

Chapter 01: Cellular Biology

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. A student is observing a cell under the microscope. It is observed to have supercoiled DNA with histones. Which of the following would also be observed by the student?
 - a. A single circular chromosome
 - b. A nucleus
 - c. Free-floating nuclear material
 - d. No organelles

ANS: B

The cell described is a eukaryotic cell, so it has histones and a supercoiled DNA within its nucleus; thus, the nucleus should be observed. A single circular chromosome called a prokaryote contains free-floating nuclear material but has no organelles.

REF: p. 2

2. A nurse is instructing the staff about cellular functions. Which cellular function is the nurse describing when an isolated cell absorbs oxygen and uses it to transform nutrients to energy?
 - a. Metabolic absorption
 - b. Communication
 - c. Secretion
 - d. Respiration

ANS: D

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The cell's ability to absorb oxygen is referred to as respiration while its communication ability involves maintenance of a steady dynamic state, metabolic absorption provides nutrition, and secretion allows for the synthesizing of new substances.

REF: p. 2

3. A eukaryotic cell is undergoing DNA replication. In which region of the cell would most of the genetic information be contained?
 - a. Mitochondria
 - b. Ribosome
 - c. Nucleolus
 - d. Nucleus Cytoplasm

ANS: C

The region of the cell that contains genetic material, including a large amount of ribonucleic acid, most of the DNA, and DNA-binding proteins, is the nucleolus, which is located within the cell's nucleus. Mitochondria is associated with cellular respiration, while ribosomes are involved with protein manufacturing. Cytoplasm is a fluid filling that is a component of the cell.

REF: p. 2

4. Which of the following can remove proteins attached to the cell's bilayer by dissolving the layer itself?
- Peripheral membrane proteins
 - Integral membrane proteins
 - Glycoproteins
 - Cell adhesion molecules

ANS: B

Proteins directly attached to the membrane bilayer can be removed by the action of integral membrane proteins that dissolve the bilayer. Peripheral membrane proteins reside at the surface while cell adhesion molecules are on the outside of the membrane. Glycoprotein marks cells and does not float.

REF: p. 7

5. Which of the following can bind to plasma membrane receptors?
- Oxygen
 - Ribosomes
 - Amphipathic lipids
 - Ligands

ANS: D

Ligands are the only specific molecules that can bind with receptors on the cell membrane.

REF: p. 9

6. A nurse is reviewing a report from a patient with metastatic cancer. What alteration in the extracellular matrix would support the diagnosis of metastatic cancer?
- ALTERATION
- Decreased fibronectin
 - Increased collagen
 - Decreased elastin
 - Increased glycoproteins

ANS: A

Only a reduced amount of fibronectin is found in some types of cancerous cells, allowing them to travel or metastasize.

REF: p. 10

7. Which form of cell communication is used to relate to other cells in direct physical contact?
- Cell junction
 - Gap junction
 - Desmosome
 - Tight junction

ANS: A

Cell junctions hold cells together and permit molecules to pass from cell to cell.

Gap junctions allow for cellular communication between cells. Neither desmosomes nor tight junctions are associated with cellular communication.

REF: p. 11

8. Pancreatic beta cells secrete insulin, which inhibits secretion of glucagon from neighboring alpha cells. This action is an example of which of the following signaling types?
- Paracrine
 - Autocrine
 - Neurohormonal
 - Hormonal

ANS: A

Paracrine signaling involves the release of local chemical mediators that are quickly taken up, destroyed, or immobilized, as in the case of insulin and the inhibition of the secretion of glucagon. None of the other options involve signaling that is associated with a local chemical mediator like insulin.

REF: p. 12

9. In cellular metabolism, each enzyme has a high affinity for a:
- solute.
 - substrate.
 - receptor.
 - ribosome.

ANS: B

Each enzyme has a high affinity for a substrate, a specific substance converted to a product of the reaction. Cellular metabolism is not dependent on an attraction between an enzyme and any of the remaining options.

REF: p. 16

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10. An athlete runs a marathon, after which his muscles feel fatigued and unable to contract. The athlete asks the nurse why this happened. The nurse's response is based on the knowledge that the problem is result of a deficiency of:
- GTP
 - AMP
 - ATP
 - GMP

ANS: C

When ATP is deficient, impaired muscle contraction results. None of the other options are involved in muscle contraction.

REF: p. 16

11. Which phase of catabolism produces the most ATP?
- Digestion
 - Glycolysis
 - Oxidation
 - Citric acid cycle

ANS: D

While some ATP is produced during the oxidation and glycolysis phases, most of the ATP is generated during the citric acid cycle. Digestion does not produce any ATP.

REF: p. 16

12. A nurse is teaching the staff about the phases of cellular catabolism. Which phases should the nurse include?
- Digestion, glycolysis, oxidation, and the citric acid cycle
 - Diffusion, osmosis, and mediated transport
 - S phase, G phase, and M phase
 - Metabolic absorption, respiration, and excretion

ANS: A

Only digestion, glycolysis, oxidation, and the citric acid cycle are the phases of cellular catabolism.

REF: p. 16

13. A runner has depleted all the oxygen available for muscle energy. Which of the following will facilitate his continued muscle performance?
- Electron-transport chain
 - Aerobic glycolysis
 - Anaerobic glycolysis
 - Oxidative phosphorylation

ANS: C

When no oxygen is available, anaerobic glycolysis occurs. The electron-transport chain is part of the citric acid cycle. Aerobic glycolysis involves the presence of oxygen. Oxidative phosphorylation is the mechanism by which the energy produced from carbohydrates, fats, and proteins is transferred to ATP. It is not part of muscle performance.

N_U^R_S^I_N^G_T^B.C_O^M

REF: p. 16

14. A faculty member asks a student to identify the appropriate term for the movement of a solute from an area of greater to lesser concentration. Which answer indicates the nursing student understood the teaching?
- Osmosis
 - Diffusion
 - Hydrostatic pressure
 - Active transport

ANS: B

Diffusion is the movement of a solute molecule from an area of greater solute concentration to an area of lesser solute concentration through a permeable membrane. Osmosis is the movement of water across a semipermeable membrane from a region of higher water concentration to one of lower concentration. Hydrostatic pressure is the force of fluid against a cell membrane. In active transport, molecules move up a concentration gradient.

REF: p. 19

15. Which description accurately describes electrolytes?
- Small lipid-soluble molecules
 - Large protein molecules
 - Micronutrients used to produce ATP

- d. Electrically charged molecules

ANS: D

Electrolytes are electrically charged molecules. They are not lipid soluble, they are not made up of protein, and they do not play a role in ATP production.

REF: p. 18

16. A nurse is reading a chart and sees the term oncotic pressure. The nurse recalls that oncotic pressure (colloid osmotic pressure) is determined by:
- the concentration of sodium.
 - plasma proteins.
 - hydrostatic pressure.
 - the availability of membrane transporter proteins.

ANS: B

Oncotic pressure is determined by the effect of colloids or plasma proteins. The concentration of sodium plays a role in tonicity. Hydrostatic pressure is the force within a vessel. Membrane transporter proteins are involved in active transport within a concentration gradient.

REF: p. 20

17. A patient has a body fluid of 300 mOsm/kg. This lab result is measuring:
- osmolality.
 - osmolarity.
 - osmotic pressure.
 - oncotic pressure.

ANS: A

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Osmolality measures the number of milliosmoles per kilogram of water, or the concentration of molecules per *weight* of water, while osmolarity measures the number of milliosmoles per liter of solution, or the concentration of molecules per *volume* of solution. Osmotic pressure is the amount of hydrostatic pressure required to oppose the osmotic movement of water.

Oncotic pressure is from plasma proteins, not body fluids.

REF: p. 19

18. A nurse is discussing the movement of fluid across the arterial end of capillary membranes into the interstitial fluid surrounding the capillary. Which process of fluid movement is the nurse describing?
- Hydrostatic pressure
 - Osmosis
 - Diffusion
 - Active transport

ANS: A

Blood reaching the capillary bed has a hydrostatic pressure of 25–30 mm Hg, which is sufficient force to push water across the thin capillary membranes into the interstitial space. Osmosis involves the movement of fluid from an area of higher concentration to an area of lower concentration. It does not involve pressure or force. Diffusion is the passive movement of a solute from an area of higher solute concentration to an area of lower solute concentration. Active transport involves movement up a concentration gradient.

REF: p. 19

19. How are potassium and sodium transported across plasma membranes?
- By passive electrolyte channels
 - By coupled channels
 - By adenosine triphosphate enzyme (ATPase)
 - By diffusion

ANS: C

The transporter protein ATPase is directly related to sodium and potassium transport via active transport. Electrolyte movements require energy and do not move passively, nor are they transported by diffusion. Enzymes, not electrolytes, are passed via coupled channels.

REF: p. 21

20. The ion transporter that moves Na^+ and Ca^{2+} simultaneously in the same direction is an example of which of the following types of transport?
- Biport
 - Uniport
 - Antiport
 - Symport

ANS: D

When ions are transported in one direction, it is termed symport. There is no such term as biport. Uniport refers to the movement of a single molecule. Antiport refers to the movement of molecules in the opposite direction.

N_U^R_S^I_N^G_T^B.C_O^M

REF: p. 19, Figure 1-22

21. During which process are bacteria engulfed for ingestion?
- Endocytosis
 - Pinocytosis
 - Phagocytosis
 - Exocytosis

ANS: C

Phagocytosis (cell eating) involves the ingestion of large particles, such as bacteria, through the formation of large vesicles. Endocytosis involves the formation of vesicles to facilitate movement into the cell. Pinocytosis is a type of endocytosis in which fluids and solute molecules are ingested through the formation of small vesicles. Exocytosis occurs when coated pits invaginate and internalize ligand-receptor complexes in coated vesicles.

REF: p. 22

22. Some cancer drugs work during the cell cycle phase where nuclear and cytoplasmic divisions occur. What is this cell cycle phase called?
- G_1
 - S
 - M
 - G_2

ANS: C

The M phase includes both nuclear and cytoplasmic divisions. The G₁ phase includes the period between the M phase and the start of DNA synthesis. The S phase includes synthesis of DNA in the cell nucleus. The G₂ phase includes RNA and protein synthesis.

REF: pp. 25-26

23. Which causes the rapid change in the resting membrane potential that initiates an action potential?
- Potassium gates open, and potassium rushes into the cell, changing the membrane potential from negative to positive.
 - Sodium gates open, and sodium rushes into the cell, changing the membrane potential from negative to positive.
 - Sodium gates close, allowing potassium into the cell to change the membrane potential from positive to negative.
 - Potassium gates close, allowing sodium into the cell to change the membrane potential from positive to negative.

ANS: B

When the threshold is reached, the cell will continue to depolarize with no further stimulation. The sodium gates open, and sodium rushes into the cell, causing the membrane potential to reduce to zero and then become positive (depolarization). Sodium is involved in creating the action potential, not potassium. The sodium gate and channel must be open, not closed. The action potential is not affected by a change in the potassium gate.

REF: pp. 24-25

24. A cell is isolated, and electrophysiology studies reveal that the resting membrane potential is -70 mV . The predominant intracellular ion is Na^+ , and the predominant extracellular ion is K^+ . With voltage change, which of the following would result in an action potential?
- K^+ rushing into the cell
 - Na^+ rushing into the cell
 - Na^+ rushing out of the cell
 - K^+ rushing out of the cell

ANS: A

With voltage change, potassium rushes into, not out of, the cell. Sodium movement is not related to this process.

REF: pp. 24-25

25. A nurse teaching the staff about platelet-derived growth factor includes information that platelet-derived growth factor (PDGF) stimulates the production of:
- platelets.
 - epidermal cells.
 - connective tissue cells.
 - fibroblast cells.

ANS: C

Different types of cells require different growth factors; for example, PDGF stimulates the production of connective tissue cells, but not platelets, epidermal cells, or fibroblast cells.

REF: p. 27

26. The phase of the cell cycle during which the centromeres split and the sister chromatids are pulled apart is referred to as:
- anaphase.
 - telophase.
 - prophase.
 - metaphase.

ANS: A

Anaphase begins when the centromeres split and the sister chromatids are pulled apart. During telophase, a new nuclear membrane is formed around each group of 46 chromosomes, the spindle fibers disappear, and the chromosomes begin to uncoil. During prophase, the first appearance of chromosomes occurs. Metaphase occurs when two centrioles located at opposite poles of the cell pull the chromosomes to opposite sides of the cell.

REF: p. 26

27. What is the role of cytokines in cell reproduction?
- Provide growth factor for tissue growth and development.
 - Block progress of cell reproduction through the cell cycle.
 - Restrain cell growth and development.
 - Provide nutrients for cell growth and development.

ANS: A

Cytokines play a major role in the regulation of tissue growth and development but do not restrain it. Cytokines help overcome intracellular braking mechanisms that restrain cell growth and promote cell growth, but they do not provide nutrients.

REF: p. 26

28. A biopsy of the lung bronchi revealed ciliated epithelial cells that are capable of secretion and absorption. These cells are called _____ columnar epithelium.
- simple
 - ciliated simple
 - stratified
 - pseudostratified ciliated

ANS: B

Ciliated simple columnar epithelium is found in the lungs. Simple columnar epithelium is found from the stomach to the anus. Stratified columnar epithelium is found in the lining of the epiglottis, part of the pharynx, the anus, and the male urethra. Pseudostratified ciliate columnar epithelium is found in the lining of the large ducts of some glands (parotid, salivary), male urethra, respiratory passages, and Eustachian tubes of the ears.

REF: p. 30, Table 1-6

29. A student is reviewing functions of the cell. The student would be correct in identifying a chief function of the nerve cell as:
- sensory interpretation.
 - conductivity.

- c. maintenance of homeostasis.
- d. communication.

