

CLINICAL PHARMACY BOARD REVIEW

MCQs
in

Pharmacotherapy



Editor
Hassan AL-Temimi
PhD Clinical Pharmacy

1
EDITION
Series H017

SELF-ASSESSMENT AND CLINICAL PHARMACY
BOARD REVIEW IN
MCQs in Pharmacotherapy

Editor

Hassan AL-Temimi

PhD Clinical Pharmacy

Reviewers

Dr. Alaa A. Abdurassoul - Prof. of Pharmacy

Dr. Hayder Al-Hamami - Prof. of Dermatology

Dr Jawad Ibrahim Rasheed - Consultant nephrologist

Dr. Ibrahim adham - Assist. Prof. Clinic. pharmacy

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

{فَأَمَّا الزَّبَدُ فَيَذْهَبُ جُفَاءً وَأَمَّا مَا يَنْفَعُ النَّاسَ فَيَمْكُثُ فِي الْأَرْضِ}
[الرعد: 17]

قال رسول الله (ص)

إذا مات الإنسان انقطع عنه عمله إلا من ثلاثة: إلا من صدقة جارية ، أو علم
ينتفع به ، أو ولد صالح يدعو له

الفاتحة

على روح والدي وامواتنا وشهداء العراق

نسالكم الدعاء"



This book is one of the series edited by Hassan AL-Temimi and reviewed by academic advisor in the field of internal medicine and clinical pharmacy. The main aim of this series is to provide a guide in clinical pharmacy for internal medical students and clinical pharmacy students. The series (017) is a part of clinical pharmacy board review.

EDITOR

DR. HASSAN MOHAMMED ABBAS AL-TEMIMI

PHD CLINICAL PHARMACY

DIRECTOR OF TRAINING CENTER OF CLINICAL PHARMACY BOARD

MEDICAL CITY - BAGHDAD

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Editor

2014

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Clinical pharmacokinetics

Clinical pharmacokinetics questions

1) How does the glomerular filtration rate (GFR) change after the age of 40?

- A) Increase 1% each year
- B) Increases 2% each year
- C) Decreases 1% each year
- D) Decreases 2% each year
- E) Does not depend on age

2) A decrease in renal and liver function, as seen in the elderly, would prolong drug half-life,plasma protein binding, and volume of distribution.

- A) Increase; Increase
- B) Decrease; Decrease
- C) Increase; Decrease
- D) Decrease; Increase

3) Which of the following are the two modifying factors that contribute to why women have higher blood peak concentrations of alcohol than men when consuming equivalent amounts?

- A) Lower blood volume & increased hormones
- B) Lower fat content & more gastric alcohol dehydrogenase (ADH)
- C) Higher fat content & more gastric alcohol dehydrogenase (ADH)
- D) Lower fat content & less gastric alcohol dehydrogenase (ADH)
- E) Higher fat content & less gastric alcohol dehydrogenase (ADH)

4) Pharmacokinetics is the effect of the and pharmacodynamics is the effect of the.....

- A) Drug on a drug; Body on the drug
- B) Body on the drug; Drug on a drug
- C) Drug on the body; Body on the drug
- D) Body on the drug; Drug on the body
- E) Drug on a drug; Drug on a drug

5) Which of the following describes minimal effective concentration (MEC)?

- A) The minimal drug plasma concentration that can be detected
- B) The minimal drug plasma concentration to enter tissues
- C) The minimal drug plasma concentration to interact with receptors
- D) The minimal drug plasma concentration to produce effect
- E) The minimal drug plasma concentration to reach therapeutic levels

6) If a patient misses three doses of their daily drug, which of the following (in general) is the best solution?

- A) Take a 4x dose at the next dose time
- B) Wait 3 more days (week total) then return to normal regimen
- C) Do nothing and continue normal regimen
- D) Setup an appointment to have the patient evaluated
- E) Prescribe a higher dosage pill so missed doses will have less effect

7) Which of the following drug permeation mechanisms uses the Henderson-Hasselbalch equation for the ratio of solubility for the weak acid or weak base?

- A) Aqueous diffusion
- B) Lipid diffusion
- C) Carrier molecules
- D) Endocytosis and exocytosis

8) Using the Fick Law of Diffusion, how will flux change if membrane thickness is doubled?

- A) It will double
- B) It will quadruple
- C) It will halve
- D) It will quarter
- E) It will not change

9) Using the Fick Law of Diffusion how will flux change if the permeability coefficient is quadrupled?

- A) It will double
- B) It will quadruple
- C) It will halve
- D) It will quarter
- E) It will not change

10) Which of the following is the amount of a drug absorbed per the amount administered?

- A) Bioavailability
- B) Bioequivalence
- C) Drug absorption
- D) Bioinequivalence
- E) Dosage

11) Which of the following is NOT needed for drug bioequivalence?

- A) Same active ingredients
- B) Same strength or concentration
- C) Same dosage form

- D) Same route of administration
- E) Same side effects

12) Although morphine (Avinza, Oramorph SR, MS Contin) is well-absorbed when administered orally (PO), how much of the drug is metabolized on its first pass through the liver?

- A) 90%
- B) 70%
- C) 50%
- D) 30%
- E) 10%

13) Which of the following is NOT a pharmacokinetic process?

- A) Alteration of the drug by liver enzymes
- B) Drug metabolites are removed in the urine
- C) Movement of drug from the gut into general circulation
- D) The drug causes dilation of coronary vessels
- E) The drug is readily deposited in fat tissue

14) Which of the following can produce a therapeutic response? A drug that is:

- A) Bound to plasma albumin
- B) Concentrated in the bile
- C) Concentrated in the urine
- D) Not absorbed from the GI tract
- E) Unbound to plasma proteins

15) Given the equilibrium $HA \rightleftharpoons A^- + H^+$ (acid) and $BH^+ \rightleftharpoons B + H^+$ (base), in an acid environment (low pH) the acid reaction will move to the and the base reaction will move to the

- A) Right; Left
- B) Right; Right
- C) Left; Right
- D) Left; Left

16) What form of a drug is more lipid-soluble, and thus would remain trapped within a compartment where the pH does not favor the lipid-soluble form?

- A) Strong acid (A^-)
- B) Weak acid (A^-)
- C) Neutral (AH and B)
- D) Weak base (BH^+)
- E) Strong base (BH^+)

17) The lipid-soluble form of a base is and the lipid-soluble form of an acid is.....

- A) Protonated; Protonated
- B) Protonated; Unprotonated
- C) Unprotonated; Unprotonated
- D) Unprotonated; Protonated

18) If the pKa of Aspirin (acetylsalicylic acid) is 3.5 and the pH of the stomach is 2.5, how much Aspirin is in the protonated species in the stomach and is this the amount available for absorption?

- A) $\approx 91\%$; Yes
- B) $\approx 91\%$; No
- C) $\approx 9\%$; Yes
- D) $\approx 9\%$; No

19) What percentage of Aspirin would be ionized in the blood compartment (pH = 7.4) assuming pH is 7.5 and Aspirin pKa is 3.5?

- A) $(10,000 - 1) / 1 = 99.99\%$
- B) $(100 - 1) / 1 = 99\%$
- C) None
- D) $1 / (100 - 1) = 0.9\%$
- E) $1 / (10,000 - 1) = 0.009\%$

20) If the pH - pKa = -1, what percentage of weak base is non-ionized?

- A) 99
- B) 90
- C) 50
- D) 10
- E) 1

21) If the pH - pKa = 2, what percentage of weak acid is non-ionized?

- A) 99
- B) 90
- C) 50
- D) 10
- E) 1

22) If pH > pKa, the drug is and if pH < pKa, the drug is An unprotonated acid is and a protonated base is

- A) Protonated; Unprotonated; Charged; Charged
- B) Protonated; Unprotonated; Neutral; Neutral
- C) Unprotonated; Protonated; Charged; Charged

- D) Unprotonated; Protonated; Neutral; Charged
- E) Unprotonated; Protonated; Charged; Neutral

23) Weak acids are excreted faster in urine and weak bases are excreted faster in urine.

- A) Acidic; Alkaline
- B) Alkaline; Acidic
- C) Acidic; Neutral
- D) Neutral; Alkaline
- E) Alkaline; Neutral

24) A patient presents with an overdose of acidic Aspirin. The drugcan be given to..... the pH of the urine and trap the Aspirin, preventing further metabolism.

- A) NaHCO_3 ; Increase
- B) NaHCO_3 ; Decrease
- C) NH_4Cl ; Increase
- D) NH_4Cl ; Decrease

25) A patient presents with an overdose of alkaline Codeine. The drug can be given to the pH of the urine and trap the Codeine, preventing further metabolism.

- A) NaHCO_3 ; Increase
- B) NaHCO_3 ; Decrease
- C) NH_4Cl ; Increase
- D) NH_4Cl ; Decrease

26) The principle of drug manipulation for excretion of a drug out of the renal tubule can be accomplished by:

- A) Acidifying the urinary pH
- B) Adjusting the urinary pH to protonate weakly acidic drugs
- C) Adjusting the urinary pH to unprotonate weakly basic drugs
- D) Adjusting the urinary pH to ionize the drug
- E) By neutralizing the urinary pH

27) Aspirin is a weak organic acid with a pK_a of 3.5. What percentage of a given dose will be in the lipid-soluble form at a stomach pH of 1.5?

- A) About 1%
- B) About 10%
- C) About 50%
- D) About 90%
- E) About 99%

- 28) For which of the following drugs is excretion most significantly accelerated by acidification of the urine?**
- A) Weak acid with pKa of 5.5
 - B) Weak acid with pKa of 3.5
 - C) Weak base with pKa of 7.5
 - D) Weak base with pKa of 7.1
- 29) A patient diagnosed with type 2 diabetes is administered an oral dose of 0.1 mg chlorpropamide, an insulin secretagogue and weak acid with a pKa of 5.0. What is the amount of this drug that could be absorbed from the stomach at pH 2.0?**
- A) 99.9 µg
 - B) 90 µg
 - C) 50 µg
 - D) 0.05 mg
 - E) 0.01 mg
- 30) Bioavailability (F) is the fraction or percentage of administered drug that reaches the systemic circulation via a given route as compared to what route?**
- A) Oral
 - B) IV (intravenous)
 - C) IO (intraosseous)
 - D) CSF (cerebrospinal fluid)
 - E) Whatever route attains the target drug concentration in plasma (CT)
- 31) A patient is in the hospital and is stable on digoxin 0.175 mg IV qd (daily). How much digoxin in mg would you need to give your patient orally, given that the bioavailability for oral digoxin tablets is 0.7?**
- A) $(0.175 * 0.7) / (1.0) = 0.1225$ mg
 - B) $(0.175 * 1) / (0.7) = 0.25$ mg
 - C) $(0.175 + 0.7) / (1.0) = 0.875$ mg
 - D) $(0.175 + 1) / (0.7) = 1.67$ mg
 - E) No change is necessary
- 32) Given a graph of plasma drug concentration versus time, what part of the graph would be used to calculate bioavailability for a PO (oral) drug administration?**
- A) Maximum concentration
 - B) Steady concentration
 - C) Derivative of the curve (slope)
 - D) Integral of the curve (area underneath)
 - E) The curve is not used to calculate bioavailability
- 33) Which of the following routes of administration has a bioavailability of about 80-100%, is usually very slow absorbing, and has prolonged duration of action?**

- A) IV (intravenous)
- B) IM (intramuscular)
- C) SQ (subcutaneous)
- D) Rectal
- E) Transdermal

34) Which of the following routes of administration is the most convenient, although may have a bioavailability anywhere from 5-100%?

- A) PO (oral)
- B) IV (intravenous)
- C) IM (intramuscular)
- D) SQ (subcutaneous)
- E) Transdermal

35) Which of the following enteral administration routes has the largest first-pass effect?

- A) SL (sublingual)
- B) Buccal
- C) Rectal
- D) Oral

36) Epithelial cells are connected by, which are tough to cross and materials often must pass through the cells. Endothelial cells of blood vessels are connected by, which proteins cannot cross but smaller drugs (MW 200-500) can.

- A) Macular gap junctions; Tight junctions
- B) Tight junctions; Macular gap junctions
- C) Adherens junctions; Tight junctions
- D) Tight junctions; Adherens junctions
- E) Macular gap junctions; Adherens junctions

37) Which of the following administration routes is not often used, is painful, and has a risk of infection and adhesion?

- A) EPI (epidural)
- B) IA (intraarterial)
- C) IP (intraperitoneal)
- D) IV (intravenous)
- E) IO (intraosseous)

38) Which of the following is NOT an advantage of prolonged release medications?

- A) Less frequent administration
- B) Therapeutic effect overnight
- C) Lower incidence of side effects
- D) Patient compliance

E) More fluctuation in plasma concentration

39) Which of the following would receive drug slowly?

- A) Liver
- B) Brain
- C) Fat
- D) Muscle
- E) Kidney

40) Which of the following is the least important for passage through capillary walls but the most important for passage through the cell wall?

- A) Molecular size
- B) Lipid solubility
- C) Diffusion constant
- D) pH
- E) pKa

41) Which of the following is the most important for movement through capillary walls?

- A) Molecular size
- B) Lipid solubility
- C) Diffusion constant
- D) pH
- E) pKa

42) Which of the following locations would most trap a lipid soluble drug?

- A) Blood
- B) Intestines
- C) Brain
- D) Stomach

43) What type of drugs can cross the blood-brain barrier (BBB)?

- A) Large and lipid-soluble
- B) Large and lipid-insoluble
- C) Small and lipid-soluble
- D) Small and lipid-insoluble

44) Acidic drugs, such as phenytoin, bind primarily to which of the following plasma proteins?

- A) α 1-fetoprotein (AFP)
- B) GC Globulin
- C) Albumin
- D) α 1-acid glycoprotein (AAG)

E) Transcortin

45) Basic drugs, such as lidocaine, bind primarily to which of the following plasma proteins?

- A) α 1-fetoprotein (AFP)
- B) Gc-Globulin (GcG)
- C) Albumin
- D) α 1-acid glycoprotein (AAG)
- E) Transcortin

46) A decrease in drug-protein binding will lead to which of the following?

- A) Decrease in the unbound drug concentration
- B) Increase in free drug
- C) Increase in rate of drug elimination
- D) Decrease in volume of distribution

47) A patient presents with acute-onset cirrhosis of the liver. They are found to have hypoalbuminemia. In severe cirrhosis it is expected that AAG will be decreased, but the patient presents with increased AAG due to the inflammatory response. Which of the following is the most likely?

- A) Increased acidic drug binding and increased basic drug binding
- B) Increased acidic drug binding and decreased basic drug binding
- C) Decreased acidic drug binding and increased basic drug binding
- D) Decreased acidic drug binding and decreased basic drug binding

48) Which of the following is NOT a site of loss (where drug is not used)?

- A) Fat
- B) GI tract
- C) Muscle
- D) Site lacking receptors

49) Which of the following locations can accumulate lipid-soluble drugs, has little or no receptors, and can hold distributed drugs like barbiturates?

- A) Liver
- B) Kidney
- C) Brain
- D) Fat
- E) Fetus

50) Which of the following locations has high blood flow and is a site of excretion?

- A) Liver
- B) Kidney
- C) Brain

- D) Fat
- E) Fetus

51) Anything affecting renal perfusion will affect drug delivery to the kidney, drug excretion, and drug levels in the blood.

- A) True
- B) False

52) Which of the following can be treated with drugs due to a leaky area in the blood brain barrier near the medulla?

- A) Seizures
- B) Shivers
- C) Diarrhea
- D) Nausea
- E) Vomiting

53) What is the approximate lag time for equilibration between maternal blood and fetal tissues?

- A) 20 mins
- B) 40 mins
- C) 1 hour
- D) 2 hours
- E) 6 hours

54) If protein plasma binding is decreased, how will volume of distribution be affected?

- A) Increased
- B) Decreased
- C) Not changed

55) 400 mg of a drug is administered to a patient and the drug is later measured in plasma to be 1 µg/ml. What is the apparent volume of distribution (Vd)?

- A) 0.04 L
- B) 0.4 L
- C) 4 L
- D) 40 L
- E) 400 L

56) Elderly patients often have..... muscle mass and thus a..... Vd.

- A) More; Increased
- B) More; Decreased
- C) Less; Increased
- D) Less; Decreased

57) Patients with ascites or edema would have Vd for hydrophilic drugs, such as gentamicin.

- A) Increased
- B) Decreased
- C) Unchanged

58) Which of the following locations is the most likely for finding a free, unaltered drug?

- A) Urine
- B) Feces
- C) Breast milk
- D) Fat
- E) Sweat

59) Most drugs are active in their form and inactive in their form.

- A) Non-polar; Polar
- B) Polar; Non-polar
- C) Water-soluble; Lipid-soluble
- D) Lipid-insoluble; Water-insoluble
- e) Neutral; Neutral

60) Drug biotransformation phase I makes drugs Polar for metabolism and phase II makes drugs Polar for excretion.

- A) More; More
- B) More; Less
- C) Less; More
- D) Less; Less

61) Which of the following groups of people is the least likely to have biotransformation effects due to altered hepatic function?

- A) Infants
- B) Adults
- C) Elderly
- D) Chronic alcoholics
- E) Acetaminophen overdoses

62 –One liter contains 1,000 mg of a drug. After one hour, 900 mg of the drug remains. What is the clearance?

- A) 100 mL
- B) 100 mL/hr
- C) 1 mg/ml
- D) 100 mg

E) 1 mg/sec

63) To maintain a drug concentration at steady state, the dosing rate should equal the elimination rate. Which of the following is true? (CL = Drug Clearance)

- A) Dosing rate = CL + target concentration
- B) Dosing rate = CL - target concentration
- C) Dosing rate = CL * target concentration
- D) Dosing rate = CL / target concentration

64) Which of the following is most useful in determining the rate of elimination of a drug, in general?

- A) Drug concentration in urine (renal elimination)
- B) Drug concentration in stool (biliary elimination)
- C) Drug concentration in blood
- D) Drug concentration in brain
- E) Drug oxidation rate

65) For first-order drug elimination, half-life $t(1/2)$ is at two places on the curve and a constant is lost per unit time.

- A) Equal; Amount
- B) Equal; Percentage
- C) Not equal; Amount
- D) Not equal; Percentage

66) For first-order drug elimination, given the half-life equation of $t(1/2) = (0.693 * V_d) / CL$, how many half-lives would be necessary to reach steady state (95%) without a loading dose?

- A) 1 to 2
- B) 2 to 3
- C) 3 to 4
- D) 4 to 5
- E) 5 to 6

67) Which of the following is NOT drug exhibiting zero-order elimination kinetics?

- A) Aspirin
- B) Morphine
- C) Phenytoin
- D) ETOH

68) For zero-order drug elimination, half-life $t(1/2)$ is at two places on the curve and a constant is lost per unit time.

- A) Equal; Amount
- B) Equal; Percentage

- C) Not equal; Amount
- D) Not equal; Percentage

69) If a drug with a 2-hour half life is given with an initial dose of 8 mcg/ml, assuming first-order kinetics, how much drug will be left at 6 hours?

- A) 8 mcg/ml
- B) 4 mcg/ml
- C) 2 mcg/ml
- D) 1 mcg/ml
- E) 0.5 mcg/ml

70) What are the units for steady-state concentration (C_{ss}), or infusion rate over clearance?

- A) mg/min
- B) ml/min
- C) mg/ml
- D) ml/mg
- E) min/mg

71) What percentage of the steady-state drug concentration is achieved at $3.3 * t(1/2)$?

- A) 10%
- B) 25%
- C) 50%
- D) 75%
- E) 90%

72) Increasing the rate of infusion changes the time necessary to reach the steady-state concentration.

- A) True
- B) False

73) An injection of two units of a drug once-daily (qd) will yield the same steady-state concentration as an injection of one unit of a drug twice-daily (bid).

- A) True
- B) False

74) Which of the following drugs would most likely need a loading dose to help reach therapeutic levels?

- A) Acetaminophen, $t(1/2) = 2$ h
- B) Aspirin, $t(1/2) = 15$ m
- C) Tetracycline, $t(1/2) = 11$ h
- D) Digitoxin, $t(1/2) = 161$ h
- E) Adenosine, $t(1/2) = 10$ s

75) A target concentration of 7.5 mg/L of theophylline is required for a 60 kg patient. What is the loading dose, given the following: $V_d = 0.5 \text{ L/kg}$, $Cl = 0.04 \text{ L/kg/hr}$, $t(1/2) = 9.3 \text{ hr}$?

- A) $0.5 \text{ L/kg} * 60 \text{ kg} * 7.5 \text{ mg/L} = 225 \text{ mg/h}$, infusion
- B) $0.5 \text{ L/kg} * 60 \text{ kg} * 7.5 \text{ mg/L} = 225 \text{ mg}$, bolus
- C) $0.04 \text{ L/kg/hr} * 60 \text{ kg} * 7.5 \text{ mg/L} = 18 \text{ mg/h}$, infusion
- D) $0.04 \text{ L/kg/hr} * 60 \text{ kg} * 7.5 \text{ mg/L} = 18 \text{ mg}$, bolus

76) A target concentration of 7.5 mg/L of theophylline is required for a 60 kg patient. What is the steady state maintenance dose, given the following: $V_d = 0.5 \text{ L/kg}$, $Cl = 0.04 \text{ L/kg/hr}$, $t(1/2) = 9.3 \text{ hr}$?

- A) $0.5 \text{ L/kg} * 60 \text{ kg} * 7.5 \text{ mg/L} = 225 \text{ mg/h}$, infusion
- B) $0.5 \text{ L/kg} * 60 \text{ kg} * 7.5 \text{ mg/L} = 225 \text{ mg}$, bolus
- C) $0.04 \text{ L/kg/hr} * 60 \text{ kg} * 7.5 \text{ mg/L} = 18 \text{ mg/h}$, infusion
- D) $0.04 \text{ L/kg/hr} * 60 \text{ kg} * 7.5 \text{ mg/L} = 18 \text{ mg}$, bolus

77) Which of the following components of a pharmacologic profile involves assessing pharmacologic activity and comparing against known compounds?

- A) Mechanism of action
- B) Receptor binding assays
- C) Activity of CYP 450
- D) In vitro & in vivo tests
- E) Tolerance, physical dependence, toxicity

78) For the human clinical trials, what initial doses are used?

- A) 1 – 2 NED
- B) 1/2 – 1 NED
- C) 1/10 – 1 NED
- D) 1/100 – 1/10 NED
- E) 1/100 – 1/100 NED

79) What is the minimal number of species tested (pregnant females) at selected organogenesis periods for teratogenesis? (e.g. Thalidomide, ethanol, Accutane, warfarin)

- A) 1
- B) 2
- C) 3
- D) 4
- E) 5

80) In the mutagenesis dominant lethal test, which of the following would be exposed to the test substance?

- A) Pre-mating male

- B) Pre-mating female
- C) Post-mating male
- D) Post-mating female (pregnant)
- E) Newborn

81) Which of the following teratogens is associated with absence of extremities?

- A) Syphilis
- B) Rubella
- C) Thalidomide
- D) Lithium
- E) Lead

82) Which of the following is least likely to be involved in carcinogenesis?

- A) Ethanol
- B) Vinyl chloride
- C) Urethane
- D) Benzo[a]pyrene

83) What type of study for an Investigational New Drug (IND) involves either the investigators or subjects knowing if the drug or placebo is being given?

- A) Single-blind study
- B) Double-blind study
- C) Placebo
- D) Positive-control
- E) Crossover study

84) What type of study for an IND involves each subject receiving all treatment conditions?

- A) Single-blind study
- B) Double-blind study
- C) Placebo (negative-control)
- D) Positive-control
- E) Crossover study

85) What type of study for an IND involves comparison with a placebo and another previously tested drug?

- A) Single-blind study
- B) Double-blind study
- C) Placebo (negative-control)
- D) Positive-control
- E) Crossover study

86) What clinical trial phase involves many patients and often a double-blind study with the purpose to further explore the beneficial action of the drug and toxicities?

- A) Phase 1
- B) Phase 2
- C) Phase 3
- D) Phase 4

87) What clinical trial phase involves single- or double-blind studies under very controlled conditions with the purpose to determine therapeutic effect at tolerated doses?

- A) Phase 1
- B) Phase 2
- C) Phase 3
- D) Phase 4

88) What clinical trial phase involves submitting a New Drug Application (NDA), monitoring, and reporting by clinicians using the drug?

- A) Phase 1
- B) Phase 2
- C) Phase 3
- D) Phase 4

89) What clinical trial phase involves small doses up to profound physiologic responses, or up to minor toxicity (pharmacokinetics)?

- A) Phase 1
- B) Phase 2
- C) Phase 3
- D) Phase 4

90) The Orphan Drug Amendment (1983) gives incentives for the development of orphan drugs, which treat diseases that affect less than how many patients?

- A) 2,000
- B) 20,000
- C) 200,000
- D) 2,000,000
- E) 20,000,000

91) Which of the following would NOT be a critique of the Prescription Drug User Fee Act (PDUFA, 1992)?

- A) Obliges FDA to satisfy drug industry
- B) Reduces FDA independence
- C) Reduces FDA critical evaluation
- D) Reduces drug approval process time

E) Reduces congressional oversight

92) Which of the following drug safety categories for pregnancy is the highest risk, where studies have shown a significant risk to women and to the fetus?

- A) A
- B) B
- C) C
- D) D
- E) X

93) Clinical effectiveness of a drug depends on its potency.

- A) True
- B) False

94) Loading dose of a drug primarily depends on

- A) Volume of distribution
- B) Clearance
- C) Rate of administration
- D) Half life

95) Identify the wrong statement :

- A) Acidic drugs bind to albumin in plasma
- B) Basic drugs bind to alpha-1 acidic glycoprotein in plasma
- C) Drugs having higher affinity can displace the other from the same protein
- D) Sex steroid hormones do not bind to any protein in plasma

96) True statement regarding first order kinetics is

- A) Rate of elimination is independent of plasma concentration
- B) A constant proportion of plasma concentration is eliminated per unit time
- C) Half life increases with dose
- D) Clearance decreases with dose

97) K_m of an enzyme is

- A) Dissociation constant
- B) The normal physiological substrate concentration
- C) The substrate concentration at half maximal velocity
- D) Numerically identical for all isozymes that catalyze a given reaction

98) All of the following factors tend to increase the volume of distribution of a drug EXCEPT

- A) High plasma protein binding
- B) Low ionization at physiological pH values
- C) High lipid solubility

D) High tissue binding

99) Maintenance dose rate of a drug depends primarily on

- A) Volume of distribution
- B) Half life
- C) Lipid solubility
- D) Total body clearance

100) Which of the following statements about a drug having high plasma protein binding is TRUE ?

- A) Volume of distribution of the drug is very high
- B) This drug will be filtered quickly by glomerulus
- C) This drug is likely to have minimum chances of drug interactions
- D) High plasma protein binding decreases the volume of distribution

101) Which of the following factors has maximum effect on filtration of a drug by the glomerulus ?

- A) Lipid solubility
- B) Plasma protein binding
- C) Degree of ionization
- D) Rate of tubular secretion

102) First order kinetics is characterized by

- A) Dose dependent elimination
- B) Decreasing clearance as plasma concentration increases
- C) Increasing rate of elimination as plasma concentration increases
- D) No relationship between rate of elimination and plasma concentration

103) Apparent volume of distribution (V_d) of a drug exceeds total body fluid volume, if a drug is

- A) distributed and bound to body tissues
- B) Slowly eliminated from body
- C) Poorly soluble in plasma
- D) Poorly bound to plasma proteins

104) Dosage interval of drugs depends upon

- A) Volume of distribution
- B) Elimination half life
- C) Clearance
- D) Binding to plasma proteins

105) The elimination of alcohol follows:

- A) Zero order kinetics

- B) 1st order kinetics
- C) 2nd orders kinetics
- D) 3rd orders kinetics

106) The clearance of drug means:

- A) Unit volume of plasma which is cleared of drug in unit of time
- B) Amount of drug excreted in urine
- C) Amount of drug metabolized in unit of time
- D) All of the above

107) Zero order kinetics means

- A) A constant amount of drug is eliminated per unit time
- B) A constant fraction of the drug in the body is eliminated per unit time
- C) The fraction of the administered dose that reaches the systemic circulation
- D) The effect that can be increased by giving a second agent that boosts the effect of the liver's enzyme system

108) Loading dose of a drug is given

- A) To achieve high concentration in short time
- B) Rapid onset of action
- C) Less complication
- D) All

109) About first order kinetics true statement is

- A) Clearance remains constant
- B) Fixed amount of the drug is eliminated
- C) Half life increase with dose
- D) Decreased clearance with increasing dose

110) Plasma drug monitoring is done for

- A) Drug with high safety margin
- B) Drug with low safety margin
- C) Drug with high therapeutic index
- D) None

111) Michaelis Menton constant is

- A) Concentration of drug at which the reaction velocity is half of maximum
- B) Concentration of drug at which the reaction velocity is maximum
- C) Both
- D) None

112) Loading dose depends on the following factors except

- A) Drug concentration to be achieved

- B) Volume of distribution
- C) Clearance of the drug
- D) Bioavailability of drug

113) Clearance

- A) Refers to the efficacy of elimination of a drug by an organ or whole body
- B) Cannot be greater than blood flow to an organ
- C) Determines the steady state of drug concentration
- D) All the above

114) Time for peak plasma concentration (T max) indicates

- A) The rate of elimination
- B) The rate of absorption
- C) The onset of effect
- D) The intensity of effect

115) The rate of distribution of a drug can determine

- A) the volume of distribution
- B) the onset of drug effect
- C) the rate of drug elimination
- D) the duration of drug effect
- E) the clearance

116) Fraction of unbound drug in the plasma is,

- A) usually not affected by the drug concentration
- B) independent of the concentration of binding protein
- C) depends on the affinity of the drug to the binding protein
- D) increases as drug concentration increases
- E) decreases as drug concentration increases

117) During the constant rate infusion, the steady state drug conc is determined by,

- A) the half life
- B) the clearance
- C) the dosing rate
- D) the volume of distribution
- E) the loading dose
- F) b and c

118) A loading dose at the start of a constant rate i.v. infusion

- A) increases the steady state drug concentration
- B) gets the steady state more quickly
- C) starts closer to the steady state drug concentration

- D) allows a lower infusion rate
- E) always achieves steady state immediately

Clinical Pharmacokinetics Answers

- 1) C) Decreases 1% each year
- 2) B) Decrease; Decrease
- 3) E) Higher fat content & less gastric alcohol dehydrogenase (ADH)
- 4) D) Body on the drug; Drug on the body
- 5) D) The minimal drug plasma concentration to produce effect
- 6) C) Do nothing and continue normal regimen
- 7) B) Lipid diffusion
- 8) C) It will halve
- 9) B) It will quadruple
- 10) A) Bioavailability
- 11) E) Same side effects
- 12) A) 90%
- 13) D) The drug causes dilation of coronary vessels
- 14) E) Unbound to plasma proteins
- 15) D) Left; Left
- 16) C) Neutral (AH and B)
- 17) D) Unprotonated; Protonated
- 18) A) $\approx 91\%$; Yes
- 19) A) $(10,000 - 1) / 1 = 99.99\%$

- 20) D) 10
- 21) E) 1
- 22) C) Unprotonated; Protonated; Charged; Charged
- 23) B) Alkaline; Acidic
- 24) A) NaHCO_3 ; Increase
- 25) D) NH_4Cl ; Decrease
- 26) D) Adjusting the urinary pH to ionize the drug
- 27) E) About 99%
- 28) C) Weak base with pKa of 7.5
- 29) A) 99.9 μg
- 30) B) IV (intravenous)
- 31) B) $(0.175 * 1) / (0.7) = 0.25 \text{ mg}$
- 32) D) Integral of the curve (area underneath)
- 33) E) Transdermal
- 34) A) PO (oral)
- 35) D) Oral
- 36) B) Tight junctions; Macular gap junctions
- 37) C) IP (intraperitoneal)
- 38) E) More fluctuation in plasma concentration
- 39) C) Fat
- 40) B) Lipid solubility
- 41) A) Molecular size

- 42) D) Stomach
- 43) C) Small and lipid-soluble
- 44) C) Albumin
- 45) D) α 1-acid glycoprotein (AAG)
- 46) B) Increase in free drug
- 47) C) Decreased acidic drug binding and increased basic drug binding
- 48) C) Muscle
- 49) D) Fat
- 50) B) Kidney
- 51) A) True
- 52) E) Vomiting
- 53) B) 40 mins
- 54) A) Increased
- 55) E) 400 L
- 56) D) Less; Decreased
- 57) A) Increased
- 58 – D) Fat
- 59) A) Non-polar; Polar
- 60) A) More; More
- 61) B) Adults
- 62) B) 100 mL/hr
- 63) C) Dosing rate = $CL * \text{target concentration}$

- 64) C) Drug concentration in blood
- 65) B) Equal; Percentage
- 66) D) 4 to 5
- 67) B) Morphine
- 68) C) Not equal; Amount
- 69) D) 1 mcg/ml
- 70) C) mg/ml
- 71) E) 90%
- 72) B) False
- 73) A) True
- 74) D) Digitoxin, $t(1/2) = 161 \text{ h}$
- 75) B) $0.5 \text{ L/kg} * 60 \text{ kg} * 7.5 \text{ mg/L} = 225 \text{ mg}$, bolus
- 76) C) $0.04 \text{ L/kg/hr} * 60 \text{ kg} * 7.5 \text{ mg/L} = 18 \text{ mg/h}$, infusion
- 77) D) In vitro & in vivo tests
- 78) D) 1/100 – 1/10 NED
- 79) B) 2
- 80) A) Pre-mating male
- 81) C) Thalidomide
- 82) A) Ethanol
- 83) B) Double-blind study
- 84) E) Crossover study
- 85) D) Positive-control

- 86) C) Phase 3
- 87) B) Phase 2
- 88) D) Phase 4
- 89) A) Phase 1
- 90) C) 200,000
- 91) D) Reduces drug approval process time
- 92) E) X
- 93) B) False
- 94) A) Volume of distribution
- 95) D) Sex steroid hormones do not bind to any protein in plasma
- 96) B) A constant proportion of plasma concentration is eliminated per unit time
- 97) C) The substrate concentration at half maximal velocity
- 98) A) High plasma protein binding
- 99) D) Total body clearance
- 100) D) High plasma protein binding decreases the volume of distribution
- 101) B) Plasma protein binding
- 102) C) Increasing rate of elimination as plasma concentration increases
- 103) A) distributed and bound to body tissues
- 104) C) Clearance
- 105) A) Zero order kinetics
- 106) A) Unit volume of plasma which is cleared of drug in unit of time

- 107) D) The effect that can be increased by giving a second agent that boosts the effect of the liver's enzyme system
- 108) A) To achieve high concentration in short time
- 109) A) Clearance remains constant
- 110) D) None
- 111) A) Concentration of drug at which the reaction velocity is half of maximum
- 112) C) Clearance of the drug
- 113) D) All the above
- 114) B) The rate of absorption
- 115) B) the onset of drug effect
- 116) C) depends on the affinity of the drug to the binding protein
- 117) D) b and c
- 118) E) always achieves steady state immediately

2

Skin pharmacotherapy

Skin pharmacotherapy questions

1-Baby Amy Tinker is a 7-month-old infant who has been diagnosed with atopic dermatitis.

Clinical signs and symptoms she presented with may include all the following except:

- A) Pruritus
- B) Hypopigmentation
- C) Facial rash
- D) Urticaria

2-Appropriate non pharmacologic therapy for Amy includes all of the following except:

- A) Moisturizer applied liberally as needed
- B) Bathing five times a day
- C) Keep humidity at or above 50%
- D) Keep Amy cool—avoid situations of overheating

3-Initial pharmacologic therapy for Amy should be:

- A) Topical corticosteroid
- B) Topical pimecrolimus
- C) Oral prednisone
- D) Phototherapy with UVB

4-Lichenification implies all of the following except:

- A) Repeated rubbing and scratching has occurred
- B) Thick, leathery skin is present
- C) A secondary bacterial infection has developed
- D) Flexural folds of the extremities are probably involved

5-The defect thought to play a key role in atopic dermatitis is:

- A) Mutations in the gene for filaggrin
- B) Absence of the epidermal growth hormone
- C) Presence of the Philadelphia chromosome
- D) Abnormal cystic fibrosis transmembrane conductance protein

6-An immune system change associated with atopic dermatitis is:

- A) Reduced serum IgE
- B) Increased interleukin-12
- C) Increased Th2 cell activity
- D) Increased blood neutrophil

7-Miss Susanne Brown is a 15-year-old girl with atopic dermatitis who has multiple food allergies. The most allergenic foods that Susanne might be allergic to would include all of the following except:

- A) Eggs
- B) Milk
- C) Yogurt
- D) Soy

8-Susanne has yellow crusting lesions on her skin. They have been diagnosed as a bacterial infection. The most likely organism is:

- A) Staphylococcus aureus
- B) Pseudomonas aeruginosa
- C) Streptococcus viridians
- D) Xenotrophomonas maltophilia

9-Susanne has required pimecrolimus 1% cream during her flare-ups. Appropriate counseling for Susanne would include:

- A) Apply the cream only on lichenified areas
- B) Use the cream three to four times a day
- C) Burning sensation is unlikely
- D) Wear a sunscreen with SPF 30 or higher

10-The following treatment alternative would be preferred in a pregnant patient with atopic dermatitis:

- A) Topical corticosteroid
- B) Oral cyclosporine
- C) Topical crude coal tar
- D) Phototherapy with PUVA

11-The most effective type of phototherapy for atopic dermatitis is:

- A) Broadband UVB
- B) Narrowband UVB
- C) PUVA
- D) Low-dose UVA

12-Potential concerns with phototherapy include all of the following except:

- A) Photo aging
- B) Sunburn
- C) Squamous cell carcinoma
- D) Skin atrophy

13-Potential concerns with oral cyclosporine include all of the following except:

- A) Hypertension

- B) Nephrotoxicity
- C) Hepatotoxicity
- D) Interaction with grapefruit juice

14-Ultrahigh and high potency topical corticosteroids include all of the following except:

- A) Betamethasone valerate
- B) Betamethasone dipropionate
- C) Clobetasone propionate
- D) Diflorasonediacetate

15-Appropriate use of oral prednisone for atopic dermatitis includes all of the following except:

- A) For severe, recalcitrant, chronic atopic dermatitis
- B) For rapid relief of severe refractory disease while transitioning to other therapies
- C) Discontinue abruptly after a short 5-day course
- D) Provide intensified skin care with topical corticosteroids and moisturizers

16-The overall incidence of psoriasis in North America and Europe is approximately

- A) 0.2%
- B) 2%
- C) 12%
- D) 20%

17-Which of the following drugs may precipitate new onset psoriasis?

- A) Corticosteroids
- B) Azathioprine
- C) β -Adrenergic blocker
- D) Thiazide diuretics

18-Which of the following drugs may exacerbate preexisting psoriasis?

- A) β -Adrenergic blocker
- B) Lithium
- C) Nonsteroidalantiinflammatory drugs
- D) All of the above

19-Comorbidities associated with psoriasis include all of the following except

- A) Hyperlipidemia
- B) Crohn disease
- C) Multiple sclerosis
- D) Multiple myeloma

20-A 43-year-old white man has been diagnosed with mild plaque psoriasis. Presenting clinical signs and symptoms may include all of the following except

- A) Hypopigmentation
- B) Pruritus
- C) Erythema
- D) Silvery scales on lesions

21- A 43-year-old white man has been diagnosed with mild plaque psoriasis. **Appropriate non pharmacologic therapy for the patient includes all of the following except**

- A) Moisturizer applied ad lib
- B) Oatmeal baths
- C) Tanning beds
- D) Stress management clinics

22- A 43-year-old white man has been diagnosed with mild plaque psoriasis.

Initial pharmacologic therapy for the patient should be

- A) Betamethasone dipropionate 0.05% ointment for 2 months
- B) Calcipotriol 50 mcg/g cream for 2 months
- C) Methotrexate 5 mg/week for 2 months
- D) PUVA treatments for 2 months

23-Adverse effects of topical corticosteroids include all of the following except

- A) Hyperpigmentation
- B) Telangiectases
- C) HPA-axis suppression
- D) Perioral dermatitis

24-SCAT therapy refers to

- A) Steroid plus calcipotriol use
- B) Steroid plus coal tar use
- C) Anthralin use
- D) Tazarotene use

25-RE-PUVA refers to

- A) Multiple PUVA treatment courses
- B) Acitretin used together with PUVA
- C) Psoralens bath plus UVA
- D) Methotrexate used together with PUVA

26- Moderate to severe psoriatic lesions in a 33-year-old white woman fail to clear with topical therapy or NB-UVB. The NB-UVB treatments were continued and acitretin added.

Appropriate counseling for this patient includes all of the following except

- A) She must be on effective birth control for the duration of acitretin therapy.
- B) She must be on effective birth control for 3 years after discontinuing acitretin.
- C) She must not donate blood.

D) She must not have more than two alcoholic drinks per day.

27-Adverse effects of cyclosporine include all of the following except

- A) Hepatotoxicity
- B) Hypertriglyceridemia
- C) Hypertension
- D) Nephrotoxicity

28-Which of the following drugs can reduce serum cyclosporine concentrations?

- A) Oral contraceptives
- B) Verapamil
- C) Valproic acid
- D) Clarithromycin

29-Which of the following drugs is not a TNF- a inhibitor?

- A) Etanercept
- B) Alefacept
- C) Adalimumab
- D) Infliximab

30-Joanne is a 25-year-old woman in the first trimester of pregnancy. She has severe plaque psoriasis that did not improve when she became pregnant. In fact, the stress of pregnancy has resulted in a flare-up of her psoriasis. An appropriate treatment for Joanne's psoriasis would be

- A) Methotrexate
- B) NB-UVB
- C) Topical tazarotene
- D) Acitretin

31-Select the true statement regarding the epidemiology of acne vulgaris:

- A) Males present with an earlier onset in puberty.
- B) Females present with more severe signs and symptoms in puberty.
- C) Males have more severe symptoms in adulthood.
- D) There are no gender differences in acne prevalence.
- E) The lifetime prevalence of acne is 65%.

32-Which statement is true regarding the etiology of acne vulgaris?

- A) Acne is generally worse in the summer due to aggravation by ultraviolet light.
- B) Aggravation of acne through stress is a myth.
- C) Violinists may experience acne lesions due to occlusion where the instrument rests.
- D) Dietary influences do not affect the expression of acne.
- E) Acne is not more serious if there is a hereditary link.

33-Select the most important of four pathophysiologic mechanisms underlying acne vulgaris:

- A) Increased follicular keratinization forming a microcomedone
- B) Increased production of sebum
- C) Bacterial lipolysis of sebum triglycerides to free fatty acids
- D) Inflammation

34-Select the true statement regarding the clinical presentation of acne vulgaris:

- A) The open comedone is the first clinically visible lesion of acne.
- B) A pustule is usually greater than 5 mm in diameter.
- C) Nodules usually resolve within a few days without scarring.
- D) Cysts are suppurative nodules that may extend down to fat.
- E) The closed comedone is very stable and may persist for a long time.

35-Which of the following factors is not an important factor in the differential diagnosis of acne vulgaris?

- A) Betamethasone therapy
- B) Lithium therapy
- C) Association with spicy food
- D) Polycystic ovary syndrome
- E) Vitamin B12 deficiency

36-Which of the following is not a basic goal of treatment?

- A) Alleviation of symptoms by reducing the number and severity of lesions
- B) Reversing progression of signs and symptoms
- C) Limiting acne duration and recurrence
- D) Prevention of long-term disfigurement associated with scarring and hyperpigmentation
- E) Avoidance of psychological suffering

37-Which fact is untrue about comedone extraction?

- A) Fewer than 10% of comedone extractions are a complete success.
- B) Comedones may recur between 25 and 50 days following expression.
- C) It may prevent progression to inflammation.
- D) It has been widely tested in clinical trials.
- E) It results in immediate cosmetic improvement.

38-To prevent cosmetic acne, patients should:

- A) avoid self-care and use cosmetics applied during a beauty salon facial.
- B) select "noncomedogenic" products.
- C) select water-based products.
- D) use a sunscreen containing benzophenone.
- E) avoid hairspray.

39-For mild to moderate acne with predominantly noninflammatory lesions (comedones), active agents of first choice include:

- A) Retinoic acid, topical antibiotics, or benzoyl peroxide
- B) Retinoic acid, topical or oral antibiotics, or benzoyl peroxide
- C) Retinoic acid, salicylic acid, or benzoyl peroxide
- D) Tretinoin, adapalene, or benzoyl peroxide

40-For severe acne, with inflammatory lesions (papules, pustules) extensive nodules and cysts, and scars, the most appropriate drug regimens should include:

- A) tretinoin, adapalene, or tazarotene.
- B) tretinoin, or adapalene, and isotretinoin.
- C) benzoyl peroxide, retinoic acid, or adapalene.
- D) isotretinoin or topical or oral antibiotics.

41-Treatment of mild scarring has best results with:

- A) dermabrasion or collagen implants.
- B) chemical peels (e.g., 70% glycolic acid).
- C) laser therapy.
- D) nonprescription alpha-hydroxy acids.
- E) local excision.

42-Comparisons of salicylic acid and benzoyl peroxide have shown:

- A) salicylic acid to be equal or slightly inferior to benzoyl peroxide in reducing number of inflammatory lesions.
- B) the two products have similar efficacy.
- C) benzoyl peroxide could be superior in acting against later steps.
- D) the effect of different bases is not relevant.

43-As a group, the topical retinoids are:

- A) useful in the management of both comedonal and inflammatory acne.
- B) ranked in order of peeling efficacy as tretinoin<adapalene<tazarotene.
- C) decrease production of sebum and are thus useful for severe acne.
- D) are not combined with antibiotics due to increased toxicity.
- E) are contraindicated in cases of postinflammatory hyperpigmentation.

44-Acne patients who wish to increase ultraviolet light exposure to improve acne should use the following therapies with caution:

- A) Doxycycline and minocycline
- B) Minocycline and benzoyl peroxide
- C) Doxycycline and retinoic acid
- D) Retinoic acid and benzoyl peroxide
- E) Topical clindamycin and minocycline

45-Choose the most correct statement:

- A) Azelaic acid therapy should include monitored for signs of hyperpigmentation.
- B) Laboratory monitoring during isotretinoin therapy need not include triglycerides or complete blood counts.
- C) Patients on isotretinoin therapy should be monitored for signs of depression.
- D) Control of acne is reflected in a decrease of lesion counts by 50% within 2 to 4 weeks.
- E) Comedones should resolve within a few weeks.

46-The stratum basale contains:

- A) Corneocytes
- B) Melanocytes
- C) Nerve endings
- D) Blood vessels

47-The skin surface is normally covered with a hydrolipid film. Which of the following about the hydrolipid film is correct?

- A) It acts as a permeability barrier
- B) It contains protein decomposition products
- C) It contains transepidermal water
- D) All of the above statements are correct

48-Which of the following is true about the skin of an infant when compared to adult skin?

- A) Infant skin is less predisposed to external insults than adult skin
- B) Infant skin contains less moisture than adult skin
- C) Infant skin absorbs topical drugs more readily than adult skin
- D) All of the above statements are correct

49-Skin requires adequate amounts of which of the following to remain healthy?

- A) Exercise
- B) Sleep
- C) Fluid intake
- D) All of the above

50-Bullae are also known as:

- A) Macules
- B) Papules
- C) Nodules
- D) Blisters

51-Irritant skin reactions include all of the following EXCEPT:

- A) Topical corticosteroid-induced acne
- B) Vaginal imidazole-induced chemical vaginitis

- C) Anthracycline extravasation reaction
- D) Hand dermatitis from dishwashing

52-Common allergic skin reactions include:

- A) Maculopapular skin reaction
- B) Stevens-Johnson Syndrome
- C) Toxic epidermal necrolysis
- D) All of the above

53-Ms. AT was prescribed doxycycline for an upper respiratory tract infection. After using them for 3 days she noticed red, itchy bumps on her left forearm which blistered. She stopped taking the doxycycline since her infection was much better, and the bumps quickly went away. Three months later, Ms. AT developed a chlamydial vaginal infection and was treated with doxycycline. On the second day taking the drug she noticed the same red, itchy bumps on her left forearm which again blistered, and this time she went back to see her doctor.

Ms. AT most likely has which type of reaction to the doxycycline?

- A) Photosensitivity
- B) Drug hypersensitivity syndrome
- C) Fixed drug eruption
- D) Maculopapular skin reaction

54-The most common cause of urticaria is:

- A) Drugs
- B) Foods
- C) Infections
- D) Latex

55-An urticarial reaction:

- A) Is IgE mediated
- B) Is extremely pruritic
- C) May include mucous membrane swelling
- D) All of the above

56-Clinical presentation of toxic epidermal necrolysis may include all of the following EXCEPT:

- A) Generalized painful blisters
- B) Electrolyte imbalances
- C) Acute serum sickness
- D) Secondary bacteremia

57-Management of a suspected drug reaction may include all of the following EXCEPT:

- A) Stop the suspected offending agent as soon as possible
- B) Short course of systemic corticosteroids
- C) Aspirin for pain or high fever
- D) Diphenhydramine for pruritus

58-Common causes of contact dermatitis include:

- A) Fragrances
- B) Preservatives
- C) Sunblocks
- D) All of the above

59-Compresses are used to:

- A) Soothe and cleanse oozing lesions
- B) Soften crusted skin lesions
- C) Relieve and rehydrate itchy skin
- D) All of the above

60-Appropriate management strategies for diaper dermatitis include all of the following EXCEPT:

- A) Air drying
- B) Cleansing with a non-soap cleanser and warm water
- C) Using zinc oxide as a barrier cream
- D) Using hydrocortisone 1% cream as prophylaxis

Skin pharmacotherapy answers

- 1- B) Hypopigmentation
- 2- B) Bathing five times a day
- 3- A) Topical corticosteroid
- 4-C) A secondary bacterial infection has developed
- 5-A) Mutations in the gene for filaggrin
- 6- C) Increased Th2 cell activity
- 7- C) Yogurt
- 8- A) Staphylococcus aureus
- 9- D) Wear a sunscreen with SPF 30 or higher
- 10- A) Topical corticosteroid
- 11- B) Narrowband UVB
- 12- D) Skin atrophy
- 13- C) Hepatotoxicity
- 14- A) Betamethasone valerate
- 15- C) Discontinue abruptly after a short 5-day course
- 16- B) 2%
- 17- C) β -Adrenergic blocker
- 18- D) All of the above
- 19- D) Multiple myeloma
- 20- A) Hypopigmentation

- 21- C) Tanning beds
- 22- B) Calcipotriol 50 mcg/g cream for 2 months
- 23- A) Hyperpigmentation
- 24- C) Anthralin use
- 25- B) Acitretin used together with PUVA
- 26- D) She must not have more than two alcoholic drinks per day.
- 27- A) Hepatotoxicity
- 28- C) Valproic acid
- 29- B) Alefacept
- 30- B) NB-UVB
- 31- D) There are no gender differences in acne prevalence.
- 32- C) Violinists may experience acne lesions due to occlusion where the instrument rests.
- 33- A) Increased follicular keratinization forming a microcomedone
- 34- D) Cysts are suppurative nodules that may extend down to fat.
- 35- E) Vitamin B12 deficiency
- 36- B) Reversing progression of signs and symptoms
- 37- D) It has been widely tested in clinical trials.
- 38- E) avoid hairspray.
- 39- C) Retinoic acid, salicylic acid, or benzoyl peroxide
- 40- B) tretinoin, or adapalene, and isotretinoin.
- 41- D) nonprescription alpha-hydroxy acids.
- 42- B) the two products have similar efficacy.

- 43- A) useful in the management of both comedonal and inflammatory acne.
- 44- C) Doxycycline and retinoic acid
- 45- C) Patients on isotretinoin therapy should be monitored for signs of depression.
- 46- B) Melanocytes
- 47- D) All of the above statements are correct
- 48- C) Infant skin absorbs topical drugs more readily than adult skin
- 49- D) All of the above
- 50- D) Blisters
- 51- A) Topical corticosteroid-induced acne
- 52- A) Maculopapular skin reaction
- 53- C) Fixed drug eruption
- 54- B) Foods
- 55- D) All of the above
- 56- C) Acute serum sickness
- 57- C) Aspirin for pain or high fever
- 58- D) All of the above
- 59- A) Soothe and cleanse oozing lesions
- 60- D) Using hydrocortisone 1% cream as prophylaxis.

3

GIT PHARMACOTHERAPY

GIT PHARMACOTHERAPY QUESTIONS

1-A 67-year-old patient complains to you of gastrointestinal (GI) symptoms. Which of the following symptoms would not require an immediate referral for further diagnostic interventions?

- A) Weight loss
- B) Anemia
- C) Sore throat
- D) Dysphagia

2-The cornerstone in the evaluation of the patient with digestive complaints is:

- A) Comprehensive patient history
- B) Colonoscopy
- C) Endoscopy
- D) Magnetic resonance imaging

3-Bleeding from the GI tract may lead to elevations in which of the following laboratory tests?

- A) Prealbumin
- B) Serum creatinine
- C) Serum potassium
- D) Blood urea nitrogen

4-Low albumin may be indicative of which of the following GI tract disorders?

- A) Hepatic dysfunction
- B) Malnutrition
- C) Protein losing-enteropathies
- D) All of the above

5-A gastrointestinal organism associated with MALT lymphomas is:

- A) Helicobacter pylori
- B) Escherichia coli
- C) Cytomegalovirus
- D) Clostridium difficile

6-Which of the following GI diagnostic tests does not require an 8 to 12 hour fast and administration of a bowel-cleansing agent prior to the procedure?

- A) Lower GI series with barium
- B) Ultrasonography
- C) Flexible sigmoidoscopy
- D) Capsular endoscopy

7-A noninvasive GI procedure that provides images of deeper structures like the gallbladder or liver is:

- A) Small bowel enteroclysis
- B) Barium in a lower GI series
- C) Capsular endoscopy
- D) Ultrasonography

8-A radiologic imaging method to detect GI hemorrhages is:

- A) Radionuclide imaging
- B) Computed tomography
- C) Magnetic resonance imaging
- D) None of the above

9- To improve patient acceptance with upper endoscopy, which of the following agents can be used to achieve conscious sedation?

- A) Lorazepam
- B) Midazolam
- C) Propofol
- D) All of the above may be used

10-The most common method to visually evaluate a patient with Barrett's esophagus is:

- A) Upper GI series with gastrograffin
- B) Endoscopy
- C) Magnetic resonance imaging
- D) All of the above may be used

11-In patients with gastroesophageal reflux symptoms not receiving a proton pump inhibitor therapy, up to what percentage will have normal findings?

- A) 10 %
- B) 25%
- C) 50%
- D) 75%

12- In patients with inflammatory bowel disease, which of the following procedures allows for diagnosis, staging, and therapy?

- A) Flexible sigmoidoscopy
- B) Ultrasonography
- C) Computed tomography
- D) All of the above

13-Which of the following gastrointestinal tract test will evaluate diseases of esophageal dysmotility?

- A) Capsule endoscopy
- B) Enteroscopy
- C) Manometry
- D) Upper GI series

14-The gold standard procedure for patients that complain of gastroesophageal reflux is:

- A) Capsule endoscopy
- B) Flexible sigmoidoscopy
- C) Magnetic resonance imaging
- D) Esophageal pH monitoring

15- Multichannel intraluminal impedance is a procedure that:

- A) Allows for staging of inflammatory bowel disease
- B) Assesses both acid and nonacid reflux
- C) Will visualize gastrointestinal tumors
- D) All of the above are correct

16-Aggressive factors that can promote esophageal damage include all of the following except:

- A) Bicarbonate
- B) Gastric acid
- C) Pancreatic enzymes
- D) Bile acids
- E) Pepsin

17-A typical symptom associated with GERD is:

- A) Dysphagia
- B) Regurgitation
- C) Weight loss
- D) Barrett's esophagus

18-The following is true regarding patients who present with symptom-based esophageal GERD syndromes:

- A) Symptoms are always less severe than those presenting with erosive esophagitis
- B) Symptoms are always easier to treat than those presenting with erosive esophagitis
- C) H₂-receptor antagonists are the preferred treatment
- D) Symptoms can be as severe as those seen in patients with erosive esophagitis
- E) Maintenance therapy will not be needed

19-Elderly patients with GERD can have the following defect in one of their protective host defense mechanisms:

- A) Decreased saliva production

- B) Increased bile acid production
- C) Increased GI motility
- D) Increased gastric emptying
- E) Decreased acid production

20-The following factor(s) may increase a patient's risk for developing adenocarcinoma of the esophagus

- A) Presence of Barrett's esophagus
- B) Presence of atypical GERD symptoms
- C) Presence of strictures
- D) Concomitant extraesophageal syndrome
- E) Long-term proton pump inhibitor use

21-The presence of Barrett's esophagus can be diagnosed by:

- A) Ambulatory pH monitoring
- B) Manometry
- C) Barium swallow
- D) Endoscopy
- E) Clinical presentation

22-The following type patient is more at risk for developing GERD:

- A) 50-year old obese female smoker
- B) 24-year old white male with Crohn's disease
- C) 18-year old African American male athlete
- D) 35-year old male with below-the-knee amputation
- E) 5-year old female with Type I diabetes

23-All of the following drug classes can worsen GERD symptoms except:

- A) Calcium channel blocker
- B) Estrogens
- C) Angiotensin-converting enzyme inhibitors
- D) Anticholinergics
- E) Barbiturates

24-Lifestyle modifications include:

- A) Elevating the head of the bed with three to four pillows
- B) Eating larger meals less often
- C) Decreasing protein intake
- D) Elevating the head of the bed 6 to 8 inches with blocks
- E) Wearing a girdle

25-The preferred initial treatment option for a 45-year old male presenting with a 3-month history of severe, continuous GERD symptoms is:

- A) Patient-directed therapy with OTC omeprazole
- B) Prescription-strength H₂-receptor antagonist
- C) Prescription-strength proton pump inhibitor
- D) Antireflux surgery
- E) Endoscopic therapy

26-Proton pump inhibitors exert their action by:

- A) Stimulating histamine-2 receptors in the gastric parietal cells
- B) Inhibiting gastric H⁺/K⁺-adenosine triphosphate in gastric parietal cells
- C) Inhibiting Na⁺/K⁺-adenosine biphosphate in the gastric parietal cells
- D) Inhibiting epithelial growth factor in the stomach
- E) Increasing GI motility

27-The goal of acid suppression therapy is to:

- A) Maintain the gastric pH above 7
- B) Maintain the gastric pH below 3
- C) Maintain the gastric pH above 4
- D) Maintain the gastric pH below 2
- E) Maintain the gastric pH above 8

28-A 50-year-old male truck driver might be most concerned with which of the following side effects of proton pump inhibitors:

- A) Vitamin B12 deficiency
- B) Dizziness
- C) Headache
- D) Constipation
- E) Nausea

29-The most effective and recommended option for GERD maintenance therapy is:

- A) Proton pump inhibitor
- B) H₂-receptor antagonist
- C) Antireflux surgery
- D) Endoscopic therapy
- E) Antacids

30-The following patient is the best candidate for maintenance therapy for GERD:

- A) 25-year-old patient with intermittent GERD symptoms
- B) 3-month-old baby with intermittent regurgitation of feeds
- C) 45-year-old patient who relapses after an 8-week course of proton pump inhibitor therapy
- D) 45-year-old patient with Barrett's esophagus
- E) C and D

31-Nonsteroidal antiinflammatory drug (NSAID)-induced ulcers differ from Helicobacter pylori (HP)-associated ulcers in that an NSAID-induced ulcer is

- A) Most likely located in the stomach
- B) Most likely associated with less severe upper gastrointestinal bleeding
- C) Most likely associated with a greater degree of ulcer-related epigastric pain
- D) Most likely associated with gastric acid hypersecretion

32-Which of the following statements regarding the epidemiology of inflammatory bowel disease is true?

- A) Men are affected at a greater rate than women.
- B) IBD occurs more commonly in areas of southern latitude.
- C) The peak incidence is in the second and third decades of life.
- D) Black patients are affected at a higher rate than white patients.

33-Which of the following is not implicated as a major factor in the development of inflammatory bowel disease?

- A) Genetic predisposition
- B) Presence of psychosocial stressors
- C) Immune response against intestinal bacteria
- D) Dysregulation of proinflammatory cytokines

34- Polymorphisms of which enzyme may predispose patients receiving azathioprine to toxicity?

- A) ACE
- B) TNF- α
- C) TPMT
- D) HLA DRPHLA-DR2

35-Which of the following is more characteristic of ulcerative colitis than Crohn disease?

- A) Confinement of disease to the colon and rectum
- B) Fistula formation
- C) Cobblestone pattern of inflammation
- D) Extension of inflammation below the intestinal mucosa

36-Which nutritional therapy may need to be implemented for a patient receiving long-term sulfasalazine therapy?

- A) Vitamin C
- B) Vitamin K
- C) Folic acid
- D) Zinc

37-Which of the following drugs would be the most effective for induction of remission of mild to moderate active ulcerative proctitis?

- A) Oral mesalamine
- B) Mesalamine suppository
- C) Oral azathioprine
- D) Intravenous infliximab

38-Which drug has been shown to have corticosteroid-sparing properties when used for treatment of ulcerative colitis?

- A) Mercaptopurine
- B) Sulfasalazine
- C) Mesalamine
- D) Balsalazide

39- Which one of the following is a potential adverse effect of natalizumab?

- A) Primary sclerosing cholangitis
- B) Progressive multifocal leukoencephalopathy
- C) Pulmonary fibrosis
- D) Heart failure

40-What is a potential role for the use of metronidazole for patients with inflammatory bowel disease?

- A) Alternate first-line therapy for mild active ulcerative colitis
- B) Maintenance therapy for moderate active ulcerative proctitis
- C) Treatment of perianal or fistulizing Crohn disease
- D) No role in the treatment of inflammatory bowel disease

41-Which drug would be the best initial therapy for acute treatment of a hospitalized patient with severe active Crohn disease who has failed maximum oral doses of mesalamine?

- A) Intravenous methylprednisolone
- B) Intravenous cyclosporine
- C) Oral olsalazine
- D) Oral azathioprine

42-Which baseline diagnostic test should be performed prior to initiating adalimumab therapy?

- A) Serum potassium
- B) Tuberculin skin test
- C) Thyroid stimulating hormone
- D) Urinalysis

43-Which one of the following medications would be most appropriate as initial treatment of mild to moderate active Crohn disease involving the terminal ileum?

- A) Rowasa enema
- B) Dipentum
- C) Colazal
- D) Pentasa

44-Which medication is most effective for treatment of fistulizing Crohn disease?

- A) Sulfasalazine
- B) Ciprofloxacin
- C) Infliximab
- D) Methotrexate

45-Which one of the following medications would be the most appropriate to treat an acute flare of distal ulcerative colitis in a patient who is 17 weeks pregnant?

- A) Azathioprine
- B) Methotrexate
- C) Budesonide
- D) Prednisone

46-Which one of the following drugs should not be used as maintenance therapy for a patient with Crohn disease?

- A) Prednisone
- B) Methotrexate
- C) Infliximab
- D) Azathioprine

47-Patients experiencing simple nausea and vomiting associated with heartburn may obtain relief from:

- A) Magnesium/aluminum hydroxide 30 mL orally
- B) Cimetidine 200 mg orally
- C) Ranitidine 75 mg orally
- D) All of the above
- E) None of the above

48-A 45-year-old woman asks your advice as to what she should bring with her on a cruise in case she develops motion sickness. You recommend all of the following except:

- A) Dimenhydrinate
- B) Scopolamine transdermal patch
- C) Aprepitant
- D) Meclizine
- E) Diphenhydramine

49-Concomitant use of the following drug(s) with aprepitant can result in a potential drug interaction:

- A) Etoposide
- B) Oral contraceptives
- C) Dexamethasone
- D) Warfarin
- E) All of the above

50-The preferred agent(s) for the prophylaxis of nausea and vomiting associated with the administration of gemcitabine in an adult is:

- A) Dexamethasone
- B) Granisetron
- C) Granisetron + dexamethasone
- D) Granisetron + dexamethasone + aprepitant
- E) None of the above

51-The best strategy for preventing delayed CINV is to control acute CINV and provide adequate prophylaxis for delayed CINV.

- A) True
- B) False

52-Chemotherapy-induced anticipatory nausea and vomiting (ANV) may be prevented by:

- A) Control of acute CINV
- B) Behavioral therapy
- C) Lorazepam prior to chemotherapy
- D) All of the above
- E) None of the above

53-Strategies to reduce the risk of PONV include all of the following except:

- A) Use of regional anesthesia
- B) Avoidance of nitrous oxide
- C) Use of supplemental hydrogen
- D) Avoidance of opioids
- E) Use of hydration

54-A 62-year-old man undergoes surgery and does not receive prophylaxis for PONV. Two hours after completion of the procedure, he complains of nausea. Select the most appropriate medication from the list below.

- A) Granisetron 1 mg IV
- B) Ondansetron 1 mg IV
- C) Prochlorperazine 10 mg IV
- D) Dexamethasone 8 mg IV

E) None of the above

55-Which of the following is the recommended first-line therapy for the treatment of nausea and vomiting in a pregnant woman?

- A) Diphenhydramine
- B) Meclizine
- C) Prochlorperazine
- D) Pyridoxine + doxylamine
- E) Doxylamine

56-Which of the following statements is false concerning antiemetic use in children?

- A) When receiving a chemotherapy regimen of high emetic risk, children should receive ondansetron plus dexamethasone to prevent CINV.
- B) All children should receive the same standard dose of ondansetron to prevent CINV.
- C) Oral rehydration therapy should be considered in pediatric patients experiencing nausea due to gastroenteritis.
- D) Oral rehydration therapy may be facilitated by the administration of ondansetron.

57-A 52-year-old nonsmoking woman is scheduled for a hysterectomy. She experienced nausea and vomiting after a previous elective surgery. Select an appropriate regimen for PONV prophylaxis.

- A) Dexamethasone 4 mg IV
- B) Ondansetron 4 mg IV
- C) Aprepitant 40 mg oral
- D) Scopolamine transdermal patch
- E) Dexamethasone 4 mg IV + ondansetron 4 mg IV

58-The preferred agent(s) for the prophylaxis of nausea and vomiting associated with the administration of doxorubicin + cyclophosphamide in an adult is:

- A) Dexamethasone
- B) Palonosetron
- C) Palonosetron + dexamethasone
- D) Palonosetron + dexamethasone + aprepitant
- E) None of the above

59-Bacterial organisms responsible for the most episodes of infectious diarrhea include all of the following except:

- A) E. coli
- B) Salmonella
- C) Campylobacter
- D) Pseudomonas
- E) Shigella

60-Absorption from the intestines occurs via the following process(es):

- A) Active transport
- B) Diffusion
- C) Solvent drag
- D) a. and b.
- E) All of the above

61-This type of diarrhea occurs when a stimulating substance either increases secretion or decreases absorption of water and electrolytes:

- A) Osmotic
- B) Exudative
- C) Secretory
- D) Transitory
- E) Hydrostatic

62-This type of diarrhea is distinguishable from other types because it ceases if the patient resorts to a fasting state:

- A) Osmotic
- B) Exudative
- C) Secretory
- D) Altered intestinal motility
- E) None of the above

63-Which statement about acute diarrhea is true?

- A) It is self-limiting, usually subsiding within 72 hours.
- B) It is secondary to diseases such as diabetes.
- C) It is treatable with bulk-forming laxatives.
- D) It is a long-term condition that waxes and wanes throughout life.
- E) It is always a sign of significant gastrointestinal disease.

64-Which of the following drugs or measures are not advocated for prevention of traveler's diarrhea?

- A) Special care with drinking water
- B) Bismuth subsalicylate (BSS)
- C) Special care with fresh vegetables
- D) Avoidance of meat products
- E) Antibiotic prophylaxis

65-If diarrhea occurs, therapeutic goals include all of the following except:

- A) Prevent excessive water and electrolyte loss
- B) Provide symptomatic relief
- C) Manage the diet
- D) Treat curable causes

E) Stop the diarrhea at all costs

66-This antisecretory agent used to treat diarrhea may interact with anticoagulants, interfere with tetracycline absorption, and interfere with some gastrointestinal radiographic studies:

- A) Polycarbophil
- B) Bismuth subsalicylate
- C) Loperamide
- D) Paregoric
- E) Diphenoxylate with atropine

67-Which of the following statements about constipation is true?

- A) Lack of daily bowel movements leads to buildup of toxic substances.
- B) Daily bowel movements are required for health and well-being.
- C) Inadequate diet is a major cause of constipation in the United States.
- D) Normal healthy subjects pass at least 6 stools per week.
- E) Constipation should be treated initially with castor oil.

68-Factors found to correlate with self-reported constipation include all of the following except:

- A) Presence of hemorrhoids
- B) Greater frequency in females
- C) Total number of drugs taken
- D) Age of subject
- E) Greater frequency in males

69. Known causes of constipation include:

- A) Metabolic disorders (diabetes)
- B) Endocrine disorders (hypothyroidism)
- C) Disorders of the large bowel (irritable bowel syndrome)
- D) Disorders of the upper GI tract (ulceration, cancer)
- E) All of the above

70-Drugs affecting gastrointestinal function that may cause constipation include all of the following except:

- A) Anticholinergics
- B) Magnesium antacids
- C) Opiates
- D) Aluminum antacids
- E) All of the above are known to cause constipation.

71-The cornerstone of therapy in the treatment of constipation should be:

- A) Decrease fluid intake

- B) Increase in dietary fiber
- C) Biofeedback therapy
- D) Prolonged use of laxatives
- E) Anticholinergic drugs

72-Which laxative compound, famous for its ability to discolor the urine, is no longer contained in laxative products in the United States?

- A) Casanthrol
- B) Cascara sagrada
- C) Bisacodyl
- D) Phenolphthalein
- E) Glycerin

73-To prevent constipation, patients should be advised to include this amount of fiber in their daily diet:

- A) 10–15 grams
- B) 30–35 grams
- C) 50–55 grams
- D) 100–110 grams
- E) 150–160 grams

74-Products such as psyllium, methylcellulose, and polycarbophil are known as:

- A) Stimulant laxatives
- B) Bulk-forming agents
- C) Cathartics
- D) Lubricants
- E) Diphenylmethane derivatives

75-Which of the following statements about irritable bowel syndrome (IBS) is/are true?

- A) It affects up to 80% of adults worldwide.
- B) It is equally prevalent in both men and women.
- C) It is characterized by abdominal pain, disturbed defecation, and bloating.
- D) It is known to be of viral origin.
- E) All of the above

76-The major pathophysiologic cause of irritable bowel syndrome is believed to be:

- A) Bipolar disorder
- B) Norwalk and rotavirus groups
- C) Laxative abuse
- D) Visceral hypersensitivity
- E) E. coli

77-Current procedures used in the diagnosis of irritable bowel syndrome include:

- A) Manning or Rome III criteria
- B) Sigmoidoscopy or colonoscopy
- C) Occult blood test and examination for parasites
- D) CBC and erythrocyte sedimentation rate
- E) All of the above

78-Which of the following treatment measures is recommended in constipation-predominant IBS?

- A) Saline cathartics
- B) Loperamide
- C) Mineral oil
- D) Dietary fiber
- E) Lactulose

79-In addition to avoidance of certain food products, which of the following treatments is recommended in diarrhea-predominant IBS?

- A) Saline cathartics
- B) Loperamide
- C) Mineral oil
- D) Dietary fiber
- E) Lactulose

80-Nongastrointestinal manifestations of IBS include all of the following except:

- A) Increased passage of mucus
- B) Urinary symptoms
- C) Heart palpitations
- D) Dyspareunia
- E) Fatigue

81-Which of the following drug classes has/have been used for their analgesic effects in patients suffering from IBS-associated pain?

- A) Tricyclic compounds
- B) Serotonin reuptake inhibitors (SSRI.s)
- C) Preprandial doses of anticholinergic drugs
- D) a and b
- E) All of the above

82-Drug classes currently under investigation for the treatment of IBS include:

- A) ACE inhibitors
- B) Calcium channel blockers
- C) Beta agonists
- D) MAOIs

E) All of the above

83-Which of the following is an example of a correct recommendation for primary prophylaxis against variceal bleeding for a patient with medium varices and no known drug therapy contraindications?

- A) Atenolol 100 mg daily plus isosorbide mononitrate 60 mg daily
- B) Isosorbide mononitrate 60 mg daily
- C) Propranolol 20 mg twice daily
- D) Isosorbide mononitrate 60 mg daily plus propranolol 20 mg twice daily

84-Which of the following describes the most rational approach to prevent rebleeding of varices?

- A) Nonselective β -adrenergic blocker alone
- B) Nonselective β -adrenergic blocker plus endoscopic band ligation
- C) Beta-1 selective β -adrenergic blocker plus isosorbide mononitrate
- D) Beta-1 selective β -adrenergic blocker plus endoscopic band ligation

85-Which of the following should not be recommended any longer for the treatment of a patient with acute variceal bleeding?

- A) Octreotide
- B) Vasopressin
- C) Terlipressin
- D) Endoscopic band ligation

86-Which of the following diuretic regimens is the recommended initial regimen for the treatment of ascites in a patient with cirrhosis?

- A) Furosemide 100 mg daily as monotherapy
- B) Furosemide 40 mg daily as monotherapy
- C) Spironolactone 100 mg daily + furosemide 40 mg daily
- D) Spironolactone 40 mg daily + furosemide 100 mg daily

87-Albumin infusion should be instituted in which of the following patients?

- A) JR, whose ascitic polymorphonuclear cell count is found to be 100 cells/mm³
- B) TS, who underwent therapeutic paracentesis with 2 L of ascitic fluid being removed
- C) RP, whose ascitic polymorphonuclear cell count is found to be 300 cells/mm³
- D) RS, whose ascitic polymorphonuclear cell count is found to be 200 cells/mm³ and who had 2 L of ascitic fluid removed

88-Which of the following antibiotic therapies is the drug of choice for the antibacterial therapy of a patient with spontaneous bacterial peritonitis?

- A) Aztreonam
- B) Tobramycin plus ampicillin
- C) Cephalexin

D) Cefotaxime

89-Long-term antibiotic prophylaxis against spontaneous bacterial peritonitis is appropriate in which of the following patients?

- A) SB, who survived an episode of spontaneous bacterial peritonitis 1 month ago
- B) TR, who has ascites, total ascitic protein of 2 g/dL, and a serum bilirubin of 3.5 mg/dL
- C) PW, who survived a variceal hemorrhage 4 months ago
- D) JD, who just suffered an acute episode of hepatic encephalopathy

90-Which of the following is a recommended antibiotic choice for a patient who is in need of long-term antibiotic prophylaxis against spontaneous bacterial peritonitis?

- A) Cefotaxime
- B) Neomycin
- C) Trimethoprim-sulfamethoxazole
- D) Cephalexin

91-Which of the following is a correct match between a common precipitating factor of hepatic encephalopathy and a corresponding treatment alternative that is appropriate for the management of a patient presenting with hepatic encephalopathy due to that particular precipitating factor?

- A) Infection : Bowel cleansing via enema
- B) Renal insufficiency : Bromocriptine
- C) Sedative ingestion : Flumazenil
- D) Electrolyte abnormalities : Lactulose

92-The first-line therapeutic drug option for a patient with episodic HE is which of the following?

- A) Metronidazole
- B) Neomycin
- C) Flumazenil
- D) Lactulose

93- Cirrhosis can lead to all of the following complications except:

- A) Hepatopulmonary syndrome
- B) Hypothyroidism
- C) Gynecomastia
- D) Thrombocytosis

94-Drugs metabolized through which of the following processes are most likely to be affected by cirrhosis?

