

Pharmacokinetics / Pharmacodynamics MCQs

May 2006

1. Which of the following is >90% bound to plasma proteins?
 - a. Atenolol
 - b. Diazepam
 - c. Gentamycin
 - d. Lithium
 - e. Theophylline

2. Which of the following has the largest volume of distribution?
 - a. Digoxin
 - b. Imipramine
 - c. Lithium
 - d. Chloroquine
 - e. Trimethoprim

3. Which of the following has the shortest half life?
 - a. Theophylline
 - b. Diazepam
 - c. Aspirin
 - d. Lithium
 - e. Digoxin

4. Which of the following is a phase one reaction?
 - a. Reduction
 - b. Acetylation
 - c. Glucuronidation
 - d. Methylation
 - e. Sulphate conjugation

5. Clearance of which drug involves capacity limited elimination?
 - a. Theophylline
 - b. Gentamycin
 - c. Digoxin
 - d. Lithium
 - e. Phenytoin

6. An example of drugs that undergo chemical antagonism is
 - a. Insulin - glucagon
 - b. Protamine - heparin
 - c. Prednisone - glipizide
 - d. Morphine - naloxone
 - e. Phenoxybenzamine - prazosin

7. Regarding first order kinetics - all of the following are true EXCEPT
 - a. First order kinetics means rate of reaction is proportional to concentration
 - b. First order kinetics is more common than zero order kinetics
 - c. First order kinetics apply to exponential processes
 - d. First order kinetics generally apply to high plasma concentrations (>20 mg / 100 ml) of ethanol
 - e. First order kinetics result in steady state concentrations after multiple dosing.

8. Bioavailability is
- The difference between the amount of drug absorbed and the amount excreted
 - The proportion of the drug in a formulation that is found in the systemic circulation
 - The AUC relating plasma concentration of drug to time after administration
 - Always identical with different formulations of the same drug
 - A measure of the rate of absorption of a drug
9. Which of the following drugs has a high extraction ratio?
- Diazepam
 - Theophylline
 - Phenytoin
 - Warfarin
 - Propranolol
10. What is the half life of a drug with a volume of distribution of 700l/70kg and clearance of 49l/hour/70kg?
- 5 hours
 - 7 hours
 - 10 hours
 - 12.5 hours
 - 15 hours
11. Regarding biotransformation
- Phase one reactions always precede phase two reactions
 - Skin is an organ involved in drug biotransformation
 - Water conjugation is a phase one reaction
 - CYP2D6 accounts for the majority of P450 activity
 - Epoxidation is phase two biotransformation
12. Which of the following receptor - ligand pathway is correct?
- Insulin - G protein receptor
 - Mineralocorticoid - tyrosine kinase receptor
 - Vitamin D - intracellular receptor
 - Adrenaline - ligand gated channel receptor
 - Platelet derived growth factor - cytokine receptor
13. Age associated changes in pharmacokinetics include
- Reduction in creatinine clearance in 2/3 population
 - Decreased body fat
 - Increase body water
 - A greater reduction in conjugation compared with oxidation
 - A decreased absorption related to age alone
14. The metabolic pathway of detoxification that become increasingly important in paracetamol toxicity is
- Conjugation with glucuronide
 - Oxidation
 - Reduction
 - Methylation
 - Cytochrome p450 dependent glutathione conjugation
15. You are given a vial with 15 ml of 0.5% prilocaine to do an arm block. How many mg of prilocaine are you injecting?
- 7.5 mg
 - 15 mg
 - 30 mg
 - 50 mg
 - 75 mg

16. Drugs that enhance other drug metabolism include all of the following EXCEPT
- Rifampicin
 - Ketoconazole
 - Phenobarbital
 - Griseofulvin
 - Phenytoin
17. Which is the safest to give in pregnancy?
- Lithium
 - Phenytoin
 - Gentamycin
 - Heparin
 - ACE inhibitors
18. Regarding pharmacology principles
- Diffusion is directly proportional to thickness and inversely proportional to surface area
 - LD50 - 50% of the dose that kills most people
 - Efficacy is the maximum response produced by a drug
 - A partial agonist is always less potent than a full agonist
 - EC50 = concentration of agonist that results in maximal response in 50% of patients
19. Reports of cardiac arrhythmias caused by unusually high blood levels of 2 antihistamines (terfenadine and astemizole) are best explained by
- Concomitant treatment with phenobarbital
 - Use of these drugs by smokers
 - Use of antihistamines by persons of Asian background
 - A genetic predisposition to metabolise succinylcholine slowly
 - Treatment of these patients with ketoconazole
20. Which of the following statements is correct?
- The half life is the time taken for a parameter to fall to 1/4 its original value
 - Partial agonists act at receptor sites to cause maximal pharmacological effect at high doses
 - Diazepam has a high extraction ratio and is thus subject to flow dependent elimination
 - Morphine and pethidine have the same potency
 - A patient with oedema will have an increased volume of distribution of tobramycin

Answers: Pharmacokinetics / pharmacodynamics April 2004

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

Antibiotics MCQs

Jan 04

1. All of the following are true regarding penicillins EXCEPT
 - a. Most penicillins only cross the blood brain barrier when the meninges are inflamed.
 - b. Penicillins don't require dosage adjustment in renal failure
 - c. Penicillins inhibit cross linkage of peptidoglycans in the cell wall
 - d. Piperacillin is a penicillin active against pseudomonas
 - e. Only about 5 to 10% of people with a past history of penicillin allergy have a reaction on re exposure