ANS: B

Conductivity, not sensory interpretation, homeostasis, or communication, is one of the eight chief functions of nerve cells.

REF: p. 2

MULTIPLE RESPONSE

1. A nurse recalls that the basic types of tissues are: (select all that apply)
 - a. nerve.
 - b. epithelial.
 - c. mucosal.
 - d. connective.
 - e. skeletal.
 - f. muscle.

ANS: A, B, D, F

The basic tissue types include nerve, epithelial, connective, and muscle. Mucosal is a type of epithelial cell, while skeletal is a type of connective tissue.

REF: p. 27

2. Characteristics of prokaryotes include which of the following? (select all that apply)
 - a. They contain no organelles.
 - b. Their nuclear material is not encased by a nuclear membrane.
 - c. They contain a distinct nucleus.
 - d. They contain histones.
 - e. They contain a cellular membrane.

ANS: A, B

The prokaryotes lack a cellular membrane that encases nuclear material, thus they have no distinct nucleus; organelles and histones are also missing.

REF: p. 1

Chapter 02: Genes and Genetic Diseases

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MULTIPLE CHOICE

1. A nurse recalls the basic components of DNA are:
 - a. pentose sugars and four phosphate bases.
 - b. a phosphate molecule, deoxyribose, and four nitrogenous bases.
 - c. adenine, guanine, and purine.
 - d. codons, oxygen, and cytosine.

ANS: B

The three basic components of DNA are deoxyribose; a phosphate molecule; and four types of nitrogenous, not phosphate, bases. DNA does not contain condone.

REF: p. 38

2. Which of the following mutations have the most significant effect on protein synthesis?
 - a. Base pair substitutions
 - b. Silent mutations
 - c. Intron mutations
 - d. Frameshift mutations

ANS: D

The frameshift mutation involves the insertion or deletion of one or more base pairs of the DNA molecule. This greatly alters the amino acid sequence, which affects protein synthesis. The base pair substitution is ~~NURSINGTB.COM~~ a type of mutation in which one base pair replaces another. Silent mutations do not change amino acids or protein synthesis. Intron mutations are part of RNA sequencing.

REF: p. 39

3. The base components of DNA are:
 - a. A, G, C, and U.
 - b. P, G, C, and T.
 - c. A, G, C, and T.
 - d. X, XX, XY, and YY.

ANS: C

The four base components of DNA are cytosine, thymine, adenine, and guanine, and are commonly represented by their first letters (A, C, T, and G) and not components identified as P or U. X, XX, XY, and YY are components of human chromosomes.

REF: p. 38

4. A DNA strand has a region with the sequence ATCGGAT. Which of the following would be a complementary strand?
 - a. CGATACGT
 - b. TAGCCTAG
 - c. TUGCCTUG

- d. UAGCCUAG

ANS: B

The consistent pairing of adenine with thymine and of guanine with cytosine is known as complementary base pairing; thus, A complements to T and C to G and vice versa throughout the strand. A complements to T; thus, the first letter must be a T. U does not represent a complement in the sequence.

REF: p. 39

5. A biologist is explaining how RNA directs the synthesis of protein. Which process is the biologist describing?
- a. Termination
 - b. Transcription
 - c. Translocation
 - d. Translation

ANS: D

In translation, RNA directs the synthesis of a polypeptide, interacting with transfer RNA (tRNA), a cloverleaf-shaped strand of about 80 nucleotides. Termination does not involve synthesis of protein. Transcription is the process by which DNA specifies a sequence of messenger RNA (mRNA). Translocation is the interchange of genetic material between nonhomologous chromosomes.

REF: p. 41

6. What is the result of homologous chromosomes failing to separate during meiosis?
- a. Neurofibromatosis **N_UR_SI_NG_TB.C_OM**
 - b. Nondisjunction
 - c. Polyploidy
 - d. Conjoined twins

ANS: B

Nondisjunction is an error in which homologous chromosomes or sister chromatids fail to separate normally during meiosis or mitosis. Neurofibromatosis is not due to chromosome failure during meiosis. Polyploidy occurs when a euploid cell has more than the diploid number of chromosomes. Conjoined twins are not due to chromosome failure during meiosis.

REF: p. 45

7. A cell that does not contain a multiple of 23 chromosomes is called a _____ cell.
- a. diploid
 - b. euploid
 - c. polyploid
 - d. haploid

ANS: C

A polyploid cell is one in which a euploid cell has more than 23 pairs of chromosomes. A diploid cell is when the somatic cell nucleus has 46 chromosomes in 23 pairs. A euploid cell is a cell with multiples of the normal number of chromosomes. A haploid cell has only one member of each chromosome pair, for a total of 23 chromosomes.

REF: p. 42

8. A 20-year-old pregnant female gives birth to a stillborn child. Autopsy reveals that the fetus has 92 chromosomes. What term may be on the autopsy report to describe this condition?
 - a. Biploidy
 - b. Triploidy
 - c. Tetraploidy
 - d. Aneuploidy

ANS: C

Tetraploidy is a condition in which euploid cells have 92 chromosomes. Biploidy is a euploid cell with two times more chromosomes, or 46. Triploidy is a zygote that has three copies of each chromosome, rather than the usual two. Aneuploidy is when an aneuploid cell does not contain a multiple of 23 chromosomes.

REF: p. 42

9. The condition in which an extra portion of a chromosome is present in each cell is called:
 - a. reciprocal translocation.
 - b. partial trisomy.
 - c. inversion.
 - d. Down syndrome.

ANS: B

Partial trisomy is a condition in which only an extra portion of a chromosome is present in each cell. A reciprocal translocation occurs when breaks take place in two different chromosomes and the material is exchanged. An inversion occurs when two breaks take place on a chromosome, followed by the reinsertion of the missing fragment at its original site, but in inverted order. Down syndrome is an aneuploidy of the twenty-first chromosome.

REF: p. 46

10. After a geneticist talks to a patient about being a chromosomal mosaic, the patient asks the nurse what that means. How should the nurse respond? You may _____ genetic disease(s).
 - a. only be a carrier of the
 - b. have a mild form of the
 - c. have two
 - d. be sterile as a result of the

ANS: B

A chromosomal mosaic means the body has two or more different cell lines, each of which has a different karyotype; thus, the person has a mild form of the disease. Mosaics are not only carriers; they have the disease; they have two different lines but not two different diseases; and they are not necessarily sterile.

REF: p. 46

11. What is the most common cause of Down syndrome?
 - a. Paternal nondisjunction
 - b. Maternal translocations
 - c. Maternal nondisjunction

- d. Paternal translocations

ANS: C

The most common cause of Down syndrome is maternal, not paternal, nondisjunction. Translocation is not a cause of this syndrome.

REF: p. 46, Table 2-1

12. A patient wants to know the risk factors for Down syndrome. What is the nurse's best response?
- Fetal exposure to mutagens in the uterus.
 - Increased paternal age.
 - Family history of Down syndrome.
 - Pregnancy in women over age 35.

ANS: D

The primary risk for Down syndrome is pregnancy in women over 35. Down syndrome is a trisomy and not due to fetal exposure or paternal age. Down syndrome is a chromosomal abnormality and is not related to family history.

REF: pp. 46-47

13. A 13-year-old girl has a karyotype that reveals an absent homologous X chromosome with only a single X chromosome present. What medical diagnosis will the nurse observe on the chart?
- Down syndrome
 - Cri du chat syndrome
 - Turner syndrome
 - Fragile X syndrome

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ANS: C

A condition with the presence of a single X chromosome and no homologous X or Y chromosome, so the individual has a total of 45 chromosomes, is known as Turner syndrome. Down syndrome is a change in one arm of a chromosome. Cri du chat syndrome is due to a chromosome deletion. Fragile X syndrome is due to a break or a gap in a chromosome.

REF: p. 47

14. What genetic disorder is the result if an individual possesses an XXY chromosome configuration?
- Turner
 - Klinefelter
 - Down
 - Fragile X

ANS: B

Individuals with at least two X chromosomes and one Y chromosome in each cell (47 XXY karyotype) have a disorder known as Klinefelter syndrome. A condition with the presence of a single X chromosome and no homologous X or Y chromosome, so the individual has a total of 45 chromosomes, is known as Turner syndrome. Down syndrome is a trisomy. Fragile X syndrome is due to a break or a gap in a chromosome, not an extra chromosome.

REF: p. 47

15. A patient demonstrates severe mental retardation caused by a deletion of part of chromosome 5. What genetic disorder will the nurse see documented in the chart?
 - a. Prader-Willi syndrome
 - b. Down syndrome
 - c. Cri du chat syndrome
 - d. Trisomy X

ANS: C

Cri du chat syndrome means “cry of the cat” and describes the characteristic cry of the affected child. Another symptom of the disorder is mental retardation. The disease is caused by a deletion of part of the short arm of chromosome 5. Prader-Willi syndrome is characterized by short stature, obesity, and hypogonadism. Down syndrome does cause mental retardation but is due to chromosome 21, not chromosome 5. Trisomy X can result in mental retardation but is due to an extra X chromosome.

REF: p. 48

16. An aide asks the nurse why people who have neurofibromatosis will show varying degrees of the disease. Which genetic principle should the nurse explain to the aide?
 - a. Penetrance
 - b. Expressivity
 - c. Dominance
 - d. Recessiveness

ANS: B

Expressivity is the extent of variation in phenotype associated with a particular genotype. For neurofibromatosis, a variety of manifestations occur among individuals. The penetrance of a trait is the percentage of individuals with a specific genotype who also exhibit the expected phenotype. Dominance refers to observable traits and risk of transmission. Recessiveness refers to silent strains with reduced risk of occurrence.

REF: p. 51

17. Cystic fibrosis is caused by what gene abnormality?
 - a. X-linked dominant
 - b. X-linked recessive
 - c. Autosomal dominant
 - d. Autosomal recessive

ANS: D

Cystic fibrosis is an autosomal recessive disorder. It is not a result of X links or dominant pathology.

REF: p. 52

18. A 15-year-old female is diagnosed with Prader-Willi syndrome. This condition is an example of:
 - a. genomic imprinting.
 - b. an autosomal recessive trait.

- c. an autosomal dominant trait.
- d. a sex-linked trait.

ANS: A

Prader-Willi, an example of gene imprinting, is not associated with any autosomal sex-linked abnormality.

REF: p. 52

19. A patient, age 9, is admitted to a pediatric unit with Duchenne muscular dystrophy. When planning care the nurse recalls the patient inherited this condition through a trait that is:
- a. X-linked dominant.
 - b. X-influenced.
 - c. X-limited.
 - d. X-linked recessive.

ANS: D

Duchenne muscular dystrophy is a relatively common X-linked recessive, not dominant, disorder. While it is sex linked, it is not X-limited or X-influenced.

REF: p. 55

20. A child is diagnosed with cystic fibrosis. History reveals that the child's parents are siblings. Cystic fibrosis was most likely the result of:
- a. X-inactivation.
 - b. genomic imprinting.
 - c. consanguinity.
 - d. obligate carriers.

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ANS: C

Consanguinity refers to the mating of two related individuals, and the offspring of such matings are said to be *inbred*. Consanguineous matings produce a significant increase in recessive disorders and are seen most often in pedigrees for rare recessive disorders.

X-inactivation occurs when one X chromosome in the somatic cells of females is permanently inactivated. Genomic imprinting is related to methylation and other changes. Obligate carriers are those who have an affected parent and affected children and, therefore, must themselves carry the mutation.

REF: p. 54

21. A 12-year-old male is diagnosed with Klinefelter syndrome. His karyotype would reveal which of the following?
- a. XY
 - b. XX
 - c. XYY
 - d. XXY

ANS: D

A person with Klinefelter syndrome has an XXY karyotype. An XY is a normal male. An XX is a normal female. An XYY is an aneuploid karyotype.

REF: p. 47

22. To express a polygenic trait:
- genes must interact with the environment.
 - several genes must act together.
 - multiple mutations must occur in the same family.
 - penetrance must occur.

ANS: B

Polygenic traits are those that result from several genes acting together. When environmental factors influence the expression of the trait, the term multifactorial inheritance is used. When multiple mutations occur in the same family, the mechanism most likely responsible is termed germline mosaicism. Penetrance of a trait is the percentage of individuals with a specific genotype who also exhibit the expected phenotype.

REF: pp. 57-58

23. What is the diagnosis of a 13-year-old female who has a karyotype that reveals an absent homologous X chromosome with only a single X chromosome present? Her features include a short stature, widely spaced nipples, and a reduced carrying angle at the elbow.
- Down syndrome
 - Cri du chat syndrome
 - Turner syndrome
 - Klinefelter syndrome

ANS: C

Turner syndrome is characterized by short stature, female genitalia, webbed neck, shield-like chest with underdeveloped breasts and widely spaced nipples, and imperfectly developed ovaries. Down syndrome is characterized by distinctive characteristics: low nasal bridge, epicanthal folds, protruding tongue, and low-set ears. Cri du chat syndrome is characterized by low birth weight, severe mental retardation, microcephaly (smaller than normal head size), and heart defects. Klinefelter syndrome is characterized by small testes, some development of the breasts, sparse body hair, and long limbs.

REF: p. 46, Table 2-1

24. The gradual increase in height among the human population over the past 100 years is an example of:
- a polygenic trait.
 - a multifactorial trait.
 - crossing over.
 - recombination.

ANS: B

The gradual increase in height is an example of multifactorial traits influenced by genes and also by environment. Polygenic traits result from several genes acting together. Crossing over is an abnormal chromosome structure. Recombination results from new arrangements of alleles.