- A) Sulfation
- B) Oxidation
- C) Conjugation

D) Hydrolysis

95-The most common causes of cirrhosis in the United States are:

- A) Adverse effects of drug therapies such as isoniazid, amiodarone, and methotrexate
- B) Metabolic liver diseases such as hemochromatosis and NASH
- C) Chronic alcohol consumption and chronic viral hepatitis
- D) Cholestatic liver disease such as primary biliary cirrhosis or primary sclerosing cholangitis

96-Which of the following patient parameters is not included in the Child-Pugh scoring system?

- A) Bilirubin
- B) Ascites
- C) Encephalopathy
- D) INR

97-Which of the following drug therapies used in the management of hepatic encephalopathy can cause neurotoxicity?

- A) Neomycin
- B) Metronidazole
- C) Rifaximin
- D) Bromocriptine

98-Which of the following are patterns of drug-induced liver disease?

- A) Nonalcoholic steatohepatitis
- B) Phospholipidosis
- C) Toxic cirrhosis
- D) Cholestatic injury
- E) All of the above

99-Mechanisms of drug-induced liver disease include:

- A) Idiosyncratic reactions
- B) Liver vascular disorder
- C) Cell membrane injury
- D) A and C only
- E) All of the above

100-Which of the following drugs has been associated with an allergic drug-related hepatotoxicity?

- A) Minocycline
- B) Amiodarone
- C) Ketoconazole
- D) Isoniazid

E) None of the above

101-The assessment of a possible liver injury caused by drugs should include:

- I. A review of the patient's history
 - II. An evaluation of the patient's liver enzymes
 - III. A review of the patient's mental status
- A) I only
 - B) III only
 - C) I and II
 - D) II and III
 - E) I, II, and III

102-Blood samples of AST, ALT, bilirubin, and albumin should be drawn before a patient is started on a hepatotoxic drug.

- A) True
- B) False

103-Which of the following are environmental hepatotoxins?

- I. Arsenic
 - II. Copper
 - III. Vinyl chloride
- A) I only
 - B) III only
 - C) I and II
 - D) II and III
 - E) I, II, and III

104-Which of the following etiologies of acute pancreatitis is the most common in the United States?

- A) Gallstones
- B) Medications
- C) Alcohol
- D) ERCP

105-Which of the following medications has a probable association as a cause of acute pancreatitis?

- A) Pravastatin
- B) Opiates
- C) Lamivudine
- D) Bactrim

106-Which of the following is correct concerning the course of acute pancreatitis?

- A) About half of patients have a severe course with a mortality rate over 30%.

- B) The gold standard for identifying patients at risk for a severe course is serum lipase.
- C) There is no role for CECT in the diagnosis or staging of acute pancreatitis.
- D) Scoring systems combine multiple factors to predict the clinical course of acute pancreatitis.

107-Which of the following is correct regarding fluid replacement in acute pancreatitis?

- A) Patients at risk for renal or cardiovascular complications should be fluid restricted.
- B) Fluid and electrolyte requirements are minimal in patients with mild disease.
- C) The prognosis of patients often depends on the adequacy of volume restoration.
- D) Sequestered fluid in the peritoneal or retroperitoneal space should not be replaced.

108-Which of the following is the best nutrition therapy for a patient with severe acute pancreatitis whose pain has improved and bowel sounds are normal?

- A) Enteral nutrition via the nasogastric route
- B) Enteral nutrition via the nasojejunal route
- C) Total parenteral nutrition
- D) Combined enteral and parenteral nutrition

109-Which of the following is correct with respect to the use of opioid analgesics for pain associated with acute pancreatitis?

- A) Avoid agents that cause spasm of the sphincter of Oddi.
- B) Morphine can be used first line.
- C) Synthetic opioids are the preferred agents.
- D) Meperidine is the agent of choice.

110-Which of the following is correct regarding studies evaluating the use of prophylactic antibiotics in acute pancreatitis?

- A) No benefit has been demonstrated with their use in mild disease.
- B) Studies using carbapenems show a decrease in pancreatic infection.
- C) The largest studies demonstrate the greatest benefit.
- D) Studies enrolling patients without necrosis show a decrease in mortality.

111-Which of the following pathogenic mechanisms for the development of chronic pancreatitis results in fatty degeneration of the pancreas secondary to lipid accumulation due to the presence of metabolites of alcohol?

- A) Toxic-metabolic
- B) Oxidative stress
- C) Periductular necrosis
- D) Ductal obstruction

112-Which of the following is most indicative of chronic pancreatitis?

- A) Serum trypsinogen of 10 ng/mL

- B) Fecal elastase of 400 mcg/g stool
- C) Weight loss
- D) Watery diarrhea

113-Which of the following is the best recommendation for a 47-year-old man with chronic pancreatitis who smokes and still has steatorrhea despite maximum pancreatic enzyme supplementation?

- A) Begin an antisecretory agent and medium-chain triglyceride supplementation.
- B) Quit smoking and begin medium-chain triglyceride supplementation.
- C) Begin an antisecretory agent, quit smoking, and reduce fat intake to 0.5 g/kg/day.
- D) Begin alternative enzyme supplement and reduce fat intake to 0.5 g/kg/day.

114-Which of the following is the best therapy for treating pain from chronic pancreatitis in a 51-year-old woman with a past medical history of a bleeding gastric ulcer who is no longer getting relief from acetaminophen 650 mg orally four times daily?

- A) Fentanyl 25 mcg/hr transdermal patch every 72 hours
- B) Hydrocodone/acetaminophen 5/500 mg orally four times daily
- C) Ibuprofen 400 mg orally three times daily
- D) Tramadol 50 mg orally four times daily

115-Which of the following patients with chronic pancreatitis is the best candidate for pancreatic enzyme supplementation?

- A) Steatorrhea with persistent weight loss
- B) Steatorrhea without weight loss
- C) Fecal fat estimation of 2 g per day
- D) Worsening pain despite opioids

116-Which of the following pancreatic enzyme supplements would likely provide the largest amount of active lipase to the duodenum at a rate similar to that of chyme from the stomach?

- A) Minitablets
- B) Microspheres
- C) Minimicrospheres
- D) Microspheres with bicarbonate buffer

117-Which of the following is the best option for a patient with persistent steatorrhea who has not gained weight despite receiving the maximum dose of minimicrosphere enzyme supplements administered during meals?

- A) Change to microspheres.
- B) Add an antisecretory agent.
- C) Administer supplements before meals.
- D) Administer supplements with applesauce.

118-Which of the following should regularly be assessed in a patient receiving opioids for pain associated with chronic pancreatitis?

- A) Steatorrhea
- B) Weight loss
- C) Respiratory depression
- D) Constipation

119-Hepatitis A treatment consists of:

- A) Antivirals
- B) Immunomodulators
- C) Immunosuppressants
- D) Supportive care

120-Prevention of hepatitis A can be achieved by:

- A) Preexposure prophylaxis
- B) Postexposure prophylaxis
- C) Vaccination
- D) All of the above
- E) None of the above

121-Which of the following statements regarding hepatitis A vaccination is correct?

- A) The vaccine series may be completed with either brand of vaccine
- B) The vaccine series should not be administered with immunoglobulin concomitantly
- C) A disadvantage of the vaccine series is that it requires multiple doses before conferring immunity for the majority of patients
- D) All of the statements are correct

122-According to published guidelines, which of the following therapies for HBV is considered safe for patients with cirrhosis?

- A) Lamivudine
- B) IFN
- C) PEG-IFN
- D) Patients with cirrhosis are not candidates for treatment

123-Resistance mutations have been seen in all of the following therapies except:

- A) Adefovir
- B) Entecavir
- C) IFN
- D) Telbivudine

124-Which of the following statements correctly summarizes key concerns in initiating HBV treatment?

- A) The patient's HIV status must be evaluated prior to starting treatment because a number of HBV drugs also have activity against HIV
- B) Prior HBV treatment should be evaluated to determine if a patient has had previous exposure to HBV drugs because the choice and dosage of HBV medication are different depending on previous treatment history
- C) A HBV viral load and evaluation of ALT levels should be done to evaluate if a patient should receive HBV treatment or be managed with periodic monitoring
- D) All of the above are correct

125-Which of the following statements is true?

- A) HbeAg-negative mutants are associated with IFN therapy
- B) HbeAg-negative mutants are associated with worse outcomes
- C) HbeAg-negative mutants are more likely to occur in children
- D) Lamivudine has no activity against HbeAg-negative mutants

126-Candidates for HCV screening include:

- A) All persons should be screened
- B) Persons with tattoos or piercings
- C) Persons who received blood products prior to 1992
- D) Persons with a history of injection drug use
- E) C and D only

127-Side effects of IFN include all of the following except:

- A) Depression
- B) Fever
- C) Neutropenia
- D) Teratogenicity

128-The most common adverse effect of ribavirin therapy is:

- A) Depression
- B) Hemolytic anemia
- C) Neutropenia
- D) Suicidal ideation

129-Predictors of treatment response in hepatitis C include:

- A) RVR
- B) Infection with non-genotype 1
- C) Adherence
- D) All of the above
- E) None of the above

130-Standard of care for HCV genotype-1 infection is:

- A) PEG-IFN once per week plus 800 mg ribavirin daily for 48 weeks

- B) PEG-IFN once per week plus weight based ribavirin daily for 48 weeks
- C) PEG-IFN once per week plus weight based ribavirin daily for 24 weeks
- D) PEG-IFN once per week plus weight based ribavirin daily indefinitely

131-Which of the following lifestyle changes should be encouraged to minimize disease progression on the liver?

- A) Alcohol cessation
- B) Weight loss
- C) Smoking cessation
- D) All of the above

132-Appropriate adjunct therapies for hepatitis C include:

- A) Acetaminophen
- B) NSAIDs
- C) SSRIs
- D) Herbals
- E) A, B, or C

133-All of the following patients are candidates for hepatitis C treatment EXCEPT:

- A) HCV-infected patients with normal ALTs
- B) Patients with a history of depression
- C) Pregnant patients or patients planning to become pregnant
- D) Recovering drug users

134-Blood supply to the liver includes

- A) Hepatic artery
- B) Portal vein
- C) Hepatic vein
- D) Hepatic artery and portal vein
- E) Hepatic artery and hepatic vein

135-Which of the following statement is true

- A) An orally administered drug with high extraction ratio will have high bioavailability
- B) An orally administered drug with high extraction ratio will have low bioavailability
- C) An orally administered drug with low extraction ratio will have low bioavailability
- D) All of the above
- E) None of the above

136-Which of the following statement regarding intrinsic clearance is true

- A) It reflects the efficiency of drug delivery to the liver
- B) It reflects the efficiency of drug exit from the liver
- C) It reflects the efficiency of ability of the hepatocyte to eliminate drug in the absence of blood flow limitation

- D) It reflects the efficiency of ability of the hepatocyte to eliminate drug in the presence of blood flow limitation
- E) It reflects the bioavailability of the drug

137-The most clinically used liver function test is

- A) Indocyanine green
- B) Child-Pugh classification
- C) Intrinsic clearance
- D) Extraction ratio
- E) Metabolic genetic test

138-The liver disease that is most commonly associated with altered drug metabolism is

- A) Cirrhosis
- B) Hepatitis
- C) Liver cancer
- D) Hepatosplenic schistosomiasis
- E) Hepatorenal syndrome

139-Which of the following regarding warfarin dosing is true

- A) Dosage may be optimized by CYP2C9 genotype alone
- B) Dosage may be optimized by CYP2C9 and VKORC1 genotypes
- C) Dosage may be optimized by Child-Pugh classification
- D) Dosage may be optimized by indocyanine green
- E) Dosage may be optimized by antipyrine

140-The implication of CYP2C19 polymorphism is specific for

- A) Lansoprazole
- B) Omeprazole
- C) Rabenprazole
- D) Omeprazole and rabenprazole
- E) All of the above

141-Increased dosage requirement as a result of altered drug metabolic capacity has been clearly shown with the following polymorphism

- A) CYP2D6
- B) CYP3A4
- C) CYP2C19
- D) CYP2C9
- E) CYP2B6

142-Laboratory tests have been developed for the following genetic polymorphisms except

- A) CYP2D6
- B) CYP3A4
- C) CYP2C19
- D) CYP2C9
- E) TPMT

143-Laboratory metabolic tests have been developed and used as an aid for dosage regimen optimization for the following drugs except

- A) Azathiopurine
- B) Irinotecan
- C) 6-mercaptopurine
- D) Warfarin
- E) Citalopram

144-For dosing of antidepressants and antipsychotics, Kirchheiner's general recommendations for PMs of CYP2D6 is

- A) Reduction in dose by 200%
- B) Reduction in dose by 100 - 140%
- C) Reduction in dose by 20%
- D) Reduction in dose by 50%
- E) No reduction

145-Revised labeling based on pharmacogenetic information is currently available for

- A) Azathiopurine
- B) Irinotecan
- C) 6-mercaptopurine
- D) Warfarin
- E) All of the above

146-The current capability of the AmpliChip CYP genotyping test include application to

- A) CYP1A2
- B) CYP2E1
- C) CYP2D6
- D) CYP3A4
- E) CYP2B6

147-Which of the following statements is true?

- A) CYP2D6 genotyping can predict efficacy of antipsychotics in EMs
- B) CYP2D6 genotyping can predict efficacy of antidepressants in EMs
- C) CYP2D6 genotyping can predict efficacy of antidepressants in UMs
- D) All of the above
- E) None of the above

148-Hepatic elimination of drugs can be affected by the following patient-specific factors

- A) Metabolic genotypes
- B) Cirrhosis
- C) Enzyme inhibition
- D) Enzyme induction
- E) All of the above

149-Patients with celiac disease should avoid products made of wheat, barley, rye and which of the following?

- A) Spelt
- B) Flax
- C) Rice
- D) Amaranth

150-Which of the following grains is safe for a patient with celiac disease to ingest?

- A) Graham flour
- B) Triticale
- C) Corn
- D) Bran

151-The etiology of celiac disease is related to all of the following except:

- A) Genetic factors
- B) Exposure to gluten
- C) Exposure to environmental heavy metal
- D) Autoimmune-related inflammation

152-Which of the following enzymes converts the gliadin portion of wheat into the toxic molecule that causes an immune reaction in celiac disease patients?

- A) Alpha-6-glucosidase
- B) Glucose-6-phosphate dehydrogenase
- C) Glucuronyl transferase
- D) Tissue transglutaminase

153-Symptoms associated with celiac disease include all of the following except:

- A) Diarrhea
- B) Fatigue
- C) Anemia
- D) Weight gain

154-A patient suspected of having celiac should:

- A) Undergo testing for HLA-DQ2/DQ8
- B) Undergo duodenal biopsy

- C) Start a gluten-free diet
- D) Be referred to a dietitian

155-Which if the following is a common misdiagnosis of celiac disease?

- A) Irritable bowel syndrome
- B) Cystic fibrosis
- C) Chronic fatigue syndrome
- D) All of the above are correct

156-The mainstay of treatment of celiac disease includes which of the following?

- A) Periodic adherence to a gluten-free diet
- B) Strict lifelong adherence to a gluten-free diet
- C) Chronic oral corticosteroids
- D) Intravenous infliximab

157-Patients with celiac disease should be assessed for which of the following nutrient deficiencies?

- A) Fat-soluble vitamins
- B) Vitamin B12
- C) Folic acid
- D) All of the above are correct

158-Which of the following cancers has an increased incidence in celiac disease patients?

- A) Non-Hodgkins Lymphoma
- B) Mesothelioma
- C) Hepatocarcinoma
- D) Malignant melanoma

159-Which of the following steps is important for the care of a celiac disease patient?

- A) Consultation with a dietitian
- B) Periodic adherence to a gluten-free diet
- C) Consultation with a neurologist
- D) Avoidance of all oral medications

160-Which of the following is a skin disease related to celiac disease?

- A) Psoriasis
- B) Rosacea
- C) Dermatitis herpetiformis
- D) Eczema

161- Which of the following is a difficulty experienced by celiac disease patients?

- A) The high cost of gluten-free foods

- B) Determination of gluten-free medications
- C) Determination of gluten-free dietary supplements
- D) All of the above are correct

162-Supplementation with which of the following nutrients can help decrease celiac disease-related bone loss?

- A) Calcium
- B) Iodine
- C) Vitamin E
- D) All of the above are correct

163-Refractory celiac disease has been reported to have been treated using which of the following medications?

- A) Celecoxib
- B) Cyclophosphamide
- C) Aspirin
- D) Cyclosporine

GIT Pharmacotherpay answers

- 1-C) Sore throat
- 2-A) Comprehensive patient history
- 3-D) Blood urea nitrogen
- 4-D) All of the above
- 5-A) Helicobacter pylori
- 6-B) Ultrasonography
- 7-D) Ultrasonography
- 8-A) Radionuclide imaging
- 9-D) All of the above may be used
- 10-B) Endoscopy
- 11-C) 50%
- 12-A) Flexible sigmoidoscopy
- 13-C) Manometry
- 14-D) Esophageal pH monitoring
- 15-B) Assesses both acid and nonacid reflux
- 16-A) Bicarbonate
- 17-B) Regurgitation
- 18-D) Symptoms can be as severe as those seen in patients with erosive esophagitis
- 19-A) Decreased saliva production
- 20-A) Presence of Barrett's esophagus

- 21-D) Endoscopy
- 22-A) 50-year old obese female smoker
- 23-C) Angiotensin-converting enzyme inhibitors
- 24-D) Elevating the head of the bed 6 to 8 inches with blocks
- 25-C) Prescription-strength proton pump inhibitor
- 26-B) Inhibiting gastric H⁺/K⁺-adenosine triphosphate in gastric parietal cells
- 27-C) Maintain the gastric pH above 4
- 28-B) Dizziness
- 29-A) Proton pump inhibitor
- 30-C) 45-year-old patient who relapses after an 8-week course of proton pump inhibitor therapy
- 31-D) Most likely associated with gastric acid hypersecretion
- 32-D) Black patients are affected at a higher rate than white patients.
- 33-B) Presence of psychosocial stressors
- 34-C) TPMT
- 35-A) Confinement of disease to the colon and rectum
- 36-B) Vitamin K
- 37-B) Mesalamine suppository
- 38-A) Mercaptopurine
- 39-B) Progressive multifocal leukoencephalopathy
- 40-C) Treatment of perianal or fistulizing Crohn disease
- 41-A) Intravenous methylprednisolone

- 42-B) Tuberculin skin test
- 43-D) Pentasa
- 44-C) Infliximab
- 45-D) Prednisone
- 46-A) Prednisone
- 47-D) All of the above
- 48-C) Aprepitant
- 49-E) All of the above
- 50-A) Dexamethasone
- 51-A) True
- 52-D) All of the above
- 53 -C) Use of supplemental hydrogen
- 54-B) Ondansetron 1 mg IV
- 55-D) Pyridoxine + doxylamine
- 56-B) All children should receive the same standard dose of ondansetron to prevent CINV.
- 57-E) Dexamethasone 4 mg IV + ondansetron 4 mg IV
- 58-D) Palonosetron + dexamethasone + aprepitant
- 59-D) Pseudomonas
- 60-E) All of the above
- 61-C) Secretory
- 62-A) Osmotic
- 63A) It is self-limiting, usually subsiding within 72 hours.

- 64-D) Avoidance of meat products
- 65-E) Stop the diarrhea at all costs
- 66-B) Bismuth subsalicylate
- 67-C) Inadequate diet is a major cause of constipation in the United States.
- 68-E) Greater frequency in males
- 69-E) All of the above
- 70-B) Magnesium antacids
- 71-B) Increase in dietary fiber
- 72-D) Phenolphthalein
- 73-A) 10–15 grams
- 74-B) Bulk-forming agents
- 75-C) It is characterized by abdominal pain, disturbed defecation, and bloating.
- 76-D) Visceral hypersensitivity
- 77-E) All of the above
- 78-D) Dietary fiber
- 79-B) Loperamide
- 80-C) Heart palpitations
- 81-E) All of the above
- 82-B) Calcium channel blockers
- 83-C) Propranolol 20 mg twice daily
- 84-B) Nonselective β -adrenergic blocker plus endoscopic band ligation
- 85-B) Vasopressin

- 86-C) Spironolactone 100 mg daily + furosemide 40 mg daily
- 87-C) RP, whose ascitic polymorphonuclear cell count is found to be 300 cells/mm³
- 88-D) Cefotaxime
- 89-A) SB, who survived an episode of spontaneous bacterial peritonitis 1 month ago
- 90-C) Trimethoprim-sulfamethoxazole
- 91-C) Sedative ingestion : Flumazenil
- 92-D) Lactulose
93. D) Thrombocytosis
- 94-B) Oxidation
- 95-C) Chronic alcohol consumption and chronic viral hepatitis
- 96-D) INR
- 97-B) Metronidazole
- 98-E) All of the above
99. D) A and C only
- 100-A) Minocycline
- 101-C) I and II
- 102-A) True
- 103-E) I, II, and III
- 104-A) Gallstones
- 105-C) Lamivudine
- 106-D) Scoring systems combine multiple factors to predict the clinical course of acute pancreatitis.

- 107-C) The prognosis of patients often depends on the adequacy of volume restoration.
- 108-B) Enteral nutrition via the nasojunal route
- 109-B) Morphine can be used first line.
- 110-A) No benefit has been demonstrated with their use in mild disease.
- 111-D) Ductal obstruction
- 112-A) Serum trypsinogen of 10 ng/mL
- 113-C) Begin an antisecretory agent, quit smoking, and reduce fat intake to 0.5 g/kg/day.
- 114-B) Hydrocodone/acetaminophen 5/500 mg orally four times daily
- 115-A) Steatorrhea with persistent weight loss
- 116-C) Minimicrospheres
- 117-B) Add an antisecretory agent.
- 118-D) Constipation
- 119-D) Supportive care
- 120-D) All of the above
- 121-A) The vaccine series may be completed with either brand of vaccine
- 122-A) Lamivudine
- 123-C) IFN
- 124-D) All of the above are correct
- 125-B) HbeAg-negative mutants are associated with worse outcomes
- 126-D) Persons with a history of injection drug use
- 127-D) Teratogenicity
- 128-B) Hemolytic anemia

- 129-D)** All of the above
- 130-B)** PEG-IFN once per week plus weight based ribavirin daily for 48 weeks
- 131-D)** All of the above
- 132-E)** A, B, or C
- 133-C)** Pregnant patients or patients planning to become pregnant
- 134-D)** Hepatic artery and portal vein
- 135-B)** An orally administered drug with high extraction ratio will have low bioavailability
- 136-C)** It reflects the efficiency of ability of the hepatocyte to eliminate drug in the absence of blood flow limitation
- 137-B)** Child-Pugh classification
- 138-A)** Cirrhosis
- 139-B)** Dosage may be optimized by CYP2C9 and VKORC1 genotypes
- 140-E)** All of the above
- 141-A)** CYP2D6
- 142-B)** CYP3A4
- 143-E)** Citalopram
- 144-B)** Reduction in dose by 100 - 140%
- 145-E)** All of the above
- 146-C)** CYP2D6
- 147-C)** CYP2D6 genotyping can predict efficacy of antidepressants in UMs
- 148-E)** All of the above
- 149-A)** Spelt

- 150-C)** Corn
- 151-C)** Exposure to environmental heavy metal
- 152-D)** Tissue transglutaminase
- 153-D)** Weight gain
- 154-B)** Undergo duodenal biopsy
- 155-D)** All of the above are correct
- 156-B)** Strict lifelong adherence to a gluten-free diet
- 157-D)** All of the above are correct
- 158-A)** Non-Hodgkins Lymphoma
- 159-A)** Consultation with a dietitian
- 160-C)** Dermatitis herpetiformis
- 161-D)** All of the above are correct
- 162-A)** Calcium
- 163-D)** Cyclosporine

4

NUTRITION REQUIRMENTS

NUTRITION REQUIREMENTS QUESTIONS

1-A 45-year-old is admitted with a new diagnosis of cancer. He has had a 20 pound (9.1 kg) weight loss in the last 6 months. Which of the following would be expected in this patient with marasmus?

- A) Edema secondary to hypoalbuminemia
- B) Triceps skinfold thickness within normal range for age and gender
- C) Evidence of skeletal muscle wasting
- D) No physical evidence of malnutrition

2-Which of the following would be an appropriate component of an effective nutrition screening program?

- A) Obtaining a patient's serum albumin concentration on admission to the hospital
- B) Obtaining a weight and height on every patient that is seen in a primary care clinic
- C) Performing a bioelectrical impedance analysis on each patient that is admitted to a long-term care facility
- D) Measuring a triceps skinfold thickness on every patient admitted to the hospital

3-T.C. is a 55-year-old man (weight, 132 lb [60 kg]; height, 6'1" [185 cm]). How would his nutrition status be assessed using his ideal body weight?

- A) Normal
- B) Mild malnutrition
- C) Moderate malnutrition
- D) Severe malnutrition

4-Sam is a 19-year-old that requests your help. She says that she is tired of going shopping and trying on clothes that don't fit. Sam is 5'3" (160 cm) tall and weighs 210 pounds (95.5 kg). Based on Sam's BMI, what is the best interpretation of her current nutrition status?

- A) Normal, healthy
- B) Moderate obesity
- C) Severe or morbid obesity
- D) Severe malnutrition

5-Which of the following would significantly impact the accuracy of a bioelectrical impedance measurement?

- A) Dehydration
- B) Muscle wasting
- C) Hypoalbuminemia
- D) Low total body fat percentage

6-Which of the following would be the most appropriate test to measure the acute response (first 3–4 days) to refeeding in a patient suffering from chronic starvation?

- A) Serum albumin concentration
- B) Serum transferrin concentration
- C) Serum prealbumin concentration
- D) Serum C-reactive protein concentration

7-C.T. is seen in clinic today for follow-up of his nutrition status. He has been on home parenteral nutrition for 15 years. His parenteral nutrition regimen has included a standard trace element cocktail during this time. Routine laboratories are within reference ranges, except that his total and direct bilirubin concentrations are elevated. He describes a tremor which he has developed since his last visit, and his wife states that he has been acting more aggressive and irritable lately. These symptoms are most consistent with which of the following?

- A) Manganese toxicity
- B) Zinc deficiency
- C) Chromium deficiency
- D) Copper toxicity

8-R.S. has an ileostomy. The output from the ostomy has been several liters each day for several weeks. He has developed thinning hair and a dry, scaly skin. A deficiency of which of the following is the most likely cause of these new conditions?

- A) Vitamin B12 (cyanocobalamin)
- B) Selenium
- C) Essential fatty acids
- D) Zinc

9-S.W. has fat malabsorption due to cystic fibrosis. His serum alkaline phosphatase is elevated, but his hepatic enzymes are within the reference range. Which of the following laboratory tests should be done to further evaluate the increase in alkaline phosphatase?

- A) Serum 25-OH-vitamin D
- B) Serum 1,25-(OH)₂-vitamin D
- C) Serum vitamin A
- D) Serum vitamin E

10-Which of the following would be the most appropriate initial calorie intake provided to a patient who weighs 330 lb (150 kg), is 5'11" (180 cm) tall, and is in the intensive care unit secondary to suffering multiple trauma including head trauma in a motor vehicle accident.

- A) 1,100 kcal/day (4604 kJ/day)
- B) 2,100 kcal/day (8790 kJ/day)
- C) 3,750 kcal/day (15,697 kJ/day)

D) 4,500 kcal/day (18,836 kJ/day)

11-The amount of protein required daily by a normal, healthy 70-year-old individual who weighs 132 lb (60 kg) is which of the following?

- A) 30 g
- B) 48 g
- C) 75 g
- D) 120 g

12- E.G. (weight, 132 lbs [60 kg]; height, 5'5" [165 cm]) is admitted to the hospital tonight for surgery in the morning. She will be made NPO after 12 midnight in preparation for anesthesia during the operative procedure. She has a peripheral IV catheter placed. The intern asks for your help in ordering her IV fluids. Which of the following would be the most appropriate rate at which to run E.G.'s maintenance fluids once she is NPO?

- A) 75 mL/hour
- B) 100 mL/hour
- C) 150 mL/hour
- D) 200 mL/hour

13- Your patient is a 78-year-old woman (weight, 103 lb [47 kg]; height, 5'1" [155 cm]) admitted with a small bowel obstruction. She underwent an exploratory laparotomy and bowel resection 8 days ago. She has been receiving a parenteral nutrition solution with final concentrations of dextrose 12.5% and amino acids 5% at a rate of 90 mL/hour for the last 3 days. A 24-hour urine for UUN was reported today as 10.2 gm N. What is this patient's nitrogen balance?

- A) Positive 3 (+3)
- B) Positive 7 (+7)
- C) Negative 7 (-7)
- D) Negative 3 (-3)

14- W.F. (weight, 121 lb [55 kg]; height, 5'5" [165 cm]) is receiving a parenteral nutrition (PN) solution which provides 2,500 mL/day, 2,950 kcal/day (12,348 kJ/day) (total); 55 g protein/day; and a nonprotein calorie distribution of 70% CHO: 30% fat. She underwent a metabolic gas monitor study (indirect calorimetry) today. The results of her study were reported as: REE 1,800 kcal/day (7,534 kJ/day); RQ 0.9. Which of the following is the best interpretation of the current amount of calories being provided to W.F. by her current PN regimen?

- A) An appropriate amount of calories
- B) Too many calories
- C) Not enough calories
- D) Unable to determine; the indirect calorimetry study was invalid

15-Z.Z., a patient in the Neurosurgery ICU, has been maintained on phenytoin 150 mg intravenously every 24 hours for the past 4 weeks after suffering severe head trauma in a motor vehicle accident. He has been placed on a standard, lactose-free enteral feeding formulation 300 mL per gastrostomy (G-tube) every 4 hours, and the team has ordered “Phenytoin 150 mg per G-tube every 24 hours.” Which of the following is the most appropriate instructions to give the nurse and team regarding phenytoin administration with Mr. Z.’s tube feedings?

- A) Mix the phenytoin suspension directly with the first 300-mL bolus of enteral feeding formulation of the day
- B) Crush phenytoin tablets; mix with one 300-mL bolus of enteral feeding formulation
- C) Change the phenytoin to 150 mg per G-tube every 8 hours and schedule it to coincide with the feedings
- D) Hold the enteral feeding formulation for 2 hours before and 2 hours after the daily dose of phenytoin

16-Which one of the following drugs is most likely to have significantly decreased absorption when administered by a nasoduodenal feeding tube?

- A) ferrous sulfate
- B) carbamazepine
- C) esomeprazole
- D) digoxin

17-Which procedure is best to minimize carbamazepine adsorption to the feeding tube?

- A) Administer the suspension without dilution
- B) Dilute the suspension 50:50 with water
- C) Use crushed tablets mixed in a water slurry in lieu of the suspension
- D) Administer the suspension rapidly (over a couple seconds)

18-Which class of medication formulation is most likely to lead to tube clogging when admixed with liquid nutrition formulas?

- A) Suspension
- B) Liquid
- C) Elixir
- D) Syrup

19-Which fluoroquinolone antibiotic has the lowest bioavailability and may require a dosage escalation when given concurrently with liquid enteral nutrition?

- A) levofloxacin
- B) ciprofloxacin
- C) ofloxacin
- D) moxifloxacin

20-Which one of the following medications would necessitate holding the enteral feeding for at least one hour before and after drug administration?

- A) esomeprazole
- B) ranitidine
- C) warfarin
- D) voriconazole

21-Which of the following liquid or suspended medications is most likely to induce diarrhea secondary to its osmotic load when administered via a nasojejunal feeding tube?

- A) Potassium chloride
- B) Saturated solution of potassium iodide
- C) Haloperidol
- D) Cimetidine

22-Which one of the following liquid medications, when given in therapeutic doses, can result in diarrhea secondary to its sorbitol content?

- A) Acetaminophen
- B) Ferrous sulfate
- C) Digoxin
- D) Furosemide

23-Which medication listed below should not be crushed and administered via an enteral feeding tube?

- A) Seroquel
- B) Cardizem
- C) Niaspan ER
- D) Bemicar HCT

24-One of the greatest concerns for withholding of enteral nutrition for drug therapy in a critically ill patient is:

- A) delayed gastric emptying
- B) increased gastroesophageal reflux
- C) hypokalemia
- D) hypoglycemia

25-Which anti-epileptic medication is most likely to have the greatest reduction in absorption when administered with continuous nasogastric enteral feeding?

- A) Phenobarbital
- B) Carbamazepine
- C) Phenytoin
- D) Levetiracetam

26-Which liquid medication can induce an osmotic diarrhea when given in higher doses due to its polyethylene glycol content?

- A) Acetaminophen
- B) Lorazepam
- C) Lactulose
- D) Potassium chloride

27-Which of the following interactions between calcium and phosphorus have the greatest threat for producing lethal precipitates in extemporaneously compounded parenteral nutrition admixtures?

- A) monobasic calcium phosphate
- B) dibasic calcium phosphate
- C) tribasic calcium phosphate
- D) no calcium phosphorus precipitates are lethal

28-Which of the following has the highest propensity for disrupting the lipid emulsion component of a 3-in-1 parenteral nutrition formulation?

- A) Calcium gluconate
- B) Potassium phosphate
- C) Potassium chloride
- D) Iron dextran

29-Which of the following medications would be safest to add directly to the 3-in-1 PN formulation for continuous infusion?

- A) heparin
- B) albumin
- C) famotidine
- D) levothyroxine

30-Which medication is physically compatible with parenteral nutrition admixtures but is unstable resulting in a loss of pharmacologic activity?

- A) octreotide
- B) heparin
- C) hydrocortisone
- D) ranitidine

31-RJ is a 65-year-old female admitted to the hospital with a 3-week history of nausea, vomiting, diarrhea, and increasing abdominal girth. Initial physical exam revealed a pelvic mass, which was confirmed by computed tomography (CT) scan. A subsequent barium enema revealed an obstruction of the sigmoid colon. The patient was subsequently taken to surgery for exploratory laparotomy at which time the patient underwent an omentectomy, an ileal–ileal anastomosis with colostomy and central venous access placement. The patient presents now on postoperative day 7 with continued distended abdomen, but clinically

stable and afebrile and a nasogastric tube at low continuous suction with approximately 600 to 700 mL/day output. Parenteral nutrition (PN) support was ordered to begin. The patient's goal regimen was determined to be (final concentrations) 5% amino acids, 20% dextrose at 70mL/h continuous infusion with 20% IV fat emulsion (IVFE) 250 mL/day via piggyback infusion over 12 h.

Pertinent Data:

Height: 5 ft 5 in (165 cm)

Admission weight: 53 kg (117 lb)

Weight 2 months prior to admission: 70 kg (154 lb)

Present weight: 56 kg (123 lb)

The best approach for initiating PN for this patient is to begin therapy with a regimen that provides

- A) The goal estimated caloric and protein requirements beginning PN day 1.
- B) Seventy-five percent to 100% calculated caloric requirements PN day 1 and cycle the infusion over 16 hours.
- C) Twenty-five percent to 50% calculated caloric requirements on PN day 1 and advance to the goal regimen over 3 to 4 days.
- D) One-hundred percent dextrose calories on PN day 1 and advance protein dose over 3 to 4 days.

32-RJ is a 65-year-old female admitted to the hospital with a 3-week history of nausea, vomiting, diarrhea, and increasing abdominal girth. Initial physical exam revealed a pelvic mass, which was confirmed by computed tomography (CT) scan. A subsequent barium enema revealed an obstruction of the sigmoid colon. The patient was subsequently taken to surgery for exploratory laparotomy at which time the patient underwent an omentectomy, an ileal-ileal anastomosis with colostomy and central venous access placement. The patient presents now on postoperative day 7 with continued distended abdomen, but clinically stable and afebrile and a nasogastric tube at low continuous suction with approximately 600 to 700 mL/day output. Parenteral nutrition (PN) support was ordered to begin. The patient's goal regimen was determined to be (final concentrations) 5% amino acids, 20% dextrose at 70mL/h continuous infusion with 20% IV fat emulsion (IVFE) 250 mL/day via piggyback infusion over 12 h.

Pertinent Data:

Height: 5 ft 5 in (165 cm)

Admission weight: 53 kg (117 lb)

Weight 2 months prior to admission: 70 kg (154 lb)

Present weight: 56 kg (123 lb)

The daily gram amount of protein provided by this regimen is

- A) 50
- B) 72
- C) 84
- D) 107

33-RJ is a 65-year-old female admitted to the hospital with a 3-week history of nausea, vomiting, diarrhea, and increasing abdominal girth. Initial physical exam revealed a pelvic mass, which was confirmed by computed tomography (CT) scan. A subsequent barium enema revealed an obstruction of the sigmoid colon. The patient was subsequently taken to surgery for exploratory laparotomy at which time the patient underwent an omentectomy, an ileal–ileal anastomosis with colostomy and central venous access placement. The patient presents now on postoperative day 7 with continued distended abdomen, but clinically stable and afebrile and a nasogastric tube at low continuous suction with approximately 600 to 700 mL/day output. Parenteral nutrition (PN) support was ordered to begin. The patient's goal regimen was determined to be (final concentrations) 5% amino acids, 20% dextrose at 70mL/h continuous infusion with 20% IV fat emulsion (IVFE) 250 mL/day via piggyback infusion over 12 h.

Pertinent Data:

Height: 5 ft 5 in (165 cm)

Admission weight: 53 kg (117 lb)

Weight 2 months prior to admission: 70 kg (154 lb)

Present weight: 56 kg (123 lb)

The daily gram amount of dextrose provided by this regimen is

A) 110

B) 240

C) 336

D) 420

34-RJ is a 65-year-old female admitted to the hospital with a 3-week history of nausea, vomiting, diarrhea, and increasing abdominal girth. Initial physical exam revealed a pelvic mass, which was confirmed by computed tomography (CT) scan. A subsequent barium enema revealed an obstruction of the sigmoid colon. The patient was subsequently taken to surgery for exploratory laparotomy at which time the patient underwent an omentectomy, an ileal–ileal anastomosis with colostomy and central venous access placement. The patient presents now on postoperative day 7 with continued distended abdomen, but clinically stable and afebrile and a nasogastric tube at low continuous suction with approximately 600 to 700 mL/day output. Parenteral nutrition (PN) support was ordered to begin. The patient's goal regimen was determined to be (final concentrations) 5% amino acids, 20% dextrose at 70mL/h continuous infusion with 20% IV fat emulsion (IVFE) 250 mL/day via piggyback infusion over 12 h.

Pertinent Data:

Height: 5 ft 5 in (165 cm)

Admission weight: 53 kg (117 lb)

Weight 2 months prior to admission: 70 kg (154 lb)

Present weight: 56 kg (123 lb)

The daily gram amount of nitrogen provided by this regimen is

A) 13.4

B) 22.7

- C) 35.2
- D) 50

35-RJ is a 65-year-old female admitted to the hospital with a 3-week history of nausea, vomiting, diarrhea, and increasing abdominal girth. Initial physical exam revealed a pelvic mass, which was confirmed by computed tomography (CT) scan. A subsequent barium enema revealed an obstruction of the sigmoid colon. The patient was subsequently taken to surgery for exploratory laparotomy at which time the patient underwent an omentectomy, an ileal–ileal anastomosis with colostomy and central venous access placement. The patient presents now on postoperative day 7 with continued distended abdomen, but clinically stable and afebrile and a nasogastric tube at low continuous suction with approximately 600 to 700 mL/day output. Parenteral nutrition (PN) support was ordered to begin. The patient's goal regimen was determined to be (final concentrations) 5% amino acids, 20% dextrose at 70mL/h continuous infusion with 20% IV fat emulsion (IVFE) 250 mL/day via piggyback infusion over 12 h.

Pertinent Data:

Height: 5 ft 5 in (165 cm)

Admission weight: 53 kg (117 lb)

Weight 2 months prior to admission: 70 kg (154 lb)

Present weight: 56 kg (123 lb)

The volumes of 10% amino acids and 70% dextrose stock solutions required to provide daily protein and carbohydrate amounts for this regimen are

- A) 102 mL amino acids; 408 mL dextrose
- B) 415 mL amino acids; 257 mL dextrose
- C) 840 mL amino acids; 480 mL dextrose
- D) 1,200 mL amino acids; 681 mL dextrose

36-RJ is a 65-year-old female admitted to the hospital with a 3-week history of nausea, vomiting, diarrhea, and increasing abdominal girth. Initial physical exam revealed a pelvic mass, which was confirmed by computed tomography (CT) scan. A subsequent barium enema revealed an obstruction of the sigmoid colon. The patient was subsequently taken to surgery for exploratory laparotomy at which time the patient underwent an omentectomy, an ileal–ileal anastomosis with colostomy and central venous access placement. The patient presents now on postoperative day 7 with continued distended abdomen, but clinically stable and afebrile and a nasogastric tube at low continuous suction with approximately 600 to 700 mL/day output. Parenteral nutrition (PN) support was ordered to begin. The patient's goal regimen was determined to be (final concentrations) 5% amino acids, 20% dextrose at 70mL/h continuous infusion with 20% IV fat emulsion (IVFE) 250 mL/day via piggyback infusion over 12 h.

Pertinent Data:

Height: 5 ft 5 in (165 cm)

Admission weight: 53 kg (117 lb)

Weight 2 months prior to admission: 70 kg (154 lb)

Present weight: 56 kg (123 lb)

The daily total calories provided by this regimen is

- A) 1,478 kcal (6,187 kJ)
- B) 1,642 kcal (6,873 kJ)
- C) 1,978 kcal (8,280 kJ)
- D) 2,180 kcal (9,125 kJ)

37-RJ is a 65-year-old female admitted to the hospital with a 3-week history of nausea, vomiting, diarrhea, and increasing abdominal girth. Initial physical exam revealed a pelvic mass, which was confirmed by computed tomography (CT) scan. A subsequent barium enema revealed an obstruction of the sigmoid colon. The patient was subsequently taken to surgery for exploratory laparotomy at which time the patient underwent an omentectomy, an ileal–ileal anastomosis with colostomy and central venous access placement. The patient presents now on postoperative day 7 with continued distended abdomen, but clinically stable and afebrile and a nasogastric tube at low continuous suction with approximately 600 to 700 mL/day output. Parenteral nutrition (PN) support was ordered to begin. The patient's goal regimen was determined to be (final concentrations) 5% amino acids, 20% dextrose at 70mL/h continuous infusion with 20% IV fat emulsion (IVFE) 250 mL/day via piggyback infusion over 12 h.

Pertinent Data:

Height: 5 ft 5 in (165 cm)

Admission weight: 53 kg (117 lb)

Weight 2 months prior to admission: 70 kg (154 lb)

Present weight: 56 kg (123 lb)

The amount of IVFE provided by this regimen is

- A) Appropriate for the patient's weight
- B) An inappropriate percentage of total calories
- C) Being infused too rapidly
- D) An inappropriate concentration for an adult.

38-The percentage of total calories provided as essential fatty acids required to prevent essential fatty acid deficiency in adults and pediatric patients is

- A) 0.5 to 1.5
- B) 2 to 5
- C) 10 to 15
- D) 20 to 30

39-Which of the following amino acids are considered conditionally essential for preterm and term infants?

- A) Arginine
- B) Leucine
- C) Valine
- D) Cysteine

40-Which of the following PN solutions is the most suitable for peripheral infusion?

- A) 10 g protein; 60 g dextrose in total volume of 300 mL
- B) 85 g protein; 200 g dextrose, 50 gm IVFE in total volume of 1,680 mL
- C) 95 g protein; 250 g dextrose in total volume of 2,400 mL.
- D) 100 g protein; 300 g dextrose in total volume of 1,800 mL

41-Which of the following combinations of additives in a PN solution that provides 105 g Amino Acids, 350 g Dextrose in 1,920 mL per day is most likely to result in an incompatibility?

- A) Potassium phosphate 40 mmol/day, calcium gluconate 10 mEq/day (5 mmol/day), sodium acetate 150 mEq/day (150 mmol/day)
- B) Sodium phosphate 35 mmol/L, calcium gluconate 5 mEq/L (2.5 mmol/L), sodium bicarbonate 50 mEq/L (50 mmol/L)
- C) Magnesium sulfate 32 mEq/day (16 mmol/d), calcium gluconate 10 mEq/day (5 mmol/day), cysteine 160 mg
- D) Potassium phosphate 20 mmol/L, Magnesium Sulfate 8 mEq/L (4 mmol/L), Ranitidine 150 mg/day

42-The United States Pharmacopeia–assigned risk level for microbial contamination during compounding of PN solutions is

- A) Low
- B) Medium
- C) High
- D) Very High

43-Which of the following patients is the most likely candidate for central PN?

- A) Twenty-eight-week gestational age infant with newly diagnosed necrotizing enterocolitis
- B) Two-year-old female with acute gastroenteritis
- C) Well-nourished 5-year-old male with femur fractures from a motor vehicle accident in his recovery phase
- D) Twelve-year-old female with cystic fibrosis and an acute pulmonary exacerbation

44-Which of the following is the most appropriate practice for initiating and advancing PN for infants and children with normal renal and hepatic function?

- A) Advance protein, carbohydrate, and IV fat doses daily by 5% until the child's goal requirements are provided.
- B) Initiate therapy with goal amounts of protein, carbohydrate, and IV fat on the first day of therapy.
- C) Initiate therapy with goal amounts of protein on the first day of therapy, and advance IV fat and carbohydrate doses to goal requirements over several days as tolerated.
- D) Initiate therapy with micronutrients for the first 3 days, and then add macronutrients (protein, carbohydrate, and lipid) on day 4 of therapy.

45-Which of the following central PN formulations would be appropriate for a 30-week gestational age infant weighing 2 kg (4.4 lb)?

- A) 6 g amino acids, 40 g dextrose, and 30 mL 20% IVFE in (total volume) 270 mL infused at 11.25 mL/h continuous infusion
- B) 6 g amino acids, 40 g dextrose in 240 mL with 30 mL 20% IV fat delivered by piggyback infusion in the PN line continuous infusion
- C) 8 g amino acids, 40 g dextrose in 240 mL infused over 24 hours
- D) 2 g amino acids, 20 g dextrose in 240 mL with 60 mL 10% IVFE delivered by piggyback infusion in the PN line continuous infusion.

46-In a geriatric patient with a history of massive stroke and a hemicolectomy, which of the following is an advantage of enteral nutrition (EN) via a jejunostomy compared with a gastrostomy?

- A) Decreased risk of aspiration
- B) Decreased colostomy output
- C) Decreased flatulence
- D) Decreased cost associated with placement

47-Which of the following tube feeding–related factors is not likely to contribute to the development of diarrhea?

- A) Rapid advancement of formula
- B) Bolus administration into the small bowel
- C) Initiation of a full-strength formula
- D) Use of a powder formulation that requires reconstitution

48-In a patient with normal functioning motility who will require long-term EN in the home setting due to dysphagia, the best access choice is

- A) Nasogastric
- B) Nasojejunal
- C) Gastrostomy
- D) Jejunostomy

49-When should EN be initiated in a critically ill adult patient with multiple trauma who is endotracheally intubated for mechanical ventilation?

- A) Upon arrival at the intensive care unit
- B) Within 24 to 48 hours of hospital admission
- C) Within 5 to 7 days of hospital admission
- D) It will depend on the patient's underlying nutritional status.

50-EN should be avoided in which of the following patients?

- A) A patient with severe GI hemorrhage
- B) A patient with a gastric ileus
- C) A patient with head and neck cancer

D) A patient with >50% total body surface area burn

51-Which of the following strategies has been recommended to minimize the risk of aspiration in patients receiving enteral nutrition?

- A) Keep the head of the bed elevated to a 30- to 45-degree angle.
- B) Add blue food dye to the enteral formula.
- C) Change from continuous to bolus administration.
- D) Change from a 1 kcal/mL (4.2 kJ/mL) to a 2 kcal/mL (8.4 kJ/mL) enteral formula.

52-Which of the following techniques is appropriate for medication administration via a percutaneous endoscopic gastrostomy tube?

- A) Always hold the feeding for 1 hour before and after administering medications.
- B) Always flush the tube with at least 30 mL of water before and after administering the medication.
- C) Never administer hypertonic medications.
- D) Only administer medications that are available in a liquid form.

53-Specialized enteral feeding formulations designed to enhance immune function in patients with severe metabolic stress have been supplemented with all of the following except

- A) Glutamine
- B) Nucleotides
- C) Omega-3 fatty acids
- D) Carnitine

54-Which method of administration is preferred when initiating EN in the hospitalized patient?

- A) Continuous
- B) Bolus
- C) Cyclic
- D) Intermittent

55-Which of the following is not an advantage of an enteral formulation supplied in a closed-system container compared with one supplied via an open delivery system?

- A) Refrigeration is not required.
- B) It accommodates the addition of medication.
- C) There is extended hang time.
- D) There is a lower contamination risk.

56-The end product of bacterial degradation of fiber within the colon is

- A) Medium-chain triglycerides
- B) Long-chain triglycerides
- C) Short-chain fatty acids

57-Which of the following is not an advantage of EN compared with parenteral nutrition?

- A) Improved nitrogen balance
- B) Improved glucose tolerance
- C) Fewer infectious complications
- D) Lower cost

58-Components of gut barrier function include all of the following except

- A) Gut-associated lymphoid tissue
- B) Small bowel peristalsis
- C) Bacterial translocation
- D) Hepatic Kupffer cells

59-A gastric residual volume of 150 mL in an adult patient receiving EN requires which of the following interventions?

- A) Hold the feeding.
- B) Decrease the administration rate.
- C) Dilute the formulation and continue the same rate.
- D) No intervention is required.

60-When EN is started in a patient receiving warfarin, which of the following interactions is most likely to occur?

- A) Warfarin absorption is decreased.
- B) Warfarin absorption is increased.
- C) Warfarin elimination is decreased.
- D) Warfarin elimination is increased.

61-Which of the following nutritional interventions would be appropriate for a patient with SBS who has a retained colon but not for one with a jejunostomy?

- A) High fat enteral nutrition
- B) Avoidance of simple carbohydrates
- C) rhGH
- D) Parenteral nutrition supplemented with BCAAs
- E) Increased soluble fiber intake

62-What is the most appropriate time to begin weaning the parental nutrition (PN) of a SBS patient?

- A) A steady weight of 75 kg with EN and PN is achieved
- B) Six days following a colon resection
- C) Acute flare of Crohn disease
- D) When jejunostomy output is increasing
- E) Weight loss of 3 kg over the last month

63-Regarding hydration of the SBS patient in the acute phase immediately following resection, it would be most appropriate to:

- A) Administer fluids orally or via nasogastric tube to enhance the adaptation process immediately postoperatively
- B) Include fluid needs within the volume of the PN so a separate IV does not have to be administered
- C) Administer a small excess of fluids within the PN daily, then bolus the patient with an extra 1 to 2 liters every 3 to 4 days when necessary
- D) Administer fluids separate from the PN daily because of the high volume needed for replacement in the phase immediately following resection
- E) Fluid-restrict patients because of the risk of accumulation in the lungs and pulmonary edema

64-Which of the following nutrition interventions is most likely to lead to excessive carbon dioxide production that can be detrimental to a patient suffering from pulmonary disease?

- A) Excessive rates of lipid administration at rates greater than 3.5 mg/kg per minute
- B) Excessive carbohydrate administration at rates much greater than 5 mg/kg per minute
- C) Protein composition greater than 1 to 1.5 g/kg per day
- D) The absence of vitamin K supplementation at a dose of 10 mg weekly
- E) The oral supplementation of foods high in oxalate content, such as spinach, rhubarb, and tea

65-Supplementation with which of the following electrolytes may promote respiratory muscle function in patients with pulmonary failure?

- A) Sodium
- B) Phosphorus
- C) Potassium
- D) Chloride
- E) Calcium

66-Enteral formulations that include antioxidants from borage oil and fish oil have been shown to decrease morbidity in patients with which of the following disorders?

- A) Acute renal failure
- B) Chronic kidney disease
- C) Cirrhosis
- D) ARDS
- E) Short bowel syndrome

67-Which of the following statements is true regarding the nutrition support of patients with acute renal failure?

- A) ARF causes significant hypometabolism
- B) ARF causes significant hypermetabolism

- C) Patients with ARF on dialysis require protein restriction
- D) Patients with ARF do not tolerate enteral nutrition
- E) ARF does not uniformly alter patient energy needs

68-Which of the following nutritional alterations is frequently observed in patients with acute renal failure?

- A) Hyperglycemia
- B) Hypomagnesemia
- C) Hypophosphatemia
- D) Hypoglycemia
- E) Hypernatremia

69-Which of the following vitamins is most likely to be significantly removed by hemodialysis?

- A) Vitamin A
- B) Vitamin C
- C) Vitamin D
- D) Vitamin E
- E) Vitamin K

70-What is the most appropriate initial protein provision in a patient with ESRD undergoing maintenance hemodialysis?

- A) 0.5 g/kg/day
- B) 0.8 g/kg/day
- C) 1.0 g/kg/day
- D) 1.2 g/kg/day
- E) 1.8 g/kg/day

71-What is the most appropriate initial daily protein intake for a patient with stable cirrhosis?

- A) 0.5 g/kg
- B) 1.0 g/kg
- C) 1.5 g/kg
- D) 2.0 g/kg
- E) 2.5 g/kg

72-What is the most appropriate nutritional intervention in an underweight patient with cirrhosis hospitalized for an elective orthopedic procedure?

- A) Standard PN
- B) PN supplemented with BCAAs
- C) Standard EN
- D) EN supplemented with BCAAs

73-The prevalence of overweight and obesity is increasing worldwide. In the United States, the groups with the highest prevalence of overweight are

- A) Mexican American women and non-Hispanic black women
- B) Non-Hispanic white women and Mexican American women
- C) Mexican American women and Asian women
- D) Mexican American women and Mexican American men

74-Which of the following factors has been implicated as a potential cause of overweight and obesity?

- A) Increased caloric consumption
- B) Decreased physical activity
- C) Genetic predisposition
- D) All of the above

75-Compute the body mass index (BMI) for a 53-year-old Caucasian woman who is 5 ft 8 inches tall (173 cm) and weighs 211 lb (95.9 kg):

- A) 25 kg/m²
- B) 32 kg/m²
- C) 36 kg/m²
- D) 40 kg/m²

76-According to the National Institutes of Health (NIH) guidelines, which one of the following categories best describe a Hispanic man with a BMI of 42 kg/m²?

- A) Normal
- B) Overweight
- C) Obese
- D) Extreme obesity

77-All of the following medical conditions are more prevalent in patient with obesity except

- A) Colorectal cancer
- B) Hypoventilation syndrome
- C) Osteoporosis
- D) Pulmonary embolism

78-Which of the following initial weight loss goals is most appropriate for a 180 lb (81.8 kg) patient considering weight loss intervention for obesity?

- A) Gradual weight loss of 4 lb (1.8 kg) over 6 months
- B) Gradual weight loss of 18 lb (8.2 kg) over 6 months
- C) Gradual weight loss of 36 lb (16.4 kg) over 6 months
- D) Gradual weight loss of 54 lb (24.5 kg) over 6 months

79-A marker of increased risk for development of type 2 diabetes, hypertension, and cardiovascular disease in a person of normal weight is

- A) BMI
- B) Total body weight
- C) Body surface area
- D) Waist circumference

80-Which one of the following interventions represents the mainstay of weight loss therapy?

- A) Low-calorie diet, exercise, and behavioral modification
- B) Phentermine 30 mg orally every morning
- C) Leptin injections
- D) Laparoscopic vertically banded gastroplasty

81-Which of the following choices best describes the appropriate criteria for initiation of drug therapy after a patient has failed a 6-month trial of diet, exercise, and behavior modification?

- A) BMI >27 kg/m² with comorbidities or BMI >29 kg/m²
- B) BMI >27 kg/m² with comorbidities or BMI >30 kg/m²
- C) BMI >25 kg/m² with comorbidities or BMI >30 kg/m²
- D) BMI >25 kg/m² with comorbidities or BMI >29 kg/m²

82-Which of the following choices represents the most effective intervention for the treatment of obesity?

- A) Low-calorie diet, exercise, and behavioral modification
- B) Orlistat
- C) Sibutramine
- D) Bariatric surgery

83-Which of the following supplements is required to prevent nutritional deficiencies in bariatric surgery patients?

- A) Magnesium
- B) Calcium citrate
- C) Vitamin C
- D) Potassium chloride

84-Which of the following postoperative considerations is important in bariatric surgery patients?

- A) Altered drug absorption
- B) Altered nutrient absorption
- C) Enhanced adverse drug effects
- D) All of the above

85-Which of the following classes of drugs should be avoided in patients receiving sibutramine therapy?

- A) Selective serotonin reuptake inhibitors
- B) Calcium channel blockers
- C) HMG-Co reductase inhibitors
- D) Immunosuppressants

86-Which of the following medications may require dosing adjustments in patients receiving orlistat therapy?

- A) Phenytoin
- B) Warfarin
- C) Fluoxetine
- D) Omeprazole

87-Which of the following effects would most likely be experienced by a patient taking orlistat after ingestion of a high fat meal?

- A) High blood pressure
- B) Dumping syndrome
- C) Steatorrhea
- D) Serotonin syndrome

88-Which of the following weight loss medications has been associated with increased abuse potential?

- A) Phentermine
- B) Rimonabant
- C) Sibutramine
- D) Orlistat

89-Guarana extracts commonly contain which one of the following substances?

- A) Ephedrine
- B) Caffeine
- C) Chitosan
- D) Epinephrine

90-Which of the following factors are concerns regarding herbal and food supplements marketed for obesity management?

- A) Content
- B) Efficacy
- C) Safety
- D) All of the above

91-Which of the following monitoring parameters is most important to assess before initiation of sibutramine therapy?

- A) Hemoglobin
- B) Blood pressure
- C) Blood glucose
- D) Low-density lipoprotein cholesterol

92- When monitoring patients with type 2 diabetes , which of the following scenarios would most likely be expected when undertaking aggressive weight management therapy?

- A) Higher average blood glucose and increased dosages to control blood glucose
- B) Lower average blood glucose and decreased dosages to prevent hypoglycemia
- C) Higher average blood pressure and increased dosages to control blood pressure
- D) Lower average blood pressure and decreased dosages to prevent hypotension.

NUTRITION REQUIRMENTS ANSWERS

- 1-C) Evidence of skeletal muscle wasting
- 2-B) Obtaining a weight and height on every patient that is seen in a primary care clinic
- 3-C) Moderate malnutrition
- 4-B) Moderate obesity
- 5-B) Muscle wasting
- 6-A) Serum albumin concentration
- 7-C) Chromium deficiency
- 8-A) Vitamin B12 (cyanocobalamin)
- 9-D) Serum vitamin E
- 10-B) 2,100 kcal/day (8790 kJ/day)
- 11-C) 75 g
- 12-B) 100 mL/hour
- 13-A) Positive 3 (+3)
- 14-B) Too many calories
- 15-D) Hold the enteral feeding formulation for 2 hours before and 2 hours after the daily dose of phenytoin
- 16-A) ferrous sulfate
- 17-D) Administer the suspension rapidly (over a couple seconds)
- 18-B) Liquid
- 19-D) moxifloxacin

20-C) warfarin

21-A) Potassium chloride

22-A) Acetaminophen

23-C) Niaspan ER

24-D) hypoglycemia

25-C) Phenytoin

26-B) Lorazepam

27-B) dibasic calcium phosphate

28-D) Iron dextran

29-C) famotidine

30-A) octreotide

31-C) Twenty-five percent to 50% calculated caloric requirements on PN day 1 and advance to the goal regimen over 3 to 4 days.

32-C) 84

33-C) 336

34-A) 13.4

35-C) 840 mL amino acids; 480 mL dextrose

36-C) 1,978 kcal (8,280 kJ)

37-A) Appropriate for the patient's weight

38-B) 2 to 5

39-D) Cysteine

40-C) 95 g protein; 250 g dextrose in total volume of 2,400 mL.

41-B) Sodium phosphate 35 mmol/L, calcium gluconate 5 mEq/L (2.5 mmol/L), sodium bicarbonate 50 mEq/L (50 mmol/L)

42-B) Medium

43-A) Twenty-eight-week gestational age infant with newly diagnosed necrotizing enterocolitis

44-C) Initiate therapy with goal amounts of protein on the first day of therapy, and advance IV fat and carbohydrate doses to goal requirements over several days as tolerated.

45-B) 6 g amino acids, 40 g dextrose in 240 mL with 30 mL 20% IV fat delivered by piggyback infusion in the PN line continuous infusion.

46-A) Decreased risk of aspiration

47-C) Initiation of a full-strength formula

48-C) Gastrostomy

49-B) within 24 to 48 hours of hospital admission

50-A) A patient with severe GI hemorrhage

51-A) Keep the head of the bed elevated to a 30- to 45-degree angle.

52-B) Always flush the tube with at least 30 mL of water before and after administering the medication.

53-D) Carnitine

54-A) Continuous

55-B) It accommodates the addition of medication.

56-C) Short-chain fatty acids

57-A) Improved nitrogen balance

58-C) Bacterial translocation

59-D) No intervention is required.

- 60-A) Warfarin absorption is decreased.
- 61-E) Increased soluble fiber intake
- 62-A) A steady weight of 75 kg with EN and PN is achieved
- 63-D) Administer fluids separate from the PN daily because of the high volume needed for replacement in the phase immediately following resection
- 64-B) Excessive carbohydrate administration at rates much greater than 5 mg/kg per minute
- 65-B) Phosphorus
- 66-D) ARDS
- 67-E) ARF does not uniformly alter patient energy needs
- 68-A) Hyperglycemia
- 69-B) Vitamin C
- 70-D) 1.2 g/kg/day
- 71-C) 1.5 g/kg
- 72-C) Standard EN
- 73-A) Mexican American women and non-Hispanic black women
- 74-D) All of the above
- 75-B) 32 kg/m²
- 76-D) Extreme obesity
- 77-C) Osteoporosis
- 78-B) Gradual weight loss of 18 lb (8.2 kg) over 6 months
- 79-D) Waist circumference
- 80-A) Low-calorie diet, exercise, and behavioral modification

- 81-B)** BMI > 27 kg/m² with comorbidities or BMI > 30 kg/m²
- 82-D)** Bariatric surgery
- 83-B)** Calcium citrate
- 84-D)** All of the above
- 85-A)** Selective serotonin reuptake inhibitors
- 86-B)** Warfarin
- 87-C)** Steatorrhea
- 88-A)** Phentermine
- 89-B)** Caffeine
- 90-D)** All of the above
- 91-B)** Blood pressure
- 92-B)** Lower average blood glucose and decreased dosages to prevent hypoglycemia

5

Respiratory Pharmacotherapy

Respiratory pharmacotherapy questions

1-Which of the following has been shown to result in reduced death and hospitalizations for patients with asthma?

- A) Inhaled corticosteroids
- B) Nedocromil
- C) Leukotriene modifiers
- D) Salmeterol

2-Which of the following has been shown to provide a significant reduction in severe exacerbations when used in combination with inhaled corticosteroids for moderate persistent asthma?

- A) Long-acting inhaled β_2 -agonist
- B) Cromolyn
- C) Sustained-release theophylline
- D) Leukotriene receptor antagonists

3-Which of the following statements is true concerning the use of inhaled corticosteroids in children with mild persistent asthma?

- A) Inhaled corticosteroids are no more effective than cromolyn or nedocromil
- B) Inhaled corticosteroids are more effective than alternatives but are not recommended for safety reasons
- C) Inhaled corticosteroids are the most effective and proven to reduce exacerbations at recommended doses
- D) Inhaled corticosteroids are no more effective than the leukotriene receptor antagonists

4-Which of the following is true regarding the use of written action plans for patients with asthma?

- A) Written action plans should only be used in those patients with severe persistent asthma
- B) Written action plans as part of self-management programs have been demonstrated to improve outcomes in patients with asthma
- C) Written action plans based on peak flow monitoring are superior to those based on symptoms only
- D) Written action plans are no longer recommended in asthma as they have been shown to be ineffective in improving outcomes

5- One of your adult patients with severe chronic asthma recently was placed on one inhalation of fluticasone propionate/salmeterol 250/50 mcg 3 months ago. He states that it has made a significant difference in his wellbeing and that he has never felt better. On questioning him he states that he continues to occasionally awaken at night although only one to two times per week, and that he did require a 7 days burst of prednisone for an upper

respiratory tract infection last month so is in to refill his prescription. **This patient should:**

- A) Continue with current therapy as he is improving
- B) Consider increasing inhaled corticosteroid dose
- C) Consider adding regular inhaled ipratropium bromide
- D) Consider adding montelukast to his regimen

6-Which of the following is the primary long-term controller medication for a 4 year-old female with moderate persistent asthma?

- A) Salmeterol twice daily
- B) Fluticasone propionate twice daily
- C) Sustained-release theophylline twice daily
- D) Montelukast once daily

7-Which of the following statements regarding short-acting inhaled beta2-agonists is the most correct?

- A) Regular use of short-acting inhaled beta 2-agonists worsens asthma increasing the morbidity from asthma
- B) Regular use of short-acting inhaled beta2-agonists increases the risk of death and near death from asthma
- C) Short-acting inhaled beta2-agonists should be used as needed so their use can be used as an outcome measure
- D) Regular use of short-acting inhaled beta2-agonists produces tolerance so that patients will not respond during acute exacerbations

8-A 22-year-old female, diagnosed with moderate persistent asthma, goes to her pharmacy to pick up her prescription for fluticasone/salmeterol combination. She is dispensed the medication in a dry powder inhaler called a Diskus, which she has never used before.

Which of the following is the appropriate way for her to use this device?

- A) Dispense the dose of medication, place lips around the mouthpiece, exhale into the device, inhale steadily and deeply, hold breath for 10 seconds, breathe out slowly
- B) Shake the device, dispense the dose of medication, place lips around mouthpiece, breathe in steadily and deeply, hold breath for 10 seconds, breathe out slowly
- C) Shake the device, dispense the dose of medication, place lips around mouth piece, exhale into the device, inhale steadily and deeply, hold breath for 10 seconds, breathe out slowly
- D) Dispense the dose of medication, place lips around mouthpiece, inhale steadily and deeply, hold breath for 10 seconds, breathe out slowly

9-Which of the following will enhance the therapeutic index (efficacy-to-toxicity ratio) of an inhaled corticosteroid?

- A) Decrease the oral bioavailability
- B) Increase receptor-binding affinity
- C) Decrease the lipophilicity
- D) Increase the volume of distribution

10-Which of the following is not a necessary component of asthma pathophysiology?

- A) Bronchial hyperresponsiveness
- B) Airway inflammation
- C) Atopy or allergy
- D) Bronchial obstruction

11-A 23-year-old college student with a history of asthma presents to the clinic taking only as needed albuterol by metered-dose inhaler (MDI). She states that she uses her inhaler just occasionally (once or twice monthly) for symptoms during the day but also five times weekly for pretreatment before she runs. She awakens at night with coughing and sometimes feels tight but only once or twice a week but more frequently when she has a “cold.” The preferred therapy for this patient would be:

- A) Continue her current therapy and check her inhaler technique
- B) Begin her on an inhaled long-acting β_2 -agonist at night
- C) Begin her on a dose of sustained-release theophylline at night
- D) Begin her on regular low dose inhaled corticosteroid therapy

12-A 45-year-old male receiving budesonide 200 mcg via Turbuhaler twice daily who requires albuterol MDI two to three times daily approximately four times a week would be considered to have:

- A) Well-controlled persistent asthma
- B) Not well-controlled persistent asthma
- C) Poorly controlled persistent asthma
- D) Steroid-resistant asthma

13-The patient in question 12 above would be most appropriately treated with:

- A) 400 mcg daily of budesonide plus omalizumab
- B) 400 mcg daily of budesonide plus formoterol 24 mcg daily
- C) 400 mcg daily of budesonide plus theophylline 400 mg daily
- D) 400 mcg daily of budesonide plus montelukast 10 mg daily

14-An 18-year-old patient complains of wheezing and chest tightness during basketball practice. She had asthma as a child but has “outgrown” it and does not report any day or nighttime symptoms consistent with asthma. Which of the following is the most appropriate?

- A) She should stop playing basketball and try swimming
- B) She should be told she still has asthma and take regular inhaled corticosteroids
- C) She should be started on two inhalations of albuterol prior to basketball practice
- D) She should be started on once nightly montelukast 10 mg prior to basketball season

15-Which of the following statements is true concerning the potential for growth suppression from inhaled corticosteroids?

- A) Growth retardation only occurs at high doses of the inhaled corticosteroids
- B) Growth retardation results in the cumulative loss of 1–2 cm/y
- C) Attainment of predicted adult height does not appear to be affected
- D) It is only a risk with a few of the older inhaled corticosteroids

16-Which of the following is the most effective antiinflammatory therapy for a 8-year-old boy with persistent asthma?

- A) Fluticasone 44 mcg two puffs twice daily
- B) Montelukast 5 mg orally at night
- C) Cromolyn MDI 2 puffs four times daily
- D) Salmeterol 50 mcg twice daily

17-Which of the following would be preferred therapy for a 3-year-old with moderate persistent asthma?

- A) Budesonide suspension nebulized 0.5 mg twice daily
- B) Montelukast orally 4 mg nightly
- C) Fluticasone 100 mcg plus salmeterol 50 mcg by DPI twice daily
- D) Cromolyn 20 mg nebulized three times daily

18-Which of the following would be most appropriately added to frequent doses of inhaled, short-acting β_2 -agonists in the emergency department if the patient does not completely respond after the first three doses?

- A) Frequent doses of inhaled ipratropium bromide
- B) Intravenous aminophylline
- C) Intravenous magnesium sulfate
- D) Inhalation of halothane

19-Which of the following is true concerning the use of short-acting inhaled β_2 -agonists in asthma?

- A) Continued regular use will worsen asthma and increase the risk of dying from asthma
- B) Continued regular use will produce tolerance to the β_2 -receptor rendering the drugs ineffective for acute exacerbations
- C) Continued regular use improves outcomes in mild persistent asthma and reduces exacerbations in moderate asthma
- D) Continued regular use neither improves nor worsens persistent asthma and thus is not indicated

20-Which of the following is the principal advantage of dry-powder inhalers (DPIs) over metered-dose inhalers (MDIs) with or without holding chambers?

- A) DPIs produce smaller particles thus enhancing delivery
- B) Inhaled corticosteroids administered by DPIs cause less topical adverse effects (thrush)
- C) DPIs do not require coordination of activation and inhalation
- D) DPIs can be used in younger patients than MDIs

21-Which of the following findings represents the primary criteria for establishing the severity of a COPD diagnosis?

- A) The forced expiratory volume in one second (FEV1) to forced vital capacity (FVC) ratio
- B) The forced expiratory volume in one second (FEV1) result
- C) An increase in nitric oxide concentration in exhaled breath
- D) The presence of dyspnea at rest

22-Which of the following exposures is most commonly implicated as the cause of COPD in the United States?

- A) Environmental gases used for energy in urban areas
- B) Endotoxin exposure to fossil fuels
- C) Inhaled toxins from tobacco smoke
- D) Bacterial encountered during childhood

23-Which of the following represent an objective improvement related to pharmacotherapy for a patient with COPD?

- A) Reduction in the severity of symptoms
- B) Improved spirometry
- C) Greater respiratory muscle strength
- D) Improved exercise tolerance

24-Which of following medication therapies can increase the risk of respiratory tract infections?

- A) Levofloxacin
- B) Salmeterol
- C) Albuterol
- D) Budesonide

25-Which of the following medications is recommended for a patient to relieve acute symptoms of COPD?

- A) Formoterol
- B) Mometasone
- C) Albuterol
- D) Theophylline

26-According to COPD guidelines, inhaled corticosteroids are recommended for patients with COPD to

- A) Reduce exacerbation frequency
- B) Reduce the progressive loss of lung function
- C) Reduce and relieve acute symptoms
- D) Reduce bacteria in the airways

27-Which of the following therapies should be used during acute exacerbations of COPD based on strong clinical evidence?

- A) Theophylline
- B) Prednisone
- C) Formoterol
- D) Anti-tumor necrosis factor α (TNF α) therapies

28-Oxidative stress plays a significant role in the inflammatory and destructive process of COPD.

- A) True
- B) False

29-Which of the following statements concerning immunization against influenza is true for patients with COPD?

- A) Influenza vaccine should be avoided due to the risk of adverse effects.
- B) Live, attenuated, intranasal influenza vaccine is preferred for COPD patients to reduce systemic side effects.
- C) Intramuscular, inactivated influenza vaccine should be administered annually to COPD patients.
- D) Influenza and pneumococcal vaccine should not be administered at the same time to COPD patients.

30-Which of the following agents is a rationale choice for a patient with COPD who reports intermittent symptoms associated with exercise?

- A) Fluticasone
- B) Theophylline
- C) Salmeterol
- D) Albuterol

31-At which of the following pO₂ values should supplemental oxygen therapy be considered?

- A) 55 mm Hg and below
- B) 65 mm Hg and below
- C) 75 mm Hg and below
- D) 90 mm Hg and below

32-The recommendation to employ combinations of long-acting bronchodilators for patients with advanced stages of COPD has substantial evidence and support available.

- A) True
- B) False

33-Pulmonary hypertension can be defined as a mean pulmonary artery pressure >25 mm Hg at rest with a pulmonary wedge pressure equal to or less than _____ mm Hg measured by cardiac catheterization.

- A) 10
- B) 15
- C) 20
- D) 25

34-Which of the following symptoms is not suggestive of pulmonary arterial hypertension?

- A) Exertional chest pain
- B) Syncope
- C) Lower extremity edema
- D) Wheezing

35-The endothelin abnormalities that are targets of current pharmacologic treatment options include all of the following except:

- A) Supplementing endogenous vasodilators
- B) Reducing endothelial platelet interaction and limiting thrombosis
- C) Reducing levels of serotonin
- D) Inhibiting endogenous vasoconstrictors

36-If unresponsive to acute vasoreactivity testing, the patient should not receive which class of drug therapy?

- A) Calcium channel blockers
- B) Endothelin antagonists
- C) Phosphodiesterase inhibitors
- D) Prostacyclin analogs

37-A 34-year-old woman presents to your clinic with increasing dyspnea with mild exertion for 2 years, chest tightness, occasional ankle edema, and a recent episode of near syncope. The patient denies paroxysmal nocturnal dyspnea, orthopnea, wheezing, or palpitations but does report a 15 lb weight gain over the last year. Her past medical history includes having two children without pregnancy complications. The patient has no known drug allergies and is not currently taking any medications. Her family history is significant for type 2 diabetes mellitus. Physical examination: The patient is 5 ft 5 in. and 180 lb with a body mass index of 30 kg/m². Her heart rate is 86 beats/minute with a blood pressure of 128/74 mm Hg. Significant findings: Jugular venous pressure is 12 cm. Normal S1 and S2, 3/6 tricuspid murmur; 1+ lower extremity edema. Imaging: Chest X-ray and electrocardiogram are ordered. On the basis of the clinical presentation, **what diagnostic test should be order next?**

- A) Pulmonary angiography
- B) Echocardiography

- C) Doppler ultrasound of lower extremity
- D) Coronary angiography

38-Which of the following medications can be associated with significant elevations in aminotransferases, requiring baseline and monthly monitoring?

- A) Epoprostenol
- B) Amlodipine
- C) Sildenafil
- D) Bosentan

39-A patient presenting with no discomfort at rest but increased dyspnea, fatigue, and chest pain on exertion is classified in which World Health Organization functional class?