2. Ciprofloxacin
 - a. Is a defluorinated analogue of nalidixic acid
 - b. Inhibits topoisomerases 2 and 3
 - c. Has no gram positive cover
 - d. Has a bioavailability of 30%
 - e. May cause an arthropathy

3. Resistance to B lactams
 - a. Can be due to an efflux pump
 - b. Is most commonly due to modification of the target PBPs
 - c. Does not involve penetration of drug to target PBPs
 - d. Infers resistance only to penicillins
 - e. Can involve up to 5 different B lactamases

4. Macrolides
 - a. Have enhanced activity at acidic pH
 - b. Have little activity against legionella
 - c. Have half lives which increase in patients with anuria
 - d. Induce cytochrome p450 enzymes
 - e. Are contraindicated in neonates

5. Flucloxacillin
 - a. Is ineffective against streptococci
 - b. Is active against enterococci and anaerobes
 - c. Blocks transpeptidation and inhibits peptidoglycan synthesis
 - d. Is poorly absorbed orally
 - e. Has excellent penetration into CNS and prostate

6. All of the following inhibit nucleic acid synthesis EXCEPT
 - a. Norfloxacin
 - b. Chloramphenicol
 - c. Trimethoprim
 - d. Rifampicin
 - e. Sulfasalazine

7. Which of the following is a second generation cephalosporin?
 - a. Cefaclor
 - b. Ceftazidime
 - c. Cephalexin
 - d. Cefotaxime
 - e. Cephalothin

8. Regarding the pharmacokinetics of the tetracyclines

- a. Tetracyclines are 40 to 80 % bound by serum proteins
- b. Absorption is enhanced by coadministration of antacids
- c. Tetracyclines cross the blood brain barrier easily
- d. Doxycycline is excreted predominantly by the kidney
- e. Demeclocycline is a short acting tetracycline drug

9. All of the following are recognized adverse effects of isoniazid EXCEPT

- a. Hepatitis
- b. Peripheral neuropathy
- c. Retrobulbar neuritis
- d. Decreased phenytoin metabolism – increased phenytoin blood levels / toxicity
- e. CNS toxicity

10. Vancomycin

- a. 90% of vancomycin is excreted by glomerular filtration
- b. Inhibits proteinsynthesis in bacteria
- c. Is bactericidal against gram negative bacilli
- d. Is well absorbed from the GIT
- e. One adverse reaction to infusions of vancomycin is the “blue man” syndrome

11. Regarding mechanisms of antiviral drug action

- a. blockage of viral uncoating is caused by rifampicin
- b. Zidovudine is a protease inhibitor
- c. Amantidine blocks viral DNA packaging and assembly
- d. Indinavir is a reverse transcriptase inhibitor
- e. Acyclovir inhibits viral DNA synthesis

12. Regarding toxicity of antibiotics

- a. Enamel dysplasia is common with aminoglycosides
- b. Gray baby syndrome occurs with rifampicin use
- c. Haemolytic anaemias can occur with sulphonamide use
- d. Nephritis is the most common adverse reaction with isoniazid
- e. Disulfiram like reaction can occur with macrolides

13. Chloramphenicol

- a. Does not penetrate the blood brain barrier
- b. Must be administered parenterally
- c. Can be safely used in premature infants
- d. Can cause depression of bone marrow function
- e. Can cause discoloration of developing teeth when given to children

14. Spironolactone

- a. Has a steroid structure
- b. Is a partial agonist
- c. Promotes sodium retention
- d. Increases potassium loss
- e. Is a loop diuretic

15. Which of the following drugs cause diuresis by the mechanisms indicated?

- a. Ethanol – by preventing the reabsorption of sodium from renal tubular fluid
- b. Digoxin – by inhibiting release of ADH
- c. Dopamine – by inhibiting active transport of chloride over the entire length of the descending limb of the loop of Henle
- d. Furosemide – by inhibiting carbonic anhydrase
- e. Chlorothiazide – by inhibiting active sodium transport in the ascending limb of the loop of Henle

Antibiotics Pharmacology Answers

1. B
2. E
3. A
4. C
5. C
6. B
7. A
8. A
9. C
10. A
11. E
12. C
13. D
14. A
15. E

MCQs: Analgesia Toxicology and Antibiotics

Q1: All of the following may cause seizures directly or indirectly except.

- A: Tramadol
- B: M3G
- C: M6G
- D: Hydromorphone
- E: Flumazenil

Q2: The following opiate with the least intrinsic activity is.

- A: Propoxyphene
- B: Alfentanil
- C: Codeine
- D: Nefopam
- E: Meperidine

Q3: Regarding spinal pain transmission and the opiates one is false.

- A: Pre-synaptic terminals have mu, delta and kappa receptors.
- B: Binding mu receptors on post-synaptic terminal opens K⁺ channels.
- C: Decrease in Ca⁺⁺ influx pre-synaptically can be mediated by opiate binding.
- D: Opiates affect afferent pain transmission but also efferent pain modulation.
- E: NMDA blockade increases tolerance to opiates.

Q4: Complications related to COX-2 inhibitors include.

- A: Gastrointestinal bleeding.
- B: Renal failure.
- C: Increase in adverse cardiovascular events.
- D: Sulphur allergy.
- E: All of the above.

Q5: Medication with anti-inflammatory properties in gout include all except.

