

CHOOSE THE SINGLE BEST ANSWER FOR QUESTIONS 1 - 100.

1. All of the following statements concerning **clozapine** are CORRECT EXCEPT:
 - A. Its potency as an antimuscarinic ranks it among the most useful of the antipsychotic drugs.
 - B. Its affinity for the 5HT₂ receptors is tenfold higher than its affinity for the D₂ receptors.
 - C. It is the treatment of choice for drug-resistant patients.
 - D. Many cases of tardive dyskinesia have been reported with the use of clozapine.
 - E. Unlike all other current antipsychotics, clozapine has very low D₂ receptor affinity.

2. All the following statements concerning neuroleptic drugs are accurate EXCEPT:
 - A. Their antipsychotic effects are probably due to blockade of dopaminergic receptors.
 - B. Their relative affinity for 5HT₂ receptors may influence their efficacy against negative symptoms.
 - C. Those neuroleptics that cause more extrapyramidal side effects are the agents that have only weak anticholinergic properties.
 - D. All neuroleptics reduce psychotic symptoms, especially positive symptoms.
 - E. Anticholinergic agents are rarely given to reduce extrapyramidal side effects caused by neuroleptic agents.

3. Fluphenazine has been prescribed for a 20-year-old male patient. This drug may cause him to experience all of the following EXCEPT:
- A. Constipation.
 - B. Difficulty reading the newspaper.
 - C. Excessive salivation.
 - D. Decreased sex drive.
 - E. Orthostatic hypotension.
4. Clinical uses of antipsychotic drugs include all of the following EXCEPT:
- A. Treatment of the amenorrhea-galactorrhea syndrome.
 - B. Acute management of the maniac phase of bipolar disorder.
 - C. Management of psychosis caused by phencyclidine intoxication.
 - D. Treatment of schizoaffective disorders.
 - E. Management of Tourette syndrome.
5. Akinesia, rigidity, and tremor occur more frequently during treatment with haloperidol than with thioridazine. The most CORRECT explanation is that:
- A. Thioridazine has greater alpha adrenoceptor-blocking actions.
 - B. Haloperidol has a low affinity for D₂ receptors.
 - C. Haloperidol activates GABAergic neurons in the striatum.
 - D. Haloperidol acts presynaptically to block dopamine release.
 - E. Thioridazine has greater blocking actions on brain muscarinic receptors.

6. The following statements concerning adverse effects of antipsychotic drugs are all CORRECT EXCEPT:
- A. Blurring of vision and urinary retention are likely side effects of chlorpromazine.
 - B. The late-occurring choreoathetoid movements caused by conventional antipsychotic drugs are exacerbated by antimuscarinic agents.
 - C. Retinal pigmentation is a dose-dependent toxic effect of thioridazine.
 - D. Acute dystonic reactions usually respond to diphenhydramine.
 - E. Uncontrollable restlessness in a patient on antipsychotic medications is usually alleviated by increasing the drug dose.
7. Concerning hypotheses for the pathophysiologic basis of schizophrenia, all of the following are CORRECT EXCEPT:
- A. All effective antipsychotic drugs have high affinity for D2 receptors.
 - B. Positron emission tomography has shown increased dopamine receptors in the brains of both untreated and drug-treated schizophrenics.
 - C. The clinical potency of many antipsychotic drugs correlates well with their alpha adrenoceptor-blocking actions.
 - D. Drug treatment of schizophrenics sometimes results in changes in the cerebrospinal fluid levels of the dopamine metabolite, homovanillic acid.
 - E. In a patient with parkinsonism, psychotic effects may occur during treatment with dopamine receptor agonists.

8. Related to the proposed mechanisms of action of antidepressant drugs, all of the following statements are CORRECT EXCEPT:
- A. Elevation in the cerebrospinal fluid levels of amine metabolites prior to drug therapy occurs in most depressed patients.
 - B. Endogenous depression has been postulated to result from decreased functional activity at certain central noradrenergic or serotonergic synapses.
 - C. Chronic treatment with selective serotonin reuptake inhibitors leads to a down-regulation of adrenoceptors.
 - D. The acute effect of most tricyclic drugs is to block the neuronal reuptake of norepinephrine and serotonin in the CNS.
 - E. MAO inhibitors decrease the metabolism of norepinephrine, serotonin, and dopamine.
9. Clinical uses of tricyclic antidepressants include all of the following EXCEPT:
- A. Endogenous depression
 - B. Phobic and obsessional states
 - C. Parkinson's disease
 - D. Bed-wetting in children
 - E. Neuropathic pain states
10. Effects of the tricyclic antidepressant drugs include all of the following EXCEPT:
- A. Elevation of the seizure threshold
 - B. Muscarinic receptor-blocking action
 - C. Alpha adrenoceptor blockade
 - D. Sympathomimetic actions
 - E. Sedation

