

Student Name
(Please Print)

PERINO

Last

Louis

First

Unit Examination II
10/31/01

MEDICAL PHARMACOLOGY
UNIT EXAMINATION II
OCTOBER 31, 2001

Each of the questions or incomplete statements below is followed by suggested answers or completions. Select the ONE that is best in each case.

1. Deferoxamine (Desferal[®]) is used as an antidote in
 - A. folic acid and vitamin B12 overdose.
 - B. folic acid and iron poisoning.
 - C. iron poisoning.
 - D. vitamin B12 poisoning.
 - E. erythropoietin (Epogen[®]) overdose.

2. Hypochromic microcytic anemia is due to a deficiency in
 - A. iron.
 - B. folic acid.
 - C. vitamin B12.
 - D. erythropoietin.
 - E. myeloid growth factors.

3. Neurological symptoms will develop if the patient has a deficiency in
 - A. tetrahydrofolic acid.
 - B. iron in the ferrous (Fe 2+) oxidation state.
 - C. iron in the ferric (Fe 3+) oxidation state.
 - D. methylene - tetrahydrofolic acid.
 - E. cobalamin.

4. Beriberi is a disease state due to a deficiency in
 - A. riboflavin (B2).
 - B. nicotinic acid (B3).
 - C. pantothenic acid (B5).
 - D. thiamin (B1).
 - E. biotin (vitamin H).

5. Torseimide (Demadex[®])

- ~~X~~ is mainly a "K⁺ sparing" diuretic.
- ~~X~~ is safe to use in patients allergic to sulfonamides.
- C. abolishes "free water" production.
- ~~X~~ is mainly used to treat hypothalamic diabetes insipidus.
- E. is safe to use in patients with gout. - *hyperuricemia*

6. To treat the "syndrome of inappropriate ADH secretion", administer

- A. demeclocycline (Declomycin[®]).
- B. chlorothiazide (Diuril[®]).
- C. ethacrynic acid (Edecrin[®]).
- D. ethanol.
- E. mannitol (Osmitol[®]).

7. Select the **FALSE** statement.

- ~~T~~ A. "Loop" diuretics are used to treat hypercalcemia.
- ~~T~~ B. Thiazide diuretics are used to treat nephrogenic diabetes insipidus.
- ~~T~~ C. Thiazide diuretics are used to treat calcium containing stones in the urine.
- ~~T~~ D. Desmopressin acetate (dDAVP) is used to treat hypothalamic diabetes insipidus.
- E. "K⁺ sparing" diuretics are used to counter the hyperkalemia caused by thiazide and "Loop" diuretics. *hypokalemia*

8. Select the **TRUE** statement.

- ~~T~~ A. Swelling of breasts can occur during spironolactone (Aldactone[®]) treatment.
- F B. Ethacrynic acid (Edecrin[®]) makes the urine basic.
- F C. Hearing loss is a common side effect associated with desmopressin acetate (dDAVP).
- F D. Hyponatremia results from excessive water intake during treatment with chlorothiazide (Diuril[®]).
- F E. Hyperuricemia typically occurs during treatment with amiloride (Midamor[®]).

9. An individual with congestive heart failure is experiencing some edema. Which drug or combination of drugs might be beneficial to this individual?

- A. a reduced dose of a digitalis like drug and a normal dose of chlorothiazide (Diuril[®])
- B. triamterene (Dyrenium[®])
- ~~C.~~ water
- D. spironolactone (Aldactone[®])
- ~~E.~~ mannitol (Osmitol[®])

11. Select the **TRUE** statement.
- A. All "loop" diuretics cause vaso dilatation.
 - B. Acetazolamide (Diamox[®]) typically causes hyperkalemia.
 - C. Pulmonary edema is best treated with thiazide diuretics.
 - D. Hyponatremia can occur during administration of thiazide but not "loop" diuretics.
 - E. Both thiazide and "loop" diuretics can potentially cause hyperuricemia.
12. For the treatment of the "syndrome of inappropriate ADH secretion", administer
- A. desmopressin acetate (DDAVP).
 - B. demeclocycline (Declomycin[®]).
 - C. water.
 - D. ADH.
 - E. acetazolamide (Diamox[®]).
13. Which one of the following techniques allows the best anatomical localization of a mRNA expressed in a cell type in a tissue (which produces this RNA)?
- A. RFLP
 - B. immunohistochemistry
 - C. in situ hybridization
 - D. southern blot hybridization
 - E. western blot analysis
14. Which one of the following statements is **FALSE**?
- A. Gene therapy can be used to treat infectious diseases.
 - B. Diagnostic tests for mutations in Huntington's disease are available.
 - C. A human genetic disorder, which has a good animal model, is a better candidate for gene therapy.
 - D. Hepatocytes are more difficult to transfect than fibroblasts.
 - E. Incorporation of a gene by homologous recombination is usually less beneficial than by random insertion.
15. In human gene therapy, an ideal viral vector would have the following features **EXCEPT** (F)
- A. easy to generate in large quantities in the lab.
 - B. elicit little or no immunological responses and/or other adverse effects.
 - C. transfect or infect only dividing cells.
 - D. capacity for large DNA insert of greater than 10 Kb.
 - E. transfect or infect both dividing and non-dividing cells.