- A) Class I
- B) Class II
- C) Class III
- D) Class I

40-A 28-year-old woman presents to your clinic with increasing dyspnea with mild exertion for 1 year, chest tightness, and occasional ankle edema, consistent with World Health Organization Class II pulmonary arterial hypertension. The patient denies paroxysmal nocturnal dyspnea, orthopnea, wheezing, or palpitations but does report an 8 lb weight gain over the last year. The patient has no known drug allergies and is not currently taking any medications. She has previously been found unresponsive to acute vasoreactivity testing.

What is the most appropriate initial treatment for this patient?

- A) Sildenafil 100 mg orally daily
- B) Epoprostenol 8 ng/kg/minute continuous infusion
- C) Bosentan 62.5 mg orally twice daily
- D) Amlodipine 5 mg orally daily

41-A 28-year-old woman presents to your clinic with increasing dyspnea with mild exertion for 1 year, chest tightness, and occasional ankle edema, consistent with World Health Organization Class II pulmonary arterial hypertension. The patient denies paroxysmal nocturnal dyspnea, orthopnea, wheezing, or palpitations but does report an 8 lb weight gain over the last year. The patient has no known drug allergies and is not currently taking any medications. She has previously been found unresponsive to acute vasoreactivity testing.

What drugs should this patient avoid?

- A) Ibuprofen
- B) Digoxin
- C) Furosemide
- D) Acetaminophen

42-Which of the following agents is not used for acute vasoreactivity testing in pulmonary arterial hypertension?

- A) Epoprostenol
- B) Nitroglycerin
- C) Adenosine
- D) Nitric oxide

43-What is the correct mechanism of action of epoprostenol?

- A) Competitive antagonist of endothelin receptors, causing vasodilation of the pulmonary vasculature
- B) Phosphodiesterase inhibition, causing an increase in cyclic guanosine monophosphate leading to vasorelaxation
- C) Inhibition of influx of extracellular calcium, leading to vasodilation
- D) Direct vasodilation of pulmonary vascular beds as well as inhibition of platelet aggregation

44-Infection, catheter obstruction, and sepsis are potential serious complications of which drug?

- A) Bosentan
- B) Sildenafil
- C) Epoprostenol
- D) Diltiazem

45-Conventional pharmacologic therapy for pulmonary arterial hypertension includes all of the following except:

- A) Digoxin
- B) Oxygen therapy
- C) Sublingual nitroglycerin
- D) Warfarin

46-Women of child-bearing age with pulmonary arterial hypertension should be counseled on the risks of pregnancy. Which medication is category X in pregnancy?

- A) Ambrisentan
- B) Amlodipine
- C) Epoprostenol
- D) Diltiazem

47-Epoprostenol is indicated for PAH patients with what WHO functional classification?

- A) WHO functional class I and II
- B) WHO functional class II and III
- C) WHO functional class II, III, and IV
- D) WHO functional class III and IV

48-Which of the following sweat chloride values are diagnostic of CF?

- A) 90 mmol/L
- B) 30 mmol/L
- C) 55 mmol/L
- D) 10 mmol/L

49-Antiinflammatory therapy for CF patients is most easily done with

- A) Azithromycin
- B) High-dose ibuprofen
- C) Glucocorticoids
- D) Acetaminophen

50-Sputum cultures can be used in the CF patient to check

- A) What organisms are colonizing the lung
- B) How much of an organism is growing
- C) The susceptibility pattern of bacteria
- D) All of the above

51-What mutation is commonly identified in the CF patient?

- A) G551D
- B) R117H
- C) Δ F508
- D) G54ZX

52-The following are all true regarding nonclassic CF except

- A) Males may be sterile
- B) May have adequate pancreatic exocrine function
- C) May have pulmonary disease
- D) May have normal sweat chloride values

53-P. aeruginosa and Stenotrophomonas could be covered by

- A) Ceftriaxone + amikacin + trimethoprim/sulfamethoxazole
- B) Ceftazidime + ertapenem
- C) Piperacillin + gentamicin+ doxycycline
- D) Cefepime + azithromycin + doxycycline

54-A 5-year-old patient needs an aminoglycoside. Based on typical CF pharmacokinetics, what adjustments will you expect to make?

- A) Increase the dose, shorten the interval
- B) Increase the dose, extend the interval
- C) Decrease the dose, shorten the interval
- D) Decrease the dose, extend the interval

55-In airway clearance therapy, the sequence of therapy using (A) TOBI, (B) albuterol, (C) Pulmozyme, and (D) hypertonic saline should be.

- A) A,B,C,D
- B) D,A,B,C
- C) C,B,D,A
- D) B,D,C,A

56-Which of the following vitamins should be supplemented in the CF patient?

- A) Vitamin C
- B) Vitamin B
- C) Vitamin D
- D) All of the above

57-Pulmozyme is a(n)

- A) Corticosteroid
- B) Bronchodilator
- C) Osmotic agent
- D) Enzyme

58-The following statements regarding B. cepacia are all true except

- A) Treated by ceftazidime and trimethoprim/sulfamethizole
- B) Transmitted from patient to patient
- C) Gram positive organism
- D) Misidentified for Pseudomonas

59-The most appropriate treatment choice for CF-related diabetes is

- A) Metformin
- B) Insulin
- C) Rosiglitazone
- D) Acarbose

60-Two parents that are both carriers for CF have a boy, what are the chances he may have CF?

- A) 100%
- B) 75%
- C) 50%
- D) 25%

RESPIRATORY PHARMACOTHERAPY ANSWERS

1-A) Inhaled corticosteroids

2-A) Long-acting inhaled β_2 -agonist

3-C) Inhaled corticosteroids are the most effective and proven to reduce exacerbations at recommended doses

4-B) Written action plans as part of self-management programs have been demonstrated to improve outcomes in patients with asthma

5-B) Consider increasing inhaled corticosteroid dose

6-B) Fluticasone propionate twice daily

7-C) Short-acting inhaled beta2-agonists should be used as needed so their use can be used as an outcome measure

8-D) Dispense the dose of medication, place lips around mouthpiece, inhale steadily and deeply, hold breath for 10 seconds, breathe out slowly

9-A) Decrease the oral bioavailability

10-C) Atopy or allergy

11-D) Begin her on regular low dose inhaled corticosteroid therapy

12-B) Not well-controlled persistent asthma

13-B) 400 mcg daily of budesonide plus formoterol 24 mcg daily

14-C) She should be started on two inhalations of albuterol prior to basketball practice

15-C) Attainment of predicted adult height does not appear to be affected

16-A) Fluticasone 44 mcg two puffs twice daily

17-A) Budesonide suspension nebulized 0.5 mg twice daily

18-A) Frequent doses of inhaled ipratropium bromide

- 19-D)** Continued regular use neither improves nor worsens persistent asthma and thus is not indicated
- 20-C)** DPIs do not require coordination of activation and inhalation
- 21-B)** The forced expiratory volume in one second (FEV1) result
- 22-C)** Inhaled toxins from tobacco smoke
- 23-C)** Greater respiratory muscle strength
- 24-D)** Budesonide
- 25-C)** Albuterol
- 26-A)** Reduce exacerbation frequency
- 27-B)** Prednisone
- 28-A)** True
- 29-C)** Intramuscular, inactivated influenza vaccine should be administered annually to COPD patients.
- 30-D)** Albuterol
- 31-A)** 55 mm Hg and below
- 32-B)** False
- 33-B)** 15
- 34-D)** Wheezing
- 35-C)** Reducing levels of serotonin
- 36-A)** Calcium channel blockers
- 37-B)** Echocardiography
- 38-D)** Bosentan
- 39- B)** Class II

- 40-C) Bosentan 62.5 mg orally twice daily
- 41-A) Ibuprofen
- 42-B) Nitroglycerin
- 43-D) Direct vasodilation of pulmonary vascular beds as well as inhibition of platelet aggregation
- 44-C) Epoprostenol
- 45-C) Sublingual nitroglycerin
- 46- A) Ambrisentan
- 47-D) WHO functional class III and IV
- 48-A) 90 mmol/L
- 49-A) Azithromycin
- 50-D) All of the above
- 51-C) $\Delta F508$
- 52-B) May have adequate pancreatic exocrine function
- 53-C) Piperacillin + gentamicin+ doxycycline
- 54-A) Increase the dose, shorten the interval
- 55-D) B,D,C,A
- 56-C) Vitamin D
- 57-D) Enzyme
- 58-C) Gram positive organism
- 59-B) Insulin
- 60-D) 25%

6

NEUROLOGY Pharmacotherapy

NEUROLOGY PHARMACOTHERAPY QUESTIONS

1-A 55-year-old male patient presents to the clinic with an intense headache that has persisted for 4 days. Why should a neurologic examination be done?

- A) To identify the cause of the headache
- B) To assess whether the headache is accompanied by a focal neurologic deficit
- C) To measure the intensity of the headache
- D) To identify the best analgesic for the patient for relief from headache symptoms

2-In a patient with neurologic illness, when is it appropriate to abbreviate or “target” the neurologic examination to one or more of the six components?

- A) When the only symptom the patient has is numbness of the right hand
- B) When the patient’s complaints are nonspecific
- C) When the patient’s symptoms have disappeared
- D) When there is no demonstrable asymmetry in motor strength
- E) One should never abbreviate the neurologic examination

3-In a 44-year-old patient with epilepsy who is receiving phenytoin, the clinician observes “ataxia” when she approaches the examining room. What part of the neurologic examination is most likely to be abnormal?

- A) Mental status
- B) Cranial nerves
- C) Motor function
- D) Reflexes
- E) Sensory function
- F) Gait

4-Which of the following tests can be used to assess the status of the cerebral deregulatory system?

- A) EEG
- B) LP
- C) EMG
- D) MRA
- E) NCVs

5-Which of the following tests would be most helpful in determining whether a comatose patient is actually having seizures?

- A) EEG
- B) MRI
- C) CT
- D) LP

E) NCVs

6-Which of the following tests of neurologic function could be used to reveal “asymmetry”?

- A) CT
- B) LP
- C) SPECT
- D) TCD
- E) A, C, and D

7-When a stroke patient is reported to have a seventh cranial nerve deficit, what would you expect to see?

- A) Paresis of the opposite arm and leg
- B) Facial weakness
- C) Gaze deviation
- D) Ptosis
- E) Swallowing difficulty

8-The most common form of dementia in older adults is:

- A) Lewy body dementia
- B) Vascular dementia
- C) Frontotemporal dementia
- D) Alzheimer’s disease
- E) Organic brain syndrome

9-Genetic susceptibility to late-onset Alzheimer’s disease (AD) is primarily linked to

- A) Presenilin gene mutations
- B) Amyloid precursor protein mutations
- C) Apolipoprotein E4 genotype
- D) Apolipoprotein E2 genotype
- E) Angiotensin-converting enzyme gene mutations

10-Environmental risk factors for AD include:

- A) High educational level
- B) Head injury
- C) Low body weight
- D) Increased brain size
- E) Increased physical activity

11-Alzheimer’s disease is caused by:

- A) Amyloid plaques in the brain
- B) Neurofibrillary tangles in the brain
- C) Inflammatory processes in the brain

- D) Oxidative stress
- E) The cause of Alzheimer's disease is unknown.

12-Is the following statement true or false? Diabetes increases the risk of AD.

- A) True
- B) False

13-The diagnostic workup for AD should include:

- A) A spinal tap to test the cerebrospinal fluid for the presence of β -amyloid peptide fragments
- B) A CT scan to visualize neuritic plaques in the brain
- C) Blood tests to rule out vitamin D deficiency
- D) Biopsy of brain tissue to visualize neurofibrillary tangles
- E) Thyroid function tests to rule out hypothyroidism

14-J.F. is an 87-year-old man who was recently diagnosed with probable Alzheimer's disease. His Mini-Mental Status Examination (MMSE) score is 22, and his symptoms became noticeable approximately 1 year prior to the diagnosis. J.F.'s chief complaint is difficulty with his memory. He is able to perform all activities of daily living, and his care is not a burden to his wife. He exhibits no behavioral disturbances but does seem depressed. For patients such as J.F., which of the following drugs or drug combinations have been shown in multiple, double-blind, placebo-controlled trials to be effective therapy for mild to moderate AD?

- A) Gingko 120 mg twice daily
- B) Donepezil 10 mg daily plus memantine 10 mg twice daily
- C) Memantine 10 mg twice daily
- D) Vitamin E 1,000 international units twice daily
- E) Rivastigmine 3 mg twice daily

15-J.F. is an 87-year-old man who was recently diagnosed with probable Alzheimer's disease. His-Mini Mental Status Examination (MMSE) score is 22, and his symptoms became noticeable approximately 1 year prior to the diagnosis. J.F.'s chief complaint is difficulty with his memory. He is able to perform all activities of daily living, and his care is not a burden to his wife. He exhibits no behavioral disturbances but does seem depressed. In clinical situations similar to that of J.F., what should patients and families be told about clinical expectations from cholinesterase inhibitor therapy?

- A) Drug therapy will usually halt disease progression, and memory should significantly improve.
- B) The time to reach significant functional decline can be delayed, but behavioral disturbances usually worsen.
- C) The time to reach significant functional decline can be delayed, but the disease will continue to progress.

- D) Memantine is more effective than cholinesterase inhibitors for patients with mild to moderate AD.
- E) The risk of adverse events from cholinesterase inhibitors outweighs their usefulness in mild disease, and drug therapy should be delayed until the disease is moderately severe.

16-A.Y. is a 69-year-old white male who was recently diagnosed with Alzheimer's disease by his primary care physician. A.Y. also suffers from hypertension and hypercholesterolemia and has received treatment for these conditions for more than 5 years. A.Y.'s wife brought him in to see the primary care physician because he was becoming increasingly forgetful and suspicious. He experienced several bouts of agitation with aggressive behavior during the month before he was diagnosed with dementia. His primary care physician initiated galantamine therapy at the usual starting dose of 4 mg twice a day with food.**Important counseling points for patients such as A.Y. starting cholinesterase inhibitors include:**

- A) Therapy is usually short-term until the symptoms are controlled.
- B) A slow dose titration over 4 to 6 weeks is necessary to minimize side effects.
- C) The most common side effect of cholinesterase inhibitors is dry mouth.
- D) Significant improvement in memory is expected with galantamine therapy.
- E) Galantamine is expected to worsen A.Y.'s agitation.

17-A.Y. is a 69-year-old white male who was recently diagnosed with Alzheimer's disease by his primary care physician. A.Y. also suffers from hypertension and hypercholesterolemia and has received treatment for these conditions for more than 5 years. A.Y.'s wife brought him in to see the primary care physician because he was becoming increasingly forgetful and suspicious. He experienced several bouts of agitation with aggressive behavior during the month before he was diagnosed with dementia. His primary care physician initiated galantamine therapy at the usual starting dose of 4 mg twice a day with food. A.Y.'s wife asks about using acetaminophen-diphenhydramine (Tylenol PM) to help her husband sleep.

What recommendations should you give A.S. concerning the use of Tylenol PM?

- A) Diphenhydramine is preferred over prescription medications to treat insomnia in the elderly.
- B) Diphenhydramine should be avoided because it is anticholinergic and can counteract the effects of galantamine.
- C) Diphenhydramine should be avoided because it increases blood sugar in the elderly.
- D) A.Y. should take diphenhydramine nightly until the symptoms of insomnia resolve.
- E) Diphenhydramine can enhance the effects of galantamine, so concurrent use should be avoided.

18-What is the preferred initial treatment for most behavioral disturbances in AD?

- A) Benzodiazepines
- B) Anticonvulsants
- C) Antipsychotics

- D) Antidepressants
- E) Nonpharmacologic behavioral therapies

19-K.L. is an 88-year-old woman who was diagnosed with Alzheimer's disease 8 years ago. She has been treated with donepezil 10 mg/day since she was first diagnosed. Her MMSE score today is 10, and her memory has declined significantly in the past 3 months.

Appropriate therapy recommendations for K.L. include:

- A) The dose of donepezil should be increased to 20 mg/day
- B) Galantamine should be added to her current therapy.
- C) Memantine should be added to her current therapy.
- D) Donepezil is no longer effective and should be discontinued.
- E) No changes should be made in her drug therapy.

20-Which of the following statements is true regarding use of antipsychotics in patients with AD?

- A) Antipsychotics have a labeled indication for the treatment of behavioral disturbances in patients with AD.
- B) Antipsychotics are associated with an increased risk of death in dementia patients.
- C) Antipsychotics are first-line treatment for memory enhancement in patients with AD.
- D) Management of wandering behavior in patients with AD frequently requires the use of antipsychotics.
- E) Antipsychotics should not be used in the management of behavioral disturbances in patients with AD.

21-Is the following statement true or false? Cholinesterase inhibitors are indicated for the treatment of mild cognitive impairment.

- A) True
- B) False

22-Ginkgo:

- A) Is one of the most commonly used dietary supplements for the treatment of AD
- B) Should be taken with vitamin E for optimal efficacy
- C) Is recommended for use primarily in late-stage AD
- D) Is safe for use in patients with vascular dementia and atrial fibrillation taking warfarin
- E) Products are standardized with regard to content and consistency

23-At the time of diagnosis, the most common form of multiple sclerosis (MS) is:

- A) Primary-progressive
- B) Relapsing-progressive
- C) Relapsing-remitting
- D) Secondary-progressive

24-Regarding MS, which of the following statements is false?

- A) In the United States, most people with MS are women.
- B) The incidence of MS increases the closer to the equator you live.
- C) Most people are diagnosed with MS between the ages of 15 and 45.
- D) There are approximately 10,000 new cases of MS in the United States each year.

25-Which of the following is used in the treatment of an acute attack/relapse of MS?

- A) Oral immunoglobulin
- B) High-dose intravenous methylprednisolone
- C) High-dose oral prednisone
- D) Mitoxantrone

26-Which is true regarding fatigue in MS?

- A) Fatigue occurs rarely in MS.
- B) The treatment of fatigue often is overlooked in MS patients.
- C) Amantadine is useful orally and intrathecally to treat fatigue.
- D) It is often helpful to treat for sleep improvement.

27-Which is true about spasticity in MS?

- A) Spasticity occurs early after a patient is diagnosed with MS.
- B) Increased muscle tone because of spasticity in late stage MS can help to decrease falls because of weakness.
- C) Fluoxetine is a first-line agent to treat spasticity.
- D) Baclofen is useful orally, intrathecally, and intravenously for spasticity.

28-When counseling a patient about interferon therapy for MS, you should communicate to the patient which important aspect regarding efficacy?

- A) He or she will start to notice a change in symptoms immediately.
- B) He or she must freeze the medication.
- C) It can take up to 1 or 2 years to see a change on the MRI.
- D) The medication works best if a double dose is given.

29-Interferon β 1a (Rebif) differs from interferon β 1a (Avonex) in what way?

- A) Rebif is given once per week.
- B) Rebif is given as an intramuscular injection.
- C) Rebif is given 3 times per week.
- D) Rebif causes tissue necrosis.

30-A patient is diagnosed with secondary-progressive MS. You recommend which FDA-labeled medication for this patient?

- A) Mitoxantrone
- B) Interferon β 1a (Avonex)
- C) Natalizumab

D) Cyclophosphamide

31-Which of the following statements is true regarding medications used for relapsing-remitting MS?

- A) Interferon β 1a (Avonex) is given as an intramuscular injection once weekly.
- B) Interferon β 1b (Betaseron) is given as an intramuscular injection 3 times per week.
- C) Glatiramer acetate (Copaxone) is given as a subcutaneous injection 3 times per week.
- D) Glatiramer acetate (Copaxone) has a side-effect profile consistent with flu-like symptoms.

32-Which of the following is not a side effect seen with interferon therapy (interferon β 1a [Avonex, Rebif] or interferon β 1b [Betaseron])?

- A) Flu-like symptoms
- B) Depression
- C) Chest tightness and facial flushing
- D) Skin injection-site reactions

33-Which of the following is a serious adverse effect of mitoxantrone?

- A) Hepatotoxicity
- B) Renal failure
- C) Skin site reactions
- D) Leukemia

34-Common side effect(s) of glatiramer acetate (Copaxone) include which of the following?

- A) Chest tightness and facial flushing
- B) Abortions
- C) Flu-like symptoms
- D) Depression

35-Efficacy of the interferons can be attributed to which mechanism of action?

- A) β 1-blockade
- B) β - and β 1-blockade
- C) Immune system dysregulation in the central nervous system
- D) Immune system modulation in the periphery and at the blood–brain barrier

36-Glatiramer acetate (Copaxone) is thought to act by which of the following mechanisms of action?

- A) Decrease matrix metalloproteinases
- B) Inhibition of the proliferation of reactive T cells
- C) Decreased number of adhesion molecules
- D) Blockage of the binding of major histocompatibility (MHC) class II products to myelin basic protein (MBP)

37-What is the life-threatening adverse effect of natalizumab?

- A) Agranulocytosis
- B) Cardiotoxicity
- C) Thrombocytopenia
- D) Progressive multifocal leukoencephalopathy

38-Which of the following statements is false in regards to epilepsy?

- A) Epilepsy is defined by the occurrence of at least two unprovoked seizures separated by 24 hours.
- B) Excessive sleep can precipitate seizures.
- C) Sleep deprivation can precipitate seizures.
- D) No loss of consciousness occurs during a simple partial seizure.
- E) Cryptogenic etiology of a seizure implies that there is a known cause.

39-Which statement is false regarding epilepsy treatment?

- A) Compliance is the single most common reason for treatment failure.
- B) Up to 60% of epilepsy patients are noncompliant.
- C) Noncompliance is influenced by seizure type.
- D) Frequent uncontrolled seizures can predispose a patient to noncompliance.
- E) Sex does not influence drug compliance in epilepsy patients.

40-J.B. is an 8-year-old male who experiences absence seizures. Which antiepileptic drug (AED) should not be used to treat this patient?

- A) Lamotrigine
- B) Valproic acid
- C) Ethosuximide
- D) Topiramate
- E) Carbamazepine

41-Which AED(s) is not associated with weight gain?

- A) Zonisamide
- B) Vigabatrin
- C) Valproic acid
- D) Topiramate
- E) Both a and d

42-S.J. is a 48-year-old female of Southeast Asian heritage who suffers from complex partial seizures. Which AED(s) is best avoided in this patient until further testing can be done?

- A) Topiramate
- B) Phenytoin
- C) Vigabatrin
- D) Carbamazepine

E) Both b and d

43-Which AED(s) requires routine visual field testing?

- A) Topiramate
- B) Rufinamide
- C) Carbamazepine
- D) Vigabatrin
- E) Both a and d

44-J.M. is a 55-year-old male with a partial seizure disorder who is undergoing a liver transplant due to end-stage cirrhosis. Which AED should be avoided?

- A) Felbamate
- B) Gabapentin
- C) Pregabalin
- D) Levetiracetam
- E) Topiramate

45-Which patient is not associated with successful discontinuation of AED(s)?

- A) A patient who is seizure free for 2-4 years
- B) A patient with a normal neurological exam
- C) A patient with the onset of seizures after 5 years of age or before age 45
- D) A patient who suffers from one seizure type
- E) Both a and d

46-Which statement is incorrect concerning non pharmacological methods to treat epilepsy?

- A) The ketogenic diet may cause kidney stones and have an adverse effect on growth.
- B) A modified Atkins diet may help some patients in controlling their seizures.
- C) The vagal nerve stimulator may cause irritability and visual hallucinations.
- D) Epilepsy surgery may impair learning and memory in some patients.
- E) Temporal lobe epilepsy is the most amenable to surgery.

47-All of the following AEDs can be involved in a drug interaction utilizing the glucuronic pathway, except:

- A) Pregabalin
- B) Valproic acid
- C) Carbamazepine
- D) Phenytoin
- E) Oxcarbazepine

48-R.F. is a 55-year-old male who has a partial seizure disorder. R.F. works as a sales representative and uses the telephone frequently to make sales. Which AED should probably be avoided in this patient?

- A) Phenytoin
- B) Topiramate
- C) Levetiracetam
- D) Carbamazepine
- E) None of the above

49-Which AED does not interact with oral combination contraceptives?

- A) Tiagabine
- B) Lamotrigine
- C) Valproic acid
- D) Carbamazepine
- E) Oxcarbazepine

50-Which AED requires that a new prescription be written every 6 months for a patient to receive continual therapy?

- A) Lacosamide
- B) Rufinamide
- C) Pregabalin
- D) Vigabatrin
- E) Both a and c

51-Which AED is not efficacious in the treatment of partial seizures?

- A) Felbamate
- B) Topiramate
- C) Valproic acid
- D) Lacosamide
- E) None of the above

52-Which statement is false regarding valproic acid–induced liver toxicity?

- A) Age <2 years is a risk factor.
- B) AED polytherapy is a risk factor.
- C) Carnitine therapy prevents toxicity from occurring.
- D) Liver toxicity is always preceded by increased serum ammonia levels.
- E) Both c and d

53-A 4-year-old is brought by ambulance to the ER. His mother says he had fallen to the ground and began twitching and jerking both arms and legs. This lasted about 2 to 3 minutes, and he woke up and didn't remember anything. He kept doing this over an hour before the ambulance arrived. His mother said he had a fever a day or two ago with an upper respiratory tract symptoms. She relayed he does not have epilepsy but does have asthma. He takes Flonase (fluticasone) and Singular (montelukast) daily and albuterol prn. As you are taking the history, he begins to convulse again. Which of the following is true?

- A) He has nonconvulsive status epilepticus.
- B) He has cluster seizures.
- C) He has partial status epilepticus.
- D) He has generalized convulsive status epilepticus.

54- As part of his workup, which test would be the least helpful in evaluating his seizure etiology?

- A) Toxicology screen
- B) Blood cultures
- C) Chest x-ray
- D) Blood electrolytes

55-Given that he is actively seizing, what would you recommend administering?

- A) Phenytoin
- B) Diazepam and phenytoin
- C) Lorazepam
- D) Do not give anticonvulsants until an EEG is performed.

56-Which of the following is a risk factor for a poorer outcome in the above patient?

- A) Prolonged duration of seizure
- B) Age
- C) Unknown etiology
- D) Gender

57-The child is stabilized on a benzodiazepine and later transferred to the PICU. Shortly after arrival to the PICU, he begins to seize again and is intubated and is given a neuromuscular blocker. His convulsions cease.

What would your recommendation be?

- A) Give a long-acting anticonvulsant
- B) Obtain an EEG
- C) Give dextrose
- D) Continue what you are doing as his seizures have stopped

58-Concurrent administration of diazepam and phenobarbital may result in, so additional ICU monitoring may be needed.

- A) Arrhythmia
- B) Hypotension
- C) Respiratory depression
- D) Extravasation

59-Responsiveness to anticonvulsive treatment in status epilepticus is affected by which of the following?

- A) Patient age

- B) History of epilepsy
- C) Patient adherence
- D) Duration of seizure

60-Which of the following is true regarding fosphenytoin and phenytoin?

- A) Phenytoin causes pruritis, whereas fosphenytoin does not.
- B) Fosphenytoin does not cause arrhythmias, whereas phenytoin does.
- C) A post-loading dose of phenytoin concentration can be drawn at 1 hour following IV administration, whereas a post-loading dose of fosphenytoin concentration can be drawn at 2 hours after a dose.
- D) Phenytoin (50 mg/min) reaches concentrations more slowly than fosphenytoin (50 PE/min).

61-Which of the following is true regarding diazepam and lorazepam?

- A) Lorazepam has a more rapid onset than diazepam.
- B) Diazepam has a more rapid onset than lorazepam.
- C) Lorazepam has a longer duration of action than does diazepam.
- D) Diazepam has a longer duration of action than does lorazepam.

62-A 57-year-old male (wt 85 kg) with a history of complex partial seizures is admitted to your ER because he had a “long” seizure at home that was partly witnessed by his wife. He chronically receives Carbatrol 600 mg bid and Keppra 1,500 mg bid. He typically has 2 to 4 seizures a month. His chemistries, including AST/ALT/?GGT and CBC are not clinically significant, and he is currently alert.

What would you recommend as part of his workup?

- A) STAT EEG
- B) STAT MRI
- C) Carbamazepine concentration
- D) Levetiracetam concentration

63-Tachyphylaxis is most commonly associated with which of the following?

- A) Midazolam
- B) Ketamine
- C) Phenytoin
- D) Phenobarbital

64A 27-year old female is admitted unresponsive and seizing with a presumed diagnosis of viral encephalopathy. She was admitted to the ICU and intubated. At an outlying hospital, she received diazepam 0.25 mg/kg IV x 3. Upon arrival to your unit, she received phenytoin 20 mg/kg IV and is still seizing.**Which of the following would be most correct?**

- A) Fosphenytoin 15 PE/kg
- B) Valproate 30 mg/kg
- C) Midazolam 0.2 mg/kg

D) Phenobarbital 20 mg/kg

65-If the above treatment failed, which of the following would you not recommend?

- A) Fosphenytoin 15 PE/kg IV
- B) Valproate 30 mg/kg IV
- C) Pentobarbital 20 mg/kg IV, infusion 1 mg/kg/h
- D) Phenobarbital 10 mg/kg IV

66-Which of the following events account for the highest mortality among adult traumatic brain injury (TBI) cases?

- A) Gunshot wounds
- B) Sport and recreational accidents
- C) Motor vehicle accidents
- D) Falls

67-Which of the following is considered the key pathophysiologic event triggering secondary neuronal injury following a severe TBI?

- A) Systemic hypotension
- B) Central nervous system acidosis
- C) Increased cerebral blood flow
- D) Central nervous system ischemia

68-Which of the following neuronal cellular events would be most consistent in a patient who has sustained a severe TBI?

- A) Increased intracellular calcium
- B) Increased intracellular magnesium
- C) Increased intracellular potassium
- D) Decreased intracellular sodium

69-Which of the following Glasgow Coma Scale scores in a TBI patient would be most consistent with severe brain injury?

- A) 4
- B) 10
- C) 14
- D) 20

70-Which of the following agents has been used off-label to improve cognitive function in TBI patients?

- A) Amantidine
- B) Escitalopram
- C) Sertraline
- D) Carbamazepine

71-Cerebral perfusion pressure can be defined as:

- A) $(\text{MAP}-\text{ICP})/\text{CVR}$
- B) $\text{MAP}-\text{ICP}$
- C) $\text{MAP} \times \text{ICP}$
- D) $(\text{MAP}-\text{ICP}) \times \text{CVR}$

72-Which of the following represents “goal” values in a patient with a severe TBI?

- A) $\text{ICP} > 20 \text{ mm Hg}$, $\text{MAP} > 90 \text{ mm Hg}$
- B) $\text{ICP} < 20 \text{ mm Hg}$, $\text{MAP} > 120 \text{ mm Hg}$
- C) $\text{ICP} < 20 \text{ mm Hg}$, $\text{MAP} > 90 \text{ mm Hg}$
- D) $\text{ICP} > 20 \text{ mm Hg}$, $\text{MAP} > 120 \text{ mm Hg}$

73-Which of the following is an accepted first-line therapy in the management of severe TBI injury?

- A) Aggressive hyperventilation (PaCO_2 25–30 mm Hg)
- B) Moderate hypothermia (34°C – 35°C)
- C) Methylprednisolone
- D) 150 ml 7.5% saline

74-What total loading dose of pentobarbital should be used to induce a barbiturate coma?

- A) 5 mg/kg
- B) 15 mg/kg
- C) 25 mg/kg
- D) 50 mg/kg

75-Which of the following is a common side effect of pentobarbital coma?

- A) Hypotension
- B) GI hypomotility
- C) Pulmonary edema
- D) Central nervous system hemorrhage

76-Which of the following anticonvulsants is not indicated for the prevention or treatment of posttraumatic seizures?

- A) Phenytoin
- B) Carbamazepine
- C) Valproate
- D) Lorazepam

77-Which of the following is an accepted first-line therapy for severe TBI in a patient with congestive heart failure or pulmonary edema?

- A) Mannitol
- B) Hypothermia

- C) Pentobarbital
- D) Furosemide

78-Which of the following is an adverse event associated with serum osmolality exceeding 320 mOsm/kg (mmol/kg) secondary to mannitol therapy?

- A) Toxic epidermal necrolysi
- B) Acute renal dysfunction
- C) Acute hepatic dysfunction
- D) Hemolytic anemia

79-If a patient with a severe TBI has a hematocrit of 30% and a MAP of 97 mm Hg, which of the following would be the most appropriate action?

- A) The patient should receive 1 unit of packed red blood cells.
- B) The patient should receive dopamine.
- C) The patient should receive 3% normal saline.
- D) Continue to monitor vital signs and daily hematocrit.

80-Which of the following drugs has demonstrated improved outcome in TBI patients with traumatic subarachnoid hemorrhage on CT scan?

- A) Tirilazad
- B) Aptiganel
- C) Nimodipine
- D) Pegorgotein

81-All the following are primary features of Parkinson's disease except:

- A) Convulsions
- B) Rigidity
- C) Rest tremor
- D) Slowness of movement

82-All the following are used as monotherapy in Parkinson's disease except:

- A) Carbidopa/levodopa
- B) Entacapone
- C) Rasagiline
- D) Ropinirole

83-Tremor-predominant Parkinson's disease in a 50-year-old can be treated initially with any of the following except:

- A) Amantadine
- B) Carbidopa/levodopa
- C) Entacapone
- D) Trihexyphenidyl

84-A 75-year-old nursing home resident with newly diagnosed Parkinson's disease and a history of memory problems and confusion is best treated with:

- A) Amantadine
- B) Benztropine
- C) Pramipexole
- D) Carbidopa/levodopa

85-Entacapone is useful because it:

- A) Is a MAO-B inhibitor
- B) Is a D2 receptor agonist
- C) Blocks peripheral COMT
- D) Inhibits dopa decarboxylase

86-All the following can produce parkinsonian symptoms except:

- A) Apomorphine
- B) Haloperidol
- C) Metoclopramide
- D) Prochlorperazine

87-Parkinson's disease is predominantly associated with neuronal degeneration of the:

- A) Cerebellum
- B) Cerebral cortex
- C) Hippocampus
- D) Substantia nigra

88-A patient with Parkinson's disease is taking carbidopa/levodopa 25/100 mg three times a day, and reports that he tends to slow down an hour or two before his next carbidopa/levodopa dose. This patient is most likely experiencing:

- A) Delayed onset response
- B) Dyskinesia
- C) Freezing
- D) Wearing off

89-An 85-year-old patient taking carbidopa/levodopa 25/100 mg 3 times a day for Parkinson's disease is experiencing end-of-dose wearing off. The best next step is to:

- A) Add tolcapone
- B) Consider surgery
- C) Add trihexyphenidyl
- D) Increase carbidopa/levodopa to 4 times daily

90-A 70-year-old patient taking carbidopa/levodopa 25/100 mg 4 times a day for Parkinson's disease is experiencing end-of-dose wearing off. All of the following are acceptable except:

- A) Add entacapone
- B) Add rasagiline
- C) Decrease carbidopa/levodopa to 3 times daily
- D) Increase carbidopa/levodopa to 5 times daily

91-A 70-year-old patient was just diagnosed with Parkinson's disease and was placed on carbidopa/levodopa 25/100 mg 3 times a day by his primary care physician. He is complaining of nausea and stomach upset, as well as light headness, since starting the medication and wants to stop it. The best **recommendation is to:**

- A) Recommend deep brain stimulation
- B) Stop the medication and never take it again
- C) Recommend taking carbidopa/levodopa with food
- D) Stay on the medicine and the side effects will go away

92-A 65-year-old patient has had Parkinson's disease for 10 years and is currently taking benztropine 2 mg every day, pramipexole 1.5 mg 3 times a day, and carbidopa/levodopa 25/100 mg 4 times a day. His wife claims that he is complaining of seeing spiders and bugs running across the floor. **The first thing to do is:**

- A) Add clozapine
- B) Add quetiapine
- C) Taper and stop the benztropine
- D) Taper and stop the carbidopa/levodopa

93-A 73-year-old Parkinson's disease patient is experiencing moderate dyskinesias. The patient reports that she is on carbidopa/levodopa 25/250 mg 3 times a day and that she just took a dose an hour ago. **Which of the following is most appropriate:**

- A) Add amantadine
- B) Add apomorphine
- C) Taper and stop the carbidopa/levodopa
- D) Recommend increasing the carbidopa/levodopa dose to 4 times a day

94-A 63-year-old with Parkinson's disease has done well on rasagiline 1 mg once a day and ropinirole 4 mg 3 times a day for several years. In the past, higher doses of ropinirole resulted in excessive drowsiness. **He now needs more symptom relief. The best recommendation would be to:**

- A) Consider surgery
- B) Add entacapone
- C) Add carbidopa/levodopa
- D) Switch ropinirole to pramipexole

95-All of the following statements are true regarding carbidopa/levodopa except:

- A) It is neuroprotective.
- B) It is the most effective antiparkinsonian agent.

- C) Administration with food can minimize nausea.
- D) It is associated with the development of motor complications.

96-Regarding pain, all the following descriptors are applicable except:

- A) Always subjective
- B) Always associated with actual tissue damage
- C) A sensory and emotional experience
- D) A primary reason patients seek medical advice
- E) Often undertreated

97-We can think of nociceptive pain in terms of:

- A) Stimulation
- B) Transmission
- C) Perception
- D) Modulation
- E) All the above

98-Neuropathic pain is:

- A) Not distinctly different than nonciceptive pain
- B) Due partly to anatomical and biochemical changes in the nervous system
- C) Always seen immediately after traumatic injury
- D) Is sustained by the normal processing of sensory input by the peripheral or central nervous system
- E) None of the above

99-When evaluating the pain of a 50-year-old woman who has just had her gall bladder removed, the most important characteristic to consider when assessing her immediate postoperative pain would be:

- A) History of past surgeries
- B) Time elapsed since the patient was in surgery
- C) Pain severity
- D) Amount of tissue damage
- E) Amount of time spent in surgery

100-The following drug would be preferred when treating acute mild pain in a 30-year-old male with no significant medical history and who is taking no medications:

- A) Nalbuphine
- B) Propoxyphene
- C) Codeine with acetaminophen
- D) Acetaminophen
- E) Tramadol

101-Therapeutic doses of morphine given to patients in severe pain will cause:

- A) Temperature to drop
- B) Respiratory depression
- C) Decrease in myocardial oxygen demand in myocardial ischemia
- D) Increase in the propulsive contractions of the gastrointestinal tract
- E) Urinary incontinence

102-The following would be the drug(s) of choice in severe acute pain secondary to surgery:

- A) Morphine plus a nonsteroidal antiinflammatory drug
- B) Morphine alone
- C) Meperidine alone
- D) Meperidine plus promethazine
- E) Pentazocine plus a nonsteroidal antiinflammatory drug

103-An indication for the use of an opioid analgesic on an as-needed basis is:

- A) The patient is over 75 years old
- B) The patient is depressed
- C) The analgesic is used to treat breakthrough pain
- D) The analgesic is administered epidurally
- E) The patient is experiencing constipation

104-When treating moderate to severe cancer pain:

- A) Assess the frequency/duration/occurrence/etiology of the pain
- B) Use sustained-release opioid in an around the clock fashion
- C) Use prn immediate-release opioids with the sustained-release drugs
- D) Titrate opioids based on the response of patients
- E) All the above

105-Chronic noncancer pain:

- A) Is often psychosomatic
- B) Is best treated with nalbuphine
- C) Is exacerbated with the use of tricyclic antidepressants
- D) May be treated with anticonvulsants
- E) Usually effects blood pressure and heart rate

106-The best treatment of opioid induced constipation is:

- A) Prevention with the proper intake of fluids, fiber, and stimulant laxatives
- B) Prevention by using propoxyphene
- C) Concomitant use of acetaminophen with the opioid
- D) Concomitant use of aspirin
- E) All the above

107-The use of nonpharmacologic therapies:

- A) Should be considered only in chronic noncancer pain
- B) Are beneficial in chronic and acute pain
- C) Can detract from pharmacologic treatment in cancer patients
- D) Can induce a number of opioid-like side effects
- E) None of the above

108-When tramadol is being considered to treat neuropathic pain, which of the following may prevent the clinician from starting this agent?

- A) Drug interactions with capsaicins
- B) History of diabetes
- C) History of gastrointestinal bleeding
- D) Drug interactions with the nonsteroidal antiinflammatory drugs
- E) None of the above

109-When treating bone pain associated with breast cancer, the best therapy would be:

- A) Ibuprofen plus amitriptyline
- B) Ibuprofen plus sustained-release opioids plus prn immediate-release opioids
- C) Ibuprofen plus prn immediate-release opioids
- D) Ibuprofen plus amitriptyline plus sustained release opioids
- E) Amitriptyline plus sustained release opioids

110-Which of the following is appropriate pain management?

- A) Ibuprofen alone to treat acute severe pain
- B) Tricyclic antidepressants to treat acute pain
- C) Morphine dose titration in severe pain
- D) Use of a placebo to diagnosis pain
- E) All the above

111-Which one of the following is not a type of primary headache disorder?

- A) Migraine
- B) Tension
- C) Cluster
- D) Vascular

112-Migraine pain is believed to result from activity in which one of the following systems?

- A) Perivascular
- B) Trigeminovascular
- C) Extravascular
- D) Tuberofundibular

113-Which one of the following does not appear to affect migraine threshold?

- A) Low levels of magnesium
- B) High levels of dopamine
- C) Increased levels of excitatory amino acids
- D) Altered levels of extracellular potassium

114-The migraine aura is defined by which one of the following?

- A) Positive focal neurologic symptoms that follow an attack
- B) Negative focal neurologic symptoms that precede an attack
- C) Positive and negative focal neurologic symptoms that follow an attack
- D) Positive and negative focal neurologic symptoms that precede or accompany an attack

115-Which one of the following is the most common gastrointestinal symptom that accompanies migraine attack?

- A) Constipation
- B) Diarrhea
- C) Nausea
- D) Abdominal bloating
- E) Abdominal cramps

116-Which one of the following is not part of International Headache Society diagnostic criteria for migraine without aura?

- A) At least two attacks
- B) Headache that lasts 4 to 72 hours (untreated or unsuccessfully treated)
- C) Has at least two of the following characteristics: unilateral location, pulsating quality, moderate or severe intensity, aggravation by or avoidance of routine physical activity
- D) During headache at least nausea, vomiting, or both or photophobia and phonophobia
- E) Not attributed to another disorder

117-Which one of the following drug or drug classes is not used in the acute treatment of migraine headaches?

- A) Ergot alkaloids
- B) Antidepressants
- C) NSAIDs
- D) Serotonin agonists
- E) Acetaminophen

118-Patients may benefit from adherence to a wellness program that may include all of the following except:

- A) Regular exercise
- B) Regular eating habits
- C) Smoking cessation
- D) Increasing caffeine intake

119-Which type of NSAIDs would be preferred in migraine attacks?

- A) Short half-life
- B) Long half-life
- C) Low bioavailability
- D) High protein binding

120-Which of the following is the most common adverse effect of the ergotamine derivatives?

- A) Painful extremities
- B) Peripheral ischemia
- C) Nausea and vomiting
- D) Continuous paresthesias

121-"Chest symptoms" commonly reported by patients receiving a triptan include:

- A) Tightness and shortness of breath
- B) Pressure and radiating pain
- C) Tightness, pressure, and heaviness
- D) Heaviness and shortness of breath

122-Which one of the following oral triptans has the longest half-life, but the slowest onset of action?

- A) Sumatriptan
- B) Eletriptan
- C) Naratriptan
- D) Frovatriptan

123-Triptans are selective agonists at which of the following receptors?

- A) 5-HT_{1B} and 5-HT_{1D}
- B) Dopamine
- C) Norepinephrine
- D) Cholinergic

124-Which of the following would not be appropriate for migraine prophylaxis?

- A) Beta-blockers
- B) Beta-blockers with intrinsic sympathomimetic activity
- C) Anticonvulsants
- D) Calcium channel blockers

125-Which of the following vitamins has demonstrated efficacy in migraine prophylaxis?

- A) Ascorbic acid
- B) Riboflavin
- C) Cyanocobalamin

D) Pyridoxine

126-Which of the following is the most severe of the primary headaches?

- A) Migraine
- B) Cluster
- C) Tension
- D) Neck trauma headache

NEUROLOGY PHARMACOTHERAPY ANSWERS

- 1-B)** to assess whether the headache is accompanied by a focal neurologic deficit
- 2-A)** When the only symptom the patient has is numbness of the right hand
- 3-F)** Gait
- 4-D)** MRA
- 5-A)** EEG
- 6-E)** A, C, and O
- 7-B)** Facial weakness
- 8-D)** Alzheimer's disease
- 9-C)** Apolipoprotein E4 genotype
- 10-B)** Head injury
- 11-E)** The cause of Alzheimer's disease is unknown.
- 12-A)** True
- 13-E)** Thyroid function tests to rule out hypothyroidism
- 14-E)** Rivastigmine 3 mg twice daily
- 15-C)** the time to reach significant functional decline can be delayed, but the disease will continue to progress.
- 16-B)** A slow dose titration over 4 to 6 weeks is necessary to minimize side effects.
- 17-B)** Diphenhydramine should be avoided because it is anticholinergic and can counteract the effects of galantamine.
- 18-E)** Nonpharmacologic behavioral therapies
- 19-C)** Memantine should be added to her current therapy.

- 20-B)** Antipsychotics are associated with an increased risk of death in dementia patients.
- 21-B)** False
- 22-A)** Is one of the most commonly used dietary supplements for the treatment of AD
- 23-C)** Relapsing-remitting
- 24-B)** The incidence of MS increases the closer to the equator you live.
- 25-B)** High-dose intravenous methylprednisolone
- 26-B)** The treatment of fatigue often is overlooked in MS patients.
- 27-B)** Increased muscle tone because of spasticity in late stage MS can help to decrease falls because of weakness.
- 28-C)** It can take up to 1 or 2 years to see a change on the MRI.
- 29-C)** Rebif is given 3 times per week.
- 30-A)** Mitoxantrone
- 31-A)** Interferon β 1a (Avonex) is given as an intramuscular injection once weekly.
- 32-C)** Chest tightness and facial flushing
- 33-D)** Leukemia
- 34-A)** Chest tightness and facial flushing
- 35-D)** Immune system modulation in the periphery and at the blood–brain barrier
- 36-D)** Blockage of the binding of major histocompatibility (MHC) class II products to myelin basic protein (MBP)
- 37-D)** Progressive multifocal leukoencephalopathy
- 38-E)** Cryptogenic etiology of a seizure implies that there is a known cause.
- 39-C)** Noncompliance is influenced by seizure type.
- 40-E)** Carbamazepine

- 41-E) Both a and d
- 42-E) Both b and d
- 43-D) Vigabatrin
- 44-A) Felbamate
- 45-C) A patient with the onset of seizures after 5 years of age or before age
- 46-C) The vagal nerve stimulator may cause irritability and visual hallucinations.
- 47-A) Pregabalin
- 48-B) Topiramate
- 49-A) Tiagabine
- 50-E) Both a and c
- 51-E) None of the above
- 52-E) Both c and d
- 53-A) He has nonconvulsive status epilepticus.
- 54-C) Chest x-ray
- 55-C) Lorazepam
- 56-A) Prolonged duration of seizure
- 57-A) Give a long-acting anticonvulsant
- 58-C) Respiratory depression
- 59-D) Duration of seizure
- 60-C) A post-loading dose of phenytoin concentration can be drawn at 1 hour following IV administration, whereas a post-loading dose of fosphenytoin concentration can be drawn at 2 hours after a dose.
- 61-C) Lorazepam has a longer duration of action than does diazepam.

- 62-C) Carbamazepine concentration
- 63-D) Phenobarbital
- 64-D) Phenobarbital 20 mg/kg
- 65-A) Fosphenytoin 15 PE/kg IV
- 66-C) Motor vehicle accidents
- 67-D) Central nervous system ischemia
- 68-A) Increased intracellular calcium
- 69-A) 4
- 70-A) Amantidine
- 71-B) MAP-ICP
- 72-C) ICP < 20 mm Hg, MAP > 90 mm Hg
- 73-D) 150 ml 7.5% saline
- 74-C) 25 mg/kg
- 75-A) Hypotension
- 76-C) Valproate
- 77-D) Furosemide
- 78-B) Acute renal dysfunction
- 79- D) Continue to monitor vital signs and daily hematocrit.
- 80-C) Nimodipine
- 81-A) Convulsions
- 82-B) Entacapone
- 83-C) Entacapone

- 84-D) Carbidopa/levodopa
- 85-C) Blocks peripheral COMT
- 86-A) Apomorphine
- 87-D) Substantianigra
- 88-D) Wearing off
- 89-D) Increase carbidopa/levodopa to 4 times daily
- 90-C) Decrease carbidopa/levodopa to 3 times daily
- 91-C) Recommend taking carbidopa/levodopa with food
- 92-C) Taper and stop the benztropine
- 93-A) Add amantadine
- 94-C) Add carbidopa/levodopa
- 95-A) It is neuroprotective.
- 96-B) Always associated with actual tissue damage
- 97-E) All the above
- 98-B) Due partly to anatomical and biochemical changes in the nervous system
- 99-C) Pain severity
- 100-D) Acetaminophen
- 101-C) Decrease in myocardial oxygen demand in myocardial ischemia
- 102-A) Morphine plus a nonsteroidalantiinflammatory drug
- 103-C) The analgesic is used to treat breakthrough pain
- 104-E) All the above
- 105-D) May be treated with anticonvulsants

- 106-A)** Prevention with the proper intake of fluids, fiber, and stimulant laxatives
- 107-B)** Are beneficial in chronic and acute pain
- 108-E)** None of the above
- 109-B)** Ibuprofen plus sustained-release opioids plus prn immediate-release opioids
- 110-C)** Morphine dose titration in severe pain
- 111-D)** Vascular
- 112-B)** Trigeminovascular
- 113-B)** High levels of dopamine
- 114-D)** Positive and negative focal neurologic symptoms that precede or accompany an attack
- 115-C)** Nausea
- 116-A)** At least two attacks
- 117-B)** Antidepressants
- 118-D)** Increasing caffeine intake
- 119-B)** Long half-life
- 120-C)** Nausea and vomiting
- 121-C)** Tightness, pressure, and heaviness
- 122-D)** Frovatriptan
- 123-A)** 5-HT_{1B} and 5-HT_{1D}
- 124-B)** Beta-blockers with intrinsic sympathomimetic activity
- 125-B)** Riboflavin
- 126-B)** Cluster

7

PSYCHIATRY

Pharmacotherapy

PSYCHIATRY PHARMACOTHERAPY QUESTIONS

1-Which of the following is true of the suicidal patient?

- A) They are also likely to harm others.
- B) They are more likely to attempt suicide if the interviewer asks about thoughts of suicide
- C) They rarely acknowledge feeling suicidal.
- D) They should not be left alone.

2-A 29-year-old male patient with a history of bipolar disorder, manic type was admitted to the hospital in a manic state. He was speaking rapidly and pushing the words out so fast you cannot get a word in. Upon admission, he believed he was Jesus and would save all people from "eternal damnation." What target symptoms were exhibited?

- A) Thought broadcasting and hallucinations
- B) Labile affect and delusional thinking
- C) Flat affect and hallucinations
- D) Pressured speech and delusional thinking

3-The DSM-IV-TR is useful for clinicians working with people with mental illness because it:

- A) Describes how to perform a clinical interview to assess patients with mental illness
- B) Uses a common language to describe psychiatric disorders and contains specific information about the diseases themselves
- C) Describes treatment strategies for the individual mental illnesses
- D) Describes a comprehensive framework for the complete evaluation of patients with mental illness

4-During an interview, a patient stops speaking in mid-sentence, stares at the wall for 10 to 15 seconds, then begins talking about a completely unrelated subject. What symptom is the patient exhibiting?

- A) Perseveration
- B) Thought blocking
- C) Mutism
- D) Circumstantial speech

5-A patient's "affect" comprises all except which of the following?

- A) Facial expression
- B) Tone of voice
- C) Subjective statements of feeling
- D) Body posture

6-A 23-year-old female with no previous history of mental illness was admitted to the psychiatric unit. She presented with a recent acute change in her mental status. She is irritable, confused, crying, and seeing her mother who has been dead for 10 years. **The following assessment(s) would be appropriate for the initial workup of this patient.**

- A) Physical examination, medical and psychiatric history, urine drug screen, chemistry panel, and complete blood count
- B) Psychiatric and medical history
- C) Dexamethasone suppression test, chemistry panel, and liver function tests
- D) No further workup other than a mental status examination

7-A patient is unable to subtract “serial 7s”, in serial fashion, from 100. **Which of the following is not a likely explanation?**

- A) Poor concentration
- B) Limited math skills
- C) Dementia
- D) Poor abstraction ability

8-Which term best describes the ability of a scale to measure what it was designed to measure?

- A) Sensitivity
- B) Validity
- C) Specificity
- D) Reliability

9-Asking a patient to complete a task such as picking up an object with his or her right hand, then unfolding a brochure and handing it to the examiner assesses what function in a patient?

- A) Working memory
- B) Abstraction ability
- C) Remote memory
- D) Insight

10-A 27-year-old male with the diagnosis of schizophrenia has been treated with haloperidol, chlorpromazine, risperidone, and quetiapine (each antipsychotic agents), over the years. He has developed severe tardive dyskinesia over the past year, even though his psychiatric symptoms have improved with his current treatment—haloperidol monthly injections. The psychiatrist is starting clozapine (antipsychotic agent), and you are consulted to follow the patient during his treatment.

Which rating scales are most appropriate for the ongoing assessment of specific symptoms (e.g., auditory hallucinations, dyskinesia)?

- A) Mini-Mental Status Examination (MMSE) and Dyskinesia Identification System: Condensed User Scale (DISCUS)
- B) DISCUS and Clinical Global Impression Scale (CGI)

- C) CGI and MMSE
- D) Positive and Negative Syndrome Scale (PANSS) and DISCUS

11-Which laboratory tests and/or clinical measurements in addition to the required weekly white blood count and absolute neutrophil counts for clozapine would be consistent with the 2004 consensus guidelines for antipsychotic therapy for the 27-year-old male described in question 10 above?

- A) Clozapine serum levels
- B) Baseline and yearly body weight measurements
- C) Baseline and monthly abdominal waist measurements
- D) Baseline, 12 weeks, and yearly fasting glucose and lipids

12-A patient is experiencing the following symptoms from taking risperidone 3 mg twice daily: tremor, muscle rigidity, akinesia, and increased salivation. Which rating scale would be the most appropriate to assess these symptoms?

- A) Barnes Akathisia Scale (BAS)
- B) DISCUS
- C) Rating Scale for Extrapyrimal Side Effects (Simpson-Angus EPS Scale)
- D) Systematic Assessment for Treatment Emergent Events-General Inquiry (SAFTEE-GI)

13-A patient has gained 12 pounds (5.5 kg) in the abdominal area while taking risperidone over the past four months. Which of the following clinical problems is least likely to be developing?

- A) Thyrotoxicosis
- B) Metabolic syndrome
- C) Hypertension
- D) Hyperlipidemia

14-Identify the incorrect statement among the following:

- A) Many serious psychiatric disorders such as schizophrenia and bipolar disorder generally present in adolescence or early adulthood.
- B) Patients with psychotic disorders frequently present with only physical complaints.
- C) Most psychiatric disorders can be diagnosed with laboratory work or routine imaging studies.
- D) The mental status examination is the cornerstone of the psychiatric workup.

15-Which of the following is true regarding the MMSE?

- A) The MMSE focuses primarily on visuospatial orientation.
- B) The MMSE is a rapid radiologic screening test to determine if an MRI or CT scan should be performed.
- C) The MMSE should be administered in two sessions of 1 hour each, separated in time by several hours.
- D) The MMSE globally assesses a number of cognitive domains.

16-VJ is a 6-year-old girl referred for evaluation to determine if she meets criteria for attention deficit/hyperactivity disorder (ADHD). She has had difficulty sustaining attention in activities at school and at home. She fails to give close attention to teachers and often makes careless mistakes in her schoolwork. She displays no hyperactivity. She has had these symptoms since starting kindergarten last year, and her grades are barely passing. In determining whether VJ meets the criteria for ADHD, **which of the following statements is true?**

- A) Hyperactivity and impulsivity are required for the diagnosis.
- B) VJ's inattentive symptoms could meet the criteria for diagnosis.
- C) A reliable diagnosis cannot be made until VJ is 7 years old.
- D) If a test dose of stimulant helps VJ, it confirms the diagnosis.

17-Which of the following brain changes increases the likelihood of ADHD?

- A) A defective 7-repeat allele of the dopamine4 receptor gene (DRD4)
- B) A genetic variation in the presynaptic serotonin transporter protein
- C) An enlarged basal ganglia and caudate nucleus in relation to the cortex
- D) Enlarged ventricles and atrophy in the temporal and occipital lobes

18-Which of the following statements about the adverse effects of stimulants is accurate?

- A) Risk of growth suppression with stimulants is lower compared with atomoxetine.
- B) There is a risk of new-onset suicidal behavior in the first 2 to 4 weeks of treatment.
- C) The risk of sudden, unexplained death is no greater than in untreated children.
- D) Immediate-release stimulants cause more insomnia than once-daily stimulants.

19-TC is a 13-year-old boy with severe aggression, hyperactivity, and poor attention span. He has rapid, pressured speech and grandiose delusions. He believes he is Jet Li starring in a martial arts movie. The treatment team diagnoses TC with ADHD and bipolar disorder.

Which of the following treatment options is optimal?

- A) Low-dose methylphenidate and an atypical antipsychotic to treat all symptoms
- B) Atypical antipsychotic with titration to response before considering stimulant
- C) Mixed amphetamine salts and lithium to treat both conditions concomitantly
- D) Haloperidol, lithium, and stimulant to treat psychosis, mood, and attention span

20-Which of the following is an advantage of atomoxetine over stimulants in the treatment of ADHD?

- A) Rapid onset of therapeutic effect
- B) Once-daily dosing is effective.
- C) Low to no risk of nausea
- D) Lack of abuse potential

21-TT is an 8-year-old boy with ADHD taking Concerta 27 mg in the morning with good tolerability. **How long will his symptoms be controlled on Concerta?**

- A) 3 to 5 hours

- B) 4 to 6 hours
- C) 6 to 8 hours
- D) 8 to 12 hours

22-TT reports positive therapeutic response to Concerta but some difficulty swallowing the tablet. His mother asks for a recommendation on what TT can take in place of Concerta that should work as well with a similar duration of action but offer less trouble in swallowing.

What is your best response?

- A) Metadate CD
- B) Daytrana
- C) Adderall XR
- D) Strattera

23-Select the most appropriate statement to include in counseling TT's parents on the clinical course of ADHD as TT grows up.

- A) ADHD symptoms typically remit when a child reaches puberty.
- B) Symptoms continue into adolescence for most children and teens.
- C) Stimulants are not as effective for adolescent and adult symptoms.
- D) Taking stimulants makes TT more likely to abuse drugs as an adult.

24-Clonidine is the most frequently prescribed medication for Tourette's disorder worldwide, according to literature reports. Which of the following describes an advantage of clonidine compared with D2 antagonists?

- A) Higher efficacy
- B) Less sedation
- C) No muscle rigidity
- D) Greater safety in overdose

25-Which of the following statements describe an advantage of desmopressin tablet compared with imipramine in the treatment of enuresis?

- A) It has no risk of seizures.
- B) It is less expensive.
- C) There is no need to restrict fluids.
- D) It is better tolerated.

26-Which of the following statements is true regarding Tourette's disorder?

- A) Multiple motor tics and at least one vocal tic are present over 1 year.
- B) Major depression is the most common comorbid condition.
- C) Individuals have high tolerance for medication side effects.
- D) Mild symptoms should be medicated to improve functioning.

27-What is the first step in treating a 5-year-old child with enuresis?

- A) Investigate medical causes of enuresis.
- B) Implement dry bed training and restriction of fluids.
- C) Initiate a test dose of imipramine 25 mg at bedtime.
- D) Start desmopressin 200 mcg tablet at bedtime.

28-What is the annual spontaneous remission rate of enuresis?

- A) 5%
- B) 10%
- C) 15%
- D) 25%

29-Which statement accurately describes how guanfacine compares with clonidine?

- A) It blocks dopaminergic and α_2 -adrenergic receptors.
- B) It has a longer half-life and less sedation.
- C) It is more sedating with more bradycardia.
- D) It has less α_2 selectivity and fewer noradrenergic effects.

30-Which of the following monitoring parameters is more important for pimozide compared with other D2 antagonists prescribed for Tourette's disorder?

- A) Fasting lipid panel
- B) Fasting glucose
- C) Electrocardiogram
- D) Thyroid function

31-Patient A is an overweight man who presents with symptoms of a suspected eating disorder. He expresses a low energy level, anhedonia, feelings of hopelessness, and a general depressed mood, as well as difficulty falling and staying asleep. He indicates that he often gets up at 2 or 3 a.m. and has a sandwich or large bowl of ice cream.

The most likely diagnosis is

- A) Anorexia nervosa
- B) Binge eating disorder
- C) Night eating syndrome
- D) Bulimia nervosa

32-Anorexia nervosa and bulimia nervosa patients often use different methods of purging.

The most common method seen across these two diagnostic entities is

- A) Laxative abuse
- B) Self-induced vomiting
- C) Diuretic use
- D) Excessive exercise

33-A 15-year-old female patient with anorexia nervosa is most likely to report **which of the following complaints following the ingestion of a meal?**

- A) Nausea and vomiting
- B) Stomach cramping
- C) Diarrhea
- D) Feeling bloated

34-The recognition and management of bulimia nervosa requires an extensive medical and psychiatric evaluation and assessment. **In addition, nearly one-third of patients with bulimia nervosa are likely to experience**

- A) Substance abuse
- B) Major depression
- C) Bipolar disorder
- D) Antisocial personality

35-A 23-year-old woman with anorexia nervosa is currently undergoing caloric restoration at a rate that her physician feels is too fast and is placing her at risk for further medical complications. **The physician is most worried about**

- A) Renal failure
- B) Bowel obstruction
- C) Refeeding syndrome
- D) Diabetic ketoacidosis

36-A 16-year-old female patient presents unable to maintain more than 85% of her normal body weight. She has a fear of gaining weight and has obsessive thoughts with a self-image of being perceived as “fat and ugly.” She often induces vomiting after eating her one meal a day for fear of gaining too much weight. Her parents indicate that she has always been underweight; they do not understand her emotional state and find themselves more frustrated and less supportive of her.

Which of the following factors in this case is considered the most positive predictor for a positive response?

- A) Poor family relationship
- B) Young age of onset
- C) Obsessive-compulsive tendencies
- D) Presence of purging behavior

37-Cognitive behavioral therapy (CBT) is often one of the first lines in the treatment of anorexia nervosa. One of the primary goals of CBT is to assist the patient in **which of the following ways?**

- A) Overcome distorted thinking
- B) Improve interpersonal relationships
- C) Resolve symptoms of depression
- D) Restore weight above 85% of normal

38-A 19-year-old, 5 ft, 6 in., 80 lb female patient is hospitalized for the treatment of anorexia nervosa. She is currently undergoing oral refeeding with liquid formulas; however, she has been somewhat resistant. Nasogastric refeeding has been considered, but the patient has recently been more compliant.

Which of the following is an appropriate refeeding and controlled weight gain plan?

- A) 1,000 calories (4186 J) per day to gain 0.5 to 1 lb (0.2 – 0.5 kg) per week
- B) 1,300 calories (5442 J) per day to gain 2 to 3 lb (0.9 to 1.4 kg) per week
- C) 1,800 calories (7534 J) per day to gain 2 to 3 lb (0.9 to 1.4 kg) per week
- D) 1,500 calories (6279 J) per day to gain 0.5 to 1 lb (0.2 to 0.5 kg) per week

39-In patients with bulimia nervosa, recent findings suggest that self-help cognitive behavioral therapy approaches are most effective when combined with?

- A) 12-step programs
- B) Gradual caloric introduction
- C) Oral antidepressants
- D) Nutritional counseling

40-Treatment of bulimia nervosa with antidepressant medications, if effective, is most likely to occur how long after starting therapy?

- A) 1 to 2 weeks
- B) 3 to 4 weeks
- C) 4 to 6 weeks
- D) 6 to 8 weeks

41-Based on data from multiple clinical trials and case reports, which of the following doses of fluoxetine would be considered the most likely maintenance dose for the treatment of bulimia nervosa?

- A) 10 mg per day
- B) 20 mg per day
- C) 40 mg per day
- D) 60 mg per day

42-Selective serotonin reuptake inhibitor (SSRI) antidepressant medications are often initiated in patients with anorexia nervosa, with the most widely studied agent being fluoxetine in the dosing range of 20 to 80 mg/day. A recent year-long study of fluoxetine versus placebo in anorexic patients determined fluoxetine

- A) Extended time to relapse
- B) Did not affect time to relapse
- C) Shortened time to relapse
- D) Reduced the risk of suicide

43-Data from clinical trials and small case reports of antipsychotic medications suggest which of the following off-label dosing regimens to be the most appropriate in treating adults with anorexia nervosa?

- A) Haloperidol 5 mg orally twice daily
- B) Risperidone 2 mg orally twice daily
- C) Olanzapine 20 mg orally twice daily
- D) Quetiapine 200 mg orally twice daily

44-Cardiovascular collapse, which can result from the refeeding syndrome, is secondary to?

- A) Electrolyte disturbances
- B) Rhabdomyolysis
- C) Atherosclerosis
- D) Torsades de pointes

45-The most effective treatment strategies for binge eating disorders as supported by clinical evidence involves the use of

- A) Antidepressants
- B) Antipsychotics
- C) Interpersonal psychotherapy
- D) Family therapy

46-Nearly of men arrested for homicide and assault actually test positive for an illegal drug.

- A) 10 percent
- B) 20 percent
- C) 30 percent
- D) 50 percent
- E) 70 percent

47-Drug abuse can be defined as:

- A) Physiologic adaptation to the effect of drugs, so as to diminish effects with constant dosages or to maintain the intensity and duration of effects through increased dosage
- B) Any use of a drug that varies from a socially or medically accepted use
- C) The emotional state of craving a drug either for its positive effect or to avoid negative effects associated with its absence
- D) Any use of drugs that causes physical, psychologic, economic, legal, or social harm to the individual user or to others affected by the drug user's behavior
- E) A physiologic state of adaptation to a drug or alcohol, usually characterized by the development of tolerance to drug effects and the emergence of a withdrawal syndrome during prolonged abstinence

48-The most commonly used illicit drug is which of the following?

- A) LSD
- B) MDMA
- C) Marijuana
- D) Cocaine
- E) Heroin

49-What is the purpose of The Monitoring the Future Study conducted at the University of Michigan?

- A) To determine what types of drugs are causing Emergency Department visits at metropolitan hospitals.
- B) To study changes in the beliefs, attitudes, and behavior of young people toward drugs in the United States.
- C) To serve as the primary source of statistical information on the use of illegal drugs by the U.S. population.
- D) To determine the types of drugs that are associated with drug-related mortality.
- E) To serve as an early warning system such that prevention and treatment efforts can be tailored to the recent trends in substance abuse.

50-Carisoprodol is metabolized in the body to which of the following compounds?

- A) Diazepam
- B) Nor-propoxyphene
- C) Chloral Hydrate
- D) 11- hydroxyl alprazolam
- E) Meprobamate

51-Which of the following compound(s) is (are) a chemical or pharmacologic analog to hydroxybutyrate (GHB)?

- A) γ -Butyrolactone (GBL)
- B) 1,4-Butanediol
- C) Ketamine
- D) All of the above
- E) A and B only

52-High doses of cocaine and/or prolonged use can trigger symptoms of ?

- A) Paranoia
- B) Hypothyroidism
- C) Osteoporosis
- D) Lassitude
- E) Bradycardia

53-When smoked, crack cocaine has a longer duration of action than powdered cocaine used intranasally.

- A) True

B) False

54-Methamphetamine can be manufactured in home laboratories using which of the following as starting materials?

- A) LSD
- B) Pseudoephedrine
- C) γ -Butyrolactone
- D) Cocaine
- E) Dopamine

55-What is the name of the impurity formed during the clandestine manufacture of MDMA (also known as Ecstasy) that has been shown to be a potent hyperthermic agent.

- A) MDMA methyl ester
- B) Methamphetamine
- C) Paramethoxy amphetamine (PMA)
- D) Isophenylalanine
- E) Nor-meperidine

56-Which of the following describe the acute effects of inhalants?

- A) Inhalants depress the CNS, producing decreased respiration and blood pressure.
- B) Inhalants stimulate the CNS, producing increased respiration and blood pressure.
- C) Users report increased, accurate perceptions of time and space.
- D) Users can become diabetic in the face of pre-existing renal disease.
- E) Both A and D are accurate descriptions of inhalant effects.

57-There is increasing evidence that MDMA can cause structural damage to neurons in the brain.

- A) Serotonergic
- B) Dopaminergic
- C) Adrenergic
- D) Gabaminergic
- E) Cholinergic

58-According to the latest statistics from the Mississippi Marijuana Potency Monitoring Project, the average THC (delta-9-tetrahydrocannabinol) content in tested samples of marijuana in 2007 was:

- A) 3.52 percent
- B) 21.44 percent
- C) 0.625 percent
- D) 65.8 percent
- E) 9.64 percent

59-What percentage of treated substance-dependent patients will relapse at least once?

- A) 10%
- B) 25%
- C) 50%
- D) 75%
- E) 90%

60-Which of the following is true regarding ultrarapid detoxification from opiate dependence?

- A) This technique has become the “standard of care” for treating opiate dependence
- B) It has been proved to be a cost-effective alternative to outpatient detoxification
- C) More research is needed using rigorous research methods, longer-term outcomes, and comparisons with other methods of treatment before this technique can gain widespread acceptance
- D) This technique has been outlawed by the DEA because of the high rate of relapse and the greater intensity of withdrawal with subsequent episodes of opiate abuse
- E) A recent meta-analysis has shown this technique to be clearly superior to conventional methods of detoxification, in both short- and long-term outcomes.

61-Which of the following benzodiazepines has been shown to be most effective in evidence-based analysis of published studies for treating or preventing alcohol withdrawal?

- A) Diazepam
- B) Chlordiazepoxide
- C) Lorazepam
- D) Alprazolam
- E) All were shown to be equally effective

62-Thiamine should be administered to suspected chronic alcohol abusers to avoid:

- A) Ascites
- B) Wernicke encephalopathy
- C) Nystagmus
- D) Autonomic dysfunction
- E) Cardiac arrhythmias

63-A patient is found to have a blood alcohol concentration (BAC) of 170 mg/dL. Which of the following would best describe this patient’s clinical condition?

- A) Dysphoria (anxiety, restlessness) predominates, and nausea can appear; the drinker has the appearance of a “sloppy drunk”
- B) No effect discernible to the untrained observer
- C) Slight impairment of balance, speech, vision, reaction time, and hearing
- D) Euphoria; judgment and self-control are reduced, and caution, reason, and memory are impaired

E) Onset of coma, possible death because of respiratory arrest

64-An individual's likelihood of becoming alcohol dependent is related to:

- A) Genetic predisposition
- B) Environmental factors
- C) Pattern and history of alcohol consumption
- D) A and B only
- E) A, B, and C

65-Clonidine is administered in alcohol withdrawal for what purpose?

- A) To treat the symptoms of autonomic rebound
- B) To decrease craving
- C) To treat agitation unresponsive to benzodiazepine administration
- D) All of the above
- E) None of the above

66-Beer typically contains what percentage of alcohol by volume?

- A) 3%
- B) 5%
- C) 12%
- D) 18%
- E) 40%

67-Polly Dent, a 47-year-old secretary, comes into the pharmacy for a refill of her theophylline prescription. Her doctor has told her she must quit smoking. Polly has been smoking since she was 15 years old, and she currently smokes one pack of cigarettes per day. Ms. Dent wants to know if the chewing gum (and/or patches) really works.

What should you tell her?

- A) Nicotine chewing gum is guaranteed to help her quit smoking, therefore she should buy some right away.
- B) Nicotine chewing gum can help patients with the pharmacologic effects of nicotine withdrawal, but this is only one component of a comprehensive smoking cessation program; behavior modification is an equally important (or more important) part of a good program.
- C) Nicotine chewing gum is an effective way to deal with the psychologic as well as the physical cravings for a cigarette and should work well by itself.
- D) Nicotine chewing gum would be contraindicated in Ms. Dent, so she should consider some other methods of smoking cessation.
- E) Nicotine chewing gum is inferior to the patches because it does not provide a constant source of nicotine; besides, it does not taste very good and hence, you would not recommend it for her.

68-Which of the following is considered a second-line pharmacotherapy for helping people quit smoking?

- A) Nicotine patch
- B) Bupropion
- C) Clonidine
- D) Nicotine gum
- E) Nicotine nasal spray

69-Which of the following is the only official diagnosis associated with caffeinism in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR)?

- A) Caffeine dependence syndrome
- B) Caffeine intoxication
- C) Caffeine withdrawal syndrome
- D) Caffeine-induced seizure disorder
- E) Caffeinism

70-Pharmacologically, the risk of developing some meaningful clinical manifestations becomes high when intake exceeds how much caffeine per day?

- A) 70 mg/day
- B) 100 mg/day
- C) 230 mg/day
- D) 500 mg/day
- E) 630 mg/day

71-Which of the following is a contraindication for using SR bupropion in treating nicotine dependence?

- A) Taking a monoamine oxidase inhibitor within 14 days
- B) History of hypothyroidism
- C) Aspirin allergy
- D) All of the above
- E) A and B only

72-For smoking cessation, the manufacturer of bupropion recommends a dosage of:

- A) 150 mg of the sustained release product once daily for 3 days and then twice daily for 7 to 12 weeks or longer
- B) 300 mg of the sustained release product once daily and then 300 mg twice daily for a minimum of 6 months
- C) 50 mg of the immediate release product 3 times daily for 1 year
- D) 75 mg of the sustained release product 3 times a day for 7 to 12 weeks or longer
- E) 150 mg of the immediate release tablets daily for 3 days and then twice daily for 7 to 12 weeks or longer

73-Patients are instructed to stop smoking during which week of treatment with bupropion?

- A) First
- B) Second
- C) Third
- D) Fourth
- E) Fifth

74-When children are exposed to environmental smoke or if their mothers smoke during pregnancy, they have a higher risk of all of the following except:

- A) Respiratory infection
- B) Middle ear infections
- C) Asthma
- D) Sudden infant death syndrome
- E) Down syndrome

75-Which of the following is the most effective treatment of the withdrawal symptoms that follow sudden discontinuation of caffeine intake?

- A) Propranolol
- B) Naltrexone
- C) Acamprosate
- D) Reintroduction of caffeine
- E) Naloxone

76-Which of the following is the most accurate statement regarding the potential etiology of schizophrenia?

- A) Developmental delays in children who later develop schizophrenia indicate that schizophrenia is clearly a developmental disorder.
- B) Genetics studies suggest a Mendelian genetic relationship for developing schizophrenia.
- C) PET studies indicate that schizophrenia is a degenerative brain disorder.
- D) Schizophrenia shows characteristics of both a developmental and a degenerative disorder.

77-Neurotransmitter abnormalities that are thought to exist in schizophrenia include

- A) Excessive synthesis and release of dopamine from presynaptic receptors
- B) Decreased density of D2 receptors in the mesocaudate
- C) Hypofunction of glutamatergic pathways
- D) Increased density of D2 receptors in the prefrontal cortex
- E) Hyperactivity of glutamatergic pathways

78-Symptom domains that are characteristic of a diagnosis of schizophrenia include all of the following except:

- A) Cognitive impairment
- B) Depression
- C) Negative symptoms

D) Positive symptoms

79-Nonpharmacological interventions that are key components of comprehensive care for individuals with schizophrenia include all of the following except:

- A) Family psychoeducation
- B) Individual supportive therapy
- C) Psychoanalysis
- D) Social skills therapy
- E) Supported housing

80-Which of the following most accurately reflects the initial workup (i.e., evaluation) of a patient suspected of having schizophrenia?