11. The main advantages of 5-HT uptake inhibitors compared with tricyclic antidepressant drugs and MAO inhibitors include all of the following EXCEPT:
- A. Lack of anticholinergic and cardiovascular side effects.
 - B. Low acute toxicity.
 - C. No problem with weight gain.
 - D. Do not cause nausea, anorexia and insomnia.
 - E. No food reactions.
12. A patient under treatment for a major depressive disorder is brought to the emergency room after ingesting 50 times the normal therapeutic dose of amitriptyline. The signs and symptoms in this patient are likely to include all of the following EXCEPT:
- A. Hot dry skin
 - B. Coma and shock
 - C. Hypotension
 - D. Acidosis
 - E. Pinpoint pupils
13. In high doses, quinidine blocks alpha1 receptors. Which of the following drugs would be most likely to potentiate this effect.
- A. Chlordiazepoxide
 - B. Haloperidol
 - C. Chlorpromazine
 - D. Ethanol
 - E. Naproxen

14. Which of the following drugs would be LEAST likely to add to the CNS depression caused by ethanol consumption?
- A. Imipramine
 - B. Naproxen
 - C. Haloperidol
 - D. Morphine
 - E. Chlorpromazine
15. All of the following may be caused by treatment with moderate to large doses of a benzodiazepine EXCEPT:
- A. Additive depression of the central nervous system with alcoholic beverages
 - B. Anterograde amnesia with continued use as hypnotic agents
 - C. Increase in the activity of ALA synthetase with continued use
 - D. Decreased performance on tests of psychomotor function
 - E. Hyperreflexia and seizures with abrupt discontinuance after chronic use
16. Benzodiazepines produce all of the following effects EXCEPT:
- A. Sedation and induction of sleep
 - B. Reduction of muscle tone and coordination
 - C. Reduction of anxiety and aggression
 - D. Respiratory depression
 - E. Anticonvulsant effect

17. Concerning the clinical uses of sedative-hypnotics, all of the following are recognized indications EXCEPT:
- A. Symptoms of the alcohol withdrawal state may be alleviated by treatment with chlordiazepoxide
 - B. Alprazolam has selective anxiolytic effects in patients who suffer from panic attacks and phobic disorders
 - C. Intravenous diazepam is used in status epilepticus
 - D. Diazepam is used for muscle spasticity in patients with cerebral palsy
 - E. Phenobarbital is effective in the long-term management of patients with psychotic disorders
18. In a patient taking digoxin, furosemide and a potassium supplement, large doses of an atropine-like antinotion sickness drug (e.g. scopolamine) might produce which of the following?
- A. Anuria
 - B. Decreased automaticity of the SA node
 - C. Increased conduction through the AV node
 - D. Pulmonary fibrosis
 - E. Decreased inotropy
19. The antiarrhythmic effect of lidocaine is due to its inhibition of which of the following:
- A. Voltage-gated sodium channels only in the resting state
 - B. Voltage-gated sodium channels only in the active state
 - C. Voltage-gated sodium channels only in the inactive state
 - D. Voltage-gated sodium channels in both the active and inactive states
 - E. The rectifying potassium channel

20. One of the cardinal features of Parkinson's disease is:
- A. Seismic tremor
 - B. Resting tremor
 - C. Intention tremor
 - D. Delirium tremens
 - E. Hereditary essential tremor
21. The current principal treatment strategy for Parkinson's disease is:
- A. Tyrosine loading to increase dopamine synthesis
 - B. Cell replacement (transplants)
 - C. Muscarinic antagonist
 - D. Monoamine oxidase inhibitor
 - E. Dopamine replacement or mimicry
22. The current major limitations of levodopa therapy are:
- A. Wearing-off and on off phenomena
 - B. Nausea and vomiting
 - C. Hallucinations and confusion
 - D. Dietary restrictions and hypotension
 - E. Nystagmus
23. The principal pathology of Parkinson's disease includes:
- A. Loss of inhibitory interneurons within the basal ganglia
 - B. Neocortical cell death
 - C. Astrogliosis pigmentosis
 - D. Midbrain dopamine cell death
 - E. Plaques and tangles

