Theophylline

1. C.C. is a 30 years old, 44 kg weight woman admitted to the ER for the exacerbation of her asthma caused by excessive exercise. (2 point each, 4 points)

(1) What is the IV loading dose of aminophylline for her to achieve plasma levels of 15 mg/L (Assume Vd=0.5 L/kg and S=0.80)?

(2) What is the infusion rate of aminophylline required to maintain the plasma concentrations

Cyclosporine

2. A liver transplant patient at Shands hospital has been treated with IV infusion of 200 mg/day of cyclosporine for a certain time. His plasma concentration at steady state is 180 ng/mL. Since he is doing fine, the physician would like to change IV infusion to orally administration and decrease the desired steady state concentration by 10%. What is the reasonable dose for oral treatment? (The bioavailability of oral cyclosporine is 0.3)(1 points)

Lidocaine

3. H.C. is a 45 years old, 60 kg female with liver cirrhosis. On the sixth hospital day, she developed ventricular arrhythmias, and lidocaine was given. The first day of lidocaine administration, she received an initial 50 mg bolus dose of lidocaine at 9:00 am, followed by 100 mg infusion administered over the next 30 min. At 10:00 am, she was given 1.5 mg/min constant infusion of lidocaine. Predict her lidocaine concentration at the start of her maintenance infusion and at steady state. (Vc=0.61 L/kg, Vd=2.3 L/kg, CL=6 mL/kg/min, S=0.87) (3 points)
Procainamide

4. A.P. is a 40 years old, 65 kg weight woman. She was admitted to the hospital with a diagnosis of tachyarrhythmia. Her serum creatinine is 1.5 mg/dL. Calculate the maintenance infusion rate that will keep the average plasma concentration of procainamide at 5 mg/L. \((S=0.87)\)  (2 points)