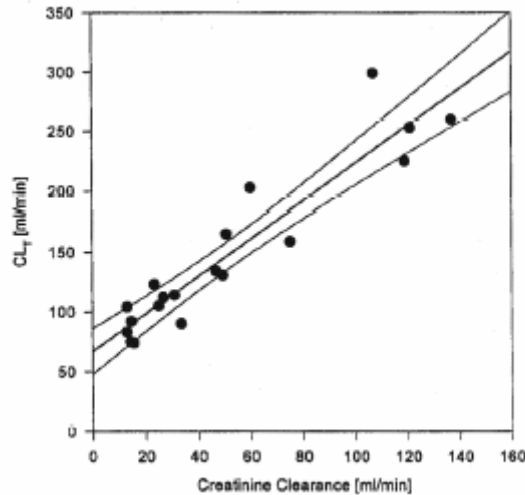


PHA 5127 – Fall 2003
Case Study # 4

1. In a study in patients with various degrees of renal impairment the following relationship was found for piperacillin:



The volume of distribution in the elimination phase ($V_{d_{area}}$) was 19L and independent of renal function.

For a patient with normal renal function (CrCL 130 mL/min) and a patient with impaired renal function (CrCL 25mL/min), estimate the clearance, the renal clearance, the non-renal clearance, half-life (k_e) and the percentage of the dose excreted into urine.

2. B.G., a 62-year-old, 50 kg female is admitted to the hospital. Her serum creatinine is 3.0 mg/dL and she is about to be started on drug A. She receives an i.v. bolus of 750mg of drug A. What will be B.G.'s plasma concentration after 3.5h? Also calculate B.G.'s half-life.

$$CL = (0.8 \text{ mL / min / kg} \cdot \text{weight}) + CrCL (\text{mL / min})$$

$$Vd = 3.8 \cdot \text{weight} + 3.1 \cdot CrCL (\text{mL / min})$$