PHA 5127
Case Study III
Fall 2004

Case 1:

Two pharmacy students wanted to have some fun, and bet for $20 who would have the higher creatinine clearance.
Homer J. is 25 years old and 4'9" tall. Even though he is very small, he weighs 210 lbs., due to massive donut intake.
His girlfriend Marge S. is 22 years old, and 5'9" high and a lot more athletic. She weights 125 lbs.

   a) Determine the clearance.

   b) Assume Homer J.'s serum creatinine is 1.5 mg/100ml and Marge S.' is 1.7mg/100ml. Calculate the creatinine clearance using this data (Ckckcroft-Gault-Equation).

   c) What are the implications of Homer J.'s and Marge S.'s GFR?

   d) Why is IBW used to calculate CrCL rather than TBW. What would happen if we used TBW?

Case 2:

Researchers in industry got data from a clinical study about their new drug. The drug is supposed to be a weak base, with a pKa=9.0. The drug is non-polar when unionized. The clinical trial shows a 2 hour half-life and a VD=10L. We know that the drug is renally cleared to 50% (the other 50-% through metabolism) and the fraction bound in plasma is 0.3. (Urine pH=7.4)

   a) What is the renal clearance,

   b) What processes are involved in the renal clearance? Justify your answer.

   c) How will changes in urine pH to a more acidic pH affect the renal clearance?

   d) What factors have to be considered when we analyze values for renal clearance?
      (What processes do we have to take into consideration besides glomerular filtration?)

Additional questions:

What does a renal clearance of 130ml/min tell us?
What does a renal clearance of **0** ml/min tell us?
What does a renal clearance > than GFR*fu tell us?