24. An important untoward effect of tranylcypromine, a monoamine oxidase inhibitor, is which of the following?
- A. Additive sedation with depressants such as ethanol.
 - B. Hypotension
 - C. Massive release of epinephrine
 - D. Hypoglycemia
 - E. Confusion and depression
25. An antiseizure drug with multiple mechanisms, broad therapeutic spectrum (a drug of choice for generalized seizures) and idiosyncratic hepatotoxicity is:
- A. Valproate
 - B. Phenytoin
 - C. Ethosuximide
 - D. Carbamazepine
 - E. Phenobarbital
26. Partial seizures:
- A. Include myoclonic, tonic-clonic and absence seizures
 - B. Are linked to low threshold calcium currents in thalamic neurons
 - C. Can be caused by tumors, strokes or developmental lesions
 - D. Are largely unresponsive to drugs
 - E. Show widespread cortical involvement from the outset

27. An inexpensive antiseizure agent that is relatively, nontoxic but sedating and most effective in partial and tonic-clonic seizures is:
- A. Valproate
 - B. Phenytoin
 - C. Ethosuximide
 - D. Carbamazepine
 - E. Phenobarbital
28. An antiseizure drug with a good correlation between plasma concentration and effects with adverse effects including cerebellar signs and hirsutism:
- A. Valproate
 - B. Phenytoin
 - C. Ethosuximide
 - D. Carbamazepine
 - E. Phenobarbital
29. In a patient taking digoxin, captoprol, tolbutamide and a potassium supplement, propranolol may cause which of the following?
- A. Tachycardia
 - B. Hypoglycemia
 - C. Increased peripheral resistance
 - D. Increased cardiac output
 - E. Hypokalemia

30. A drug used for opiate overdose, for rapid opiate detoxification and to reduce craving for opiates:
- A. Codeine
 - B. Naltrexone
 - C. Buprenorphine
 - D. Diphenoxylate
 - E. Fentanyl
31. An analgesic agent with poor solubility and absorption that limits its use to management of diarrhea:
- A. Codeine
 - B. Naltrexone
 - C. Buprenorphine
 - D. Diphenoxylate
 - E. Fentanyl
32. A potent analgesic opiate with a short duration of action that is used in anesthesia:
- A. Codeine
 - B. Naltrexone
 - C. Buprenorphine
 - D. Diphenoxylate
 - E. Fentanyl
33. A partial opiate agonist with complex interactions with morphine that is used for addict maintenance:
- A. Codeine
 - B. Naltrexone
 - C. Buprenorphine
 - D. Diphenoxylate
 - E. Fentanyl

34. Which of the following agents is effective in reversing gastric atony associated with diabetes and is an effective antiemetic?
- A. Diphenhydramine
 - B. Metoclopramide
 - C. Kaolin
 - D. Scopolamine
 - E. Neostigmine
35. The chronic use of this agent may result in decreased prothrombin synthesis:
- A. Mineral oil
 - B. Castor oil
 - C. Bisacodyl
 - D. Psyllium seed
 - E. Diphenoxylate
36. Which of the following agents is most closely associated with a marked increase in tonus of the colon and interruption of the normal peristaltic contractions?
- A. Diphenhydramine
 - B. Sucralfate
 - C. Bismuth subsalicylate
 - D. Loperamide
 - E. Atropine

37. When the chronic use of a laxative is absolutely essential the most natural one would be:
- A. Dantrolene
 - B. Ipecac Syrup
 - C. Paregoric
 - D. Bismuth subsalicylate
 - E. Psyllium seed
38. A patient is going to have elective small bowel surgery and requires cleaning of the small intestine with laxative, which of the following would be most effective?
- A. Glycerin
 - B. Ipecac syrup
 - C. Castor oil
 - D. Diphenoxylate
 - E. Pectin
39. Irreversibly blocks the action of the proton pump in parietal cells:
- A. Tacrine
 - B. Omeprazole
 - C. Metoclopramide
 - D. Loperamide
 - E. Propantheline

40. For histamine H₂ receptor antagonists, all statements are true EXCEPT:
- A. Block the effect of histamine on respiratory tract mucosa
 - B. Are structurally similar to histamine
 - C. Differ in potency but have similar bioavailability and half life
 - D. Are available in over-the-counter form in effective doses to decrease acid secretion
 - E. Produce more uniform acid inhibition when given by continuous IV infusion
41. All are true regarding effective *Helicobacter pylori* treatment EXCEPT:
- A. "Clinical cure" of duodenal and most gastric ulcers
 - B. Often fails because of poor patient compliance
 - C. Ulcer patients require long term H₂ blocker therapy after eradication
 - D. Has little effect on gastric ulcers in NSAID users
 - E. Has no positive effects on esophagitis
42. The hypotension noted with the use of d-tubocurarine is associated with:
- A. Blockade of cardiac muscarinic receptors
 - B. Release of histamine from mast cells
 - C. Blockade of cardiac beta-adrenergic receptors
 - D. Reflex bradycardia
 - E. Decreased pCO₂