- A: Prednisone
- B: Colchicine
- C: Tolmetin
- D: Indomethacin
- E: Celecoxib

Q6: Diet supplementation with fish eicosapentaenoic acid

- A: Decreases inflammation by elevating vitamin D levels.
- B: Is not as efficient as NSAIDs at reducing inflammation.
- C: Is a saturated fatty acid.
- D: Forms eicosanoids several orders less potent than usual.
- E: Effects have not been clinically studied.

Q7: Regarding carbon monoxide one is false.

- A: It is readily formed by incomplete combustion of carbon.
- B: The fetus is protected by the maternal circulation from toxic effects.
- C: The hemoglobin affinity is 220 times that of oxygen.
- D: The half life is 5 hours and 20 mins breathing air.
- E: Smokers can exhibit carboxyhemoglobin levels of 5-10 per cent.

Q8: Bio-accumulation is a feature of which substance.

- A: Carbamates.
- B: Organophosphates.
- C: Ozone.
- D: Mercury.
- E: None of the above.

Q9: Chelation therapy for heavy metal poisoning.

- A: Chelation for lead has little compelling evidence in the asymptomatic individual.
- B: Deferoxamine therapy increases susceptibility to *Yersinia enterocolitica* infection.
- C: Chelation therapy is useful in cadmium intoxication.
- D: Peanut allergy is a contraindication to the use of intramuscular dimercaprol.
- E: L-Penicillamine frequently causes pyridoxine deficiency.

Q10: A primarily bacteriostatic antibiotic is.

- A: Metronidazole
- B: Chloramphenicol
- C: Penicillin
- D: Vancomycin
- E: Gentamicin

Q11: If penicillin together with tetracycline is tested for synergy and is found in combination to achieve MIC at 3mg/L of penicillin and 3mg/L of tetracycline compared to a MIC of 0.5mg/L for each drug on its own then the FIC index is.

- A: 3
- B: 6
- C: 9
- D: 12
- E: 1/6

Q12: For Question 11 one of the following statements is false.

- A: Damage to the bacteria at two sites simultaneously has not enhanced synergy.
- B: Antibiotics displaying indifference of effect approach a FIC index of 2.
- C: Antibiotics displaying similar action without synergy approach FIC index of 1.
- D: Synergy is an increase in expected effect above the sum of individual ABx effects had they been acting alone.
- E: Synergy is seen at greater than or equal to 4.

Q13: Cefoxitin and Piperacillin interact in the following way to achieve antagonism.

- A: Induction of enzymatic inactivation by beta-lactamase for some species.
- B: Competitive inhibition at PBPs.
- C: Cidal inhibition by static agent.
- D: Achieve high levels of synergy.
- E: Are not available in Australasia and are irrelevant.

Q14: All the penicillins need dose adjustment in renal failure except.

- A: Penicillin G
- B: Dicloxacillin
- C: Amoxicillin/ Clavulanate
- D: Ticarcillin
- E: Penicillin V

Q15: For cross reaction/ hypersensitivity one of the following is incorrect.

- A: Penicillins/ Monobactams no cross reactivity.
- B: Vancomycin: release of histamine.
- C: Penicillins/ Cephalosporin 20% cross reactivity.
- D: Penicillins/ Carbapenems 50% cross reactivity.
- E: Penicillin/ Erythromycin no cross reactivity.

Q16: The best CSF penetration of the beta lactam containing antibiotics is achieved by.

- A: Cefotaxime
- B: Ceftriaxone
- C: Meropenem
- D: Penicillin G
- E: Aztreonam

Q16: Chloramphenicol has the following features except one.

- A: In doses above 50mg/kg/d in infants may cause grey baby syndrome.
- B: It is an inhibitor of microsomal enzymes.
- C: It binds reversibly to the 50s subunit inhibiting protein synthesis.
- D: It penetrates virtually every tissue to near serum levels.
- E: Agranulocytosis is idiosyncratic, 1: 24-40,000 cases and tends to be reversible.

Q18: A lactone ring is a feature of all the following drugs except:

- A: Erythromycin
- B: Clindamycin
- C: Amphotericin B
- D: Clarithromycin
- E: Ivermectin

Q19: MLS Resistance will give resistance to all the following antibiotics except.

- A: Quinupristin/ Dalfopristin
- B: Linezolid
- C: Roxithromycin
- D: Clindamycin
- E: Lincomycin.

Q20: Sulphonamide antibiotics.

- A: Do not affect mammalian cells as they rely on exogenous folate.
- B: Act as PABA analogues inhibiting Dihydrofolate reductase.
- C: Gain synergy from other folate metabolic pathway inhibitors acting at alternate sites.
- D: Have activity against protozoa, fungi and bacterial species.
- E: Share hypersensitivity with COX2 inhibitors/ carbonic anhydrase inhibitors/ loop diuretics and oral hypoglycaemic agents.

Q21: Fluoroquinolones exhibit all the following except.

- A: Risk of tendinitis and arthropathy.
- B: QTc prolongation worsened by erythromycin administration.
- C: Resistance arising with 1: 10 to the 7-9 due to point mutations.
- D: Act via inhibition of topoisomerase II and IV
- E: The newest agents including moxifloxacin have improved pseudomonal cover.

Q22: With the anti-Tubercular drugs the following associations are true except.

- A: Rifampicin: yellow staining of soft contact lenses.
- B: Pyrazinamide: taken up by phagocytes and more active in this acidic environment.
- C: Streptomycin: well tolerated orally and given as fourth agent pending sensitivity.
- D: Isoniazid: inhibition of mycolic acid production in cell wall.
- E: Ethambutol: red green colour blindness.