15. Magnesium sulfate (Mag Sul[®]) has been administered to B.P., a 25-year old woman who is 26-week pregnant and was brought by her husband to the emergency room in labor. B.P. has no other known health problems. Which of the following adverse scenarios is most likely to be caused by the magnesium sulfate?

- A. coronary ischemia
- B. bronchospasms
- C. jaundice
- D. electrolyte imbalance
- E. headache

The following three questions are related to the following scenario (Questions 16-18).

X.G. is a 54-year old male who is overweight (BMI = 29.8), has a 12-year history of hypertension and a 6-year history of type 2 diabetes. Also, he has elevated cholesterol and triglyceride levels. Mr. G. works at a warehouse where he is foreman of a shift crew. He smokes 25 cigarettes per day. His current medications are propranolol (Inderal[®]), glyburide (Diabeta[®]) lovastatin (Mevacor[®]) and. His current blood pressure, non-fasted glucose and total cholesterol levels are 145/95 (normal 140/90), 150 mg/dL (normal 150 mg/dL) and 205 mg/dL (normal <200 mg/dL). He states that he tries to eat "right" but has a hard time "sticking to the diet" and does not exercise as much as he has been encouraged to do.

16. Which of the following aspects of Mr. G. history and exam is least likely to contribute to his excess weight?

- A. level of exercise
- B. propranolol (inderal[®])
- C. food intake
- D. glyburide (Diabeta[®])
- E. lovastatin (Mevacor[®])

17. Which of the following pharmacological agents is most likely be helpful to Mr. G. to loss weight?

- A. orlistat (Xenical[®])
- B. amitriptyline (Elavil[®])
- C. clonidine (Catapres[®])
- D. alendronate (Fosamax[®])
- E. ergocalciferol (Drisdol[®])

18. Which of the following is important to explain to Mr. G. about taking this medication?

- A. It interfer with the actions of the glyburide.
- B. It is most likely to be helpful if he adheres to the recommended diet and exercise program.
- C. It will cause nausea at first but that symptom diminishes after a while.
- D. It should only be taken 2 hours after or before meals.
- E. It can cause jaundice in some people.

ARRIVING AT ALL

20. A 27-year-old female is in premature labor. She has a history of hyperthyroidism. It is decided to attempt to stop or postpone the delivery. Which of the following agents would potentially have disease-drug interactions and therefore should be used most cautiously in her case to stop or postpone the delivery?

- A. indomethacin (Indocin®)
- B. magnesium sulfate
- C. nifedipine (Procardia®)
- D. ritodrine (Yutopar®)

21. A 59-year-old male has a head cold with severe symptoms of nasal congestion. He has a history of obesity, has a body-mass index (BMI) of 31 and is taking sibutramine (Meridia®) to aid weight loss. Which of the following adverse effects might be caused by a drug-drug interaction between sibutramine and an over-the-counter cold medication containing pseudoephedrine (PseudoFed®)?

- A. after-flow urinary dribbling
- B. constipation
- C. hallucinations
- D. hypotension
- E. hypertension

22. Two females of the same age are concerned about their weight. One (Patient 1) has polycystic ovary syndrome but is otherwise healthy. The other (Patient 2) has no health problems. Which of the following body mass indices (BMIs) qualifies Patient 1 but not Patient 2 for orlistat (Xenical®) treatment?

- A. 20
- B. 24
- C. 27
- D. 30
- E. 35

23. Propranolol is known to causes iatrogenic weight gain. What is the presumed mechanism and site of action of this effect?