REF: p. 58

25. When discussing DNA replication, which enzyme is most important?

- a. RNA polymerase
- b. Transfer RNA
- c. Messenger RNA
- d. DNA polymerase

ANS: D

DNA polymerase, not RNA polymerase, is the primary enzyme involved in replication. It adds bases to the new DNA strand and performs “proofreading” functions. Neither messenger RNA nor transfer RNA is as important to DNA replication.

REF: p. 39

26. The regions of the heterogeneous nuclear RNA that must be spliced out to form functional RNA are called:
- a. promoter sites.
 - b. introns.
 - c. exons.
 - d. anticodon.

ANS: B

When the mRNA is first transcribed from the DNA template, it reflects exactly the base sequence of the DNA. In eukaryotes, many RNA sequences are removed by nuclear enzymes, and the remaining sequences are spliced together to form the functional mRNA that migrates to the cytoplasm. The excised sequences are called introns (intervening sequences), and the sequences that are left to code for proteins are called exons. In translation, RNA directs the synthesis of a polypeptide, a cloverleaf-shaped strand of about 80 nucleotides. The tRNA molecule has a site where an amino acid attaches. The three-nucleotide sequence at the opposite side of the cloverleaf is called the **anticodon**.

REF: p. 41

27. A 50-year-old male was recently diagnosed with Huntington disease. Transmission of this disease is associated with:
- a. penetrance of a trait.
 - b. recurrence risk.
 - c. expressivity.
 - d. delayed age of onset.

ANS: D

A key feature of Huntington disease is its delayed age of onset such that symptoms are not seen until 40 years of age or later. The penetrance of a trait is the percentage of individuals with a specific genotype who also exhibit the expected phenotype. Recurrence risk is the percentage of family members who will inherit the disease. Expressivity is the extent of variation in phenotype associated with a particular genotype.

REF: p. 51

28. What type of mutation does not change the amino acid sequence and thus has no observable consequence?
- a. Frameshift
 - b. Spontaneous

- c. Silent
- d. Missense

ANS: C

Silent mutations do not change the amino acid sequence and therefore have no consequences. Frameshift mutations involve the insertion or deletion of one or more base pairs of the DNA molecule. They alter the amino acid sequence. Spontaneous mutations occur in the absence of exposure to a mutagen and produce changes in the amino acid sequence. Missense mutations, a form of base pair substitution, alter amino acids, which produce a change (i.e., the “sense”) in a single amino acid.

REF: p. 39

29. A nurse is reviewing the pedigree chart. When checking for a proband, what is the nurse looking for?
- a. The person who is first diagnosed with a genetic disease.
 - b. The individual who has a disease gene but is phenotypically normal.
 - c. The phenotype of genetic material.
 - d. The codominance.

ANS: A

The pedigree chart summarizes family relationships and shows which members of a family are affected by a genetic disease. The pedigree begins with the proband. The person who has a disease gene but is phenotypically normal is a carrier. The phenotype is the result of both genotype and environment; it is not a proband. Codominance is not represented by a proband, but it occurs when the heterozygote is distinguishable from both homozygotes.

REF: p. 50

N_U^R_S^I_N^G_T^B. C_O^M

30. Which of the following disorders is manifested primarily in males?
- a. Cystic fibrosis
 - b. Neurofibromatosis
 - c. Muscular dystrophy
 - d. Klinefelter syndrome

ANS: C

Muscular dystrophy is manifested primarily in males. Cystic fibrosis, neurofibromatosis, and Klinefelter syndrome are manifested in both males and females.

REF: p. 55

MULTIPLE RESPONSE

1. When the nurse is teaching the staff about X-linked recessive disorders, which information should the nurse include? (select all that apply)
 - a. The trait is seen much more often in females than in males.
 - b. The trait is never transmitted from father to son.
 - c. The gene can be transmitted through a series of carrier females.
 - d. The gene is passed from an affected father to all his daughters.
 - e. The trait never skips generations.

ANS: B, C, D

The principles of X-linked recessive inheritance include: the trait is seen much more often in males than in females; the trait is never transmitted from father to son; the gene can be transmitted through a series of carrier females; the gene is passed from an affected father to all his daughters, who, as phenotypically normal carriers, transmit it to approximately half their sons, who are affected. X-linked recessive disorders can skip generations since it is a one in four chance.

REF: p. 55

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Chapter 03: Epigenetics and Disease

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. When considering abnormal epigenetic modifications, what factor is currently being viewed as strongly associated with the development of some cancers?
 - a. Family genetics
 - b. Lifestyle choices
 - c. Environmental stressors
 - d. Emotional coping skills

ANS: C

Environmental stressors can markedly increase the risk of aberrant epigenetic modification and are strongly associated with some cancers. While genetics, lifestyle choices, and coping skills can affect the development and management of cancer, they are not currently considered as being the primary factors in the epigenetic modification that occurs.

REF: p. 62

2. Housekeeping genes are vital to the function and maintenance of all the body's cells. What characteristic is associated with these genes?
 - a. They lack encoding histones.
 - b. They are transcriptionally active.
 - c. Ribosomal RNA genes are absent.
 - d. Epigenetic silencing has occurred.

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ANS: B

A small percentage of genes, termed housekeeping genes, are necessary for the function and maintenance of all cells. These genes escape epigenetic silencing and remain transcriptionally active in all or nearly all cells. Housekeeping genes include encoding histones, DNA and RNA polymerases, and ribosomal RNA genes.

REF: p. 64

3. What characteristic of Prader-Willi syndrome is not a characteristic of Angelman syndrome?
 - a. It is inherited from the father.
 - b. Mental retardation is observable.
 - c. Imprinting of an abnormal chromosome 15.
 - d. Seizure disorder is present.

ANS: A

A well-known disease example of imprinting is associated with a deletion of about 4 million base (Mb) pairs of the long arm of chromosome 15. When this deletion is inherited from the father, the child manifests Prader-Willi syndrome, whose features include short stature, hypotonia, small hands and feet, obesity, mild to moderate mental retardation, and hypogonadism. The same 4 Mb deletion, when inherited from the mother, causes Angelman syndrome, which is characterized by severe mental retardation, seizures, and an ataxic gait.

REF: p. 65

4. Research has demonstrated that neural stem cells have an impaired ability to differentiate into functional neurons when subjected to:
 - a. ethanol.
 - b. marijuana.
 - c. insufficient nutrients.
 - d. poor oxygenation.

ANS: A

It has been found that treating cultured neural stem cells with ethanol impairs their ability to differentiate to functional neurons; this impairment seems to be correlated with aberrant, dense methylation at loci that are active in normal neuronal tissue. The research does not support the effects of marijuana, insufficient nutrition, or poor oxygenation on the stem cell's ability to differentiate appropriately.

REF: p. 67

5. What is the role of inactive *MLH1* in the development of some forms of inherited colon cancer?
 - a. Deletion of a nucleotide repeat in the *DUX4* gene.
 - b. DNA damage is left unrepaired.
 - c. Expansion in the number of cytosine-guanine (CG) dinucleotide.
 - d. Abnormalities of chromosome 11p15.5 that lead to downregulation of IGF2.

ANS: B

A major cause of one form of inherited colon cancer (hereditary nonpolyposis colorectal cancer [HNPPCC]) is the methylation of the promoter region of a gene, *MLH1*, whose protein product repairs damaged DNA. When *MLH1* becomes inactive, DNA damage accumulates, eventually resulting in colon tumors. Facioscapulohumeral muscular dystrophy (FSHMD) is associated with the *DUX4* gene. Fragile X is associated with the cytosine-guanine (CG) dinucleotide. Downregulation of IGF2 is associated with Russell-Silver syndrome.

REF: p. 69

6. Mutations in the encoding of histone-modifying proteins have been shown to influence the development of what congenital condition?
 - a. Cleft palate
 - b. Acephalous
 - c. Heart disease
 - d. Webbed digits

ANS: C

Mutations in genes that encode histone-modifying proteins have been implicated in congenital heart disease. Research has yet to provide a relationship between abnormal histone-modifying proteins and cleft palate, acephalous, and webbed digits.

REF: p. 64

7. Which embryonic stem cell characteristic is referred to as totipotent?
 - a. Ability to differentiate into any type of somatic cell.
 - b. Ability to repair its own damaged DNA.

- c. Ability to determine which parental chromosome copy it will imprint.
- d. Ability to minimize the impact of poor *in utero* nutrition.

ANS: A

Each of the cells in the very early embryo has the potential to give rise to a somatic cell of any type. These embryonic stem cells are therefore said to be totipotent (“possessing all powers”). The term totipotent does not infer the ability to repair damaged DNA, select specific chromosome copies, or adjust for poor *in utero* nutrition.

REF: p. 64

- 8. 5-Azacytidine has demonstrated promise in the treatment of which form of cancer?
 - a. Liver
 - b. Colon
 - c. Gallbladder
 - d. Pancreatic

ANS: D

Though associated with various side effects, including digestive disturbance, 5-azacytidine has shown promise in the treatment of pancreatic cancer. There is no support for its use in the treatment of liver, colon, or gallbladder cancers.

REF: p. 70

- 9. During which stage of human development does the role of epigenetics have the greatest impact on the development of epigenetic abnormalities?
 - a. Infancy
 - b. Puberty
 - c. *In utero*
 - d. Middle age

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ANS: C

Conditions encountered *in utero*, during childhood, and even during adolescence or later can have long-term impacts on epigenetic states, which sometimes can be transmitted across generations. The impact is not supported for the periods of infancy, puberty, and middle age.

REF: p. 66

- 10. What comorbid condition does an individual diagnosed with Beckwith-Wiedemann syndrome have an increased risk of developing?
 - a. Cancer
 - b. Diabetes
 - c. Depression
 - d. Food allergies

ANS: A

Beckwith-Wiedemann syndrome is accompanied by an increased predisposition to cancer. There is no current correlation between Beckwith-Wiedemann syndrome and diabetes, depression, or food allergies.

REF: p. 65

MULTIPLE RESPONSE

1. Screening tools that are epigenetically based have shown promise in diagnosing which types of cancer? (select all that apply)
 - a. Colon
 - b. Breast
 - c. Skin
 - d. Bladder
 - e. Prostate

ANS: A, B, D, E

Monitoring for misregulation of miRNAs has shown promise as a tool for early diagnosis of cancers of the colon, breast, and prostate. Other epigenetics-based screening approaches have shown promise for detection of cancers of the bladder, lung, and prostate. Such screenings have not yet been developed for skin cancers.

REF: p. 69

2. Research has provided support for the theory that epigenetic modifications can result from deficient *in utero* nutrition causing which chronic disease? (select all that apply)
 - a. Obesity
 - b. Asthma
 - c. Cardiovascular disease
 - d. Diabetes
 - e. Crohn's disease

ANS: A, C, D

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When researchers sought to investigate how exposure to famine *in utero* had impacted individuals born in a historically prosperous country whose nutritional intake was dramatically impacted by WWII, they found that individuals who suffered nutritional deprivation *in utero* were more likely to suffer from obesity and diabetes as adults than individuals who had not experienced nutritional deprivation during gestation. Other data sets reveal elevated risk of cardiovascular and metabolic disease for offspring of individuals exposed during early development to fluctuations in agricultural yields. The research does support the development of asthma or Crohn's disease.

REF: p. 66

Chapter 04: Altered Cellular and Tissue Biology

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. A report comes back indicating that muscular atrophy has occurred. A nurse recalls that muscular atrophy involves a decrease in muscle cell:
 - a. number.
 - b. size.
 - c. vacuoles.
 - d. lipofuscin.

ANS: B

Atrophy is a decrease or shrinkage in cellular size. Hyperplasia is an increase in the number of cells. Vacuoles are membrane-bound vesicles within the cell that contain cellular debris and hydrolytic enzymes. Lipofuscin is the yellow-brown age pigment.

REF: p. 74

2. During childhood, the thymus decreases in size, and this is referred to as what type of atrophy?
 - a. Physiologic
 - b. Pathologic
 - c. Disuse
 - d. Neurogenic

ANS: A

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A normal decrease in cell size is physiologic atrophy. Atrophy can result from disease (pathologic), disuse, or nerve injury (neurogenic).

REF: p. 74

3. When planning care for a cardiac patient, the nurse knows that in response to an increased workload, cardiac myocardial cells will experience hypertrophy which is an:
 - a. increase in size.
 - b. decrease in length.
 - c. increase in excitability.
 - d. decrease in number.

ANS: A

Hypertrophy is a compensatory increase in the size of cells in response to mechanical stimuli (also called mechanical load or stress, such as from stretching, repetitive, chronic, pressure, or volume overload) and consequently increases the size of the affected organ. The cells of the heart and kidneys are particularly prone to enlargement. A decrease in length is not associated with hypertrophy. A deficiency of electrolytes or minerals could lead to an increase in excitability; it is not due to increased workload or related to hypertrophy. A decrease in cell numbers is referred to as hypoplasia.

REF: p. 75

4. A 55-year-old male with a 30-year history of smoking is examined for respiratory disturbance. Examination of his airway (bronchial) reveals that stratified squamous epithelial cells have replaced the normal columnar ciliated cells. This type of cellular adaptation is called:
- anaplasia.
 - hyperplasia.
 - metaplasia.
 - dysplasia.

ANS: C

Metaplasia is the reversible replacement of one mature cell type by another, sometimes a less differentiated cell type. Anaplasia is loss of cellular differentiation. Hyperplasia is an increase in the number of cells resulting from an increased rate of cellular division. Dysplasia refers to abnormal changes in the size, shape, and organization of mature cells.

REF: p. 77

5. When planning care for the pregnant patient, the nurse will recall that the mammary glands enlarge as a consequence of:
- compensatory hyperplasia.
 - hormonal hyperplasia.
 - hormonal anaplasia.
 - compensatory anaplasia.

ANS: B

An increase in the mammary glands during pregnancy is a result of hormonal changes. The number of mammary cells increases in response to increased hormone levels, not as a compensatory mechanism. Anaplasia is a reversal to less mature cells.

