

PHA 5127 (Fall, 2008)

Case Study #4

Q1. For the following situations, indicate whether the drug is: filtered, reabsorbed, actively secreted, or reabsorbed through transporters (Assume GFR is 130 mL min^{-1} , urine flow is 1.5 ml min^{-1})

a). A drug with $f_u = 0.02$ and a $Cl_{REN} = 20 \text{ mL min}^{-1}$

b). A drug with $f_u = 0.40$ and a $Cl_{REN} = 52 \text{ mL min}^{-1}$

c). A drug with $f_u = 0.60$ and a $Cl_{REN} = 0.9 \text{ mL min}^{-1}$

d). A drug with $f_u = 1.0$ and a $Cl_{REN} = 0.3 \text{ mL min}^{-1}$

Q2. A male patient is 5 ft 10 inches tall, 40 years old, and weights 80 kg. His serum creatinine is 1.5 mg/dl. Please estimate his GFR.

Q3. Mark each of the following statements True or False.

T F The maximum value of renal clearance can not exceed the glomerula filtration rate.

T F The renal clearance of a drug (as determined by filtration and reabsorbtion) always depends on the tissue binding of the drug.

T F Drinking a lot of water (urine flow is doubled) will increase significantly the renal clearance of aminoglycocsides.

T F For an acidic drug with a pka of 1.0, adjustment of the urine pH within physiological ranges will significantly change the renal clearance.

T F To determine the clearance of a drug, one needs to know whether the drug is a one or two compartment drug.

T F Since creatinine is endogenous and predominantly eliminated by kidney, its clearance is a good estimation of renal active secretion.

T F The larger the volume of distribution, the smaller the AUC of a given drug.

Q4. Define the term linear pharmacokinetics.