Q23: One of the following is true for the imidazoles vs the triazoles.

- A: The triazoles are more specific for fungal p450
- B: The imidazoles are less toxic parenteral.
- C: Fluconazole has poor CSF penetration due to insolubility in water.
- D: Both these medications act to activate p450 digestion of fungal cell walls.
- E: Flucytosine is a close relative with similar action.

Q24: The nucleotide-like antivirals include all except.

- A: acyclovir
- B: ganciclovir
- C: zidovudine
- D: lamivudine
- E: nevirapine

Q25: The most generally active of the following antimicrobials is.

- A: Sodium hypochlorite
- B: Phenols
- C: Alcohols
- D: Chlorhexidine
- E: Sodium bicarbonate

Q26: You are treating a patient with *P.falciparum* from rural Thailand and you are primarily worried about.

- A: The residency status of your patient.
- B: The risk of catching malaria.
- C: Mefloquine induced psychosis.
- D: Multi- drug resistance.
- E: Difficulty clearing the liver of hypnozoites.

Q27: Agents used in the treatment of *P.jiroveci* include all except.

- A: Oxygen
- B: Pentamidine
- C: Co-trimoxazole
- D: Atovaquone
- E: Ciprofloxacin

Q28: Albendazole shares a similar mechanism of action with.

- A: piperazines
- B: opiates
- C: colchicine
- D: ivermectin
- E: praziquantel

Answers from Katzung

Q1: C page 500, 512, 360

Q2: A page 499 note Nefopam non-opioid and not in Katzung

Q3: E page 503, 500

Q4: E page 582, 583, 584

Q5: C page 583, 597

Q6: D page 595

Q7: B page 960

Q8: D page 976

Q9: C page 978. Others A-973; B-980; D-978; E-980

Q10: B page 842

Q11: D page 846

Q12: E page 846

Q13: A page 847

Q14: B page 738

Q15: C page 747 (5-10 per cent) note D from Guide to pathogens and AB treatment

Q16: A page 845

Q17: E page 755

Q18: B page 761 and 792 and 890

Q19: B page 759 and 762

Q20: B page 773 and 775

Q21: E page 777

Q22: C page 786

Q23: A page 795

Q24: E page 817

Q25: A page 830

Q26: debatable but probably D from page 864

Q27: E page 880

Q28: C page 886 and page 597

Antihypertensives, vasodilators, angina drugs, cardiac glycosides.

June 02

1. Diuretics
 - a. Work to lower BP initially by decreasing peripheral vascular resistance
 - b. Thiazide diuretics are potassium sparing
 - c. Are effective in lowering Bp by 20 – 25 mmHg in most patients
 - d. BP response to thiazides continues to increase at doses greater than usual therapeutic dose.
 - e. Diuretics may impair glucose tolerance

2. Methyl dopa
 - a. Lowers the heart rate and cardiac output more than clonidine does
 - b. Causes reduction in renal vascular resistance
 - c. Has minimal CNS side effects
 - d. Has 80% bioavailability
 - e. Usual therapeutic dose is about 1 – 2 mg/day

3. Propranolol
 - a. Is a B1 specific blocker
 - b. Causes prominent postural hypotension
 - c. Inhibits the stimulation of renin production by catecholamines
 - d. Has a half life of 12 hours
 - e. Has no effect on plasma lipids

4. Hydralazine
 - a. Dilates veins but not arterioles
 - b. Is contraindicated in the treatment of preeclampsia
 - c. Can cause an SLE type syndrome in up to 10 – 20% of patients
 - d. Causes orthostatic hypotension in many cases
 - e. Is extremely useful as a single agent in treatment of hypertension

5. Which of the following drug's metabolism characteristics are bimodally distributed in the population?
 - a. Sodium nitroprusside
 - b. Clonidine
 - c. Minoxidil
 - d. Hydralazine
 - e. Phentolamine

6. The ACE inhibitors
 - a. Inhibit peptidyl dipeptidase thus preventing the inactivation of bradykinin
 - b. Captopril is a prodrug
 - c. Are to be used with caution in patients with IHD as reflex sympathetic activation occurs secondary to the hypotensive effects of the ACE inhibitors
 - d. Have no role in treating the normotensive diabetic patients
 - e. Are useful antihypertensive agents in late pregnancy

7. The following drugs when combined with ACE inhibitors may produce troublesome problems EXCEPT
- Diclofenac
 - Potassium supplements
 - Spirolactone
 - Lithium
 - Theophylline
8. The nitrates
- Have an antianginal effect via vasodilation of arterioles only
 - Serve to increase preload
 - Have a direct effect on cardiac muscle to cause a decrease in anginal symptoms
 - All have high oral bioavailability
 - Are contraindicated in the presence of increased intracranial pressure
9. Regarding Calcium channel blockers
- Calcium channel blockers are not bound to plasma proteins
 - Nifedipine has less vascular potency than verapamil
 - Felodipine has been shown to inhibit insulin release in humans
 - Diltiazem has a plasma half life of 3 – 4 hours
 - Verapamil has high affinity for cerebral blood vessels thus decreasing vasospasm post subarachnoid haemorrhage
10. Which of the following calcium channel blockers is excreted predominantly in the faeces?
- Nifedipine
 - Felodipine
 - Diltiazem
 - Nimodipine
 - Verapamil
11. Which of the following calcium channel blockers has the longest plasma half life?
- Felodipine
 - Diltiazem
 - Amlodipine
 - Nimodipine
 - Verapamil
12. The following include major actions of digoxin on cardiac electrical functions EXCEPT
- Decreased PR interval on ECG
 - Decreased conduction velocity at the AV node
 - Increased automaticity of the atrial muscle
 - Decreased effective refractory period in purkinje system/ventricles
 - Bigeminy can be induced by digoxin
13. Which of the following increases the risk of digoxin induced arrhythmias?
- Hyperkalaemia
 - Hypercalcaemia
 - Hypermagnesaemia
 - Hyperuricaemia
 - Hypernatraemia