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REF: p. 76

6. A 24-year-old female presents with excessive menstrual bleeding. The physician identified endometrial changes that are due to hormonal imbalances. These cellular changes would be referred to as:
- dysplasia.
 - pathologic dysplasia.
 - hyperplasia.
 - pathologic hyperplasia.

ANS: D

Because the changes are due to an imbalance, they would be considered pathologic hyperplasia, a term more descriptive than simple hyperplasia. The endometrial changes were not abnormal in size and shape; thus, it is not dysplasia regardless of cause.

REF: pp. 76-77

7. A 55-year-old male is diagnosed with hepatocellular cancer secondary to hepatitis C. If the cancerous region of the liver is removed, the remaining cells would undergo:
- pathologic hyperplasia.
 - pathologic metaplasia.
 - compensatory hyperplasia.
 - compensatory aplasia.

ANS: C

Compensatory hyperplasia is an adaptive, not pathologic, mechanism that enables certain organs to regenerate. Metaplasia is the reversible replacement of one mature cell type by another, sometimes less differentiated, cell type. Aplasia is not a compensatory mechanism.

REF: p. 76

8. A 40-year-old female's Pap smear indicates abnormal changes in the shape and organization of cervical cells. Which term would be used to identify this type of change?
 - a. Metaplasia
 - b. Atrophy
 - c. Hypertrophy
 - d. Dysplasia

ANS: D

When cervical cells undergo dysplasia, there is a change in their size, shape, and organization. Metaplasia is the reversible replacement of one mature cell type. The cells have not decreased in size; therefore, atrophy is incorrect. The cells have not increased in size in response to stimuli; therefore, they have not hypertrophied.

REF: p. 77

9. A 75-year-old male presents with chest pain on exertion. The chest pain is most likely due to hypoxic injury secondary to:
 - a. malnutrition.
 - b. free radicals.
 - c. ischemia.
 - d. chemical toxicity.

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ANS: C

The cardiac cells are deprived of oxygen, leading to ischemia, a reduction in blood supply to tissues. The cells are deprived of oxygen; they are not malnourished. Free radicals are electrically uncharged atoms or groups of atoms that have an unpaired electron. Chemical toxicity is not a factor in the chest pain.

REF: pp. 78-79

10. A patient has a heart attack that leads to progressive cell injury that causes cell death with severe cell swelling and breakdown of organelles. What term would the nurse use to define this process?
 - a. Adaptation
 - b. Calcification
 - c. Apoptosis
 - d. Necrosis

ANS: D

Necrosis is the sum of cellular changes after local cell death. Cellular adaptation is a reversible, structural, or functional response to both normal or physiologic conditions and adverse or pathologic conditions. Calcification is an accumulation of calcium salts. Apoptosis is an active process of cellular self-destruction.

REF: p. 78, Table 4-1

11. Sodium and water accumulation in an injured cell are a direct result of:
 - a. decreased ATP production.
 - b. karyorrhexis.
 - c. ribosome detachment.
 - d. dehydration.

ANS: A

A reduction in ATP levels causes the plasma membrane's sodium-potassium ($\text{Na}^+ \text{-K}^+$) pump and sodium-calcium exchange to fail. Sodium and water can then enter the cell freely. Karyorrhexis means fragmentation of the nucleus into smaller particles or "nuclear dust." Ribosome detachment reduces protein synthesis. Dehydration leads to loss of sodium and water.

REF: p. 80

12. The early dilation (swelling) of the cell's endoplasmic reticulum results in:
 - a. increased aerobic metabolism.
 - b. failure of DNA.
 - c. reduced protein synthesis.
 - d. increased $\text{Na}^+ \text{-K}^+$ pump function.

ANS: C

Early dilation of the endoplasmic reticulum causes the ribosomes to detach from the rough endoplasmic reticulum, reducing protein synthesis. Aerobic metabolism is a normal process and would not lead to swelling. Cellular swelling will not alter cellular DNA. A reduction in the $\text{Na}^+ \text{-K}^+$ pump leads to an intracellular accumulation of sodium and calcium and diffusion of potassium out of the cell. **Sodium and water can then enter the cell freely**, and cellular swelling results.

REF: p. 80

13. A 52-year-old male suffered a myocardial infarction secondary to atherosclerosis and ischemia. Once blood flow is returned to the damaged heart, reperfusion injury occurs as a result of:
 - a. oxidation stress.
 - b. vacuolation.
 - c. decreased intracellular calcium.
 - d. lipid acceptor proteins.

ANS: A

Reperfusion injury can result from oxidative stress, increased intracellular calcium, inflammation, or complement activation. Oxidative stress causes the formation of radicals that cause further membrane damage and mitochondrial calcium overload. Vacuolation leads to cellular swelling but is not associated with reperfusion. An increase of intracellular calcium is a cause of reperfusion injury. Lipid acceptor proteins bind with triglycerides to create fatty liver, and they do not affect the myocardium.

REF: p. 81

14. A family presents to their primary care provider reporting headache, nausea, weakness, tinnitus, and vomiting. Which of the following would be the most likely explanation for these symptoms?
- Lead exposure
 - Carbon monoxide poisoning
 - Ethanol exposure
 - Mercury poisoning

ANS: B

Symptoms related to carbon monoxide poisoning include headache, giddiness, tinnitus (ringing in the ears), nausea, weakness, and vomiting. Although nausea and vomiting can occur with lead exposure, lead toxicity is primarily manifested by convulsions and delirium and, with peripheral nerve involvement, wrist, finger, and sometimes foot paralysis. Ethanol exposure has CNS effects and would not affect the whole family. Mercury poisoning is manifested by CNS effects and would not lead to nausea and vomiting.

REF: p. 90

15. A common pathway of irreversible cell injury involves increased intracellular:
- sodium.
 - potassium.
 - magnesium.
 - calcium.

ANS: D

Increased intracellular calcium levels activate cell enzymes (caspases) that promote cell death by apoptosis. Persistent ischemia is associated with irreversible injury and necrosis. Irreversible injury is associated structurally with severe swelling of the mitochondria, severe damage to plasma membranes, and swelling of lysosomes. Cellular injury is not associated with sodium, potassium, or magnesium levels.

REF: p. 81

16. A 50-year-old male sustained a closed head injury as a result of a motor vehicle accident. CT scan revealed a collection of blood between the inner surface of the dura mater and the surface of the brain. Which type of injury will the nurse be caring for?
- Subdural hematoma
 - Epidural hematoma
 - Contusion
 - Abrasions

ANS: A

A subdural hematoma occurs when blood is between the inner surface of the dura mater and the surface of the brain; it can result from blows, falls, or sudden acceleration/deceleration of the head. An epidural hematoma is a collection of blood between the inner surface of the skull and the dura; it is most often associated with a skull fracture. A contusion is bleeding into the skin or underlying tissues. An abrasion (scrape) results from removal of the superficial layers of the skin caused by friction between the skin and injuring object.

REF: p. 94, Table 4-8

17. A 20-year-old male presents to the emergency department with a jagged sharp-force injury that is longer than it is deep. Which type of wound will the nurse be caring for?
- Stab wound
 - Incised wound
 - Puncture wound
 - Chopping wound

ANS: B

An incised wound is a cut that is longer than it is deep. A stab wound is a penetrating sharp-force injury that is deeper than it is long. A puncture wound is without sharp edges and is made with an instrument like a nail. Heavy, edged instruments (axes, hatchets, propeller blades) produce wounds with a combination of sharp and blunt force characteristics.

REF: p. 94, Table 4-8

18. A 30-year-old female presents with a gunshot wound to the head. The wound has seared edges and a deep penetration of smoke and gunpowder fragments. This wound would be documented as a(n):
- exit.
 - intermediate range entrance.
 - contact range entrance.
 - indeterminate range entrance.

ANS: C

A contact range entrance wound is a distinctive type of wound that happens when a gun is held so the muzzle rests on or presses into the skin surface; in addition to the hole, there is searing of the edges of the wound from flame and soot or smoke on the edges of the wound. It is unlikely it is an exit wound since there is only one wound and it has seared edges and gunpowder fragments. An intermediate range entrance wound is surrounded by gunpowder tattooing or stippling. An indeterminate range entrance wound occurs when flame, soot, or gunpowder does not reach the skin surface but the bullet does.

REF: p. 95, Table 4-8

19. A 15-year-old female presents to the ER following a physical assault. She has internal damage to the neck with deep bruising. X-ray reveals fractures of the hyoid bone and tracheal and cricoid cartilage. Which of the following most likely caused her injuries?
- Chemical asphyxiation
 - Choking asphyxiation
 - Ligature strangulation
 - Manual strangulation

ANS: D

Squeezing of the neck as with strangulation would fracture the hyoid bone. Chemical asphyxiation would lead to breathing problems but would not result in fracture. Choking asphyxiation would lead to swelling of tissues but would not result in fracture. In ligature strangulation, the mark on the neck is horizontal without the inverted V pattern seen in hangings. It would not lead to fracture.

REF: p. 96

20. A 55-year-old male has swelling of the feet. Which of the following aided in the development of swelling?
- Increased ATP
 - Chloride movement out of the cell
 - Na⁺ movement into the cell
 - Decreased oncotic pressure

ANS: C

When sodium and water enter the cell freely, cellular swelling, as well as early dilation of the endoplasmic reticulum, results. Decreased ATP would lead to swelling. Chloride movement out of the cell would affect muscle contraction but does not lead to swelling. Increased oncotic pressure would not affect swelling.

REF: p. 97

21. A 35-year-old female is diagnosed with multiple myeloma. Biopsy of the tumor reveals Russell bodies, and laboratory testing reveals kidney dysfunction. Which substance should the nurse monitor as it is accumulating in the patient's body?
- Glycogen
 - Protein
 - Pigment
 - Melanin

ANS: B

Russell bodies occur due to excess aggregates of protein. Excess glycogen would affect blood glucose. Increased pigment would not lead to kidney dysfunction. Melanin accumulates in epithelial cells (keratinocytes) of the skin and retina.

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REF: p. 99

22. A newborn male is diagnosed with albinism based on skin, eye, and hair appearance. Which finding will support this diagnosis?
- Increased melanin
 - Increased hemoproteins
 - Inability to convert tyrosine to DOPA (3,4-dihydroxyphenylalanine)
 - Inability to convert bile to bilirubin

ANS: C

The person with albinism is unable to convert tyrosine to DOPA, an intermediate in melanin biosynthesis. An increase in melanin would cause skin to be darker. Hemoprotein accumulations in cells are caused by excessive storage of iron, which is transferred to the cells from the bloodstream. An inability to convert bile to bilirubin would not lead to albinism.

REF: p. 100

23. A 23-year-old male develops a black eye following a fight. When the aide asks the nurse why this occurred, the nurse's best response is that the bruising is due to an accumulation of:
- transferrin.
 - bilirubin.
 - albumin.
 - hemosiderin.

ANS: D

Hemosiderin is responsible for the color changes in a black eye. Transferrin is a transport protein responsible for iron transport. Bilirubin is the normal, yellow-to-green pigment of bile derived from the porphyrin structure of hemoglobin. Albumin is the protein in the serum, responsible for cellular integrity.

REF: p. 100

24. Liquefactive necrosis occurs in the brain because:
- debris is not digested by hydrolases.
 - of protein denaturation.
 - it is rich in hydrolytic enzymes and lipids.
 - ischemia results in chemical injury.

ANS: C

Liquefactive necrosis is due to enzymatic action and because cells of the brain are rich in enzymes. Protein denaturation occurs primarily in the kidneys. Liquefactive necrosis is due to enzymatic reaction and not to hypoxia or hydrolases.

REF: p. 103

25. A 2-year-old swallowed watch batteries. Following ingestion, kidney function was impaired, and the heart began to fail. Which of the following was the most likely cause?
- Karyorrhexis
 - Coagulative necrosis
 - Ammonia accumulation
 - Caseous necrosis

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ANS: B

Coagulative necrosis occurs primarily in the kidneys, heart, and adrenal glands and commonly results from hypoxia. Karyorrhexis means fragmentation of the nucleus into smaller particles or “nuclear dust.” Ammonia accumulation is not associated with this toxicity. Caseous necrosis results from tuberculosis pulmonary infection.

REF: pp. 102-103

26. A group of prison inmates developed tuberculosis following exposure to an infected inmate. On examination, tissues were soft and granular (like clumped cheese). Which of the following is the most likely cause?
- Coagulative necrosis
 - Liquefactive necrosis
 - Caseous necrosis
 - Autonecrosis

ANS: C

Caseous necrosis results from tuberculosis pulmonary infection. Coagulative necrosis occurs primarily in the kidneys, heart, and adrenal glands, and commonly results from hypoxia. Liquefactive necrosis results from ischemic injury to neurons and glial cells in the brain. Autonecrosis is a process of cellular self-digestion and is not due to infection such as tuberculosis.

REF: p. 103

27. A 50-year-old female became infected with *Clostridium* bacteria and died a week later. Examination of her red blood cells revealed lysis of membranes. Which of the following was the most likely cause of her death?
- Fat necrosis
 - Wet gangrene
 - Gangrenous necrosis
 - Gas gangrene

ANS: D

Gas gangrene is a special type of gangrene caused by infection of injured tissue by one of many species of *Clostridium*. Fat necrosis is cellular dissolution caused by powerful enzymes, called lipases, that occur in the breast, pancreas, and other abdominal structures. Wet gangrene develops when neutrophils invade the site, causing liquefactive necrosis. Gangrenous necrosis is due to death of tissue and results from severe hypoxic injury.

REF: p. 104

28. While reading a textbook, a student reads the term apoptosis. The student recalls that apoptosis is a condition in which cells program themselves to:
- atrophy.
 - die.
 - regenerate.
 - age.