- A) Mental status exam, physical exam, neurological exam, social history, laboratory work-up, and PET scan
- B) Mental status exam, physical exam, neurological exam, social history, laboratory workup, and MRI scan
- C) Mental status exam, physical exam, neurological exam, social history, family history, and a CSF homovanillic acid (HVA) level
- D) Mental status exam, physical exam, neurological exam, family history, laboratory work-up, and a CSF 5-hydroxyindolacetic acid (5-HIAA) level
- E) Mental status exam, physical exam, neurological exam, family history, social history, and laboratory workup

81-According to the PORT recommendations, all of the following antipsychotics are appropriate choices for the treatment of an individual with schizophrenia in its first psychotic break except:

- B) Perphenazine
- C) Quetiapine
- D) Risperidone
- E) Ziprasidone

82-O.Y. is a 27-year-old male with schizophrenia. This is his fourth psychiatric hospitalization. He has most recently been treated with risperidone. He currently presents in an acute psychotic episode with fulminate suicidal ideation and a serious attempt prior to hospitalization. Based on this information, which of the following antipsychotics would be the best choice for this patient at the present time?

- A) Clozapine
- B) Haloperidol
- C) Iloperidone
- D) Risperidone
- E) Ziprasidone

83-Which of the following are interventions which may increase the treatment adherence of individuals with schizophrenia?

- A) Cognitive behavioral therapy
- B) Involvement of families
- C) Patient information about the disorder and treatment
- D) Consumer to consumer groups
- E) All of the above are effective

84-B.W. is a 33-year-old woman with schizophrenia in an acute exacerbation. She has had previous unsuccessful medication trials with risperidone and olanzapine. Her risperidone trial was at a maximum dose of 6 mg/d for 6 months, and her olanzapine regimen was for a maximum dose of 20 mg daily for 9 months. Patient adherence with treatment was deemed to be adequate during the previous medication trials. Based on the available information, **which of the following is the most appropriate medication intervention at the present time?**

- A) Asenapine
- B) Clozapine
- C) Haloperidol
- D) Quetiapine
- E) Ziprasidone

85-The rapid on, rapid off theory of atypicality is best associated with which of the following antipsychotics?

- A) Aripiprazole
- B) Olanzapine
- C) Quetiapine
- D) Risperidone
- E) Ziprasidone

86-The preferred treatment option for a 20-year-old patient with bipolar disorder who has severe liver disease is:

- A) Valproic acid
- B) Lithium
- C) Carbamazepine
- D) Lamotrigine

87-During the lag time for onset of action of lithium, an appropriate adjunctive medication for acute mania might include drugs from all of the following classes except:

- A) Antihistamines
- B) Benzodiazepines
- C) Antipsychotics
- D) Anticonvulsants

88-Lamotrigine appears to be useful for the maintenance phase of bipolar disorder. However, which of the following adverse effects has limited its use?

- A) Anxiety
- B) Tremor
- C) Sedation
- D) Rash

89-If lamotrigine is initiated in a patient receiving valproic acid (VPA), the starting dose of lamotrigine should be:

- A) Lower than if started in a patient not receiving VPA
- B) Higher than if started in a patient not receiving VPA
- C) The same as in a patient not receiving VPA
- D) Lamotrigine is contraindicated in patients receiving VPA

90-Which of the following laboratory test is needed prior to initiating therapy with valproic acid?

- A) Potassium level
- B) Liver function test
- C) Thyroid function test
- D) Magnesium level

91-Which adverse effect is more frequently associated with oxcarbazepine than carbamazepine?

- A) Ataxia
- B) Nausea and vomiting
- C) Stevens-Johnson syndrome
- D) Hyponatremia

92-All of the following are symptoms of acute mania except:

- A) Grandiosity
- B) Racing thoughts
- C) Decreased appetite
- D) Pressured speech

93-Antidepressants should be used when treating a patient with bipolar disorder who is currently:

- A) Depressed, with a history of treatment resistant depressions
- B) Not depressed, but has a history of severe depression before each manic episode
- C) Hypomanic, but has a history of severe depression
- D) Manic, but has a history of severe depression after a manic episode

94-A diagnosis of bipolar disorder comes only after a patient has a:

- A) Manic episode
- B) Hypomanic episode
- C) Depressed episode

- D) a or b
- E) All of the above

95-Antipsychotics could be used in a patient displaying which of the following symptoms?

- A) Mania with psychotic features
- B) Mania without psychotic features
- C) Depression with psychotic features
- D) a and b
- E) All of the above

96-A first-line treatment option in a patient with bipolar disorder current episode manic is:

- A) Lithium
- B) Carbamazepine
- C) Lamotrigine
- D) Oxcarbazepine

97-Treatment of choice for rapid cycling is:

- A) Lamotrigine
- B) Carbamazepine
- C) Lithium
- D) Valproic acid

98-Which medication has an FDA indication for the treatment of bipolar depression

- A) Olanzapine
- B) Quetiapine
- C) Risperidone
- D) Ziprasidone

99-Which medication has an FDA indication for maintenance therapy in bipolar disorder

- A) Olanzapine
- B) Quetiapine
- C) Risperidone
- D) Ziprasidone

100-Which of the following laboratory test is needed prior to initiating lithium therapy?

- A) Potassium level
- B) Platelet count
- C) Thyroid function test
- D) Magnesium level

101-A 63-year-old patient with asthma, hypertension, and ulcers presents with symptoms of anxiety including palpitations, diaphoresis, and abdominal pain. The patient's medication regimen includes tiotropium, theophylline, lisinopril, and esomeprazole. Which medication is most likely to contribute to symptoms of anxiety?

- A) Lisinopril
- B) Tiotropium
- C) Theophylline
- D) Esomeprazole

102-Which of the following brain structures is located in the brain stem, contains norepinephrine, and is responsible for implementing fear responses associated with anxiety?

- A) Amydala
- B) Hippocampus
- C) Hypothalamus
- D) Locus ceruleus

103-Which of the following neurotransmitter systems is most likely involved in the pathophysiology of anxiety disorders?

- A) Dopamine
- B) Serotonin
- C) Acetylcholine
- D) Histamine

104-A patient who experiences blushing, palpitations, and hand tremor before a public performance is best treated with which of the following medications?

- A) Venlafaxine
- B) Propranolol
- C) Pregabalin
- D) Citalopram

105-A 26-year-old patient with generalized anxiety disorder who responds to acute treatment with duloxetine should continue on it for at least month(s).

- A) 1
- B) 3
- C) 6
- D) 12

106-The long-term goal of therapy in the treatment of generalized anxiety, panic, and social anxiety disorders is which of the following?

- A) Few to minimal core symptoms
- B) Partial response after 12 weeks

- C) Ability to taper adjunctive agent
- D) Complete remission of symptoms

107-A patient with a history of prescription drug abuse with oxycodone presents for acute management of panic disorder. The most appropriate initial therapy for this patient is which of the following?

- A) Bupropion 150 mg twice daily
- B) Sertraline 25 mg every morning
- C) Alprazolam XR 1 mg twice daily
- D) Buspirone 5 mg 3 times daily

108-A 35-year-old school teacher has been treated for generalized anxiety disorder for 4 weeks with paroxetine 20 mg daily. The patient has a partial response. Based on evidence-based treatment guidelines, the most appropriate action is which of the following?

- A) Taper the dose gradually over the next 2 weeks
- B) Increase paroxetine to 30 mg and reassess in 4 weeks
- C) Add clonazepam 1 mg 3 times daily for 2 weeks
- D) Switch to sertraline 50 mg daily, increase to 100 mg in a week

109-Patients with panic disorder should be started at $\frac{1}{4}$ to $\frac{1}{2}$ of the dose of fluoxetine used to treat depression in order to decrease the risk for which of the following?

- A) Weight gain
- B) Sedative effects
- C) Increased anxiety
- D) Sexual dysfunction

110-A 42-year-old patient with multiple worries, irritability, sleep disturbances, and gastrointestinal symptoms for more than six months presents in acute distress. The patient complains of interference in their ability to care for their family and meet work commitments. This patient meets the diagnostic criteria for which of the following?

- A) Specific phobia
- B) Generalized anxiety disorder
- C) Panic disorder with agoraphobia
- D) Social anxiety disorder

111-A 25-year-old pharmacy student is prescribed escitalopram 10 mg daily for the treatment of generalized anxiety disorder. The most appropriate rating scale to monitor the effectiveness is which of the following?

- A) Sheehan Disability Scale
- B) Liebowitz Social Anxiety Scale
- C) Hamilton Rating Scale for Anxiety
- D) Clinical Global Impression of Severity

112-In the treatment of social anxiety disorder, which of the following medications is associated with the risk of dependence with chronic and prolonged use?

- A) Buspirone
- B) Alprazolam
- C) Venlafaxine
- D) Escitalopram

113-A patient has been treated with clonazepam 1 mg 3 times daily for panic disorder for 15 months. Upon discontinuation of therapy, the clonazepam should be tapered over how many weeks to reduce the chance for relapse?

- A) 2
- B) 4
- C) 6
- D) 12

114-You are consulted on the case of a 71-year-old patient with newly diagnosed generalized anxiety disorder who has severe anxiety requiring pharmacotherapy with a quick onset of effect. Which of the following benzodiazepines do you recommend?

- A) Alprazolam
- B) Lorazepam
- C) Clorazepate
- D) Chlordiazepoxide

115-Which of the following statements is most accurate regarding the evidence of the role of atypical antipsychotics in the treatment of anxiety disorders?

- A) Contraindicated with social anxiety disorder
- B) Effective as monotherapy for anxiety disorders
- C) Helps physical symptoms of panic disorder
- D) Effective in treatment-resistant anxiety

116-A patient with recurring thoughts of a recent sexual assault, avoidance of the building corner where it occurred, irritability, and insomnia for the past 3 weeks since the assault would be diagnosed with which of the following?

- A) Acute stress disorder
- B) Obsessive-compulsive disorder
- C) Generalized anxiety disorder
- D) Posttraumatic stress disorder

117-Which of the following is an example of a hypervigilance symptom of posttraumatic stress disorder (PTSD)?

- A) Restricted range of affect
- B) Exaggerated startle response
- C) Shunning conversations about the trauma

D) Feeling like the event were recurring

118-A 45-year-old cashier was shot during a robbery at the convenience store where he works 5 months ago. He presents for management of intrusive images of the event, has missed work, feels that someone is following him, and cannot envision the rest of his life as being happy. He complains of recurring nightmares with restless sleep. He is diagnosed with posttraumatic stress disorder. **What is the most appropriate pharmacologic management of this patient?**

- A) Imipramine 100 mg twice daily
- B) Paroxetine 20 mg every day
- C) Diazepam 5 mg 4 times a day
- D) Quetiapine 50 mg at bedtime

119-An appropriate length of time to assess the efficacy of sertraline 150 mg daily in the treatment of PTSD is which of the following?

- A) 1 week
- B) 3 weeks
- C) 6 weeks
- D) 24 weeks

120-A nonpharmacologic treatment effective in PTSD is which of the following?

- A) Cingulotomy
- B) Electroconvulsive therapy
- C) Transcranial magnetic stimulation
- D) Eye movement desensitization and reprocessing

121-A 32-year-old mechanic from Georgia returned to the United States after being deployed in Iraq where he witnessed an explosion that maimed several Iraqi children. He assisted in transporting two children to the hospital. Afterward he had an extreme reaction of hopelessness. Each time he sees children in his neighborhood this reminds him of the mangled limbs he saw when overseas. He describes flashbacks of the trauma, avoids going outside of his house, has no interests in former hobbies or even work, he is hypervigilant to any unusual noises, and prone to angry outbursts. He suffered one bout of depression 5 years ago after a divorce and was treated with desipramine. The nurse practitioner prescribed lorazepam 1 mg 3 times a day 2 weeks ago, but he continues to suffer from symptoms of posttraumatic stress disorder.

The most appropriate suggestion at this time is which of the following?

- A) Initiate muscle relaxation therapy
- B) Add phenelzine 15 mg twice a day
- C) Increase lorazepam to 2 mg 3 times a day
- D) Switch to fluoxetine 20 mg once a day

122-Research indicates that the pathophysiology of PTSD may involve an imbalance in which of the following neurotransmitters?

- A) Norepinephrine
- B) Hypocretin
- C) Monoamine oxidase
- D) Acetylcholinesterase

123-Which of the following antipsychotic agents would be most appropriate to use in managing paranoia, suspiciousness, and insomnia in a 24 year-old male combat veteran currently treated with paroxetine 50 mg daily for PTSD?

- A) Pimozide
- B) Olanzapine
- C) Haloperidol
- D) Chlorpromazine

124-The goals of acute therapy in PTSD include which of the following?

- A) Managing anxiety disorders and preventing weight gain
- B) Reducing core symptoms and improving quality of life
- C) Improving depressive symptoms and reducing suicide potential
- D) Addressing substance abuse issues and minimizing trauma risk

125-The pathophysiology of obsessive-compulsive disorder (OCD) involves abnormalities in the function of which of the following neurotransmitters?

- A) GABA
- B) Histamine
- C) Serotonin
- D) Norepinephrine

126-Which of the following is an example of a compulsion?

- A) Need for symmetry
- B) Recurring disturbing images
- C) Repeated thoughts of doubt
- D) Counting pencils and pens

127-Clomipramine is not a first choice medication in the treatment of OCD for which of the following reasons?

- A) Numerous drug interactions
- B) It is not as effective as SSRIs
- C) Cost makes it difficult to afford
- D) Intolerable adverse effects

128-Which of the following is true about antidepressants for OCD?

- A) Lower doses are needed compared with depression management

- B) Effective medications possess similar adverse effect profiles
- C) Plasma levels are used to monitor medication therapy
- D) Complete resolution of symptoms is difficult to achieve

129-An 18-year-old has been diagnosed with obsessive-compulsive disorder. Her main obsession involves contamination. She compulsively avoids touching doorknobs and using public restrooms. She spends a lot of time making sure that she is clean by washing her hands for 3 to 4 hours daily. Sertaline therapy was initiated, and for 3 weeks she has been receiving 100 mg daily. While her symptoms have abated somewhat, she continues to suffer significantly. **At this point you should recommend that the physician:**

- A) Add buspirone as augmentation therapy
- B) Discontinue fluoxetine and begin clomipramine
- C) Continue for 2 to 4 more weeks and reevaluate
- D) Add aripiprazole to help control the obsessions

130-With respect to treatment of OCD, cognitive behavioral therapy:

- A) Should not be used alone
- B) Is used for 2 to 4 weeks
- C) Should be offered to each patient
- D) Is widely available to patients

131-SB is a 28-year-old female who complains that she has had difficulty sleeping over the last several weeks and that it is beginning to interfere with her work. She states that she had been working long hours and feeling stressed, so she has been doing aerobics before bed around 10 PM.

What would you recommend initially to SB?

- A) Trazodone
- B) Flurazepam
- C) Cognitive therapy
- D) Zolpidem
- E) Sleep hygiene

132-Mrs. D, a 35-year-old female, complains of difficulty maintaining sleep for more than 6 weeks. She has appropriately tried sleep-hygiene therapy, but that has not worked. The plan is to initiate medication therapy. If the patient has no contraindications, and no medical causes for these sleep difficulties, **which of the following therapies would you start with?**

- A) Amitriptyline
- B) Fluoxetine
- C) Eszopiclone
- D) Citalopram
- E) Ramelteon

133-A 42-year-old female who recently lost her husband tells you that she is not sleeping at night. After questioning her further, you determine that she does not have depression or substance abuse. **What would you recommend?**

- A) Educate her concerning sleep hygiene
- B) Recommend a trial of a short-acting BZDRA
- C) Recommend a trial of fluoxetine
- D) Recommend a trial of amitriptyline

134-A 27-year-old female has trouble with waking up in the middle of the night. **Which of the following is least likely to be effective for her if taken at bedtime?**

- A) Zaleplon
- B) Temazepam
- C) Zolpidem CR
- D) Estazolam

135-What is the best way to avoid tolerance and dependence in this patient?

- A) Use high-dose BZDRA therapy for as long as possible.
- B) Use high-dose BZDRA therapy for as short as possible.
- C) Use low-dose BZDRA therapy for as long as possible.
- D) Use low-dose BZDRA therapy for as short as possible.

136-A 28-year-old female has a chief complaint of insomnia occurring for the last 5 months. She just graduated from pharmacy school, and she spends the evening worrying if she has made a mistake during her busy days at work. **All other psychiatric and medical conditions have been ruled out. How would you approach treating this patient?**

- A) Recommend a short-term trial of lorazepam
- B) Recommend a short-term trial of clonazepam
- C) Recommend an approach that would include education concerning good sleep hygiene, supportive therapy, and trazodone as an adjunct if needed
- D) Recommend cognitive therapy alone

137-A 34-year-old male travels to Europe for a business trip. **What is the best recommendation you can provide him to help avoid jet lag?**

- A) Drink alcohol at target bedtime when you arrive at new location
- B) Take melatonin or a short-acting BZDRA at bedtime at new location
- C) Take an SSRI at bedtime at new location
- D) Exercise routinely immediately before bedtime at new location

138-A 76-year-old patient has been in the rehabilitation unit after a fall for the past 2 days. He complains of difficulty sleeping due to light and noise in the hallways. **Which of the following would be the most appropriate?**

- A) Diazepam
- B) Eszopiclone

- C) Quazepam
- D) Flurazepam

139-A 46-year-old male with chronic obstructive pulmonary disease recently completed a sleep study and was diagnosed with sleep apnea. **Which pharmacologic agent would you want to avoid in this patient?**

- A) Hydrochlorothiazide
- B) Diazepam
- C) Fluoxetine
- D) Levothyroxine

140-The most effective treatment for sleep apnea is:

- A) Tracheostomy
- B) Continuous positive airway pressure
- C) Uvulopalatopharyngoplasty
- D) Oral appliances
- E) Modafinil

141-Sleep apnea can lead to all of the following sequelae except

- A) Depression
- B) Stroke
- C) Hypertension
- D) REM parasomnias

142-Which of the following is the standard of treatment for daytime sleepiness associated with narcolepsy?

- A) Methamphetamine
- B) Modafinil
- C) Zolpidem
- D) Imipramine

143-Which of the following is the most effective treatment for cataplexy associated with narcolepsy?

- A) Methamphetamine
- B) Medroxyprogesterone acetate
- C) Modafinil
- D) Sodium oxybate

144-Narcolepsy is caused by:

- A) Loss of dopamine receptors in the basal ganglia.
- B) Loss of histamine receptors in the posterior hypothalamus.
- C) Loss of hypocretin-orexin neurons in the hypothalamus.
- D) Loss of serotonin receptors in the dorsal raphe nucleus.

145-Which of the following would be the therapy of choice for restless legs syndrome?

- A) Zolpidem
- B) Temazepam
- C) Magnesium
- D) Pramipexole

146- Psychiatric disorders?

- A) Community integration
- B) Stress management
- C) Specialized testing instruments
- D) Expressive language skills

147-Which of the following is most frequently identified as an age risk factor for Down syndrome?

- A) Maternal grandmother
- B) Paternal
- C) Maternal
- D) Maternal and paternal

148-Martha Jones, a 39-year-old woman diagnosed with Down syndrome and mild to moderate intellectual impairment, presents to psychiatric clinic. Her family reports over the past 6 months she is increasingly irritable, more socially withdrawn, and unable to complete previously simple tasks.

The most clinical evidence supports a trial of:

- A) Tranylcypromine
- B) Phenelzine
- C) Memantine
- D) Donepezil

149-Marsha, now 6 years old, was progressing normally until approximately 3 years ago when pronounced developmental regression was noted. This progressed to profound intellectual impairment with significant skill and neurological changes. **You recommend monitoring for an increase in:**

- A) Ataxia
- B) Bruxism
- C) Scoliosis
- D) Seizures

150-A colleague requests a consult for a 16-year-old Down syndrome patient recently diagnosed with bipolar disorder and started on lithium. **You state that:**

- A) The current evidence suggests that no monitoring is needed.
- B) There is a significant causal link established between these comorbidities.
- C) Closer thyroid monitoring may be needed in this patient.

D) Renal function may be impaired in persons with Down syndrome.

151-A child with a confirmed diagnosis of autism is in your pediatric clinic. **What is the most common neurological disorder associated with children with autism?**

- A) Seizure disorder
- B) Tourette's disorder
- C) Rett syndrome
- D) Pervasive developmental disorder

152-The mother of a child with autism exhibiting extreme aggressive behaviors is reluctant to consent to a trial of risperidone for these behaviors. Nonpharmacologic strategies have already been implemented. **You discuss this potential medication therapy with the mother and explain:**

- A) First-generation antipsychotic agents are less expensive and equally effective as an atypical agent.
- B) Secretin may be a better therapeutic option for her child.
- C) She should check the Internet for more natural treatment strategies.
- D) Risperidone has the strongest evidence-based results in treating adverse behaviors of autism.

153-Early diagnosis and accompanying appropriate treatment is important for children with autism in order to:

- A) Promote maximal learning, improve behaviors/communications, and engage in recreations/social/occupational activities.
- B) Start pharmacotherapy as quickly as possible.
- C) Secure institutional placement.
- D) Allow the parents to join a support group.

154-A mother brings her 18-month-old daughter to your pediatric clinic. She mentions the child does not enjoy playing with her siblings, has no interest in her parents, and has not begun to speak single words.

What guidance should be given to this mother?

- A) Discuss the possible differential diagnoses and refer the family to a developmental evaluation center for a multidisciplinary evaluation and workup
- B) Minimize her concerns due to the young age of the child
- C) Refer the family to an autism support group
- D) Discuss neuroimaging to rule out brain pathology

155- As part of a medical workup for a child with suspected autism, which of the following is not commonly performed?

- A) Detailed medical and developmental history
- B) Test for lead or heavy metals, especially if pica present
- C) Genetic testing

D) Electrocardiography

156-What clinical condition with personality and behavior changes may present in Down syndrome adults?

- A) Hypothyroidism
- B) Obsessive-compulsive disorder
- C) Alzheimer's disease
- D) Megakaryoblastic leukemia

157-What is the most common seizure presentation in Rett syndrome?

- A) Partial with secondary generalization
- B) Generalized tonic-clonic
- C) Myoclonic or Jacksonian
- D) Absence with secondary generalization

158-A functional analysis of Rett syndrome-associated stereotypies found they:

- A) Are maintained by negative environmental reinforcement
- B) Are indicators of an autism comorbidity
- C) Are mediated by autonomic reinforcement
- D) Respond to atypical antipsychotic agents

159-Down syndrome immunologic abnormalities may necessitate medication regimen adjustments associated with the treatment of:

- A) Leukemia
- B) Scoliosis
- C) Seizures
- D) Hypothyroidism

160-What is the best treatment for scoliosis secondary to Rett syndrome?

- A) High calcium and vitamin D diets
- B) Frequent feedings to ensure adequate caloric intake
- C) Prostheses or surgery to correct the curvature
- D) Relaxation therapy and massage to release muscle tension.

Psychiatry pharmacotherapy answers

- 1-D) They should not be left alone.
- 2-D) Pressured speech and delusional thinking
- 3-B) Uses a common language to describe psychiatric disorders and contains specific information about the diseases themselves
- 4-B) Thought blocking
- 5-C) Subjective statements of feeling
- 6-A) Physical examination, medical and psychiatric history, urine drug screen, chemistry panel, and complete blood count
- 7-D) Poor abstraction ability
- 8-B) Validity
- 9-A) Working memory
- 10-D) Positive and Negative Syndrome Scale (PANSS) and DISCUS
- 11-D) Baseline, 12 weeks, and yearly fasting glucose and lipids
- 12-C) Rating Scale for Extrapyrarnidal Side Effects (Simpson-Angus EPS Scale)
- 13-A) Thyrotoxicosis
- 14-C) Most psychiatric disorders can be diagnosed with laboratory work or routine imaging studies.
- 15-D) The MMSE globally assesses a number of cognitive domains.
- 16-B) VJ's inattentive symptoms could meet the criteria for diagnosis.
- 17-A) A defective 7-repeat allele of the dopamine4 receptor gene (DRD4)
- 18-C) The risk of sudden, unexplained death is no greater than in untreated children.
- 19-B) Atypical antipsychotic with titration to response before considering stimulant

- 20-D)** Lack of abuse potential
- 21-D)** 8 to 12 hours
- 22-B)** Daytrana
- 23-B)** Symptoms continue into adolescence for most children and teens.
- 24-C)** No muscle rigidity
- 25-A)** It has no risk of seizures.
- 26-A)** Multiple motor tics and at least one vocal tic are present over 1 year.
- 27-A)** Investigate medical causes of enuresis.
- 28-C)** 15%
- 29-B)** It has a longer half-life and less sedation.
- 30-C)** Electrocardiogram
- 31-C)** Night eating syndrome
- 32-B)** Self-induced vomiting
- 33-D)** Feeling bloated
- 34-A)** Substance abuse
- 35-C)** Refeeding syndrome
- 36-B)** Young age of onset
- 37-A)** Overcome distorted thinking
- 38-B)** 1,300 calories (5442 J) per day to gain 2 to 3 lb (0.9 to 1.4 kg) per week
- 39-C)** Oral antidepressants
- 40-D)** 6 to 8 weeks
- 41-D)** 60 mg per day

42-A) Extended time to relapse

43-D) Quetiapine 200 mg orally twice daily

44-A) Electrolyte disturbances

45-C) Interpersonal psychotherapy

46-D) 50 percent

47-E) A physiologic state of adaptation to a drug or alcohol, usually characterized by the development of tolerance to drug effects and the emergence of a withdrawal syndrome during prolonged abstinence

48-C) Marijuana

49-B) To study changes in the beliefs, attitudes, and behavior of young people toward drugs in the United States.

50-E) Meprobamate

51-E) A and B only

52-A) Paranoia

53-B) False

54-B) Pseudoephedrine

55-C) Paramethoxy amphetamine (PMA)

56-A) Inhalants depress the CNS, producing decreased respiration and blood pressure.

57-A) Serotonergic

58-E) 9.64 percent

59-D) 75%

60-C) More research is needed using rigorous research methods, longer-term outcomes, and comparisons with other methods of treatment before this technique can gain widespread acceptance

61-E) All were shown to be equally effective

62-B) Wernicke encephalopathy

63-A) Dysphoria (anxiety, restlessness) predominates, and nausea can appear; the drinker has the appearance of a “sloppy drunk”

64-E) A, B, and C

65-A) To treat the symptoms of autonomic rebound

66-B) 5%

67-B) Nicotine chewing gum can help patients with the pharmacologic effects of nicotine withdrawal, but this is only one component of a comprehensive smoking cessation program; behavior modification is an equally important (or more important) part of a good program.

68-C) Clonidine

69-B) Caffeine intoxication

70-D) 500 mg/day

71-A) Taking a monoamine oxidase inhibitor within 14 days

72-A) 150 mg of the sustained release product once daily for 3 days and then twice daily for 7 to 12 weeks or longer

73-B) Second

74-E) Down syndrome

75-D) Reintroduction of caffeine

76-D) Schizophrenia shows characteristics of both a developmental and a degenerative disorder.

77-C) Hypofunction of glutamatergic pathways

78-B) Depression

79-C) Psychoanalysis

- 80-E)** Mental status exam, physical exam, neurological exam, family history, social history, and laboratory workup
- 81-A)** Olanzapine
- 82-A)** Clozapine
- 83-E)** All of the above are effective
- 84-B)** Clozapine
- 85-C)** Quetiapine
- 86-B)** Lithium
- 87-D)** Anticonvulsants
- 88-D)** Rash
- 89-A)** Lower than if started in a patient not receiving VPA
- 90-B)** Liver function test
- 91-D)** Hyponatremia
- 92-C)** Decreased appetite
- 93-A)** Depressed, with a history of treatment resistant depressions
- 94-D)** a or b
- 95-E)** All of the above
- 96-A)** Lithium
- 97-D)** Valproic acid
- 98-B)** Quetiapine
- 99-A)** Olanzapine
- 100-C)** Thyroid function test

- 101-C) Theophylline
- 102-D) Locus ceruleus
- 103-B) Serotonin
- 104-B) Propranolol
- 105-D) 12
- 106-D) Complete remission of symptoms
- 107-B) Sertraline 25 mg every morning
- 108-B) Increase paroxetine to 30 mg and reassess in 4 weeks
- 109-C) Increased anxiety
- 110-B) Generalized anxiety disorder
- 111-C) Hamilton Rating Scale for Anxiety
- 112-B) Alprazolam
- 113-D) 12
- 114-B) Lorazepam
- 115-D) Effective in treatment-resistant anxiety
- 116-A) Acute stress disorder
- 117-B) Exaggerated startle response
- 118-B) Paroxetine 20 mg every day
- 119-C) 6 weeks
- 120-D) Eye movement desensitization and reprocessing
- 121-D) Switch to fluoxetine 20 mg once a day
- 122-A) Norepinephrine

- 123-B) Olanzapine
- 124-B) Reducing core symptoms and improving quality of life
- 125-C) Serotonin
- 126-D) Counting pencils and pens
- 127-D) Intolerable adverse effects
- 128-D) Complete resolution of symptoms is difficult to achieve
- 129-C) Continue for 2 to 4 more weeks and reevaluate
- 130-C) Should be offered to each patient
- 131-E) Sleep hygiene
- 132-C) Eszopiclone
- 133-B) Recommend a trial of a short-acting BZDRA
- 134-A) Zaleplon
- 135-D) Use low-dose BZDRA therapy for as short as possible.
- 136- C) Recommend an approach that would include education concerning good sleep hygiene, supportive therapy, and trazodone as an adjunct if needed
- 137-B) Take melatonin or a short-acting BZDRA at bedtime at new location
- 138-B) Eszopiclone
- 139-B) Diazepam
- 140-B) Continuous positive airway pressure
- 141-D) REM parasomnias
- 142-B) Modafinil
- 143-D) Sodium oxybate

- 144-** C) Loss of hypocretin-orexin neurons in the hypothalamus.
- 145-** D) Pramipexole
- 146-** D) Expressive language skills
- 147-** C) Maternal
- 148-** D) Donepezil
- 149-** D) Seizures
- 150-** C) Closer thyroid monitoring may be needed in this patient.
- 151-** A) Seizure disorder
- 152-** D) Risperidone has the strongest evidence-based results in treating adverse behaviors of autism.
- 153-** A) Promote maximal learning, improve behaviors/communications, and engage in recreations/social/occupational activities.
- 154-** A) Discuss the possible differential diagnoses and refer the family to a developmental evaluation center for a multidisciplinary evaluation and workup
- 155-** D) Electrocardiography
- 156-** C) Alzheimer's disease
- 157-** B) Generalized tonic-clonic
- 158-** A) Are maintained by negative environmental reinforcement????
- 159-** A) Leukemia
- 160-** C) Prostheses or surgery to correct the curvature

8

Coagulation disorder pharmacotherapy

COAGULATION DISORDERS QUESTIONS

1-All of the following are potential risks for plasma-derived factor concentrates, except:

- A) HIV contamination
- B) Hepatitis contamination
- C) Development of factor inhibitor
- D) Renal toxicity
- E) Allergic reaction

2-The dose of recombinant Factor IX concentrate (BeneFix) for an 8-year-old male who weighs 25 kg to target a 50% correction is:

- A) 2,000 units
- B) 1,750 units
- C) 1,250 units
- D) 1,000 units
- E) 625 units

3-A potential advantage to using recombinant factor concentrate instead of plasma-derived product is:

- A) Decreased risk of viral contamination
- B) Decreased risk of inhibitor development
- C) Increased efficacy
- D) Easier administration
- E) Decreased cost

4-Which of the following is not an appropriate choice for the acute treatment of a patient with hemophilia-A who is bleeding and has a high titer inhibitor?

- A) Cyclophosphamide
- B) Factor VIIa concentrate
- C) PCCs
- D) Porcine factor VIII
- E) aPCCs

5-When counseling a patient on potential side effects of desmopressin, you should include:

- A) Facial flushing
- B) Water retention
- C) Headache
- D) Seizures
- E) All of the above

6-Which of the following is least likely to occur in a patient with type 1 von Willebrand disease?

- A) Bleeding after dental extraction
- B) Menorrhagia
- C) Postoperative bleeding
- D) Nosebleed
- E) Joint hemorrhage

7-A patient with type 2N von Willebrand disease is receiving a plasma derived von Willebrand factor containing product. You can monitor all of the following, for efficacy except:

- A) von Willebrand antigen
- B) von Willebrand activity (ristocetin cofactor)
- C) Prothrombin time
- D) Factor VIII activity
- E) Symptoms

8- Which of the following is the least likely to occur in a patient with mild factor VIII deficiency?

- A) Bleeding after dental extraction
- B Spontaneous joint hemorrhage
- C) Bleeding after tonsillectomy
- D) Easy bruising
- E) Bleeding after trauma

9-Which laboratory tests can aid in the diagnosis of disseminated intravascular coagulation?

- A) Fibrinogen
- B) D-dimer
- C) Bleeding time
- D) A and B
- E) A and C

10-A patient presents with septic shock and disseminated intravascular coagulation from bacterial sepsis. Which of the following agents is most likely to have the greatest impact on the patient's outcome?

- A) Activated protein C
- B) Antithrombin
- C) Heparin
- D) Antibiotics
- E) Fresh frozen plasma

11-The following are possible etiologies for vitamin K deficiency:

- A) Age <1 month
- B) Acute diarrhea
- C) Cystic fibrosis
- D) A and B
- E) A and C

12-The standard of care for the prevention of hemorrhagic disease of the newborn in the United States is:

- A) Subcutaneous phytonadione
- B) Intramuscular phytonadione
- C) Oral phytonadione
- D) Intramuscular menadione
- E) Oral menadiol

13-All of the following are possible methods of viral inactivation for plasma derived factor replacement products except:

- A) Recombinant technology
- B) Solvent detergent
- C) Dry heat
- D) Pasteurization
- E) Monoclonal antibody

14-Which common laboratory test is abnormal in patients with hemophilia?

- A) Bleeding time
- B) Thrombin time
- C) Activated partial thromboplastin time (aPTT)
- D) Prothrombin time (PT)
- E) Platelet count

15-Which of the following is a false statement?

- A) Desmopressin is frequently used for patients with von Willebrand disease
- B) Anti-inhibitor coagulant complex (Feiba VH Immuno) can be effective in patients with factor VIII inhibitors
- C) Recombinant antihemophilic factor concentrate (Bioclata) is a plasma-derived factor IX product
- D) Heat-treated anti-inhibitor coagulant complex (Autoplex T) is neither a recombinant nor a monoclonal product
- E) The dose of nonacog alfa (BeneFix) would be higher than a dose of factor IX concentrate (Mononine) to treat the same patient

16-Which of the following statement is incorrect?

- A) Sick cell disease is a hereditary disorder involving abnormal hemoglobin.

- B) Patients with sickle cell trait usually are asymptomatic but can become symptomatic in extreme conditions.
- C) Sickle cell disease is only seen in those with African ancestry.
- D) The primary clinical manifestations of sickle cell disease are hemolysis and vaso-occlusion.
- E) Patients with fetal hemoglobin 20% or higher generally have a milder disease.

17-Patients with sickle cell anemia have increased risk of the following infection:

- A) Streptococcus pneumoniae
- B) Candida species
- C) Aspergillus species
- D) Pseudomonas species
- E) Enterobacter species

18-Prevention of pneumococcal infection in sickle cell disease includes

- A) Influenzae vaccine annually starting at age 6 months
- B) Haemophilus influenzae vaccine (Hib) starting at age 2 months
- C) Tetanus toxoid every 10 years
- D) 23-valent pneumococcal polysaccharide vaccine, 7-valent pneumococcal conjugated vaccine, and oral penicillin
- E) Meningococcal vaccine

19-The appropriate penicillin prophylaxis regimen is

- A) Penicillin 125 mg twice daily by mouth from 5 years of age to adolescent
- B) Penicillin 125 mg once a day by mouth begin at diagnosis until 5 years of age
- C) Penicillin 125 mg twice a day by mouth beginning at diagnosis until 3 years of age, then 250 mg twice daily until age 5
- D) Penicillin 125 mg twice a day by mouth until first dose of pneumococcal vaccine
- E) Penicillin 250 mg twice a day by mouth beginning at diagnosis until first dose of pneumococcal vaccine then once daily

20-Hydroxyurea is useful in management of sickle cell disease because

- A) It is a chemotherapeutic agent.
- B) It increases fetal hemoglobin production.
- C) It suppresses bone marrow production of sickle hemoglobin.
- D) It inhibits the cation transport in red blood cell membrane.
- E) It has the potential of cure the disease.

21-Which of the following statements is correct?

- A) Hydroxyurea is useful in the management of sickle cell disease because the agent is efficacious in reducing pain crisis and has no toxicities.
- B) Hydroxyurea is preferred over butyrate because of its sustained effect on fetal hemoglobin and lack of side effects with long-term use.

- C) Hydroxyurea reduces painful crisis but close monitoring is needed because of its effect on the bone marrow.
- D) Chronic transfusion is the therapy of choice to increase fetal hemoglobin.
- E) Penicillin prophylaxis can be discontinued once fetal hemoglobin inducer is initiated.

22-The appropriate management of sickle cell patients presented with fever includes the following except:

- A) Cefotaxime or ceftriaxone \pm vancomycin
- B) Ibuprofen or Tylenol for fever
- C) Fluid
- D) Frequent monitoring
- E) Pneumococcal vaccine

23-The primary indication for chronic transfusion program is

- A) Prevention of infection
- B) Prevention of organ damage
- C) Lack of fetal hemoglobin response to hydroxyurea
- D) Bone marrow suppression secondary to hydroxyurea
- E) Prevention of stroke

24-Patients admitted with signs and symptoms of acute chest syndrome should

- A) Avoid narcotic analgesics because those agents may suppress ventilation
- B) Receive twice maintenance fluid to prevent dehydration from hyperventilation
- C) Not receive bronchodilators because those agents cause excessive relaxation of airway leading to collapse of the airway
- D) Receive appropriate pain management, oxygen, balanced fluid, and antimicrobial agent
- E) Be given corticosteroids because the agents reduce hospital stay, need for transfusions, and supportive care and readmission

25-The most common cause for aplastic crisis is

- A) Pneumococcal infection
- B) ASPEN syndrome occurred after partial exchange transfusion in patients with priapism
- C) Parvovirus B19
- D) Sequestration of red blood cells in the spleen
- E) Splenectomy

26-Which of the followings is true in regard to the management of vaso-occlusive pain crisis?

- A) Hydration and aggressive analgesics are the primary treatment. Analgesic therapy should be individualized.
- B) Narcotic analgesics should be minimally used because patients can become addicted to those agents.
- C) Patients who require narcotic analgesics more than 24 hours are drug-seeking.

- D) All patients with pain crisis should be hospitalized.
- E) Fluid restriction should be initiated to prevent fluid overload.

27-Analgesic choices for sickle cell patients with mild to moderate pain include the following except:

- A) Nonsteroidal antiinflammatory drugs (NSAIDS)
- B) Acetaminophen
- C) Narcotic analgesics
- D) Combination of NSAIDS and narcotic analgesics
- E) Intramuscular meperidine

28-Analgesic choices for sickle cell patients with severe pain include the followings except:

- A) Morphine
- B) Hydromorphone
- C) Fentanyl
- D) Acetaminophen
- E) Methadone

29-Patient-controlled analgesic (PCA) is useful in management for sickle cell pain crisis because

- A) It limits the allowable amount that can be delivered to the patient; therefore, avoiding confrontations with the patient.
- B) This method of delivery resulted in increased duration of action.
- C) Intramuscular administration of narcotic agents should be avoided, especially for young children.
- D) It gives the patient control over the analgesic therapy.
- E) It minimize addition potential.

30-Newborn screening can be cost-effective.

- A) True
- B) False

31-Epidemiologic data suggest that the drug-induced hematologic disorder which causes the greatest number of deaths is:

- A) aplastic anemia
- B) thrombocytopenia
- C) agranulocytosis
- D) hemolytic anemia
- E) megaloblastic anemia

32-Chloramphenicol is thought to cause aplastic anemia through the following mechanism(s):

- A) dose-dependent

- B) idiosyncratic
- C) metabolite-induced immune reaction
- D) a and b
- E) a and c

33-The major cause of mortality among patients with aplastic anemia is:

- A) bleeding
- B) thrombosis
- C) embolism
- D) infection
- E) hypoxia

34-The treatment regimen that has yet to demonstrate improvement in survival from drug-induced aplastic anemia is:

- A) granulocyte colony-stimulating factor
- B) hematopoietic stem cell transplantation
- C) combined antithymocyte globulin, glucocorticoids, and cyclosporine
- D) antithymocyte globulin monotherapy

35-All of the following medications have been associated with immune-mediated drug-induced agranulocytosis except:

- A) penicillin
- B) ticlopidine
- C) quinidine
- D) propylthiouracil
- E) methimazole

36-Relative to other antipsychotic medications, what is the incidence of clozapine induced agranulocytosis?

- A) same incidence
- B) 2-fold higher
- C) 10-fold higher
- D) 10-fold lower
- E) 100-fold higher

37-Which of the following statements are true regarding penicillin-induced agranulocytosis?

- A) Penicillin-induced agranulocytosis is likely caused by several mechanisms.
- B) A patient should never be rechallenged after developing agranulocytosis from penicillins.
- C) It is often possible to successfully treat patients with lower doses of penicillin even after they have experienced penicillin-induced agranulocytosis.
- D) a and b

E) a and c

38-A hereditary condition in which there is a deficiency in the enzyme glucose-6-phosphate dehydrogenase (G6PD), which in turn causes an abnormal reaction to some drugs is:

- A) immune hemolytic anemia
- B) oxidative cytopenic neutropenia
- C) immune agranulocytosis
- D) oxidative hemolytic anemia
- E) immune thrombocytopenia

39-All of the following statements regarding drug-induced oxidative hemolytic anemia are true except:

- A) Some patients with the G6PD deficiency have also been observed to experience the reaction after ingesting fava beans.
- B) The reaction can occur at doses below prescribed quantities.
- C) The reaction has been observed in breast-fed child whose mother was using a medication known to cause hemolytic anemia.
- D) The disorder is most prevalent in populations of African or Mediterranean descent.
- E) Most cases of oxidative hemolytic anemia are severe and require extensive management for their resolution.

40-Methyldopa is known to cause drug-induced immune hemolytic anemia. Regarding the Coombs test as a monitoring tool to detect the disorder in a patient beginning methyldopa therapy, the following statement is true:

- A) The Coombs test should be used routinely to diagnose immune hemolytic anemia so the patient's therapy can be changed before the condition becomes severe.
- B) The Coombs test has not been shown to react when patients are experiencing immune hemolytic anemia secondary to methyldopa use.
- C) The Coombs test becomes positive over time for a proportion of methyldopa users, however only a small percentage of patients develop hemolytic anemia, rendering many false positives.
- D) The Coombs test produces too many false negatives (patients have immune hemolytic anemia that is not detected) to be useful as a tool in the diagnosis of methyldopa-induced immune hemolytic anemia.

41-The medications phenytoin, primidone, cotrimoxazole, and phenobarbital most likely cause megaloblastic anemia because of their interference with the normal metabolism/catabolism of:

- A) riboflavin
- B) iron
- C) niacin
- D) cyanocobalamin

E) folic acid

42-Which regimen(s) should be considered for managing a patient experiencing heparin-induced thrombocytopenia with or without thrombosis?

- A) argatroban
- B) aspirin
- C) enoxaparin
- D) warfarin monotherapy
- E) c and d

43-After observing a 10% reduction in platelet counts 3 days following the initiation of heparin therapy in a patient with no apparent exposure to heparin in the past, the proper course of action is to:

- A) Discontinue the therapy at once because the patient is experiencing heparin-induced thrombocytopenia.
- B) Discontinue the therapy at once and initiate argatroban therapy for thrombosis prophylaxis.
- C) Continue the therapy until a more profound reduction in platelet count is observed at a later date in the therapy.
- D) Continue the therapy with the addition of argatroban therapy for thrombosis prophylaxis.

44-Which of the following is not a known mechanism of drug-induced thrombocytopenia ?

- A) direct toxicity
- B) enzyme deficiency
- C) hapten-type immune reaction
- D) innocent bystander-type immune reaction

45-Which disease states require particular vigilance in monitoring for drug-induced hematologic disorders, since multiple medications used in management of the disorder have been associated with such reactions?

- A) rheumatoid arthritis
- B) seizure disorders
- C) infectious diseases
- D) diabetes
- E) all of the above

COAGULATION DISORDERS ANSWERS

- 1-D) Renal toxicity
- 2-B) 1,750 units
- 3-A) Decreased risk of viral contamination
- 4-A) Cyclophosphamide
- 5-E) All of the above
- 6-E) Joint hemorrhage
- 7-C) Prothrombin time
- 8-B) Spontaneous joint hemorrhage
- 9-D) A and B
- 10-D) Antibiotics
- 11-E) A and C
- 12-B) Intramuscular phytonadione
- 13-A) Recombinant technology
- 14-C) Activated partial thromboplastin time (aPTT)
- 15-C) Recombinant antihemophilic factor concentrate (Bioclote) is a plasma-derived factor IX product
- 16-C) Sickle cell disease is only seen in those with African ancestry.
- 17-A) Streptococcus pneumonia
- 18-D) 23-valent pneumococcal polysaccharide vaccine, 7-valent pneumococcal conjugated vaccine, and oral penicillin

- 19-C)** Penicillin 125 mg twice a day by mouth beginning at diagnosis until 3 years of age, then 250 mg twice daily until age 5
- 20-B)** It increases fetal hemoglobin production.
- 21-C)** Hydroxyurea reduces painful crisis but close monitoring is needed because of its effect on the bone marrow.
- 22-E)** Pneumococcal vaccine
- 23-E)** Prevention of stroke
- 24-D)** Receive appropriate pain management, oxygen, balanced fluid, and antimicrobial agents
- 25-C)** Parvovirus B19
- 26-A)** Hydration and aggressive analgesics are the primary treatment. Analgesic therapy should be individualized.
- 27-E)** Intramuscular meperidine
- 28-D)** Acetaminophen
- 29-D)** It gives the patient control over the analgesic therapy.
- 30-A)** True
- 31-A)** aplastic anemia
- 32-D)** a and b
- 33-D)** infection
- 34-A)** granulocyte colony-stimulating factor
- 35-B)** ticlopidine
- 36-C)** 10-fold higher
- 37-E)** a and c
- 38-D)** oxidative hemolytic anemia

40-C) The Coombs test becomes positive over time for a proportion of methyldopa users, however only a small percentage of patients develop hemolytic anemia, rendering many false positives.

41-E) folic acid

42-A) argatroban

43-C) Continue the therapy until a more profound reduction in platelet count is observed at a later date in the therapy.

44-B) enzyme deficiency

45-E) all of the above

9

Sodium and water homeostasis Pharmacotherapy

Sodium and Water Homeostasis Pharmacotherapy questions

1-The body's homeostatic mechanisms for maintaining sodium and water balance control what aspects of the body?

- A) Blood volume and plasma osmolality
- B) Serum sodium concentration and total body water
- C) Blood volume and serum sodium concentration
- D) Total body water and plasma osmolality
- E) Extracellular fluid volume and serum sodium concentration

2-A.S. is a 56-year-old woman who presents with nausea, malaise, and disorientation of 2 days duration. Her laboratory examination results include the following: serum sodium, 120 mEq/L; serum glucose, 110 mg/dL; serum BUN, 14 mg/dL; serum cholesterol, 240 mg/dL; and serum triglycerides, 175 mg/dL. What is this patient's estimated plasma osmolality?

- A) 131 mOsm/kg
- B) 185 mOsm/kg
- C) 251 mOsm/kg
- D) 280 mOsm/kg
- E) 355 mOsm/kg

3-Both plasma osmolality and effective circulating volume influence AVP release from the posterior pituitary, thereby influencing the reabsorption of water in the collecting ducts. What direction of change in these two variables stimulates increased release of AVP?

- A) Decreased osmolality and decreased effective circulating volume
- B) Increased osmolality and increased effective circulating volume
- C) Decreased osmolality and increased effective circulating volume
- D) Increased osmolality and decreased effective circulating volume

4-C.D. is a 64-year-old man with trigeminal neuralgia who has been diagnosed with carbamazepine-induced syndrome of inappropriate antidiuretic hormone (SIADH). What clinical and laboratory findings would be consistent with this diagnosis?

- A) Clinical hypovolemia
- B) Clinical hypervolemia
- C) Maximally dilute urine
- D) Urine sodium concentration >20 mEq/L
- E) Urine sodium concentration <20 mEq/L

5-R.C. is a 72-year-old woman who was started on hydrochlorothiazide for the treatment of hypertension 8 days ago. She presents today with thiazide-induced hyponatremia. What are the most likely characteristics of this patient on presentation?

- A) Hypovolemia
- B) Increased plasma osmolality
- C) Moderate to severe neurologic symptoms

- D) Urine osmolality of 100 mOsm/kg
- E) Serum sodium concentration <20 mEq/L

6-What are the usual signs and symptoms of hyponatremia?

- A) Muscular weakness
- B) Restlessness
- C) Diarrhea
- D) Cardiac arrhythmias
- E) Bronchospasm

7-K.N. is a 54-year-old woman with fluoxetine-induced SIADH. Her serum sodium concentration is 118 mEq/L, and she is experiencing moderate to severe symptoms.

Appropriate treatment of this patient might include what steps?

- A) Fluid restriction alone
- B) Fluid restriction plus demeclocycline administration
- C) 0.45% sodium chloride infusion
- D) 0.9% sodium chloride infusion
- E) 3% sodium chloride infusion

8-L.C. is an 85-year-old, 55-kg, 5 ft–4 in woman, who presented with moderate to severe symptoms because of a relatively abruptly developing hypovolemic hypotonic hyponatremia. Her serum sodium concentration is 118 mEq/L. **Approximately how many liters of 0.9% sodium chloride would be required to increase this patient's serum by 5%?**

- A) 0.5
- B) 0.8
- C) 1.4
- D) 4.2
- E) 4.7

9-What are the likely causes of an isovolemic hypernatremia?

- A) Ingestion of large amounts of sodium
- B) Diabetes insipidus
- C) Prolonged diarrhea
- D) Hyperaldosteronism
- E) High fever without access to fluids

10-Signs and symptoms of hyperkalemia are typically associated with what organ system?

- A) Cardiovascular
- B) Gastrointestinal
- C) Nervous
- D) Pulmonary

E) Urinary

11-Too rapid correction of chronic hypernatremia can cause brainthat can result in seizures, neurologic damage, and potentially death.

- A) Swelling
- B) Dehydration
- C) Exsanguination
- D) Degeneration

12-J.S. is a 36-year-old man whose bipolar disorder has been treated with lithium for several years. He now reports that he has had to urinate more frequently than normal over the past several weeks. This has been getting progressively worse and has been accompanied by increasing thirst. The patient's serum sodium is 146 mEq/L and his 24-hour urine output is 5 liters. What is an appropriate treatment of this patient's condition?

- A) Intranasal desmopressin acetate 10 mcg once daily
- B) Intravenous D5W at 48 mL/h over the next 24 hours
- C) Water restriction to <1,000 mL per day
- D) Demeclocycline 300 mg three times daily
- E) Amiloride 5 mg daily

13-What fluid and electrolyte abnormality is characteristic of patients with severe hyperglycemia?

- A) Hypovolemic hypotonic hyponatremia
- B) Hypervolemic hypotonic hyponatremia
- C) Isovolemic hypotonic hyponatremia
- D) Hypovolemic hypernatremia
- E) Hypervolemic hypernatremia

14-Which diuretic has the greatest ability to increase the fractional excretion of sodium?

- A) Hydrochlorothiazide
- B) Furosemide
- C) Metolazone
- D) Spironolactone
- E) Acetazolamide

15-J.V. is a 68-year-old man with severe congestive heart failure who currently lives at home with his wife. His GFR is 60 mL/min. J.V.'s physician has progressively increased his dose of furosemide to 120 mg every 6 hours to control his edema, without success. What is the most appropriate change to this patient's diuretic therapy at this point?

- A) Increasing the dose of furosemide
- B) Switching to a continuous infusion of furosemide

- C) Adding metolazone
- D) Adding torsemide

16-A malignancy associated with hypercalcemia from PTH-related protein is:

- A) Lung
- B) Prostate
- C) Leukemia
- D) Cervical
- E) Multiple myeloma

17-JK is a 68-year-old female with a serum total calcium of 13.1 mg/dL (3.28 mmol/L) secondary to primary hyperparathyroidism. She presents with complaints of dyspnea, weakness, bradycardia and polyuria. Which of the following are symptoms most likely associated with hypercalcemia?

- A) Dyspnea
- B) Weakness
- C) Dyspnea and polyuria
- D) Bradycardia
- E) Weakness and polyuria

18-LP is a 56-year-old male with stage 4 prostate cancer. He presents to the emergency department with profound weakness, abdominal pain with nausea and vomiting, and profound dehydration. Laboratory analysis reveals: sodium 135 mEq/L (135 mmol/L), potassium 4.5 mEq/L (4.5 mmol/L), chloride 101 mEq/L (101 mmol/L), bicarbonate 24 mEq/L (24 mmol/L), serum creatinine 1.0 mg/dL (88 mol/L) and BUN 17 mg/dL (6.1 mmol/L), total calcium 14.2 mg/dL (3.55 mmol/L).

Which of the following is the most appropriate initial therapy in LP?

- A) Hemodialysis with a low calcium bath
- B) High-dose loop diuretic
- C) Saline hydration
- D) Intravenous bisphosphonate
- E) Subcutaneous calcitonin

19-PM is a 65-year-old female with her first episode of asymptomatic hypercalcemia secondary to metastatic breast cancer with a serum calcium of 12.2 mg/dL (3.05 mmol/L). The decision is made to initiate therapy with an agent that inhibits bone resorption. Based on the efficacy and toxicity profile of the following agents, which would be the most appropriate to initiate in PM?

- A) Glucocorticoids
- B) Zolendronate
- C) Gallium nitrate
- D) Mithramycin

20-Which of the following would be the treatment of choice in a 75-year-old female with osteopenia and chronic hypercalciuria with calcium oxalate nephrolithiasis $\times 2$?

- A) Thiazide diuretic
- B) Calcium-restricted diet
- C) Lithotripsy
- D) Calcium-binding exchange resin

21-A pharmacist counseling a patient on cinacalcet-induced hypocalcemia should include which of the following?

- A) Itching
- B) Diarrhea
- C) Paresthesias
- D) Polyuria

22-The most appropriate therapy for hypocalcemia in a patient with advanced chronic kidney disease would be:

- A) Ergocalciferol
- B) Calcium carbonate
- C) Calcium acetate
- D) Calcitriol

23-KP is a 64-year-old male who is status post a parathyroidectomy who develops hungry bone syndrome with seizures and tetany postoperatively. His ionized calcium is 4.0 mg/dL (1.00 mmol/L). Which of the following is the best initial management?

- A) Calcium chloride 1 g IV
- B) Calcium citrate 500 mg IV
- C) Calcium gluconate 2 g IV
- D) Lorazepam 1 mg IV

24-KM is a 65-year-old patient with chronic kidney disease stage 4 (estimated GFR 35 mL/min/1.73m² [0.34 mL/min/m²]). Her present medications include lisinopril 40 mg qd, furosemide 80 mg BID, and atenolol 50 mg qd. She is scheduled to have a colonoscopy and she is advised to purchase a sodium phosphate bowel preparation (Fleet Phospho-Soda). All but which of the following put her at increased risk for phosphate nephropathy or acute renal failure?

- A) Chronic kidney disease
- B) Lisinopril therapy
- C) Atenolol therapy
- D) Diuretic therapy

25- JM is a 65-year-old male on hemodialysis for 3 years. He has been on sevelamer carbonate 800 mg tid and cinacalcet 90 mg qd. He presents to clinic with tingling in his hands and around his mouth. Laboratory data include: corrected calcium 7.2 mg/dL (1.80

mmol/L), phosphorus 6.8 mg/dL (2.20 mmol/L), and calcium phosphorus product 49 mg²/dL² (4.0 mmol²/L²).

The most likely cause of his tingling is:

- A) Hyperphosphatemia
- B) Hypophosphatemia
- C) Hypercalcemia
- D) Hypocalcemia

26-Which of the following would be the best choice for phosphate binder therapy in JM based on the above data?

- A) Aluminum hydroxide
- B) Calcium carbonate
- C) Lanthanum carbonate
- D) Sevelamer

27-A patient presents to the emergency department obtunded and nonresponsive. A family member describes the patient as a poorly controlled diabetic. Laboratory data reveal: serum glucose 780 mg/dL (43.3 mmol/L), potassium 5.2 mEq/dL (5.2 mmol/L), phosphorus 3.2 mg/dL (1.03 mmol/L), and total corrected calcium 8.3 mg/dL (2.08 mmol/L). The patient is initiated on dextrose and insulin. Two hours later his serum phosphorus is 0.8 mg/dL (0.26 mmol/L). Which of the following best describes the pathogenesis of his hypophosphotemia?

- A) Increased renal excretion
- B) Extracellular fluid dilution
- C) Redistribution
- D) Binding to serum calcium

28-Myocardial dysfunction related to hypophosphatemia is most likely caused by which of the following?

- A) Altered cardiac conduction
- B) Depletion of cardiac ATP stores
- C) Myocardial cell apoptosis
- D) All of the above

29-Based on the patient presentation and laboratory data in question #12, what would be the most appropriate phosphorus supplement to initiate?

- A) Potassium phosphate IV
- B) Sodium phosphate IV
- C) Sodium phosphate PO
- D) Increase phosphorus content in his meals

30-NH is an 85-year-old hemodialysis patient who develops hypophosphatemia (serum phosphorus 1.1 mg/dL [0.36 mmol/L]) secondary limited oral intake associated with

advanced dementia. His other laboratory data include: serum potassium 6.2 mEq/L (6.2 mmol/L) and total corrected calcium 8.5 mg/dL (2.13 mmol/L).

Which of the following is the best therapy to initiate in NH?

- A) Neutra-Phos-K
- B) K-Phos Neutral
- C) Neutra-Phos
- D) Potassium phosphate in his dialysis line

31-Potassium is best classified as a:

- A) Intracellular ion
- B) Extracellular ion
- C) Interstitial ion
- D) Zwitterion

32-Which of the following agents causes an exchange of sodium and potassium in the intestines?

- A) Epinephrine
- B) Bicarbonate
- C) Spironolactone
- D) Sodium polystyrene sulfonate

33-Which of the following hormones does not affect potassium metabolism?

- A) Aldosterone
- B) Epinephrine
- C) Thyrotropin
- D) Insulin

34-Which of the following drugs does not contribute to the development of hypokalemia?

- A) Hydrochlorothiazide
- B) Amiloride
- C) Amphotericin-B
- D) Sorbitol

35-Which of the following statements is true?

- A) Nausea and vomiting are the earliest signs and symptoms of hypokalemia.
- B) Hypophosphatemia may be an important cause of hypokalemia.
- C) The body does not have an effective storage mechanism for potassium.
- D) Beta-blockers are an important cause of hypokalemia

36-Intravenous potassium replacement should be used in which of the following conditions?

- A) Serum potassium concentration of 3.0 mEq/L (3.0 mmol/L)

- B) Thrombophlebitis
- C) Continuous nausea and vomiting
- D) Hospitalized patients because they have peripheral IV access

37-All of the following are appropriate first line therapy for severe hyperkalemia except:

- A) Albuterol
- B) IV regular insulin
- C) IV bicarbonate
- D) IV furosemide

38-Immediate first line therapy for hyperkalemia associated with EKG changes is which of the following?

- A) Furosemide 40 mg PO
- B) Calcium gluconate 1 g IV
- C) Sodium bicarbonate 50 mEq (50 mmol) IV

39-Which of the following therapies does not result in potassium exchange and removal from the body?

- A) Dialysis
- B) Sodium polystyrene sulfonate
- C) Insulin
- D) All of the above

40-Which of the following drugs will result in increased renal excretion of potassium?

- A) Furosemide
- B) Insulin
- C) Sodium bicarbonate
- D) Albuterol

41-Which of the following statements is false?

- A) Magnesium is an important co-factor for ATP dependent systems.
- B) Magnesium homeostasis is maintained primarily by the liver.
- C) Disorders of magnesium balance are manifested as neurological or cardiovascular dysfunction.
- D) Magnesium is primarily found in bone.

42-Chvostek's sign and Trousseau's sign are common signs of which electrolyte disorder?

- A) Hypokalemia
- B) Hypomagnesemia
- C) Hyperkalemia
- D) Hypermagnesemia

43-Which of the following are limitations of magnesium replacement therapy?

- A) Intramuscular therapy is often painful and intolerable to the patient.
- B) Oral therapy can result in a high incidence of diarrhea.
- C) Intravenous infusion can result in flushing and hypotension.
- D) All of the above

44-Common causes of hypermagnesemia include all of the following except:

- A) Chronic kidney disease
- B) Parenteral nutrition
- C) Magnesium-containing laxative abuse
- D) Digitalis treatment

45-What is the preferred treatment of hypermagnesemia in patients with adequate renal function?

- A) Saline bolus followed by furosemide
- B) Calcium carbonate
- C) Aluminum hydroxide
- D) Sodium bicarbonate

46-Which of the following medications is not a cause of high anion gap metabolic acidosis?

- A) Propofol
- B) Captopril
- C) Metformin
- D) Lorazepam
- E) Isoniazid

47-Which of the following statements is false regarding respiratory acidosis?

- A) Respiratory acidosis can occur at high altitudes.
- B) Respiratory acidosis can result from opioids.
- C) Respiratory acidosis can occur from head trauma.
- D) Respiratory acidosis is a primary decrease in PCO₂ resulting in an increase in pH.
- E) None of the above are false.

48-Which of the following is a cause of normal anion gap metabolic acidosis?

- A) Diabetic ketoacidosis
- B) Ethylene glycol intoxication
- C) Diarrhea-induced metabolic acidosis
- D) Alcoholic ketolactic acidosis
- E) Renal failure

49-Which of the following is false regarding lactic acidosis?

- A) Only occurs when the serum lactate concentrations exceed 5 mEq/L (5 mmol/L).
- B) Propofol may cause lactic acidosis through the uncoupling of oxidative phosphorylation by its lipid vehicle.
- C) Nucleoside-analogue reverse transcriptase-induced lactic acidosis is caused by the inhibition of enzyme DNA polymerase gamma.
- D) Pentobarbitol may cause lactic acidosis primarily through the accumulation of propylene glycol
- E) Liver disease is a risk factor for the development of metformin-induced lactic acidosis.

50-Which of the following signs and symptoms are not associated with severe metabolic alkalosis?

- A) Hypokalemia
- B) Nausea and vomiting
- C) Neuromuscular irritability
- D) Cardiac arrhythmias
- E) Hyperventilation.

Sodium and Water Homeostasis answers

- 1-A) Blood volume and plasma osmolality
- 2-C) 251 mOsm/kg
- 3-D) Increased osmolality and decreased effective circulating volume
- 4-D) Urine sodium concentration >20 mEq/L
- 5-A) Hypovolemia
- 6-B) Restlessness
- 7-E) 3% sodium chloride infusion
- 8-D) 4.2
- 9-B) Diabetes insipidus
- 10-C) Nervous
- 11-A) Swelling
- 12-E) Amiloride 5 mg daily
- 13-D) Hypovolemic hypernatremia
- 14-B) Furosemide
- 15-C) Adding metolazone
- 16-A) Lung
- 17-E) Weakness and polyuria
- 18-C) Saline hydration
- 19-B) Zolendronate
- 20-A) Thiazide diuretic

- 21-C) Paresthesias
- 22-D) Calcitriol
- 23-C) Calcium gluconate 2 g IV
- 24-C) Atenolol therapy
- 25-D) Hypocalcemia
- 26-B) Calcium carbonate
- 27-C) Redistribution
- 28-B) Depletion of cardiac ATP stores
- 29-B) Sodium phosphate IV
- 30-B) K-Phos Neutral
- 31-A) Intracellular ion
- 32-D) Sodium polystyrene sulfonate
- 33-C) Thyrotropin
- 34-B) Amiloride
- 35-C) The body does not have an effective storage mechanism for potassium.
- 36-C) Continuous nausea and vomiting
- 37-A) Albuterol
- 38-B) Calcium gluconate 1 g IV
- 39-C) Insulin
- 40-A) Furosemide
- 41-B) Magnesium homeostasis is maintained primarily by the liver.
- 42-B) Hypomagnesemia

- 43-D) All of the above
- 44-D) Digitalis treatment
- 45-A) Saline bolus followed by furosemide
- 46-B) Captopril
- 47-A) Respiratory acidosis can occur at high altitudes.
- 48-C) Diarrhea-induced metabolic acidosis
- 49-A) Only occurs when the serum lactate concentrations exceed 5 mEq/L (5 mmol/L).
- 50-E) Hyperventilation

10

Cancer Pharmacotherapy

CANCER PHARMACOTHERAPY QUESTIONS

1-In the multistep model of carcinogenesis, which of the following terms is reversible and a target for cancer prevention strategies?

- A) Initiation
- B) Promotion
- C) Conversion
- D) Progression

2-Which of the following terms refer to a gene that can help prevent abnormal cellular growth?

- A) Protooncogene
- B) Oncogene
- C) Tumor suppressor gene
- D) Cyclin-dependent kinase

3-J.Z. is a 50-year-old African American who is undergoing a “midlife health crisis.” His favorite uncle recently died of cancer after a long and painful illness. J.Z. is determined to turn his unhealthy lifestyle around to improve his chances for long-term good health. He gave up smoking on the day of his uncle’s funeral.

All of the following interventions are recommended for a male of J.Z.’s age and racial background except:

- A) Colonoscopy every 5 years
- B) Annual PSA testing
- C) Annual digital rectal e
- D) FOBT (or FIT) every 5 years

4-M.M. is a 45-year-old white man who was recently diagnosed with colon cancer. Further workup determined the tumor to be T3N2M1 in "TNM" staging. He has begun systemic treatment with a chemotherapy regimen including 5-fluorouracil, leucovorin, and oxaliplatin. Today in clinic he complains of some of the most common side effects of this regimen, and of being "too tired to do more than watch TV."Based on M.M.’s TNM stage, which of the following best describes his cancer?

- A) Carcinoma in situ
- B) Stage I disease
- C) Stage IV disease
- D) None of the above

5-M.M. is a 45-year-old white man who was recently diagnosed with colon cancer. Further workup determined the tumor to be T3N2M1 in "TNM" staging. He has begun systemic treatment with a chemotherapy regimen including 5-fluorouracil, leucovorin, and

oxaliplatin. Today in clinic he complains of some of the most common side effects of this regimen, and of being "too tired to do more than watch TV." Leucovorin is folinic **acid and is included in M.M.'s chemotherapy regimen to:**

- A) Reduce the toxicity of the 5-fluorouracil
- B) Increase the cytotoxicity of the 5-fluorouracil
- C) Reduce the toxicity of the oxaliplatin
- D) Increase the cytotoxicity of the oxaliplatin

6-M.M. is a 45-year-old white man who was recently diagnosed with colon cancer. Further workup determined the tumor to be T3N2M1 in "TNM" staging. He has begun systemic treatment with a chemotherapy regimen including 5-fluorouracil, leucovorin, and oxaliplatin. Today in clinic he complains of some of the most common side effects of this regimen, and of being "too tired to do more than watch TV." The common toxicities of M.M.'s **chemotherapy regimen include:**

- A) Diarrhea, nephrotoxicity, and neuropathy
- B) Diarrhea and neuropathy
- C) Neuropathy and ototoxicity
- D) Nephropathy, ototoxicity, and diarrhea

7-M.M. is a 45-year-old white man who was recently diagnosed with colon cancer. Further workup determined the tumor to be T3N2M1 in "TNM" staging. He has begun systemic treatment with a chemotherapy regimen including 5-fluorouracil, leucovorin, and oxaliplatin. Today in clinic he complains of some of the most common side effects of this regimen, and of being "too tired to do more than watch TV." M.M.'s hemoglobin is 10 g/dL (100 g/L; 6.21 mmol/L) (normal 14–16 g/dL [140–160 g/L; 8.69–9.93 mmol/L]). After appropriate work-up he is started on an erythropoietic agent by guideline. M.M.'s hemoglobin is unchanged after 1 month of therapy and he remains symptomatic. **What is the appropriate intervention at this time?**

- A) Discontinue the erythropoietic agent
- B) Increase the dose of the erythropoietic agent
- C) Decrease the dose of chemotherapy
- D) Add granulocyte colony stimulating factor therapy

8-M.M. is a 45-year-old white man who was recently diagnosed with colon cancer. Further workup determined the tumor to be T3N2M1 in "TNM" staging. He has begun systemic treatment with a chemotherapy regimen including 5-fluorouracil, leucovorin, and oxaliplatin. Today in clinic he complains of some of the most common side effects of this regimen, and of being "too tired to do more than watch TV." M.M.'s absolute neutrophil count [ANC] dropped below 500 cells/mm³ ($0.5 \times 10^9/L$) during his last cycle of chemotherapy and he developed a clinically relevant fever. He did not have any other signs of infection during that time. He comes into clinic for his next cycle of chemotherapy with normal blood counts. **What intervention, if any, is recommended?**

- A) Begin filgrastim or pegfilgrastim therapy as secondary prophylaxis.

- B) Hold chemotherapy for one additional week.
- C) Begin prophylactic antibiotics against common pathogens.
- D) No intervention is required at this time.

9-Select the correct statement:

- A) Since all tumors arise from a single cell, all cells in a tumor mass are identical.
- B) Combination chemotherapy regimens are used to permit administration of maximum doses of each drug.
- C) Since chemotherapy is given systemically, it destroys tumor cells equally well in every part of the body.
- D) None of the above statements are correct.

10-L.Y. is scheduled to receive her first dose of a chemotherapy regimen containing the following agents: doxorubicin, methotrexate, and vinblastine. Her creatinine clearance is approximately 30 mL/min (0.50 mL/s) [estimated], and her bilirubin is 2.4 mg/dL (41 μ mol/L) (normal <1.2 mg/dL [20.5 μ mol/L]). Which of the following empiric dose modifications should be recommended for these three drugs, based on L.Y.'s pattern of organ function?

- A) Reduce doxorubicin and vinblastine doses by 50%; no change in methotrexate dose.
- B) Reduce the methotrexate dose by 50%; no change in doxorubicin and vinblastine dose
- C) Reduce doses of all agents by 50%.
- D) No chemotherapy doses should be given.

11-All of the following agents are believed to work through effects on topoisomerases enzymes except:

- A) Taxanes
- B) Anthracyclines
- C) Camptothecins
- D) Etoposide

12-P.M. is a 65-year old male diagnosed with stage IV with non-small-cell lung cancer about to receive carboplatin plus paclitaxel. The order is written as follows: carboplatin AUC 6. The patient has a calculated CrCl of 80 mL/min (1.33 mL/s) and a BSA of 2m². What dose of carboplatin should PM receive?

- A) 630 mg
- B) 1,260 mg
- C) 6 mg
- D) 12 mg

13-The suffix -ximab in rituximab indicates the antibody source was:

- A) Human
- B) Chimeric
- C) Mouse

D) Humanized

14-Which of the following medications causes profound lymphopenia necessitating prophylaxis for *Pneumocystis jirovecii* pneumonia?

- A) Ibritumomab tiuxetan
- B) Tositumomab
- C) Gemtuzumab ozogamicin
- D) Alemtuzumab

15-Which of the following statement about EGFR inhibitors is true?

- A) Monoclonal antibodies to EGFR work by preventing downstream signal transduction that occurs after receptor dimerization.
- B) Tyrosine kinase inhibitors of EGFR work by preventing dimerization of receptors and preventing signal transduction.
- C) The most frequent adverse event associated with these agents is related to the skin and the development of rash.
- D) The majority of adverse events are grade 3 or 4 myelosuppression requiring frequent monitoring of blood counts.

16-Which of the following are considered risk factors for developing breast cancer?

- A) Age, late menarche, early menopause.
- B) Hormone replacement therapy, early menarche, early menopause
- C) Age, hormone replacement therapy, first pregnancy after age 30.
- D) Hormone replacement therapy, first pregnancy after age 30, early menopause.
- E) Age, first pregnancy after age 30, early menopause.

17-Most women with breast cancer present with:

- A) A painful, large mass in the skin of the breast.
- B) A soft mass with pain associated with monthly periods.
- C) A painful, small mass deep in the muscle of the chest wall.
- D) A painless lump in the breast.
- E) A soft mass with nipple discharge.

18-LG is a woman with newly diagnosed breast cancer. Her tumor was 3 cm in size, with 5 positive lymph nodes upon axillary dissection, and she has no other sites of cancer spread. According to the TNM staging system for breast cancer what stage of breast cancer does LG have?

- A) Stage IIIC
- B) Stage IIA
- C) Stage IIB
- D) Stage IIIA
- E) Stage IIIB

19-When comparing breast conserving therapy (BCT) to a modified radical mastectomy, which of the following statements are true:

- A) Despite slightly higher local recurrence rates, BCT is associated with similar survival outcomes.
- B) BCT is associated with decreased local recurrence rates.
- C) A modified radical mastectomy is associated with improved survival.
- D) These procedures have similar local recurrence rates and survival.
- E) BCT is associated with increased local recurrence rates and decreased survival.

20-Which of the following adjuvant chemotherapy combinations is most appropriate for the treatment of early-stage breast cancer?

- A) Fluorouracil, doxorubicin, cyclophosphamide (FAC)
- B) Irinotecan, fluorouracil, leucovorin (IFL)
- C) Cyclophosphamide, doxorubicin, vincristine, prednisone (CHOP)
- D) Doxorubicin, paclitaxel (AT)
- E) Doxorubicin, ifosfamide (AI)

21-Which of the following adjuvant endocrine therapy regimens is most appropriate for a postmenopausal woman with early stage breast cancer?

- A) Anastrozole ? 5 years
- B) Letrozole ? 2 years
- C) Fulvestrant ? 2 years
- D) Tamoxifen ? 5 years
- E) Goserelin ? 5 years

22-MR is a 42 y.o. female with newly diagnosed inflammatory right breast cancer. What is the best option for primary therapy at this time?

- A) Surgery.
- B) Radiation.
- C) Tamoxifen.
- D) Docetaxel, doxorubicin, cyclophosphamide (TAC).
- E) Paclitaxel with concurrent radiation.

23-Which of the following stages of breast cancer are generally considered incurable?

- A) Stage 0
- B) Stage IIA
- C) Stage IIIA
- D) Stage IIIC
- E) Stage IV

24-Which of the following hormonal therapies is most appropriate for adjuvant treatment in a premenopausal woman?