14. Digoxin

- a. Is poorly lipid soluble
- b. Is extensively metabolized
- c. Has a half life in the body of 40 hours
- d. Has minimal GI toxicity
- e. Is 80% bound to plasma proteins

15. Drugs which may increase digoxin effect include all of the following EXCEPT

- a. Amiodarone
- b. Diltiazem
- c. Frusemide
- d. Quinidine
- e. Antacids

16. Which of the following drugs has the smallest volume of distribution?

- a. Chloroquine
- b. Verapamil
- c. Imipramine
- d. Warfarin
- e. Digoxin

Pharmacology Answers

- 1. E
- 2. B
- 3. C
- 4. C
- 5. D
- 6. A
- 7. E
- 8. E
- 9. D
- 10. C
- 11. C
- 12. A
- 13. B
- 14. C
- 15. E
- 16. D

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Nov 04

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Pharmacology Answers

- 1. E
- 2. B
- 3. C
- 4. C
- 5. D
- 6. A
- 7. E
- 8. E
- 9. D
- 10. C
- 11. C
- 12. A
- 13. B
- 14. C
- 15. E
- 16. D

Mock Pharmacology MCQ Examination (60 Questions)

♣ July 2006

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 - b. 1st order kinetics = more common than zero order kinetics
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 - d. 1st order kinetics generally apply to high plasma concentrations (>20mg/100ml) of ethanol
 - e. 1st order kinetics result in steady state concentrations after multiple dosing

2. Glyceryl trinitrate
 - a. Is the treatment of choice in CHF
 - b. Has to be converted to a nitrite before it is effective
 - c. Has a duration of action of several hours following buccal absorption
 - d. Has no effect on blood pressure
 - e. Can increase exercise tolerance if taken immediately before exercise

3. Which of the following drug interactions may occur in patients treated with MAO inhibitors?
 - a. Hypertension after administration of L-dopa
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 - b. Liquid paraffin acts by osmotically increasing the volume of gut contents
 - c. Sodium sulphate acts as an irritant purgative
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 - a. Is used as an anxiolytic
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 - Reduction
 - Methylation
 - Water conjugation
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- Benzodiazepines – Naloxone
 - Fluoride – magnesium
 - Anticholinergic agents – pralidoxime
 - Methanol – fomepizole
 - Iron salts – acetylcysteine
31. Which of the following drugs has a high extraction ratio?
- Diazepam
 - Theophylline
 - Phenytoin
 - Propranolol
 - Warfarin
32. Inhibition of the angiotensin converting enzyme (ACE)
- Prevents the conversion of renin to angiotensin I
 - Improves renal function
 - Is achieved with β blockers
 - Can result in an increase in plasma K^+ concentration
 - Increases aldosterone production
33. The fluoroquinolones
- Work by inhibiting dihydrofolate reductase
 - Have little effect against gram positive organisms
 - May be administered to patients with severe campylobacter infection
 - Are heavily metabolised in the liver
 - Are safe to give to breast feeding mothers
34. Codeine
- Occurs in foxglove plants
 - Frequently causes diarrhoea
 - Is used to treat nausea caused by morphine
 - Is equipotent to morphine
 - Depresses the cough reflex
35. Regarding the alpha blockers
- Phenoxybenzamine binds to α receptors causing irreversible blockade
 - Prazosin has much higher affinity for α_2 receptors compared with α_1 receptors
 - They may precipitate urinary retention
 - They have no effect on peripheral vascular resistance
 - Doxazosin has a short half life of 2 hours

36. All of the following are live virus vaccines EXCEPT
- MMR
 - Mumps
 - Yellow fever
 - Oral polio
 - Influenza
37. Metaclopramide
- Is a potent dopamine agonist
 - Is prokinetic in gut
 - Dystonic reactions are very rare
 - Has a side effect of profound nausea in some patients
 - Acts by releasing serotonin from the neurons in the enteric nervous systems's myenteric plexus
38. Regarding the antipsychotic drugs
- Chlorpromazine has a high clinical potency
 - Haloperidol is highly sedative
 - Clozapine causes a great degree of extrapyramidal toxicity
 - Pimozide acts almost exclusively on D₂ receptors
 - They may cause tardive dyskinesia by their action of dopamine receptor blockade
39. Serotonin – all true EXCEPT
- Reuptake into neurons is blocked by clomipramine
 - When stored in enterochromaffin cells has a neurotransmitter role
 - Cause cause ↑ GI motility
 - Storage is disrupted by reserpine
 - Concentration in nerves is ↑ by MAOIs
40. Which of the following steroid agents is most potent (in its anti-inflammatory effect)?
- Prednisone
 - Betamethasone
 - Hydrocortisone
 - Triamcinolone
 - Methylprednisolone
41. Regarding lead toxicity
- Lead can induce an anaemia that is macrocytic
 - Young children absorb around 10% of ingested inorganic lead
 - Lead induced peripheral neuropathy often involves upper limb extensors resulting in wrist drop
 - High dose organic lead poisoning usually results in severe pneumonitis
 - All patients with elevated blood lead levels should have chelation treatment whether symptomatic or not
42. Regarding amiodarone
- It is a strong calcium channel blocker
 - It combines almost exclusively with sodium channels in the activated state, blocking them
 - It increases clearance of warfarin and theophylline
 - Skin deposits result in photodermatitis in about 55% of patients
 - It has a half life of 13 – 103 days