43. Factors that influence the action of local anesthetics include all of the following EXCEPT:
- A. Use of vasoconstrictors
 - B. Amount of local anesthetic injected
 - C. Blood flow through the tissue in which the injection is made
 - D. Tissue pH
 - E. Activity of acetylcholinesterase in the area
44. All of the following statements about nerve blockade with local anesthetics are CORRECT EXCEPT:
- A. Speed of onset may be reduced when injected into infected tissue
 - B. Block is faster in onset with smaller diameter fibers.
 - C. Activity is use-dependent
 - D. Fibers in the periphery of a nerve bundle are blocked sooner than fibers in the center of a bundle
 - E. Nociceptive and sympathetic transmission are blocked last.
45. All of the following statements concerning the anesthetic MAC are accurate EXCEPT:
- A. At a given level of anesthesia, measurement of alveolar concentrations of different anesthetics allow potency comparison
 - B. MACs give information about the slope of the dose-response curve
 - C. MACs decrease in elderly patients
 - D. The MAC value for nitrous oxide in humans is greater than 100%
 - E. MAC values are additive when several anesthetics are administered simultaneously

46. Which statement is INCORRECT concerning the pharmacology of local anesthetics?
- A. There is a direct correlation between lipid:water partition coefficient of a local anesthetic and the minimum concentration required for conduction blockade
 - B. The duration of action of a local anesthetic depends on binding to the protein components of the nerve membrane
 - C. The more-water soluble local anesthetic molecules penetrate the nerve membrane more easily
 - D. In solution, some local anesthetic molecules are unionized free base, while others accept a hydrogen ion and carry a positive charge
 - E. The onset of anesthesia can be increased by administering a greater mass of the drug thereby increasing the concentration gradient that drives diffusion.
47. All of the following factors have a major affect on either the onset or duration of nerve blockade by procaine EXCEPT:
- A. Administered with epinephrine
 - B. Degree of myelination
 - C. pH surrounding the nerve trunk
 - D. The density of potassium channels in the membrane
 - E. Blood flow to the injection site
48. Injection of Midazolam is often included in preanesthetic medication for all of the following reasons EXCEPT:
- A. Amnesic action
 - B. Rapid onset of action
 - C. Analgesic effect
 - D. Short duration of action
 - E. Anxiolysis

49. The pharmacokinetics of anesthetic gases depend on all of the following EXCEPT:
- A. Decreased alveolar ventilation
 - B. Uptake from the blood into body tissues
 - C. Metabolism
 - D. Partial pressure of the anesthetic in the inspired gases
 - E. Low blood : gas solubility coefficient
50. Which anesthetic produces a state called "dissociative anesthesia"?
- A. Propofol
 - B. Midazolam
 - C. Ketamine
 - D. Flumazenil
 - E. None of the above
51. Studies in both animals and humans have found that drugs of abuse have powerful reinforcing effects. One reason for this is the which of the following types of receptors found in the nucleus accumbens?
- A. Dopaminergic
 - B. GABAergic
 - C. Glutaminergic
 - D. Serotonergic
 - E. Noradrenergic

52. All of the following are true concerning the biotransformation of ethanol EXCEPT:
- A. Induction of P450
 - B. Metabolized by non-hepatic enzymes
 - C. Exhibits a zero order pharmacokinetic profile
 - D. Involves both soluble and membrane bound catalysts
 - E. Yields cytotoxic alkylating metabolites
53. Naltrexone is employed in the treatment of alcoholism because it:
- A. Irreversibly inhibits receptor binding of ethanol
 - B. Reduces excessive second messenger activity
 - C. Provides antagonist support during withdrawal
 - D. Leads to accumulation of toxic EtOH metabolites
 - E. Decreases the urge to drink after withdrawal
54. Vertical nystagmus, a pathognomonic sign of drug intoxication, is characteristic with which of the following?
- A. Amphetamine
 - B. Phencyclidine
 - C. Marihuana
 - D. Psilocybin
 - E. Ethanol
55. REM stage sleep is impaired specifically by excessive use of:
- A. Methadone
 - B. Psilocybin
 - C. Amphetamine
 - D. Gabapentin
 - E. Disulfiram

