting concentration. However, the AUC of AM is less than the AUC of CS. What does this tell us about the elimination rate and the half life of the drug between the two patients?