1. The term “Cp_min e^{-kd(t’)}” found in the denominator of the Sawchuk-Zaske formula for Vd tells you:

A. How much of the trough remains after the drug infusion -- $e^{-kd(t‘)}$ represents the fraction of the serum concentration that remains after the drug infusion, so $Cp_{min}e^{-kd(t‘)}$ represents the fraction of the trough concentration that remains after the infusion.

B. How much of the trough was eliminated during the drug infusion

C. How much of the trough remains after the dosage interval

D. How much of the trough was eliminated over the dosage interval

E. None of the above

2. Agents of the fluoroquinolone class have been extensively studied with respect to their pharmacodynamic profiles. While fluoroquinolones have been classified as concentration-dependent killers of gram-negative organisms, controversy surrounds their classification versus gram-positive organisms. In general, which of the following dosing strategies optimizes the effect of concentration-independent antibiotics?

A. Give the agent as a continuous infusion

B. Give large, infrequent doses

C. Block excretion of the antibiotic if its primary route of elimination is through the kidneys

D. A and C – both of these would maximize the time that the drug concentration remained above the MIC, which is the typical parameter for concentration-independent (time-dependent) drugs

E. B and C

3. Please match the drugs below with the characteristic that best describes them. All three must be correct to receive credit.

Ketoconazole---------needs acidic environment for absorption

Flucytosine-------------should not be used alone because of high incidence of resistance

Amphotericin B-------can lead to potassium and/or magnesium wasting

4. SDD theory suggests 3-7 mg/kg/day to achieve peaks of approximately 20 mcg/ml. Mark (T) True or (F) False for the following statements regarding aminoglycoside SDD. All four must be correct to receive credit.

a. F__ A peak of approximately 20 mcg/ml is necessary for both enterococci and P. aeruginosa. – Gram-positive organisms, such as enterococcus, require much lower peaks, usually around 3-5 mg/L, and most data suggest that aminoglycosides are NOT concentration-dependent versus Gram-positive organisms.

b. F__ 3-7 mg/kg/day maximizes $T$ above the MIC, the pharmacodynamic parameter associated with aminoglycosides – The pharmacodynamic goal of SDD is to optimize the peak/MIC ratio.

c. T__ One of the theoretical benefits of SDD is the prevention of adaptive resistance. – This is thought to be due to the drug-free period.

d. T__ While SDD therapy may be appropriate in some patients, it is inappropriate in others such as those with t1/2 > 4 h or those with Gram-positive infections. – See letter A above regarding Gram-positive infections. In patients with a long t1/2 (e.g., > 4h), a drug-free period will most likely not be achieved, eliminating the theoretical benefit of avoiding adaptive resistance.

Continued…
5. When using the equation \[((140 \text{-} \text{age}) \times \text{LBW}) \div (72 \times \text{Scr}) \times 0.85\text{ for females}\) to calculate the CrCl, when do you substitute DW for LBW?

A. When the patient weight is severely below LBW
B. When the patient \(t_1/2 < 4\) hours
C. You do not substitute DW for LBW in the calculation of CrCl, only in empirical dosing (ie 1.5-2.5 mg/kg). – LBW is the most appropriate weight to use for an estimate of CrCl. The only time any other weight should be used in the Cockcroft-Gault equation is if the ABW < LBW.
D. You use neither. You should always use actual body weight to calculate the CrCl.
E. Both A and B.