

## Pharmacology Questions

1. The clearance and volume of distribution of some drugs are shown in the table below, for a 70kg man. Which of the following drugs has the longest half life in plasma?

*Handwritten:  $t_{1/2} = \frac{V_d}{Cl}$*

		Clearance	Vd
A.	Verapamil	2.5	10.5
• B.	Phenobarbitone	0.42	37.8
C.	Warfarin	0.25	10
D.	Piroxicam	7.7	15.4
E.	Naproxen	9.1	11.2

2. The volume of distribution and half life in hours for various drugs is given below. Which of them has the lowest clearance?

		Vd	Half-life
A.	Amiloride	11.5	7.5
B.	Amiodarone	4230	600
C.	Chlorpromazine	1450	29
• D.	Tolbutamide	7	6
E.	Venlafaxine	500	10

3. The relative concentrations in the blood of a new medication following administration of different oral presentations are as follows: One 50mg capsule leads to an AUC of 300, while a 100mg tablet leads to an AUC of 500 one hour after dosing. The drug has linear kinetics. What is the relative bioavailability of the tablet?

- A. 1.2
- B. 1.8
- C. 2
- D. 3
- E. 6

*Handwritten: 1/2 50mg capsule  
300 AUC*

*Handwritten: 1/5 100mg  
500 AUC*

*Handwritten:  $\frac{1}{5} \div \frac{1}{6} = \frac{6}{5}$*

*Handwritten:  $\frac{1}{5} \times \frac{6}{1} = \frac{6}{5}$*

4. Which of the following drugs has the strongest pharmacodynamic interaction with digoxin?

- A. Amiodarone
- B. Diltiazem
- C. Probenecid
- D. Lithium
- E. Phenytoin

5. Regarding neuramidase inhibitors, such as Zanamivir, which of the following statements is most correct if given within 24 hours of onset of influenza symptoms?
- A. Completely stops symptoms within 24 hours
  - B. Reduces severity of illness but doesn't affect duration
  - C. Reduces severity of illness and reduces duration by 1-2 days
  - D. Doesn't reduce severity but reduces duration by 1-2 days
  - E. Doesn't affect illness course but reduces infectivity of patient
6. A 24 year old woman with a past history of epilepsy is pregnant with her first child. She presents at 18 weeks having had a tonic clonic seizure. Her phenytoin levels are found to be subtherapeutic. Why does she have a reduced phenytoin level?
- ? ,
- A. Increased renal clearance of active metabolites
  - B. Increased hepatic metabolism
  - C. Reduce plasma protein binding, increasing the free concentration
  - D. Increased volume of distribution
  - E. Decreased volume of distribution
7. What is the mechanism of action of folinic acid in the treatment of methotrexate toxicity?
- A. Increased renal excretion of methotrexate
  - B. Increases the pool of reduced folate for purine synthesis
  - C. Inhibits the action of methotrexate
  - D. Activates dihydrofolate reductase
  - E. Replaces hepatic stores of folate depleted by methotrexate use
8. Drug X has a half life of 48 hours. How long will the plasma level continue to rise if the drug is given daily?
- A. 12 hours
  - B. 24 hours
  - C. 4 days
  - D. 10 days
  - E. Indefinitely
9. What is the mechanism of toxicity of the combination of allopurinol and azathioprine?
- A. Decreased renal clearance
  - B. Promotes GI absorption
  - C. Increased half life of active metabolites of azathioprine
  - D. Protein binding displacement

E. Inhibition of hepatic excretion

10. Two drug regimens given the the same patient with no plasma levels detected before the drug was given. On both occasions the volume of distribution = 0.85 and the half life = 6 hours.

Regimen A: 10mg/kg/h continuous infusion with no loading dose.

Regimen B: IV bolus of 50mg/kg is given followed by continuous infusion of 10mg/kg/hr. Plasma level for regimen B, measured at 48 hours was 100mg. What would be the most likely plasma level for regiment A?

- A. 50mg
- B. 75mg
- C. 100mg
- D. 125mg
- E. 150mg

$$V_d = 0.85$$

$$t_{1/2} = 6$$

$$V_d = 0.85L$$

$$t_{1/2} = 6hr$$

$$Cf = \frac{85}{100} \times \frac{1}{6}$$

$$\frac{85}{600}$$

$$CL = \frac{0.85}{6} = 0.14$$

~~$$C_{ss} = \frac{V_D \times LD}{0.85 \times T}$$~~

