Case study 5 A

1. A 32 year old 70 kg male received a kidney transplant, and is treated with cyclosporine 250 mg BID. His trough level is measured and comes back 80ng/mL. Design a new dosing regimen based on this information with a Cmax of 400ng/mL and a Cmin of 150ng/mL. (Cyclosporine is rapidly absorbed).

2. A 57-year-old, 50kg woman with congestive heart failure, was admitted to the hospital for possible digoxin toxicity. Her serum creatinine was 2.8mg/dL, and her dosing regimen at home had been 0.25mg digoxin (tablets) daily for a year. Her digoxin plasma concentration on admission was 3.8μg/L. How long will it take for the digoxin concentration to fall from 3.8 to 2μg/L if no further doses are given?

3. An 82 kg male became nauseated after receiving i.v. aminophylline 90mg/h for several days. A plasma sample for theophylline was obtained and the infusion was discontinued. Ten hours later a second plasma sample was obtained. The reported plasma theophylline concentrations were 40μg/mL and 20μg/mL, respectively. Estimate the hourly dose of aminophylline required to maintain the plasma theophylline concentration at 15mg/L. (Use aminophylline S = 0.85, Vd = 0.5L/kg)

4. A 34 year old female patient (54 kg, SeCr 1.1 mg/dl) received a 30 mg methotrexate loading dose I.V. followed by a 30 mg/h infusion over 36 hours. Her levels at 24h and 48h were 12.2 μM and 0.76 μM, respectively. Calculate the anticipated methotrexate level at 60 hours.