- A) Anastrozole

- B) Letrozole
- C) Exemestane
- D) Tamoxifen
- E) Fulvestrant

25-SW is a 66 y.o. postmenopausal woman with newly diagnosed metastatic breast cancer to the liver (ER/PR positive; HER2-negative). This was found on routine blood work (elevated transaminases) and was confirmed by CT scan and biopsy. She is otherwise asymptomatic from her cancer and feels well. **Which of the following regimens would be best to treat her cancer at this time?**

- A) Letrozole
- B) Lapatinib
- C) Trastuzumab
- D) Paclitaxel
- E) Irinotecan

26-DB is a 35 y.o. premenopausal woman with newly diagnosed metastatic breast cancer (triple negative). She completed adjuvant chemotherapy (anthracycline- and taxane-containing regimen) for a locally advanced breast cancer approximately 7 months ago. She now has widespread lung metastases with shortness of breath and coughing at rest. **Which of the following regimens would be most likely to provide symptomatic relief for this patient at this time?**

- A) Letrozole
- B) Docetaxel with trastuzumab
- C) Capecitabine
- D) Ixabepilone with capecitabine
- E) Vinorelbine

27-LJ is a 43 y.o. woman with newly diagnosed breast cancer. Her tumor was 4 cm in size, with 6 positive lymph nodes upon axillary dissection, and she has no other sites of cancer. Her tumor is ER/PR negative, HER2 positive by FISH. **Which of the following regimens would be most appropriate to treat her early-stage breast cancer?**

- A) Doxorubicin + cyclophosphamide (AC) + paclitaxel + trastuzumab (PH)
- B) Fluorouracil, doxorubicin, cyclophosphamide (FAC)
- C) Doxorubicin + cyclophosphamide (AC) + paclitaxel (P)
- D) Docetaxel + trastuzumab (TH)
- E) Vinorelbine + trastuzumab (VH)

28-Which of the following statements accurately describes the molecular target of lapatinib?

- A) EGFR tyrosine kinase.
- B) EGFR and HER2 tyrosine kinase.
- C) HER2 extracellular domain.

- D) Aromatase enzyme.
- E) VEGF-A

29-CB is a 35y.o. woman with a known BRCA1 mutation. According to the American Cancer Society, **which of the following screening modalities would be recommended for her annually?**

- A) Mammogram and clinical breast exam.
- B) Mammogram alone.
- C) Breast MRI, mammogram, clinical breast exam.
- D) Breast MRI and clinical breast exam.
- E) Breast MRI alone.

30-According to the NSABP Tamoxifen Prevention Trial (P1), tamoxifen given for 5 years (compared to placebo) is associated with which of the following?

- A) Increased risk of endometrial cancer and gastrointestinal cancers.
- B) Increased risk of thromboembolism and endometrial cancer.
- C) Decreased risk of breast cancer and cataracts.
- D) Decreased risk of endometrial and breast cancer.
- E) Increased risk of thromboembolism and osteoporosis.

31-A 65 year-old healthy female has a father and paternal grandfather who were diagnosed with colon cancer. She is seeking advice so that she may reduce her personal risk of developing colon cancer. **Which of the following recommendations is most appropriate?**

- A) Maintain a healthy BMI; keep physically active; eat a balanced diet.
- B) Avoid tobacco use; take folic acid 1 mg oral supplement daily.
- C) Take a low dose of aspirin (81-160 mg) orally each day.
- D) Start postmenopausal oral hormone-replacement therapy.

32-Which of the following statements regarding regular consumption of NSAIDs and risk of colorectal cancer is true?

- A) Chronic regular NSAID consumption is associated with an 80% reduction in cancer risk.
- B) Cancer risk reduction for individuals without a prior history of adenoma is greatest with selective COX-2 inhibitors compared to non-selective COX inhibitors.
- C) Regular use of selective COX-2 inhibitors reduces incidence of colorectal adenoma recurrence and mortality associated with colorectal cancer.
- D) Regular use of aspirin or NSAIDs in average-risk individuals decreases relative risk of colorectal cancer by about 22%.

33-Hereditary nonpolyposis colorectal cancer (HNPCC) is associated with germline mutations in which genes?

- A) APC, P53
- B) MSH2, MLH1
- C) KRAS, BRAF

D) TGF β R2, SMAD-4

34-Which of the following colon cancer screening methods is most appropriate for a 55 year-old male that is willing to undergo preparative bowel cleansing?

- A) Colonoscopy
- B) Digital rectal exam
- C) Double-contrast barium enema
- D) Abdominal CT scan

35-A 62 year-old male is diagnosed with Stage IIB colon cancer after a mass was discovered during a work-up for abdominal pain and a positive FOBT. He underwent surgical resection of the mass and regional mesenteric lymph nodes. The tumor was poorly differentiated, KRAS wild-type, and showed evidence of lymphatic invasion. Which of the following statements regarding adjuvant chemotherapy for this individual is true? Adjuvant chemotherapy:

- A) is not administered for stage II disease; he should not receive additional treatment.
- B) should be offered because the patient has stage II disease and is older than 50 years of age.
- C) is not necessary because the tumor is KRAS wild-type.
- D) should be offered because the cancer is associated with several poor prognostic factors.

36-Which of the following adjuvant treatment regimens for an individual diagnosed with stage III rectal cancer is most appropriate? Post-operative:

- A) radiation therapy.
- B) radiation plus capecitabine and oxaliplatin chemotherapy.
- C) cetuximab plus irinotecan and capecitabine chemotherapy.
- D) bevacizumab plus infusional fluorouracil and leucovorin chemotherapy.

37-A 67 year-old female is diagnosed with stage III cancer of the colon. Her CEA level at time of diagnosis was WNL. Other laboratory test results for CBC, AST, ALT, LDH, and total bilirubin were also WNL. She underwent a surgical resection of her primary tumor followed by adjuvant capecitabine chemotherapy for a total of 6 months following resection. Which of the following tests is most appropriate to monitor regularly to detect recurrent disease?

- A) Serum CEA
- B) CBC and Panel 7
- C) PET scan
- D) Abdominal CT scan

38-A 66 year-old male is scheduled to receive treatment for newly diagnosed, recurrent metastatic colon cancer. He was originally diagnosed at age 60 and underwent surgery for stage I disease. He has type 2 DM and hypertension that are well-controlled with medication. Four weeks ago he underwent triple-vessel coronary artery bypass surgery

following an AMI. His performance status is ECOG 2. **The most appropriate rationale for a decision to exclude bevacizumab from his initial treatment regimen is the patient's history of:**

- A) type 2 diabetes mellitus.
- B) hypertension.
- C) recent AMI and CABG surgery.
- D) advanced age and ECOG performance status 2.

39-A 60 year-old female was diagnosed with colon cancer that is metastatic to her liver and femur. The tumor is positive for EGFR overexpression and is KRAS wild-type. She has no significant medical history except for osteoporosis for which she takes a weekly oral bisphosphonate. Her serum chemistries, renal function, hepatic function, and CBC are WNL. She has a good performance status and her pain is well-controlled. **Which of the following initial treatment regimens is most appropriate?**

- A) Infusional fluorouracil plus leucovorin
- B) Panitumumab plus capecitabine and irinotecan
- C) Bevacizumab plus a fluoropyrimidine and oxaliplatin
- D) Bevacizumab plus cetuximab plus a fluoropyrimidine and irinotecan

40-An adult male with metastatic colorectal cancer is being considered for initial systemic chemotherapy. He was tested for UGT1A1 polymorphisms and his genotype indicates that he possesses reduced UGT1A1 enzyme activity. **Based on the results of this test, how might his treatment plan be adjusted?**

- A) The initial dose of irinotecan might need to be reduced.
- B) Fluorouracil should be selected because capecitabine cannot be activated.
- C) He should not receive oxaliplatin because of excessive toxicity.
- D) Bevacizumab is contraindicated as part of his therapy.

41-A 56 year-old male with a long-standing history of type 2 DM and poorly controlled hypertension is diagnosed with KRAS mutant colon cancer that is metastatic to his liver and lungs. His BP typically ranges from 145-155/94-105, despite an antihypertensive regimen comprised of enalapril, hydrochlorothiazide, and amlodipine. His blood glucose has been well-controlled with metformin, but pain due to diabetic peripheral neuropathy has not responded well to gabapentin and tramadol. His estimated creatinine clearance is 80 mL/min. **Which of the following chemotherapy regimens is most appropriate for this individual?**

- A) Bevacizumab plus infusional fluorouracil and leucovorin.
- B) Infusional fluorouracil, leucovorin, and oxaliplatin.
- C) Irinotecan plus infusional fluorouracil and leucovorin.
- D) Cetuximab plus irinotecan.

42-A 63 year-old female is to receive cetuximab plus irinotecan for metastatic colorectal cancer that progressed with irinotecan, oxaliplatin, fluorouracil, and leucovorin

chemotherapy. She tolerated cycles of previous chemotherapeutic regimens well, with only minor nausea and occasional loose stools. **Which of the following counseling points is most appropriate with regard to this new chemotherapy regimen?**

- A) Anaphylaxis during cetuximab infusions is common.
- B) Life-threatening diarrhea is a frequent complication with this regimen.
- C) Cetuximab can cause a follicular skin rash that may be severe.
- D) Severe peripheral neuropathy is a frequent complication with this regimen.

43-A 61 year-old male with recurrent metastatic KRAS mutant colon cancer was initially treated with capecitabine and irinotecan. After 6 months of chemotherapy he had experienced a partial response to treatment and therapy was continued. Four months later, he has developed worsening abdominal pain and an abdominal CT scan showed new sites of disease in his liver. **Which of the following modifications to his current treatment regimen is now most appropriate?**

- A) Continue current regimen; add cetuximab.
- B) Continue current regimen; add bevacizumab
- C) Discontinue current regimen; start capecitabine and oxaliplatin.
- D) Discontinue current regimen; start bevacizumab and panitumumab.

44-A 38 year-old female with FAP was diagnosed 7 months ago with KRAS wild-type colon cancer metastatic to her liver. She has been receiving bevacizumab, infusional fluorouracil, leucovorin, and oxaliplatin and experienced a complete response after receiving 9 courses of this regimen. She began to experience mild symptoms of peripheral neuropathy after her 11th course of therapy, and these symptoms have worsened somewhat with continued treatment. Her disease remains stable with no evidence of tumor progression. **Which of the following treatment strategies is most appropriate for this individual?**

- A) Discontinue current regimen; initiate bevacizumab, a fluoropyrimidine, and irinotecan upon disease progression.
- B) Discontinue oxaliplatin; continue bevacizumab, fluorouracil, and leucovorin; reinstitute oxaliplatin upon disease progression.
- C) Discontinue current regimen; start capecitabine.
- D) Discontinue oxaliplatin and bevacizumab; continue fluorouracil and leucovorin; start cetuximab upon disease progression.

45-A 66 y/o female underwent surgical resection 8 months ago for Stage III KRAS mutant colon cancer. She received a 6-month postoperative treatment regimen with weekly fluorouracil plus high-dose leucovorin. A routine checkup one year later revealed a rising CEA level that was confirmed as cancer recurrence in her liver and lumbar spine. She is otherwise asymptomatic and healthy. **Which of the following treatments is most appropriate for this individual?**

- A) Oral capecitabine, starting when the patient becomes symptomatic.
- B) Cetuximab plus irinotecan.

- C) Bevacizumab plus oxaliplatin and a fluoropyrimidine.
- D) Oxaliplatin plus irinotecan and a fluoropyrimidine

46-What is the first-line treatment of choice for a patient with Stage IIA Classical Hodgkin lymphoma?

- A) ABVD chemotherapy
- B) Surgical resection
- C) Involved field radiation
- D) All of the above

47-Which of the following is NOT a "B" symptom?

- A) Night sweats
- B) Fever
- C) Pruritus
- D) Weight loss (>10%)

48-A 50-year-old white male presents with fatigue, weight loss, and fevers and is later diagnosed with stage IV Hodgkin lymphoma. Additional labs include: Hgb 9.1 gm/dl, WBC 23,000/ul, Plt 120,000/ul, Albumin 3.2 g/dl, SCr 1.1 g/dl, bili 1.0 g/dl. What would be the most effective initial risk-adapted treatment for this patient?

- A) COPP/ABVD
- B) ABVD
- C) MOPP
- D) Escalated-dose BEACOPP

49-A 22-year-old male with stage IV Hodgkin lymphoma wants to retain fertility. What chemotherapy regimen would you recommend for this patient?

- A) ABVD
- B) MOPP
- C) ChIVPP
- D) MOPP/ABV hybrid

50-A 25-year-old female is diagnosed with early-stage Hodgkin lymphoma with favorable prognosis. She is going to receive four cycles of ABVD. What is the overall survival rate for this patient?

- A) >10%
- B) >30%
- C) >60%
- D) >90%

51-Which of the following long-term toxicities is a greater concern for escalated dose BEACOPP as compared with ABVD?

- A) Cardiac disease
- B) Secondary leukemia
- C) Interstitial pulmonary fibrosis
- D) Renal insufficiency

52-Which of the following statements is true about a patient who relapses 4 months after receiving MOPP chemotherapy for stage IV Hodgkin lymphoma?

- A) Autologous hematopoietic stem cell transplant offers a relatively high chance of cure
- B) The patient will likely be cured with ABVD or the Stanford V regimen
- C) Salvage therapy should include radiation to optimize the cure rate
- D) Patients who have an early relapse (<1 year) are not curable

53-Which of the following classification systems is currently used for non-Hodgkin lymphoma?

- A) WHO
- B) Luke-Collins
- C) REAL
- D) International Working Formulation

54-What is the clinical objective of the IPI and FLIPI score?

- A) To classify the lymphoma as either indolent or aggressive
- B) To predict likelihood for conversion to a more aggressive histology
- C) To classify the lymphoma into molecular subtypes
- D) To predict prognosis (i.e., survival)

55-What is the appropriate treatment for a newly diagnosed patient with advanced-stage follicular lymphoma?

- A) No initial treatment (“watch and wait”)
- B) Rituximab alone
- C) Rituximab and CHOP chemotherapy (R-CHOP)
- D) All of the above are appropriate treatment options, depending on patient and tumor characteristics and patient and physician preferences

56-Rituximab is a monoclonal antibody targeted against lymphoma cells. What is the molecular target of rituximab?

- A) CD20
- B) CD34
- C) CD52
- D) LAP (lymphoma-associated protein)

57-Which of the following terms best describe Bexxar and Zevalin?

- A) Monoclonal antibodies
- B) Radioimmunoconjugates

- C) Immunotoxins
- D) Recombinant proteins

58-What is the appropriate treatment for a newly diagnosed patient with advanced-stage diffuse large B-cell lymphoma?

- A) Rituximab and CHOP chemotherapy (R-CHOP)
- B) Bendamustine
- C) CHOP chemotherapy
- D) Bexxar or Zevalin

59-Which of the following statements best describe the results of appropriate treatment in patients with advanced-stage diffuse large B-cell lymphoma?

- A) About 30–60% of patients can be cured of their cancer
- B) About 60–90% of patients can be cured of their cancer
- C) Patients are not cured of their disease, but they will probably live longer may have improved quality of life
- D) Patients will probably not live longer, but they

60-Which of the following chemotherapy regimens warrant granulocyte colony-stimulating factor support?

- A) Dose-dense CHOP
- B) Escalated-dose BEACOPP
- C) BEACOPP-14
- D) All of the above

61-Symptoms found in patients with myelodysplastic syndrome may include which of the following?

- A) Dysphagia
- B) Fatigue
- C) Painless lymphadenopathy
- D) All of the above

62-Which of the following tests is routinely done in the diagnosis of patients with MDS?

- A) Bone marrow aspiration and biopsy
- B) Computed tomography of the chest, abdomen and pelvis
- C) Lymph node biopsy
- D) Magnetic resonance imaging of the brain

63-In regard to the pathophysiology of MDS, patients are found to have

- A) Decreased bone marrow proliferation
- B) Decreased apoptosis
- C) Reduced response to regulatory cytokines

D) All of the above

64-KR is a 36-year-old female with a history of stage 2A breast cancer. She underwent radical mastectomy, radiation, and adjuvant chemotherapy with doxorubicin, cyclophosphamide, and paclitaxel. She then received 5 years of tamoxifen. On routine follow-up, 7 years after her diagnosis of breast cancer, she was found to have a hemoglobin on 9.8 g/dL, neutrophil count of 1.7×10^9 cells/L, and platelets of 67×10^9 cells/L. Bone marrow biopsy was consistent with MDS- refractory anemia with excess blasts-2 (RAEB-2). Her cytogenetics revealed a 7q chromosomal deletion. **Which of the following medications is her therapy-related MDS most likely related to?**

- A) Doxorubicin
- B) Cyclophosphamide
- C) Paclitaxel
- D) Tamoxifen

65-MB is a 74-year-old male with MDS. His hemoglobin is 6.8 g/dL, neutrophil count is 0.8×10^9 cells/L, and platelets are 43×10^9 cells/L. Bone marrow biopsy reveals 9% blasts. His cytogenetics are normal. What is his IPSS score?

- A) 0
- B) 1
- C) 1.5
- D) 2

66-Treatment goals in MDS may include

- A) Altering the natural history of the disease
- B) Reducing transfusions
- C) Improving quality of life
- D) All of the above

67-What is the most appropriate therapy for a 72-year-old male with myelodysplastic syndrome associated with an isolated chromosomal 5q deletion?

- A) Antithymocyte globulin 40 mg/kg/day intravenously for 4 days
- B) Azacitidine 75 mg/m² SQ daily for 7 days
- C) Lenalidomide 10 mg PO daily
- D) Thalidomide 200 mg PO every night at bedtime

68-What is the most effective therapy for a 37-year-old female with refractory anemia with excess blasts-2 (RAEB-2) noted to have a chromosome 7 abnormality?

- A) Matched sibling donor allogeneic hematopoietic stem cell transplant
- B) Autologous hematopoietic stem cell transplant
- C) Lenalidomide
- D) Darbepoetin

69-Which of the following therapies demonstrated improvement in overall survival in patients with MDS?

- A) Azacitidine
- B) Lenalidomide
- C) AML-type induction chemotherapy
- D) Romiplostim

70-Which of the following patients is most likely to respond to antithymocyte globulin?

- A) A 45-year-old female with refractory anemia with an isolated chromosomal 5q deletion, who has required transfusions for the past 2 years
- B) A 35-year-old female with HLA DR15 expression who has required transfusions for the past month.
- C) A 72-year-old male with a serum erythropoietin level of 237 mIU/mL who has required red blood cell transfusions for the past 4 months
- D) None of the above

71-Mr. Smith is a 78-year-old male with a past medical history of heart failure, type II diabetes, and myelodysplastic syndrome-refractory anemia with excess blasts-2 (RAEB-2). He read about iron overload on the MDS foundation website and would like to know what benefits he would have from receiving deferasirox. You explain to him that treatment of MDS with deferasirox has been shown to do which of the following?

- A) Reverse congestive heart failure and improve shortness of breath
- B) Decrease insulin requirements and lower hemoglobin A1C
- C) Prolong life by 2–3 years
- D) Decrease serum ferritin, a blood test that indicates iron overload

72-Which of the following patients is most likely to respond to erythropoietin therapy?

- A) A 27-year-old female requiring 6 red blood cell transfusions/month for the past 3 months with a serum erythropoietin level of 672 MIU/mL
- B) A 63-year-old male requiring 3 red blood cell transfusions/month for the past 2 years with a serum erythropoietin level of 512 MIU/mL
- C) A 72-year-old female requiring 1 red blood cell transfusion/month for the past 3 months with a serum erythropoietin level of 172 MIU/mL
- D) A 63-year-old male requiring 1 red blood cells transfusions/month for the past 2 years with a serum erythropoietin level of 430 MIU/mL

73-M.K. is a 64-year-old male with refractory anemia with ringed sideroblasts (RARS). He has normal cytogenetics. His hemoglobin is 9 g/dL, neutrophil count is 2.7×10^9 cells/L and platelets are 107×10^9 cells/L. Which of the following regimens would you recommend for him?

- A) Erythropoietin 40,000 units SQ + filgrastim 100 mcg SQ twice weekly
- B) Erythropoietin 40,000 units SQ every 2 weeks

- C) Darbepoetin 200 mcg SQ every 2 weeks
- D) Filgrastim 480 mcg SQ once daily

74-Common adverse effects of lenalidomide include which of the following?

- A) Rash and peripheral neuropathy
- B) Rash and peripheral cytopenias
- C) QTc interval prolongation and peripheral neuropathy
- D) Peripheral cytopenias and QTc prolongation

75-Notable adverse effects of DNA DNA hypomethylating agents include which of the following?

- A) Peripheral cytopenias and hepatotoxicity
- B) QTc interval prolongation and hepatotoxicity
- C) Peripheral neuropathy and QTc interval prolongation
- D) Peripheral cytopenias and peripheral neuropathy

76-All of the following patients would be at an increased risk of renal cell carcinoma except:

- A) A male with a 50-pack-per-year smoking history who continues to smoke
- B) A male who uses 2 g of acetaminophen daily for his osteoarthritis
- C) An obese male with a BMI of 31
- D) A male with a 20-year history of poorly controlled hypertension

77-Compared with hereditary RCC, sporadic RCC is more likely to be:

- A) Diagnosed in younger patients
- B) Seen concurrently with other malignancies
- C) Multicentric rather than unicentric
- D) Present in one kidney rather than in both kidneys

78-Von Hippel–Lindau (VHL) can best be described as a/an:

- A) Oncogene
- B) Tumor suppressor gene
- C) Receptor tyrosine kinase endothelial growth factor (VEGF)
- D) Substrate for vascular

79-Both HIF and VHL play important roles in the development of clear cell RCC. When VHL is UNABLE to bind to HIF....

- A) HIF is destroyed by the proteosome rapidly
- B) HIF phosphorylates AKT and increases mTOR activity
- C) HIF is able to travel to the cell nucleus and activate genes that increase cell growth
- D) HIF methylates important cell growth genes, resulting in cell apoptosis

80-The current treatment of RCC has shifted towards targeted therapy against a variety of substances that play a role in the pathogenesis of the disease. All of the following are genes that are directly activated by the HIF complex except:

- A) Glucose transporter-1
- B) Vascular endothelial growth factor (VEGF)
- C) Mammalian target of rapamycin (mTOR)
- D) Platelet-dependent growth factor (PDGF)

81-Which of the following scenarios can best describe the most common presentation of RCC?

- A) A patient with flank pain, hematuria, and a palpable abdominal mass
- B) A patient with fever and unexplained weight gain
- C) A patient with severe bone and new-onset seizures
- D) A patient with mild non-specific symptoms who undergoes a CT scan for an unrelated GI problem

82-Regardless of stage of disease, which of the following treatment modalities is ideally utilized in the initial management of renal cell carcinoma?

- A) Surgery
- B) Radiation
- C) Targeted therapy
- D) Immunotherapy

83-Though frequently utilized in the management of RCC, which of the following therapies is not FDA-approved for the treatment of this disease?

- A) Bevacizumab
- B) Interleukin-2
- C) Interferon
- D) Pazopanib
- E) Everolimus

84-Capillary leak syndrome is seen mostly commonly in patients treated with which of the following agents?

- A) Sorafenib
- B) Sunitinib
- C) Interferon
- D) Interleukin-2
- E) Temsirolimus

85-Which of the following targeted therapies is the best choice for the first-line treatment of metastatic RCC in a patient with an MSKCC risk classification of poor risk (three or four of five factors)?

- A) Sunitinib
- B) Temsirolimus
- C) Sorafenib
- D) Bevacizumab
- E) Everolimus

86-Which of the following targeted therapies is the best choice for the second-line treatment of metastatic RCC in an individual who has experienced disease progression on a tyrosine kinase inhibitor?

- A) Temsirolimus
- B) Bevacizumab
- C) Sorafenib
- D) Pazopanib
- E) Everolimus

87-The targeted agent, bevacizumab, is a humanized monoclonal antibody that exerts its biologic effect by binding:

- A) VEGFR on the cell surface of cancer cells
- B) EGFR on the cell surface of cancer cells
- C) VEGF circulating in the bloodstream
- D) EGF circulating in the bloodstream
- E) HER-2/neu circulating in the bloodstream

88-The role of chemotherapy in the management of RCC can best be described as:

- A) Most beneficial in the adjuvant setting following nephrectomy
- B) Primarily used in combination with the tyrosine kinase inhibitors
- C) Consisting primarily of 5-fluorouracil given concurrently with radiation
- D) Minimal because of the high frequency of intrinsic resistance mechanisms

89-The tyrosine kinase inhibitors, sunitinib, sorafenib, and pazopanib exert their biologic effect by binding:

- A) Intracellular kinase domains resulting in down-regulation of a constitutively active signaling pathway
- B) Extracellular kinase domains resulting in down-regulation of a constitutively active signaling pathway
- C) Intracellular kinase domains resulting in up-regulation of a constitutively inactive signaling pathway
- D) Extracellular kinase domains resulting in up-regulation of a constitutively inactive signaling pathway

90-Which of the following agents are most likely to cause hyperlipidemia, hyperglycemia, and hypercholesterolemia?

- A) Bevacizumab
- B) Pazopanib
- C) Sorafenib
- D) Sunitin
- E) Temsirolimus

CANCER PHARMACOTHERAPY ANSWERS

- 1-B) Promotion
- 2-C) Tumor suppressor gene
- 3-D) FOBT (or FIT) every 5 years
- 4-C) Stage IV disease
- 5-B) Increase the cytotoxicity of the 5-fluorouracil
- 6-B) Diarrhea and neuropathy
- 7-B) Increase the dose of the erythropoietic agent
- 8- A) Begin filgrastim or pegfilgrastim therapy as secondary prophylaxis.
- 9-D) None of the above statements are correct.
- 10-C) Reduce doses of all agents by 50%.
- 11- A) Taxanes
- 12-A) 630 mg
- 13-B) Chimeric
- 14-D) Alemtuzumab
- 15-C) The most frequent adverse event associated with these agents is related to the skin and the development of rash.
- 16-C) Age, hormone replacement therapy, first pregnancy after age 30.
- 17-D) A painless lump in the breast.
- 18-D) Stage IIIA
- 19-A) Despite slightly higher local recurrence rates, BCT is associated with similar survival outcomes.

- 20-A)** Fluorouracil, doxorubicin, cyclophosphamide (FAC)
- 21- A)** Anastrozole ? 5 years
- 22-D)** Docetaxel, doxorubicin, cyclophosphamide (TAC).
- 23-E)** Stage IV
- 24-D)** Tamoxifen
- 25- A)** Letrozole
- 26-D)** Ixabepilone with capecitabine
- 27-A)** Doxorubicin + cyclophosphamide (AC) ? paclitaxel + trastuzumab (PH)
- 28-B)** EGFR and HER2 tyrosine kinase.
- 29-C)** Breast MRI, mammogram, clinical breast exam.
- 30-B)** Increased risk of thromboembolism and endometrial cancer.
- 31- A)** Maintain a healthy BMI; keep physically active; eat a balanced diet.
- 32-D)** Regular use of aspirin or NSAIDs in average-risk individuals decreases relative risk of colorectal cancer by about 22%.
- 33-B)** MSH2, MLH1
- 34-A)** Colonoscopy
- 35-D)** should be offered because the cancer is associated with several poor prognostic factors.
- 36-B)** radiation plus capecitabine and oxaliplatin chemotherapy.
- 37-D)** Abdominal CT scan
- 38-C)** recent AMI and CABG surgery.
- 39-C)** Bevacizumab plus a fluoropyrimidine and oxaliplatin
- 40-A)** The initial dose of irinotecan might need to be reduced.

- 41-C) Irinotecan plus infusional fluorouracil and leucovorin.
- 42-C) Cetuximab can cause a follicular skin rash that may be severe.
- 43-C) Discontinue current regimen; start capecitabine and oxaliplatin.
- 44-B) Discontinue oxaliplatin; continue bevacizumab, fluorouracil, and leucovorin; reinitiate oxaliplatin upon disease progression.
- 45-C) Bevacizumab plus oxaliplatin and a fluoropyrimidine.
- 46- A) ABVD chemotherapy
- 47-C) Pruritus
- 48-D) Escalated-dose BEACOPP
- 49- A) ABVD
- 50-D) >90%
- 51-B) Secondary leukemia
- 52-A) Autologous hematopoietic stem cell transplant offers a relatively high chance of cure
- 53-A) WHO
- 54-D) To predict prognosis (i.e., survival)
- 55-D) All of the above are appropriate treatment options, depending on patient and tumor characteristics and patient and physician preferences
- 56-A) CD20
- 57-B) Radioimmunoconjugates
- 58-A) Rituximab and CHOP chemotherapy (R-CHOP)
- 59- A) About 30–60% of patients can be cured of their cancer
- 60-D) All of the above
- 61-B) Fatigue

- 62-A)** Bone marrow aspiration and biopsy
- 63-C)** Reduced response to regulatory cytokines
- 64-B)** Cyclophosphamide
- 65-B)** 1
- 66-D)** All of the above
- 67-C)** Lenalidomide 10 mg PO daily
- 68- A)** Matched sibling donor allogeneic hematopoietic stem cell transplant
- 69-A)** Azacitidine
- 70-B)** A 35-year-old female with HLA DR15 expression who has required transfusions for the past month.
- 71-D)** Decrease serum ferritin, a blood test that indicates iron overload
- 72-C)** A 72-year-old female requiring 1 red blood cell transfusion/month for the past 3 months with a serum erythropoietin level of 172 MIU/mL
- 73-A)** Erythropoietin 40,000 units SQ + filgrastim 100 mcg SQ twice weekly
- 74-B)** Rash and peripheral cytopenias
- 75- A)** Peripheral cytopenias and hepatotoxicity
- 76-B)** A male who uses 2 g of acetaminophen daily for his osteoarthritis
- 77-D)** Present in one kidney rather than in both kidneys
- 78-B)** Tumor suppressor gene
- 79-C)** HIF is able to travel to the cell nucleus and activate genes that increase cell growth
- 80-C)** Mammalian target of rapamycin (mTOR)
- 81-D)** A patient with mild non-specific symptoms who undergoes a CT scan for an unrelated GI problem

82-A) Surgery

83-C) Interferon

84-D) Interleukin-2

85-B) Temsirolimus

86-E) Everolimus

87-C) VEGF circulating in the bloodstream

88-D) Minimal because of the high frequency of intrinsic resistance mechanisms

89- A) Intracellular kinase domains resulting in down-regulation of a constitutively active signaling pathway

90-E) Temsirolimus

11

Renal function clinical assessment

Clinical Assessment of Kidney Function questions

1-The glomerulus is primarily responsible for _____ of unbound drug in the kidney:

- A) Filtration
- B) Reabsorption
- C) Secretion
- D) Endocytosis

2-Active drug secretion occurs most often in which of the following nephron segments:

- A) Glomerulus
- B) Proximal tubule
- C) Loop of Henle
- D) Distal tubule

3-According to the intact nephron hypothesis, reabsorption _____ and single nephron GFR _____ in the surviving nephrons:

- A) increases, increases
- B) decreases, decreases
- C) increases, decreases
- D) decreases, increases

4-The kidney is responsible for synthesizing each of the following hormones, EXCEPT:

- A) Erythropoietin
- B) Prostaglandin
- C) PTH
- D) Renin

5-The decreased serum creatinine values observed during dobutamine therapy are likely due to:

- A) analytical interference
- B) increased tubular secretion of creatinine
- C) increased GFR caused by dobutamine
- D) increased muscle breakdown

6- Which of the following renal function indices is least influenced to changes in fluid or volume status:

- A) Serum creatinine
- B) Blood urea nitrogen
- C) Urine specific gravity
- D) Urine sodium

7-Which of the following renal function indices is least affected by dietary protein intake:

- A) Serum creatinine
- B) Blood urea nitrogen
- C) Creatinine clearance
- D) Urine sodium

8-The most appropriate index for quantifying proteinuria in a patient with CKD risk factors is:

- A) Total protein dipstick
- B) Protein:albumin ratio
- C) Albumin:creatinine ratio
- D) 24-hour protein excretion

9-The least accurate method for measuring GFR is:

- A) Iohexol clearance
- B) Iothalamate clearance
- C) Inulin clearance
- D) Creatinine clearance

10-Which of the following equations is most appropriate for estimating renal function in a patient with stable CKD and GFR <60 mL/min/1.73m²?

- A) 4-variable MDRD
- B) 6-variable MDRD
- C) Cockcroft-Gault
- D) Brater

11- Use of MDRD equations in individuals with GFR > 60 mL/min/1.73m² may result in:

- A) Overestimation of true GFR
- B) Underestimation of true GFR
- C) Accurate estimation of true GFR
- D) Accurate estimation of creatinine clearance

12. J.S. is a 70-year old African American male (5'8", 85 kg) with a history of hypertension and CKD. His serum creatinine today is 1.50 mg/dL (using the IDMS calibrated assay) . What is his estimated creatinine clearance?

- A) 55.0 mL/min
- B) 43.5 mL/min
- C) 37.2 mL/min
- D) 29.4 mL/min

13 -What is J.S.'s estimated GFR (in mL/min/1.73m²)?

- A) 56.0 mL/min/1.73m²
- B) 49.4 mL/min/1.73m²
- C) 35.0 mL/min/1.73m²
- D) 30.2 mL/min/1.73m²

14 -What is J.S.'s estimated GFR when corrected for BSA (in mL/min)?

- A) 38.9 mL/min
- B) 45.6 mL/min
- C) 65.2 mL/min
- D) 72.1 mL/min

15- J.R. is a 68 year-old Caucasian man (60 kg, 5'7") with a history of hypertension, cerebral stroke and benign prostatic hypertrophy. He presents to the ambulatory care clinic today for evaluation of a viral infection to be treated with acyclovir. His serum creatinine value today is 0.63 mg/dL. Which one of the following approaches should be used to assess this patient's renal function for the purpose of renal dose adjustment for acyclovir?

- A) Measure a chromium-labeled ethylenediaminetetraacetic acid GFR.
- B) Estimate creatinine clearance using the CG equation.
- C) Estimate GFR using the MDRD equation.
- D) Conduct a timed 24-hour urine collection.

16 -An appropriate clinical monitoring plan to evaluate renal protective therapy in patients with CKD should include each of the following items EXCEPT:

- A) estimated creatinine clearance
- B) urinary albumin:creatinine
- C) urinary Cystatin C
- D) estimated GFR

17. Which of the following compounds is most often used to assess cationic tubular secretion?

- A) PAH
- B) TEA
- C) Probenecid
- D) Retinal-binding protein

18- In the clinical setting, the renal clearance of PAH is considered an index of

- A) Fractional excretion of sodium
- B) Renal plasma or blood flow
- C) Glomerular filtration rate
- D) Renal tubular reabsorption

19-Which of the following is the least common type of true acute kidney injury (AKI)?

- A) Prerenal AKI
- B) Pseudorenal AKI
- C) Intrinsic AKI
- D) Postrenal AKI

20-A 60-year-old long-term care resident is admitted to the hospital with altered mental status. His admission laboratory values show blood urea nitrogen (BUN) of 30 mg/dL (10.7 mmol/L), serum creatinine (Scr) of 2 mg/dL (177 μ mol/L), a fractional excretion of sodium (FeNa) of 2.5% (0.025), and granular casts on urine sediment. The most likely etiology of his AKI is?

- A) Acute tubular necrosis
- B) Bladder obstruction
- C) Nonsteroidal antiinflammatory drug (NSAID)–induced renal hypoperfusion
- D) Volume depletion

21-Which of the following parameters are used to determine the stage of severity of a patient's AKI by means of Risk, Injury, Failure, Loss of Kidney Function, and End-Stage Renal Disease (RIFLE) and Acute Kidney Injury Network (AKIN) classification systems?

- A) Serum creatinine and blood urea nitrogen
- B) Serum creatinine and urine output
- C) Glomerular filtration rate and blood urea nitrogen
- D) Glomerular filtration rate and cystatin C

22-A 56-year-old (71 kg) man is admitted to the intensive care unit with sepsis. His serum creatinine increased from a baseline of 0.9 mg/dL (80 μ mol/L) to 1.6 mg/dL (141 μ mol/L), and his blood urea nitrogen (BUN) increased from 15 mg/dL (5.4 mmol/L) to 30 mg/dL (10.7 mmol/L). His urine output in the last 24 hours was 500 mL. Per RIFLE criteria, which stage does this patient's AKI belong to?

- A) Risk
- B) Injury
- C) Failure
- D) Loss of kidney function
- E) End-stage kidney disease

23-Which of the following markers allows for a significantly earlier diagnosis of AKI compared with serum creatinine?

- A) Blood urea nitrogen
- B) Glomerular filtration rate
- C) Neutrophil gelatinase-associated lipocalin
- D) Urinary creatinine levels

24-A 66-year-old woman with a history of diabetes and chronic kidney disease is scheduled for diagnostic imaging requiring contrast dye administration. Her serum creatinine is 2 mg/dL (177 μ mol/L), blood urea nitrogen (BUN) is 30 mg/dL (10.7 mmol/L), and urine output in the last 24 hours is 1,500 mL. Her complete blood count and electrolytes are all within normal range.

Which of the following medications would you recommend to decrease the risk of contrast-induced nephropathy in this patient?

- A) Tight glycemic control
- B) Sodium bicarbonate infusion
- C) Hemodialysis
- D) Furosemide infusion
- E) None of the above

25-Which of the following medications should not be used for prevention of AKI in high-risk individuals?

- A) Ascorbic acid
- B) Sodium bicarbonate
- C) Dopamine
- D) N-acetylcysteine

26-Which of the following pathophysiologic processes are involved in the development of prerenal AKI?

- A) Glomerular damage secondary to severe inflammation
- B) Tubular epithelial cell necrosis due to ischemia
- C) Drug hypersensitivity reaction leading to interstitial inflammation
- D) Decreased renal perfusion secondary to volume depletion

27-Which of the following pharmacotherapeutic interventions is used to reverse AKI in hospitalized patients?

- A) Saline hydration
- B) Intermittent hemodialysis
- C) Continuous renal replacement therapy
- D) None of the above; supportive care is the mainstay of therapy

28-Compared with intermittent hemodialysis, one of the main advantages of continuous renal replacement therapy is that

- A) It is associated with fewer hypotensive episodes
- B) It is associated with lower rates of thrombosis
- C) It is less labor intensive
- D) It does not require anticoagulation

29-Diuretic resistance to furosemide may be overcome by

- A) Switching to a different loop diuretic
- B) Increasing the furosemide dose and decreasing the frequency
- C) Adding a thiazide diuretic
- D) Adding a second loop diuretic

30-Which of the following electrolyte abnormalities are most commonly found in patients with AKI?

- A) Hypophosphatemia
- B) Hyperkalemia
- C) Hyponatremia
- D) None of the above; electrolytes are usually unaffected

31-All of the following factors can make drug dosing a challenge in a critically ill patient with established AKI except the

- A) Presence of edema, which can significantly increase the volume of distribution of a drug
- B) Presence of residual nonrenal clearance
- C) Need for constant reassessment of the patient's renal function and status
- D) Presence of electrolyte abnormalities

32-In continuous renal replacement therapy (CRRT), the following statement is true regarding drug clearance:

- A) Increasing CRRT ultrafiltration rate will generally result in increased drug clearance.
- B) Decreasing the CRRT ultrafiltration rate will generally result in increased drug clearance.
- C) Decreasing the CRRT dialysate rate will generally result in increased drug clearance.
- D) Increasing the CRRT dialysate rate will generally result in decreased drug clearance.

33-Which of the following medications are associated with the development of prerenal AKI?

- A) Valsartan
- B) Acyclovir
- C) Lithium
- D) Gentamicin

34-Which of the following is an appropriate statement regarding the epidemic of CKD in the United States?

- A) The number of individuals with CKD is expected to decline in the next 10 years due to increased awareness of CKD.
- B) The mortality rate is lower for an individual with ESRD compared with age-matched individuals without CKD.
- C) Dialysis therapy corrects the majority of secondary complications of CKD, and these individuals require fewer treatment interventions compared with early-stage CKD patients

D) The incident rate of ESRD is much higher in African Americans and Hispanics compared with that in whites.

35-Which of the following secondary complications can usually be effectively treated with chronic dialysis therapy (either peritoneal dialysis or hemodialysis) alone?

- A) Iron deficiency anemia
- B) Metabolic acidosis
- C) Renal osteodystrophy
- D) Hyperlipidemia

36- Which of the following diuretic regimens would likely be required to optimize diuresis in an individual with stage 4 CKD (GFR 20 mL/min/1.73 m² [0.19 mL/s/m²]) requiring volume removal?

- A) Metolazone alone
- B) Hydrochlorothiazide + metolazone
- C) Furosemide + metolazone
- D) Furosemide + spironolactone

37- Which of the following regimens is most appropriate for management of severe hyperkalemia in a patient with ESRD and no residual kidney function?

- A) Loop diuretic and dialysis
- B) Sodium polystyrene sulfonate and dialysis
- C) IV calcium gluconate and loop diuretic
- D) Insulin and glucose

38-Which of the following is the recommended total daily energy intake for a patient with ESRD on chronic hemodialysis?

- A) 35 kcal/kg (147 kJ/kg)
- B) 25 kcal/kg (105 kJ/kg)
- C) 40 kcal/kg (167 kJ/kg)
- D) 20 kcal/kg (84 kJ/kg)

39-A patient with ESRD and the associated secondary complications would likely present with which of the following laboratory data?

- A) Phosphorus 2.0 mg/dL (0.65 mmol/L), Hb 13 g/dL (8.07 mmol/L)
- B) PTH 275 pg/mL (275 ng/L), Hb 11 g/dL (110 g/L; 6.83 mmol/L)
- C) Phosphorus 6.0 mg/dL (1.94 mmol/L), serum bicarbonate 15 mEq/L (15 mmol/L)
- D) PTH 110 pg/mL (110 ng/L), serum bicarbonate 22 mEq/L (22 mmol/L)

40- According to the K/DOQI guidelines for anemia management which of the following is the preferred route of iron administration in the nondialysis CKD population?

- A) Intravenous

- B) Oral
- C) Either oral or intravenous
- D) Intramuscular

41-Achievement of a higher target hemoglobin level (> 12 g/dL [>120 g/L; 7.45 mmol/L]) in the CKD population has been associated with which of the following?

- A) Higher risk of mortality
- B) Improved survival
- C) Decrease in quality of life
- D) Lower risk of cardiovascular events

42-Which of the following is a typical repletion dose of IV iron recommended in the hemodialysis population with absolute iron deficiency?

- A) 100 mg per week for 8 weeks
- B) 250 mg administered over 1 hour
- C) 500 mg administered in divided doses
- D) 1000 mg administered in divided doses

43-ES is a 45-year-old male on HD started on an epoetin dose of 5,000 Units intravenously TIW 1 week ago. The Hb at the time of initial dosing was 10 g/dL (100 g/L; 6.21 mmol/L). The current Hb is 10.3 g/dL (103 g/L; 6.39 mmol/L). Iron indices reveal the following: ferritin 250 ng/mL (250 g/L), transferrin saturation 30% (0.30). Which of the following options is most appropriate for ES?

- A) Oral ferrous sulfate 325 mg three times per day
- B) 1 g of iron sucrose divided over 10 hemodialysis sessions
- C) Increase the dose of epoetin alfa by 50% to achieve the target Hb
- D) No change is necessary based on Hb response after 1 week of epoetin alfa

44-Which of the following iron preparations requires a test dose because of the association with anaphylactic reactions?

- A) Iron dextran
- B) Sodium ferric gluconate
- C) Iron sucrose
- D) Ferumoxytol

45-Which characteristics define CKD-mineral and bone disorder?

- A) Abnormal calcium, phosphorus, PTH and vitamin D levels
- B) Presence of anemia, CKD and renal osteodystrophy
- C) Low phosphorus and osteoporosis
- D) Failure to correct 25-hydroxyvitamin D levels with vitamin D supplementation

46-TR is an ESRD patient just starting peritoneal dialysis. The most recent laboratory analysis reveals the following: phosphorus 7.4 mg/dL (2.39 mmol/L), calcium 9.0 mg/dL (2.25 mmol/L), albumin 2.5 g/dL (25 g/L), iPTH 500 pg/mL (500 ng/L), 25-OH D 40

ng/mL (100 nmol/L). TR is on sevelamer carbonate as a phosphate binder and no other therapy to address CKD-MBD. **Which of the following is the most appropriate vitamin D therapy?**

- A) Calcitriol
- B) Ergocalciferol
- C) Paricalcitol
- D) Cholecalciferol

47- In addition to lowering PTH, the calcimimetic agent cinacalcet causes which of the following changes in laboratory parameters?

- A) Increase in phosphorus, decrease in calcium
- B) Decrease in phosphorus, increase in calcium
- C) Increase in phosphorus and calcium
- D) Decrease in phosphorus and calcium

48- Which of the following phosphate-binding agents would be recommended for an individual who has difficulty swallowing larger pills?

- A) Lanthanum carbonate tablets
- B) Aluminum hydroxide liquid
- C) Calcium carbonate tablets
- D) Sevelamer carbonate tablets

49-The most common manifestation of drug-induced kidney disease is

- A) Proteinuria
- B) Pyuria
- C) Hematuria
- D) A decline in the glomerular filtration rate (GFR)
- E) A reduction in tubular secretion

50-Regarding drug-induced kidney disease, all of the following are applicable except

- A) Temporal relationship with potentially toxic agent
- B) The offending agent is rarely identified
- C) Significant source of morbidity in the hospital setting
- D) Abrupt and sustained reduction in GFR
- E) The most common presentation in the hospital setting is acute tubular necrosis

51-Which of the following drugs would be the most likely culprit in a patient with newly diagnosed renal intratubular obstruction?

- A) Ibuprofen
- B) Losartan
- C) Amphotericin B
- D) Ciprofloxacin
- E) Acyclovir

52-Hemodynamically mediated kidney injury induced by angiotensin-converting enzyme inhibitors involves all of the following except

- A) Enhanced efferent arteriolar constriction
- B) Patients with renal artery stenosis at increased risk
- C) Decrease in glomerular capillary hydrostatic pressure
- D) Reduced glomerular ultrafiltration
- E) None of the above

53-Which of the following drugs has been associated with chronic interstitial nephritis?

- A) Cyclosporine
- B) Ifosfamide
- C) Lithium
- D) Streptozotocin
- E) All of the above

54-Which of the following drugs has been associated with collapsing glomerulosclerosis?

- A) Propylthiouracil
- B) Aminoglycosides
- C) Pamidronate
- D) Radiographic contrast media
- E) Hydralazine

55-The following renal structural–functional alteration is associated with exposure to radiographic contrast media:

- A) Allergic interstitial nephritis
- B) Intratubular obstruction
- C) Glomerulosclerosis
- D) Acute tubular necrosis
- E) Papillary necrosis

56-All of the following strategies may be used to prevent radiographic contrast media nephrotoxicity except

- A) Amifostine
- B) Acetylcysteine
- C) Low-osmolality agents
- D) Hydration
- E) Reduced doses of contrast

57-The preferred agent for preventing cisplatin induced nephrotoxicity is

- A) Fenoldopam
- B) Amifostine

- C) Dopamine
- D) Acetylcysteine
- E) Mesna

58-All of the following drugs are linked to the development of ANCA-positive vasculitis except

- A) Hydralazine
- B) Allopurinol
- C) Warfarin
- D) Propylthiouracil
- E) Penicillamine

59-Each of the following statements regarding aminoglycoside-induced acute tubular necrosis (ATN) is true except

- A) Risk factors include prolonged therapy and increased age.
- B) It manifests as a gradual rise in serum creatinine 4 to 6 weeks after exposure to the drug.
- C) Patients typically present with nonoliguria, maintaining urine volumes >500 mL/day.
- D) Toxicity of various aminoglycosides is related to cationic charge of the drug.
- E) "Once daily" dosing may be one method to maintain antimicrobial efficacy while reducing nephrotoxicity.

60-The preferred treatment for a patient with drug-induced minimal change glomerular injury accompanied by interstitial nephritis is

- A) Amifostine
- B) Cyclophosphamide
- C) Pamidronate
- D) Prednisone
- E) Hydration

61-The signs and symptoms of penicillin-induced allergic interstitial nephritis include all of the following except

- A) Rash, eosinophilia, pyuria
- B) Fever, eosinophilia, reduced intraglomerular pressure
- C) Fever, rash, eosinophilia
- D) Elevated serum creatinine, rash, eosinophilia
- E) Hematuria, proteinuria, oliguria

62-A 60-year-old woman with a 5-year history of NSAID use is prescribed enalapril and develops acute kidney injury. What is the most likely cause of her acute kidney injury?

- A) Acute allergic interstitial nephritis
- B) Chronic interstitial nephritis
- C) Minimal change glomerular injury

- D) Focal segmental glomerulosclerosis
- E) Hemodynamically mediated kidney injury

63-The calcineurin inhibitor cyclosporine has been implicated in which of the following?

- A) Allergic interstitial nephritis
- B) Thrombotic microangiopathy
- C) Chronic interstitial nephritis
- D) Hemodynamically mediated kidney injury
- E) All of the above

64-In a patient with nephrotic syndrome, which of the following is not expected to be present?

- A) Proteinuria
- B) Edema
- C) Hyperlipidemia
- D) Hypercoagulable state
- E) Hematuria

65-Which of the following is not expected to reduce proteinuria when used for patients with glomerulonephritis?

- A) Angiotensin-converting enzyme (ACE) inhibitors
- B) Angiotensin II receptor blockers
- C) Nondihydropyridine calcium channel blockers (eg, diltiazem)
- D) Dihydropyridine calcium channel blockers (eg, nifedipine, amlodipine)
- E) All of the above are expected to reduce proteinuria

66-Treatment of which of the following is expected to reduce the progression of renal failure in patients with glomerulonephritis?

- A) Edema
- B) Proteinuria
- C) Hyperlipidemia
- D) Coagulopathy
- E) Hematuria

67-Angiotensin-converting enzyme (ACE) inhibitors are often used in patients with glomerulonephritis because of their ability to reduce:

- A) Proteinuria
- B) Blood pressure
- C) Immunologically induced glomerular damage
- D) Both a and b
- E) All a, b, and c

68 -Intravascular thrombosis is a common and serious complication of nephrotic syndrome associated with which of the following glomerular disease?

- A) Minimal-change nephropathy
- B) Focal segmental glomerulonephritis
- C) Membranous nephropathy
- D) Immunoglobulin A nephropathy
- E) Membranoproliferative glomerulonephritis

69- Which of the following glomerulonephritis is more commonly seen in pediatric patients?

- A) Minimal-change nephropathy
- B) Focal segmental glomerulonephritis
- C) Immunoglobulin A nephropathy
- D) Membranous nephropathy
- E) Membranoproliferative glomerulonephritis

70- Which of the following agent is known to be most effective in inducing remission in patients with recently diagnosed minimal-change nephropathy?

- A) Steroid
- B) Cyclosporine
- C) Azathioprine
- D) Cyclophosphamide
- E) Levamisole

71-Which of the following agent is often effective in inducing remission in patients with minimal-change nephropathy who experience relapse?

- A) Steroid
- B) Cyclosporine
- C) Azathioprine
- D) Cyclophosphamide
- E) Levamisole

72-Which of the following is not correct regarding the use of cyclosporine for the treatment of minimal-change nephropathy?

- A) Cyclosporine may reduce lymphokine production by activated T lymphocytes
- B) Cyclosporine may improve the permselectivity of GBM
- C) Cyclosporine is often effective in preventing relapse
- D) Cyclosporine is often effective in inducing remission during relapse
- E) Cyclosporine is useful for patients who are steroid dependent

73-Compared with minimal-change nephropathy, patients with focal segmental glomerulonephritis are:

- A) More likely to be adults
- B) Less responsive to steroid treatment
- C) More likely to develop progressive renal failure
- D) Only a and b above are correct
- E) All a, b, and c above are correct

74- In patients with mild focal segmental glomerulonephritis, which of the following is/are commonly used?

- A) Angiotensin-converting enzyme (ACE) inhibitors
- B) Angiotensin II receptor blockers
- C) Immunosuppressive agents
- D) Both a and/or b may be used
- E) All a, b, and c may be used

75- Fish oil may be beneficial in certain patients with which of the following types of glomerulonephritis?

- A) Minimal-change nephropathy
- B) b. Focal segmental glomerulonephritis
- C) Immunoglobulin A nephropathy
- D) Membranous nephropathy
- E) Membranoproliferative glomerulonephritis

76-Which of the following is correct with respect to treatment for membranous nephropathy?

- A) Spontaneous remission is common and steroid treatment alone is commonly used to reduce proteinuria and progression of disease
- B) Spontaneous remission is common and steroid treatment alone is not effective in reducing proteinuria and progression of disease
- C) Spontaneous remission is unlikely and steroid treatment is needed to reduce proteinuria and progression of disease
- D) Spontaneous remission is unlikely and steroid treatment alone is not effective in reducing proteinuria and progression of disease
- E) Steroid and cytotoxic agents are commonly needed to induce remission

77-A patient with IgA nephropathy who has normal renal function, isolated micro-hematuria, and proteinuria less than 1 g/day should be:

- A) Observed closely without specific treatment
- B) Given fish oil
- C) Given steroid treatment
- D) Given cytotoxic agents
- E) Given cyclosporine

78-Which of the following is not normally considered when selecting the optimal treatment for patients with lupus nephritis?

- A) Type of underlying lesion
- B) Disease activity according to pathologic findings
- C) Severity of symptoms
- D) Duration of symptoms
- E) All of the above are commonly considered

79-Which of the following is frequently used for chronic maintenance treatment of lupus nephritis?

- A) Steroid
- B) Cytotoxic agent
- C) Cyclosporine
- D) Mycophenolate mofetil
- E) Fish oil

80-Monoclonal antibodies have been evaluated for the treatment of which of the following glomerular disease?

- A) Minimal-change nephropathy
- B) Focal segmental glomerulonephritis
- C) IgA nephropathy
- D) Lupus nephritis
- E) Poststreptococcal glomerulonephritis

81-The presence of crescents in glomeruli of patients with rapidly progressing glomerulonephritis (RPGN) indicates:

- A) Severe disease requiring early aggressive therapy
- B) Type I RPGN
- C) Type II RPGN
- D) Type III RPGN
- E) The need for close observation but no specific treatment

82-Which of the following is/are known to cause glomerulonephritis?

- A) Group A streptococci
- B) Hepatitis C virus
- C) HIV
- D) Parasites
- E) All of the above

83-Antibiotic treatment after poststreptococcal glomerulonephritis may:

- A) Prevent subsequent poststreptococcal glomerulonephritis
- B) Reduce severity of disease
- C) Prevent the spread of infection to family members

D) Both b and c

E) Both a and c

Clinical Assessment of Kidney Function answers

- 1-A) Filtration
- 2- B) Proximal tubule
- 3- D) decreases, increases
- 4- C) PTH
- 5-A) analytical interference
- 6- A) Serum creatinine
- 7- D) Urine sodium
- 8- C) Albumin:creatinine ratio
- 9-D) Creatinine clearance
- 10-A) 4-variable MDRD
- 11-B) Underestimation of true GFR
- 12- A) 55.0 mL/min
- 13 - D) 30.2 mL/min/1.73m²
- 14 -A) 38.9 mL/min
- 15- B) Estimate creatinine clearance using the CG equation.
- 16 - C) urinary Cystatin
17. B) TEA
- 18-B) Renal plasma or blood flow
- 19- D) Postrenal AKI
- 20- A) Acute tubular necrosis

- 21-** B) Serum creatinine and urine output
- 22-** C) Failure
- 23-** C) Neutrophil gelatinase-associated lipocalin
- 24-** B) Sodium bicarbonate infusion
- 25-** C) Dopamine
- 26-** D) Decreased renal perfusion secondary to volume depletion
- 27-** D) None of the above; supportive care is the mainstay of therapy
- 28-** A) It is associated with fewer hypotensive episodes
- 29-** C) Adding a thiazide diuretic
- 30-** B) Hyperkalemia
- 31-** D) Presence of electrolyte abnormalities
- 32-** A) Increasing CRRT ultrafiltration rate will generally result in increased drug clearance.
- 33-** A) Valsartan
- 34-** D) The incident rate of ESRD is much higher in African Americans and Hispanics compared with that in whites.
- 35-** B) Metabolic acidosis
- 36-** C) Furosemide + metolazone
- 37-** B) Sodium polystyrene sulfonate and dialysis
- 38-** A) 35 kcal/kg (147 kJ/kg)
- 39-** C) Phosphorus 6.0 mg/dL (1.94 mmol/L), serum bicarbonate 15 mEq/L (15 mmol/L)
- 40-** C) Either oral or intravenous
- 41-** A) Higher risk of mortality

- 42-D) 1000 mg administered in divided doses
- 43- D) No change is necessary based on Hb response after 1 week of epoetin alfa
- 44-A) Iron dextran
- 45-A) Abnormal calcium, phosphorus, PTH and vitamin D levels
- 46- C) Paricalcitol
- 47- D) Decrease in phosphorus and calcium
- 48- A) Lanthanum carbonate tablets
- 49- D) A decline in the glomerular filtration rate (GFR)
- 50- B) The offending agent is rarely identified
- 51- E) Acyclovir
- 52-A) Enhanced efferent arteriolar constriction
- 53-E) All of the above
- 54-C) Pamidronate
- 55-D) Acute tubular necrosis
- 56- A) Amifostine
- 57- B) Amifostine
- 58-C) Warfarin
- 59- B) It manifests as a gradual rise in serum creatinine 4 to 6 weeks after exposure to the drug.
- 60- D) Prednisone
- 61- B) Fever, eosinophilia, reduced intraglomerular pressure
- 62- E) Hemodynamically mediated kidney injury

- 63- E) All of the above
- 64-E) Hematuria
- 65-D) Dihydropyridine calcium channel blockers (eg, nifedipine,
- 66-B) Proteinuria
- 67- D) Both a and b
- 68 - C) Membranous nephropathy
- 69- A) Minimal-change nephropathy
- 70- A) Steroid
- 71-A) Steroid
- 72-C) Cyclosporine is often effective in preventing relapse
- 73- E) All a, b, and c above are correct
- 74-D) Both a and/or b may be used
- 75- C) Immunoglobulin A nephropathy
- 76- B) Spontaneous remission is common and steroid treatment alone is not effective in reducing proteinuria and progression of disease
- 77- A) Observed closely without specific treatment
- 78-E) All of the above are commonly considered
- 79-A) Steroid
- 80- D) Lupus nephritis
- 81- A) Severe disease requiring early aggressive therapy
- 82-E) All of the above
- 83- D) Both b and c

12

Endocrine Pharmacotherapy

ENDOCRINE PHARMACOTHERAPY QUESTIONS

1-Type 2 diabetes mellitus is characterized by:

- A) An autosomal dominant pattern of inheritance from one of six loci
- B) A relative insulin deficiency with peripheral insulin resistance
- C) Autoimmune destruction of beta cells in the pancreas
- D) The problem of subcutaneous insulin resistance, which often results in poor glucose control
- E) Altered insulin levels in the brain

2-If one screening plasma glucose was diagnostic for diabetes mellitus, the diagnosis of diabetes mellitus could be confirmed if the second laboratory reading was a:

- A) Fasting plasma glucose of 123 mg/dL
- B) Casual plasma glucose of 206 mg/dL without symptoms
- C) Plasma glucose of 141 mg/dL at 2 hours on a oral glucose tolerance test (OGTT)
- D) Fasting plasma glucose of 139 mg/dL
- E) Two-hour plasma glucose level on a 75 gram OGTT of 140 mg/dL

3-Pathophysiologically, the reason fasting plasma glucose levels are high in diabetes mellitus is because:

- A) The muscle is deficient of GLP-1 made in the gut
- B) The liver is producing too much glucose (increased hepatic glucose production)
- C) The fat tissue is exclusively allowing triglyceride breakdown resulting in higher free fatty acid levels
- D) The brain is already saturated with glucose which does not allow further uptake
- E) The L-cells in the gut are deficient in GIP

4-When comparing and contrasting glucagon-like peptide-1 (GLP-1) and glucose-dependent insulin-releasing peptide (GIP) in regards to their incretin mechanism of action, it is clear that:

- A) GLP-1 is advantageous as a therapeutic target because people with type 2 DM are resistant to its effects
- B) GIP has no effect on insulin secretion, a distinct advantage for GIP-1 or GIP
- C) GLP-1, but not GIP reduces postprandial insulin resistance, improving insulin secretion
- D) GLP-1, but not GIP enhances satiety, lowers postprandial glucagon, and enhances satiety
- E) GIP and GLP-1 have identical mechanisms of action

5-H.A. is a 44-year-old newly diagnosed with type 2 diabetes. He is of Mexican American heritage. He has had hypertension (HTN) for 8 years and is obese. His family history shows that he has two brothers and one sister who have diabetes. His brother died suddenly approximately 6 years ago when he was 52 years old. H.A. is currently a lawyer and runs a

real estate business with his wife as a second job. His current medications are hydrochlorothiazide 25 mg daily, amlodipine 10 mg daily, and rosuvastatin 5mg daily. His vital signs are as follows: pulse, 81 beats/min; blood pressure, 136/82 mm Hg; other vitals are within normal limits. His **laboratory examination results show the following:**

Hemoglobin A1c (HbA1c), 8.2%

Liver function tests within normal limits (WNL)

Urinalysis, normal but [±]2 glucose

Body mass index (BMI), 33 kg/m²

Potassium, 3.7 mEq/L

Eye examination, dilated/WNL

Creatinine, 0.6 mg/dL

Fasting plasma glucose (FPG), 239 mg/dL

Rest of examination is normal

H.A. has started to implement dietary changes and exercise, but after 1 month is still having FPG readings of 130 to 160 mg/dL. **What would the most appropriate intervention be for H.A.?**

- A) Continue current dietary changes for up to 1 year
- B) Start metformin 500 mg twice daily, titrate to 2 g/day as tolerated
- C) Start pramlintide 15 mcg before each meal
- D) Start 70/30 insulin 10 units twice daily with meals
- E) Start glyburide 10 mg twice daily

6-H.A. is a 44-year-old newly diagnosed with type 2 diabetes. He is of Mexican American heritage. He has had hypertension (HTN) for 8 years and is obese. His family history shows that he has two brothers and one sister who have diabetes. His brother died suddenly approximately 6 years ago when he was 52 years old. H.A. is currently a lawyer and runs a real estate business with his wife as a second job. His current medications are hydrochlorothiazide 25 mg daily, amlodipine 10 mg daily, and rosuvastatin 5mg daily. His vital signs are as follows: pulse, 81 beats/min; blood pressure, 136/82 mm Hg; other vitals are within normal limits. His laboratory examination results show the following:

Hemoglobin A1c (HbA1c), 8.2%

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Body mass index (BMI), 33 kg/m²

Potassium, 3.7 mEq/L

Eye examination, dilated/WNL

Creatinine, 0.6 mg/dL

Fasting plasma glucose (FPG), 239 mg/dL

H.A. has been on the maximum effective dose of the monotherapy chosen from question 1 for 3 years, but the HbA1c had been increasing, and is currently 7.9%. It has been decided to add exenatide to the regimen. **What effects would you educate H.A. about with the start of exenatide?**

- A) The necessity to take after meals to minimize the gastrointestinal side effects
- B) Possible weight loss and the need to continue lifestyle changes and exercise to maximize this effect
- C) Symptoms of heart failure and to report immediately
- D) Both B and C
- E) Both A and C

7-H.A. is a 44-year-old newly diagnosed with type 2 diabetes. He is of Mexican American heritage. He has had hypertension (HTN) for 8 years and is obese. His family history shows that he has two brothers and one sister who have diabetes. His brother died suddenly approximately 6 years ago when he was 52 years old. H.A. is currently a lawyer and runs a real estate business with his wife as a second job. His current medications are hydrochlorothiazide 25 mg daily, amlodipine 10 mg daily, and rosuvastatin 5mg daily. His vital signs are as follows: pulse, 81 beats/min; blood pressure, 136/82 mm Hg; other vitals are within normal limits. His laboratory examination results show the following:

Hemoglobin A1c (HbA1c), 8.2%

Liver function tests within normal limits (WNL)

Urinalysis, normal but $[+/-]2$ glucose

Body mass index (BMI), 33 kg/m²

Potassium, 3.7 mEq/L

Eye examination, dilated/WNL

Creatinine, 0.6 mg/dL

Fasting plasma glucose (FPG), 239 mg/dL

Over the past 6 years, the dose of exenatide has been 10 mcg twice daily. H.A. had an HbA1c of 7.2% 6 months ago, and pioglitazone 30 mg was added to the regimen. **The clinician should be aware that with the addition of pioglitazone:**

- A) The risk of hypoglycemia substantially increases, and this combination is not recommended at this HbA1c level
- B) The HbA1c will not decrease significantly because exenatide has a similar mechanism of action to pioglitazone
- C) There is significant drug-drug interaction with pioglitazone, which may prolong exenatide's action
- D) The risk of congestive heart failure can increase, and the clinician should watch for signs and symptoms

8-A.J. is a 37-year-old female who has had type 1 DM since she was 9 years old. She states that she currently has neuropathic gastroparesis and mild nonproliferative background retinopathy. She controls the blood glucose by the following insulin regimen: insulin glargine 20 units at bedtime and insulin lispro 1 unit for every 15 grams of carbohydrate at breakfast (~8 AM), lunch (~1 PM), dinner (~6 PM). In her average glucose readings over last 2 weeks prior to meals and at bedtime, no low glucose readings are noted: morning, 182 mg/dL; noon, 125 mg/dL; afternoon, 120 mg/dL; bedtime, 167 mg/dL. **Your first intervention for A.J. is that she should:**

- A) Test a 2 to 3 AM blood sugar to ascertain if she is having low blood sugar reactions in the middle of the night, which is likely
- B) Be testing her blood sugar 2 hours after her evening meal to ascertain if her blood sugar is high
- C) Increase the morning insulin lispro dose (by changing the insulin ratio with breakfast)
- D) Increase her glargine insulin to lower the fasting plasma glucose readings
- E) Not be taking insulin lispro; it is better to switch her to insulin glulisine

9-X.M. is a 64-year-old African American male who has had type 2 DM for 22 years. Currently to control his blood sugar he takes 70/30 insulin twice daily before breakfast and his evening meal. His average glucose readings over the last 2 weeks (taken prior to meals and at bedtime) are as follows: morning, 99 mg/dL; noon, 103 mg/dL; afternoon, 62 mg/dL; bedtime, 180 mg/dL.

Your first intervention is to:

- A) Reduce the dose of 70/30 insulin in the morning
- B) Reduce the dose of 70/30 insulin in the evening
- C) Increase the dose of 70/30 insulin in the evening
- D) Increase the dose of 70/30 insulin in the morning

10-The treatment of choice when dietary interventions have not normalized glucose levels in pregnancy is:

- A) To continue diet
- B) Glyburide
- C) Pioglitazone
- D) Insulin
- E) None of the above

11-The only medication recommended by the American Diabetes Association for the prevention of diabetes is:

- A) Metformin
- B) Acarbose
- C) Orlistat
- D) Rosiglitazone
- E) None of the above

12-A person with diabetes mellitus has had two urine microalbumin/creatinine ratios of 35 and 45 mcg/mg with no other transient reasons to have these microalbumin readings. The correct intervention at this time is to:

- A) Obtain a third microalbumin/creatinine sample, and average the three numbers
- B) Start hydrochlorothiazide, but only if hypertensive
- C) Start ramipril, even if the person is not hypertensive
- D) Repeat the urine microalbumin/creatinine sample in 1 year

13-A person with diabetes mellitus, currently with excellent glycemic control, presents to your clinic. A workup is done including a nerve conduction study, and it is ascertained that the patient likely has peripheral neuropathy caused by diabetes. You interview the patient and find numbness in the feet but no pain. **You decide to:**

- A) Do nothing, as you do not treat numb variant peripheral neuropathy if glycemic control is excellent
- B) Start gabapentin 300 mg three times daily and titrate to 900 mg three times daily as tolerated as it has been shown to be superior to duloxetine treatment
- C) Allow glucose control to get slightly worse, as this has been documented to lessen symptoms
- D) Start duloxetine 60 mg at bedtime, as it has been shown to be superior to gabapentin treatment

14-Monitoring of the pharmaceutical care plan for the patient with diabetes includes all of the following except:

- A) Foot exam at each clinician visit
- B) HbA1c values at least two to four times a year
- C) Blood pressure evaluation at each visit
- D) Dilated eye examination every 3 to 5 years
- E) All of these are part of the pharmaceutical care plan

15-Thionamides (methimazole and propylthiouracil) act by doing which of the following

- A) Interfere with thyroglobulin resorption into thyroid follicles
- B) Inhibit iodine incorporation into tyrosine residues
- C) Inhibit the sodium iodide transporter
- D) Increase thyroglobulin stores
- E) Cause destruction of thyroid follicular cells

16-Which of the following is true regarding the medical treatment of hyperthyroidis ?

- A) Methimazole has a shorter half-life than propylthiouracil
- B) A common side effect of these agents is renal impairment
- C) Both propylthiouracil and methimazole are concentrated within the thyroid gland
- D) It takes 4–8 months of thionamide therapy before thyroid hormone levels begin to decrease
- E) Methimazole is strongly bound to plasma proteins

17-The following statements about thionamides (propylthiouracil (PTU) and methimazole) are correct EXCEPT:

- A) Methimazole can be administered once daily
- B) Methimazole and PTU reduce the stores of thyroglobulin within the thyroid gland
- C) PTU use is contraindicated during the first trimester of pregnancy
- D) Methimazole is considerably more potent than propylthiouracil

E) The side effects of PTU and methimazole can include gastrointestinal symptoms

18-The following statements about thionamides (propylthiouracil (PTU) and methimazole) are correct EXCEPT:

- A) Mild leukopenia can be seen with PTU, methimazole, and with Graves' disease itself
- B) Methimazole and PTU serve as substrates for the iodinating intermediate of thyroid peroxidase
- C) PTU may increase the efficacy of later treatment with radioactive iodine
- D) Methimazole is generally considered first-line therapy for hyperthyroidism
- E) The side effects of PTU and methimazole can include development of a rash

19-Which of the following statement about radioactive iodine therapy of hyperthyroidism is INCORRECT:

- A) Men are less likely to become hypothyroid after radioactive iodine therapy
- B) Treatment doses of radioiodine may be based on a fixed-dose approach or a calculated-dose approach, using calculations based on thyroid gland size and iodine uptake and turnover
- C) Hypothyroidism generally occurs approximately 6 days after radioiodine administration
- D) Radioactive iodine therapy is contraindicated during pregnancy and lactation
- E) If a first dose of radioactive iodine is ineffective, a second radioactive iodine dose may be given

20-Which of the following statement about thyroid hormones is correct:

- A) T4 has a half-life about a day
- B) T3 is not usually chosen for treatment of hypothyroidism because it has to be given subcutaneously
- C) T4 can be thought of as a prohormone as it is converted into the active hormone T3
- D) The thyroid gland produces mostly T3 and a small amount of T4
- E) TSH concentrations are generally not helpful when titrating a hypothyroid patient's dose of thyroid hormone

21-Which of the following is NOT a potential cause of hypothyroidism

- A) Hashimoto's thyroiditis
- B) Radioactive iodine therapy
- C) Pituitary failure
- D) Beta-blocker therapy
- E) Over-treatment with thionamides.

22-Which of the following is NOT true about levothyroxine (synthetic thyroid hormone)?

- A) It has a half-life of 7 days, which allows it to be administered once daily.
- B) It is active when taken orally.
- C) It produces stable serum levels of both T4 and T3.

- D) Its side effects can include hepatitis and agranulocytosis.
- E) New steady-state levels of T4 are reached about 6 weeks after a levothyroxine dosage change.

23-Which are the following is NOT true about liothyronine (synthetic T3)?

- A) It has a half-life of about one day, which means it has to be administered several times a day to maintain steady levels of T3.
- B) It has been used in combination with levothyroxine therapy.
- C) It produces stable serum levels of both T4 and T3.
- D) The side effects can include palpitations and insomnia.
- E) It is not the treatment of choice for hypothyroidism.

24-Which of the following are not true regarding the use of recombinant hTSH (rhTSH)

- A) rhTSH can be used to prepare patients with thyroid cancer for diagnostic radioiodine whole body scanning.
- B) rhTSH cannot be used to stimulate thyroglobulin production as part of the diagnostic testing of patients with thyroid cancer.
- C) Preparation with rhTSH avoids the morbidity of hypothyroidism.
- D) rhTSH is given as an intramuscular injection.
- E) Post-thyroidectomy adjuvant radioiodine therapy can be delivered following rhTSH administration.

25-Which of the following physiologic functions is not regulated by anterior pituitary hormones?

- A) Growth
- B) Thyroid function
- C) Ovulation
- D) Uterine contraction

26-Which of the following clinical characteristics is common to acromegalic patients?

- A) Diarrhea
- B) Increased shoe size
- C) Weight loss
- D) Alopecia

27-The preferred initial treatment option for a patient recently diagnosed with acromegaly is:

- A) Bromocriptine
- B) Lanreotide
- C) Transsphenoidal surgery
- D) Radiation therapy

28- K.L. a 58-year-old man who was recently diagnosed with acromegaly. His past medical history is significant for type 2 diabetes and obesity. He is currently complaining of fatigue, joint pain, increased sweating and headaches. **Which of the following medical treatments is most appropriate for first-line treatment of K.L.'s symptoms?**

- A) Bromocriptine
- B) Cabergoline
- C) Octreotide
- D) Pegvisomant

29-Which of the following information is most important to provide to an acromegalic patient with a new prescription for lanreotide?

- A) Concomitant therapy with ursodeoxycholic acid is needed to prevent gallstones.
- B) The most common adverse effect of lanreotide therapy is headache.
- C) A standard multiple vitamins is recommended during therapy.
- D) Gastrointestinal adverse effects should subside within 10 to 14 days of therapy.

30-Which of the following clinical characteristics is common to patients with GH-deficient short stature?

- A) Normal GH serum concentrations
- B) Physical height <2 standard deviations below the population mean
- C) Malnutrition
- D) None of the above

31-Which of the following assessments need to be considered for the diagnosis of GH deficiency?

- A) Bone age and growth velocity
- B) GH response to provocative stimuli
- C) Serum IGF-1 concentrations
- D) All of the above

32- For which of the following conditions does recombinant human growth hormone therapy have a definitive role?

- A) Chronic fatigue syndrome
- B) GH-deficient short stature
- C) Natural aging
- D) None of the above

33-Which of the following parameters should be monitored in a patient receiving recombinant human growth hormone therapy?

- A) Alkaline phosphatase
- B) Blood glucose
- C) Thyroid function
- D) All of the above

34-Which of the following clinical characteristics is common in women with hyperprolactinemia?

- A) Menstrual irregularities
- B) Darkened skin
- C) Dry mouth
- D) Increased blood glucose

35-Which of the following classes of medications is most likely to cause drug-induced hyperprolactinemia?

- A) Beta-blockers
- B) Antidepressants
- C) Antihistamines
- D) Oral contraceptives

36-L.J. is a 29-year-old woman who has been diagnosed with a prolactin-secreting adenoma that is 8 mm in diameter. She complains of amenorrhea for 1 year and galactorrhea from both breasts. Which of the following treatments is most appropriate for first-line treatment of L.J.'s symptoms?

- A) Radiation therapy
- B) Transsphenoidal surgery
- C) Dopamine agonist therapy
- D) Somatostatin analog therapy

37-Which of the following dopamine agonists would be an appropriate choice for a patient trying to conceive?

- A) Cabergoline
- B) Pergolide
- C) Bromocriptine
- D) Pramipexole

38-C.M. is a 30-year-old woman diagnosed with hyperprolactinemia. She recently began therapy with cabergoline. Which of the following medications should be considered as adjunctive therapy in C.M.?

- A) Human growth hormone
- B) Oral contraceptives
- C) Multivitamins
- D) Antacids

39-Which of the following treatments may be required for patients with panhypopituitarism?