- A. blockade of anorexigenic systems in or to the hypothalamus
- B. blockade of peripheral sympathetic stimulation causing a decrease basal metabolic rate
- C. blockade of sympathetic outflow causing a decreased basal metabolic rate
- D. stimulation of orexigenic systems in or to the hypothalamus
- E. stimulation of pancreatic lipase in the small intestines

23. Which one of the following human disorders is **NOT** a good candidate for molecular intervention?
- A. cystic fibrosis
 - B. a single gene disorder
 - C. glioblastoma
 - D. a genetic disorder caused by a dominant gene
 - E. a genetic disorder caused by a recessive gene
24. Which one of the following statements is **FALSE**?
- A. A human genetic disorder which has a good animal model is a better candidate for gene therapy.
 - B. The number of genes in the human genome is currently estimated to be between 150,000 and 180,000.
 - C. We now have diagnostic tests for mutations in Huntington's disease gene.
 - D. Gene therapy can be used to treat infectious diseases.
 - E. RT-PCR technique can be employed to clone genes from small samples.
25. Which one of the following vectors can **NOT** be used for gene transfer?
- ~~A.~~ a genetically engineered adenoviral vector
 - ~~B.~~ a genetically engineered herpes simplex viral vector
 - C. recombinant plasmids mixed with microsomes
 - ~~D.~~ a genetically engineered retroviral vector
 - E. recombinant plasmids
26. Which one of the following statements is **CORRECT**?
- A. Hepatocytes are more difficult to transfect than fibroblasts.
 - B. The most common current strategy for human gene therapy is repairing the mutant RNA in the cell.
 - ~~C.~~ Incorporation of a gene by homologous recombination is always less beneficial than by random insertion.
 - ~~D.~~ The most common current strategy for human gene therapy is repairing the mutant protein in the cell.
 - E. Current concepts to successful human gene therapy dictate that gene transfer to somatic cells is not important.

28. A 88-year-old male has symptoms of acute congestion and edema. He has a long-standing history of congestive heart failure for which he takes diuretics, an ACE inhibitor and propranolol. What aspect of the pharmacokinetics of propranolol will be most dramatically different from "normal" adults for this patient due to his age and the disease-drug interactions?
- A. absorption rate by the intestines
 - B. entry into the CNS
 - C. metabolic rate by the liver
 - D. renal clearance
 - E. volume of distribution
29. A 92-year-old female in cardiac unit of a hospital because of sustained ventricular tachycardia. Procainamide is being considered to treat the tachycardia. Which of the following is an expected aging-induced change in pharmacokinetics particularly relevant to procainamide and needs closest attention in this elderly patient to avoid intoxication and life threatening adverse effects?
- A. decreased metabolism of the drug by the liver
 - B. decreased volume of distribution of the drug because of lean-to-fat mass change
 - C. decreased clearance of the drug by the kidneys
 - D. increased absorption of the drug by the intestines
 - E. increased plasma free drug levels because of diminished levels of blood α -acid glycoprotein levels
30. Sulfonylurea drugs reduce blood glucose levels mainly by
- A. sensitizing peripheral tissues to glucose.
 - B. inhibiting glucagon release.
 - C. inducing glycosuria.
 - D. releasing pancreatic insulin. ✓
 - E. releasing pancreatic glucagons.
31. Antidiabetic drugs work by several different mechanisms of action. Name the antidiabetic agent that acts by binding to a peroxisome proliferator-activated receptor. (PPAR)
- A. chlorpropamide
 - B. rosiglitazone ✓
 - C. tolbutamide
 - D. glipizide
 - E. metformin
32. Many drugs are known to induced hypoglycemia through various mechanisms. Name the drug listed below that is not able to cause hypoglycemia.
- A. ethanol
 - B. metformin ✓
 - C. glipizide
 - D. tolbutamide
 - E. insulin

32. Which drug listed can be used to treat hyperprolactinemia?
- A. metyrapone
 - B. leuprolide
 - C. somatrem
 - D. octreotide
 - E. bromocriptine mesylate ✓
33. The drug Octreotide has which of the following properties?
- A. It is a prolactin agonist.
 - B. It is a somatostatin agonist. ✓
 - C. It is a somatostatin antagonist.
 - D. It is a gonadotropin releasing hormone agonist.
 - E. It is a dopamine antagonist.
34. A common diagnostic test for pituitary growth hormone release is
- A. the metyrapone test.
 - B. the dexamethasone suppression test.
 - C. the methyl dopa test.
 - ✓ D. the insulin tolerance test. ✓
 - E. the glucose tolerance test.
35. Cushing's syndrome due to cortisol hypersecretion is diagnosed using which of the following tests?
- A. insulin tolerance test
 - ✓ B. dexamethasone suppression test ✓
 - C. glucose tolerance test
 - D. metyrapone test
 - E. methyl dopa test
36. Aminoglutethimide has anti-glucocorticoid activity because the drug will
- A. inhibit activity of the steroid 17 α -hydroxylase enzyme (P450c17).
 - B. inhibit activity of the steroid 11 β -hydroxylase enzyme (P450c11).
 - ✓ C. inhibit activity of the cholesterol side chain cleavage enzyme (P450ssc) ✓
 - D. inhibit activity of the 3 β -hydroxysteroid dehydrogenase enzyme.
 - E. Inhibit activity of the steroid 21 β -hydroxylase enzyme (P450c21).
37. Which drug listed is an orally active mineralocorticoid sometimes used in congenital adrenal hyperplasia?
- A. prednisone
 - ✓ B. fludrocortisone ✓
 - C. fluoxymesterone 4
 - D. mifepristone
 - E. metyrapone