56. A person who consumes excessive amounts of alcohol chronically has a high risk for:
- A. Pancreatic carcinoma
 - B. Elevated serum LDL
 - C. Tardive dyskinesia
 - D. Hepatic cirrhosis
 - E. Diabetes insipidus
57. The typical abstinence syndrome for alcohol dependence is characterized by:
- A. Skin eruptions
 - B. Postural hypotension
 - C. Severe dehydration
 - D. Profound hyperthermia
 - E. Distinct hyperreflexivity
58. Information you have gleaned from a patient in the Emergency Room indicates that he has experienced visual, auditory and tactile hallucinations. He appears disheveled and somewhat confused, but he is anxious and fears that other people are trying to get him. Upon questioning, he reports that the bump on his head came from a fight he had earlier in the day. You suspect that this patient is a drug user. What substance use condition do these findings suggest?
- A. Alcohol withdrawal
 - B. Opiate abstinence
 - C. LSD flashback
 - D. Crack cocaine intoxication
 - E. Inhalation of organic solvents

59. Which of the following psychotropic agents predictably cause hyperirritability and a toxic paranoid psychosis when used acutely in high dosage?
- A. Mescaline
 - B. MDMA
 - C. Amphetamine
 - D. Marijuana
 - E. Phencyclidine
60. Which of the following drugs has the most advantageous risk vs. benefit ratio for managing the withdrawal of an opiate-dependent patient?
- A. Naltrexone
 - B. Fluoxetine
 - C. Clonidine
 - D. Disulfiram
 - E. Meperidine
61. A patient presenting with complaints of intense GI cramping, diarrhea, and pain. In addition, he has objective signs of tremor, mydriasis, rapid shallow breathing along with elevated BR, HR and temperature. He should be considered for specific short term stabilization with:
- A. Scopolamine
 - B. Lorazepam
 - C. Buprenorphine
 - D. Haloperidol
 - E. Methadone

62. Anandamide is an arachidonic acid derivative that is widely distributed in the central nervous system. It is purported to be a natural ligand for which of the following receptors:
- A. Cannabinoid
 - B. Glutamate
 - C. Benzodiazepine
 - D. β_2 adrenergic
 - E. Cholinergic
63. When prescribing for the elderly, which principles must be kept in mind as you choose a pharmacological agent?
- A. Start low and go slow
 - B. Maintain patient function as the primary goal
 - C. Consider quality of life and side effects
 - D. Remember cost of drugs hits the elderly on fixed incomes hard
 - E. All of the above
64. Hidden presentations of disease in the elderly include all of the following EXCEPT:
- A. Confusion
 - B. Depression
 - C. Confabulation
 - D. Incontinence
 - E. Immobility

65. Doctors often prescribe for the elderly assuming they will fill the prescription and follow directions for drug use exactly. However, adherence to treatment plans is often poor. Which of the following reasons helps account for poor adherence (compliance) in the elderly?
- A. It is hard to convince old people to do what is right
 - B. Elderly patients are too assertive and like to determine their own treatment
 - C. Elderly patients are usually on many prescription drugs and OTC purchases
 - D. Family members may interfere with the patient's intentions to follow the instructions
 - E. All of the above
66. Major changes in pharmacokinetics and pharmacodynamics are known to occur with human aging. The changes that are important for the physician to keep in mind are the following:
- A. Distribution
 - B. Metabolism
 - C. Elimination
 - D. Receptor sensitivity
 - E. All of the above

67. Drug disposition studies in the elderly may be either longitudinal cohort studies of a younger group as it ages or cross-sectional comparison studies of younger groups versus older groups of patients. When longitudinal cohort studies are available, they reveal that there is:
- A. More variation from individual to individual than between age groups
 - B. Slow, but steady decline in organ function in all elderly individuals
 - C. A predictable reduction, within a few percentage points of error, in the absorption rate of drugs in older persons
 - D. Dependable change in the metabolic rates of the elderly that allow for exact drug dosing
 - E. Little significant alteration of body composition of elderly persons
68. Nutrition and drug metabolism are inter-related in the elderly. Poor nutrition may affect drug metabolism in several different ways. Please indicate which of the following statements is TRUE:
- A. Malnutrition readily is evident if the correct lab tests are ordered
 - B. Decreased fatty acids leads to decreased oxidative reactions for those drugs metabolized via oxidation
 - C. Increased carbohydrates in the diet leads to diabetes mellitus, which causes increased urine output, resulting in rapid loss of drugs into the urine
 - D. Decreased protein in the diet leads to reduced albumin production, affecting protein binding of many drugs
 - E. Decreased carbohydrates and calories enhance the activity of Cytochrome P-450 enzymes and increase metabolism of many drugs