- A) Thyroid replacement
- B) Recombinant human growth hormone
- C) Glucocorticoids

D) All of the above

ENDOCRINE PHARMACOTHERAPY ANSWERS

- 1-B)** A relative insulin deficiency with peripheral insulin resistance
- 2-D)** Fasting plasma glucose of 139 mg/dL
- 3-D)** The brain is already saturated with glucose which does not allow
- 4-D)** GLP-1, but not GIP enhances satiety, lowers postprandial glucagon, and enhances satiety
- 5-B)** Start metformin 500 mg twice daily, titrate to 2 g/day as tolerated
- 6-B)** Possible weight loss and the need to continue lifestyle changes and
- 7-D)** The risk of congestive heart failure can increase, and the clinician should watch for signs and symptoms
- 8-D)** Increase her glargine insulin to lower the fasting plasma glucose readings
- 9-A)** Reduce the dose of 70/30 insulin in the morning
- 10-D)** Insulin
- 11-A)** Metformin
- 12-C)** Start ramipril, even if the person is not hypertensive
- 13-A)** Do nothing, as you do not treat numb variant peripheral neuropathy if glycemic control is excellent
- 14-D)** Dilated eye examination every 3 to 5 years
- 15-B)** Inhibit iodine incorporation into tyrosine residues
- 16-C)** Both propylthiouracil and methimazole are concentrated within the thyroid gland
- 17-C)** PTU use is contraindicated during the first trimester of pregnancy
- 18-C)** PTU may increase the efficacy of later treatment with radioactive iodine

- 19-C)** Hypothyroidism generally occurs approximately 6 days after radioiodine administration
- 20-C)** T4 can be thought of as a prohormone as it is converted into the active hormone T3
- 21-D)** Beta-blocker therapy
- 22-D)** Its side effects can include hepatitis and agranulocytosis.
- 23-C)** It produces stable serum levels of both T4 and T3.
- 24-B)** rhTSH cannot be used to stimulate thyroglobulin production as part of the diagnostic testing of patients with thyroid cancer.
- 25-D)** Uterine contraction
- 26-B)** Increased shoe size
- 27-C)** Transsphenoidal surgery
- 28-C)** Octreotide
- 29-D)** Gastrointestinal adverse effects should subside within 10 to 14 days of therapy.
- 30-B)** Physical height <2 standard deviations below the population mean
- 31-D)** All of the above
- 32-B)** GH-deficient short stature
- 33-D)** All of the above
- 34-A)** Menstrual irregularities
- 35-B)** Antidepressants
- 36-C)** Dopamine agonist therapy
- 37-C)** Bromocriptine
- 38-B)** Oral contraceptives
- 39-D)** All of the above

13

Cardiovascular system Pharmacotherapy

Cardiovascular pharmacotherapy questions

1-A patient with a murmur is suspected of having an abnormal heart valve. Which test would be most appropriate to evaluate the presence and severity of this condition?

- A) 12 lead electrocardiogram (EKG)
- B) Holter monitor
- C) Exercise stress test
- D) Transthoracic echocardiogram
- E) Myocardial perfusion scan

2-A patient complains of intermittent palpitations. Which test would you order to assess this patient's condition?

- A) PET scan
- B) Holter monitor
- C) Exercise stress test
- D) Transthoracic echocardiogram
- E) Myocardial perfusion scan

3-A 63-year-old truck driver with a history of diabetes mellitus, cigarette smoking, and a sedentary lifestyle due to severe right knee osteoarthritis has new onset chest pain. Which is the most reasonable test to evaluate reversible ischemia in this patient?

- A) Adenosine myocardial perfusion scan
- B) Exercise stress test
- C) Exercise myocardial perfusion study
- D) Cardiac CT imaging
- E) Cardiac catheterization

4- A 45-year-old woman reports intermittent palpitations and near syncope. A 12 lead electrocardiogram demonstrates a prolonged QT interval. Of the following medications she has been prescribed, which may cause QT prolongation and torsades de pointes (i.e., polymorphic ventricular tachycardia)?

- A) Verapamil
- B) Metoprolol
- C) Metformin
- D) Neurontin
- E) Clarithromycin

5-Which of the following statements is true?

- A) The incidence of VF at the initial rhythm for in-hospital cardiac arrest is roughly 80%.

- B) Although once the most common initial rhythm encountered with out-of-hospital cardiac arrest, the incidence of VF or PVT is decreasing markedly. C) In-hospital cardiac arrest is typically characterized by atrial fibrillation leading to VF.
D) Survival with VF is lower than that observed with PEA.
E) Pediatric cardiac arrests are usually due to cardiac-related etiologies.

6-Which of the following are factors proven to enhance prehospital survival?

- A) Occurrence of a witnessed arrest
B) Rapid implementation of bystander CPR
C) Presence of VF as the initial rhythm
D) Early defibrillation
E) All of the above

7-Which of the following statements is true?

- A) The recommended rate for chest compressions is 60 beats per minute.
B) The first action upon recognition of a patient with cardiac arrest is to begin chest compressions.
C) CPR should be performed using cycles of 30 chest compressions followed by 2 rescue breaths.
D) The presence of a pulse should be assessed immediately following a defibrillation attempt in patients with VF/PVT.
E) None of the above.

8-The concept of CCR entails which of the following?

- A) Continuous chest compressions for bystander resuscitation
B) Use of a 3-phase time-sensitive model for defibrillation
C) Use of hypothermia for all comatose patients
D) Early emergent catheterization for all resuscitated victims
E) All of the above

9-Which of the following statements is true?

- A) Epinephrine should be administered immediately upon recognition of a patient with cardiac arrest.
B) CPR should be provided immediately to a patient with cardiac arrest with minimal interruptions in chest compressions.
C) Initial defibrillation attempts should consist of 3 shocks with 360 J.
D) Early ACLS is the most crucial link in the "chain of survival."
E) None of the above.

10-Which of the following statements is true?

- A) Coronary perfusion pressures of at least 5 mmHg are associated with a higher rate of ROSC.
B) Phenylephrine is superior to epinephrine for treatment of VF.

- C) The effectiveness of epinephrine is thought to be due to its α_2 effects.
- D) Epinephrine is associated with a higher incidence of hospital discharge than norepinephrine is.
- E) None of the above.

11-Which of the following statements is true?

- A) Vasopressin is shorter acting than epinephrine.
- B) The vasoconstrictor effect of vasopressin is due to its effects on α_1 -receptors.
- C) The dose of vasopressin for VF is 40 units every 3 to 5 minutes.
- D) The effect of vasopressin can be blunted with metabolic acidosis.
- E) Vasopressin has a more favorable effect than epinephrine on myocardial oxygen demand in the postresuscitative phase.

12-Which of the following is a potential adverse effect related to IV amiodarone?

- A) Hypotension
- B) Seizures
- C) Torsades de pointes
- D) Diarrhea
- E) Hypokalemia

13-Which of the following is the drug of choice for torsades de pointes?

- A) Adenosine
- B) Amiodarone
- C) Lidocaine
- D) Magnesium sulfate
- E) Procainamide

14-Which of the following statements is true?

- A) Therapeutic hypothermia has no effect on the pharmacokinetics or pharmacodynamics of medications used in the postresuscitative setting.
- B) Target temperatures for therapeutic hypothermia are 32°C to 34°C and should be maintained for 24 to 48 hours.
- C) The goal of therapeutic hypothermia is protect from cerebral injury caused by destructive enzymatic reactions that occur following cardiac arrest.
- D) There are no adverse effects associated with therapeutic hypothermia.
- E) None of the above

15-Which of the following is not an acceptable therapy for asystole?

- A) Atropine
- B) Defibrillation
- C) Intubation
- D) Epinephrine
- E) CPR

16-Which of the following is a cause of PEA?

- A) Hypovolemia
- B) Drug overdose
- C) Tension pneumothorax
- D) Hypokalemia
- E) All of the above

17- Which of the following is not a potentially harmful effect of sodium bicarbonate.

- A) Tissue hypercarbia
- B) Intracellular acidosis
- C) Iatrogenic alkalosis
- E) Decrease in myocardial contractility

18-If IV access cannot be readily obtained, which of the following is the preferred alternative route for drug administration?

- A) Endotracheal
- B) Intraosseous
- C) Intracardiac
- D) Subcutaneous
- E) None of the above

19-The first drug administered following electrical defibrillation following ventricular fibrillation is

- A) Epinephrine
- B) Amiodarone
- C) Lidocaine
- D) Sodium bicarbonate
- E) Atropine

20-Which of the following statements is true regarding diuretics in the treatment of hypertension?

- A) Thiazide-type diuretics are first-line agents because they lower BP and lower risk of CV events.
- B) The ALLHAT study showed that nonfatal MI and coronary heart disease are reduced more with chlorthalidone than with amlodipine or lisinopril.
- C) Loop diuretics are preferred over thiazide-type diuretics in chronic kidney disease.
- D) BP lowering with hydrochlorothiazide 25 mg daily is equal to chlorthalidone 25 mg daily.

21-Which of the following is true regarding prehypertension?

- A) All patients with BP values $>120/80$ mm Hg have prehypertension.
- B) The JNC7 and AHA guidelines encourage, but do not recommend, lifestyle modifications in all patients with prehypertension.
- C) Most patients with prehypertension will not develop hypertension in their lifetime.
- D) Patients with prehypertension have higher CV risk than patients with normal BP values.

22- A 70-year-old woman with hypertension and type 2 diabetes has been on hydrochlorothiazide 25 mg daily and amlodipine 5 mg daily for 6 years. She was on captopril and enalapril several years ago, but both were stopped due to a dry cough. She was first diagnosed with hypertension when her BP was 180/82 mm Hg. Today, her BP is 148/78 mm Hg (148/76 mm Hg when repeated), and her heart rate is 100 beats/minute. Her urinalysis shows microalbuminuria, serum creatinine is 1.5 mg/dL, potassium is 4.1 mEq/L, weight is 75 kg, and height is 66 in. Her only complaint is headache.

Which of the following is/are routine monitoring parameters for her antihypertensive drug therapy?

- A) Heart rate
- B) Serum potassium, sodium, and magnesium
- C) Serum creatinine and BUN
- D) All of the above

23- A 70-year-old woman with hypertension and type 2 diabetes has been on hydrochlorothiazide 25 mg daily and amlodipine 5 mg daily for 6 years. She was on captopril and enalapril several years ago, but both were stopped due to a dry cough. She was first diagnosed with hypertension when her BP was 180/82 mm Hg. Today, her BP is 148/78 mm Hg (148/76 mm Hg when repeated), and her heart rate is 100 beats/minute. Her urinalysis shows microalbuminuria, serum creatinine is 1.5 mg/dL, potassium is 4.1 mEq/L, weight is 75 kg, and height is 66 in. Her only complaint is headache. Losartan 50 mg daily is added to her regimen. Four weeks later, her BP is 132/82 and 134/80 mm Hg, serum creatinine is 1.9 mg/dL, and potassium has increased to 4.4 mEq/L. **Which of the following is the most appropriate option to treat this patient's hypertension?**

- A) Stop losartan and start ramipril
- B) Increase losartan to 100 mg daily
- C) Increase hydrochlorothiazide to 50 mg daily
- D) Add eplerenone 25 mg daily
- E) Decrease losartan to 25 mg daily

24- A 65-year-old woman with type 2 diabetes, hypertension, osteoporosis, and atrial fibrillation has a BP of 150/96 mm Hg (150/90 mm Hg when repeated), heart rate of 68 beats/minute, potassium of 3.2 mEq/L, and a serum creatinine of 2.3 mg/dL. She reports an allergy to chlorthalidone (severe gout). Presently, she is on diltiazem CD 360 mg daily and torsemide 10 mg daily. At this point in her care, which of the following agents would be the most rational addition to her regimen?

- A) Hydrochlorothiazide 12.5 mg daily

- B) Amlodipine 5 mg daily
- C) Doxazosin 1 mg daily
- D) Atenolol 25 mg daily
- E) Valsartan 160 mg daily

25- Which of the following is preferred as add-on therapy for a patient who is status post-MI (1 month ago) with a BP of 146/88 mm Hg (144/86 mm Hg when repeated) while treated with metoprolol XL 200 mg daily?

- A) Chlorthalidone
- B) Valsartan
- C) Eplerenone
- D) Amlodipine
- E) Lisinopril

26-Which of the following is preferred as initial antihypertensive therapy for a 63-year-old woman who is diagnosed with hypertension and has a history of ischemic stroke (6 months ago), with a BP of 166/108 mm Hg (164/106 mm Hg when repeated)?

- A) A thiazide-type diuretic with an ACE inhibitor
- B) A thiazide-type diuretic with a non-selective β -blocker
- C) An ARB alone
- D) A thiazide-type diuretic alone
- E) An ACE inhibitor alone

27-A 52-year-old man has a past history of chronic stable angina and hypertension. He is experiencing chest pain twice weekly while being treated with atenolol 100 mg daily. His BP is 146/90 mm Hg (144/92 mm Hg when repeated), and his heart rate is 58 beats/minute. Which of the following is the most appropriate agent to add in this patient?

- A) Hydrochlorothiazide 12.5 mg daily
- B) Quinapril 20 mg daily
- C) Diltiazem SR 180 mg daily
- D) Nifedipine SR 30 mg daily
- E) Irbesartan 150 mg daily

28-: A 69-year-old woman with a history of angioedema (from lisinopril), hypertension, and type 2 diabetes is currently receiving hydrochlorothiazide 25 mg daily and atenolol 100 mg daily. Today her BP is 138/82 mm Hg (138/84 mm Hg when repeated), and her heart rate is 56 beats/min. Urinalysis shows macroalbuminuria, serum creatinine is 1.2 mg/dL, potassium is 3.8 mEq/dL, weight is 90 kg, and height is 65 in. She complains of heartburn, a dry cough, constipation, and fatigue when she exercises. She normally exercises 3 times/week and follows a DASH eating plan. Which of her complaints is most likely from one of her antihypertensive medications?

- A) Heartburn

- B) Dry cough
- C) Constipation
- D) Fatigue

29-A 55-year-old man with hypertension is currently treated with hydrochlorothiazide 25 mg daily, irbesartan 300 mg daily, carvedilol 25 mg twice daily, and amlodipine 10 mg daily. His BP is 144/90 mm Hg (146/92 mm Hg when repeated). He is adherent with all of these medications. Serum creatinine is 1.2 mg/dL, potassium is 4.2 mEq/L, and all other laboratory values are normal. His Framingham risk score is 8%. **Which of the following is the most appropriate to add to his regimen?**

- A) Terazosin 2 mg daily
- B) Spironolactone 25 mg daily
- C) Clonidine 0.1 mg twice daily
- D) Chlorthalidone 12.5 mg daily

30-Which of the following is/are appropriate recommendations when a patient with newly diagnosed hypertension asks you for advice on how to increase potassium as a lifestyle modification to lower BP?

- A) Increase your dietary intake of potassium rich foods.
- B) Start using over the counter potassium supplements.
- C) Ask your physician to prescribe prescription strength potassium chloride.
- D) a and b.
- E) a, b, and c.

31-A white man with a 2-year history of heart failure secondary to an acute myocardial infarction (MI) returns to the clinic for routine follow-up. He continues to have fatigue and dyspnea on minimal exertion.

Lisinopril 20 mg daily
Carvedilol 25 mg twice daily
Furosemide 40 mg twice daily
Digoxin 0.25 mg daily
Esomeprazole 25 mg daily
Aspirin 81 mg daily
Simvastatin 40 mg qhs

His cardiovascular drug regimen is unchanged over the previous 3 months except for digoxin, which was started 1 month ago. His current digoxin plasma concentration is 1.6 ng/mL. His left ventricular ejection fraction (LVEF) by echo is 35%. His labs are all within normal limits.

Which of the following is the most appropriate approach to his digoxin therapy?

- A) Decrease the digoxin dose to 0.125 mg/day.
- B) Decrease the digoxin dose to 0.0625 mg/day.
- C) Discontinue digoxin.
- D) No changes in digoxin therapy are indicated.

32-A white man with a 2-year history of heart failure secondary to an acute myocardial infarction (MI) returns to the clinic for routine follow-up. He continues to have fatigue and dyspnea on minimal exertion.

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His cardiovascular drug regimen is unchanged over the previous 3 months except for digoxin, which was started 1 month ago. His current digoxin plasma concentration is 1.6 ng/mL. His left ventricular ejection fraction (LVEF) by echo is 35%. His labs are all within normal limits.

A-Which of the following would be the most appropriate recommendation to improve the long-term outcome of this patient?

A) Add hydralazine/isosorbide dinitrate 37.5 mg/20 mg three times daily.

B) Add amlodipine.

C) Add spironolactone.

D) Change lisinopril to eprosartan.

B-Cough is an adverse effect associated with which of the following medications?

A) Enalapril

B) Valsartan

C) Carvedilol

D) Spironolactone

33-Heart failure may be exacerbated by which of the following medications?

A) Glipizide

B) Digoxin

C) Simvastatin

D) Rosiglitazone

34-Which of the following is true regarding use of β -blockers for treating heart failure?

A) All β -blockers are equally effective for the treatment of heart failure.

B) Only cardioselective agents are effective.

C) Therapy should be initiated at the target dose and titrated down if not tolerated.

D) Therapy should be initiated in patients who are clinically stable without volume overload.

35-Which of the following adverse effects of lisinopril can be avoided by switching to candesartan?

- A) Hypotension
- B) Cough
- C) Hyperkalemia
- D) Renal insufficiency

36-Which of the following combinations represent optimal therapy for patients with chronic heart failure due to decreased LVEF?

- A) Hydrochlorothiazide, diltiazem, atenolol
- B) Losartan, verapamil, amlodipine
- C) Furosemide, enalapril, metoprolol succinate
- D) Dobutamine, metoprolol tartrate, nesiritide

37-Which of the following are risk factors for spironolactone-induced hyperkalemia?

- A) Concomitant digoxin therapy
- B) Increased peripheral edema
- C) Concomitant furosemide therapy
- D) Concomitant lisinopril therapy

38-Which of the following should be used to monitor diuretic therapy in patients with heart failure?

- A) Daily weights, serum potassium, serum magnesium
- B) Plasma norepinephrine
- C) Hemoglobin A1C and fasting blood sugar
- D) Fasting lipid profile

39-A patient with New York Heart Association class III heart failure who was recently hospitalized for heart failure exacerbation continues to experience symptoms of volume overload and dyspnea on exertion despite treatment with maximal doses of an angiotensin-converting enzyme (ACE) inhibitor, β -blocker, loop diuretic, and digoxin.

Which of the following would be the most appropriate addition to this patient's drug therapy?

- A) Isosorbide dinitrate
- B) Amlodipine
- C) Amiodarone
- D) Spironolactone

40-A patient with a history of hypertension was recently diagnosed with stage C heart failure and reduced LVEF. Current medications include verapamil SR 120 mg qid, digoxin 0.25 mg qid, and furosemide 40 mg qid. The patient's current vital signs are blood pressure 145/90, pulse 82.

Which of the following changes should be recommended in this patient's drug therapy?

- A) Increase verapamil to 240 mg daily.
- B) Add metolazone.
- C) Discontinue verapamil and initiate lisinopril and carvedilol therapy.
- D) Add candesartan to the present therapy.

41-What is the most appropriate vasodilator therapy for a patient with heart failure, left ventricular systolic dysfunction, and a history of losartan-induced angioedema?

- A) Lisinopril
- B) Candesartan
- C) Hydralazine/nitrates
- D) Diltiazem

42-A 63-year-old woman with stage C heart failure and LVEF of 18% is currently taking lisinopril 20 mg qid, furosemide 40 mg qid, digoxin 0.25 mg qid, and carvedilol 3.125 mg bid. Today, she presents with increasing shortness of breath, fatigue, and ankle swelling. She also reports a 5 lb weight gain over the past week. Her labs are significant for a serum potassium of 5.2 mEq/L and serum creatinine of 2.2 mg/dL.

Which of the following interventions is most appropriate?

- A) Increase the dose of furosemide to 80 mg bid.
- B) Increase the dose of carvedilol to 6.25 mg bid.
- C) Start spironolactone 12.5 mg qid.
- D) Increase the dose of digoxin to 0.25 mg qid.

43-A 55-year-old patient with heart failure who is in normal sinus rhythm is currently receiving an ACE inhibitor, β -blocker, and loop diuretic. Despite these therapies, the patient continues to experience symptoms. Current vital signs are blood pressure 120/75, pulse 88. Estimated creatinine clearance is 62 mL/min.**Which of the following would be the preferred treatment option?**

- A) Add digoxin and titrate the dose until symptoms resolve.
- B) Add digoxin 0.125 mg/day to target a serum digoxin concentration of 0.5 to 1 ng/mL.
- C) Add digoxin 0.5 mg/day to target a serum digoxin concentration 2.0 ng/mL.
- D) Digoxin should not be used because this patient is in sinus rhythm.

44-Despite treatment with enalapril 20 mg bid, metoprolol XL 200 mg qid, digoxin 0.125 mg qid, and furosemide 40 mg bid, an African American patient with stage C heart failure continues to experience shortness of breath and fatigue with minimal exertion. Vital signs are blood pressure 138/80, pulse 60, and there is no evidence of fluid overload on physical exam. Labs are significant for potassium 5.1 mEq/L and serum creatinine 1.6 mg/dL.

Which of the following do you recommend?

- A) Add candesartan 4 mg qid.
- B) Increase metoprolol to 300 mg bid.

- C) Add spironolactone 25 mg qid.
- D) Add hydralazine/isosorbide dinitrate (ISDN).

45-Which of the following descriptions best characterizes diastolic heart failure?

- A) Low ejection fraction
- B) Enlarged ventricular chamber
- C) Impaired diastolic relaxation
- D) Thin myocardial wall

46-Which of the following descriptions would most likely describe a patient with diastolic heart failure?

- A) 65-year-old man, status post–anterior myocardial infarction
- B) 75-year-old woman with hypertension
- C) 45-year-old woman with diabetes
- D) 35-year-old man with hypertension

47-Which of the following is the best method available to differentiate diastolic heart failure from systolic heart failure?

- A) Physical findings
- B) Patient symptoms
- C) Echocardiography
- D) Chest x-ray

48-Which of the following is the most common contributing factor to the development of diastolic heart failure?

- A) Hypertension
- B) Coronary artery disease
- C) Pregnancy
- D) Aortic stenosis

49-Which of the following symptom(s) is/are consistent with diastolic heart failure?

- A) Shortness of breath
- B) Exaggerated increase in blood pressure with exercise
- C) Exercise intolerance
- D) All of the above

50-Which of the following nonpharmacologic interventions would be inappropriate for a patient with diastolic dysfunction?

- A) Isometric exercise
- B) Low sodium diet (< 3g/day)
- C) Low fat diet
- D) None of the above, all are appropriate

51-Which of the following pharmacologic agents would not be beneficial in a patient with diastolic heart failure?

- A) Furosemide
- B) Diltiazem
- C) Metoprolol
- D) Digoxin

52-Which of the following is true regarding the use of β -blockers in patients with diastolic heart failure?

- A) Beta-blockers have shown a reduction in mortality.
- B) Selective β -blockers appear to be more effective than nonselective β -blockers.
- C) Beta-blockers have been associated with an improvement in symptoms.
- D) When monitoring therapy, an initial resting heart rate goal should be 90 beats per minute.

53-A diabetic patient with hypertension complains of exercise intolerance due to shortness of breath. His blood pressure is under poor control (150/90 mm Hg). He is currently receiving lisinopril 20 mg twice daily and hydrochlorothiazide 25 mg daily. His heart rate is 90 beats per minute at rest. He has a normal ejection fraction and no signs of edema.

Which of the following modifications to the current regimen is best for this patient?

- A) Add amlodipine 10 mg daily.
- B) Discontinue hydrochlorothiazide and add furosemide 80 mg daily.
- C) Add metoprolol succinate 100 mg daily.
- D) Discontinue lisinopril and add losartan 50 mg daily.

54-A 70-year-old woman presents to the emergency department with sudden onset of severe shortness of breath and chest pressure. Her history is significant only for hypertension, which is controlled with hydrochlorothiazide. On physical examination, her blood pressure is 140/75 mm Hg, with a heart rate of 140 beats per minute. Chest examination reveals pulmonary rales. Her ECG shows atrial fibrillation with a rapid ventricular response. All of the following are appropriate measures for this patient except

- A) IV nitroglycerin
- B) IV diltiazem
- C) Supplemental oxygen
- D) IV lidocaine

55-Which one of the following patients with hypertrophic cardiomyopathy is the best candidate for possible implantable cardioverter-defibrillator placement?

- A) A 25-year-old marathon runner who is currently receiving verapamil and has poorly controlled atrial fibrillation
- B) A 35-year-old woman with left ventricular outflow obstruction who has recently undergone alcohol ablation

- C) A 40-year-old triathlete who is currently receiving diltiazem and has recently suffered a ventricular fibrillation arrest
- D) A 95-year-old man with hypertension and myocardial ischemia who is currently controlled on verapamil

56-The patient, a 40-year-old man, has hypertrophic cardiomyopathy with a mild obstructive component. His symptoms include chest pain on exertion.

All of the following could be considered potential treatments for this patient's symptoms except

- A) Surgical intervention
- B) Digoxin
- C) Verapamil
- D) Alcohol ablation

57-A 50-year-old man with hypertrophic obstructive cardiomyopathy complains of dyspnea with exertion. **Which of the following calcium channel blocker regimens is the best choice for this patient?**

- A) Nifedipine sustained release 90 mg daily
- B) Verapamil sustained release 240 mg daily
- C) Amlodipine 10 mg daily
- D) Felodipine 5 mg twice daily

58-A 55-year-old man presents to the clinic with significant dyspnea on exertion and orthopnea. He has an ejection fraction of 55% and a past medical history significant for type 2 diabetes, heart failure, and hypertension. He has no known drug allergies and is receiving furosemide, metoprolol, and glyburide.

Which of the following pharmacologic agents should be added to this patient's regimen to reduce the mortality associated with his type of heart failure?

- A) Lisinopril
- B) Digoxin
- C) Candesartan
- D) None of the above

59-The patient is a 76-year-old woman with a history of hypertension and diastolic heart failure. She is currently taking enalapril 10 mg twice daily, hydrochlorothiazide 25 mg once daily, and metoprolol tartrate 50 mg twice daily for blood pressure control. On her visit today, her blood pressure is 150/85. and her heart rate is 76 beats per minute. Recent labs: Na⁺ 139, K⁺ 5.3, Cl⁻ 100, CO₂ 24, Cr 1.5, blood urea nitrogen 25, glucose 80. The patient's primary care provider asks for a recommendation for better blood pressure control. **Which of the following strategies is appropriate for this patient?**

- A) Increase the angiotensin-converting enzyme (ACE) inhibitor dose.
- B) Increase the β -blocker dose.
- C) Add spironolactone.

D) Add eplerenone

60-A 58-year-old male with a history of ischemic cardiomyopathy presents to clinic with orthopnea, dyspnea with minimal exertion, 3+ pitting edema, fatigue, anorexia, nausea, and early satiety. **These signs and symptoms are consistent with**

- A) Fluid overload only
- B) Low cardiac output only
- C) Both fluid overload and low cardiac output
- D) Neither fluid overload or low cardiac output

61-A patient is admitted with decompensated chronic heart failure. The patient's current medications include lisinopril 20 mg daily, furosemide 40 mg twice a day, metoprolol CR/XL 200 mg daily digoxin 0.125 mg daily. The patient has been stable on these doses for the previous 4 months. It is decided that positive inotropic therapy is indicated, along with IV diuretics.

Which of the following would you recommend?

- A) D/C metoprolol and start dopamine
- B) D/C metoprolol and start dobutamine
- C) Start dobutamine
- D) Start milrinone

62-A 63-year-old female with hypertensive cardiomyopathy (LVEF 30–35%) presents with a chief complaint of “always feeling tired.” Her daughter reported that the patient's exercise tolerance has recently significantly declined despite strict adherence to a low sodium diet and currently prescribed medications that include enalapril 7.5 mg twice daily, carvedilol 12.5 mg twice daily, furosemide 80 mg twice daily, and digoxin 0.125 mg daily. Vital signs include BP 92/57 mmHg, HR 95 bpm, (mild orthostasis), and RR 16 rpm. On physical examination, she has no finding consistent with fluid overload. Laboratory analysis reveals sodium 135 mmol/L, potassium 4.9 mmol/L, BUN 45 mg/dL, and SCr 2.2 mg/dL (baseline BUN/SCr 27/1.1). Upon further questioning, the patient does admit to occasional dizziness.

Which one of the following is the optimal initial intervention for this patient?

- A) Change furosemide to 80 mg intravenously twice daily.
- B) Hold furosemide and initiate cautious hydration with intravenous fluids.
- C) Hold carvedilol and initiate dobutamine at 2 mcg/kg/min.
- D) Increase carvedilol to 25 mg PO twice daily.

63-Which of the following patient descriptions would indicate a cardiac chest pain that has progressed from stable to unstable angina?

- A) "I get this pain occasionally while mowing the yard and it usually goes away after I sit down for a few minutes"
- B) "This just started a couple weeks ago. The first time it happened while I was helping my friend move some heavy furniture but now it happens 3 or 4 times a day while I am walking"

- C) "I get this pain on the left side of my chest. It usually happens late at night after I have gone to bed. Tums seem to help along with sitting upright for 30 minutes"
- D) "I was outside gardening this morning when it hit me. I took a nitroglycerin and it knocked it out right away"

64-RG is a 68-yo female who presents to the clinic c/o chest pain. It occurs while she is gardening and is relieved with rest. She has a PMH of HTN. Current meds include metoprolol 25 mg BID and HCTZ 25 QD. Current vitals are: BP: 128/78, P: 70, RR: 12. Which of the following treatments would be appropriate for this patient?

- A) Increase metoprolol to 50 mg BID
- B) Start aspirin 81 mg QD
- C) Start amlodipine 2.5 mg QD
- D) A and B

65-Which of the following is an adverse effect of immediate-release nifedipine that limits its use for chronic stable angina?

- A) Tachycardia
- B) Bradycardia
- C) Hypertension
- D) Hypotension

66-Which of the following combinations of anti-anginal drugs is contraindicated due to a drug–drug interaction?

- A) Verapamil and ranolazine
- B) Diltiazem and isosorbide dinitrate
- C) Metoprolol and isosorbide dinitrate
- D) Metoprolol and amlodipine

67-Which of the following counseling point quotes for sublingual nitroglycerin contains INCORRECT information?

- A) "Its ok to put a few in a clear Ziploc sandwich bag to pack for a trip"
- B) "You can take one every 5 minutes for up to 3 doses"
- C) "Place it under your tongue and allow it to dissolve"
- D) "Call EMS if a third dose is required"

68-Which of the following statements regarding clopidogrel and prasugrel is correct?

- A) Clopidogrel has a faster onset than prasugrel
- B) Clopidogrel is more potent than prasugrel
- C) Clopidogrel causes more bleeding than prasugrel
- D) None of the above are correct

69-How long should clopidogrel be given along with aspirin after angioplasty and drug-eluting stent placement?

- A) 1 day
- B) 1 week
- C) 1 month
- D) 6 months
- E) 1 year

70-If a patient with angina can walk no more than 1-2 blocks or climb one flight of stairs at a normal pace, the patient would be classified as:

- A) Class I
- B) Class II
- C) Class III
- D) Class IV

71-Which one of the following would increase oxygen demand and potentially precipitate angina?

- A) Anemia
- B) Hyperthyroidism
- C) Sick cell disease
- D) Hypoxemia
- E) Hyperviscosity

72-Which one of the following should not be used in the treatment of variant (Prinzmetal's angina)?

- A) Nifedipine
- B) Isosorbide mononitrate
- C) Metoprolol
- D) Diltiazem
- E) Verapamil

73-Which one of the following is the recommended initial drug therapy for angina once PRN use of nitroglycerin is no longer adequate?

- A) B-blockers
- B) Nitrates
- C) Calcium channel blockers
- D) ACEI
- E) Clopidogrel

74-Which of the following characteristics describes a patient with ACS patient who is at the highest risk of immediate death?

- A) ST-segment elevation and heart failure symptoms
- B) ST-segment depression and heart failure symptoms
- C) T-wave inversion and positive troponin
- D) ST-segment depression and positive troponin

75-The most specific diagnostic test for myocardial infarction (MI) is

- A) Elevated troponin
- B) Elevated creatine kinase
- C) T wave inversion on electrocardiogram
- D) Report of chest pain at rest

76-Which of the following treatment scenarios describes a patient who has received optimal reperfusion therapy for ST-segment elevation (STE) myocardial infarction (MI)?

- A) Patient presented to the hospital at 0730 with chest discomfort and received tenecteplase at 0830
- B) Patient presented to the hospital at 1150 and received alteplase at 1225
- C) Patient presented to the hospital at 0810 and received primary percutaneous coronary intervention (PCI) at 0900
- D) Patient presented to the hospital at 1200, received reteplase at 1240, and underwent PCI at 1440

77-Based upon evidence-based practice guidelines, which of the following antithrombotic drug therapy regimens is preferred for a patient undergoing primary PCI for STE MI?

- A) Aspirin, unfractionated heparin, abciximab, reteplase
- B) Clopidogrel, enoxaparin, bivalirudin, eptifibatide
- C) Clopidogrel, aspirin, streptokinase, abciximab
- D) Prasugrel, aspirin, bivalirudin

78-A 65-year-old man presents to the emergency department of a hospital with no interventional cardiology services with STE MI 2 hours after the onset of symptoms. He has a history of HTN 10 years and hemorrhagic stroke 10 years ago. His current blood pressure is 105/55 mm Hg and his heart rate is 98 bpm. He has no signs and symptoms of acute heart failure. He received aspirin 325 mg orally and was started on an intravenous NTG infusion. What additional pharmacotherapy should be administered in the emergency department to prevent death, stroke, or reinfarction?

- A) Unfractionated heparin, clopidogrel
- B) Reteplase, bivalirudin and metoprolol
- C) Prasugrel, enoxaparin, and metoprolol
- D) Enoxaparin and abciximab

79-Which of the following best describes patients who should receive eplerenone following myocardial infarction?

- A) All patients
- B) All patients with left ventricular ejection fraction less than or equal to 40%, serum creatinine less than 2.5 mg/dL, and creatinine clearance greater than 30 mL/min
- C) All patients with heart failure symptoms and serum potassium less than 5.0 mEq/L

D) All patients with diabetes mellitus and left ventricular ejection fraction less than or equal to 40%

80-Which of the following therapies reduce the risk of stroke following MI?

- A) Warfarin
- B) Aspirin
- C) Simvastatin
- D) All of the above

81-Which of the following reduce mortality following NSTEMI?

- A) Ramipril
- B) Reteplase
- C) Clopidogrel
- D) Isosorbide dinitrate

82-The goal blood glucose for a patient with acute MI is:

- A) <80 mg/dL
- B) <100 mg/dL
- C) <126 mg/dL
- D) <180 mg/dL

83-The goal low-density lipoprotein cholesterol for a patient with recent MI is:

- A) <60 mg/dL
- B) <70 mg/dL
- C) <130 mg/dL
- D) <160 mg/dL

84-You are asked to see a patient with new-onset atrial fibrillation, a rapid ventricular response (heart rate = 179 bpm) and thyrotoxicosis. Currently, his only symptoms are weakness and palpitations. Which of the following do you suggest as initial therapy?

- A) Intravenous digoxin to control his ventricular rate
- B) Intravenous ibutilide to restore sinus rhythm
- C) Intravenous esmolol to control his ventricular rate
- D) Intravenous amiodarone to control his ventricular rate

85-Which of the following drugs would be most appropriate to restore sinus rhythm in a patient with AV nodal reentry or orthodromic AV reentry?

- A) Adenosine
- B) Procainamide
- C) Lidocaine
- D) Digoxin

86-A 19-year-old female with a history of WPW syndrome is seen in the ER. She has no other medical problems or known heart disease. Her current ECG shows a wide QRS tachycardia (irregular) (heart rate = 178 bpm). Her BP is stable and she does not feel syncopal. Which of the following agents **would be the most appropriate to administer to this patient at this time?**

- A) Intravenous adenosine
- B) Intravenous verapamil
- C) Intravenous procainamide
- D) Intravenous lidocaine

87-A 79-year-old man with a past medical history of hypertension and dyslipidemia presents to clinic complaining of dizziness and palpitations that have been occurring for the past 2–3 days. An ECG reveals that he is in atrial fibrillation (HR = 120 bpm). **Which of the following drug regimens would be most appropriate for stroke prevention in this patient?**

- A) Aspirin 325 mg po daily
- B) Warfarin (titrated to an INR of 2–3)
- C) Low-dose warfarin (titrated to an INR 1.2–1.5) and aspirin 325 mg po daily
- D) This patient does not need antithrombotic therapy and should be cardioverted immediately.

88-A 55-year-old female with a history of atrial fibrillation is admitted for pharmacologic cardioversion. In the CCU, she is given 2 mg of intravenous ibutilide, which terminates the atrial fibrillation. However, shortly thereafter, she suffers several long episodes of polymorphic ventricular tachycardia with a prolonged QT interval during sinus rhythm. **Which of the following would be the most appropriate treatment for this arrhythmia?**

- A) Intravenous epinephrine 1 mg
- B) Intravenous amiodarone 300 mg
- C) Intravenous lidocaine 100 mg
- D) Intravenous magnesium 2 g

89-Mr. Jones develops an objectively confirmed deep vein thrombosis (DVT) while receiving unfractionated heparin (UFH) for venous thromboembolism (VTE) prophylaxis for the past 7 days. The patient's platelet count has dropped by 50% and is less than 100,000; therefore, heparin-induced thrombocytopenia is strongly suspected. Mr. Jones is 5 foot 11 inches tall and weighs 100 kg.

Which of the following strategies would be the most appropriate in the initial management for Mr. Jones?

- A) Stop heparin and start warfarin 5mg orally every day
- B) Stop heparin and start enoxaparin 100 mg SC q 12 h
- C) Stop heparin and start argatroban 200 mcg/min via intravenous infusion
- D) Stop heparin therapy and wait for results of laboratory tests to confirm diagnosis before making a treatment decision

90-Which of the following statements regarding warfarin sodium is true?

- A) Warfarin slows the production of protein C in the liver.
- B) Warfarin should never be used in combination with other anticoagulant drugs.
- C) Although it has a long half-life, warfarin produces its anticoagulation effect rapidly.
- D) Warfarin is effective for the long-term treatment of VTE but is not useful for VTE prophylaxis.

91-Low-dose unfractionated heparin (5,000 units SC q 12 h) would be an appropriate choice to prevent VTE for which of following patients?

- A) A 77-year-old male receiving a hip fracture repair following an automobile accident
- B) A 42-year-old female undergoing an abdominal hysterectomy for ovarian cancer
- C) A 51-year-old male with benign prostatic hyperplasia and undergoing an abdominal prostatectomy
- D) A 28-year-old female with a history of recurrent DVT undergoing bowel resection surgery for severe Crohn's disease

92-Which of the following statements regarding the low-molecular-weight heparins (LMWHs) is true?

- A) LMWHs are direct inhibitors of thrombin formation.
- B) LMWHs are identical to unfractionated heparin but are more potent.
- C) LMWHs are poorly absorbed following subcutaneous administration.
- D) LMWHs are a heterogenous mixture of molecules of varying weights and lengths.

93-Which of the following statements regarding unfractionated heparin (UFH) is true?

- A) UFH molecules with fewer than 18 saccharide units possess no anticoagulant activity.
- B) UFH should be given in significantly lower doses to patients with liver disease.
- C) UFH is rapidly and completely absorbed when administered subcutaneously in doses of 5,000 units or less.
- D) Even when weight-based dosing protocols are use, UFH produces an unpredictable degree of anticoagulation.

94- In addition to starting warfarin sodium therapy, which of the following would be the most appropriate initial acute treatment regimen for a 57-year-old, 120-kg male who has a proximal DVT and no other comorbid conditions?

- A) Dalteparin 5,000 units IV bolus followed by 1,000 units SC q 24 h
- B) Enoxaparin 30 mg SC q 12 h
- C) Fondaparinux 10 mg SC q 24 h
- D) Unfractionated heparin 5,000 unit IV bolus followed by 1,000 units/h given by continuous IV infusion

95-Which of the following individuals would be at the greatest risk for a major bleed if given warfarin therapy?

- A) An 81-year-old woman with frequent tonic-clonic seizures who had neurosurgery last week
- B) A 54-year-old man with well-controlled high blood pressure who enjoys playing golf on weekends
- C) A 74-year-old woman with poorly controlled diabetes mellitus type 2 who drinks one glass of wine with dinner
- D) A 42-year-old man with coronary artery disease who takes aspirin 81 mg daily and who participates in a daily exercise program at the gym

96-A 76-year-old male has been stable on warfarin 5 mg daily for the past 6 months for the treatment of recurrent DVTs. The patient has been prescribed amiodarone to control a symptomatic dysrhythmia. The patient will be given a loading dose in the hospital today and then discharged home on amiodarone 200 mg daily. **Which of the following would be the most appropriate dose of warfarin for this patient now?**

- A) 0.5 mg
- B) 2.5 mg
- C) 5 mg
- D) 10 mg

97-A patient is initiating dalteparin subcutaneously and warfarin sodium orally for the treatment of DVT on an outpatient basis. **Which of the following laboratory monitoring plans is the most appropriate to determine response and toxicity to this drug treatment regimen?**

- A) Measure platelet count, aPTT, and INR daily
- B) Measure INR in 2 days and platelet count in 7 days
- C) Measure INR in 12 hours, aPTT in 4 days, and hemoglobin in 30 days
- D) Measure clotting time, serum creatinine, and liver function tests every 3 days

98-Which of the following antiplatelet medications is associated with a high incidence of headache?

- A) Warfarin
- B) Aspirin
- C) Clopidogrel
- D) Aspirin + dipyridamole
- E) Unfractionated heparin

99-Which class of antihypertensives reduced blood pressure and other cardiovascular events for patients with PAD as demonstrated in the Heart Outcomes Prevention Evaluation (HOPE) study?

- A) β -Blockers
- B) ACE-inhibitors
- C) Calcium channel blockers
- D) Thiazide diuretics

100-The Antithrombotic Trialists' Collaboration (ATC) concluded that which medication lead to a significant reduction in serious vascular events (12%) in "high-risk" patients, such as those with PAD?

- A) Aspirin
- B) Clopidogrel
- C) Ticlopidine
- D) Pentoxifylline

101-Which of the following drugs stimulates only α -adrenergic receptors?

- A) Dobutamine.
- B) Dopamine.
- C) Phenylephrine.
- D) Epinephrine.
- E) Norepinephrine.

102-Which of the following explains the development of lactic acidosis by a catecholamine?

- A) Enhanced vasoconstriction in peripheral arteries.
- B) Enhanced glycogenolysis.
- C) Mobilization of lactate from peripheral tissues.
- D) A and B only.
- E) All the above.

103-Which of the following catecholamines is preferred when treating hypotension in a septic shock patient with concomitant tachycardia?

- A) Dobutamine.
- B) Dopamine.
- C) Phenylephrine.
- D) Epinephrine.
- E) Norepinephrine.

104-All of the following are similarities between dopamine and norepinephrine, except?

- A) Both agents decrease gut mucosal oxygenation.
- B) Both agents may be dosed in $\mu\text{g/kg/minute}$.
- C) Both agents may cause tachycardia via β_1 stimulation.
- D) Both agents may contribute to ischemic side effects.
- E) Both agents are considered first-line therapy of septic shock refractory to fluid administration.

105-Which of the following receptors is most likely to cause immunomodulation when stimulated?

- A) β_1 .
- B) β_2 .
- C) α_1 .
- D) Dopamine.
- E) V1.

106-Based on efficacy and cost considerations, this is the fluid of choice for the initial resuscitation of a patient with hypovolemic shock:

- A) Normal saline
- B) Dextrose 5%
- C) Albumin 5%
- D) Hetastarch 6%

107-An adult patient with hypovolemic shock continues to have low urine output and blood pressure after the administration of 1 liter of normal saline. What should be the next step assuming no signs of fluid overload?

- A) More normal saline
- B) Albumin 25%
- C) Phenylephrine
- D) Norepinephrine

Cardiovascular pharmacotherapy answers

- 1- D) Transthoracic echocardiogram
- 2- B) Holter monitor
- 3- A) Adenosine myocardial perfusion scan
- 4- E) Clarithromycin
- 5-B) Although once the most common initial rhythm encountered with out-of-hospital cardiac arrest, the incidence of VF or PVT is decreasing markedly.
- 6-E) All of the above
- 7- C) CPR should be performed using cycles of 30 chest compressions followed by 2 rescue breaths.
- 8- E) All of the above
- 9- B) CPR should be provided immediately to
- 10- C) The effectiveness of epinephrine is thought to be due to its α_2 effects.
- 11- E) Vasopressin has a more favorable effect than epinephrine on myocardial oxygen demand in the postresuscitative phase.
- 12- A) Hypotension
- 13- D) Magnesium sulfate
- 14-C) The goal of therapeutic hypothermia is protect from cerebral injury caused by destructive enzymatic reactions that occur following cardiac arrest.
- 15- B) Defibrillation
- 16-E) All of the above
- 17-E) Decrease in myocardial contractility
- 18- B) Intraosseous

19- A) Epinephrine

20- A) Thiazide-type diuretics are first-line agents because they lower BP and lower risk of CV events.

21- D) Patients with prehypertension have higher CV risk than patients with normal BP values.

22- D) All of the above

23- B) Increase losartan to 100 mg daily

24- E) Valsartan 160 mg daily

25- E) Lisinopril

26- A) A thiazide-type diuretic with an ACE inhibitor

27- D) Nifedipine SR 30 mg daily

28- D) Fatigue

29- B) Spironolactone 25 mg daily

30- A) Increase your dietary intake of potassium rich foods.

31- A) Decrease the digoxin dose to 0.125 mg/day.

32- A- C) Add spironolactone.

B- A) Enalapril

33- D) Rosiglitazone

34- D) Therapy should be initiated in patients who are clinically stable without volume overload.

35- B) Cough

36- C) Furosemide, enalapril, metoprolol succinate

37- D) Concomitant lisinopril therapy

- 38-** A) Daily weights, serum potassium, serum magnesium
- 39-** D) Spironolactone
- 40-** C) Discontinue verapamil and initiate lisinopril and carvedilol therapy.
- 41-** C) Hydralazine/nitrates
- 42-** A) Increase the dose of furosemide to 80 mg bid.
- 43-** B) Add digoxin 0.125 mg/day to target a serum digoxin concentration of 0.5 to 1 ng/mL.
- 44-** D) Add hydralazine/isosorbide dinitrate (ISDN).
- 45-** C) Impaired diastolic relaxation
- 46-** B) 75-year-old woman with hypertension
- 47-** C) Echocardiography
- 48-** A) Hypertension
- 49-** D) All of the above
- 50-** A) Isometric exercise
- 51-** D) Digoxin
- 52-** C) Beta-blockers have been associated with an improvement in symptoms.
- 53-** C) Add metoprolol succinate 100 mg daily.
- 54-** D) IV lidocaine
- 55-** C) A 40-year-old triathlete who is currently receiving diltiazem and has recently suffered a ventricular fibrillation arrest
- 56-** B) Digoxin
- 57-** B) Verapamil sustained release 240 mg daily
- 58-** D) None of the above

- 59- B) Increase the β -blocker dose.
- 60-C) Both fluid overload and low cardiac output
- 61- D) Start milrinone
- 62- B) Hold furosemide and initiate cautious hydration with intravenous fluids.
- 63- B) "This just started a couple weeks ago. The first time it happened while I was helping my friend move some heavy furniture but now it happens 3 or 4 times a day while I am walking"
- 64-D) A and B
- 65- A) Tachycardia
- 66- A) Verapamil and ranolazine
- 67- A) "Its ok to put a few in a clear Ziploc sandwich bag to pack for a trip"
- 68- D) None of the above are correct
- 69- E) 1 year
- 70- A) Class I
- 71- B) Hyperthyroidism
- 72-C) Metoprolol
- 73- A) B-blockers
- 74- A) ST-segment elevation and heart failure symptoms
- 75- A) Elevated troponin
- 76- C) Patient presented to the hospital at 0810 and received primary
- 77-D) Prasugrel, aspirin, bivalirudin
- 78- A) Unfractionated heparin, clopidogrel

- 79-** B) All patients with left ventricular ejection fraction less than or equal to 40%, serum creatinine less than 2.5 mg/dL, and creatinine clearance greater than 30 mL/min
- 80-** D) All of the above
- 81-** A) Ramipril
- 82-** D) <180 mg/dL
- 83-** B) <70 mg/dL
- 84-** C) Intravenous esmolol to control his ventricular rate
- 85-** A) Adenosine
- 86-** C) Intravenous procainamide
- 87-** B) Warfarin (titrated to an INR of 2–3)
- 88-** D) Intravenous magnesium 2 g
- 89-** C) Stop heparin and start argatroban 200 mcg/min via intravenous infusion
- 90-** A) Warfarin slows the production of protein C in the liver.
- 91-** C) A 51-year-old male with benign prostatic hyperplasia and undergoing an abdominal prostatectomy
- 92-** D) LMWHs are a heterogenous mixture of molecules of varying weights and lengths.
- 93-** D) Even when weight-based dosing protocols are use, UFH produces an unpredictable degree of anticoagulation.
- 94-** C) Fondaparinux 10 mg SC q 24 h
- 95-** A) An 81-year-old woman with frequent tonic-clonic seizures who had neurosurgery last week
- 96-** B) 2.5 mg
- 97-** B) Measure INR in 2 days and platelet count in 7 days
- 98-** D) Aspirin + dipyridamole

99- B) ACE-inhibitors

100- A) Aspirin

101- C) Phenylephrine.

102- E) All the above.

103- C) Phenylephrine.

104- A) Both agents decrease gut mucosal oxygenation.

105- B) β_2 .

106- A) Normal saline

107- A) More normal saline

14

Glaucoma

Pharmacotherapy

GLAUCOMA PHARMACOTHERAPY QUESTIONS

1. Which of the following would not be considered a predisposing factor to the development of allergic rhinitis in a child?

- A) Parents with a history of cigarette smoking
- B) Early childhood spent living in an urban environment
- C) One parent with a history of allergic rhinitis
- D) History of eczema
- E) High socioeconomic class

2-The prevalence of an IgE sensitization to aeroallergens measured by allergen-specific IgE in serum or skin tests is

- A) 10%
- B) 40%
- C) 20%
- D) 80%
- E) 100%

3-Which of the following medications would not be likely to interfere with allergy skin testing?

- A) Loratadine
- B) Diphenhydramine
- C) Montelukast
- D) Levocetirizine
- E) Cetirizine

4-Parasympathetic stimulation of the vascular tissue in the nose results in

- A) Vasoconstriction
- B) Reduction in erectile tissue size
- C) Airway widening
- D) Vasodilation
- E) All of the above except d

5-Mediators of immediate hypersensitivity after allergen exposure include

- A) Cytokines
- B) Histamine
- C) Leukotriene C4
- D) Prostaglandin D2
- E) Tryptase

6-Symptoms secondary- to late-phase allergic reaction in allergic rhinitis peak in

- A) 1 to 2 hours

- B) 3 to 4 hours
- C) 5 to 7 hours
- D) 10 hours
- E) 12 to 24 hours

7. Which of the following statements is true regarding avoidance?

- A) Avoidance is usually successful and prevents the need for pharmacotherapy.
- B) Using fans that blow outside air into the house should be avoided.
- C) Most patients accept the need to get rid of their cat or dog if they are allergic.
- D) Washing bedding in cold water is an effective way to eliminate dust mites
- E) Filter masks should be worn at bedtime to prevent exposure to dust mites?

8-Which of the following antihistamines has the most anticholinergic side effects in normal doses?

- A) Cetirizine
- B) Cyproheptadine
- C) Loratadine
- D) Diphenhydramine
- E) Chlorpheniramine

9-For a patient receiving nasal steroids, which of the following agents would be helpful for a patient that also had ocular symptoms?

- A) Azelastine
- B) Levocabastine
- C) Pseudoephedrine
- D) Phenylephrine
- E) Montelukast

10-Rhinitis medicamentosa or rebound congestion is a complication from overusing

- A) Topical decongestants
- B) Systemic decongestants
- C) Nasal steroids
- D) Nasal antihistamines
- E) Cromolyn sodium

11-Pseudoephedrine was placed "behind the counter" in pharmacies primarily due to

- A) Changes in blood pressure with high doses
- B) Changes in heart rate with high doses
- C) Potential for abuse since it is a component in methamphetamine production
- D) Drug interactions with other allergic rhinitis treatments
- E) A potentially fatal drug interaction with monoamine oxidase inhibitors.

12-Candidates for immunotherapy may include

- A) Patients with asthma
- B) Patients who are unable to achieve total avoidance of allergens
- C) Patients who have failed pharmacotherapy
- D) Patients who cannot tolerate pharmacotherapy options
- E) All of the above

13-Common side effects to immunotherapy include

- A) Anaphylaxis
- B) Bronchospasm
- C) Swelling at the injection site
- D) Generalized urticaria
- E) All of the above

14-Montelukast is approved for children with seasonal allergic rhinitis down to the age of

- A) 2 years
- B) 1 year
- C) 6 months
- D) 2 months
- E) Newborns

15-Key elements of evaluating the therapeutic outcome of a patient with allergic rhinitis include which of the following?

- A) Effect of the disease on the patient's life
- B) Efficacy of the treatment regimen
- C) Tolerability of the treatment regimen
- D) Patient's satisfaction of the treatment regimen
- E) All of the above

16-Assessment of primary open-angle glaucoma includes:

- A) Increased intraocular pressure
- B) Loss of visual fields
- C) Glaucomatous changes of the optic disc and nerve fiber layer
- D) b and c
- E) a, b and c

17-The objective of drug therapy of open-angle glaucoma is to:

- A) Reduce intraocular pressure to the normal range
- B) Restore visual field to normal
- C) Halt progression of visual field loss
- D) a and c
- E) a, b and c

18-Aqueous humor is produced by the:

- A) Trabecular meshwork
- B) Iris
- C) Schlemm's canal
- D) Ciliary body
- E) None of the above

19-Increased intraocular pressure observed in the majority of primary open-angle glaucoma is the result of:

- A) Increased aqueous humor production
- B) Increased resistance to flow through the pupil
- C) Blockage of the trabecular meshwork by the iris
- D) Increased resistance to outflow through the trabecular meshwork
- E) None of the above

20-Drug therapies used in glaucoma reduce intraocular pressure by:

- A) Reduction of aqueous production by the ciliary body
- B) Increased outflow of aqueous humor through the trabecular meshwork and/or uveoscleral pathway
- C) Induction of miosis
- D) a and b only
- E) a and c only

21-Glaucoma medications which reduce intraocular pressure by increasing uveoscleral outflow include:

- A) β -blockers and carbonic anhydrase inhibitors
- B) Cholinergics
- C) prostaglandin analogues and α -2 agonists
- D) a and c
- E) a and b

22-First line agents for the treatment of open-angle glaucoma include:

- A) Cholinesterase inhibitors
- B) Epinephrine
- C) Prostaglandin analogues
- D) Oral carbonic anhydrase inhibitors
- E) Pilocarpine

23-Use of naso-lacrimal occlusion or eyelid closure following application of topical glaucoma medications is potentially beneficial for:

- A) Only patients experiencing inadequate response to therapy
- B) Only patients experiencing systemic adverse effects
- C) All patients

- D) Only patients with significant local side effects
- E) Only patients who have difficulty administering medications

24-Side effects associated with prostaglandin F2a analogues include:

- A) Pigmentary changes of the iris
- B) Miosis
- C) Bronchospasm
- D) Decreased blood pressure
- E) a and d

25-Appropriate therapeutic approaches to a 67-year-old patient with an intraocular pressures of 26 mm Hg in both eyes with normal visual fields and optic disc findings include:

- A) Initiate therapy with pilocarpine 4% 1 drop in each eye four times daily
- B) Laser trabeculoplasty
- C) Initiate therapy with 0.5% timolol 1 drop in each eye twice daily
- D) Adjunctive therapy to reduce intraocular pressure aggressively
- E) Monitor for signs of glaucoma only after assessing glaucoma risk factors.

26-Differences between available ophthalmic beta-blocking agents are:

- A) β_1 specificity
- B) Intrinsic sympathomimetic activity
- C) Available dosage forms
- D) Frequency of local and systemic side effects
- E) all of the above

27-Side effects associated with ophthalmic β blockers include:

- A) Reduced exercise capacity
- B) Bronchospasm
- C) Heart block
- D) Psychosis
- E) all of the above

28-Topical carbonic anhydrase inhibitors reduce intraocular pressure by:

- A) Increased trabecular outflow
- B) Increased uveoscleral outflow
- C) Induction of miosis
- D) Reduced aqueous production
- E) Increased serum osmolarity

29-Caution should be used when administering the following medications to patients being treated for open-angle glaucoma:

- A) Systemic agents with anticholinergic effects
- B) Topical parasympathomimetics
- C) Topical corticosteroids
- D) Systemic monoamine oxidase inhibitors
- E) None of the above

30-The following statement(s) regarding the drug therapy of open-angle glaucoma is (are) true:

- A) Reduction of a high intraocular pressure in a patient with glaucoma to normal always results in a halt of visual field loss.
- B) Patients with normal intraocular pressures and with early glaucomatous field loss may not be left untreated and should be observed for disease progression
- C) Reduction of intraocular pressure below normal provides no benefit to patients with glaucoma and normal intraocular pressure
- D) b and c only
- E) a and c only.

Glaucoma Pharmacotherapy answers

- 1-B) Early childhood spent living in an urban environment
- 2-B) 40%
- 3-C) Montelukast
- 4-D) Vasodilation
- 5-A) Cytokines
- 6-E) 12 to 24 hours
- 7-B) Using fans that blow outside air into the house should be avoided.
- 8-D) Diphenhydramine
- 9-B) Levocabastine
- 10-C) Nasal steroids
- 11-C) Potential for abuse since it is a component in methamphetamine production
- 12-E) All of the above
- 13-C) Swelling at the injection site
- 14-A) 2 years
- 15-E) All of the above
- 16-E) a, b and c
- 17-C) Halt progression of visual field loss
- 18-D) Ciliary body
- 19-D) Increased resistance to outflow through the trabecular meshwork
- 20-D) a and b only

- 21-C) prostaglandin analogues and α -2 agonists
- 22--C) Prostaglandin analogues
- 23-C) All patients
- 24-A) Pigmentary changes of the iris
- 25- E) Monitor for signs of glaucoma only after assessing glaucoma risk factors.
- 26-E) all of the above
- 27-E) all of the above
- 28-D) Reduced aqueous production
- 29-C) Topical corticosteroids
- 30-B) Patients with normal intraocular pressures and with early glaucomatous field loss may not be left untreated and should be observed for disease progression

15

Rheumatology

Pharmacotherapy

Rheumatology pharmacotherapy questions

1-Risk factors for the development of OA include

- A) Smoking
- B) Participation in running
- C) Being underweight
- D) Advanced age
- E) b and d

2-Patient education for OA, such as programs in which volunteers regularly contact patients,

- A) Has not yet been demonstrated to provide benefit to OA patients
- B) Is too expensive to recommend for general use by OA patients
- C) Should emphasize the "wear and tear" nature of OA as part of the educational message
- D) Has been shown to improve pain and functional status of OA patients
- E) All of the above

3-Matrix metalloproteinases (MMPs)

- A) Are naturally occurring chemokines that work primarily by recruiting neutrophils and macrophages to the inflamed synovium
- B) Help trigger degradation of articular cartilage by cleaving peptide bonds in proteoglycans
- C) Are stimulated by tissue inhibitors of metalloproteinases (TIMPs)
- D) Must be activated before they can ease the pain of
- E) b and c

4-Which of the following are required for an accurate and appropriate diagnosis of OA?

- A) Patient history and physical exam
- B) Patient history, physical exam, and radiologic evaluation
- C) Physical examination and magnetic resonance imaging
- D) Patient history, physical exam, and positive response to pharmacologic treatment
- E) Any of the above is accurate and appropriate

5-Acetaminophen

- A) Is recommended as an appropriate initial treatment in OA
- B) Should be given on a scheduled basis for optimal pain control
- C) Can be associated with hepatotoxicity at doses below 4 g/day
- D) Provides mild analgesia and potent anti-inflammatory relief
- E) All of the above

6-Traditional, nonselective NSAIDs

- A) Block access of arachidonic acid to both COX-1 and COX-2 enzymes
- B) Promote platelet aggregation through blockade of COX-2 activity
- C) Promote prostaglandin and bicarbonate production in gastric mucosa through blockade of COX-2 activity
- D) Counteract renal vasoconstriction by promoting formation of renal prostaglandins
- E) Are antiinflammatory at low doses and analgesic at higher doses

7-NSAIDs

- A) Are associated with thousands of serious or life-threatening GI adverse events every year
- B) Provide superior relief of OA pain in some individuals
- C) Will usually produce symptoms of dyspepsia or abdominal discomfort as a prelude to serious GI adverse events
- D) When used in antiinflammatory doses, should be consistently monitored by serum levels
- E) a and b

8-Celecoxib, a COX-2-selective inhibitor,

- A) Blocks the COX- 2 enzyme with little or no inhibition of COX-1
- B) Is more effective at relieving pain than nonselective NSAIDs
- C) Is much safer to use for patients with compromised circulatory function
- D) Carries a manufacturer's warning against use in sulfa-allergic patients
- E) a and d

9-Intraarticular corticosteroids

- A) Have no role in OA, as this disease does not have any inflammatory component
- B) Are recommended as maintenance therapy for patients who can not tolerate NSAIDs and who have severe OA
- C) Can be administered up to 12 times per year for the treatment of severe OA pain
- D) Are associated with hyperglycemia for patients without diabetes mellitus
- E) None of the above

10-Hyaluronate injectable material

- A) Is made using recombinant technology
- B) Provides a long-term increase in viscosity of synovial fluid
- C) Is a low cost pharmacologic therapy
- D) Is highly effective when compared with placebo vehicle injections
- E) None of the above

11-Chondroitin and glucosamine sulfate

- A) Must be injected into the joint
- B) Has been evaluated in a large, well-controlled trial
- C) Have limited efficacy in mild to moderate OA
- D) Are available by prescription only

E) b and c

12-Recommended treatment options for OA patients who have failed acetaminophen include

- A) Nonselective NSAIDs used at analgesic doses, if the patient is not at high risk for GI bleeding
- B) Nonselective NSAIDs with an H₂ antagonist to prevent GI bleeding in the high-risk patient
- C) COX-2–selective inhibitors with sucralfate in the high-risk patient
- D) COX-2–selective inhibitors with misoprostol in the high-risk patient
- E) None of the above

13-Surgery should be considered for the patient with OA

- A) If the patient prefers not to try oral medications such as acetaminophen
- B) If there is disability and interference with daily functioning
- C) If the patient refuses treatment with low-dose NSAIDs
- D) If the patient is at high-risk for NSAID-related GI bleeding
- E) Any of the above

14-Topical capsaicin therapy for the treatment of OA pain

- A) Produces systemic adverse effects
- B) Provides therapeutic results within 48 hours
- C) Is most effective when used on an as needed basis
- D) Provides therapeutic results after 14 days of treatment
- E) Must be used four times daily for best results

15-Which of the following is not a clinical manifestation of hyperuricemia?

- A) Acute gouty arthritis
- B) Nephrolithiasis
- C) Osteoarthritis
- D) Gouty nephropathy
- E) Tophaceous gout

16-Hyperuricemia may result from the following mechanisms except

- A) Increased phosphoribosyl pyrophosphate (PRPP) synthetase activity
- B) Deficiency of hypoxanthine guanine phosphoribosyltransferase (HGPRT)
- C) Underexcretion of uric acid
- D) Myeloproliferative disorders
- E) Decreased purine metabolism

17-Which of the following is the most likely site for acute monarticular gouty arthritis?

- A) First metatarsophalangeal joint

- B) Instep
- C) Ankle
- D) Heel
- E) Knee

18-All of the following are risk factors for uric acid nephrolithiasis except

- A) Hyperuricemia
- B) Alkaline urine
- C) Highly concentrated urine
- D) Increased urinary excretion of uric acid
- E) Uricosuric therapy

19-Which of the following is not associated with chronic gouty nephropathy?

- A) Proteinuria
- B) Decreases in the kidney's ability to concentrate urine
- C) History of asymptomatic hyperuricemia
- D) Hypertension
- E) Nephrosclerosis

20-Which of the following is false regarding the epidemiology of gout?

- A) Prevalence increases with age.
- B) Excessive alcohol intake is a risk factor.
- C) Incidence varies from 20 to 35 per 100,000 persons
- D) Women are affected three times more often than men.
- E) Family history of gout is a risk factor.

21-Serum urate concentrations are correlated with all of the following except

- A) Alcohol intake
- B) Body weight
- C) Increasing age
- D) Serum cholesterol
- E) Blood pressure

22-Which of the following is not recommended as an initial therapy in the management of gout?

- A) Reduced amount of purines in the diet
- B) Weight reduction
- C) Colchicine
- D) Decrease alcohol intake
- E) Local ice therapy

23-Colchicine is associated with all of the following adverse effects except

- A) Axonal neuromyopathy

- B) Constipation
- C) Renal toxicity
- D) Hepatotoxicity
- E) Bone marrow toxicity

24-The preferred treatment option for a patient with acute gouty polyarticular arthritis who presents 36 hours after the onset of pain is

- A) Allopurinol
- B) Sulfapyrazone
- C) Colchicine
- D) Naproxen
- E) Triamcinolone intraarticular injection

25-Which of the following is not recommended in the acute management of uric acid nephrolithiasis?

- A) Maintain a 2 to 3 L 24-hour urine volume
- B) Sodium bicarbonate
- C) Potassium citrate
- D) Acetazolamide
- E) Potassium bicarbonate

26-Uricosuric agents are contraindicated in all of the following patients except those with a history of

- A) Impaired renal function
- B) History of uric acid kidney stones
- C) Asymptomatic hyperuricemia
- D) Myeloproliferative disorders
- E) Underexcretion of uric acid

27-Which of the following statements is false regarding the use of xanthine oxidase inhibitors in the management of gout?

- A) They should be given twice a day.
- B) Start with a low dose after the acute attack has resolved.
- C) Adjust the dose until the serum urate concentration is <6 mg/dL (<357 μ mol/L).
- D) They are the drugs of choice for patients with a history of urinary stones.
- E) Coadminister colchicine or an NSAID during the first 8 weeks of therapy following an acute gouty arthritis attack

28-Which of the following is false regarding asymptomatic hyperuricemia?

- A) There is no justification for treating most patients.
- B) It may be caused by diuretic therapy.
- C) It could lead to chronic urate nephropathy if left untreated.
- D) Treatment is not warranted to prevent acute attacks of gout.

E) It may be caused by nicotinic acid therapy.

29-The preferred treatment option for a patient with polyarticular acute gouty arthritis of 3 days duration who cannot tolerate an NSAID is

- A) Intravenous colchicine
- B) Corticosteroids
- C) Oral colchicine
- D) Probenecid
- E) Sulfinpyrazone.

RHEUMATOLOGY ANSWERS

- 1-D)** Advanced age
- 2-D)** Has been shown to improve pain and functional status of OA patients
- A) B)** Help trigger degradation of articular cartilage by cleaving peptide bonds in proteoglycans
- 4-B)** Patient history, physical exam, and radiologic evaluation
- 5-E)** All of the above
- 6-A)** Block access of arachidonic acid to both COX-1 and COX-2 enzymes
- 7-E)** a and b
- 8-C)** Is much safer to use for patients with compromised circulatory function
- 9-D)** Are associated with hyperglycemia for patients without diabetes mellitus
- 10-A)** Is made using recombinant technology
- 11-E)** b and c
- 12-A)** Nonselective NSAIDs used at analgesic doses, if the patient is not at high risk for GI bleeding
- 13-B)** If there is disability and interference with daily functioning
- 14-C)** Is most effective when used on an as needed basis
- 15-C)** Osteoarthritis
- 16-E)** Decreased purine metabolism
- 17-A)** First metatarsophalangeal joint
- 18-B)** Alkaline urine
- 19-C)** History of asymptomatic hyperuricemia

- 20-D) Women are affected three times more often than men.
- 21-D) Serum cholesterol
- 22-D) Decrease alcohol intake
- 23-B) Constipation
- 24-D) Naproxen
- 25-B) Sodium bicarbonate
- 26-E) Underexcretion of uric acid
- 27-A) They should be given twice a day.
- 28-C) It could lead to chronic urate nephropathy if left untreated.
- 29-B) Corticosteroids

16

Infectious diseases pharmacotherapy

INFECTIOUS DISEASES PHARMACOTHERAPY QUESTIONS

1-Choose the correct statement(s) regarding the white blood cell (WBC) count and differential.

- A) WBCs are usually elevated in response to infection.
- B) The normal range of the WBC is 12,500 to 20,000 cells/mm³.
- C) WBC is nonspecific and can be elevated in response to a number of noninfectious conditions.
- D) Neutrophils are the most common type of WBC in the blood.
- E) a, c, and d

2-The inflammatory process initiated by infection can set up complex host responses which include:

- A) Activation of the complement cascade
- B) An increase in the erythrocyte sedimentation rate
- C) Elevations of C-reactive protein
- D) Increased production of interleukins and tumor necrosis factor
- E) All of the above

3-Which of the following circumstances would not be considered colonization with normal flora?

- A) *S epidermis* found on the skin
- B) *S aureus* in the bloodstream
- C) *E coli* in the urine
- D) Viridians streptococci found in the nasopharynx
- E) b and c

4-Choose the correct statement(s) regarding the Gram stain and use of cultures to identify potential pathogens.

- A) The Gram stain may provide a presumptive diagnosis and identify whether the pathogen is gram-positive or -negative and a bacillus or cocci.
- B) Cultures can provide definitive pathogen identification and differentiate organisms on the basis of biochemical characteristics.
- C) Every effort should be made to avoid culture contamination.
- D) Even with automated systems, detection of bacteria or fungi within a few hours is not yet possible.
- E) a, b, and c

5 -Although widely employed, the use of hybridization probes is often limited by their lack of sensitivity.

- A) True
- B) False

6-Which of the following is incorrect regarding the use of nucleic acid amplification?

- A) Polymerase chain reaction (PCR) is based on the capability of a DNA polymerase to copy and elongate a targeted strain of DNA.
- B) Each PCR cycle doubles the amount of DNA originally present.
- C) PCR techniques are useful for detecting fastidious or slowly growing organisms.
- D) Gene markers for resistance for *M. tuberculosis* and methicillin-resistant *S. aureus* are two examples where PCR techniques have been employed.
- E) All of the above

7-One limitation of microtiter MIC testing is that:

- A) There is a limited ability to automate the test procedures.
- B) Microtiter MICs have little to no value in the contemporary management of infections.
- C) Microtiter MICs may overestimate in vivo β -lactam activity.
- D) There is a wide variation in the MIC test procedures due to inadequate standardization.

8 -Which of the following is incorrect regarding MIC testing?

- A) Defined as the lowest concentration of a given antimicrobial that will kill (99.9%) of the patient's organism after 18-to-24-hour incubation.
- B) Defined as the lowest concentration of given antimicrobial that will visually inhibit the organism from growing after 18-to-24-hour incubation.
- C) Kirby-Bauer test is a qualitative test for determining antimicrobial susceptibility with the results expressed as inhibitory zone sizes (in millimeters).
- D) An E-test can be used as quantitative test expressed as mg/L to measure a MIC.

9 -MM is a patient with pneumonia and a lung abscess. *Staphylococcus aureus* (susceptible to vancomycin via microtiter MICs) grew from a properly obtained sample of the patient's sputum. Vancomycin therapy was started, but the patient has not responded to 7 days of therapy. Which of the following would be the least likely explanation for the failure?

- A) The presence of vancomycin-resistant *S. aureus* (VRSA)
- B) A peak vancomycin serum concentration less than 25 mcg/mL
- C) Inadequate penetration of the vancomycin to the site of the infection
- D) An undetectable vancomycin serum trough concentration

10-Which of the following statements is not true concerning antimicrobial susceptibility testing and its application to the management of infections?

- A) An infection due to an antimicrobial-resistant organism will not respond to treatment with maximal doses.
- B) A modification of the disk diffusion test method can be used to detect β -lactamase production.
- C) Automated susceptibility test systems can interface with pharmacy records to help assess appropriateness of antimicrobial therapy.
- D) Newly developed testing methods for mycobacteria have reduced susceptibility reporting time to less than 28 days.

11- A patient has a lung infection due to *Pseudomonas aeruginosa*. He currently is receiving therapy with a fluoroquinolone that on average produces a peak serum concentration of 5 mcg/mL and an AUC of 100. The MIC for this fluoroquinolone against his infecting pathogen is 2 mcg/mL. **Which of the following statements is true?**

- A) The data provided are incomplete, since the pharmacodynamic predictor of activity for fluoroquinolones is the time above the MIC.
- B) The fluoroquinolone's peak-to-MIC ratio is optimized for this pathogen.
- C) The fluoroquinolone's AUC-to-MIC ratio is optimized for this pathogen.
- D) The fluoroquinolone should be avoided due to concern for development of resistance.

12- Which of the following statements is false concerning "once-daily" (extended interval) aminoglycoside dosage regimens?

- A) The higher doses produce higher peak serum concentrations which maximize antimicrobial activity.
- B) Peak and/or mid-dose serum concentrations should be routinely monitored.
- C) Nomograms can be used to determine dosage regimens.
- D) Limitations in the clinical studies of "once daily" regimens have prevented widespread use.

13 -Which of the following methods would be least appropriate for determining the individual antimicrobial serum concentrations during a clinical study that evaluates the effectiveness of the combination of two antimicrobial agents to treat pneumonia?

- A) Fluorescence-polarization immunoassay
- B) Radioimmunoassay
- C) Microbiologic assay
- D) High-pressure liquid chromatography

14- Which of the following statements is false concerning special in vitro tests of antimicrobial susceptibility?

- A) Demonstration of in vitro antagonism for two antimicrobials correlates strongly with in vivo antagonism.
- B) MBCs can be helpful to guide antimicrobial treatment of infections such as endocarditis.
- C) Timed-kill curve tests can be used determine the effect of concentration on antimicrobial killing activity.
- D) The administration interval can be prolonged for an antimicrobial with a post-antibiotic effect.

15- Which of the following should be done to appropriately select an antimicrobial regimen?

- A) Confirm the presence of an infection
- B) Identify the pathogen causing the infection
- C) Select the antimicrobial regimen based on the site of infection
- D) Monitor the therapeutic response

E) All of the above

16-Which of the following statements is true regarding temperature?

- A) The normal body temperature taken orally is 97.0°F.
- B) The body temperature is generally 1°F lower when taken rectally.
- C) The body temperature is generally 1°F higher when taken axillary.
- D) The body temperature is controlled by the hypothalamus.
- E) Fever is always due to an infectious process.

17-Mature neutrophils are also known as which of the following?

- A) Bands
- B) Polymorphonuclear leukocytes
- C) Basophils
- D) Eosinophils
- E) Neutropenia

18 -Which of the following should be done before initiating antimicrobial therapy?

- A) Perform a Gram stain
- B) Sample the infected material
- C) Identify the pathogen causing the infection
- D) Know the antimicrobial susceptibility profile of the pathogen
- E) All of the above

19-Which of the following are considered important host factors for the selection of antimicrobial therapy?

- A) Age of the patient
- B) Renal function
- C) Comorbid conditions
- D) Allergies
- E) All of the above

20-A cephalosporin could be given to a patient with a penicillin allergy that displayed which of the following signs and symptoms to the penicillin?

- A) Anaphylaxis
- B) Rash
- C) Gastrointestinal disturbance
- D) Laryngospasm
- E) All of the above

21-Which of the following pharmacokinetic-pharmacodynamic parameters correlates best with outcomes for the β -lactams?