43. Clindamycin
- Inhibits bacterial cell wall synthesis
 - If often used for prophylaxis of endocarditis in patients with valvular disease who are undergoing dental procedures
 - Penetrates through blood brain barrier into CSF well
 - Works well against enterococci and gram negative aerobic organisms
 - Is 10% protein bound
44. Regarding agents used to treat gout
- As little as 8mg in 24 hours of colchicine may be fatal
 - Allopurinol treats gout by stimulating the enzyme xanthine oxidase
 - Probenecid is an organic alkaline substance
 - Colchicine may precipitate acute attacks of gout
 - Aspirin is effective against gout as it inhibits urate crystal phagocytosis
45. Overdoses of which of the following antidepressant agents are characterised by severe neurotoxicity?
- Amitriptyline
 - Moclobemide
 - Amoxapine
 - Imipramine
 - Fluoxetine
46. Local anaesthetics
- Block by LAs is more marked in nerves with higher frequencies of depolarisation and with shorter depolarisations
 - Bupivacaine is metabolised faster in the liver than prilocaine
 - Elevated extracellular calcium partially potentiates the action of local anaesthetics
 - Large doses of prilocaine may cause methaemoglobinaemia
 - Block unmyelinated small nerve fibres before myelinated fibres of the same diameter
47. What is the half-life of a drug with a volume of distribution of 700l/70kg and clearance of 49 litres / hour /70kg?
- 5 hours
 - 8 hours
 - 10 hours
 - 12.5 hours
 - 15 hours
48. All of the following may be seen in organophosphate poisonings EXCEPT
- Salivation
 - Fibrillation of muscle fibres
 - Bronchospasm
 - Tachycardia
 - Vomiting
49. Regarding antihypertensive agents
- Hydralazine dilates both arterioles and veins
 - Nifedipine has more cardiodepressant effects than vasodilator effect compared with Verapamil
 - Minoxidil works by opening calcium channels in smooth muscle
 - Nitroprusside is a safe antihypertensive agent in pregnancy
 - Diazoxide is bound extensively to serum albumin

50. Regarding antimycobacterial agents
- Isoniazid is a prodrug
 - Rifampicin inhibits DNA synthesis
 - About 20% of ethambutol is excreted in faeces
 - Risk of ototoxicity and nephrotoxicity is increased in the elderly with Streptomycin
 - All of the above are true
51. Regarding asthma treatment
- Salmeterol is a potent selective B₂ agonist with short duration of action
 - Corticosteroids work in asthma by direct action on relaxing airway smooth muscle
 - Cromolyn sodium is an excellent first line medication in treatment of acute severe asthma
 - ≥80-90% of the total dose of aerosol medication is deposited in the mouth/pharynx
 - Theophylline may produce seizures at blood concentrations around 20mg/l
52. Regarding temazepam – all of the following are true EXCEPT
- It produces inactive metabolites
 - It induces enzymes only to a minimal extent
 - It increases REM sleep
 - It causes less hangover than nitrazepam
 - It causes rebound insomnia
53. Regarding the anti-epileptic drugs
- Vigabatrin works by sodium channel blockade
 - Phenytoin is able to stimulate its own metabolism by enzyme induction
 - Lorazepam has documented efficacy against absence seizures
 - Valproate has a large volume of distribution (>500l/70kg)
 - The most common dose related adverse effects of carbamazepine are diplopia and ataxia
54. Regarding aspirin
- The average anti-inflammatory dose of aspirin is 0.6g up to 4 hourly
 - Aspirin's main adverse effect at usual doses is rash
 - Aspirin's antiplatelet effect lasts 8 – 10 days
 - At low toxic doses – respiratory acidosis may occur
 - Aspirin has a pKa of 4.5
55. Which of the following agents can be given as an anaesthetic without causing cardiovascular depression or stimulation?
- Ketamine
 - Etomidate
 - Propofol
 - Halothane
 - Thiopentone
56. Metronidazole
- Causes pancreatitis uncommonly
 - Is 80% bound to protein
 - Plasma clearance of Metronidazole is decreased in patients with impaired renal function
 - Is the treatment of choice in gonococcal disease
 - Is safe in pregnancy

57. Benzodiazepines
- Increase the duration of GABA gated chloride channel openings
 - Will depress (in high doses) the CNS to the point known as stage 3 of general anaesthesia
 - Bind to GABA_B receptors
 - Have extensive cardiodepressant effects in doses used to cause hypnosis
 - Decrease the duration of stage 2 NREM sleep
58. Regarding antacids
- Calcium carbonate can cause milk alkali syndrome as an adverse effect
 - Aluminium hydroxide can cause constipation
 - Sodium bicarbonate is a highly soluble salt
 - Magnesium hydroxide is one of the constituents in mylanta
 - All of the above are true
59. Sotalol
- Is extensively metabolised in the liver
 - Is a selective B₁ blocker
 - Has a usual effective dosage of 80 – 320mg bd
 - Causes torsade de pointes when plasma concentrations of sotalol are normal – low
 - Is only effective in supraventricular arrhythmia treatment
60. This MCQ paper has been so tedious it might be good now to take some hallucinogens. All of the following statements are correct EXCEPT
- LSD is related to the ergot alkaloids
 - PCP can cause loss of proprioception
 - Overdosage of LSD commonly is fatal
 - Scopolamine causes hallucinogenic effects by blocking the central muscarinic receptors
 - PCP acts as an antagonist on the NMDA subtype of glutamate receptors