ANS: B

In apoptosis, cells are programmed to die. Apoptosis is not associated with cell atrophy, regeneration, or aging. 

REF: p. 104

29. A 50-year-old male intravenous drug user is diagnosed with hepatitis C. Examination of the liver reveals cell death secondary to:
- fat necrosis.
 - physiologic apoptosis.
 - infection-induced apoptosis.
 - pyknosis.

ANS: C

With hepatitis C, the liver will demonstrate apoptosis that is a result of the viral infection. Fat necrosis occurs with enzymatic action due to lipases. Apoptosis is not a normal physiological process. Pyknosis occurs when the nucleus shrinks and becomes a small, dense mass of genetic material.

REF: p. 104

30. What principle should the nurse remember when trying to distinguish aging from diseases?
- It is difficult to tell the difference because both processes are believed to result from cell injury.
 - It is easy to tell normal processes from abnormal processes.
 - Disease, unlike aging, has a genetic component.

- d. Aging is defined as exceeding life expectancy, but not maximal life span.

ANS: A

It is difficult to differentiate between aging and disease because both occur secondary to cellular aging. It is not easy to differentiate normal processes from abnormal because aging appears as a normal process. Disease and aging have a possible genetic component. Aging is a time-dependent loss of structure and function that proceeds slowly and in such small increments that it appears to be the result of the accumulation of small, imperceptible injuries. It is not a time period outside of life expectancy.

REF: p. 107

31. When a nurse observes muscle stiffening occurring within 6–14 hours after death, the nurse should document this finding as the presence of:
- livor mortis.
 - gangrene.
 - algor mortis.
 - rigor mortis.

ANS: D

Rigor mortis occurs within 6 hours after death and is evidenced by muscle stiffening. Livor mortis is a purple discoloration. Gangrene refers to death of tissue and results from severe hypoxic injury and does not lead to stiffening. Algor mortis is postmortem reduction of body temperature.

REF: pp. 109-110

32. When a nurse is checking a urinalysis, the finding that would alert the nurse to cellular injury is the presence of:
- slight glucose.
 - excessive protein.
 - blood.
 - urea.

ANS: B

The presence of protein in the urine in significant amounts indicates cellular injury and altered cellular function. Neither glucose nor blood is normally present in the urine, but its presence is not indicative of altered cellular function. Urea is an expected substance in the kidney.

REF: p. 99

33. An 86-year-old female patient has the wasting syndrome of aging, making her vulnerable to falls, functional decline, disease, and death. The nurse knows this patient is experiencing:
- frailty.
 - sarcopenia.
 - somatic death.
 - cellular aging.

ANS: A

Frailty leaves the individual vulnerable to falls, disease, and death. Sarcopenia is loss of muscle mass. It is associated with aging but is not as severe as frailty. Somatic death is death of the whole person. Cellular aging occurs at the cellular level and is characteristic of aging, including cell atrophy, decreased function, and loss of cells.

REF: p. 109

34. Confirmation of somatic death is based on:
- presence of algor mortis.
 - presence of livor mortis.
 - complete cessation of respiration and circulation.
 - change in skin color to pale yellow.

ANS: C

The most notable manifestations are complete cessation of respiration and circulation. Algor mortis is postmortem reduction of body temperature and is not confirmation of somatic death. Livor mortis is muscle stiffening and is not confirmation of somatic death. Change in skin color to pale yellow does occur, but complete cessation of respiration and circulation confirms somatic death.

REF: p. 109

MULTIPLE RESPONSE

1. A patient has been reading on the Internet that light to moderate intake of alcohol is cardioprotective. When the patient asks the nurse what this means, the nurse should respond that the heart is protected by which of the following mechanisms? (select all that apply)
- Increased levels of high-density lipoprotein cholesterol
 - Prevention of clot formation
 - Reduction in platelet aggregation
 - Decrease in blood pressure
 - Increased collateral circulation
 - Decreased folate absorption

ANS: A, B, C, D

The suggested mechanisms for cardioprotection by low to moderate alcohol intake include increased levels of high-density lipoprotein cholesterol (HDL-c), prevention of clot formation, reduction in platelet aggregation, and decrease in blood pressure. Increased collateral circulation is not a benefit of alcohol. Alcohol consumption can decrease folate absorption, which can lead to a nutritional deficient.

REF: p. 91

2. After ingestion of lead, what organ systems should the nurse monitor because they are the most sensitive to the effects of lead? (select all that apply)
- Heart
 - Lungs
 - Liver
 - Kidneys
 - Brain

f. Hematopoietic

ANS: D, E, F

The organ systems primarily affected by lead ingestion include the nervous system (brain), the hematopoietic system (tissues that produce blood cells), and the kidneys. The heart, liver, and lungs are not affected.

REF: p. 89

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Chapter 05: Fluids and Electrolytes, Acids and Bases
Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. A nurse is reviewing lab reports. The nurse recalls blood plasma is located in which of the following fluid compartments?
 - a. Intracellular fluid (ICF)
 - b. Extracellular fluid (ECF)
 - c. Interstitial fluid
 - d. Intravascular fluid

ANS: D

Blood plasma is the intravascular fluid. ICF is fluid in the cells. ECF is all the fluid outside the cells. Interstitial fluid is fluid between the cells and outside the blood vessels.

REF: p. 114

2. A 35-year-old male weighs 70 kg. Approximately how much of this weight is considered the total volume of body water?
 - a. 5 L
 - b. 10 L
 - c. 28 L
 - d. 42 L

ANS: D

The total volume of body water for a 70-kg person is about 42 L or two thirds of 70 kg.

REF: p. 114

3. While planning care for elderly individuals, the nurse remembers the elderly are at a higher risk for developing dehydration because they have:
 - a. a higher total body water volume.
 - b. decreased muscle mass.
 - c. increased thirst.
 - d. an increased tendency toward developing edema.

ANS: B

The elderly are at higher risk for dehydration due to a decrease in muscle mass. The elderly have a decrease in total body water and thirst. The increased tendency to develop edema is not related to dehydration.

REF: p. 131, Geriatric Considerations

4. Which of the following patients should the nurse assess for decreased oncotic pressure in the capillaries? A patient with:
 - a. a high-protein diet.
 - b. liver failure.
 - c. low blood pressure.
 - d. low blood glucose.

ANS: B

Liver failure leads to lost or diminished plasma albumin production, and this contributes to decreased plasma oncotic pressure. A high-protein diet would provide albumin for the maintenance of oncotic pressure. Low blood pressure would lead to decreased hydrostatic pressure. Decreased glucose does not affect oncotic pressure.

REF: p. 116

5. Water movement between the ICF and ECF compartments is determined by:
 - a. osmotic forces.
 - b. plasma oncotic pressure.
 - c. antidiuretic hormone.
 - d. buffer systems.

ANS: A

Osmotic forces determine water movement between the ECF and ICF compartments. Oncotic pressure pulls water at the end of the capillary, which makes it move between intra and extra as interstitial is considered extra. The antidiuretic hormone regulates water balance, which would make water move between the intra- and extracellular spaces. Buffer systems help regulate acid balance.

REF: p. 115

6. An experiment was designed to test the effects of the Starling forces on fluid movement. Which of the following alterations would result in fluid moving into the interstitial space?
 - a. Increased capillary oncotic pressure.
 - b. Increased interstitial hydrostatic pressure.
 - c. Decreased capillary hydrostatic pressure.
 - d. Increased interstitial oncotic pressure.

ANS: D

Increased interstitial oncotic pressure would attract water from the capillary into the interstitial space. Increased capillary oncotic pressure would attract water from the interstitial space back into the capillary. Increased interstitial hydrostatic pressure would attract movement of water from the interstitial spaces into the capillary. Decreased capillary hydrostatic pressure would move water into the capillaries.

REF: p. 115

7. When planning care for a dehydrated patient, the nurse remembers that the principle of water balance is closely related to the balance of:
 - a. potassium.
 - b. chloride.
 - c. bicarbonate.
 - d. sodium.

ANS: D

Because water follows the osmotic gradients established by changes in salt concentration, water balance is tied to sodium balance, not that of potassium, chloride, or bicarbonate.

REF: pp. 116-117 | p. 118, Figure 5-5

8. A 70-year-old male with chronic renal failure presents with edema. Which of the following is the most likely cause of this condition?
- Increased capillary oncotic pressure.
 - Decreased interstitial oncotic pressure.
 - Increased capillary hydrostatic pressure.
 - Increased interstitial hydrostatic pressure.

ANS: C

Increased capillary hydrostatic pressure would facilitate increased movement from the capillary to the interstitial space, leading to edema. Increased capillary (plasma) oncotic pressure attracts water from the interstitial space back into the capillary. Decreased interstitial oncotic pressure would keep water in the capillary. Increased interstitial hydrostatic pressure would facilitate increased water movement from the interstitial space into the capillary.

REF: pp. 115-116

9. A 10-year-old male is brought to the emergency room (ER) incoherent and semiconscious. CT scan reveals that he is suffering from cerebral edema. This type of edema is referred to as:
- localized edema.
 - generalized edema.
 - pitting edema.
 - lymphedema.

ANS: A

Cerebral edema is a form of localized edema. Generalized edema is manifested by a more uniform distribution of fluid in interstitial spaces. When pressure is applied, pitting edema results in an indentation in the skin. Lymphedema is due to swelling in interstitial spaces, primarily in the extremities. **NURSINGTB.COM**

REF: p. 116

10. A nurse is teaching the staff about antidiuretic hormone (ADH). Which information should the nurse include? Secretion of ADH is stimulated by:
- increased serum potassium.
 - increased plasma osmolality.
 - decreased renal blood flow.
 - generalized edema.

ANS: B

ADH is secreted when plasma osmolality increases or circulating blood volume decreases and blood pressure drops. ADH is not secreted by an increase in potassium, a decrease in renal blood flow, or the presence of generalized edema.

REF: p. 118

11. Which statement by the staff indicates teaching was successful concerning aldosterone? Secretion of aldosterone results in:
- decreased plasma osmolality.
 - increased serum potassium levels.
 - increased blood volume.
 - localized edema.

ANS: C

Aldosterone promotes renal sodium and water reabsorption and excretion of potassium, thus increasing blood volume. Aldosterone secretion would cause increased plasma osmolality but it does not promote the development of localized edema; it affects blood volume.

REF: p. 117

12. A 25-year-old male is diagnosed with a hormone-secreting tumor of the adrenal cortex. Which finding would the nurse expect to see in the lab results?
- Decreased blood volume
 - Decreased blood K⁺ levels
 - Increased urine Na⁺ levels
 - Increased white blood cells

ANS: B

Aldosterone is secreted from the adrenal cortex. It promotes renal sodium and water reabsorption and excretion of potassium, leading to decreased potassium levels. Blood volume actually increases with aldosterone secretion. Aldosterone promotes sodium reabsorption, leading to normal or decreased Na⁺ levels, and is not associated with white blood cells.

REF: p. 117

13. A patient has been searching on the Internet about natriuretic hormones. When the patient asks the nurse what these hormones do, how should the nurse respond? Natriuretic hormones affect the balance of:
- calcium.
 - sodium.
 - magnesium.
 - potassium.

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ANS: B

Natriuretic hormones are sometimes called a “third factor” in sodium regulation but have no influence on calcium, magnesium, or potassium balance.

REF: p. 117

14. A 5-year-old male presents to the ER with delirium and sunken eyes. After diagnosing him with severe dehydration, the primary care provider orders fluid replacement. The nurse administers a hypertonic intravenous solution. Which of the following would be expected?
- Symptoms subside quickly
 - Increased ICF volume
 - Decreased ECF volume
 - Intracellular dehydration

ANS: D

A hypertonic solution would cause fluid to move into the extracellular space, leading to intracellular dehydration. With this solution, his symptoms will not subside quickly because his cells will lose fluid. His intracellular volume will decrease and his extracellular volume will increase.

REF: p. 120

15. Which of the following patients is the most at risk for developing hypernatremia? A patient with:
- vomiting.
 - diuretic use.
 - dehydration.
 - hypoaldosteronism.

ANS: C

Dehydration leads to hypernatremia because an increase in sodium occurs with a net loss in water. Vomiting and diuretic use leads to hyponatremia. Hypoaldosteronism leads to hyponatremia.

REF: p. 119

16. Which of the following conditions would cause the nurse to monitor for hyperkalemia?
- Excess aldosterone
 - Acute acidosis
 - Insulin usage
 - Metabolic alkalosis

ANS: B

In acidosis, ECF hydrogen ions shift into the cells in exchange for ICF potassium and sodium; hyperkalemia and acidosis therefore often occur together. Acidosis does not cause excess aldosterone. Insulin would help treat hyperkalemia, not cause it.

Alkalosis does not lead to hyperkalemia.

REF: p. 124

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17. Which organ system should the nurse monitor when the patient has long-term potassium deficits?
- Central nervous system (CNS)
 - Lungs
 - Kidneys
 - Gastrointestinal tract

ANS: C

Long-term potassium deficits lasting more than 1 month may damage renal tissue, with interstitial fibrosis and tubular atrophy. Long-term potassium deficits are not associated with damage to the CNS, GI tract, or lungs.

REF: pp. 123-124

18. A 42-year-old female presents to her primary care provider reporting muscle weakness and cardiac abnormalities. Laboratory tests indicate that she is hypokalemic. Which of the following could be the cause of her condition?
- Respiratory acidosis
 - Constipation
 - Hypoglycemia
 - Laxative abuse

ANS: D

Losses of potassium from body stores are usually caused by gastrointestinal and renal disorders. Diarrhea, intestinal drainage tubes or fistulae, and laxative abuse also result in hypokalemia. Acidosis is related to hyperkalemia, not hypokalemia. Constipation can occur with hypokalemia but does not cause it. Hypoglycemia is not related to muscle weakness.