39. Tomoxifen citrate
- A. is a competitive antagonist at progesterone receptors in breast tissue.
 - B. is a competitive antagonist at androgen receptors in the prostate.
 - C. is used to stimulate follicular growth for induction of ovulation.
 - D. is used to block GnRH secretion and inhibit ovulation.
 - E. is a competitive antagonist at estrogen receptors in breast tissue. ✓
40. The drug Clomiphene citrate is
- A. a 5 α -reductase-1 inhibitor.
 - B. an androgen receptor agonist.
 - C. a selective estrogen receptor modulator. *Answer*
 - D. an inhibitor of aromatase in the ovary.
 - E. a specific glucocorticoid antagonist. ~~Antiestrogen~~
41. Which drug listed can be used to treat hyperprolactinemia?
- A. metyrapone
 - B. bromocriptine mesylate ✓
 - C. leuprolide
 - D. somatrem
 - E. octreotide
42. The drug Octreotide has which of the following properties?
- A. It is a dopamine agonist.
 - B. It is a somatostatin antagonist.
 - C. It is a somatostatin agonist. ✓
 - D. It is a gonadotropin releasing hormone agonist.
 - E. It is a dopamine antagonist.
43. Somatropin is the name for the drug that
- A. is human growth hormone. ✓
 - B. is used to treat hypoprolactinemia.
 - C. is a growth hormone-releasing hormone analog.
 - D. stimulates 3 β -hydroxysteroid dehydrogenase activity.
 - E. is an anti-glucocorticoid.
44. Aminoglutethimide has anti-glucocorticoid activity because the drug will
- A. inhibit activity of the steroid 21 β -hydroxylase enzyme (P450c21).
 - B. inhibit activity of the steroid 17 α -hydroxylase enzyme (P450c17).
 - C. inhibit activity of the steroid 11 β -hydroxylase enzyme (P450c11).
 - D. inhibit activity of the cholesterol side chain cleavage enzyme (P450ssc). ✓
 - E. inhibit activity of the 3 β -hydroxysteroid dehydrogenase enzyme.

43. Finasteride is a drug with antiandrogen properties. Name its mechanism of action.
- A. It stimulates the 3β -hydroxysteroid dehydrogenase enzyme.
 - ✓ B. It inhibits the $5-\alpha$ reductase enzyme. ✓
 - C. It binds to androgen receptors.
 - D. It inhibits Leydig cell function.
 - E. It blocks the aromatase enzyme.
44. Choose the drug treatment below that will result in inhibition of testosterone synthesis.
- A. oral metyrapone
 - B. flutamide t.i.d.
 - C. long-term finasteride treatment
 - D. depo injection of desogestrel
 - ✓ E. continuous administration of gonadorelin ✓
45. Name the antiandrogen drug whose mechanism of action is to antagonize binding to androgen receptors.
- ~~A.~~ finasteride
 - B. nafarelin
 - ~~C.~~ tamoxifen citrate
 - ✓ D. cyproterone acetate ✓
 - ~~E.~~ raloxifene
46. Estrogens can be used therapeutically for each of the following conditions except one. Name the condition where estrogen therapy is not indicated.
- A. contraception
 - B. dysmenorrhea
 - C. hypogonadism (females)
 - ✓ D. undiagnosed abnormal genital bleeding ✓
 - E. palliative treatment of prostatic adenocarcinoma
47. Name the correct property for the drug Mifepristone.
- A. It is used to block GnRH secretion and to inhibit ovulation.
 - ✓ B. It is a competitive antagonist at progesterone receptors. ✓
 - C. It is a competitive antagonist at androgen receptors.
 - D. It is used as an oral contraceptive.
 - E. It is a competitive antagonist at estrogen receptors.

50. Name the glucocorticoid that is commonly administered i.v. during acute organ rejection.

- A. dexamethasone
- B. methylprednisolone ✓
- C. medrysone
- D. prednisone
- E. fludrocortisone

51. This cytokine can be used to stimulate the immune system of patients with metastatic renal cancer. Toxicities associated with its use include GI bleeding, increased incidence of infections, and capillary leak syndrome. The cytokine is

- A. interferon- β -1b.
- B. interferon- α -2a.
- C. granulocyte colony-stimulating factor.
- D. interleukin-1 β .
- E. interleukin-2. ✓

52. The mechanism of action of the immunosuppressant drug cyclosporine is

- A. to inhibit inosine monophosphate dehydrogenase.
- B. to alkylate DNA, particularly in proliferating cells.
- C. to bind to an intracellular protein and inhibit calcineurin phosphatase. ✓
- D. to potentiate the stimulation of lymphocytes, granulocytes and macrophages by antigens, mitogens, lymphokines and chemotactic factors.
- E. to inhibit viral replication and modulate immune responses.