69. Antidepressants (TCA's and SSRI's) act by:
- A. Inhibiting the metabolic breakdown of the neurotransmitter
 - B. Enhancing the binding of the neurotransmitter to the post-synaptic receptor
 - C. Enhancing the binding of the neurotransmitter to the pre-synaptic receptors
 - D. Impeding the re-uptake of the neurotransmitter by the pre-synaptic neuron.
 - E. Functioning as an agonist, directly stimulating the pre and post-synaptic receptors
70. Unfortunately, psychotropic drugs rarely just have precisely targeted effects on the CNS synaptic neurotransmitter each is designed to affect. Any given neurotransmitter may act at synapses where different neurotransmitters are meant to work, producing unwanted side effects. An example of this phenomenon is the unwanted anticholinergic effects of many psychotropic agents. You would suspect anticholinergic side effects if the patient complained of which of the following?
- A. Tremors
 - B. Dry mouth and eyes
 - C. Feeling faint and weak and falling down
 - D. Diarrhea
 - E. Erectile or ejaculatory dysfunction

71. Each of the following statements about erythropoietin is TRUE EXCEPT:
- A. Erythropoietin is effective in the treatment of anemia associated with cancer chemotherapy.
 - B. Adequate body stores of iron are required for a proper response to administration of erythropoietin.
 - C. Increases the hematocrit within one hour by releasing mature erythrocytes from the spleen.
 - D. Erythropoietin is the regulator of proliferation of committed progenitor cells of the hematopoietic system.
 - E. Erythropoietin is synthesized in both the kidney and the liver.
72. Antioxidant agents show promise for future prevention of atherosclerosis because they
- A. Prevent entry of LDL cholesterol into cells.
 - B. Increase expression of hepatic LDL receptors
 - C. Inhibit cell proliferation
 - D. Prevent oxidative modification of LDL
 - E. Increase levels of HDL
73. Which of the following combinations of drugs will provide a synergistic (additive or supra-additive) lowering of LDL-cholesterol levels in patients with heterozygous familial hypercholesteremia?
- A. Lovastatin and cholestyramine
 - B. Gemfibrozil and lovastatin
 - C. Gemfibrozil and cholestyramine
 - D. Fish oil and cholestyramine
 - E. Probucol and gemfibrozil

74. Which of the following agents lowers LDL cholesterol through inhibition of HMG-CoA reductase activity?
- A. Gemfibrozil
 - B. Cholestyramine
 - C. Lovastatin
 - D. Probucol
 - E. Niacin
75. Which of the following is the agent of choice for treating patients with elevated levels of VLDL triglycerides?
- A. Gemfibrozil
 - B. Cholestyramine
 - C. Lovastatin
 - D. Probucol
 - E. Niacin
76. Oral anticoagulants such as warfarin exert their anticoagulant effects by:
- A. Inhibiting calcium binding to coagulation factors
 - B. Acting as a template for complexing thrombin and antithrombin III
 - C. Breaking down thrombin
 - D. Inhibiting hepatic posttranslational carboxylation of coagulation factors
 - E. Forming an active complex with plasminogen

77. Which of the following combinations of drugs would be useful to treat an acute myocardial infarction (heart attack)?
- A. Aspirin + warfarin + gemfibrozil + lovastatin
 - B. Aspirin + urokinase + heparin + warfarin
 - C. Tissue plasminogen activator + protamine sulfate + heparin + hirudin
 - D. Probucol + streptokinase + gemfibrozil + vitamin K
 - E. Niacin + glyburide + cortisol + heparin
78. Heparin exerts its anticoagulant effects by
- A. Breaking down thrombin
 - B. Inhibiting calcium binding to coagulation factors
 - C. Acting as a template for complexing thrombin and antithrombin III
 - D. Inhibiting hepatic posttranslational carboxylation of coagulation factors
 - E. Forming an active complex with plasminogen
79. This inexpensive agent is used to treat elevations in LDL cholesterol but suffers from the fact that a majority of patients started on this agent complain that the gastrointestinal and vasodilatory effects are too bothersome.
- A. Cholestyramine
 - B. Lovastatin
 - C. Gemfibrozil
 - D. Probucol
 - E. Niacin