REF: p. 123

19. A 19-year-old male presents to his primary care provider reporting restlessness, muscle cramping, and diarrhea. Lab tests reveal that he is hyperkalemic. Which of the following could have caused his condition?
- Primary hyperaldosteronism
 - Acidosis
 - Insulin secretion
 - Diuretic use

ANS: B

During acute acidosis, hydrogen ions accumulate in the ICF and potassium shifts out of the cell to the ECF, causing hyperkalemia. Primary hyperaldosteronism is associated with hypokalemia, not hyperkalemia. Insulin secretion helps reduce potassium levels in the cell; it does not cause hyperkalemia. Diuretics would cause hypokalemia, not hyperkalemia.

REF: p. 122

20. A 60-year-old female is diagnosed with hyperkalemia. Which assessment finding should the nurse expect to observe?
- Weak pulse
 - Excessive thirst
 - Oliguria
 - Constipation

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ANS: C

Hyperkalemia is manifested by oliguria. Hypokalemia is manifested by a weak pulse; it is not caused by hyperkalemia. Hypokalemia is manifested by excessive thirst. Diarrhea, not constipation, is a manifestation of hyperkalemia.

REF: p. 124, Table 5-6

21. Which of the following buffer pairs is considered the major plasma buffering system?
- Protein/fat
 - Carbonic acid/bicarbonate
 - Sodium/potassium
 - Amylase/albumin

ANS: B

The carbonic acid/bicarbonate buffer pair operates in both the lung and the kidney and is a major extracellular buffer. Protein and fat are nutrients not related to the buffering system. Sodium and potassium are electrolytes for fluid and electrolyte balance, not the major plasma buffering system for acid-base balance. Amylase is a carbohydrate enzyme, and albumin is a protein; neither is a buffering system.

REF: p. 125

22. A nurse recalls that regulation of acid-base balance through removal or retention of volatile acids is accomplished by the:
- buffer systems.
 - skin.
 - lungs.
 - liver.

ANS: C

The volatile acid is carbonic acid (H_2CO_3), which readily dissociates into carbon dioxide (CO_2) and water (H_2O). The CO_2 is then eliminated by the lungs. Buffer systems are throughout the body and operate in the extracellular and intracellular systems. Neither the liver nor the skin regulates acid-base balance.

REF: p. 125

23. Which patient is most prone to metabolic alkalosis? A patient with:
- retention of metabolic acids.
 - hypoaldosteronism.
 - excessive loss of chloride (Cl).
 - hyperventilation.

ANS: C

When acid loss is caused by vomiting, renal compensation is not very effective because loss of Cl stimulates renal retention of bicarbonate, leading to alkalosis. Retention of metabolic acids would lead to acidosis, not alkalosis. Hypoaldosteronism leads to hyponatremia and does not cause alkalosis. Hyperventilation leads to respiratory alkalosis, not metabolic alkalosis.

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REF: p. 127

24. Which patient should the nurse assess for both hyperkalemia and metabolic acidosis? A patient diagnosed with:
- diabetes insipidus.
 - pulmonary disorders.
 - Cushing syndrome.
 - renal failure.

ANS: D

Renal failure is associated with hyperkalemia and metabolic acidosis. Diabetes insipidus results in hypernatremia. Pulmonary disorders are a cause of respiratory acidosis or alkalosis but do not affect hyperkalemia. Cushing syndrome results in hypernatremia.

REF: p. 124 | p. 127

25. For a patient experiencing metabolic acidosis, the body will compensate by:
- excreting H^+ through the kidneys.
 - hyperventilating.
 - retaining CO_2 in the lungs.
 - secreting aldosterone.

ANS: B

It is the lungs hyperventilating that would compensate for metabolic acidosis by blowing off CO₂, not any function associated with the kidneys. CO₂ retention would increase the acidotic state. Aldosterone would conserve water but does not help compensate for acidosis.

REF: p. 127

26. Which finding would support the diagnosis of respiratory acidosis?
- Vomiting
 - Hyperventilation
 - Pneumonia
 - An increase in noncarbonic acids

ANS: C

Respiratory acidosis occurs with hypoventilation, and pneumonia leads to hypoventilation. Vomiting leads to loss of acids and then to alkalosis. Hyperventilation leads to respiratory alkalosis. Metabolic acidosis is caused by an increase in noncarbonic acids.

REF: pp. 128-129

27. A 54-year-old male with a long history of smoking complains of excessive tiredness, shortness of breath, and overall ill feelings. Lab results reveal decreased pH, increased CO₂, and normal bicarbonate ion. These findings help to confirm the diagnosis of:
- respiratory alkalosis.
 - metabolic acidosis.
 - respiratory acidosis.
 - metabolic alkalosis.

ANS: C

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A decreased pH indicates acidosis. With increased CO₂, it is respiratory acidosis. The bicarbonate is normal, so it cannot be metabolic acidosis.

REF: pp. 128-129

28. For a patient with respiratory acidosis, chronic compensation by the body will include:
- kidney excretion of H⁺.
 - kidney excretion of HCO₃.
 - prolonged exhalations to blow off CO₂.
 - protein buffering.

ANS: A

The kidneys excrete H⁺ to compensate for respiratory acidosis. The kidneys do not excrete HCO₃ to compensate; this would increase acidosis. Prolonged exhalations would not be effective for compensation, especially in a chronic state. Protein buffering is intracellular and would not be effective enough to compensate for respiratory acidosis.

REF: pp. 128-130

29. A 55-year-old female presents to her primary care provider and reports dizziness, confusion, and tingling in the extremities. Blood tests reveal an elevated pH, decreased PCO₂, and slightly decreased HCO₃. Which of the following is the most likely diagnosis?
- Respiratory alkalosis with renal compensation
 - Respiratory acidosis with renal compensation

- c. Metabolic alkalosis with respiratory compensation
- d. Metabolic acidosis with respiratory compensation

ANS: A

With an elevated pH, the diagnosis must be alkalosis. Since the PCO₂ is low, it is likely respiratory, with a slight decrease in HCO₃ indicating renal compensation.

REF: p. 130

MULTIPLE RESPONSE

1. A 60-year-old male with a 30-year history of smoking is diagnosed with a hormone-secreting lung tumor. Further testing indicates that the tumor secretes ADH. Which of the following assessment findings should the nurse expect? (select all that apply)
 - a. Confusion
 - b. Weakness
 - c. Nausea
 - d. Muscle twitching
 - e. Increased reflexes

ANS: A, B, C, D

Secretion of ADH leads to water intoxication with symptoms of cerebral edema, including confusion, convulsions, weakness, nausea, and muscle twitching. Depressed reflexes are associated with water intoxication.

REF: p. 119 | p. 121

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Chapter 06: Innate Immunity: Inflammation and Wound Healing
Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. A public health nurse is teaching the community about health promotion. Which information should the nurse include for innate immunity? Innate immunity is gained:
 - a. following an illness.
 - b. at birth.
 - c. via injection of specific antibodies.
 - d. in adulthood.

ANS: B

Innate immunity is present at birth. It is not dependent on illness or injection.

REF: p. 134

2. Which statement indicates teaching was successful regarding collectins? Collectins are produced by the:
 - a. kidneys.
 - b. bowel.
 - c. lungs.
 - d. integument.

ANS: C

Collectins are produced by the lungs. Collectins are not associated with the kidneys, bowel, or integumentary system. 

REF: p. 135

3. A 20-year-old male received a knife wound to the arm during an altercation. Which of the following types of immunity was compromised?
 - a. Innate immunity
 - b. Inflammatory response
 - c. Adaptive immunity
 - d. Specific immunity

ANS: A

The epithelial cells of the skin are a part of innate immunity. The inflammatory response is not a type of immunity. Adaptive immunity is represented by the normal flora of the bowel. Specific immunity is a type of adaptive immunity and is not associated with a break in skin integrity.

REF: pp. 134-135

4. Biochemical secretions that trap and kill microorganisms include:
 - a. hormones.
 - b. neurotransmitters.
 - c. earwax.
 - d. gastric acid.

ANS: C

Epithelial cells secrete several substances that protect against infection, including earwax.

Hormones do not contain biochemical secretions that trap and kill microorganisms.

Neurotransmitters carry important messages, and gastric acid helps break down food into its component parts, but neither contains biochemical secretions.

REF: p. 135

5. A 25-year-old female presents to her primary care provider reporting vaginal discharge of a white, viscous, and foul-smelling substance. She reports that she has been taking antibiotics for the past 6 months. Which finding will the nurse most likely see on the microorganism report?
 - a. *Clostridium difficile* overgrowth
 - b. Decreased *Lactobacillus*
 - c. *Streptococcus* overgrowth
 - d. Decreased *Candida albicans*

ANS: B

Diminished colonization with *Lactobacillus* that occurs as a result of prolonged antibiotic treatment increases the risk for vaginal infections, such as vaginosis. *Clostridium difficile* and *Candida albicans* occur in the colon, not the vagina. *Streptococcus* overgrowth will occur in the mouth.

REF: p. 136

6. When an aide asks the nurse about the purpose of the inflammatory process, how should the nurse respond?
 - a. To provide specific responses toward antigens. N-R-T-G-B-C-Q-M
 - b. To lyse cell membranes of microorganisms.
 - c. To prevent infection of the injured tissue.
 - d. To create immunity against subsequent tissue injury.

ANS: C

One purpose of the inflammatory process is to prevent infection and further damage by contaminating microorganisms. Specific response toward antigens is a part of the complement system that assists in the inflammatory response, but not its purpose. Lysis of cell membranes is part of the process of phagocytosis, which removes foreign material. Immunity cannot be achieved against future tissue injury.

REF: p. 137

7. A child fell off a swing and scraped his right knee. The injured area becomes painful. What else will the nurse observe upon assessment?
 - a. Vasoconstriction at injured site
 - b. Decreased RBC concentration at injured site
 - c. Pale skin at injured site
 - d. Edema at injured site

ANS: D

Increased vascular permeability and leakage of fluid out of the vessel cause edema at the site of injury. Vasodilation occurs, bringing increased RBCs to the site and causing redness.

REF: p. 137

8. A nurse recalls the mast cell, a major activator of inflammation, initiates the inflammatory response through the process of:
 - a. chemotaxis.
 - b. endocytosis.
 - c. degranulation.
 - d. opsonization.

ANS: C

Degranulation of mast cells is a major cellular component of inflammation. Chemotaxis is the process of white cell migration. Endocytosis and opsonization are parts of phagocytosis but are not factors in mast cell response.

REF: pp. 144-145

9. Which of the following individuals would be at greatest risk for an opportunistic infection?
 - a. 18-year-old with diabetes
 - b. 70-year-old with congestive heart failure
 - c. 24-year-old who is immunocompromised
 - d. 30-year-old with pneumonia

ANS: C

Opportunistic microorganisms can cause disease if the individual's defenses are compromised. Diabetes, congestive heart failure, and pneumonia are not associated with immunocompromised disorders.

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REF: p. 137

10. The directional migration of leukocytes along a chemical gradient is termed:
 - a. chemotaxis.
 - b. endocytosis.
 - c. margination.
 - d. diapedesis.

ANS: A

Chemotaxis is the process by which leukocytes undergo directed migration. Endocytosis is a form of engulfment and a part of phagocytosis. Margination occurs when leukocytes adhere to endothelial cells in the walls of vessels. Diapedesis is the emigration of the cells through cell junctions that have loosened in response to inflammatory mediators.

REF: p. 147

11. A 20-year-old male shoots his hand with a nail gun while replacing roofing shingles. Which of the following cell types would be the first to aid in killing bacteria to prevent infection in his hand?
 - a. Eosinophils
 - b. Neutrophils
 - c. Leukotrienes
 - d. Monocytes

ANS: B

Neutrophils are the predominant phagocytes in the early inflammatory site, arriving within 6–12 hours after the initial injury. Eosinophils help limit and control inflammation. Leukotrienes are activators of the inflammatory response. Monocytes enter much later and replace leukocytes.

REF: p. 146

12. The predominant phagocyte of early inflammation is the:
 - a. eosinophil.
 - b. neutrophil.
 - c. lymphocyte.
 - d. macrophage.

ANS: B

Neutrophils are the predominant phagocytes in the early inflammatory site, arriving within 6–12 hours after the initial injury. Eosinophils help limit and control inflammation, but they are not the prominent phagocyte. Lymphocytes are part of the innate immune response. Macrophages kill microorganisms.

REF: p. 146

13. A 25-year-old female experiences a headache and takes aspirin for relief. A nurse recalls aspirin relieves the headache by:
 - a. decreasing leukotriene production.
 - b. increasing histamine release.
 - c. decreasing prostaglandin production.
 - d. increasing platelet-activating factor.

ANS: C

Aspirin is a prostaglandin inhibitor. Aspirin is not associated with leukotriene production, histamine release, or platelet-activating factor.

REF: p. 145

14. Which factor will help the nurse differentiate leukotrienes from histamine?
 - a. Site of production
 - b. Vascular effect
 - c. Chemotactic ability
 - d. Time of release

ANS: D

Leukotrienes are released slower and longer than histamine. Both leukotrienes and histamine are produced by mast cells, and they have similar vascular effects and chemotactic abilities.

REF: p. 145

15. A 25-year-old male is in a car accident and sustains a fracture to his left femur with extensive soft tissue injury. The pain associated with the injury is related to:
 - a. histamine.
 - b. prostaglandins.
 - c. vasoconstriction.

- d. immune complex formation.

ANS: B

Prostaglandins cause increased vascular permeability, neutrophil chemotaxis, and pain by direct effects on nerves. Histamine promotes vasodilation. Prostaglandins are not associated with vasoconstriction or the immune complex formation.