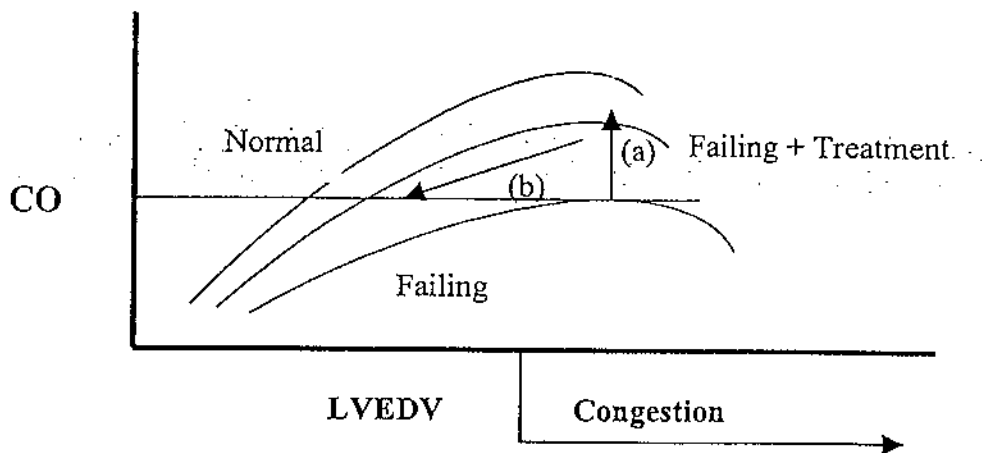
53. During thyrotoxic crisis (i.e., thyroid storm) it is important to delay potassium iodide treatment until the first dose of propylthiouracil because

- D A iodide inhibits the uptake of propylthiouracil by the thyroid. ✓
- B. iodide causes an initial release of thyroxine that can be countered by propylthiouracil.
- C. propylthiouracil requires iodide to act within the thyroid.
- D. the high doses of iodide used during thyroid storm management will delay the onset of action of propylthiouracil. ✓
- E. it is important to inhibit the peripheral conversion of T4 to T3 by iodothyronine 5'-deiodinase-1 prior to iodide exposure.

54. Which of the following best describes the primary site of action for methimazole?

- A. the TSH-receptor
- B. the T3 nuclear receptor
- C. the release of thyroid hormones
- D. the thyroid peroxidase enzyme ✓
- E. the transport of thyroid hormones

53. Syrup of Ipecac should not be used
- A. in comatose patients.
 - B. following ingestion of caustic or corrosive compounds.
 - C. following ingestion of petroleum distillates.
 - D. following ingestion of strychnine.
 - E. in all of the above.
54. The most common (highest frequency of occurrence) toxicological emergency is exposure to
- A. heroin.
 - B. cosmetics.
 - C. cleansers.
 - D. aspirin.
 - E. pesticides.
55. Warfarin (coumadin) acts by
- A. inducing apoptosis in the liver.
 - B. inhibiting vitamin K production.
 - C. causing kidney necrosis.
 - D. blocking oxygen use by cytochrome oxidase.
 - E. causing apnea.
56. Acetaminophen causes liver and kidney necrosis by
- A. directly damaging proteins and nucleic acids.
 - B. inducing drug metabolizing enzymes.
 - C. being metabolized to stable sulfates and glucuronides.
 - D. being metabolized to a reactive intermediate.
 - E. reacting with glutathione.
57. Alpha amanitin, a toxin found in the mushroom *Amanita phalloides*, is a(n)
- A. nephrotoxin.
 - B. hallucinogen.
 - C. emetic.
 - D. cyclic octapeptide.
 - E. psilosibin analog.
58. The acute effects of solvent consumption (by the oral route) are
- A. GI irritation.
 - B. alcohol-like intoxication.
 - C. chemical pneumonia.
 - D. asphyxiation.
 - E. all of the above.