- A) Time above the MIC
- B) Peak/MIC ratio

- C) AUC/MIC ratio
- D) C_{min}/MIC ratio
- E) AUC above the MIC

22- Which of the following has been associated with numerous antibiotics?

- A) Hematologic toxicities
- B) Nephrotoxicity
- C) Ototoxicity
- D) Hepatotoxicity
- E) Diarrhea associated with *Clostridium difficile*

23- The total cost of therapy should include which of the following?

- A) Antimicrobial acquisition cost
- B) Total hospitalization cost
- C) Monitoring cost
- D) Administration and storage cost
- E) All of the above

24- Which of the following would be identified as a disadvantage of combination antimicrobial therapy?

- A) Prevent the emergence of resistance
- B) Broaden the coverage of antimicrobial therapy
- C) Achieve synergy against the infecting pathogen
- D) Greater risk of drug toxicity
- E) All of the above

25- By definition, meningitis is an infection of the

- A) Pia mater
- B) Brain tissue
- C) Sub-arachnoid space
- D) Dura mater

26- What would you expect the cerebrospinal fluid chemistry to look like if you are looking for bacterial meningitis?

- A) Presence of red blood cells
- B) Protein >50 mg/dL
- C) WBC >10/mm³ all mononuclear
- D) Elevated glucose (66% of serum glucose concentration)
- E) All of the above are true

27-All of the following are encapsulated microorganisms except:

- A) *Streptococcus pneumoniae*
- B) *Listeria monocytogenes*

- C) *Neisseria meningitidis*
- D) *Haemophilus influenzae*

28- The most important laboratory tests needed to diagnose bacterial meningitis are:

- A) Gram stain and aerobic culture
- B) CBC with differential
- C) Enzyme immunoassay (EIA) and polymerase chain reaction (PCR)
- D) MRI or head CT scan

29- Penicillin resistance has been seen in:

- A) *Streptococcus pneumoniae*
- B) *Neisseria meningitidis*
- C) *Haemophilus influenzae*
- D) All the above

30 - The pneumococcal vaccine that is recommended for use by patients over 65 years of age is known as

- A) Prevnar
- B) The 23-serotype pneumococcal vaccine
- C) A + B
- D) None of the above

31- Appropriate initial (empiric) therapy for *Haemophilus influenzae* meningitis (pending antibiotic susceptibility data) includes:

- A) Vancomycin alone
- B) Ampicillin alone
- C) Cefotaxime alone
- D) Ampicillin plus vancomycin

32- The microorganism specific to meningitis cases in newborns is:

- A) *Streptococcus pneumoniae*
- B) *Listeria monocytogenes*
- C) *Haemophilus Influenzae*
- D) All the above

33- Which of the following lists of medications achieve therapeutic concentrations in the CNS with or without inflammation?

- A) Piperacillin, imipenem, acyclovir
- B) Aminoglycosides, ketoconazole, itraconazole
- C) Chloramphenicol, metronidazole, trimethoprim
- D) Ciprofloxacin, nafcillin, penicillin

34-Tuberculous meningitis is often identified by:

- A) Cellular bacterial Gram stain
- B) Negative purified protein derivative (PPD)
- C) Paralysis of nerve VI
- D) Stress test

35-The most common form of fungal meningitis in the United States is:

- A) *Cryptococcus neoformans*
- B) *Candida albicans*
- C) *Torulopsis glabrata*
- D) *Aspergillus* spp

36-The most common CNS complication associated with AIDS is:

- A) Tuberculous meningitis
- B) HIV encephalitis
- C) *Cryptococcus neoformans* meningitis
- D) Alzheimer's disease

37-The use of dexamethasone in meningitis has been questioned due to the:

- A) Corticosteroid's tendency to worsen inflammation
- B) Possible decrease in drug penetration into the CNS
- C) Corticosteroid's effects on lipid profile
- D) Cost of corticosteroids

38-Close contacts of meningitis patients should receive prophylaxis in cases of:

- A) *Neisseria meningitidis*
- B) *Listeria monocytogenes*
- C) *Staphylococcus aureus*
- D) *Streptococcus pneumoniae*

39-Multi-drug resistant *Streptococcus pneumoniae* may force clinicians to resort to agents such as:

- A) Aztreonam
- B) Erythromycin
- C) Gentamicin
- D) Linezolid

40-In the absence of a complicating bacterial infection, which of the following is the most appropriate approach to treating acute bronchitis?

- A) Prescribing broad spectrum antibiotics
- B) Routinely recommending nonprescription cough and cold preparations.
- C) Providing symptomatic and supportive care
- D) Discouraging hydration and bed rest

41-Which of the following is true regarding chronic bronchitis?

- A) The majority of patients who suffer from chronic bronchitis have a negative smoking history.
- B) N-Acetylcysteine should be routinely prescribed to treat associated bronchospasm.
- C) Given the low incidence of bacterial resistance, broad spectrum antibiotics are rarely employed.
- D) During acute exacerbations, the use of systemic corticosteroids may be warranted.

42-Which of the following is the most common cause of bronchiolitis?

- A) Respiratory syncytial virus
- B) Parainfluenza virus
- C) Mycoplasma
- D) Adenovirus

43- Which of the following statements is true regarding the treatment of bronchiolitis?

- A) The routine use of systemic corticosteroids should be encouraged.
- B) The use of aerosolized albuterol is associated with significant improvement in a majority of patients.
- C) Due to its clinical efficacy, ribavirin should be routinely prescribed.
- D) Generous amounts of fluids should be provided.

44- Community-acquired pneumonia is most commonly associated with

- A) Staphylococcus aureus
- B) Listeria monocytogenes
- C) Legionella species
- D) Streptococcus pneumoniae

45-Which of the following would be the most appropriate choice as empiric therapy for hospital-acquired pneumonia?

- A) Amoxicillin
- B) Clindamycin
- C) Piperacillin/tazobactam
- D) Erythromycin

46-Which of the following pathogens should be highly considered when prescribing empiric antimicrobial therapy to a newborn?

- A) Mycoplasma
- B) Group A Streptococcus
- C) Group B Streptococcus
- D) Pseudomonas

47-It is important to identify patients likely to have healthcare-associated pneumonia because

- A) Empiric therapy is very different compared to hospital-acquired pneumonia.
- B) These patients are more likely to receive inappropriate therapy and have a higher risk of mortality.
- C) These patients will not require hospitalization.
- D) Broad-spectrum antibiotics are not routinely recommended for empiric therapy since MDR pathogens are unlikely.

48-Which of the following would be the most appropriate therapy for the treatment of Mycoplasma pneumonia for a patient with compliance issues and currently receiving theophylline?

- A) Erythromycin
- B) Azithromycin
- C) Clindamycin
- D) Clarithromycin

49- Which of the following would be the most preferred antimicrobial agents in the treatment of aspiration pneumonia for a hospitalized patient?

- A) Clindamycin and gentamicin
- B) Gentamicin and oxacillin
- C) Tobramycin and oxacillin
- D) Tobramycin and erythromycin

50-Which of the following is true regarding avian influenza?

- A) Respiratory distress and clotting abnormalities manifest gradually
- B) Typical signs and symptoms include conjunctivitis, fever, and rhinitis
- C) Oxygen therapy is rarely warranted
- D) Due to potential resistance, amantadine remains the drug of choice

51-Which of the following concerning viral pneumonias is correct?

- A) With the exception of immunocompromised patients, viruses are a major cause of pneumonia in adult patients.
- B) Influenza virus, type B, is the most common isolate in the adult population.
- C) RSV, parainfluenza, and adenoviruses are common causes of pneumonia in children.
- D) With the availability of tissue cultures, the virus is often identified within 24 hours.

52-Which of the following is true regarding hospital-acquired pneumonias?

- A) Staphylococcus aureus and gram-negative bacilli are rarely associated with hospital-acquired pneumonia.
- B) Broad-spectrum antibiotics should be withheld until microbiological cultures are available.
- C) Diagnosis is often difficult due to underlying lung pathology of intensively ill patients.
- D) As a preventative measure, the use of histamine receptor antagonists should be encouraged.

53-Which of the following would be most appropriate for the empiric treatment of pneumonia, where *Pseudomonas* is a concern?

- A) Azithromycin plus doxycycline
- B) Cefotaxime plus clindamycin
- C) Amoxicillin/clavulanate plus levofloxacin
- D) Piperacillin/tazobactam plus ciprofloxacin

54- Acute tracheobronchitis is most commonly associated with which of the following pathogens?

- A) *Pseudomonas*
- B) *Klebsiella*
- C) A virus
- D) *Haemophilus influenzae*

55 -Which of the following is the most common pathogen in acute otitis media?

- A) Viruses
- B) *Streptococcus pneumoniae*
- C) *Haemophilus influenzae*
- D) *Moraxella catarrhalis*

56 -Which of the following is a risk factor for amoxicillin-resistant bacteria in acute otitis media?

- A) Attendance at a child care center
- B) Receipt of antibiotics within the last 30 days
- C) Age younger than 2 years
- D) All of the above are correct.

57-Which of the following characteristics can help differentiate between acute otitis media and otitis media with effusion?

- A) Middle ear effusion
- B) Fever
- C) Ear pain
- D) Two of the above are correct.

58-Which of the following is considered to be a first-line recommendation for the treatment of a 6-year-old child with acute otitis media and a fever of 39.3°C (102.8°F)?

- A) Azithromycin 500 mg daily for 1 day, followed by 250 mg daily for 5 more days
- B) Amoxicillin 90 mg/kg/day for 7 days
- C) Amoxicillin 90 mg/kg/day plus clavulanate 6.4 mg/kg/day for 7 days
- D) Cefuroxime 250 mg twice daily for 10 days

59- A child with moderate symptoms of acute otitis media returns to the clinic after taking amoxicillin for 4 days without improvement. **Which of these alternatives would you recommend?**

- A) Cefuroxime
- B) Trimethoprim/sulfamethoxazole
- C) Ceftriaxone
- D) Erythromycin-sulfisoxazole

60- Which of the following statements is accurate regarding the value of vaccines for the prevention of acute otitis media?

- A) The seven-valent pneumococcal conjugate vaccine is effective for the prevention of acute otitis media when administered during infancy.
- B) The seven-valent pneumococcal conjugate vaccine is effective for the prevention of recurrent acute otitis media infections.
- C) The seasonal influenza vaccine may help prevent acute otitis media.
- D) Two of the above are correct.

61- Which of the following is the most common pathogen in acute sinusitis?

- A) Viruses
- B) *Streptococcus pneumoniae*
- C) *Haemophilus influenzae*
- D) *Moraxella catarrhalis*

62- Which of the following is suggestive of bacterial versus viral sinusitis?

- A) Persistent symptoms for 10 days or more
- B) Worsening of symptoms after 7 days
- C) Lack of symptomatic response to nonprescription nasal decongestants
- D) All of the above are correct.

63- Which of the following is consistent with complicated acute bacterial sinusitis?

- A) Unilateral findings
- B) Mental status changes
- C) Both of the above are correct.
- D) Neither of the above is correct.

64- Which of the following is considered to be a first-line recommendation for the treatment of a 35-year-old woman with a 12-day history of persistent nasal congestion and sinus pain that is unresponsive to nonprescription nasal decongestants?

- A) Amoxicillin
- B) Clarithromycin
- C) Levofloxacin
- D) Clindamycin

65-Which of the following nonprescription medications is/are useful for the management of patients with acute sinusitis?

- A) Phenylephrine
- B) Loratadine
- C) Both of the above are correct.
- D) Neither of the above is correct.

66- A 10-year-old boy presents to the pediatrician's office with severe throat pain and dysphagia. His highest temperature was 37.7°C (99.9°F). During the physical exam, he is found to have swollen tonsils but no swelling of the anterior cervical nodes. Based on the above information, what is this patient's risk of group A β -hemolytic streptococci (GABHS) pharyngitis?

- A) 1% to 2.5%
- B) 5% to 10%
- C) 11% to 17%
- D) 28% to 35%
- E) 51% to 53%

67- In the case above, when is antibiotic therapy indicated?

- A) Clinical criteria present and low index of suspicion
- B) Clinical criteria and rapid antigen detection testing (RADT) test positive
- C) Clinical criteria and pending laboratory results
- D) B and C
- E) All of the above are situations when starting antibiotics is indicated.

68- A local day care center reports several cases of GABHS pharyngitis. How many days must pass before the risk of additional cases is no longer a concern?

- A) 1 day
- B) 5 days
- C) 10 days
- D) 14 days
- E) As soon as the child is absent from day care

69-The most appropriate therapy for a young adult diagnosed with GABHS pharyngitis is

- A) Erythromycin ethylsuccinate 400 mg orally every 6 hours for 10 days
- B) Levofloxacin 750 mg orally daily for 10 days
- C) Penicillin V 500 mg orally twice daily for 10 days
- D) Sulfamethoxazole/trimethoprim 1 DS tab orally twice daily for 10 days
- E) Tonsillectomy

70- A 9-year-old girl (weighing 30 kg [66 lb]) is diagnosed with recurrent pharyngitis. She has a history of anaphylaxis to penicillin. Which of the following is most appropriate?

- A) Amoxicillin-clavulanate 400 mg/37.5 mg chewable tablets: take one tablet orally three times daily
- B) Clindamycin hydrochloride 75 mg capsules: take three capsules orally three times daily
- C) Sulfamethoxazole/trimethoprim 200 mg/40 mg per 5 mL oral suspension: take 3 tsp orally twice daily
- D) Pencillin benzathine 0.6 million units intramuscularly: administer one dose
- E) None of the above are appropriate choices.

71-Which of the following characteristics is true for the influenza B virus?

- A) Responsible for the seasonal epidemics of influenza
- B) Typically associated with sporadic outbreaks
- C) Categorized into subtypes based on hemagglutinin and neuraminidase
- D) Does not cause disease in humans

72- What are the primary subtypes of influenza A that have been circulating among humans over the past 30 years?

- A) H3N2 and H1N1
- B) H3N2 and H5N1
- C) H2N2 and H1N1
- D) H2N2 and H5N1

73-Which of the following statements is true regarding antigenic drift and antigenic shift?

- A) Antigenic shift occurs when point mutations in the surface antigens of a particular subtype create antigenic variants, resulting in small changes in the hemagglutinin and/or neuraminidase molecules.
- B) Antigenic drift occurs when the influenza virus acquires a new hemagglutinin and/or neuraminidase via genetic reassortment.
- C) Antigenic shift causes seasonal epidemics of influenza and is the rationale behind the recommendation for annual vaccination.
- D) Antigenic drift causes seasonal epidemics of influenza and is the rationale behind the recommendation for annual vaccination.

74-In addition to novelty, an influenza virus must possess which of the following characteristics in order to potentially cause a pandemic?

- A) Replication in humans
- B) Person-to-person transmission
- C) Both a and b are necessary.
- D) Novelty alone is sufficient for an influenza virus to potentially cause a pandemic.

75-The influenza virus can be transmitted person-to-person via which of the following mechanisms?

- A) Influenza virus is not transmitted person-to-person.

- B) Via inhalation of respiratory droplets after someone sneezes
- C) Contact with an object contaminated with respiratory secretions, such as a used tissue
- D) Both b and c could allow viral transmission.

76-How long after the onset of illness are children considered infectious?

- A) 2 days
- B) 5 days
- C) 7 days
- D) 10 days

77 -A 52-year-old female presents with fever, malaise, non-productive cough, and sore throat for the last 5 days. She is diagnosed with influenza. What other signs and symptoms of influenza would be classical for this patient?

- A) Rhinitis
- B) Nausea and vomiting
- C) Otitis media
- D) None of the above is classical signs and symptoms of influenza.

78-Which diagnostic test would be the most appropriate to use in the patient from #7 to provide a rapid result?

- A) Rapid antigen test
- B) Direct fluorescence antibody test
- C) Viral culture
- D) All of the above could be used in this patient for rapid diagnosis.

79-Which of the following patients is not at high risk for complications or severe disease from seasonal influenza infection?

- A) A 28-year-old pregnant woman at 34 weeks' gestation with no significant medical history
- B) A 47-year-old male with hypertension successfully managed with lisinopril
- C) an 82-year-old female residing in a nursing home
- D) A 12-year-old boy with asthma

80-Which of the following patients should receive the trivalent influenza vaccine (TIV) but not the live-attenuated influenza vaccine (LAIV)?

- A) A 37-year-old female with HIV and a CD4 cell count of 150 cells/mm³
- B) A 45-year-old male hemodialysis patient with a hypersensitivity to eggs
- C) A healthy 2-year-old girl
- D) A healthy 39-year-old accountant

81-Which of the following statements is true?

- A) Thimerosal-free vaccines are available because thimerosal causes autism.
- B) No thimerosal-free formulations of the influenza vaccine are available.

- C) The risks of using a thimerosal-containing vaccine outweigh the benefits of receiving the influenza vaccine.
- D) No scientifically persuasive evidence exists to suggest harm from thimerosal exposure from a vaccine.

82-Adamantane monotherapy would be most appropriate in which of the following situations?

- A) Prophylaxis for patients in a nursing home during an influenza A outbreak
- B) Prophylaxis for patients in a nursing home during an influenza B outbreak
- C) Treatment in a 58-year-old male presenting within 36 hours of the onset of illness
- D) Use of the adamantanes is not appropriate for monotherapy because of rapid development of resistance

83-In which of the following patients would prophylaxis with an antiviral medication be appropriate?

- A) A vaccinated (received 1 month ago) 74-year-old male resident of a long-term care facility with a current influenza outbreak
- B) A 54-year-old female presenting to clinic to receive her influenza vaccination because she heard about several influenza cases in the community
- C) An unvaccinated 34-year-old mother of three (healthy children aged 3, 6, and 9 years)
- D) Prophylaxis with antiviral medication is appropriate in all of the above.

84-Which of the following is the most appropriate prophylactic regimen for the patient(s) requiring prophylaxis from #13?

- A) Oseltamivir 75 mg twice daily for 5 days
- B) Zanamivir 10 mg twice daily for 5 days
- C) Oseltamivir 75 mg plus rimantadine 200 mg once daily for the duration of influenza activity
- D) Zanamivir 10 mg twice daily for 2 days

85-A 21-year-old, otherwise healthy, female college student presents to clinic with history of 4 days of fever, myalgia, dry cough, and malaise. She is diagnosed with influenza A infection. What would be the most appropriate recommendation for her?

- A) Oseltamivir 75 mg once daily for 5 days
- B) Oseltamivir 75 mg plus rimantadine 100 mg twice daily for 5 days
- C) Maintenance of fluid intake, warm tea, and cough lozenges
- D) Zanamivir 10 mg twice daily for 5 days plus maintenance of fluid intake, warm tea, and cough lozenges

86-A 24-year-old man has just returned from a week-long backpacking trip. He presents to the outpatient clinic complaining of a painful sore. A physical exam reveals a large fluctuant nodule on his right shoulder. The man states that he is allergic to penicillin

(difficulty breathing) and sulfa (rash). **The most appropriate therapy for this patient would be**

- A) Ciprofloxacin
- B) Dicloxacillin
- C) Dicloxacillin or ceftriaxone
- D) Incision and drainage

87-The most appropriate antimicrobial for treatment of mild erysipelas in a child with no known drug allergies is

- A) Dicloxacillin
- B) Erythromycin
- C) Penicillin VK
- D) Penicillin G

88-A 6-year-old child is brought to the clinic with complaints of itchy blisters on her face. The young girl has just returned from a summer vacation in Florida with her grandparents. Her face has a large area of erythema with a mixture of small vesicles filled with clear serous fluid and larger pus-filled blisters. Thin golden-yellow crusts of previously ruptured blisters also cover her face. The most likely diagnosis and bacterial etiology of her infection is

- A) Erysipelas, due to *Staphylococcus aureus*
- B) Erysipelas, due to *Streptococcus pyogenes*
- C) Erysipelas, due to *Staphylococcus aureus*
- D) Impetigo, due to *Staphylococcus aureus*

89-An 18-year-old tennis player presents to the emergency department complaining of fever and chills. She states that she has had a blister on her right hand for a couple of days and now presents with a bright red, narrow streak on her skin extending from her right hand to her armpit. Regional lymph nodes are enlarged and tender.

Based on her clinical presentation, the most appropriate therapy for this patient would consist of

- A) Clindamycin + penicillin VK
- B) Nafcillin
- C) Penicillin G
- D) Vancomycin

90-A 47-year-old male presents to his family clinician complaining of a swollen, painful lower leg. His right lower leg is erythematous with nonelevated and poorly defined margins. The area is warm to touch. The man is afebrile and has no other complaints. He has no known allergies. The most appropriate empiric therapy for this man would be

- A) Ciprofloxacin
- B) Dicloxacillin
- C) Penicillin VK + clindamycin

D) Vancomycin

91-After 3 days the patient in the preceding question returns with no improvement. He states that he has been compliant in taking the antibiotic therapy as prescribed. The clinician obtains a small aspirated sample for culture and sensitivity. The Gram stain shows many white blood cells and many gram-positive cocci in clusters. **Appropriate therapy for this patient at this time would include**

- A) Aggressive surgical débridement, plus clindamycin + penicillin G
- B) Amoxicillin/clavulanic acid to provide broader coverage, including anaerobes
- C) Mupirocin ointment twice daily for 5 to 7 days
- D) Trimethoprim-sulfamethoxazole for possible CA-MRSA

92-A 38-year-old male presents to the emergency department with high fever and chills and with infection in his left lower leg. He had been seen the previous day and diagnosed with cellulitis. His leg had been hot, swollen, and erythematous without sharp margins. The man was sent home on cephalexin. Today he returns complaining of severe pain. The affected area is shiny, with some bullae filled with clear fluid; Gram stain of the bullous fluid shows gram-positive cocci in chains. **Appropriate therapy for this patient would be**

- A) Clindamycin
- B) Penicillin G
- C) Surgical débridement
- D) All of the above

93-A 48-year-old male with a history of diabetes mellitus and morbid obesity undergoes elective abdominal surgery for drainage and repair of an extensive perirectal abscess, followed by a complicated postoperative course. He has no known allergies. Three days later after the surgical procedure, he is noted to have a new high fever to 104°F, chills, and a marked elevation in white blood cell count. Inspection of the surgical site reveals significant erythema and edema around the surgical wound and extending into the surrounding tissues, including the scrotum. The entire area is warm to the touch and markedly painful. The area of affected skin and tissues markedly expands over the course of several hours. Exploration of the lesion at the bedside reveals extensive necrosis of underlying tissues and fascia which is highly suggestive of necrotizing fasciitis. **Based on this presumptive diagnosis, the most appropriate empiric antimicrobial regimen for this patient would be**

- A) Meropenem
- B) Cefazolin + gentamicin
- C) Daptomycin + metronidazole
- D) Penicillin + clindamycin

94-A 68-year-old female presents to the diabetes clinic for a routine visit. She has no complaints. Her past medical history is significant for diabetes mellitus, hyperlipidemia,

and hypertension. She has no known drug allergies. Pertinent findings today include elevated glucose and blood pressure, as well as a small ulcer on the sole of her left foot. The patient has received multiple courses of antibiotic therapy previously, but the wound has never completely healed. Today the lesion is erythematous, with the presence of pus and a foul-smelling odor. The clinician counsels the patient on the importance of glucose and blood pressure control, as well as self-exam and care of her feet. He also initiates antimicrobial therapy for the infection on her foot. **Appropriate therapy for this patient would include**

- A) Ampicillin + gentamicin
- B) Levofloxacin + clindamycin
- C) Trimethoprim-sulfamethoxazole
- D) Vancomycin

95-A 37-year-old female is seen in the internal medicine clinic for complaints related to a new “sore” that developed on her left foot over the past several weeks. She has a medical history significant for multiple problems including poorly controlled diabetes mellitus, poorly controlled hypertension, and chronic renal insufficiency. The new lesion is consistent with a small diabetic ulcer on the sole of the foot over the first metatarsal joint. The lesion appears to be infected, but the ulcer is small, and the infection is assessed as mild overall. The decision is made to treat with oral antibiotics in the outpatient setting, together with careful wound care by a visiting nurse. The patient has no known drug allergies, and her only previous antibiotic exposure was treatment of a urinary tract infection with amoxicillin 6 months ago. **The most appropriate antibiotic regimen for initial therapy of this infection is**

- A) Levofloxacin
- B) Penicillin VK
- C) Clindamycin
- D) Amoxicillin-clavulanate

96-The most important aspect in the prevention of pressure sores is

- A) Cleansing with sodium hypochlorite solutions
- B) Irrigation, immobilization, and elevation of the affected area
- C) Relief of pressure and good skin care
- D) Topical antibiotics such as silver sulfadiazine or mupirocin

97-An 18-year-old female comes to the emergency department after being bitten by her grandparent’s dog. Her right lower leg has a small laceration but is not erythematous, swollen, or tender to touch. **Appropriate management of this patient’s bite wound would be**

- A) Incision and drainage
- B) Irrigation, immobilization, and elevation
- C) Prophylactic antibiotic therapy with cephalexin
- D) Surgical débridement

98-A follow-up call the next morning to the patient in the preceding question finds that the patient now has some pain and swelling around the bite wound. **Appropriate antimicrobial therapy at this time would be**

- A) Amoxicillin/clavulanatic acid
- B) Dicloxacillin
- C) Penicillin VK + clindamycin
- D) Vancomycin

99-A 15-year-old male presents to the emergency department with a bite wound to his forearm obtained during a playful fight with his younger brother. The wound is cleaned and shows no signs of infection. **Appropriate management at this time would be**

- A) Amoxicillin/clavulanic acid for 3 to 5 days
- B) Cephalexin for 5 to 10 days
- C) Erythromycin for 7 to 10 days
- D) No antimicrobial therapy, but keep the wound clean and covered

100-A 22-year-old male presents to the emergency department with a hand wound following a fight. His hand was cut and bleeding from a blow to the mouth of the other man. The emergency department (ED) clinician calls for a specialist to examine his hand. **Following the examination, his hand is cleaned and the man is started on ampicillin/sulbactam to provide antimicrobial coverage against**

- A) Streptococcus pyogenes and Clostridium species
- B) Eikenella corrodens, Staphylococcus aureus, and anaerobes
- C) CA-MRSA
- D) Pasteurella multocida

101-The Mantoux test is best described as:

- A) A diagnostic test for active TB
- B) An intradermal screening test for TB infection
- C) A Interferon-gamma assay test for TB
- D) A test which distinguishes active and latent TB

102- In an otherwise healthy adult patient without risk factors for acquisition of TB, **which of the following measurements of induration would constitute a positive result after a properly placed purified protein derivative (PPD) tuberculin skin test?**

- A) < 5 mm
- B) 6 mm to 10 mm
- C) =15 mm
- D) 11 mm to 14 mm

103- Latent TB infection" or "LTBI" refers to patients with which of the following?

- A) Disseminated TB infection, but negative sputum smears
- B) Known TB exposure but a negative skin test

- C) Positive sputum smears for AFB but a very slowly progressive course
- D) Positive tuberculin skin test but no evidence of active disease

104- Which of the following are the most common clinical features of pulmonary TB?

- A) Chills, edema, and shortness of breath
- B) Swollen lymph nodes, painful joints and fatigue
- C) Cough, weight loss and night sweats
- D) Headache, disorientation, and difficulty breathing

105- Which of the following is a side effect of rifampin/rifabutin?

- A) Peripheral neuropathy
- B) Nephrotoxicity
- C) Orange-colored secretions
- D) Ototoxicity

106- In HIV-negative patients with laboratory-confirmed drug-susceptible Mycobacterium tuberculosis, what are the standard medication(s) used in the 6-month treatment regimen for active pulmonary TB?

- A) Isoniazid, rifabutin, streptomycin
- B) Isoniazid and azithromycin
- C) Isoniazid, rifampin, pyrazinamide, and ethambutol
- D) Rifampin and streptomycin

107- Which of the following anti-tuberculous medications interacts most frequently and most extensively with protease inhibitors used to treat HIV infection?

- A) Ethambutol
- B) Rifampin
- C) Isoniazid
- D) Rifabutin

108- Which of the following primary anti-tuberculous agents is associated with the highest rate of resistance throughout the world?

- A) Isoniazid
- B) Rifampin
- C) Pyrazinamide
- D) Ethambutol

109- Which of the following anti-tuberculous drugs is associated with ototoxicity?

- A) Rifampin
- B) Streptomycin
- C) Ethambutol
- D) Pyrazinamide

110-What is the most important side effect of ethambutol?

- A) Optic neuritis
- B) Hepatitis
- C) Conjunctivitis
- D) Pancreatitis

111- For an adult food poisoning, what antibiotic and antiperistaltic recommendations are appropriate?

- A) ciprofloxacin and loperamide are appropriate
- B) ciprofloxacin is appropriate; antiperistaltic agents are unnecessary
- C) trimethoprim-sulfamethoxazole is appropriate; antiperistaltic agents are unnecessary
- D) loperamide is appropriate; antibiotics are unnecessary

112-WHO/UNICEF recommendations for ORT osmolarity, based on reports of reduced stool output, vomiting, and the need for intravenous therapy, are

- A) Osm 245 mmol/L
- B) Osm 500 mmol/L
- C) Osm 375 mmol/L
- D) Osm 760 mmol/L

113- Diarrhea caused by enterotoxigenic E. coli should be initially treated with which therapy?

- A) doxycycline 300 mg oral single dose
- B) ciprofloxacin 500 mg oral twice daily for 3 days
- C) trimethoprim-sulfamethoxazole DS twice daily for 3–5 days
- D) oral rehydration solution only

114- Loperamide should NOT be recommended for use in which situation?

- A) Traveler's diarrhea caused by enterotoxigenic E. coli
- B) Rotavirus-associated gastroenteritis
- C) Enteric adenovirus-associated gastroenteritis
- D) Diarrhea caused by enterohemorrhagic E. coli 0157:H7

115- A pregnant (4 months gestation) female has recently returned from India, and has been diagnosed with cholera. What is the best choice for her therapy?

- A) Oral rehydration therapy (ORT) alone
- B) ORT plus doxycycline 300 mg oral single dose
- C) ORT plus erythromycin 500 mg oral every 6 hours for 3 days
- D) ORT plus ciprofloxacin 500 mg oral twice daily for 3 days

116-The hemolytic uremic syndrome, defined by a triad of hemolytic anemia, thrombocytopenia, and renal failure, is associated with which major diarrheal pathogen?

- A) *Clostridium difficile*
- B) *E. coli* 0157:H7
- C) *Vibrio cholera*
- D) *Campylobacter jejuni*

117-*Clostridium difficile* is the cause in what percentage of antibiotic-associated diarrhea?

- A) 10-20%
- B) 30-40%
- C) 50-75%
- D) > 90%

118-Worldwide, the incidence of diarrhea is highest among which group?

- A) children 6 to 11 months
- B) children 12 month to 4-year-olds
- C) children 5 years to 17 years
- D) adults over 74 years

119-An adult patient was treated for *C. difficile*-associated diarrhea with metronidazole 250 mg orally for 10 days. Fourteen days following the conclusion of therapy, diarrhea resumes and *C. difficile* toxin is again identified in stool samples. What is the most appropriate therapy at this time?

- A) vancomycin 125 mg IV four times daily for 10 days
- B) metronidazole 500 mg IV four times daily for 10 days
- C) metronidazole 250 mg oral four times daily for 10 days
- D) bacitracin 20,000 units oral four times daily for 10 days

120-Salmonella enterica serotype Typhi was identified from blood cultures in an acutely ill adult patient. What is the most appropriate empiric therapy for this patient until susceptibility testing results are available?

- A) chloramphenicol 50 mg/kg IV every 6 hours
- B) trimethoprim-sulfamethoxazole DS tablet oral every 12 hours
- C) ciprofloxacin 500 mg oral twice daily
- D) erythromycin 500 mg oral twice daily

121-An adult female developed bloody diarrhea several days after preparing a chicken dinner for her family. Her symptoms included abdominal pain, headache, and myalgias. What is the most likely bacterial cause of her diarrhea?

- A) *Campylobacter jejuni*
- B) *Escherichia coli*
- C) *Staphylococcus aureus*
- D) *Yersinia enterocolitica*

122-A 46-year-old hospitalized patient has developed severe diarrhea, with fever and leukocytosis. Sigmoidoscopy reveals pseudomembranes. **What is the most appropriate therapy at this time?**

- A) vancomycin 125 mg oral four times daily for 10 days
- B) metronidazole 500 mg IV four times daily for 10 days
- C) metronidazole 250 mg oral four times daily for 10 days
- D) bacitracin 20,000 units oral four times daily for 10 days

123-Which of the following is an appropriate recommendation for traveler's diarrhea?

- A) bismuth subsalicylate
- B) trimethoprim-sulfamethoxazole
- C) ciprofloxacin
- D) loperamide

124-Routine stool culture will screen for the presence of:

- A) Clostridium perfringens, Vibrio species, Bacillus cereus
- B) Campylobacter jejuni, Shigella species, Salmonella species
- C) E. coli, Yersinia enterocolitica, Salmonella typhi
- D) Rotavirus, Norovirus, Sapovirus

125- A 20-year-old male traveling in central Mexico experiences one episode of watery diarrhea in the evening of his second day of travel. He has no other symptoms. **What is the most appropriate recommendation for treatment of the diarrhea?**

- A) Oral rehydration therapy (ORT)
- B) loperamide
- C) ciprofloxacin
- D) loperamide plus ciprofloxacin

126-Which of the following would be considered a secondary intraabdominal infection?

- A) A patient with small bowel obstruction and peritonitis after receiving chemotherapy
- B) Peritonitis in a patient undergoing peritoneal dialysis
- C) A cirrhotic patient who is diagnosed with spontaneous bacterial peritonitis

127- True or False. Perforation of the stomach results in the release of large numbers of anaerobic and aerobic bacteria into the peritoneum.

- A) True
- B) False

128-In patients with primary peritonitis, bacteria may enter the abdomen via all of the following routes, except:

- A) through a cerebrospinal–peritoneal shunt
- B) through the damage done to the GI tract by blunt trauma

- C) through the bloodstream when there is no damage to the GI tract
- D) through a peritoneal dialysis catheter

129- True or False. Secondary bacterial peritonitis is often caused by multiple organisms, whereas primary intraabdominal infections are often caused by a single organism.

- A) True
- B) False

130-The most important component of treatment of a perforated appendix is

- A) using the best antimicrobial regimen
- B) aggressive IV fluid therapy
- C) a surgical procedure, including drainage and repair
- D) enteral nutrition supplementation

131-A patient presents with an abscess in the abdomen, most likely associated with a perforated diverticulum in the colon. Which of the following would not be a reasonable initial antimicrobial regimen?

- A) imipenem
- B) clindamycin
- C) ciprofloxacin with metronidazole
- D) gentamicin plus metronidazole

132-A male patient has been undergoing continuous ambulatory peritoneal dialysis (CAPD) and presents with cloudy dialysate, an intermittent, mild fever, and an elevated white blood cell count. Important factor(s) to consider when selecting an initial antimicrobial agent include all but which of the following:

- A) the dialysis centers and the patient's history of infecting organisms and their sensitivity
- B) how long the patient has undergone CAPD and the time interval since their last infection
- C) what has been used successfully in the past to treat his peritoneal infection
- D) whether or not the dialysis center has anaerobic bacteria that are typically susceptible to clindamycin

133-Which of the following statements is false?

- A) Antimicrobial regimens for secondary intraabdominal infections should cover a broad spectrum of aerobic and anaerobic bacteria.
- B) Antimicrobial treatment of acute bacterial contamination after trauma to the GI tract is adequately treated with an antianaerobic cephalosporin.
- C) Most patients should not complete their antimicrobial regimen orally after an uncomplicated secondary intraabdominal infection.
- D) Five to seven days of antimicrobial treatment is required when treating mild to moderate intraabdominal infections.

134- A 23-year-old woman in good health is determined to have a perforated appendix. Which of the following is the best antimicrobial regimen for this patient?

- A) cefazolin
- B) imipenem
- C) gentamicin
- D) trimethoprim–sulfamethoxazole

135- The most reasonable initial intraperitoneal empiric antimicrobial therapy for a 46-year-old male patient with peritonitis and a history of immediate allergic reactions to penicillin is

- A) cefazolin plus ceftazidime (LD 500 mg/L, MD 125 mg/L for each)
- B) cefepime (LD 500 mg/L, MD 125 mg/L)
- C) vancomycin (LD 1000 mg/L, MD 25 mg/L)
- D) metronidazole (LD 250 mg/L, MD 50 mg/L)

136- True or False. A combination of anti-anaerobic and anti-gram-negative antimicrobials are required for treatment of acute bacterial contamination after abdominal trauma when the patient is seen within 2 hours of injury.

- A) True
- B) False

137- Which of the following statements is true concerning the antimicrobial treatment of appendicitis?

- A) A treatment course of 14 days is recommended if the appendix is inflamed but not perforated at the time of surgery.
- B) An anti-anaerobic cephalosporin such as cephalothin is a reasonable preoperative antimicrobial.
- C) The patient should receive a 3-day course of trimethoprim–sulfamethoxazole.
- D) A treatment course of 5–7 days is recommended if the appendix is perforated at the time of surgery.

138- True or False. With a secondary intra-abdominal infection, anaerobic culture information is not crucial for initial selection of the antianaerobic component of the antimicrobial regimen.

- A) True
- B) False

139- The appropriate duration of antimicrobial treatment for acute contamination of the abdomen without established infection is:

- A) 24 hours or less.
- B) 10 days.
- C) 3 days.
- D) 5 to 7 days.

140-A 37-year-old man is undergoing peritoneal dialysis for chronic renal failure. His urine output was recently measured and is 110 mL/day. He relates to his physician that he has been experiencing abdominal cramping and that his dialysate has been cloudy. Which of the following is the most appropriate empiric antimicrobial regimen for this patient?

- A) cefazolin plus ceftazidime (LD 500 mg/L, MD 125 mg/L)
- B) cefepime (LD 500 mg/L, MD 125 mg/L)
- C) Clindamycin (LD 300 mg/L, MD 150 mg/L)
- D) cefazolin (LD 500 mg/L, MD 125 mg/L) plus gentamicin (LD 8 mg/L, MD 4 mg/L)

141-The following are considered possible features for clinicians to diagnose parasitic infections in U.S. patients:

- A) Recent travel to an endemic area
- B) Failure to follow recommended chemoprophylaxis
- C) Visiting family members in Asia or Africa
- D) History of consuming street vendor food in Thailand
- E) All the above

142-The drug of choice for ascariasis is:

- A) Albendazole 200 mg once daily for 3 days
- B) Mebendazole 100 mg twice daily for 3 days
- C) Ivermectin 200 mg/kg/day for 2 days
- D) Diethylcarbamazine 6 mg/kg/day for 5 days
- E) Thiabendazole 50 mg/kg/day in 2 doses for 4 days

143-Careful monitoring of fluid status and hemodynamic parameters are essential in severe falciparum malaria because of associated complications such as:

- A) Hyperglycemia and pulmonary edema
- B) Acute renal failure and coma
- C) Acute hypertensive crisis and ischemic stroke
- D) a and b
- E) a and c

144-A 37-year-old native of Cambodia is planning to visit his family. He has a history of depression and has been treated for this in the past. The prophylactic antimalarial drug that may be contraindicated in this patient is:

- A) Azithromycin
- B) Dapsone
- C) Atovaquone/proguanil
- D) Mefloquine
- E) Primaquine

145-In asymptomatic amebic cyst passers, the recommended drugs include:

- A) Iodoquinol 650 mg 3 times daily for 20 days

- B) Metronidazole 500 mg 3 times daily for 10 days
- C) Paromomycin 25–35 mg/kg 3 times daily for 7 days
- D) a and b
- E) a or c

146-All symptomatic adults and children (age >8 years) with giardiasis can be treated with:

- A) Metronidazole 100 mg twice daily for 3 days
- B) Pyrantal pamoate 11 mg/kg 3 times daily for 5 days
- C) Metronidazole 250 mg 3 times daily for 14 days
- D) Nitazoxamide 500 mg twice daily for 3 days
- E) Diloxanide furoate 500 mg 3 times daily for 5 days

147-A 42-year-old newly immigrated from Myanmar is seen in the clinic with high fever, diarrhea, right-upper-quadrant pain, and leukocytosis. Sigmoidoscopy sample shows the presence of E histolytica. Abdominal contrast tomography detects a liver abscess. You would treat this patient with:

- A) Metronidazole 250 mg 3 times daily for 10 days
- B) Metronidazole 750 mg 3 times daily for 10 days
- C) Iodoquinol 650 mg 3 times daily for 3 weeks
- D) Tindazole 2 g once daily for 2 days
- E) None of the above

148-In a patient diagnosed with strongyloidiasis, the following agents should be avoided:

- A) Cyclosporine and prednisone
- B) Doxycycline or mefloquine
- C) Ivermectin 200 mcg/kg/day for 5–14 days
- D) All antidiarrheal agents
- E) a and c

149-One of the pharmacological agents active against American trypanosomiasis or Chagas disease is:

- A) Pentamidine
- B) Thiabendazole
- C) Benznidazole
- D) Suramin
- E) Mebendazole

150-The pharmacological therapy for active larva of T solium in neurocysticercosis is:

- A) Thiabendazole
- B) Albendazole
- C) Diethylcarbamazine

- D) b and c
- E) None of the above

151-A 25-year-old college student has recently visited northern Ecuador. Nine days after his return, the patient was seen in the ER of a local hospital with high fever (38.8°C), headache, chills, and rigor. *P vivax* malaria was diagnosed. He was treated with a full course of chloroquine. Three months later, he again reports to the ER with recurrence of same symptoms. **Thick blood smear identifies *P vivax*. You would recommend the following to the clinician:**

- A) A full course of chloroquine therapy for 3 days
- B) A full course of chloroquine to be followed by a course of primaquine
- C) A full course of primaquine
- D) Doxycycline 100 mg twice daily for 5 days
- E) Mefloquine 250 mg daily for 5 days followed by a course of primaquine

152-T.M. is a 29-year-old emigrant of Mali, West Africa who is seen in the ER of a local hospital with complaints of abdominal pain, nausea, vomiting, fever, rigor and chills. T.M. returned 9 days ago to the U.S. after visiting his parents in Africa. He indicates that he did not take any antimalarial chemoprophylaxis. A preliminary peripheral blood smear confirms *P falciparum*. Attempts to obtain intravenous quinidine are unsuccessful. **Alternative parenteral antimalarials for severe *P falciparum* suggested by CDC include:**

- A) Injectable chloroquine phosphate
- B) Injectable quinine dihydrochloride
- C) Injectable artesunate
- D) a and b
- E) b and c

153-A 6-year-old elementary school student seen in the clinic is found to have lice infestation of the scalp. Parents of the patient give vague history of allergy to permethrin during a previous therapy. **Alternative agents to permethrin that can be utilized in this patient would be:**

- A) 0.5% Malathion
- B) Pyrethrins with piperonyl butoxide
- C) Benzyl alcohol 5%
- D) a and c
- E) d

154-A 4-year-old girl is seen in the clinic with maceration of the interdigital folds of the hands and with a groin rash. Diagnostic workup identifies the infection as being due to *Sarcoptes scabiei*. **Beside permethrin, alternative drugs for scabies are:**

- A) Dithranol 1% ointment
- B) Selenium sulfide 5% lotion

- C) Crotamiton 10%
- D) Benzyl alcohol 2%
- E) Salicylic acid 2% ointment

155-The Centers for Disease Control and Prevention indicate that in 2008 there were 1,500 cases of malaria in returning U.S. travelers. The cited reasons for this were:

- A) Failure to take chemoprophylaxis
- B) Inappropriate prophylaxis
- C) Delay in seeking medical care
- D) Misdiagnosis
- E) All the above

156-In which of the following patients would a urinary tract infection be considered an uncomplicated infection?

- A) A female age 25 years, with a UTI, otherwise healthy
- B) A male age 40 years with a UTI and kidney stones
- C) A female age 65 years, with a UTI, otherwise healthy
- D) A female age 15 years, with a UTI and history of vesicoureteral reflux

157-Uncomplicated UTIs are:

- A) bladder infections predominantly
- B) acquired by the descending route of acquisition commonly
- C) most commonly caused by *S. saprophyticus*
- D) more common in elderly males than elderly females

158-The organism that most commonly causes community-acquired urinary tract infections is?

- A) *Pseudomonas aeruginosa*
- B) *E. coli*
- C) *Proteus* spp.
- D) *Staphylococcus saprophyticus*

159-Organisms can most often gain entry into the urinary tract via all of these pathways except:

- A) Hematogenous spread
- B) Lymphatic spread
- C) Ascending route into bladder
- D) Translocation from intestines

160-This protein is produced by the ascending limb of Henle and distal tubule, preventing bacteria from binding to the mucosal surface of the bladder:

- A) Tamm-Horsfall protein
- B) Albumin

- C) Endotoxin
- D) Flagella

161-Which of the following would not be a predisposing factor to the development of urinary tract infections?

- A) Obstruction
- B) Prostatic hypertrophy
- C) Birth control pills
- D) Anticholinergic drugs

162-Altered mental status, change in eating habits, or gastrointestinal symptoms as opposed to typical manifestations of urinary tract infections are frequently seen in which patient population?

- A) Children
- B) Elderly
- C) Pregnant Females
- D) Males

163-Which of the following is not one of the three acceptable methods of urine collection?

- A) Midstream catch
- B) Catheterization
- C) Urine catch using the first 20-30mL of urine flow
- D) Suprapubic bladder aspiration

164-In a centrifuged specimen of urine, what is considered a significant number of bacteria for the diagnosis of a urinary tract infection?

- A) >105 bacteria/HPF
- B) 30,000 bacteria
- C) >105 bacteria/mL
- D) 107 bacteria/mL

165-The "gold standard" in determining the presence of urinary tract infections is?

- A) Urine culture
- B) Presence of nitrite in urinalysis
- C) Pyuria
- D) Proteinuria

166-Which of the following regimens would be the most appropriate treatment for uncomplicated UTIs?

- A) Nitrofurantoin 100mg po BID for 3 days
- B) Ciprofloxacin 500mg po BID for 3 days
- C) Amoxicillin 500mg po QID for 3 days

D) Trimethoprim-sulfamethoxazole double strength, 1 tablet po, 1 dose

167-Which of the following regimens would be the most appropriate treatment for a seriously ill patient with acute pyelonephritis?

- A) Trimethoprim-sulfamethoxazole double strength, 1 tablet po BID for 3 days
- B) Ciprofloxacin 500mg po BID for 3 days
- C) Levofloxacin 500mg po, 1 dose
- D) Ciprofloxacin 400mg IV BID for 3 days, followed by 500mg po BID for 11 days

168-Which of the following statements is most correct regarding recurrent UTIs?

- A) The recurrence is mostly likely due to a relapse from the previous infection.
- B) If possible, catheterize the patient and instill antibiotics for optimum treatment in men.
- C) One half of a single-strength trimethoprim-sulfamethoxazole tablet may be used on a daily basis.
- D) Men are immune to UTI recurrence due to the immune effects of prostatic fluid.

169-The course of antibiotic therapy for acute prostatitis is:

- A) Four weeks
- B) One day
- C) 3 days
- D) 7 to 10 days

170-Which of the following therapies has been shown to have a higher cure rate, lower relapse, fewer symptoms, and lower costs in the treatment of uncomplicated urinary tract infections?

- A) Amoxicillin
- B) Levofloxacin
- C) Trimethoprim-sulfamethoxazole
- D) Nitrofurantoin

171-The greatest risk factor for contracting a sexually transmitted disease is:

- A) Practice of unprotected anal-genital intercourse
- B) Practice of unprotected anal-oral intercourse
- C) Practice of unprotected oral-genital intercourse
- D) Number of sexual partners
- E) Illicit drug use

172-The CDC recommends that a penicillin-allergic pregnant patient with a diagnosis of primary syphilis should be treated with:

- A) Azithromycin
- B) Doxycycline
- C) Erythromycin

- D) Ofloxacin
- E) None of the above

173-Neonatal infections caused by which of the following can result in severe neurological impairment:

- A) N gonorrhoeae
- B) C trachomatis
- C) T vaginalis
- D) Herpes simplex virus
- E) Human papillomavirus

174-Which of the following is (are) true regarding the use of nucleic acid amplification tests (NAATs) in the diagnosis of gonorrhea?

- A) Can test for N gonorrhoeae and C trachomatis using a single specimen
- B) Can provide a diagnosis of gonorrhea using noninvasive specimens such as urine samples
- C) Can provide information on antibiotic resistance in diagnosed strains of N gonorrhoeae
- D) A and B only
- E) A, B, and C

175-Which of the following regimens does not consistently eradicate C trachomatis genital infections?

- A) Ofloxacin 300 mg twice daily for 7 days
- B) Ciprofloxacin 500 mg PO twice daily for 7 days
- C) Azithromycin 1 g PO as a single dose
- D) Doxycycline 100 mg PO twice daily for 7 days
- E) Erythromycin base 500 mg PO 4 times daily for 7 days

176-Which of the following is (are) the recommended treatment for neonatal gonococcal ophthalmia?

- A) Silver nitrate ophthalmic solution
- B) Erythromycin ophthalmic solution
- C) Tetracycline ophthalmic solution
- D) Ceftriaxone
- E) A, B, and C

177- The presence of which of the following STDs increases a person's susceptibility for contracting HIV from an infected sexual partner?

- A) Genital herpes
- B) Chlamydia
- C) Syphilis
- D) Trichomoniasis
- E) All of the above

178- Of the following treatment regimens, which is (are) recommended by the CDC for treating a patient with trichomoniasis who fails treatment with metronidazole 2 g PO as a single dose?

- A) Tinidazole 2 g PO as a single dose
- B) Metronidazole 2 grams PO for 3–5 days
- C) Metronidazole 2 gram PO as a single dose
- D) A and B only
- E) A, B, and C

179-Which of the following statements regarding genital herpes infection is false?

- A) Most genital infections are caused by HSV-1.
- B) Clinical manifestations of infection can occur within 2 days following exposure.
- C) Asymptomatic viral shedding is considered the most important source of transmission.
- D) Widely available nonspecific serologic assays for detecting HSV antibodies have limited usefulness in the diagnosis of genital herpes.
- E) The risk of transmission during birth appears to be much greater for first-episode rather than for recurrent infections.

180-Ophthalmia neonatorum can result from exposure to:

- A) C trachomatis
- B) T vaginalis
- C) T pallidum
- D) A and B only
- E) A, B, and C

181-A false-positive VDRL slide test or RPR card test for syphilis can occur in patients who have:

- A) Chronic infections
- B) Autoimmune diseases
- C) Malignancies
- D) A and B only
- E) A, B, and C

182-Which of the following statements regarding the management of recurrent genital herpes infections is (are) true?

- A) Symptoms of recurrent infections are generally milder and of shorter duration than those of primary episodes.
- B) In most patients treated with episodic therapy administered within 48 hours of symptom onset, appreciable effects on symptomatology are not seen.
- C) Daily suppressive therapy with acyclovir, famciclovir, or valacyclovir has been shown to reduce viral shedding and decrease the risk of disease transmission by almost 100%.
- D) A and B

E) A, B, and C

183-Which of the following statement regarding trichomoniasis is (are) true?

- A) Nonvenereal transmission of trichomoniasis is possible.
- B) The majority of infected men are asymptomatic.
- C) Infection during pregnancy can result in preterm labor and delivery.
- D) Wet-mount specimen examination is less sensitive in diagnosing infections in males than in females.
- E) All of the above are true.

184-Which of the following is associated with possible development of pelvic inflammatory disease?

- A) Syphilis
- B) Genital herpes infection
- C) Trichomoniasis
- D) Genital chlamydial infection
- E) None of the above

185-The CDC recommends that sexually active adolescent females undergo annual screening for which of the following?

- A) Gonorrhea
- B) Chlamydia
- C) Syphilis
- D) Genital herpes
- E) None of the above

186-What is the most frequent type of osteomyelitis?

- A) Hematogenous disease
- B) Contiguous spread disease
- C) Chronic disease
- D) Vascular disease

187-Infectious arthritis most commonly involves how many joints?

- A) One
- B) Two
- C) Three
- D) Four

188-Hematogenous osteomyelitis most commonly occurs in what age group?

- A) Adults over 50 years of age
- B) Adults between 18 and 50 years of age
- C) Children under 16 years of age
- D) Neonates

189-The most common age group of osteomyelitis patients to develop joint infections are the following:

- A) Adults over 50 years of age
- B) Adults between 18 and 50 years of age
- C) Children under 16 years of age
- D) Neonates

190-What is the most common organism causing hematogenous osteomyelitis?

- A) *Pseudomonas aeruginosa*
- B) *Haemophilus influenzae*
- C) *Staphylococcus aureus*
- D) Group B *Streptococcus*

191-What is a true characteristic of the organisms causing osteomyelitis in patients with diabetes mellitus?

- A) Anaerobic organisms are most common.
- B) Multiple organisms are most common.
- C) *Enterobacteriaceae* are most common.
- D) *Enterococcus* is most common.

192-What is the most frequent type of infectious arthritis?

- A) Hematogenous
- B) Contiguous-spread disease
- C) Chronic disease
- D) Vascular disease

193-All of the following are risk factors to develop infectious arthritis except

- A) Joint trauma
- B) IV drug abuse
- C) Preexisting arthritis
- D) Urinary tract infections

194-What is the most common organism causing adult nongonococcal bacterial arthritis?

- A) *Streptococcus*
- B) *Staphylococcus aureus*
- C) *P. aeruginosa*
- D) *Escherichia coli*

195-What would be a useful monitoring strategy for a patient with osteomyelitis?

- A) Weekly C-reactive protein
- B) Daily C-reactive protein
- C) Daily white blood cell count

D) Six-month erythrocyte sedimentation rate

196-Of the following cultures, which source would be the most trusted in determining the etiology of osteomyelitis?

- A) Sinus tract culture
- B) Skin ulcer culture
- C) Urinary tract culture
- D) Metaphyseal fluid culture

197-In children with osteomyelitis, failures rates have been shown to be higher with what duration of antibiotic treatment?

- A) One week
- B) Two weeks
- C) Three weeks
- D) Four weeks

198-The most important criterion when selecting a patient with osteomyelitis for oral antibiotic therapy is

- A) Clinical response to the parenteral antibiotic
- B) Use of bactericidal titers
- C) Presence of a central line
- D) Presence of bone pain

199-Oral ciprofloxacin for osteomyelitis would be most likely to fail with which infecting organism?

- A) *Serratia marcescens*
- B) *S. aureus*
- C) *Enterobacter cloacae*
- D) *E. coli*

200-What is the preferred empiric antibiotic regimen for a 7-year-old boy with hematogenous osteomyelitis?

- A) IV ampicillin
- B) Oral ciprofloxacin
- C) IV nafcillin
- D) IV cefuroxime

201-Regarding the common pathogens in sepsis and septic shock, which of the following statements is correct?

- A) Since the late 1970s, gram-negative organisms continued to be the predominant pathogens.

- B) *Staphylococcus aureus*, *Streptococcus pneumoniae*, and coagulase-negative staphylococci are the common gram-positive pathogens.
- C) *Escherichia coli* is the most frequent cause of sepsis fatality.
- D) Non-*Candida albicans* *Candida* species have become the most common causes of fungal sepsis.

202-The following mediators are proinflammatory except

- A) TNF- α
- B) IL-6
- C) IL-8
- D) Activated protein C

203-Complication associated with sepsis is

- A) Persistent hypotension
- B) Disseminated intravascular coagulation
- C) Acute respiratory distress syndrome
- D) Acute renal failure
- E) All of the above

204-The Surviving Sepsis campaign recommends hydrocortisone be initiated in patients with

- A) Sepsis and septic shock
- B) A post-adrenocorticotrophic hormone (ACTH) increase <9
- C) Hypovolemia
- D) Hypotension
- E) Hypotension on vasopressors

205-The following treatment regimen is preferred in cases of nosocomial pneumonia with a suspicion of *Pseudomonas aeruginosa*:

- A) Levofloxacin
- B) Ceftazidime plus azithromycin
- C) Piperacillin plus gentamicin
- D) Ceftriaxone plus levofloxacin
- E) Vancomycin plus ertapenem

206-Which of the following agents used against methicillin-resistant *Staphylococcus aureus* is incorrectly matched with a clinically significant adverse reaction?

- A) Vancomycin–nephrotoxicity
- B) Linezolid–neutropenia
- C) Quinupristin/dalfopristin–myalgia
- D) Daptomycin–hyperbilirubinemia

207-Polymicrobial infections such as secondary peritonitis can be treated with the following agents except ?

- A) Ceftazidime and gentamicin
- B) Piperacillin/tazobactam
- C) Ampicillin plus gentamicin plus metronidazole
- D) Meropenem
- E) Ciprofloxacin plus metronidazole

208-Early goal-directed therapy when resuscitating a patient in severe sepsis or sepsis-induced tissue hypotension involves ?

- A) Venous catheter placement
- B) Large volume of fluid
- C) Red blood cell transfusion
- D) Dobutamine therapy
- E) All of the above

209-The goal blood glucose level for critically ill patients is ?

- A) =126mg/dL when fasting
- B) 80–110 mg/dL
- C) =150mg/dL
- D) =150mg/dL 1-hour postprandial
- E) =200 mg/dL 1-hour postprandial

210-Regarding hemodynamic support, which of the following agents is the best initial therapeutic intervention?

- A) 5% albumin
- B) Lactated Ringer solution
- C) Normal saline
- D) Norepinephrine
- E) Dopamine

211-Dopamine affects the following receptors except

- A) α_1
- B) α_2
- C) β_1
- D) β_2

212-Invasive candidiasis can be treated with the following agents except

- A) Fluconazole
- B) Voriconazole
- C) Caspofungin
- D) Amphotericin B deoxycholate
- E) Itraconazole

213-Recombinant human activated protein C is contraindicated in

- A) Active internal bleeding
- B) Recent hemorrhagic stroke
- C) Recent severe head trauma
- D) Known hypersensitivity to drotrecogin alfa
- E) All of the above

214-Which of the following agents is effective against *Candida glabrata*?

- A) Fluconazole
- B) Voriconazole
- C) Itraconazole
- D) Ketoconazole

215-Patients are at increased risk of bleeding if

- A) Concurrent therapeutic heparin is administered
- B) Platelet count is $<30,000 \times 10^6/L$
- C) There is a recent history of GI bleeding
- D) The patient has a history of chronic severe liver disease
- E) All of the above

216-Vasopressin is indicated for

- A) Hemorrhagic shock
- B) Cardiogenic shock
- C) Septic shock
- D) Refractory shock
- E) Hypovolemic shock

217-The Majority of vulvovaginal candidiasis (VVC) infections are caused by

- A) *Candida glabrata*
- B) *Candida krusei*
- C) *Candida albicans*
- D) *Candida tropicalis*

218-Which of the following is considered a risk factor for VVC?

- A) Wearing loose-fitting clothes
- B) Excess intake of fatty foods
- C) Using low-dose oral contraceptive
- D) Using a diaphragm with spermicide

219-A woman who suffers from recurrent VVC is likely to have which one of these underlining medical conditions?

- A) Diabetes mellitus
- B) Epilepsy

- C) Hypertension
- D) Angina

220-Blastospores in Candida organisms are believed to be responsible for

- A) Invasion of epithelial tissue
- B) Spread of the organism (?)
- C) Recognition of epithelial receptors
- D) Causing symptomatic VVC infection

221-The following drug would be the preferred choice of treatment for VVC for a woman who is 11 weeks pregnant:

- A) Fluconazole 150 mg tablet for 1 day
- B) Nystatin 100,000 units for 14 days
- C) Miconazole 100 mg suppository for 7 days
- D) Ticonazole 2% cream 1 applicator for 3 days

222-Which of the following non-Candida albicans species can cause oropharyngeal candidiasis?

- A) C. glabrata
- B) C. tropicalis
- C) C. krusei
- D) C. dubliniensis
- E) All of above

223-In patients infected with human immunodeficiency virus (HIV), which of the following is likely to be the first clinical manifestation of being infected.

- A) Onychomycosis
- B) Vulvovaginal candidiasis (VVC)
- C) Oropharyngeal candidiasis (OPC)
- D) Tinea pedis

224-In HIV disease, oral carriage of yeast and risk of mucosal invasion increase with

- A) Decrease in CD4 cell count
- B) Increase in CD4 cell count
- C) Decrease in red blood cell count
- D) Decrease in white blood cell count

225-What is the preferred therapy in an HIV-infected patient with OPC and concurrent esophageal involvement?

- A) Nystatin solution 5 mL swish and swallow 4 times daily for 7–14 days
- B) Itraconazole 100 mg tablets once daily for 7–14 days
- C) Fluconazole 400 mg tablets once daily for 14–21 days
- D) Clotrimazole 10 mg troche 1 troche 4 times daily for 7–14 days

226-In a patient with OCP who is unresponsive to fluconazole, which one of the following options is appropriate to try next?

- A) Itraconazole 200 mg capsule daily
- B) Amphotericin B deoxycholate IV 0.3 mg/kg per day
- C) Voriconazole 400 mg twice daily
- D) Clotrimazole 10 mg troche 4 times daily
- E) None of the above

227-Which of the following is the most appropriate advice to provide when counseling a patient with OPC?

- A) For denture-related oral candidiasis, remove and disinfect the dentures overnight with chlorhexidine 0.2%.
- B) Clotrimazole lozenge should be slowly dissolved in mouth, not chewed or swallowed whole, over at least 1 minute and the saliva swallowed.
- C) Take itraconazole solution on an empty stomach.
- D) Discontinue treatment as soon as symptoms have disappeared.

228-Which one of the following statements is true?

- A) Tinea pedis can be referred to as jock itch.
- B) Tinea corporis can be treated with ciclopirox.
- C) Athlete's foot is commonly contracted during cold weather.
- D) Tinea capitis is a mycotic infection involving the scalp.

229-An infection with tinea barbae can be treated with which one of the following?

- A) Itraconazole 200 mg/day for 3–7 days
- B) Itraconazole 200 mg/day for 1 week
- C) Itraconazole 200 mg/day for 1–4 weeks
- D) Itraconazole 200 mg/day for 1–4 weeks

230-Which one of the following statements is correct regarding the treatment of onychomycosis?

- A) Because of the low efficacy rates of nail lacquers (amorolfine and ciclopirox), these agents do not have any role in the treatment of onychomycosis.
- B) Fluconazole is the accepted first-line agent because it has a better tolerance and drug interaction profile.
- C) Itraconazole pulse therapy is preferred over continuous dosing for fingernail infections.
- D) An advantage of terbinafine is that pulse dosing is as effective as continuous daily dosing and also has fewer side effects.
- E) The best cure rate for fingernail onychomycosis is achieved with the use of a combination of topical and systemic agents.

231-Filamentous molds:

- A) rarely cause invasive disease

- B) have rigid cell walls that reproduce by budding
- C) often appear on agar as oval or spherically shaped unicellular forms that generally produce pasty or mucoid colonies
- D) may appear as multicellular branching, thread-like structures with septated hyphae
- E) all of the above

232-Susceptibility testing:

- A) may be helpful in dealing with infections caused by non-albicans species of Candida B) have not been developed for fungi
- C) is routinely used to guide systemic therapy with antifungal agents
- D) are useful in evaluating the susceptibility of filamentous fungi to antifungal agents
- E) all of the above

233-The most commonly reported mechanisms of azole resistance among C. albicans isolates include:

- A) reduced permeability of the fungal cell membrane to azoles
- B) overproduction of the fungal cytochrome P450 enzymes
- C) efflux pumps capable of actively pumping azoles from the target pathogen
- D) overproduction of azole-inactivating enzymes
- E) a,b, and c
- F) all of the above

234-The NCCLS M27-A fungal susceptibility testing methodology does not reliably identify:

- A) caspofungin resistant isolates of Candida
- B) fluconazole resistant isolates of Candida
- C) amphotericin-B resistant isolates of Candida
- D) azole resistant isolates of Candida
- E) all of the above

235-Clinical circumstances in which plasma level monitoring of antifungal agents may be indicated include:

- A) HIV-infected patients receiving oral itraconazole capsules for the suppressive therapy of Histoplasmosis
- B) All patients receiving oral azoles
- C) Patients with renal failure who are receiving 5-flucytosine
- D) a and c
- E) all of the above azoles

236-Intrinsic resistance to fluconazole:

- A) is demonstrated by C. krusei
- B) often develops during long term therapy in HIV-infected patients
- C) is defined as an innate lack of susceptibility of the antifungal agent to a pathogen

- D) a and c
- E) none of the above

237-Treatment of histoplasmosis:

- A) is generally lifelong in HIV-infected patients
- B) should always be initiated with amphotericin B, even in non HIV-infected patients
- C) generally requires prolonged hospitalization
- D) is generally very effectively treated (>90%) with low (100 mg daily) dosages of itraconazole in the non-immunocompromised host
- E) all of the above

238-Treatment of blastomycosis:

- A) is generally not required in HIV-infected patients
- B) should always be initiated with amphotericin B, even in non HIV-infected patients
- C) generally requires prolonged hospitalization
- D) may be effectively treated with azole antifungals in the non-immunocompromised host with non-lifethreatening disease
- E) all of the above

239-Coccidioidomycosis

- A) is rarely encountered in the immunocompetent patient
- B) requires the use of intrathecal amphotericin B in all patients with meningeal disease
- C) may disseminate more commonly in certain high risk racial or ethnic populations
- D) is often treated with a synergistic combination of antifungal agents
- E) all of the above

240-Cryptococcal meningitis in the HIV-infected patient:

- A) is optimally treated with lipid formulations of amphotericin B
- B) may be accompanied by decreased intracranial pressure
- C) generally requires life-long suppressive therapy after successful induction and consolidation therapy with amphotericin B and fluconazole
- D) is generally asymptomatic
- E) all of the above

241-Candida infections:

- A) are most often caused by *C. albicans*, but may also be caused by *C. tropicalis*, *C. parapsilosis*, *C. krusei*, *C. lusitaniae*, or *C. glabrata*
- B) are generally self-limited
- C) are optimally treated with a combination of 3 or more antifungal agents
- D) a and c
- E) all of the above

242-In the non immunocompromised host, hematogenously disseminated candidiasis caused by *Candida* spp:

- A) is most commonly due to *C. albicans*, altho *C. glabrata* and *C. parapsilosis* are increasingly encountered species.
- B) should be treated with fluconazole, amphotericin B, or caspofungin
- C) should be treated by prompt removal of intravenous catheters and careful observation of the patient.
- D) a and c
- E) all of the above

243-Invasive aspergillosis:

- A) can be avoided in the neutropenic patient by administration of prophylactic antifungal agents
- B) should be treated with amphotericin B nasal sprays
- C) can be treated with high doses of amphotericin B, itraconazole, or voriconazole
- D) is most efficaciously treated by combination therapy with fluconazole plus amphotericinB
- E) all of the above

244-Drug interactions with ketoconazole:

- A) can be avoided by administration of IV rather than oral dosages
- B) are often due to induction of cytochrome P450 3A4 by ketoconazole
- C) are often due to inhibition of cytochrome P450 3A4 by ketoconazole
- D) are rarely of clinical significance
- E) all of the above

245-Adverse effects of amphotericin B:

- A) include thrombophlebitis and renal toxicity
- B) are eliminated by the use of lipid-based formulations
- C) are uncommon except in HIV-infected patients treated for prolonged (>1 year) periods
- D) can be minimized by the use of prolonged infusions
- E) all of the above

246-What is the most important risk factor for development of severe infections in cancer patients?

- A) Alteration of normal flora by chemotherapy and antimicrobial therapy
- B) Prolonged neutropenia
- C) Severe mucositis
- D) Humoral and cellular immune system defects

247-The most common bacterial microorganisms causing infections in neutropenic cancer patients are:

- A) *Klebsiella pneumoniae*

- B) *Pseudomonas aeruginosa*
- C) Staphylococci and streptococci
- D) *Candida* spp

248-Which of the following oral antibiotic regimens is/are effective in managing episodes of febrile neutropenia in low-risk patients?

- A) Ciprofloxacin plus amoxicillin/clavulanate
- B) Penicillin G/rifampin
- C) Ciprofloxacin/clindamycin
- D) All of the above regimens except (c) are acceptable regimens in this clinical setting

249-In high-risk neutropenic cancer patients who remain febrile despite 3 to 5 days of broad-spectrum parenteral antibiotic therapy, all of the following are potential treatment strategies except:

- A) Continue initial antibiotic regimen if there has been no change in the patient's condition
- B) Modify initial antibiotic regimen if the patient develops progression of signs/symptoms
- C) Add antifungal therapy to antimicrobial regimen
- D) If specific pathogen(s) are isolated, narrow antibiotic therapy to cover the identified pathogens

250-Which of the following statements regarding antifungal prophylaxis in cancer patients is false?

- A) Fluconazole prophylaxis has been shown to reduce the incidence of superficial and systemic fungal infections and significantly decrease mortality from fungal infections in patients with leukemia and HSCT.
- B) Antifungal prophylaxis significantly reduces the incidence of invasive *Aspergillus* infections in patients with febrile neutropenia.
- C) Use of fluconazole prophylaxis has resulted in emergence of infections caused by *Candida krusei* and *Candida glabrata*.
- D) Antifungal prophylaxis for prevention of invasive fungal infections is routinely recommended for neutropenic cancer patients.

251-Patients at risk for *Pneumocystis carinii* infections should receive prophylaxis with:

- A) Ciprofloxacin/penicillin
- B) Trimethoprim/sulfamethoxazole
- C) Acyclovir
- D) Fluconazole

252-Which of the following statements regarding initial empiric vancomycin therapy in febrile neutropenic cancer patients is false?

- A) All initial empiric regimens should contain vancomycin.

- B) Patients with evidence of IV catheter infections may benefit from initial empiric therapy with vancomycin.
- C) Decreased mortality from penicillin-resistant viridans streptococcal infections has been observed with initial empiric vancomycin therapy.
- D) If empiric vancomycin therapy is initiated and no evidence of gram-positive infection is found after 24 to 48 hours, vancomycin should be discontinued.

253-All of the following are measures directed at prevention of infectious complications in neutropenic cancer patients except:

- A) Meticulous hand washing
- B) Laminar air flow rooms
- C) Systemic antimicrobial prophylaxis regimens preserving colonization resistance
- D) Granulocyte transfusions

254-All of the following infections would be anticipated during the immediate period (approximately 1 month) after lung transplantation except:

- A) Surgical wound infections
- B) Pneumonia
- C) Cytomegalovirus (CMV) disease in a patient who was CMV-seronegative before transplantation
- D) Reactivation of herpes simplex virus (HSV) infection in a patient who was HSV-seropositive before transplantation

255-Patients undergoing hematopoietic stem cell transplantation are at significant risk for infection in all of the following scenarios except:

- A) Primary or recurrent varicella zoster virus infection in a patient with graft-versus-host disease
- B) Cytomegalovirus (CMV) infection in a CMV-seronegative recipient receiving stem cell donations from a CMV-seropositive donor
- C) Candida or Aspergillus infections in patients receiving allogeneic stem cell transplants
- D) All of the above

256-Patients undergoing hematopoietic stem cell transplantation are routinely recommended to receive all of the following vaccinations except:

- A) Haemophilus influenzae type B vaccine
- B) Hepatitis A vaccine
- C) 23-valent pneumococcal vaccine
- D) Influenza vaccine

257-Which of the following types of antimicrobial prophylaxis is not routinely recommended in patients undergoing solid organ transplantation?

- A) Antifungal therapy for prevention of invasive fungal infections in renal transplant patients

- B) Perioperative antibacterials for prevention of postoperative wound infections
- C) Trimethoprim/sulfamethoxazole for prevention of *Pneumocystis carinii* infection
- D) Ganciclovir or acyclovir in patients at highest risk for Cytomegalovirus disease

258-Which of the following antifungal regimens would be most appropriate for prophylaxis of invasive candidiasis in a patient undergoing liver transplantation?

- A) Amphotericin B 0.6 mg/kg intravenously once daily
- B) Fluconazole 400 mg intravenously or orally once daily
- C) Micafungin 50 mg once daily
- D) All of the above

259-An appropriate regimen for the treatment of confirmed invasive pulmonary aspergillosis in a patient undergoing solid organ transplantation would be:

- A) Caspofungin 70 mg intravenously x one dose, followed by 50 mg intravenously once daily
- B) Liposomal amphotericin B 5 mg/kg intravenously once daily
- C) Voriconazole 6 mg/kg intravenously twice daily × two doses, followed by 4 mg/kg intravenously twice daily
- D) All of the above

260-A 45-year-old female undergoes hematopoietic stem cell transplantation for advanced metastatic breast cancer and develops cytomegalovirus disease 2 months after transplantation. She is started on ganciclovir 5 mg/kg intravenously every 12 hours. The most important ganciclovir-related adverse effect which should be carefully monitored for in this patient would be:

- A) Bone marrow suppression
- B) Mucositis
- C) Nephrotoxicity
- D) Central nervous system toxicities

261-A patient undergoing a cholecystectomy for acute cholecystitis requires

- A) No antibiotic therapy
- B) Prophylactic antibiotic therapy
- C) Presumptive antibiotic therapy
- D) Therapeutic antibiotic therapy

262-According to the National Research Council classification of surgical site infections (SSIs), antibiotic therapy is not required for

- A) Clean procedures
- B) Clean–contaminated procedures
- C) Contaminated procedures
- D) a and b

263-Which of the following are not considered patient-specific risk factors for SSIs?

- A) Smoking history
- B) Preoperative nutritional status
- C) Male gender
- D) Diabetes

264-Which of the following statements about preoperative nutrition is true?

- A) Preoperative dietary supplementation with glutamine reduces the risk of postoperative SSIs.
- B) Preoperative dietary supplementation with arginine reduces the risk of postoperative SSIs.
- C) Preoperative dietary supplementation with omega-3 fatty acids reduces the risk of postoperative SSIs.
- D) No dietary supplements have been shown to decrease the incidence of postoperative SSIs.

265-According to the National Nosocomial Infection Surveillance System, which one of the following organisms is most often isolated from SSIs?

- A) Streptococcus pneumoniae
- B) Staphylococcus aureus
- C) Escherichia coli
- D) Enterococci species

266-The Centers for Disease Control and Prevention recommends that vancomycin should be substituted for a cephalosporin for surgical prophylaxis when

- A) Methicillin-resistant *S. aureus* is suspected
- B) "Contaminated" and "dirty" procedures are expected
- C) Patients have a documented history of a life-threatening allergy to penicillins or cephalosporins
- D) The surgical procedure involves implantation of any prosthetic device
- E) a and b

267-Which one of the following statements regarding prophylactic antimicrobial regimens is false?

- A) Therapeutic antimicrobials for unrelated infections can be used in place of a prophylactic antimicrobial regimen provided the antibiotic used has appropriate antimicrobial activity.
- B) Bactericidal concentrations of antibiotics must be delivered to the surgical site prior to the initial incision.
- C) Bactericidal concentrations of antibiotics must be maintained throughout the duration of the surgery.
- D) Antimicrobials should be administered with anesthesia just prior to the initial incision.

268-Intraoperative redosing of typical antimicrobials (i.e., cefazolin) are required for surgical procedures longer than

- A) 1 hour
- B) 2 hours
- C) 3 hours
- D) 6 hours

269-With respect to gastrointestinal (GI) surgeries, third-generation cephalosporins are considered to be the recommended prophylactic regimen for

- A) Cholecystectomies
- B) Gastroduodenal surgeries
- C) Colorectal surgeries
- D) All of the above

270-Regarding colorectal surgery, which one of the following statements is true?

