PHA 5128

Case Study 3,

Spring 2009

1. A 50-year-old, 5'2'', 50 kg female with a serum creatinine of 2.0 mg/dL. She is given gentamicin for soft tissue infections. Calculate the gentamicin clinical peak concentration, i.e., 1 hour after initiating the one-half hour infusion of a 200 mg dose (using the short-term infusion model).

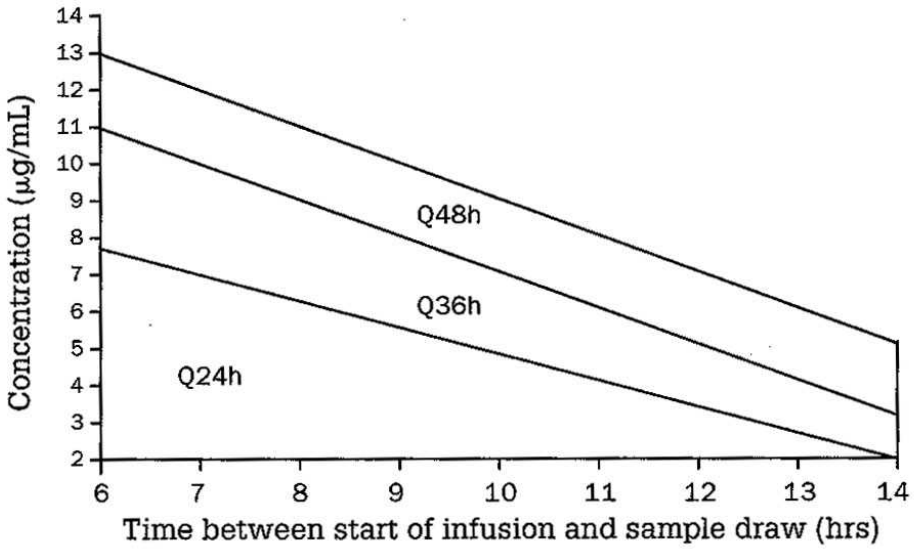
2. A 43-year-old male, was admitted to the hospital following a car accident. He is 5'2" tall and on admission weighed 52 kg. He was taken for abdominal surgery and post-operatively became hypotensive and required large volumes of fluid to maintain his blood pressure. Currently, he weighs 65 kg and has a serum creatinine of 1.9 mg/dL. To receive gentamicin after his abdominal surgery:

   a) Calculate the volume of distribution (*Vd*) and elimination half-life ($T_{1/2}$)

   b) Calculate the dose and dosing interval if 10 mg/L (clinical peak) and 1 mg/L (clinical trough) of a half-hour infusion treatment are desired

3. S.H. was given tobramycin 7mg/kg QD in a 30-minute-infusion. Following the fifth dose of his regimen the following tobramycin concentrations were determined: 18 μg/mL (clinical peak), 2 μg/mL (clinical trough). Based on the observations, make appropriate changes in this patient's dosing regimen of tobramycin according to ODA nomogram below.

ODA Nomogram for Gentamicin and Tobramycin at 7 mg/kg



4. A 65-year-old, 60 kg woman with a serum creatinine of 1 mg/dL, has been started on 1 g of vancomycin over 1 hour infusion q12h for the treatment of staphylococcal. Calculate initial peak and trough vancomycin concentration and steady-state peak and trough vancomycin concentration.