Answers

- | | | |
|-------|-------|-------|
| 1. D | 21. A | 41. C |
| 2. E | 22. E | 42. E |
| 3. A | 23. B | 43. B |
| 4. C | 24. B | 44. A |
| 5. D | 25. C | 45. C |
| 6. D | 26. E | 46. D |
| 7. B | 28. C | 47. C |
| 8. E | 28. D | 48. D |
| 9. 3 | 29. C | 49. E |
| 10. B | 30. D | 50. E |
| 11. A | 31. D | 51. D |
| 12. B | 32. D | 52. C |
| 13. E | 33. C | 53. E |
| 14. C | 34. E | 54. C |
| 15. C | 35. A | 55. B |
| 16. A | 36. E | 56. A |
| 17. E | 37. B | 57. B |
| 18. D | 38. D | 58. E |
| 19. C | 39. B | 59. C |
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Pharmacology MCQ

1. Regarding first order kinetics – all of the following are true EXCEPT
 - a. 1st order kinetics means rate of reaction is proportional to concentration
 - b. 1st order kinetics = more common than zero order kinetics
 - c. 1st order kinetics apply to exponential processes
 - d. 1st order kinetics generally apply to high plasma concentrations (>20mg/100ml) of ethanol
 - e. 1st order kinetics result in steady state concentrations after multiple dosing

2. Glyceryl trinitrate
 - a. Is the treatment of choice in CHF
 - b. Has to be converted to a nitrite before it is effective
 - c. Has a duration of action of several hours following buccal absorption
 - d. Has no effect on blood pressure
 - e. Can increase exercise tolerance if taken immediately before exercise

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 - Methanol – fomepizole
 - Iron salts – acetylcysteine

Pharmacology MCQs: July 2nd

- Regarding histamine
 - H1 receptors occur in cardiac muscle
 - H2 receptor blockers include promethazine
 - Adrenaline is a physiologic antagonist of histamine
 - Histamine works on bronchiolar smooth muscle to bronchodilate it
 - Brain H3 receptors are predominantly postsynaptic
- Histamine
 - Causes increased BP via potent vasoconstricting effects
 - Stimulates gastric acid secretion
 - Is produced by bacteria in ciguatera fish causing GI upset and cardiovascular effects
 - Has insignificant effects on nerve endings
 - All of the above are correct
- All of the following H1 antagonists may cause moderate- marked sedation EXCEPT
 - Diphenhydramine
 - Cyproheptadine
 - Pyrilamine
 - Loratadine
 - Promethazine
- Regarding H2 antagonists
 - They can be used to treat systemic mastocytosis
 - They are capable of >90% reduction in gastric acid secretion after a single dose
 - Up to 20% of ulcers may fail to heal with 4 weeks of conventional H2 antagonist/antacid treatment
 - Cimetidine may cause reversible gynaecomastia and confusional states as side effects
 - All of the above are true
- Agents promoting GI motility (i.e are prokinetic) include all of the following EXCEPT
 - Cisapride
 - Sucralfate
 - Metaclopramide
 - Bethanechol
 - Neostigmine

6. Regarding drugs which act on the colon
 - a. Lactulose is a stimulant laxative
 - b. Diphenoxylate is a weak analogue of fentanyl
 - c. Loperamide is safe for use in patients with diarrhoea from ulcerative colitis
 - d. Senna has a delayed onset of action
 - e. Kaolin is an adsorbent and is more effective in treatment of diarrhoea than loperamide or diphenoxylate

7. All of the following drugs / diseases cause prolonged QT interval / potentially lethal ventricular arrhythmias when combined with astemizole EXCEPT
 - a. Rifampicin
 - b. Patients with liver disease
 - c. Ketoconazole
 - d. Erythromycin
 - e. Itraconazole

8. H₂ antagonists
 - a. Irreversibly compete with histamine at H₂ receptor sites
 - b. Also bind to H₁ receptors
 - c. Famotidine inhibits the cytochrome P450 system
 - d. Ranitidine may increase bioavailability of ethanol by >40% in normal individuals
 - e. Ranitidine is 7 times more potent than famotidine in treatment of duodenal ulcers

9. Cimetidine may increase the pharmacologic effect of all of the following EXCEPT
 - a. Lignocaine
 - b. Ketoconazole
 - c. Warfarin
 - d. Phenytoin
 - e. Barbiturates

10. Regarding drugs affecting serotonin
 - a. Sumatriptan is a serotonin antagonist
 - b. Buspirone is a 5HT_{1a} agonist
 - c. Cyproheptadine is a competitive serotonin blocker in doses of 120 to 160 mg/day
 - d. Ketanserin blocks 5HT receptors and B receptors
 - e. Ondansetron is a 5 HT₂ antagonist

11. Regarding the ergot alkaloids
 - a. Bromocriptine has profound effects on uterine smooth muscle stimulation
 - b. Methysergide is a peptide alkaloid
 - c. Ergotamine constricts most human blood vessels and is short acting
 - d. PCP is an ergot alkaloid
 - e. Ergotism may be defined as a spectrum of hallucinations, convulsions and "fiery limb pains"