- A) Mechanical bowel preparation (i.e., with polyethylene glycol) is an effective way to reduce bacterial load in the colon.
- B) Most surgeons report routinely using a mechanical bowel preparation in addition to antibiotics prior to elective colorectal surgery.
- C) Mechanical bowel preparation (i.e., with polyethylene glycol) is an effective way to reduce surgical site infection risk after elective colorectal surgery.
- D) All of the above
- E) A and B only

271-Prophylactic antimicrobial therapy for GI endoscopy is recommended for

- A) All patients, as post procedure bacteremia is common
- B) No patient, as the risk of post procedure infection is low
- C) High-risk procedures, including colonoscopy
- D) High-risk patients, including those with prosthetic heart valves

272-Which one of the following statements about hysterectomies is false?

- A) Cefazolin is the prophylactic drug of choice for vaginal hysterectomies.
- B) Abdominal hysterectomies are associated with a higher rate of SSIs when compared with vaginal hysterectomies.
- C) It is unnecessary to provide more than 24 hours of prophylactic antimicrobial coverage for abdominal hysterectomies.
- D) Metronidazole is a reasonable alternative to a cephalosporin for penicillin-allergic patients undergoing a hysterectomy.

273-Coronary artery bypass graft surgery is

- A) Considered "clean" surgery, and antimicrobial prophylaxis is not warranted.
- B) Considered "clean" surgery, but antimicrobial prophylaxis is still warranted.
- C) Considered "contaminated" surgery, and antimicrobial prophylaxis is not warranted.

D) Considered "contaminated" surgery, but antimicrobial prophylaxis is still warranted.

274-Patients suffering an open compound limb fracture

- A) Require no more than 24 hours of prophylactic antibiotics
- B) Require no more than a single dose of prophylactic antibiotics
- C) Require a course of antibiotics for "presumptive" infection
- D) None of the above

275-Nonantimicrobial strategies to reduce SSIs include all of the following except

- A) Permissive hypothermia intraoperatively
- B) High concentrations of oxygen administration intraoperatively
- C) Protocolized aseptic technique
- D) Perioperative normoglycemia

276-Which of the following is an example of a situation in which vaccine-induced immune response would be poor?

- A) Live-attenuated influenza vaccine administered to a healthy 12-year-old child
- B) Hepatitis B vaccine administered with a 1.5-inch needle to a 22-year-old woman who weighs 95 kg
- C) Third dose in the inactivated polio vaccine series administered to a 12-month-old child
- D) Measles-mumps-rubella vaccine administered to a 4-month-old infant

277-Which of the following is the most likely adverse effect of IVIG use in a patient with immune thrombocytopenia purpura and congestive heart failure?

- A) Anaphylaxis associated with native IgM antibodies
- B) Kawasaki disease
- C) Volume overload
- D) Chronic renal failure

278-R.T. is a 5-year-old boy who presents for his well-child visit prior to entering kindergarten. His past medical history is unremarkable except for an anaphylactic reaction to amoxicillin 4 days ago when he was being treated for a tooth abscess. He was seen in the emergency room and given prednisone 40 mg daily for 5 days and azithromycin for 5 days. Although he was up-to-date on his childhood immunization at age 36 months, he now presents for routine immunizations prior to entering school.

What do you recommend with a goal of administering all needed vaccines as soon as possible?

- A) Administer DTaP, MMR, IPV today
- B) Administer DTaP, IPV today, and postpone MMR until he has been off prednisone for 3 months
- C) Administer no immunizations until he has been off prednisone for 3 months
- D) Administer DTaP and IPV today and postpone MMR until he has been off antibiotics for 2 weeks

279-Which of the following describes the rationale for Rho(D) antibody treatment?

- A) Administered to an Rh-negative infant to prevent it from developing antibodies to its red blood cells
- B) Administered to an Rh-positive mother to prevent her from developing antibodies to her Rh-negative infant
- C) Administered to an Rh-negative mother to prevent her from developing antibodies that may cause her to become anemic
- D) Administered to an Rh-negative mother to prevent her from developing antibodies to Rh-positive red blood cells that may cause anemia in the fetus in future pregnancies

280-Which of the following infections is pooled human immunoglobulin useful in preventing?

- A) Measles
- B) Diphtheria
- C) Yellow fever
- D) Guillain-Barré syndrome

281-A hypothetical new vaccine has been developed for the prevention of Neisseria meningitides. The vaccine is a polysaccharide vaccine that is administered by the subcutaneous route. Which of the following is likely true about its use?

- A) Children less than 2 years of age will not likely mount an immune response to it.
- B) Its administration should be separated from the administration of hepatitis B immunoglobulin by 4 months.
- C) It could be administered with a 1-1/2 inch, 23-gauge needle to a 75-kg female.
- D) A single dose will likely induce high concentrations of antigen-specific IgG.

282-T.P. is a 22-year-old man who had significant contact with a raccoon deemed to have rabies. The patient received rabies immunoglobulin and began the inactivated rabies vaccine series (doses on days 0, 3, 7, 14, and 28) in the emergency room yesterday. He now presents for follow-up with employee health service. Upon review of his health record including his immunization record, a second dose of a measles-containing vaccine is recommended because he is a healthcare worker.

Which of the following would you recommend?

- A) Administer an MMR vaccine now
- B) Administer the MMR vaccine in 4 weeks
- C) Administer an MMR vaccine in 4 months
- D) Administer an MMR vaccine in 6 months

283-J.G. is a 24-year-old elementary school teacher who is 14 weeks pregnant. This is her first pregnancy. She was noted to be rubella seronegative on routine prenatal screening laboratory panel. She is blood type A negative. She was age-appropriately immunized as a child.

What recommendation would you make for use of rubella vaccine for J.G.?

- A) Vaccinate postpartum at hospital delivery
- B) Vaccinate now to prevent possible congenital rubella syndrome
- C) Vaccinate 3 months postpartum
- D) No rubella vaccine should be given as she received the MMR as a child

284-J.G. is a 24-year-old elementary school teacher who is 14 weeks pregnant. This is her first pregnancy. She was noted to be rubella seronegative on routine prenatal screening laboratory panel. She is blood type A negative. She was age-appropriately immunized as a child.

What recommendations would you make regarding the use of Rho(D) Ig?

- A) Rho(D) Ig is not indicated.
- B) Rho(D) Ig should be administered only during subsequent pregnancies.
- C) Rho(D) Ig should be administered at 28 weeks' gestation and following delivery.
- D) Rho(D) Ig should be contraindicated during pregnancy.

285-P.R. is a 46-year-old man who has just been diagnosed with type 2 diabetes. He has not received any immunizations as an adult that he can remember and has not seen a physician since his military physical. **Which of the following vaccines are recommended?**

- A) Hepatitis A, hepatitis B, PPSV23, annual influenza, Tdap
- B) PPV23, annual influenza, Tdap
- C) Hepatitis A, hepatitis B
- D) No vaccines are indicated, as he is unlikely to respond secondary to his diabetes and treatment.

286- For which of the following individuals would you recommend PPSV23 revaccination?

- A) A 72-year-old man with COPD who was vaccinated 5 years ago
- B) A 66-year-old woman with diabetes who was vaccinated when she was 62
- C) A 44-year-old man with HIV who was vaccinated at the time of HIV diagnosis 5 years ago
- D) A 62-year-old kidney transplant patient who was vaccinated prior to her transplant 3 years ago

287-What action is recommended if the interval between doses of inactivated polio vaccine is longer than the recommended interval?

- A) Add one additional dose
- B) Restart the series from the beginning
- C) Continue the series, ignoring the prolonged interval
- D) Perform a serologic test to determine if a vaccine response has been mounted

288-H.N. is a 66-year-old white man who will be discharged from the hospital tomorrow. He had an uncomplicated hernia repair. He is otherwise healthy, on no medications, and has

not been immunized since he “got his polio sugar cube in the 50s.” **Which of the following vaccines are recommended?**

- A) MMR, Td, annual live-attenuated influenza
- B) Td, annual live-attenuated influenza, Haemophilus influenza type b, meningococcal, PPV23
- C) Td, annual inactivated influenza, PPSV23, zoster
- D) Tdap, annual inactivated influenza, PPSV23, zoster

289-Which of the following describes an advantage of the Vaccine Adverse Event Reporting System?

- A) All vaccine adverse events that occur in the United States are reported.
- B) Only common adverse events are collected.
- C) Adverse event rates can be calculated.
- D) Risk factors for adverse events can be evaluated.

290-Which of the following type of vaccines is likely to induce lifelong immunity?

- A) Polysaccharide
- B) Toxoid
- C) Conjugated polysaccharide
- D) Live-attenuated

291-Which of the following statements regarding the transmission of HIV is false?

- A) Insertive sexual intercourse carries higher risk for HIV acquisition compared with receptive intercourse.
- B) The main modes of HIV transmission are sexual, parenteral, and perinatal.
- C) Condom use reduces the risk of HIV transmission by more than 10-fold.
- D) HIV can be transmitted from mother to infant via breastfeeding.

292-Which of the following is not an accurate characterization of the HIV epidemic?

- A) HIV infections are most concentrated in Sub-Saharan Africa.
- B) In the United States, approximately 25% of those infected with HIV are unaware of being infected.
- C) The main risk factor for HIV worldwide is men who have sex with men.
- D) Approximately 65 million humans have been infected with HIV worldwide.

293-Which of the following regarding the molecular characteristics of HIV is false?

- A) HIV is a DNA virus.
- B) There are two main types of HIV, HIV-1 and HIV-2.
- C) There are multiple clades (subtypes) that further distinguish the HIV viruses.
- D) HIV is believed to have originated from a cross-species transmission of a simian immunodeficiency virus from primates to humans.

294-Which of the following best represents the method by which HIV is diagnosed clinically?

- A) Incubation of patient's blood in culture to recover virus
- B) An enzyme-linked immunosorbent assay (ELISA) that detects antibodies against HIV followed by a confirmatory western blot
- C) Urine test to recover virus
- D) Signs and symptoms those are consistent with HIV infection

295-Which of the following steps in the HIV life cycle establishes lifelong infection?

- A) Adsorption and penetration
- B) Reverse transcription
- C) Viral maturation
- D) Integration

296-Which of the following signs or symptoms is not commonly associated with primary HIV infection?

- A) Fever
- B) Rash
- C) Rhinitis
- D) Aseptic meningitis

297-Which of the following is not a foundational principle for clinical use of antiretroviral agents?

- A) Plasma HIV-RNA informs about the magnitude of HIV replication and the CD4 cell count indicates the extent of HIV-induced immune system damage.
- B) Single or dual nucleoside analog therapy is sufficient for treating HIV-infected patient
- C) Treatment decisions should be individualized based on disease progression risk.
- D) Cross-resistance between specific drugs has been documented.

298-Which of the following pharmacologic characteristics is best representative of the nucleoside analog reverse transcriptase (NRTI) inhibitor class?

- A) Significant drug-drug interaction potential with cytochrome P450 (CYP450) substrates.
- B) A single mutation in HIV reverse transcriptase gene causes cross-resistance to the whole class.
- C) The drugs enter cells, become phosphorylated to the active triphosphate anabolite, and inhibit HIV reverse transcriptase.
- D) Most are extensively metabolized by the liver.

299-Which of the following drugs would cause the most significant concern for a drug-drug interaction for a patient on lopinavir/ritonavir-based therapy?

- A) A 5-day regimen of IV penicillin
- B) A new oral anti-arrhythmic extensively metabolized by CYP450 3A4
- C) Aspirin as needed for headache

D) A new selective serotonin reuptake inhibitor eliminated by the kidney

300-Which initial therapy is the best choice for a pregnant woman (first trimester) with a CD4 cell count of 295 cells/mm³?

- A) Efavirenz, zidovudine, lamivudine
- B) Lopinavir/ritonavir, zidovudine, lamivudine
- C) Nevirapine, tenofovir, didanosine
- D) Tenofovir, lamivudine, abacavir

301-Which two nucleoside analogs (NRTIs) should not be used together due to potential competition for phosphorylation and pharmacologic antagonism?

- A) Zidovudine and tenofovir
- B) Tenofovir and lamivudine
- C) Lamivudine and abacavir
- D) Zidovudine and stavudine

302-Which one of the following statements regarding HIV drug resistance is false?

- A) A phenotype assay measures the in vitro drug concentration needed for inhibition of the patient's viral isolate.
- B) A genotype assay measures the genetic makeup of the patient's virus and reports the important mutations found.
- C) Non-nucleoside analog reverse transcriptase inhibitors are susceptible to a single genetic mutation in HIV that extends cross-resistance to the class (except etravirine).
- D) The protease inhibitors class is susceptible to a single genetic mutation in HIV that extends cross-resistance to the class (low genetic barrier).

303-Which of the following special circumstances or clinical scenarios does not have its own set of recommended guidelines for care?

- A) Guidelines for using chemotherapeutic agents for oncology in persons with HIV
- B) Guidelines for the use of antiretroviral agents in HIV infected adults and adolescents
- C) Guidelines for the treatment and prevention of opportunistic infections in HIV infected adults and adolescents
- D) Guidelines for the use of antiretroviral agents in HIV infected children

304-Which of the following statements regarding the management of Pneumocystis jiroveci pneumonia is false?

- A) Lifelong prophylaxis is needed even with successful antiretroviral therapy.
- B) Sulfamethoxazole-trimethoprim is the drug of first choice for treatment.
- C) Primary prophylaxis is recommended for patients with fewer than CD4 200 cells/mm³.
- D) Moderate to severe disease should be treated with corticosteroids.

305-Which of the following statements regarding ART-era complications is false?

- A) Dyslipidemia, body fat changes, abnormalities in glucose handling, are all ART-era complications.
- B) Complications usually associated with aging seem to occur earlier in the ART-era complications.
- C) Hepatitis C co-infection should not be treated in patients with HIV.
- D) Changes in body fat are not readily reversible.

INFECTIOUS DISEASES PHARMACOTHERAPY ANSWERS

1-E) a, c, and d

2-E) All of the above

3-E) b and c

4-E) a, b, and c

5 -A) True

6- A) Polymerase chain reaction (PCR) is based on the capability of a DNA polymerase to copy and elongate a targeted strain of DNA.

7-D) There is a wide variation in the MIC test procedures due to inadequate standardization.

8 -A) Defined as the lowest concentration of a given antimicrobial that will kill (99.9%) of the patient's organism after 18-to-24-hour incubation.

9-B) A peak vancomycin serum concentration less than 25 mcg/mL

10- A) an infection due to an antimicrobial-resistant organism will not respond to treatment with maximal doses.

11-A) the data provided are incomplete, since the pharmacodynamic predictor of activity for fluoroquinolones is the time above the MIC.

12-D) Limitations in the clinical studies of "once daily" regimens has prevented widespread use.

13 -D) High-pressure liquid chromatography

14-C) Timed-kill curve tests can be used determine the effect of concentration on antimicrobial killing activity.

15-E) All of the above

16-D) The body temperature is controlled by the hypothalamus.

17-B) Polymorphonuclear leukocytes

18 -B) Sample the infected material

- 19-E) All of the above
- 20-C) Gastrointestinal disturbance
- 21-A) Time above the MIC
- 22-E) Diarrhea associated with *Clostridium difficile*
- 23-E) All of the above
- 24-D) Greater risk of drug toxicity
- 25-C) Sub-arachnoid space
- 26-C) WBC $>10/\text{mm}^3$ all mononuclear
- 27-B) *Listeria monocytogenes*
- 28-A) Gram stain and aerobic culture
- 29-D) All the above
- 30 -B) The 23-serotype pneumococcal vaccine
- 31-C) Cefotaxime alone
- 32-B) *Listeria monocytogenes*
- 33 -C) Chloramphenicol, metronidazole, trimethoprim
- 34-C) Paralysis of nerve VI
- 35-A) *Cryptococcus neoformans*
- 36-B) HIV encephalitis
- 37-B) Possible decrease in drug penetration into the CNS
- 38-A) *Neisseria meningitidis*
- 39-D) Linezolid
- 40-C) providing symptomatic and supportive care

- 41-D) during acute exacerbations, the use of systemic corticosteroids may be warranted.
- 42- A) Respiratory syncytial virus
- 43- D) Generous amounts of fluids should be provided.
- 44- D) Streptococcus pneumoniae
- 45-C) Piperacillin/tazobactam
- 46-C) Group B Streptococcus
- 47-B) these patients are more likely to receive inappropriate therapy and have a higher risk of mortality.
- 48-B) Azithromycin
- 49-A) Clindamycin and gentamicin
- 50-B) Typical signs and symptoms include conjunctivitis, fever, and rhinitis
- 51-C) RSV, parainfluenza, and adenoviruses are common causes of pneumonia in children.
- 52-C) Diagnosis is often difficult due to underlying lung pathology of intensively ill patients.
- 53-D) Piperacillin/tazobactam plus ciprofloxacin
- 54 -C) A virus
- 55 -A) Viruses
- 56 -C) Age younger than 2 years
- 57-D) Two of the above are correct.
- 58-B) Amoxicillin 90 mg/kg/day for 7 days
- 59- A) Cefuroxime
- 60- D) Two of the above are correct.
- 61-A) Viruses

- 62-D)** All of the above are correct.
- 63-C)** Both of the above are correct.
- 64-A)** Amoxicillin
- 65-A)** Phenylephrine
- 66- C)** 11% to 17%
- 67-D)** B and C
- 68-B)** 5 days
- 69-C)** Penicillin V 500 mg orally twice daily for 10 days
- 70-B)** Clindamycin hydrochloride 75 mg capsules: take three capsules orally three times daily
- 71-B)** Typically associated with sporadic outbreaks
- 72-A)** H3N2 and H1N1
- 73-D)** Antigenic drift causes seasonal epidemics of influenza and is the rationale behind the recommendation for annual vaccination.
- 74-C)** Both a and b are necessary.
- 75-D)** Both b and c could allow viral transmission.
- 76-D)** 10 days
- 77-A)** Rhinitis
- 78-B)** Direct fluorescence antibody test
- 79-B)** A 47-year-old male with hypertension successfully managed with lisinopril
- 80- A)** A 37-year-old female with HIV and a CD4 cell count of 150 cells/mm³
- 81-D)** No scientifically persuasive evidence exists to suggest harm from thimerosal exposure from a vaccine.

- 82-D)** Use of the adamantanes is not appropriate for monotherapy because of rapid development of resistance
- 83-D)** Prophylaxis with antiviral medication is appropriate in all of the above.
- 84-C)** Oseltamivir 75 mg plus rimantadine 200 mg once daily for the duration of influenza activity
- 85-C)** Maintenance of fluid intake, warm tea, and cough lozenges
- 86-D)** Incision and drainage
- 87-C)** Penicillin VK
- 88-D)** Impetigo, due to *Staphylococcus aureus*
- 89-C)** Penicillin G
- 90-B)** Dicloxacillin
- 91-D)** Trimethoprim-sulfamethoxazole for possible CA-MRSA
- 92-D)** All of the above
- 93-A)** Meropenem
- 94-B)** Levofloxacin + clindamycin
- 95-D)** Amoxicillin-clavulanate
- 96-C)** Relief of pressure and good skin care
- 97-B)** Irrigation, immobilization, and elevation
- 98- A)** Amoxicillin/clavulanatic acid
- 99- A)** Amoxicillin/clavulanic acid for 3 to 5 days
- 100-B)** *Eikenella corrodens*, *Staphylococcus aureus*, and anaerobes
- 101-B)** An intradermal screening test for TB infection
- 102- C)** =15 mm

- 103-** D) Positive tuberculin skin test but no evidence of active disease
- 104-** C) Cough, weight loss and night sweats
- 105-** C) Orange-colored secretions
- 106-** C) Isoniazid, rifampin, pyrazinamide, and ethambutol
- 107-** B) Rifampin
- 108-** A) Isoniazid
- 109-** B) Streptomycin
- 110-** A) Optic neuritis
- 111-** D) looperamide is appropriate; antibiotics are unnecessary
- 112-** A) Osm 245 mmol/L
- 113-** D) oral rehydration solution only
- 114-** D) Diarrhea caused by enterohemorrhagic E. coli 0157:H7
- 115-** C) ORT plus erythromycin 500 mg oral every 6 hours for 3 days
- 116-** B) E. coli 0157:H7
- 117-** A) 10-20%
- 118-** A) children 6 to 11 months
- 119-** C) metronidazole 250 mg oral four times daily for 10 days
- 120-** C) ciprofloxacin 500 mg oral twice daily
- 121-** A) Campylobacter jejuni
- 122-** A) vancomycin 125 mg oral four times daily for 10 days
- 123-** A) bismuth subsalicylate

- 124-B) *Campylobacter jejuni*, *Shigella* species, *Salmonella* species
- 125-D) loperamide plus ciprofloxacin
- 126-A) A patient with small bowel obstruction and peritonitis after receiving chemotherapy
- 127-B) False
- 128-B) through the damage done to the GI tract by blunt trauma
- 129-A) True
- 130-C) a surgical procedure, including drainage and repair
- 131-B) clindamycin
- 132-D) whether or not the dialysis center has anaerobic bacteria that are typically susceptible to clindamycin
- 133-C) Most patients should not complete their antimicrobial regimen orally after an uncomplicated secondary intra-abdominal infection.
- 134-B) imipenem
- 135-C) vancomycin (LD 1000 mg/L, MD 25 mg/L)
- 136-B) False
- 137-D) A treatment course of 5–7 days is recommended if the appendix is perforated at the time of surgery.
- 139-A) True
- 140-A) 24 hours or less.
- 141-A) cefazolin plus ceftazidime (LD 500 mg/L, MD 125 mg/L)
- 142-E) All the above
- 143-B) Mebendazole 100 mg twice daily for 3 days
- 144-E) a and c

145-D) Mefloquine

146-E) a or c

147-D) Nitazoxamide 500 mg twice daily for 3 days

148-E) None of the above

149-A) Cyclosporine and prednisone

150-C) Benznidazole

151-B) Albendazole

152-B) A full course of chloroquine to be followed by a course of primaquine

153-E) b and c

154-D) a and c

155-C) Crotamiton 10%

156-E) All the above

157-A) A female age 25 years, with a UTI, otherwise healthy

158-A) bladder infections predominantly

159-B) E. coli

160-D) Translocation from intestines

161-A) Tamm-Horsfall protein

162-C) Birth control pills

163-B) Elderly

164-C) Urine catch using the first 20-30mL of urine flow

165-C) >10⁵ bacteria/mL

166-A) Urine culture

- 167-B) Ciprofloxacin 500mg po BID for 3 days
- 168-D) Ciprofloxacin 400mg IV BID for 3 days, followed by 500mg po BID for 11 days
- 169-C) One half of a single-strength trimethoprim-sulfamethoxazole tablet may be used on a daily basis.
- 170-A) Four weeks
- 171-C) Trimethoprim-sulfamethoxazole
- 172-D) Number of sexual partners
- 173-E) None of the above
- 174-D) Herpes simplex virus
- 175-D) A and B only
- 176-B) Ciprofloxacin 500 mg PO twice daily for 7 days
- 177-D) Ceftriaxone
- 178-E) All of the above
- 179-A) Tinidazole 2 g PO as a single dose
- 180-A) Most genital infections are caused by HSV-1.
- 181-A) C trachomatis
- 182-E) A, B, and C
- 183-D) A and B
- 184-E) All of the above are true.
- 185-D) Genital chlamydial infection
- 186-B) Chlamydia
- 187-B) Contiguous spread disease

- 187-A) One
- 188-C) Children under 16 years of age
- 189-D) Neonates
- 190-C) Staphylococcus aureus
- 191-B) Multiple organisms are most common.
- 192-A) Hematogenous
- 193-D) Urinary tract infections
- 194-B) Staphylococcus aureus
- 195-A) Weekly C-reactive protein
- 196-D) Metaphyseal fluid culture
- 197-C) Three weeks
- 198-A) Clinical response to the parenteral antibiotic
- 199-B) S. aureus
- 200-B) Oral ciprofloxacin
- 201-B) Staphylococcus aureus, Streptococcus pneumoniae, and coagulase-negative staphylococci are the common gram-positive pathogens.
- 202-D) Activated protein C
- 203-E) All of the above
- 204-E) Hypotension on vasopressors
- 205-C) Piperacillin plus gentamicin
- 206-D) Daptomycin–hyperbilirubinemia
- 207-A) Ceftazidime and gentamicin

- 208-E) All of the above
- 209-C) 150mg/dL
- 210-C) Normal saline
- 211-B) α_2
- 212-E) Itraconazole
- 213-E) All of the above
- 214-B) Voriconazole
- 215-E) All of the above
- 216-D) Refractory shock
- 217-C) *Candida albicans*
- 218-D) Using a diaphragm with spermicide
- 219-A) Diabetes mellitus
- 220-B) Spread of the organism (?)
- 221-C) Miconazole 100 mg suppository for 7 days
- 222-E) All of above
- 223-C) Oropharyngeal candidiasis (OPC)
- 224-A) Decrease in CD4 cell count
- 225-C) Fluconazole 400 mg tablets once daily for 14–21 days
- 226-E) None of the above
- 227-A) For denture-related oral candidiasis, remove and disinfect the dentures overnight with chlorhexidine 0.2%.
- 228-D) Tinea capitis is a mycotic infection involving the scalp.

- 229-B)** Itraconazole 200 mg/day for 1 week
- 230-C)** Itraconazole pulse therapy is preferred over continuous dosing for fingernail infections.
- 231-D)** may appear as multicellular branching, thread-like structures with septated hyphae
- 232-A)** may be helpful in dealing with infections caused by non-albicans species of Candida
- 233-D)** overproduction of azole-inactivating enzymes
- 234-C)** amphotericin-B resistant isolates of Candida
- 235-D)** a and c
- 236-D)** a and c
- 237-A)** is generally lifelong in HIV-infected patients
- 238-D)** may be effectively treated with azole antifungals in the non-immunocompromised host with non-life-threatening disease
- 239-C)** may disseminate more commonly in certain high risk racial or ethnic populations
- 240-C)** generally requires life-long suppressive therapy after successful induction and consolidation therapy with amphotericin B and fluconazole
- 241-D)** a and c
- 242-B)** should be treated with fluconazole, amphotericin B, or caspofungin
- 243-C)** can be treated with high doses of amphotericin B, itraconazole, or voriconazole
- 244-C)** are often due to inhibition of cytochrome P450 3A4 by ketoconazole
- 245-A)** include thrombophlebitis and renal toxicity
- 246-B)** Prolonged neutropenia
- 247-C)** Staphylococci and streptococci
- 248-D)** All of the above regimens except (c) are acceptable regimens in this clinical setting

249-D) If specific pathogen(s) are isolated, narrow antibiotic therapy to cover the identified pathogens

250-D) Antifungal prophylaxis for prevention of invasive fungal infections is routinely recommended for neutropenic cancer patients .

251-B) Trimethoprim/sulfamethoxazole

252-A) All initial empiric regimens should contain vancomycin.

253-D) Granulocyte transfusions

254-C) Cytomegalovirus (CMV) disease in a patient who was CMV-seronegative before transplantation

255-D) All of the above

256-B) Hepatitis A vaccine

257-A) Antifungal therapy for prevention of invasive fungal infections in renal transplant patients

258-B) Fluconazole 400 mg intravenously or orally once daily

259-D) All of the above

260-A) Bone marrow suppression

261-C) Presumptive antibiotic therapy

262-A) Clean procedures

263-C) Male gender

264-D) No dietary supplements have been shown to decrease the incidence of postoperative SSIs.

265-B) Staphylococcus aureus

266-E) a and b

- 267-A)** Therapeutic antimicrobials for unrelated infections can be used in place of a prophylactic antimicrobial regimen provided the antibiotic used has appropriate antimicrobial activity.
- 268-C)** 3 hours
- 269-C)** Colorectal surgeries
- 270-E)** A and B only
- 271-D)** High-risk patients, including those with prosthetic heart valves
- 272-B)** Abdominal hysterectomies are associated with a higher rate of SSIs when compared with vaginal hysterectomies.
- 273-B)** Considered "clean" surgery, but antimicrobial prophylaxis is still warranted.
- 274-C)** Require a course of antibiotics for "presumptive" infection
- 275-A)** Permissive hypothermia intra-operatively
- 276-D)** Measles-mumps-rubella vaccine administered to a 4-month-old infant
- 277-C)** Volume overload .
- 278-A)** Administer DTaP, MMR, IPV today
- 279-D)** Administered to an Rh-negative mother to prevent her from developing antibodies to Rh-positive red blood cells that may cause anemia in the fetus in future pregnancies
- 280-A)** Measles
- 281-A)** Children less than 2 years of age will not likely mount an immune response to it.
- 282-C)** Administer an MMR vaccine in 4 months
- 283-A)** Vaccinate postpartum at hospital delivery
- 284-C)** Rho (D) Ig should be administered at 28 weeks' gestation and following delivery.
- 285- A)** Hepatitis A, hepatitis B, PPSV23, annual influenza, Tdap

- 286-C)** A 44-year-old man with HIV who was vaccinated at the time of HIV diagnosis 5 years ago
- 287-C)** Continue the series, ignoring the prolonged interval
- 288-C)** Td, annual inactivated influenza, PPSV23, zoster
- 289-D)** Risk factors for adverse events can be evaluated.
- 290-D)** Live-attenuated
- 291-A)** Insertive sexual intercourse carries higher risk for HIV acquisition compared with receptive intercourse.
- 292-C)** The main risk factor for HIV worldwide is men who have sex with men.
- 293-A)** HIV is a DNA virus.
- 294-B)** An enzyme-linked immunosorbent assay (ELISA) that detects antibodies against HIV followed by a confirmatory western blot
- 295-D)** Integration
- 296-C)** Rhinitis
- 297-B)** Single or dual nucleoside analog therapy is sufficient for treating HIV-infected patients.
- 298-C)** the drugs enter cells, become phosphorylated to the active triphosphate anabolite, and inhibit HIV reverse transcriptase.
- 299-B)** A new oral anti-arrhythmic extensively metabolized by CYP450 3A4
- 300-B)** Lopinavir/ritonavir, zidovudine, lamivudine
- 301-D)** Zidovudine and stavudine
- 302-D)** The protease inhibitors class is susceptible to a single genetic mutation in HIV that extends cross-resistance to the class (low genetic barrier).
- 303-A)** Guidelines for using chemotherapeutic agents for oncology in persons with HIV
- 304-A)** Lifelong prophylaxis is needed even with successful antiretroviral therapy.

305-C) Hepatitis C co-infection should not be treated in patients with HIV.

17

Gynecology Pharmacotherapy

Gynecology pharmacotherapy questions

1-Which of the following drug properties contributes to the ability of a drug to readily transfer across the placenta?

- A) Low protein binding
- B) Molecular weight greater than 500 daltons
- C) Hydrophilicity
- D) Weak acid

2-The most effective strategy to reduce the occurrence of neural tube defects in infants is:

- A) Use medications not known to cause neural tube defects
- B) Take folic acid 4 mg daily during the first trimester
- C) Take folic acid 400 mcg daily throughout the reproductive years
- D) Increase dietary intake of folic acid

3-Which of the following medications is not preferred for treatment of pregnant patients with nausea and vomiting who have failed nonpharmacologic therapy?

- A) Pyridoxine
- B) Doxylamine
- C) Prednisone
- D) Metoclopramide
- E) Prochlorperazine

4-Which of the following interventions decreases the risk of preeclampsia?

- A) Bed rest
- B) Oral methyldopa
- C) Oral calcium supplementation
- D) Oral lisinopril
- E) Intravenous magnesium sulfate infusion

5-The most appropriate management for a pregnant patient diagnosed with Neisseria gonorrhoeae during pregnancy is:

- A) Ceftriaxone 250 mg IM as a single dose
- B) Ceftriaxone 125 mg IM plus azithromycin 1 g orally, both as a single dose
- C) Cefixime 400 mg orally as a single dose plus erythromycin estolate 250 mg orally 4 times a day for 7 days
- D) Amoxicillin 500 mg orally 3 times a day for 7 days

6-Management strategies to reduce the risk of congenital malformations in infants born to mothers with epilepsy include all of the following except:

- A) Switch drug therapy to phenobarbital

- B) Folic acid 4 mg daily during the first trimester
- C) Use only one antiepileptic drug, if possible
- D) Attempt drug withdrawal at least 6 months before trying to conceive

7-An appropriate preventive treatment regimen for a pregnant woman who has four migraine headaches per month is:

- A) Sumatriptan
- B) Ergotamine
- C) Caffeine
- D) Ibuprofen
- E) Propranolol

8-The most appropriate treatment regimen for a pregnant woman with persistent asthma previously maintained on fluticasone, salmeterol, and albuterol is:

- A) Change from fluticasone to budesonide
- B) Use only albuterol for the duration of the pregnancy
- C) Change regimen to budesonide and albuterol
- D) Continue current treatment regimen
- E) Continue current treatment regimen and add cromolyn

9-Antenatal corticosteroids are administered to:

- A) Prevent preterm premature rupture of the membranes
- B) Provide tocolysis in the setting of preterm labor
- C) Promote fetal lung maturity in premature infants
- D) Ripen the cervix in pregnant women beyond 40 weeks of gestation
- E) Prevent postpartum hemorrhage

10-Which of the following agents is the most effective for cervical ripening and labor induction?

- A) Oral misoprostol
- B) Intravaginal misoprostol
- C) Dinoprostone
- D) Oxytocin
- E) Mifepristone

11-First-line therapy for a woman diagnosed with gestational diabetes mellitus is:

- A) Recombinant insulin
- B) Exercise
- C) Glyburide
- D) Metformin
- E) Diet modification

12-Colonization of pregnant women with group B Streptococcus can cause all of the following except:

- A) Meningitis if transmitted to neonates
- B) Increased risk of premature delivery
- C) Neonatal fatality
- D) Maternal fatality

13-All of the following properties contribute to the ability of a drug to pass readily into breast milk except:

- A) Lipophilicity
- B) Low molecular weight
- C) High protein binding
- D) Maternal serum concentration
- E) Weakly basic pH

14-Appropriate antibiotic treatment for the breast-feeding woman with mastitis is:

- A) Vancomycin 1 g orally every 12 hours for 7 days
- B) Amoxicillin 500 mg orally 3 times a day for 10 days
- C) Dicloxacillin 250 mg orally every 6 hours for 5 days
- D) Cephalexin 500 mg orally every 6 hours for 14 days

15-A woman who is 6 weeks postpartum and breastfeeding seeks contraception. She would like to have another child in 1 year. Which of the following is the preferred method of contraception?

- A) Combined oral contraceptive
- B) Progestin-only oral contraceptive
- C) Depo-medroxyprogesterone acetate
- D) Transdermal contraceptive

16-A 32-year-old obese woman comes to the pharmacy to pick up her prescription for norgestimate/ethinyl estradiol (Ortho-Cyclen). A pack of cigarettes falls out of her purse.

This is a concern because:

- A) Smoking increases the risk of venous thromboembolism.
- B) Smoking inhibits the metabolism of oral contraceptives.
- C) Smoking increases the risk of ovarian cancer.
- D) Oral contraceptives increase the risk for smoking-related gastrointestinal ulcers.

17-A 21-year-old woman comes to the pharmacy for her second refill of norethindrone/ethinyl estradiol (Ortho-Novum 7/7/7). She is complaining of nausea and breast tenderness and wonders if you can recommend something for this problem. You recommend that she:

- A) Call her physician to change her prescription to another oral contraceptive with less estrogen
- B) Buy a home pregnancy test to rule out pregnancy
- C) Wait another 1 to 2 months to see if symptoms improve on their own
- D) Take a multivitamin rich in B vitamins to treat her symptoms

18-An 18-year-old woman with a seizure disorder and active STD seeks contraception today. She is taking carbamazepine and azithromycin. **Which of the following contraceptive methods would be most appropriate?**

- A) Combined oral contraceptive (with 35 mcg of ethinyl estradiol)
- B) Depo-medroxyprogesterone acetate
- C) Transdermal contraceptive
- D) Levonorgestrel intrauterine device

19-A 23-year-old frantic woman comes to the pharmacy asking for help in choosing a home pregnancy test. She says that her partner's condom broke during intercourse last night and that she's worried that she might be pregnant. She started her last period 18 days ago. **You recommend that she:**

- A) Not worry; chances are she is not pregnant
- B) Buy emergency contraception
- C) Make an appointment with her physician to discuss an additional method of contraception
- D) Purchase a home pregnancy test to use if her period is late

20-A 22-year-old woman has been using Depo-Provera for the past year. She comes to the office for her quarterly injection (her last injection was 13 weeks ago). **The nurse asks you about the administration of Depo-Provera, and you recommend that she:**

- A) Have the patient wait until her next menses before receiving the injection
- B) Return to the office next week for her injection
- C) Give the injection today but use a second method of contraception for the next cycle
- D) Do a pregnancy test and if negative give the injection today

21-In which of the following situations would it be inappropriate to recommend combined oral contraceptives?

- A) Sickle cell disease
- B) Hypertension treated with a diuretic and an average blood pressure of 172/92 mm Hg
- C) History of migraines without aura in women younger than 35 year of age
- D) Dyslipidemia without coronary artery disease treated to goal LDL with a statin

22-Oral contraceptives are associated with a known decreased risk for which of the following conditions?

- A) Breast cancer
- B) Pelvic inflammatory disease

- C) Hepatic adenomas
- D) Cerebrovascular disease

23-L.R. is a 27-year-old woman who started on a low-dose combined oral contraceptive containing 20 mcg ethinyl estradiol 2 months ago. She went out of town for the weekend and missed two doses of her medication. It is the third week of her cycle. She is now asking for your opinion on how she should handle the situation. **What would be the most appropriate response?**

- A) Take an active tablet as soon as possible (two tablets on that day) and then continue taking tablets daily, one each day. No additional contraceptive protection is recommended.
- B) Take an active tablet as soon as possible (two tablets on that day) and then continue taking tablets daily, one each day. Use condoms or abstain from sex until tablets have been taken for 7 days in a row. Finish the active tablets in the current pack and start a new pack the next day (i.e., do not take the seven inactive tablets).
- C) Discard the current pack, allow bleeding to occur and then restart a new pack, taking one tablet each day. Use condoms or abstain from sex until the new pill pack has been taken for 7 days in a row.
- D) Take an active tablet as soon as possible (two tablets on that day) and then continue taking tablets daily, one each day. Use condoms or abstain from sex until tablets have been taken for 7 days in a row.

24-Levonorgestrel intrauterine devices (Mirena) should not be used in which of the following groups of women?

- A) Those with pelvic inflammatory disease within the last 3 months
- B) Those who desire passive, long-term contraception
- C) Those with contraindications to estrogen
- D) Those with heavy menstrual bleeding

25-Which of the following mechanisms of action is unique to progesterone in preventing pregnancy?

- A) Inhibition of implantation
- B) Accelerated ovum transport
- C) Inhibition of ovulation
- D) Production of thick cervical mucous

26-Depo-medroxyprogesterone acetate is an appropriate contraceptive choice in women who:

- A) Have history of antiphospholipid syndrome and history of deep vein thrombosis
- B) Desire contraception that is rapidly reversible
- C) Have menstrual irregularities (frequent breakthrough bleeding and spotting)
- D) Are obese and desire a contraceptive that does not cause weight gain

27-Use of the vaginal contraceptive ring would be most appropriate in which of the following women?

- A) 30-year-old woman with hypothyroidism
- B) 38-year-old woman who smokes one-pack-per-day
- C) 36-year-old woman with migraines
- D) 39-year-old woman with obesity

28-Which of the following statements is true regarding emergency contraception?

- A) Levonorgestrel/ethinyl estradiol oral contraceptive (Alesse) can be used with a dose of two tablets within 72 hours of unprotected intercourse and repeated 12 hours later
- B) Progestin-only emergency contraception should be taken with an antiemetic in most women to reduce the incidence of vomiting
- C) Combined oral contraceptives taken as emergency contraception (Yuzpe method) is preferred over progestin-only emergency contraception due to reduced adverse effects
- D) Levonorgestrel emergency contraception can be taken as a single dose (1.5 mg) within 72 hours of unprotected intercourse

29- A 25-year-old, 103-kg (227 lbs) woman requests hormonal contraception. Which method would be inappropriate and should not be considered?

- A) Vaginal contraceptive ring
- B) Transdermal contraceptive
- C) Combined oral contraceptive (35 mcg ethinyl estradiol)
- D) Levonorgestrel intrauterine device

30-S.T. is a 17-year-old female who complains of amenorrhea for 3 months. She experienced menarche at the age of 14 years. What is the first step in evaluating this complaint?

- A) Perform a pregnancy test
- B) Check her TSH concentration
- C) Quantify her level of exercise
- D) Evaluate whether she may have anorexia

31-Regardless of the etiology of amenorrhea, which of the following lifestyle interventions is most appropriate?

- A) Increase the level of exercise
- B) Increase the intake of dietary calcium and vitamin D
- C) Decrease the intake of alcohol
- D) Decrease the level of exercise

32-R.D. is a 40-year-old female who has not had a period for 7 months. She is not pregnant, and her TSH and prolactin concentrations are within normal ranges. She displays no symptoms of PCOS. Which of the following is most appropriate for RD at this time?

- A) An oral contraceptive containing 30 mcg ethinyl estradiol plus levonorgestrel
- B) Bromocriptine 2.5 mg by mouth 3 times daily
- C) Medroxyprogesterone acetate 10 mg by mouth for 10 days
- D) Metformin 1,000 mg by mouth twice daily

33-A.B. is a 35-year-old female who presents complaining of worsening menorrhagia. Her menses last approximately 7 days per month. A CBC shows a 2 g/dL (20 g/L; 1.24 mmol/L) drop in hemoglobin over the past 15 months. A pap smear and endometrial biopsy are both negative. Her past medical history is significant for a deep vein thrombosis 3 years ago secondary to her oral contraceptive. **Which of the following is the most appropriate first line therapy for A.B.?**

- A) A combination oral contraceptive with 50 mcg ethinyl estradiol plus desogestrel
- B) Mefenamic acid 500 mg by mouth followed by 250 mg by mouth 4 times daily during menses
- C) Levonorgestrel IUD releasing 20 mcg levonorgestrel daily
- D) Medroxyprogesterone acetate 10 mg by mouth on days 5 to 26 of the menstrual cycle

34-Which of the following statements is true regarding the levonorgestrel IUD in women with menorrhagia?

- A) It should never be used in nulliparous women.
- B) It reduces menstrual flow by a maximum of 25%.
- C) It is a therapeutic option for any woman at low risk for sexually transmitted diseases
- D) Its use increases the need for hysterectomy.

35-The most common cause of nonphysiologic ovulatory dysfunction is:

- A) Hyperprolactinemia
- B) Hyperthyroidism
- C) PCOS
- D) Primary pituitary disease

36-B.B. is a 32-year-old female who presents with complaints of irregular menses. She is hirsute around the jaw line, her BMI is 32 kg/m², and her waist circumference is 40 inches (102.6 cm). A pelvic ultrasound reveals polycystic ovaries. **Which of the following is most appropriate for B.B.?**

- A) A combination oral contraceptive containing ethinyl estradiol and drospirenone
- B) A combination oral contraceptive containing ethinyl estradiol and levonorgestrel
- C) Metformin 850 mg by mouth twice daily
- D) Pioglitazone 15 mg by mouth daily

37-Hyperkalemia is most likely to result from which of the following products used in the management of PCOS?

- A) A combination oral contraceptive containing ethinyl estradiol and drospirenone
- B) A combination oral contraceptive containing ethinyl estradiol and levonorgestrel

- C) Metformin 850 mg by mouth twice daily
- D) Pioglitazone 15 mg by mouth daily

38-Improved insulin sensitivity in patients with PCOS may result in a reduction in circulating androgen concentrations, increased ovulation rates, and improved glucose tolerance. This may occur with:

- A) Estrogen therapy alone
- B) Combination oral contraceptive
- C) Medroxyprogesterone acetate
- D) Metformin

39-Excessive anovulatory bleeding in the adolescent population should result in an evaluation for:

- A) Hypoprothrombinemia
- B) Hyperandrogenism
- C) Hypoestrogenism
- D) Hypothyroidism

40-Which of the following agents is most appropriate for the management of dysmenorrhea in an adolescent who is not sexually active?

- A) Depomedroxyprogesterone acetate 150 mg intramuscularly every 12 weeks
- B) Ibuprofen 800 mg by mouth 3 times daily during menses
- C) Levonorgestrel IUD releasing 20 mcg levonorgestrel daily
- D) Oral contraceptive with 35 mcg ethinyl estradiol plus norgestimate daily

41-The most cost-effective treatment for menorrhagia is:

- A) A combination oral contraceptive
- B) Levonorgestrel IUD
- C) Oral medroxyprogesterone acetate
- D) Depot medroxyprogesterone acetate

42-Which of the following nonpharmacologic options is effective for the treatment of dysmenorrhea?

- A) High protein diet
- B) Topical ice packs
- C) Reduced exercise
- D) Topical heat

43-Dysmenorrhea is experienced by as many as% of women of childbearing age.

- A) 20
- B) 40
- C) 70

D) 90

44-For a woman diagnosed with PMDD, following two cycles of charting her symptoms and attempting (and failing) nonpharmacologic interventions, a SSRI is initiated. **Which of the following is a clinical controversy surrounding the use of this drug class in PMDD?**

- A) Treatment during luteal phase versus continuously
- B) When it is best to discontinue treatment so as not to relapse
- C) Treatment only after symptoms occur
- D) All of the above

45-RT is a 36-year-old woman with known endometriosis. Oral contraceptives successfully treated her painful symptoms for years, but this therapy was discontinued 24 months ago so that she could conceive a child. She gave birth 6 months ago, and now her painful symptoms have returned. Her medical history is positive for tobacco use (currently one pack per day), aspirin-sensitive asthma, and seasonal allergic rhinitis. She also states that she may want another child in the future. Based on these given patient characteristics, **which of the following is the best choice of therapy for RT's painful symptoms?**

- A) Naproxen
- B) Leuprolide
- C) Oral contraceptive
- D) Medroxyprogesterone depot injection

46-Women with endometriosis may present with which of the following symptoms?

- I: Dysuria
- II: Dysmenorrhea
- III: Infertility

- A) I and II only
- B) I and III only
- C) II and III only
- D) I, II, and III

47-RW is a 30-year-old woman recently diagnosed with endometriosis. She desires a child as soon as possible but has been unable to conceive over the past 3 years. She also experiences severe acyclic pelvic pain. Her medical history is otherwise negative. **The best initial endometriosis therapy for RW is which of the following?**

- A) Ibuprofen
- B) Danazol
- C) Conservative surgery
- D) Nonconservative surgery

48-AH is a 37-year-old woman with endometriosis. She is currently receiving treatment targeted at endometriosis-related pain and infertility. **Which of the following parameters are useful in evaluating the therapeutic response to treatment in AH?**

- I: Successful conception
- II: Decreased painful symptoms
- III: Decreased size and number of lesions

- A) I and II only
- B) I and III only
- C) II and III only
- D) I, II, and III

49-A 40-year-old woman with endometriosis is being treated with goserelin, and her physician wishes to start add-back therapy to relieve her hot flashes and prevent bone loss. **The purpose of using add-back therapy includes which of the following?**

- I: Improved efficacy
- II: Decreased incidence of hot flashes
- III: Decreased loss of bone mineral density

- A) I and II only
- B) I and III only
- C) II and III only
- D) I, II, and III

50-KH is a 13-year-old female patient with endometriosis. Her pain failed to respond to therapy with ibuprofen. **Which of the following agents is the best to recommend for KH at this time?**

- A) Danazol
- B) Levonorgestrel intrauterine system
- C) Nafarelin
- D) Ethinyl estradiol/norgestimate contraceptive pill

51-Which of the following medications treats endometriosis by creating a “functional oophorectomy” through inhibition of most follicle-stimulating hormone and luteinizing hormone secretion?

- A) Danazol
- B) Medroxyprogesterone acetate
- C) Nafarelin
- D) Naproxen

52-TS is a 30-year-old woman who recently started danazol for the treatment of endometriosis-related pain. **Which of the following is an appropriate monitoring plan for this patient?**

- A) Pain relief at 2 months; incidence of hot flashes, vaginal dryness, and insomnia
- B) Pain relief at 2 months; incidence of weight gain, acne, and hirsutism
- C) Pain relief at 6 months; incidence of hot flashes, vaginal dryness, and insomnia
- D) Pain relief at 6 months; incidence of weight gain, acne, and hirsutism

53-All of the following mechanisms likely contribute to endometriosis-related pain except

- A) Prostaglandin release
- B) Bleeding
- C) Compression of nerve fibers
- D) Increased levels of substance P

54-HS is a 32-year-old woman with a medical history of venous thromboembolism, rheumatoid arthritis, a corticosteroid-induced vertebral compression fracture, and endometriosis. Her current medications include prednisone 5 mg daily, naproxen 500 mg twice daily, methotrexate 7.5 mg weekly, and norethindrone 15 mg daily. Norethindrone has failed to help HS's endometriosis-related pain. She may want to have children in the future. Which of the following is the best choice for treatment of her endometriosis at this time?

- A) Subcutaneous medroxyprogesteronemonotherapy
- B) Leuprolidemonotherapy
- C) Conservative surgical therapy
- D) Nonconservative surgical therapy

55-SM is a 32-year-old woman who received conservative surgical therapy for treatment of her endometriosis-related infertility 8 months ago. She has not yet conceived a child. The most appropriate step for SM is to

- A) Refer for assisted reproductive technology consultation.
- B) Repeat conservative surgery to remove more endometrial lesions.
- C) Start a 6-month course of oral contraceptives to "reset" her system.
- D) Encourage her to adopt because it is not likely that she will be able to conceive.

56-Which of the following mechanisms of action is unique to danazol therapy as compared with the other drugs used to treat endometriosis?

- A) Atrophy of endometrial tissue
- B) Immunosuppressive activity
- C) Induction of amenorrhea
- D) Induction of anovulation

57-Which of the following are proposed mechanisms for development of endometriosis?

- I: Immunologic abnormalities
- II: Lymphatic spread

III: Retrograde menstrual flow

- A) I and II only
- B) I and III only
- C) II and III only
- D) I, II, and III

58- Which of the following regimens would be reasonable to recommend as add-back therapy for a woman taking a gonadotropin-releasing hormone agonist (GnRH-a)?

- A) Estradiol 1 mg orally daily
- B) Norethindrone 5 mg orally daily
- C) Ethinyl estradiol 20 mcg/drospirenone 3 mg orally daily
- D) Conjugated equine estrogens 0.3 mg/medroprogesterone 1.5 mg orally daily

59-Which of the following patients would be the best candidate for use of an aromatase inhibitor in treating endometriosis pain?

- A) Age 14, never treated in past
- B) Age 18, history of deep vein thrombosis and uncontrolled acne
- C) Age 25, failed combined hormonal contraceptives
- D) Age 30, history of deep vein thrombosis and GnRH-a failure

60-The most effective treatment to alleviate postmenopausal vasomotor symptoms (hot flushes and night sweats) is:

- A) Estrogen therapy
- B) Selective estrogen-receptor modulators (SERMs)
- C) Testosterone therapy
- D) Clonidine

61-Continued vasomotor symptoms in a 52-year-old postmenopausal woman receiving 0.3 mg of oral conjugated equine estrogens can be managed by:

- A) Changing to an equivalent transdermal estrogen regimen
- B) Changing to a selective estrogen-receptor modulator
- C) Increasing the daily estrogen dose
- D) Decreasing the daily estrogen dose

62-Non-oral forms of estrogens available in the United States include:

- A) Transdermal
- B) Topical
- C) Intra-vaginal
- D) All of the above

63-Conjugated equine estrogen and medroxyprogesterone therapy can increase the risk of:

- A) Venous thromboembolism
- B) Stroke
- C) Colon Cancer
- D) Both a and b
- E) Both a and c

64-For the management of severe menopausal symptoms, the best choice for a 55-year-old woman with breast cancer is:

- A) Estrogen
- B) Progestogen
- C) Venlafaxine
- D) Tibolone

65-Elevation in the serum concentrations of which of the following hormones in a 30-year-old woman can aid in confirming the diagnosis of primary ovarian insufficiency premature ovarian failure:

- A) FSH
- B) LH
- C) Estradiol
- D) TSH

66-Long-term hormone therapy can be routinely prescribed for which of the following conditions?

- A) Severe coronary heart disease
- B) Dementia unresponsive to other therapies
- C) Severe osteoporosis
- D) Choices b and c only
- E) None of the above choices is correct

67-According to the results of the Women's Health Initiative, short-term combined estrogen/progestogen therapy (2 years or less) increases the risk of:

- A) Breast cancer
- B) Thromboembolic disease events
- C) Coronary heart disease events
- D) Both choices a and c
- E) Both choices b and c

68-Raloxifene increases the risk for which of the following?

- A) Venous thromboembolism
- B) Breast cancer
- C) Colon cancer
- D) Inflammatory bowel disease
- E) None of the above choices is correct

69-For osteoporosis prevention, a 65-year-old woman at high risk for breast cancer may receive:

- A) Estrogen
- B) Raloxifene
- C) Clonidine
- D) Testosterone

70-A common adverse effect experienced by women taking raloxifene is:

- A) Gastrointestinal upset
- B) Hot flashes
- C) Vaginal spotting
- D) Headache

71-Which of the following statement is false?

- A) The three main classes of phytoestrogens are isoflavones, lignans, and coumestans.
- B) Hepatotoxicity has been reported with black cohosh administration.
- C) Red clover leaf contains phytoestrogens.
- D) Herbal products marketed for the relief of menopausal symptoms have been shown to be effective and therefore should be recommended.

72-Young women with primary amenorrhea in whom secondary sex characteristics have failed to develop should initially receive:

- A) High doses of estrogen with a progestin
- B) Low doses of estrogen with a progestin
- C) High doses of estrogen without a progestin
- D) Low doses of estrogen without a progestin
- E) None of the above choices is correct

73-Which of the following statements regarding hormone therapy and its relationship to mood, cognition, and dementia is true?

- A) Hormone therapy decreases the risk of dementia.
- B) Hormone therapy improves cognition in older women with mild or absent vasomotor symptoms.
- C) Hormone therapy improves mood and well-being mainly in women with vasomotor symptoms and sleep disturbance.
- D) Hormone therapy improves symptoms of Alzheimer's disease in women over the age of 78 years.

74. A 34-year-old woman comes to the Emergency department GP complaining of intermenstrual bleeding, particularly after sexual intercourse, pain on intercourse and intermittent severe right iliac fossa pain. In the last month she was admitted to the Emergency department with suspected appendicitis but later discharged. On examination she is pyrexial 37.9 C and there is bilateral lower abdominal tenderness. Speculum

examination reveals cervicitis and mucopurulent cervical discharge. **Which of the following represents the most appropriate antibiotic regime?**

- A) Cephalexin 500 mg BD and metronidazole 400 mg PO BD for 14 days
- B) Ceftriaxone 250 mg IM then doxycycline 100 mg BD and metronidazole 400 mg BD for 14 days
- C) Metronidazole 400 mg PO BD for 7 days
- D) Metronidazole 400 mg PO BD for 14 days and ciprofloxacin 500 mg BD for 14 days
- E) Ofloxacin 400 mg BD for 7 days

75. A 32-year-old woman presents to the clinic in a very distressed state. She is 35 weeks pregnant with her first child. Apparently she has developed a crop of herpetic ulcer over her vulva and on further questioning her husband admitted to unprotected sex with a prostitute during a business trip. The ulcers are confirmed as containing herpes simplex virus and serology suggests that this is a primary infection. **Which of the following represents the correct management with respect to the delivery of her child?**

- A) Aciclovir cover is not recommended in any circumstances for the mother during delivery
- B) Aciclovir is not recommended in any circumstances for the infant during the post-partum period
- C) She can be left to make up her mind about the mode of delivery
- D) She should have a caesarean section
- E) She should have a vaginal delivery

76. A 32-year-old woman comes to her 20 week visit in her first pregnancy. You are asked to review her as she is hypertensive, with a BP of 162/102 mmHg. Her BP at booking was also elevated at 141/91 mmHg. She has no significant past medical history of note apart from having consulted the practice nurse at the surgery for weight loss counseling over the past few years. On examination she looks well, physical examination being consistent with a 20 week pregnancy.

Investigations show

Hemoglobin 11.0 g/dl (11.5-16)

White cell count $5.1 \times 10^9/l$ (4-10)

Platelets $189 \times 10^9/l$ (150-400)

Sodium 140 mmol/l (134-143)

Potassium 4.2 mmol/l (3.5-5)

Creatinine 89 $\mu\text{mol/l}$ (60-120)

Glucose 5.0 mmol/l (<6.0)

Urine Blood and protein negative

Which of the following is the most appropriate anti-hypertensive medication for her?

- A) Atenolol
- B) Hydrochlorothiazide
- C) Methyldopa
- D) Ramipril
- E) Valsartan

77. A 50-year-old female presents with concerns related to reduced libido. This has been causing problems with her husband as she does not feel like sex at all and she feels rather down. In her past history she has had ovarian failure associated with a hysterectomy three years ago and is being treated with estradiol 2 mg daily. **Which of the following would be the most appropriate treatment for this patient?**

- A) Add fluoxetine
- B) Add norethisterone
- C) Add testosterone patch
- D) Increase dose of estrogen
- E) Use vaginal estrogen gel

78. A 26-year-old woman who is 12 weeks pregnant, presents with a concern after being exposed to her mother who has been diagnosed with facial shingles one day ago. She was unaware of what the rash was and had examined the rash closely two days ago before her mother was diagnosed. She informs you that she is unaware of ever having chicken pox. **Which of the following is the most appropriate action that should be taken for this patient?**

- A) She should be reassured that she will not contract *Varicella zoster* from her mother.
- B) She should be tested immediately for IgG antibodies to *Varicella zoster*
- C) She should be treated with *Varicella zoster* immunoglobulin
- D) She should immediately receive *Varicella zoster* vaccine
- E) She should receive treatment immediately with aciclovir

79. An 18-year-old Asian girl was found to be pregnant after missing her last menstrual period despite her appropriate use of the oral contraceptive pill for the last two years. She was found also to have been taking additional medication prescribed by a specialist two months ago. **Which of the following accounts for the pill failure?**

- A) Cimetidine
- B) Erythromycin
- C) Isoniazid
- D) Ketoconazole
- E) Rifampicin

80. **Which of the following is the most appropriate anticonvulsant for the treatment of an eclamptic fit?**

- A) Diazepam
- B) Lorazepam
- C) Magnesium sulphate
- D) Phenytoin
- E) Thiopentone

81. A 29-year-old woman is receiving subcutaneous Clexane (low-molecular weight heparin [LMWH]) for the treatment of pulmonary embolism. She is 30 weeks pregnant and

develops bruising on her lower arms. The blood pressure in the left lateral position is 125/75 mmHg. **What is the most appropriate test for this patient?**

- A) Anti factor Xa levels
- B) APTT
- C) Platelet count
- D) Serum albumin
- E) Serum potassium

82. A 29-year-old female who is 22 weeks pregnant is noted to have a blood pressure of 150/90 mmHg on three separate occasions. Urine protein is negative. **Which of the following would be the first line treatment?**

- A) Alpha methyldopa
- B) Atenolol
- C) Magnesium sulphate
- D) Nifedipine
- E) Salbutamol

83. Which of the following drugs should not be prescribed for a breast-feeding mother?

- A) Digoxin
- B) Erythromycin
- C) Tetracycline
- D) Theophylline
- E) Warfarin

84. A 35-year-old gentleman with well controlled rheumatoid arthritis has, with his wife, been trying to conceive for 18 months. He and his wife visit you in fertility clinic.

What is the likely cause of their problem?

- A) Chloroquine
- B) Chronic illness reducing fertility
- C) Leflunomide
- D) Methotrexate
- E) Reduced fertility due to female pelvic inflammatory disease

85. A 22-year-old woman has come to the clinic complaining that she has had no periods for the past four months. She was always a normal weight, but has found it difficult to maintain her size since starting intensive training to run a marathon. She takes no regular medication. On examination her BMI is 18 kg/m². Physical examination, including assessment of secondary sexual characteristics is unremarkable.

Investigations show

Haemoglobin 11.4 g/dl (11.5-16.5)

White cell count 6.9 x 10⁹/l (4-11)

Platelets 203 x 10⁹/l (150-400)

Sodium 140 mmol/l (135-146)

Potassium 4.2 mmol/l (3.5-5)

Creatinine 102 μ mol/l (79-118)

Albumin 40 g/l (35-50)

Alanine amino transferase 10 U/l (5-40)

Follicle stimulating hormone 15 IU/l (<20)

Thyroid stimulating hormone 2.5 mU/l (0.5-5.0)

Which of the following is the most likely diagnosis?

- A) Autoimmune ovarian failure
- B) Pregnancy
- C) Prolactinoma
- D) Secondary amenorrhea due to weight loss
- E) Thyrotoxicosis

86. A 17-year-old primigravida complains of constipation and arthralgia at 28 weeks' gestation. A number of biochemical investigations are performed, **but which of these are clinically significant?**

- A) Detectable urinary human chorionic gonadotrophin
- B) Free thyroxine 8.9 pmol/l (9-22)
- C) Prolactin of 1000 mU/l (<450)
- D) Serum alkaline phosphatase of 350 iu/l (50-110)
- E) Serum corrected calcium 2.89 mmol/l (2.2-2.6)

87. A 51-year-old lady enquires about taking hormone replacement therapy (HRT). **Which of the following is the most compelling indication for taking HRT?**

- A) Control of flushing
- B) Prevent Alzheimer's disease
- C) Prevent ischaemic heart disease
- D) Prevent osteoporosis
- E) Reverse vaginal atrophy

88. A 28-year-old female returns from a trip to Bangladesh with a fever, diarrhea and rash. She is diagnosed with typhoid fever. However, she has a 1-month-old infant and wishes to continue to breast feed. **Which of the following antibiotics is the most appropriate therapy for her?**

- A) Ceftriaxone
- B) Chloramphenicol
- C) Ciprofloxacin
- D) Cotrimoxazole
- E) Gentamicin

89. A fit and healthy couple present with a three year history of first trimester recurrent miscarriages. **Which of the following tests would be the most appropriate for this couple?**

- A) Maternal and paternal karyotyping
- B) Maternal oral glucose tolerance test
- C) Maternal prolactin concentration
- D) TORCH screen
- E) Vaginal swabs for bacterial vaginosis

90. A 25-year-old female is diagnosed with polycystic ovarian syndrome and commenced on metformin. **Which of the following are recognized effects of the use of metformin in the treatment of polycystic ovarian syndrome?**

- A) Improves action of vasopressin
- B) Improves chances of conception Correct
- C) Increases exercise capacity
- D) Reduces testosterone concentration
- E) Reduces weight

91. **Which of the following should receive treatment with varicella immunoglobulin?**

- A) A non-immune pregnant woman who is exposed to her mother who has shingles
- B) A pregnant woman non-immune to varicella zoster (VZV) exposed to a child with chicken pox 12 days previously.
- C) A pregnant woman previously treated with varicella zoster immunoglobulin 10 days ago who has been re-exposed to a case of chicken pox.
- D) A pregnant woman who has no history of chicken pox but develops shingles in pregnancy
- E) A pregnant woman with asthma taking steroids, who has had chicken pox as a child but is now exposed to her daughter who has chicken pox.

92. A 31-year-old woman in her third pregnancy is receiving low molecular weight heparin (LMWH) at treatment doses due to a pulmonary embolism three months prior to conception. She is currently at 31 weeks gestation. All fetal scans have been normal, and her blood pressure is 126/80 mmHg in the left lateral position. **Which of the following statements is correct?**

- A) Breastfeeding is not advised
- B) Clexane treatment needs no monitoring in pregnancy
- C) It is safe for her to receive NSAIDs perinatally
- D) Prothrombin time is an indicator of anti-factor Xa activity
- E) The dose of Clexane should be increased in the third trimester

Gynecology pharmacotherapy answers

- 1-A) Low protein binding
- 2-C) Take folic acid 400 mcg daily throughout the reproductive years
- 3-C) Prednisone
- 4-C) Oral calcium supplementation
- 5-A) Ceftriaxone 250 mg IM as a single dose
- 6-A) Switch drug therapy to phenobarbital
- 7-E) Propranolol
- 8-D) Continue current treatment regimen
- 9-C) Promote fetal lung maturity in premature infants
- 10-B) Intravaginal misoprostol
- 11-E) Diet modification
- 12-D) Maternal fatality
- 13-C) High protein binding
- 14-D) Cephalexin 500 mg orally every 6 hours for 14 days
- 15-B) Progestin-only oral contraceptive
- 16-A) Smoking increases the risk of venous thromboembolism.
- 17-C) Wait another 1 to 2 months to see if symptoms improve on their own
- 18-B) Depo-medroxyprogesterone acetate
- 19-B) Buy emergency contraception
- 20-D) Do a pregnancy test and if negative give the injection today

- 21-B)** Hypertension treated with a diuretic and an average blood pressure of 172/92 mm Hg
- 22-B)** Pelvic inflammatory disease
- 23-B)** Take an active tablet as soon as possible (two tablets on that day) and then continue taking tablets daily, one each day. Use condoms or abstain from sex until tablets have been taken for 7 days in a row. Finish the active tablets in the current pack and start a new pack the next day (i.e., do not take the seven inactive tablets).
- 24-A)** Those with pelvic inflammatory disease within the last 3 months
- 25-D)** Production of thick cervical mucous
- 26-A)** Have history of antiphospholipid syndrome and history of deep vein thrombosis
- 27-A)** 30-year-old woman with hypothyroidism
- 28-D)** Levonorgestrel emergency contraception can be taken as a single dose (1.5 mg) within 72 hours of unprotected intercourse
- 29-B)** Transdermal contraceptive
- 30-A)** Perform a pregnancy test
- 31-B)** Increase the intake of dietary calcium and vitamin D
- 32-C)** Medroxyprogesterone acetate 10 mg by mouth for 10 days
- 33-B)** Mefenamic acid 500 mg by mouth followed by 250 mg by mouth 4 times daily during menses
- 34-C)** It is a therapeutic option for any woman at low risk for sexually transmitted diseases
- 35-C)** PCOS
- 36-A)** A combination oral contraceptive containing ethinyl estradiol and drospirenone
- 37-A)** A combination oral contraceptive containing ethinyl estradiol and drospirenone
- 38-D)** Metformin
- 39- A)** Hypoprothrombinemia

- 40-B) Ibuprofen 800 mg by mouth 3 times daily during menses
- 41-B) Levonorgestrel IUD
- 42-D) Topical heat
- 43-D) 90
- 44-D) All of the above
- 45-B) Leuprolide
- 46-D) I, II, and III
- 47-C) Conservative surgery
- 48-A) I and II only
- 49-C) II and III only
- 50-D) Ethinyl estradiol/norgestimate contraceptive pill
- 51-C) Nafarelin
- 52-B) Pain relief at 2 months; incidence of weight gain, acne, and hirsutism
- 53-D) Increased levels of substance P
- 54-C) Conservative surgical therapy
- 55- A) Refer for assisted reproductive technology consultation.
- 56-B) Immunosuppressive activity
- 57-D) I, II, and III
- 58-D) Conjugated equine estrogens 0.3 mg/medroprogesterone 1.5 mg orally daily
- 59-D) Age 30, history of deep vein thrombosis and GnRH-a failure
- 60-A) Estrogen therapy
- 61-C) Increasing the daily estrogen dose

62-D) All of the above

63-D) Both a and b

64-C) Venlafaxine

65-A) FSH

66-E) None of the above choices is correct

67-E) Both choices b and c

68-A) Venous thromboembolism

69-B) Raloxifene

70-B) Hot flushes

71-C) D) Herbal products marketed for the relief of menopausal symptoms have been shown to be effective and therefore should be recommended.

72-D) Low doses of estrogen without a progestin

73-C) Hormone therapy improves mood and well-being mainly in women with vasomotor symptoms and sleep disturbance.

74. The answer is B, ceftriaxone 250 mg IM then doxycycline 100 mg BD and metronidazole 400 mg BD for 14 days. This patient has symptoms consistent with pelvic inflammatory disease, which may be sexually transmitted and due either to *Chlamydia* or gonorrhea. Antibiotic treatment should not wait for swab or culture results and be commenced once the diagnosis is made. Referral to a GUM clinic should be considered to arrange screening across the range of possible sexually transmitted infections. Long term sequelae include possible tubal scarring and subfertility.

75. The answer is D, she should have a caesarean section. RCOG guidance is clear that when primary herpes infection occurs within six weeks of expected delivery, then caesarean delivery is the recommended course of action. Additionally, IV aciclovir cover for mother and infant during the peri-partum period is recommended if a vaginal delivery should occur. If vaginal delivery occurs in the absence of aciclovir cover, an analysis of five available studies suggest that the neonatal infection rate maybe up to 41%.

76. The answer is C.Methyldopa is the treatment of choice for hypertension in pregnancy, as it has the largest evidence base for use. Labetalol (alpha- and beta-blocker) is the most

commonly used second line agent, with dihydropyridines the usual choice for patients who fail to tolerate these agents. Angiotensin converting enzyme (ACE) inhibitors or angiotensin receptor blockers (ARBs) are not recommended for use in pregnancy because of concerns about teratogenicity, particularly with respect to abnormalities of the renal tract (second/third trimester) cardiovascular and neurological (first trimester). As such, patients who are using ARBs or ACE inhibitors should change their medication prior even to trying to get pregnant.

77. The answer is C .Hypoactive sexual desire disorder is well recognized in post-menopausal females as well as in patients following ovarian failure. This may not improve despite adequate estrogen replacement therapy as in this case and testosterone patches have been demonstrated to improve desire, activity and reduce distress. Progestagens are not required in hysterectomised subjects and may cause deterioration in symptoms.

78. The answer is B .The patient gives a very good history of exposure to *Varicella zoster* virus (VZV) and it is possible for her to acquire chicken pox if she is non-immune. However, she may well have had VZV infection as a child and the most important action is first to measure IgG antibodies to VZV. If these are present no further action need be taken and the patient relatively reassured. If she is non-immune then the patient will probably need to be treated with VZ immunoglobulin which has been shown to reduce severity and possible fetal infection.

79. The answer is E .Rifampicin is a hepatic drug-metabolising enzyme inducer. Thus it enhances

80. The answer is C .Refer to the important conclusions of the Collaborative Eclampsia Trial and the Cochrane Review by Duley and Gulmezoglu.

81. The answer is C .This is likely to be heparin-induced thrombocytopenia (HIT). Long term LMWH treatment has been associated with low platelet counts and this is the test which is likely to provide you with the most information. Clexane may cause hyperkalemia, but this is unlikely to cause bruising. Albumin levels may increase in pregnancy but serum albumin may be low due to haemodilution. Activated partial thromboplastin time (APTT) is not useful in monitoring LMWH activity, although APTT may be prolonged in high dose Clexane treatment. Factor Xa levels can be used to monitor efficacy of treatment but the suggestion of bruising here points more to HIT for which Xa levels would not be a useful guide.

82. The answer is A .Beta blockers are safe in the third trimester of pregnancy but are generally not used due to fears of intrauterine growth retardation (IUGR)

83. The answer is C .Tetracycline should be avoided in breast-feeding mothers because of staining of the infant's teeth. Other drugs to be avoided include amiodarone, lithium, chloramphenicol and vitamin A derivatives.

84. The answer is C .Leflunomide reduces sperm count. Chronic illness can affect fertility; however in this case the gentleman's rheumatoid arthritis is well controlled and therefore should not be a barrier to conception. Chloroquine is safe in pregnancy and does not affect fertility. Its side effects include gastrointestinal disturbances and headaches. Methotrexate does not affect fertility but should be avoided in pregnancy. Its more serious side effects are bone marrow suppression and hepatotoxicity, hence blood monitoring required. Female related problems are the most common cause of infertility, especially pelvic inflammatory disease, secondary to infection. However in this case a good drug history will point to other causes.

85. The answer is D .This lady has secondary amenorrhea, whereby menstruation has previously occurred but has stopped for more than six months. Given she has been intensively training and has a BMI of 18, it seems most likely that she has amenorrhea related to weight loss. Weight loss can cause amenorrhea, especially if rapid, BMI is less than 19 and more than 10% of body weight has been lost. The amenorrhea is felt to be directly related to weight, but excess endorphin production may also play a part. FSH is in the normal range, which counts against autoimmune (premature) ovarian failure; we have no signs at all that she is pregnant, and she does not report symptoms consistent with prolactinoma, such as vaginal dryness or breast leakage of milk. Additionally her TSH is in the normal range, which rules out thyrotoxicosis.

86. The answer is E. This patient has symptoms suggestive of hypercalcaemia, which are clinically significant. Free thyroxine (T4) is at the lower end of the normal range which is often the case in pregnancy and thyroidstimulating hormone (TSH) is a better guide of thyroid function. Hyperprolactinaemia is a normal finding in pregnancy, as is detectable urinary human chorionic gonadotrophin. It is also normal for serum alkaline phosphatase to rise by up to four times normal due to increased placental production.

87. The answer is A .The indications for HRT have been a matter of great debate over recent years. Relieving the symptoms of menopause is the most compelling indication

88. The answer is A .Typhoid fever is best treated with quinolones, chloramphenicol or cotrimoxazole. However, with breast feeding chloramphenicol is relatively contraindicated as are quinolones due to potential risk even if small. Also cotrimoxazole is safe in breast feeding except with infants less than 2 months due to possible risk of increased bilirubin. In pregnancy or children the drug of choice is parenteral ceftriaxone.

89. The answer is A .Recurrent first trimester miscarriages warrant further investigation which would include karyotyping and assessment for lupus anticoagulant.

Hyperprolactinaemia may cause subfertility rather than miscarriage. There is no evidence that gestational diabetes per se causes recurrent first trimester miscarriages. TORCH (toxoplasmosis, other, rubella virus, cytomegalovirus, and herpes simplex) infection would be unlikely to precipitate recurrent miscarriage. Bacterial vaginosis rather than associated with recurrent early miscarriage is associated with second trimester miscarriage and premature labor.

90. The answer is B .Polycystic ovarian syndrome is recognized to be a condition associated with increased insulin resistance and metformin is effective through improvements in insulin sensitivity resulting in ovulation and improvements in hormonal perturbations. It has been shown to increase rates of conception but has no appreciable effect on weight loss.

91. The answer is A .Varicella immunoglobulin is effective if used sufficiently early in patients proven to be non-immune to VZV and in whom exposure to VZV is confirmed. The beneficial effects may last up to three weeks following initial treatment and beyond this, it can be used again should re-exposure occur. However, it is still important to check VZV antibodies as subclinical disease may have occurred due to its prior use. VZV can be given up to 10 days with efficacy following exposure. For more information on this topic please see the following guideline (RCOG).

92. The answer is B .Neither heparin nor warfarin are contraindications to breastfeeding. There is no recommendation that the dose of LMWH should be increased in the third trimester. Increases in prothrombin time and activated clotting time (ACT) are not linearly correlated with increasing LMWH anti-thrombotic activity and therefore are unsuitable and unreliable for monitoring LMWH activity. Nonsteroidal anti-inflammatory drug (NSAID) treatment increases the risk of haemorrhage in both mother and fetus. It is not known whether unchanged enoxaparin sodium is excreted in human breast milk. The oral absorption of enoxaparin sodium is unlikely. However, as a precaution, lactating mothers receiving enoxaparin sodium should be advised to avoid breast feeding.

References

1 - Pharmacology, pretest self-assessment & review .marshal shlafar 14th edition 2013

2- Pharmacotherapy: A Pathophysiologic Approach, 8th Edition 2012

3 - Clinical pharmacology and therapeutics: questions for self-assessment. Timothy gk mant 2008. 3rd edition

4 - Accp 2012 pharmacotherapy - mock exam