REF: p. 145

16. The complement, clotting, and kinin systems share which of the following characteristics?
- Activation of a series of proenzymes
 - Phagocytosis initiation
 - Granulocyte production
 - Activated by interferon

ANS: A

The complement system, the clotting system, and the kinin system are normally in inactive forms but can activate in a series as proenzymes and are involved in the inflammatory process. This system is not associated with phagocytosis, granulocyte production, or the activation of interferon.

REF: p. 138

17. Which statement indicates teaching was successful regarding the classical pathway of the complement system? The classical pathway of the complement system is activated by:
- histamine.
 - antigen-antibody complexes.
 - leukotrienes.
 - prostaglandins.

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ANS: B

The classical pathway of the complement system is activated by antibodies of the immune system, not by histamine, leukotrienes, or prostaglandins.

REF: p. 139

18. A patient has researched bradykinin on the Internet. Which information indicates the patient understands the functions of bradykinin? Bradykinin is involved in:
- increasing vascular permeability.
 - vasoconstricting blood vessels.
 - stimulating the clotting system.
 - increasing degradation of prostaglandins.

ANS: A

Bradykinin increases vascular permeability. It is not associated with vasoconstriction, stimulating the clotting system, or increasing degradation of prostaglandins.

REF: p. 141

19. After teaching the staff about the clotting system, which statement indicates the teaching was successful? The end product of the clotting system is:
- plasmin.

- b. fibrin.
- c. collagen.
- d. factor X.

ANS: B

The end product of the clotting system is fibrin. Plasmin activates the complement cascade. Collagen plays a factor in wound healing. Factor X is a first step in the clotting system.

REF: p. 139

20. A 5-year-old male is diagnosed with a bacterial infection. Cultures of the bacteria revealed lipopolysaccharides on the bacterial cell surface. Which of the complement pathways would be activated in this case?
- a. Classical pathway
 - b. Lectin pathway
 - c. Alternative pathway
 - d. Kinin pathway

ANS: C

The alternative pathway is activated by several substances found on the surface of infectious organisms, such as those containing lipopolysaccharides. The classical pathway is primarily activated by antibodies that are proteins of the acquired immune system. The lectin pathway is similar to the classical pathway but is independent of antibody. It is activated by several plasma proteins. The kinin pathway is involved in coagulation.

REF: p. 139

21. An 8-year-old female presents ~~with edema of the cutaneous and mucosal tissue layers~~. Her mother reports that the condition is recurrent and seems to occur more often during stressful situations. The child is diagnosed with hereditary angioedema. Which of the following is deficient in this child?
- a. C1 esterase inhibitor
 - b. Carboxypeptidase
 - c. Neutrophils
 - d. Plasmin

ANS: A

A genetic defect in C1 esterase inhibitor (C1 INH deficiency) results in hereditary angioedema. Hereditary angioedema is due to C1 esterase inhibitor, not neutrophils. Carboxypeptidase degrades kinins. Plasmin is associated with clots.

REF: p. 141

22. A nurse is preparing to teach on the subject of opsonins. Which information should the nurse include? Opsonins are molecules that:
- a. are composed of fatty acids.
 - b. regulate inflammation.
 - c. degranulate mast cells.
 - d. enhance phagocytosis.

ANS: D

Opsonins coat the surface of bacteria and increase their susceptibility to being phagocytized. Opsonins are not associated with fatty acids, the regulation of the inflammatory process, or the degranulation of mast cells.

REF: p. 138

23. A 10-year-old male is diagnosed with a parasite. Which lab result should the nurse check for a response to the parasite?
- Monocytes
 - Eosinophils
 - Neutrophils
 - Macrophages

ANS: B

Eosinophils serve as the body's primary defense against parasites. Monocytes and neutrophils are phagocytic. Macrophages are not active against parasites; they act as long-term defense against infections.

REF: p. 146

24. A 65-year-old female is diagnosed with metastatic breast cancer. She has developed muscle wasting. Which of the following substances would be produced in large quantities to eliminate the tumor cells and cause muscle wasting?
- Interleukin-6
 - Eosinophils
 - Tumor necrosis factor-alpha
 - Platelets

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ANS: C

Tumor necrosis factor causes muscle wasting. Interleukin-6 stimulates growth and differentiation of blood cells. Eosinophils are stimulated by parasites. Platelets stimulate clotting.

REF: p. 144

25. When phagocytes begin to stick avidly to capillary walls, which process is occurring?
- Margination
 - Exudation
 - Integration
 - Emigration

ANS: A

Both leukocytes and endothelial cells secrete substances that increase adhesion, or stickiness, causing the leukocytes to adhere more avidly to the endothelial cells in the walls of the capillaries and venules in a process called margination. Exudation is the process of pus formation and does not result in stickiness. Integration occurs in cells but is not a major function and does not lead to stickiness. Emigration is similar to diapedesis and is not associated with increased stickiness.

REF: p. 147

26. An infant develops a fever secondary to a bacterial infection. Which of the following most likely triggered the fever?
- Interleukin-1
 - Interleukin-6
 - Interleukin-10
 - Interferons (IFNs)

ANS: A

Interleukin-1 is responsible for fever production. Interleukin-6 stimulates growth and differentiation of blood cells. Interleukin-10 helps decrease the immune response. INFs are members of a family of cytokines that protect against viral infections.

REF: p. 143, Figure 6-6

27. A 54-year-old male intravenous (IV) drug user is diagnosed with chronic hepatitis C. Testing revealed that he is a candidate for treatment. Which of the following could be used to treat his condition?
- Interleukin-1
 - Interleukin-6
 - Interleukin-10
 - INFs

ANS: D

INFs are members of a family of cytokines that protect against viral infections. Interleukin-1 is responsible for fever production. Interleukin-6 stimulates growth and differentiation of blood cells. Interleukin-10 helps decrease the immune response.

REF: p. 144

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28. A 35-year-old male is diagnosed with lobar pneumonia (lung infection). Which of the following exudates would be present in highest concentration at the site of this advanced inflammatory response?
- Serous
 - Purulent
 - Hemorrhagic
 - Fibrinous

ANS: D

Fibrinous exudates occur in the lungs of individuals with pneumonia. Serous fluid is watery fluid, as in a blister. Purulent is characterized by an abscess, such as pus. Hemorrhagic occurs when the exudates are filled with erythrocytes.

REF: p. 149

29. During inflammation, the liver is stimulated to release plasma proteins, collectively known as:
- opsonins.
 - acute phase reactants.
 - antibodies.
 - phagolysosomes.

ANS: B

The synthesis of many plasma proteins by the liver is increased during inflammation. These proteins, which can be either proinflammatory or anti-inflammatory in nature, are referred to as acute phase reactants. Opsonins coat the surface of bacteria and increase their susceptibility to being phagocytized. Antibodies are proteins of the immune system. Phagolysosomes destroy bacteria.

REF: p. 149

30. A 3-year-old is making play cakes in a sandbox and is eating the play cakes. The sand was also being used by cats as a litter box and was contaminated with toxoplasmosis. Which of the following would most likely also be present?
- Granuloma formation
 - Degranulation
 - Blood clots
 - Exudate production

ANS: A

Infections caused by bacteria such as toxoplasmosis can result in granuloma formation. Degranulation is a part of mast cell destruction. Blood clots are not expected with chronic inflammation. Exudate production is pus formation.

REF: p. 150

31. The macrophage secretion that stimulates procollagen synthesis and secretion is:
- angiogenesis factor.
 - matrix metalloproteinase.
 - vascular endothelial growth factor.
 - transforming growth factor-beta.

ANS: D

Macrophages secrete transforming growth factor-beta to stimulate fibroblasts to secrete the collagen precursor procollagen. Angiogenesis factor supports the growth of new vessels. Matrix metalloproteinase remodels proteins at the site of injury. Vascular endothelial growth factors are also involved in vessel growth.

REF: p. 152

32. A 30-year-old male was involved in a motor vehicle accident. The glass from the shattered window cut his face and neck. The scar, however, was raised and extended beyond the original boundaries of the wound. This pattern of scarring is caused by impaired:
- nutritional status.
 - collagen synthesis.
 - epithelialization.
 - contraction.

ANS: B

Impaired production of collagen can cause surface overhealing, leading to a keloid or a hypertrophic scar. Nutritional deficiencies would lead to healing problems, but not extended scarring. Necrosis or steroid use leads to impaired epithelialization. Impaired contraction would lead to drawing of tissues, not raised.

REF: p. 153

33. The nurse is reviewing the lab data of a newly admitted patient. The nurse notes the patient had an erythrocyte sedimentation done, and the results are quite elevated. The nurse would focus the care plan on which of the following conditions?
- Anemia
 - Infection
 - Inflammation
 - Electrolyte imbalance

ANS: C

Common laboratory tests for inflammation measure levels of acute phase reactants. An increase in fibrinogen is associated with an increased erythrocyte sedimentation rate, which is considered a good indicator of an acute inflammatory response. An elevated sedimentation rate is not associated with anemia, infection, or an electrolyte imbalance.

REF: p. 149

34. Healing by secondary intention would occur in which of the following patients? A patient with a:
- sutured surgical wound.
 - stage IV pressure ulcer.
 - paper cut.
 - sunburn.

ANS: B

A patient with a stage IV pressure ulcer would heal by secondary intention. A surgical wound and a paper cut would heal by primary intention. A patient with a sunburn would heal without needing either primary or secondary intention.

REF: p. 152

35. The post-surgical patient is experiencing delayed wound healing. The dietitian believes the delay is related to nutritional intake. A deficiency in which of the following substances could directly affect healing?
- Vitamin D
 - Ascorbic acid
 - Melanin
 - Cholesterol

ANS: B

Most of the factors that interfere with the production of collagen in healing tissues are nutritional. Scurvy, for example, is caused by lack of ascorbic acid—one of the cofactors required for collagen formation by fibroblasts. The results of scurvy are poorly formed connective tissue and greatly impaired healing. Healing is not associated with vitamin D, melanin, or cholesterol.

REF: p. 153

MULTIPLE RESPONSE

1. A nurse remembers that the primary actions of the complement cascade include: (select all that apply)
 - a. increased vascular permeability.
 - b. vasoconstriction.
 - c. chemotaxis.
 - d. opsonization.
 - e. cell killing.
 - f. increased clotting.

ANS: A, C, D, E

The actions of the complement cascade include increased vascular permeability and vasodilation, chemotaxis, opsonization, and cell killing. They do not involve vasoconstriction or increased clotting.

REF: pp. 138-139

2. The nurse is assessing a patient with a diagnosis of inflammation. The nurse would expect to find which of the following signs and symptoms consistent with acute inflammation? (select all that apply)
 - a. Heat
 - b. Erythema
 - c. Pain
 - d. Swelling
 - e. Paleness
 - f. Loss of function

ANS: A, B, C, D, F

The classic symptoms of acute **NURSING B.G.M** include redness (erythema), heat, swelling, pain, and loss of function. Paleness would indicate poor circulation, not inflammation.

REF: p. 137

3. The nurse identified each of the following clinical manifestations of inflammation. Which would the nurse classify as a local response? (select all that apply)
 - a. Fever
 - b. Redness
 - c. Swelling
 - d. Heat
 - e. Pain

ANS: B, C, D, E

Local manifestations of inflammation are the result of the vascular changes associated with the inflammatory process, including vasodilation and increased capillary permeability. The symptoms include redness, heat, swelling, and pain. Fever is a symptom of infection.

REF: p. 149

4. Physical barriers that offer the body protection from damage and infection are located in the: (select all that apply)
 - a. gastrointestinal tract.
 - b. genitourinary tract.

- c. respiratory tract.
- d. lymph system.
- e. hematopoietic system.

ANS: A, B, C

The physical barriers that cover the external parts of the human body offer considerable protection from damage and infection. These barriers are composed of tightly associated epithelial cells of the skin and of the linings of the gastrointestinal, genitourinary, and respiratory tracts.

REF: p. 135

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Chapter 07: Adaptive Immunity

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. Which of the following is responsible for initiating clonal selection?
 - a. T cells
 - b. B cells
 - c. Antigens
 - d. Lymphocytes

ANS: C

The lymphocytes remain dormant until an antigen initiates clonal selection. T cells do not initiate clonal selection. B cells are antibodies. Lymphocytes are released into the circulation as immature cells that react with antigens.

REF: p. 159

2. Which patient will develop active immunity? A patient who:
 - a. has natural exposure to an antigen or receives an immunization.
 - b. receives preformed antibodies or T cells from a donor.
 - c. has T cells that become B cells.
 - d. receives immunoglobulin.

ANS: A

Active immunity occurs either after natural exposure to an antigen or after immunization, not with preformed antibodies or the transformation of T cells into B cells or as a result of receiving immunoglobulin.

REF: p. 159

3. An experiment is designed to determine specific cell types involved in cell-mediated immune response. The experimenter is interested in finding cells that attack cells that have specific antigens. Which cells should be isolated?
 - a. Lymphokine-producing cells
 - b. T-cytotoxic cells
 - c. Helper T cells
 - d. Macrophages

ANS: B

Cell-mediated immunity is driven by T-cytotoxic (Tc) cells that attack antigens directly and destroy cells that bear foreign antigens. Lymphokine-producing cells, helper T cells, and macrophages do not attack antigens directly and destroy cells that bear foreign antigens.

REF: p. 159

4. A 6-year-old female is diagnosed with a bacterial infection of the respiratory system. Which of the following will most likely try to fight the antigen?
 - a. Antibodies
 - b. Cytotoxic T cells

- c. Self-antigens
- d. Helper T cells

ANS: A

Antibodies are produced by plasma cells that mature from lymphocytes, called B lymphocytes (B cells), in response to an antigen. Cytotoxic T cells do not respond to antigens. Self-antigens do not respond to antigens. Helper T cells do not respond to antigens.