80. The controlling factor for the time to onset of action of the oral anticoagulant warfarin is:
- A. Half life for dissociation of warfarin from plasma protein binding sites
 - B. Elimination half life for Vitamin K
 - C. Elimination half life of warfarin
 - D. Half life for circulating antithrombin
 - E. Half lives for circulating Gla-containing coagulation factors
81. Which of the following descriptions correctly defines the molecular mechanism underlying the therapeutic actions of the statins such as simvastatin?
- A. Inhibition of hepatic VLDL secretion resulting in less production of IDL and LDL
 - B. Inhibition of hepatic cholesterol synthesis resulting in increased expression of LDL receptor
 - C. Inhibition of lecithin:cholesterol acyltransferase activity resulting in decreased conversion of IDL to LDL
 - D. Inhibition of hepatic production of apoCIII resulting loss of inhibition of lipoprotein lipase activity
 - E. Increased fecal excretion of bile acid resulting in increased conversion of cholesterol to bile acid
82. The thrombolytic mechanism of action of tissue plasminogen activator (tPA) involves:
- A. Direct conversion of plasminogen to plasmin
 - B. Proteolytic breakdown of thrombin
 - C. Depletion of alpha₂-antiplasmin
 - D. Formation of an active complex with plasminogen
 - E. Proteolytic activation of fibrinogen

83. Antihyperlipidemic agent whose actions in lowering LDL cholesterol depend on the expression of functional LDL receptors in the liver:
- A. Gemfibrozil
 - B. Probucol
 - C. Niacin
 - D. Etretinate
 - E. Cholestyramine
84. Toxicity of 5FU varies with schedule and route. Indicate the one toxicity NOT DECREASED by delivering 5FU by continuous infusion:
- A. Mucositis
 - B. Hand swelling
 - C. Diarrhea
 - D. Marrow suppression
 - E. Neuropathy
85. 5FU alone is NOT given orally for all but one of the following reasons:
- A. It can increase GI toxicity
 - B. Tumor drug exposure can be lessened by oral administration
 - C. Oral administration enhances liver clearance
 - D. It increases cardiac toxicity
 - E. The systemic levels 5FU achieve are too low

86. Efficacy of 5FU can be enhanced by which of the following approaches.
- A. Giving it with activated folic acid (leucovorin)
 - B. Giving it as a weekly bolus infusion
 - C. Oral administration
 - D. Combining it with Vitamin B6 (pyridoxine)
 - E. Blocking urinary excretion
87. The mechanism of action of 5FU may involve all of the following EXCEPT:
- A. Inhibition of thymidylate synthase activity
 - B. Interference with RNA synthesis
 - C. Interference with DNA synthesis
 - D. Decreased thymidine synthesis
 - E. Interference with protein synthesis
88. Which toxin could result in an increased anion gap?
- A. Lithium
 - B. Bromide
 - C. Aspirin
 - D. Household bleach
 - E. Acetaminophen
89. The use of syrup of ipecac would be contraindicated in which of the following situations?
- A. Age less than 6 months old
 - B. Absence of gag reflex
 - C. Ingestion of an agent which could rapidly cause seizures or coma
 - D. Ingestion of a corrosive substance
 - E. All of the above

90. Whole bowel irrigation may be indicated to treat which of the following?
- A. Ingestion of toxic metals
 - B. Overdose of sustained release medications
 - C. Presence of packets of cocaine or heroin
 - D. Presence of concretions
 - E. All of the above
91. Hyperbaric oxygen therapy is indicated for severe intoxication secondary to:
- A. Acetaminophen
 - B. Iron
 - C. Ethylene glycol
 - D. Carbon monoxide
 - E. Mercury
92. Toxins which are amenable to removal through hemodialysis generally have all of the properties EXCEPT:
- A. Small molecular weight
 - B. Ability to be chelated
 - C. High water solubility
 - D. Small volume of distribution
 - E. All of the above
93. Specific antibodies are available to neutralize which of the following toxins?
- A. Digoxin
 - B. Iron
 - C. Salicylates
 - D. Organophosphates
 - E. Cyanide