60. The ventricular function curve (a) above reflects the mechanism of action of which of the following drugs?
- digoxin (Lanoxin[®]) or hydralazine (Apresoline[®])
 - chlorothiazide (Diuril[®]) or nitroglycerin
 - nitroprusside (Nipride[®])
 - enalapril (Vasotec[®]) or losartan (Cozaar[®])
 - carvedilol (Coreg[®])
61. A 47-year-old male hypertensive patient receiving multiple drug therapy complains of gynecomastia. Which one of the following drugs is most likely to be responsible?
- chlorothiazide (Diuril[®])
 - enalapril (Vasotec[®])
 - losartan (Cozaar[®])
 - spironolactone (Aldactone[®])
 - reserpine (Serpasil[®])
62. A 60-year-old female patient presents with Prinzmetal's (vasospastic) angina and paroxysmal supraventricular tachycardia (pSVT). For prophylactic monotherapy you could prescribe
- verapamil (Calan[®]).
 - nifedipine (Procardia[®]).
 - propranolol (Inderal[®]).
 - nitroprusside (Nipride[®]).
 - adenosine (Adenocard[®]).

64. Diuretics produce their antihypertensive effects by

- A. initially reducing preload and subsequently reducing afterload.
- B. reducing afterload and increasing chronotropic state.
- C. initially reducing afterload and subsequently increasing inotropic state.
- ~~D.~~ reducing both preload and inotropic state.
- ~~E.~~ reducing both chronotropic and inotropic state.

65. R.K., a 55-year-old metal worker with hypertension and chronic stable angina, has been receiving sublingual nitroglycerin as needed, propranolol, and enalapril. He complains of having "weird dreams". You wish to change his medication to a water-soluble beta-blocker. Which of the following would be appropriate?

- A. timolol (Blockadren[®]).
- B. sotalol (Betapace[®]).
- C. atenolol (Tenormin[®]).
- D. labetalol (Normodyne[®]).
- E. metoprolol (Lopressor[®]).

66. Nitroglycerin has been effective in terminating anginal pain in R.K. The mechanism of action of nitroglycerin in this form of angina is

- A. reduction of preload.
- B. reduction of afterload.
- C. reduction of inotropic state.
- D. reduction of chronotropic state.
- E. direct dilation of coronary arteries.

67. Subsequently, R.K. presents complaining of a persistent, irritating cough. You decide to terminate treatment with _____ and replace therapy with _____. Which pair of drugs is appropriate to fill in the blanks?

- ~~A.~~ nitroglycerin (Nitrostat[®])....hydralazine (Apresoline[®])
- ~~B.~~ enalapril (Vasotec[®])....captopril (Capoten[®])
- C. enalapril (Vasotec[®])....nifedipine (Procardia[®])
- D. enalapril (Vasotec[®])....furosemide (Lasix[®])
- ~~E.~~ nitroglycerin (Nitrostat[®])....isosorbide dinitrate (Isodril[®])

68. When Ernest Hemingway committed suicide he was reportedly taking antihypertensive medication. Which of the following medications might have contributed to his suicide?

- A. hydralazine (Apresoline[®])
- B. propranolol (Inderal[®])
- C. chlorothiazide
- D. reserpine (Serpasil[®])
- E. clonidine (Catapres[®])

66. Subsequently, another drug is substituted but within several months, the patient develops severe suicidal depression. Which of the following drugs fits this description best?

- A. reserpine (Serpasil[®])
- B. captopril (Capoten[®])
- C. losartan (Cozaar[®])
- D. prazosin (Minipress[®])
- E. hydralazine (Apresoline[®])

67. A 75-year-old male hypertensive patient with a history of two previous myocardial infarctions and an ejection fraction of 45% presents in failure but without significant congestion. He receives medication. Within hours, his condition worsens and his cardiac output falls even further than prior to medication. The patient most likely received

- ↑ A. an inotropic agent such as digoxin (Lanoxin[®]).
- ↑ B. an afterload reducer such as hydralazine (Apresoline[®]).
- ← C. a preload reducer such as furosemide (Lasix[®]).
- ↖ D. an afterload and preload reducer such as enalapril (Vasotec[®]).
- ↑ E. an inotropic agent such as milrinone (Primacor[®]).

68. Which of the following anti-anginal drugs relieve effort angina primarily through coronary vasodilation?

- A. nitroglycerin
- ~~B. atenolol (Tenormin[®])~~
- C. verapamil (Calan[®])
- D. nifedipine (Procardia[®])
- E. None of the above.

69. Which of the following statements about digoxin (Lanoxin[®]) therapy in the failing heart is **TRUE**?

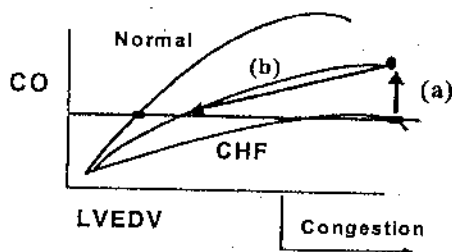
- A. Total Peripheral resistance (TPR) increases.
- B. Preload increases.
- C. Afterload decreases.
- D. Heart rate increases.
- E. AV nodal conduction increases.