12. All of the following drugs stimulate renin release EXCEPT
 - a. Clonidine
 - b. Nitroprusside
 - c. Isoproterenol
 - d. Alpha antagonists
 - e. Thiazides

13. All of the following vasoconstrict EXCEPT

- a. Vasopressin
- b. Ergotamine
- c. Angiotensin 2
- d. Substance P
- e. Endothelin

14. Regarding NSAIDs

- a. Aspirin reversibly acetylates and blocks platelet cyclo oxygenase
- b. Piroxicam has the shortest half life of all the NSAIDS
- c. Serious haematological problems have occurred with indomethacin use
- d. Ibuprofen is excreted predominantly unchanged in the urine
- e. Naproxen = selective COX 2 inhibitor

15. Methyxanthines (theophylline)

- a. Have negative chronotropic/inotropic effects
- b. Have antidiuretic effects
- c. Inhibit the enzyme phosphodiesterase at high concentrations
- d. Theophylline has less selective smooth muscle effects compared with caffeine
- e. Have no effect on skeletal muscle

16. All of the following pairings are correct EXCEPT

- a. PGE1 = vasodilation
- b. PGE2 = relaxes gut longitudinal muscle
- c. PGF 2 alpha = bronchoconstricts
- d. PGF2alpha = oxytocic actions
- e. PGI 2 = inhibits platelet aggregation

17. PGE 1 has all of the following effects EXCEPT

- a. Maintains patent ductus in some congenital heart disease
- b. Contracts intestinal smooth muscle
- c. Vasodilates
- d. Inhibits platelet aggregation
- e. Decreases water and sodium excretion by the kidney

18. Regarding drugs used to treat asthma

- a. Antimuscarinic agents are much more potent than B2 agonists in reversing asthmatic bronchospasm
- b. Salmeterol has a duration of action of 4 – 6 hours
- c. Isoproterenol is a potent bronchodilator but may cause cardiac arrhythmias
- d. Cromolyn sodium is an excellent agent for treatment of an acute asthma attack
- e. Aminophylline contains 66 % theophylline by weight

Answers Pharm 2nd July

1. C
2. B
3. D
4. E
5. B
6. D
7. A
8. D
9. E
10. B
11. E
12. A
13. D
14. C
15. C
16. B
17. E
18. C

Local anesthetics and skeletal muscle relaxants

May 02

1. Regarding local anaesthetic agents
 - a. Lignocaine is also an antiarrhythmic of the Vaughan Williams classification group 1A
 - b. At normal tissue pH the larger fraction of local anaesthetic in the body fluids will be the uncharged form
 - c. Bupivacaine may cause an apparent cyanosis in some patients
 - d. The duration of action of procaine will be increased in the presence of liver disease
 - e. Local anaesthetic agents block conduction in small myelinated axons prior to blockade of other axons.

2. The most potent local anaesthetic agent in this list is
 - a. Procaine
 - b. Lignocaine
 - c. Cocaine
 - d. Bupivacaine
 - e. Prilocaine

3. Regarding amide local anaesthetics (LA)
 - a. Lignocaine is metabolised in the liver faster than any of the other amide local anaesthetics
 - b. Allergies to amide local anaesthetics are more common than with the ester LA's
 - c. Prilocaine is the most cardiotoxic amide LA
 - d. Cocaine is an amide LA which is often used as a drug of abuse
 - e. The half life of lignocaine may be increased 3 to 4 fold in a patient with severe liver disease

4. Regarding LA effects on nerve action
 - a. Unmyelinated fibres tend to become blocked before myelinated fibres of the same diameter
 - b. Proprioceptive fibres are blocked first
 - c. Block by LA drugs is more marked in nerves with higher frequencies of depolarisation and longer action potential duration
 - d. In large nerve trunks sensory nerves are usually located circumferentially therefore exposed first to drug
 - e. None of the above statements are true

5. Suxamethonium
 - a. Is a nondepolarising neuromuscular blocking agent
 - b. Is contraindicated in all eye operations
 - c. Stimulates cardiac muscarinic receptors and autonomic ganglia
 - d. Its action is directly terminated by the action of plasma cholinesterase
 - e. Should not be administered to patients with burns > 24 hours old because of its hypercalcaemic effect

6. The skeletal muscle relaxant with the longest duration of action is
 - a. Suxamethonium
 - b. Mivacurium
 - c. Vecuronium
 - d. Pancuronium
 - e. Rocuronium

7. The nondepolarising muscle relaxant which is not dependent on renal or hepatic mechanisms for termination of action is
 - a. Pancuronium
 - b. Atracurium
 - c. Vecuronium
 - d. Gallamine
 - e. Tubocurarine

8. Regarding nondepolarising muscle relaxants
- Jaw and eye muscles are paralysed before the limb and trunk muscles
 - Rocuronium is the most potent nondepolarising skeletal muscle relaxant
 - Atracurium is a steroid derivative
 - Vecuronium blocks cardiac muscarinic receptors thus inducing moderate increase in heart rate
 - The nondepolarising agents produce a nonsurmountable blockade
9. All of the following are potential side effects of suxamethonium EXCEPT
- Hyperkalaemia
 - Prolonged duration of action in elderly patients
 - Muscle pain
 - Second dose bradycardia
 - Increased intraocular pressure
10. Which of the following drugs is said to have 100% oral bioavailability?
- Acylovir
 - Paracetamol(acetaminophen)
 - Lithium
 - Propranolol
 - Digoxin

Answers

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