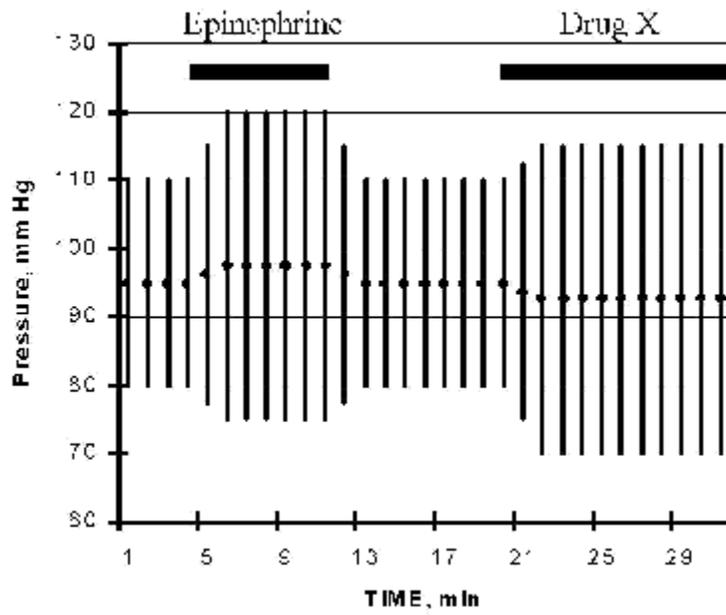
Patient AW is a 73-year-old female with complaints of mental confusion, exercise fatigue and breathlessness. Examination reveals ankle edema, pulmonary rales and dyspnea upon reclining. This patient is the subject for the next three questions.

94. Treatment of this patient with an ACE inhibitor such as captopril may be beneficial because ACE inhibitors
- A. increase efficiency of oxygen extraction by skeletal and cardiac muscle
 - B. Decrease both ventricular preload and afterload
 - C. Produce a positive inotropic effect and negative chronotropic effect
 - D. Promote ventricular remodeling and compensatory enlargement
 - E. Increase coronary perfusion
95. If ACE inhibitor treatment alone does not produce the desired therapeutic response, addition of an agent such as hydrochlorothiazide to the regimen may be effective. The primary beneficial action of treatment of such patients with hydrochlorothiazide is a result of:
- A. Promotion of large artery dilation and subsequent reduction in ventricular afterload
 - B. Reduction in thirst and subsequent decrease in fluid volume
 - C. Inhibition of uptake of dietary sodium with subsequent reduction in fluid volume
 - D. Decrease in cardiac stroke volume with subsequent reduction in ventricular afterload
 - E. Diuresis with subsequent decrease in sodium and fluid retention

96. Use of a cardiac glycoside such as digoxin in addition to captopril and hydrochlorothiazide may be warranted in this patient. Periodic monitoring of patients being treated with this three-drug combination is necessary because of the serious hazard of primary cardiac arrhythmias caused by
- A. Hypocalcemia produced by increased potassium delivery to the distal convoluted tubules
 - B. Hypokalemia produced by increased sodium delivery to the collecting ducts
 - C. Toxic accumulation of digoxin produced by diuretic inhibition of renal excretion of the glycoside
 - D. Decreased plasma oncotic pressure produced by diuretic-induced proteinuria
 - E. Desensitization of cardiac beta adrenoceptors produced by decreased bradykinin levels
97. In the operating room, a patient has been anesthetized with an inhalational anesthetic and has just been given a single intravenous dose of succinylcholine. Power has now been lost in the operating room and the surgeon wishes to stop the procedure. What pharmacological treatment will reverse the acute actions of succinylcholine?
- A. Pralidoxime
 - B. Physostigmine
 - C. Bethanechol
 - D. Atracurium
 - E. None of the above

98. A 37-year-old African-American male patient with a known allergy to sulfonamides was diagnosed with open-angle glaucoma. After treatment was initiated with topical timolol, he experienced difficulty in breathing and went to the hospital emergency room. He was treated with inhalational albuterol and released. What was the likely mechanism by which timolol caused this episode?
- A. Hemolysis caused by hereditary glucose-6-phosphate dehydrogenase deficiency
 - B. Bronchoconstriction resulting from blockade of beta adrenoceptors
 - C. Drug allergy to timolol
 - D. Induction of erythrocyte sickling
 - E. Idiosyncratic response to timolol
99. Patient EW is a 67-year-old Caucasian female who follows a vegetarian diet. She complains of weakness and "pins and needles" sensations throughout her body. The woman's daughter confides that her mother has undergone a personality change with periods of irritability and confusion. Examination of a blood sample showed the presence of macrocytic megaloblastic anemia. This patient will probably require administration of
- A. Folic acid
 - B. Vitamin B₁₂
 - C. Ferrous sulfate
 - D. Intrinsic factor
 - E. Thiamine

100. The above graph shows the blood pressure responses to an intravenous infusion of epinephrine followed by infusion of Drug X. The top of the bars indicate the systolic pressure, the bottom the diastolic and the filled circles indicate the mean pressure. Heart rate increased from 70 to 105 beats per minute during the infusion of Drug X. Identify Drug X.
- A. Atenolol
 - B. Phenylephrine
 - C. Lobetolol
 - D. Norepinephrine
 - E. Isoproterenol



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