70. A patient with few financial resources other than Medicare, presents in your clinic shortly after experiencing a transient ischemic attack (TIA). You prescribe a cheap but effective anti-thrombotic agent,

- A. acetyl salicylic acid (Aspirin).
- B. clopidogrel (Plavix[®]).
- C. eptifibatid (Integrilin[®]).
- D. dipyridamole (Persantine[®]).
- E. heparin.

74. On the following Ventricular Function Curve, (a) represents the mechanism of action of

- A. furosemide (Lasix®).
- B. nitroprusside (Nipride®).
- C. carvedilol (Coreg®).
- D. digoxin (Lanoxin®).
- E. enalapril (Vasotec®).



75. On the previous Ventricular Function Curve, (b) represents reduction in LVEDV resulting from

- A. withdrawal of sympathetic and renal compensatory reflexes.
- B. increased preload.
- C. decreased afterload.
- D. increased cardiac output.
- E. increased total peripheral resistance.

76. P.J., a 72-year-old patient with congestive heart failure, decompensated and was hospitalized. During that time, he received dobutamine intravenously. You wish to send him home on a long-term drug regimen that will provide both afterload and preload reduction, and has been demonstrated to increase survival. Which one of the following scenarios would most conveniently and safely achieve this goal with an oral therapy?

- A. digoxin (Lanoxin®)
- ~~B.~~ nitroprusside (Nipride®)
- ~~C.~~ milrinone (Primacor®)
- ~~D.~~ furosemide (Lasix®)
- E. hydralazine (Apresoline®) and isosorbide dinitrate (Isodril®) 0.21

77. Patients who develop heparin-induced thrombocytopenia can be switched to

- A. warfarin (Coumadin®).
- B. hirudin (Refludan®).
- C. clopidogrel (Plavix®).
- D. tirofiban (Aggrastat®).
- E. t-PA (Activase®).

83. Which one of the following statements about the cardiac actions of endogenous norepinephrine is FALSE?
- A. Potassium efflux from all cardiac tissue is increased.
 - B. The rate of ventricular isovolumic contraction is increased.
 - C. The rate of ventricular relaxation is increased.
 - D. The effective refractory period in AV nodal cells is lengthened.
 - E. Action potential duration is shortened in atrial and ventricular muscle and conduction pathways such as the AV node and His Purkinje system.
84. The cause of digoxin (Lanoxin[®])-induced delayed after depolarizations (DADs) is thought to be
- A. delayed inactivation of voltage operated calcium channels.
 - B. calcium overload of the sarcoplasmic reticulum.
 - C. delayed closure of potassium rectifier currents. ✗
 - D. delayed closure of cardiac sodium channels. ✗
 - E. inappropriate chloride channel activation. ✗
85. T.T. is a 52-year-old hypertensive patient with a 40 pack/year smoking history and Type II diabetes. You decide to try an ACE inhibitor and initiate therapy with captopril (Capoten[®]) and then switch him to enalapril (Vasotec[®]). You take this course of action because
- A. captopril is known not to cause angioedema.
 - B. enalapril is known not to cause an irritating cough.
 - C. captopril does not cross the blood-brain-barrier.
 - D. captopril has a short half life (3hr), while enalapril has a long half life (11hr).
 - ~~E. captopril is a "prodrug".~~
86. You have been treating Sparky for effort angina that has been stable for one year. He takes atenolol (Tenormin[®]) prophylactically, and nitroglycerin (sublingual) as needed. He arrives in the emergency room after experiencing an anginal attack while playing paintball. The attack occurred due to both the physical and emotional stress of the contest. He took one nitroglycerin tablet (0.3mg) but got no relief. In a panic, he took four more tablets simultaneously and quickly passed out. Upon recovery, he had an excruciating headache and continuing chest pain. The continuing chest pain most likely results from
- A. a dramatic drop in preload.
 - B. a dramatic drop in afterload.
 - C. reflex tachycardia.
 - D. increased total peripheral resistance due to the atenolol.
 - E. inactive nitroglycerin.

*Enalapril
prodrug*

86. Which of the following agents has been proven to increase survival of patients who have already experienced a heart attack, i.e., secondary prevention?

- PLAT A. acetyl salicylic acid (Aspirin[®])
- PLAT B. clopidogrel (Plavix[®])
- β C. propranolol (Inderal[®])
- ACC D. enalapril (Vasotec[®])
- (E) All of the above.

