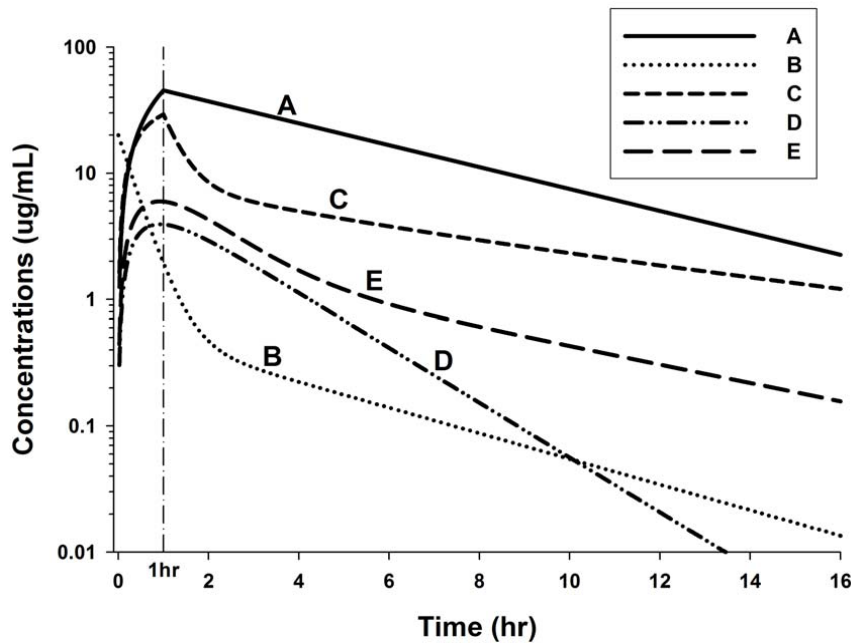


#1) Vancomycin concentration-time profiles can be described via a three-compartment model. Which profile will represent a 1-hour infusion of vancomycin in the following graph? Please provide an explanation for your answer choice.



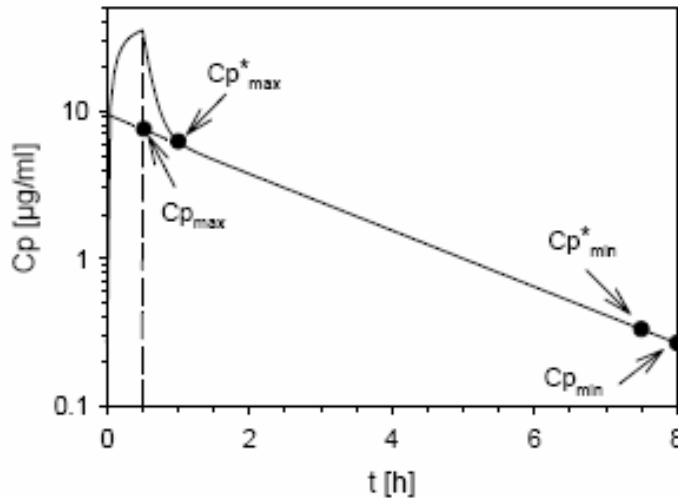
- A)
- B)
- C)
- D)
- E)

#2) Please select the correct statement(s) concerning oral drug administration

- 1 The elimination rate constant (k_e) can always be determined from concentrations at late time points (after C_{max}).
- 2 The absorption rate constant can be determined from the concentration-time profile (if no flip flop).
- 3 The oral bioavailability (F) of a low extraction drug can be changed by CYP-P450 enzyme induction.
- 4 Using extended release tablets will reduce the fluctuation compared to immediate release tablets (same dose, same dosing interval).
- 5 Clearance (CL) and volume of distribution (V_d) can be calculated from Dose and AUC only.

- A) 1, 2, 3
- B) 2, 3, 4, 5
- C) 1, 3, 4
- D) 1, 3, 5
- E) None of the above

#3) W.G. is a 5' 4", 72 kg, 30 year old female who suffered a severe burn that has since been infected by *S. aureus*. To treat her infection she is given an aminoglycoside by a half hour infusion every 8 hours. She is given an infusion starting at 8:00 am. At 9:00 am a plasma sample is taken and yields a Cp^*_{max} of $10.2 \mu\text{g/ml}$. Another sample is taken at 3:30 pm to give a Cp^*_{min} of $1.4 \mu\text{g/ml}$. Please explain why the samples are not taken at 8:30 am and 4 pm and calculate the true C_{max} and C_{min} values. (Aminoglycosides exhibit two-compartment body-model kinetics.)



#4) Please select the correct statement(s) concerning one/two-compartment body models.

- 1 For a two-compartment-body model drug, the parameter alpha is always larger than the parameter beta.
- 2 The volume of distribution during the beta phase is larger than that of the volume of distribution at steady state.
- 3 We often use one compartment model pharmacokinetics, although a number of drugs show a distinct distribution phase, especially if the higher concentrations during the alpha phase are not related to toxicity.
- 4 Assume that a low extraction drug, showing a one-compartment model behavior is metabolized via enzymes that are subject to enzyme induction by other drugs. The volume of distribution might be decreased by such enzyme-inducers.

- A) 1, 2
- B) 2, 4
- C) 1, 3, 4
- D) 1, 2, 3
- E) None of the above