87. Which one of the following acts as an anti-thrombotic agent by binding directly to GPIIb/IIIa and has been called a "platelet anesthetic"?

- A. acetyl salicylic acid (Aspirin[®])
- B. clopidogrel (Plavix[®])
- C. dipyridamole (Persantine[®])
- (D) abciximab (Reopro[®])
- E. ticlopidine (Ticlid[®])

88. Which one of the following has been approved by the FDA for the treatment of thrombo-embolic-stroke?

- A. streptokinase (Streptase[®])
- B. urokinase (Abbokinase[®])
- C. abciximab (Reopro[®])
- D. dipyridamole (Persantine[®])
- (E) tissue plasminogen activator (Activase[®])

α PLATELS
 - COX INH - ASA
 - PDB INH - PERSANTINE
 - ADP INH - PLAVIX
 - T. INH - TICLID
 - 2b3/7 INH - REOPRO
 - INTEGRIN

89. Which of the following statements about spironolactone (Aldactone[®]) is **CORRECT**?

- f A. It causes ototoxicity.
- f B. It produces hypokalemia and hypomagnesemia.
- (C) It improves survival in severe heart failure.
- f D. It decreases venous resistance.
- f E. It prevents cardiac remodeling.

90. Hypertension in the diabetic patient is best treated with

- Thiazide A. chlorothiazide (Diuril[®]).
- β B. propranolol (Inderal[®]).
- ACC (C) enalapril (Vasotec[®]).
- CC B D. reserpine (Serpasil[®]).
- α, β E. prazosin (Minipress[®]).

91. Atropine is a specific antidote for which of the following pesticides.

- A. Paraquat
- B. Diquat
- C. Fluoroacetate
- (D) Malathion and Parathion
- E. 2,4-dichlorophenoxyacetic acid

91. Patient on warfarin (Coumadin[®]) had an INR of 2.5 at last visit to your clinic. Currently her INR is 4.0. The increase in INR most likely is related to
- A. different laboratories performing the assay.
 - B. different batches of thromboplastin.
 - C. concurrent cimetidine (Tagamet[®]) use (OTC) for gastric acid reflux.
 - D. phenobarbital use for sedation.
 - E. estrogen replacement therapy.
92. Patient with chronic obstructive pulmonary disease (COPD), heart failure, and hypertension, is currently on digoxin (Lanoxin[®]), enalapril (Vasotec[®]), and furosemide (Lasix[®]). An additional drug is added resulting in immediate AV block with ventricular tachycardia associated with an additional drop in total peripheral resistance. Measurement of digoxin reveals a doubling in plasma levels. What drug do you suspect has been added to the therapeutic armamentarium?
- A. lidocaine (Xylocaine[®]) IB
 - B. verapamil (Calan[®]) - Calc Block
 - C. atenolol (Tenormin[®]) - β₁ block
 - D. losartan (Cozaar[®]).
 - E. clonidine (Catapres[®])
93. Which one of the following would be inappropriate for monotherapy of Prinzmetal's (vasospastic) angina?
- A. verapamil (Calan[®])
 - B. nitroglycerin
 - C. nifedipine (Procardia[®])
 - D. propranolol (Inderal[®])
 - E. isosorbide dinitrate (Isodril[®])
94. All of the following are effective at protecting the ventricle from rapid atrial rates, but generally fail to convert atrial fibrillation EXCEPT
- A. verapamil (Calan[®]).
 - B. esmolol (Brevibloc[®]).
 - C. adenosine (Adenocard[®]).
 - D. digoxin (Lanoxin[®]).
 - E. ibutilide (Corvert[®]).
95. Treatment with high doses of hydralazine (Apresoline[®]) or procainamide (Pronestyl[®]) in patients who are classified as "Slow Acetylators" can result in
- A. torsades de pointes.
 - B. visual disturbances.
 - C. systemic lupus erythematosus. ✓
 - D. bronchospasm.
 - E. Raynaud's disease.

98. Select these species causing the most envenomations each year in the United States that require medical treatment.

- A. crotalid (rattlesnakes, copperheads and water moccasins)
- B. elapids (coral snakes)
- C. hymenoptera (bees, wasps and fireants)
- D. centroides (Mexican scorpion)
- E. helodermatids (gila monster and Mexican beaded lizard)

99. The major barrier to absorption of a medication into the skin is the

- A. stratum corneum.
- B. stratum granulosum.
- C. stratum basale.
- D. stratum malpighii.
- E. dermis.

100. The most popular method of measuring topical corticosteroid potency is by using the

- A. imidazolidinyl methylation protocol.
- B. hydroxylation rate.
- C. absorption rate through artificial skin barriers.
- D. vasoconstriction assay.
- E. FDA reference standards.