REF: p. 164, Figure 7-7

5. Which statement indicates a correct understanding of antibodies? The most abundant class of antibody in the serum is:
- a. IgG.
 - b. IgM.
 - c. IgA.
 - d. IgE.

ANS: A

IgG is the most abundant class of immunoglobulins, constituting 80–85% of the immunoglobulins in the blood.

REF: p. 161

6. The predominant antibody of a typical primary immune response is:
- a. IgG.
 - b. IgM.
 - c. IgA.
 - d. IgE.

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ANS: B

IgM is the largest immunoglobulin and is the first antibody produced during the initial, or primary, response to antigen.

REF: p. 161

7. An immunology nurse is caring for a patient. While planning care, which principle will the nurse remember? The primary role of IgA1 is to prevent infections in the:
- a. blood.
 - b. kidneys.
 - c. lungs.
 - d. mucous membranes.

ANS: A

IgA1 is found predominantly in the blood.

REF: p. 161

8. A 23-year-old pregnant female visits her primary care provider for her final prenatal checkup. The primary care provider determines that the fetus has developed an infection *in utero*. Which of the following would be increased in the fetus at birth?
- a. IgG
 - b. IgA

- c. IgM
- d. IgD

ANS: C

IgM is synthesized early in neonatal life, and its synthesis may be increased as a response to infection *in utero*.

REF: p. 161

9. Which portion of the antibody is responsible for the biologic functions of antibodies?
- a. Heavy chain
 - b. Variable region
 - c. Fc portion
 - d. Epitope

ANS: C

The Fc portion is responsible for most of the functions of antibodies. None of the remaining options are responsible for most of the functions of antibodies.

REF: p. 161

10. A 25-year-old female has sexual relations with her boyfriend. Later she is told that the boyfriend is infected with *Neisseria gonorrhoeae*. Testing reveals that she does not have the disease. How is it possible that she did not contract the disease?
- a. Antibodies covered sites of attachment.
 - b. She was vaccinated against it.
 - c. Platelets provided protection.
 - d. IgE was released.

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ANS: A

Some bacteria, such as *Neisseria gonorrhoeae* that causes gonorrhea, must attach to specific sites on urogenital epithelial cells. Antibodies may protect the host by covering sites on the microorganism that are needed for attachment, thereby preventing infection. Neither a vaccination, the protection of platelets, nor the release of IgE was relevant to the client's ability to avoid contracting this disease.

REF: pp. 162-163

11. A patient has a disease state that results from the secretion of toxins by bacteria. Which medical diagnosis will the nurse see documented on the chart?
- a. Malaria
 - b. Tetanus
 - c. Smallpox
 - d. Hepatitis

ANS: B

Some bacteria secrete toxins that harm individuals. For instance, specific bacterial toxins cause the symptoms of tetanus or diphtheria. This is not true of malaria, smallpox, or hepatitis.

REF: p. 163

12. A 10-year-old male is stung by a bee while playing in the yard. He experiences a severe allergic reaction and has to go to the ER. The nurse providing care realizes this reaction is the result of:
- toxoids.
 - IgA.
 - IgE.
 - IgM.

ANS: C

IgE is normally at low concentrations in the circulation. It has very specialized functions as a mediator of many common allergic responses. Neither toxoids, IgA, nor IgM is the mediator of common allergic response.

REF: p. 164

13. A patient has done research on monoclonal antibodies on the Internet. Which statement indicates a correct understanding? Pure monoclonal antibodies are produced by:
- T lymphocytes.
 - bone marrow.
 - laboratories.
 - fetuses.

ANS: C

Monoclonal antibodies are produced in the laboratory from one B cell that has been cloned; thus, the entire antibody is of the same class, specificity, and function. Pure monoclonal antibodies are not produced by T lymphocytes, bone marrow, or fetuses.

REF: p. 164, Box 7-1

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14. Which of the following statements indicates more teaching is needed regarding secondary lymph organs? _____ is/are a secondary lymphoid organ.
- The spleen
 - Peyer patches
 - Adenoids
 - The liver

ANS: D

The liver is not a secondary lymph organ. The spleen, Peyer patches, and adenoids are secondary lymphoid organs.

REF: p. 161, Figure 7-3

15. A 20-year-old female is applying for nursing school and is required to be tested for immunity against several illnesses. Testing that looks at which of the following would be the best to determine immunity?
- Culture and sensitivity
 - Agglutination
 - Precipitation
 - Titer

ANS: D

The amount of antibody in a serum sample is referred to as the titer; a higher titer indicates more antibodies. Culture determines the type of organism that causes an infection, and sensitivity identifies the antibody it is sensitive to. The terms agglutination and precipitation are not used to identify a test to determine immunity.

REF: p. 167

16. A macrophage was isolated and analyzed for major histocompatibility complex. Which of the following would be expected?
- MHC I only
 - MHC II only
 - MHC I and II
 - Neither MHC I nor MHC II

ANS: C

MHC I and II would be expected.

REF: p. 168

17. A 5-month-old child is admitted to the hospital with recurring respiratory infections. A possible cause of this condition is:
- hypergammaglobulinemia.
 - increased maternal IgG.
 - immune insufficiency.
 - decreased maternal antibody breakdown, resulting in hyposensitivity.

ANS: C

Normal human infants are immunologically immature when born, with deficiencies in antibody production, phagocytic activity, and complement activity, especially components of alternative pathways. They do not possess hypergammaglobulinemia. Possessing increased maternal IgG would not lead to recurring infections. The recurrent infections are due to decreased immunity, not maternal antibody breakdown.

REF: p. 173, Pediatric Considerations

MULTIPLE RESPONSE

1. While planning care for an elderly patient, the nurse remembers that increased age is associated with: (select all that apply)
- increased T-cell function.
 - decreased immune function.
 - increased production of antibodies.
 - decreased numbers of circulating immune complexes.
 - decreased ability to fight infection.

ANS: B, D, E

Increased age is associated with diminished T-cell function, decreased immune function, diminished production of antibody responses, decreased circulating immune complexes, and decreased ability to fight infection.

REF: p. 173, Geriatric Considerations

2. When a patient asks about secondary lymph organs, how should the nurse respond? Secondary lymph organs include: (select all that apply)
- a. the spleen.
 - b. Peyer patches.
 - c. adenoids.
 - d. the liver.
 - e. bone marrow.
 - f. the appendix.

ANS: A, B, C, F

The secondary lymphoid organs include the spleen, lymph nodes, adenoids, tonsils, Peyer patches (intestines), and appendix. The liver and bone marrow are not secondary lymph organs.

REF: p. 161, Figure 7-3

3. Direct effects of antibodies include: (select all that apply)
- a. neutralization.
 - b. agglutination.
 - c. precipitation.
 - d. phagocytosis.
 - e. division.

ANS: A, B, C

Directly, antibodies can affect infectious agents or their toxic products by neutralization (inactivating or blocking the binding of antigen to receptors), agglutination (clumping insoluble particles that are in suspension), or precipitation (making a soluble antigen into an insoluble precipitate). Indirectly, antibodies activate components of innate resistance, including complement and phagocytes. Antibodies are generally a mixed population of classes, specificities, and capacity to provide the functions listed above.

REF: p. 162

Chapter 08: Infection and Defects in Mechanisms of Defense
Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. When a patient asks the nurse what hypersensitivity is, how should the nurse respond?

Hypersensitivity is best defined as:

- a. a reduced immune response found in most pathologic states.
- b. a normal immune response to an infectious agent.
- c. an excessive or inappropriate response of the immune system to a sensitizing antigen.
- d. antigenic desensitization.

ANS: C

Hypersensitivity is an altered immunologic response to an antigen that results in disease or damage to the individual. It is not a reduced immune response or a response to an infectious agent. Antigenic desensitization is performed to decrease hypersensitivity.

REF: p. 199

2. When the maternal immune system becomes sensitized against antigens expressed by the fetus, what type of immune reaction occurs?

- a. Autoimmune
- b. Anaphylaxis
- c. Alloimmune
- d. Allergic

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ANS: C

Alloimmunity can be observed during immunologic reactions against transfusions, transplanted tissue, or the fetus during pregnancy. Autoimmunity is a disturbance in the immunologic tolerance of self-antigens. The most rapid and severe immediate hypersensitivity reaction is anaphylaxis. An allergic response occurs related to exposure to an allergen.

REF: p. 199

3. A patient presents with poison ivy on the extremities, face, and buttocks after an initial exposure 48 hours ago. This condition is an example of:

- a. anaphylaxis.
- b. serum sickness.
- c. delayed hypersensitivity.
- d. viral disease.

ANS: C

The response to poison ivy is a delayed hypersensitivity because it takes up to 72 hours to develop. Anaphylaxis is immediate. Serum sickness-type reactions are caused by the formation of immune complexes in the blood and their subsequent generalized deposition in target tissues. Poison ivy is not a viral disease.

REF: p. 201

4. A 10-year-old male is stung by a bee while playing in the yard. He begins itching and develops pain, swelling, redness, and respiratory difficulties. He is suffering from:
- immunodeficiency.
 - autoimmunity.
 - anaphylaxis.
 - tissue-specific hypersensitivity.

ANS: C

Anaphylaxis occurs within minutes of reexposure to the antigen and can be either systemic (generalized) or cutaneous (localized). Immunodeficiency is a decrease in the immune response. Autoimmunity is a disturbance in the immunologic tolerance of self-antigens. Tissue-specific reaction is an autoimmune reaction.

REF: p. 201

5. When a patient presents at the emergency department for an allergic reaction, the nurse recognizes the most severe consequence of a type I hypersensitivity reaction is:
- urticaria.
 - hives.
 - anaphylaxis.
 - antibody-dependent cell-mediated cytotoxicity (ADCC).

ANS: C

The most rapid and severe immediate hypersensitivity type I reaction is anaphylaxis. Urticaria, or hives, is a dermal (skin) manifestation of allergic reactions. Hives and urticaria are similar responses. ADCC is a mechanism that involves natural killer (NK) cells. Antibodies on the target cell are recognized by Fc receptors on the NK cells, which release toxic substances that destroy the target cell.

REF: p. 201

6. Which information would indicate more teaching is needed regarding hypersensitivity reactions? Type _____ hypersensitivity reactions involve an antibody response.
- I
 - II
 - III
 - IV

ANS: D

Type IV reactions are mediated by T lymphocytes and do not involve antibodies. All the remaining options are associated with antibody responses.

REF: p. 206

7. A 30-year-old male is having difficulty breathing and has been spitting blood. He reports that he began experiencing this reaction after cleaning his pigeons' cages. Testing reveals he is suffering from allergic alveolitis. Which of the following is he experiencing?
- Serum sickness
 - Raynaud phenomenon
 - Antibody-dependent cytotoxicity
 - Arthus reaction

ANS: D

The Arthus reaction is a model of localized or cutaneous reactions. Serum sickness-type reactions are caused by the formation of immune complexes in the blood and their subsequent generalized deposition in target tissues. Typically affected tissues are the blood vessels, joints, and kidneys. Raynaud phenomenon is a condition caused by the temperature-dependent deposition of immune complexes in the capillary beds of the peripheral circulation. Antibody-dependent cytotoxicity is a type II form.

REF: pp. 205-206

8. A nurse recalls that an example of an immune-complex-mediated disease is:
 - a. bronchial asthma.
 - b. contact dermatitis.
 - c. serum sickness.
 - d. rheumatoid arthritis.

ANS: C

Immune-complex disease can be a systemic reaction, such as serum sickness, and related to type III reactions. Bronchial asthma is not an immune-complex-mediated disease and is related to type I reactions. Neither contact dermatitis nor rheumatoid arthritis is related to type III reactions.

REF: p. 205

9. When a nurse cares for a patient with systemic lupus erythematosus (SLE), the nurse remembers this disease is an example of:
 - a. autoimmunity.
 - b. alloimmunity.
 - c. homoimmunity.
 - d. alleimmunity.

N_U^R_S^I_N^G_T^B. C_O^M

ANS: A

SLE is the most common, complex, and serious of the autoimmune disorders. SLE is not identified as alloimmune, homoimmune, or alleimmune.

REF: p. 208

10. A 30-year-old female complains of fatigue, arthritis, rash, and changes in urine color. Laboratory testing reveals anemia, lymphopenia, and kidney inflammation. Assuming a diagnosis of SLE, which of the following is also likely to be present?
 - a. Anti-LE antibodies
 - b. Autoantibodies
 - c. Antiherpes antibodies
 - d. Anti-CMV antibodies

ANS: B

The presence of autoantibodies is a diagnostic criterion for SLE. Diagnostic criterion for SLE would include positive LE. Neither antiherpes nor anti-CMV antibodies are associated with a diagnosis SLE.

REF: p. 208

11. A 40-year-old female is diagnosed with SLE. Which of the following findings would be considered a symptom of this disease?
- Gastrointestinal ulcers
 - Decreased glomerular filtration rate
 - Rash on trunk and extremities
 - Photosensitivity

ANS: D

Photosensitivity is one of the 11 common clinical findings in SLE. Gastrointestinal ulcers are not a finding in SLE. Proteinuria is a symptom of SLE. A rash on the face is a symptom, but not a rash on the body.

REF: p. 208

12. What is the chance that two siblings share both HLA haplotypes, making them a good match for an organ transplant from one to the other?
- 100%
 - 75%
 - 50%
 - 25%

ANS: D

Odds dictate that children will share one haplotype with half their siblings and either no haplotypes or both haplotypes with a quarter of their siblings. Thus, the chance of finding a match among siblings is much higher (25%) than the general population.

REF: p. 210

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13. When a nurse notices that a patient has type O blood, the nurse realizes that anti-_____ antibodies are present in the patient's body.
- A only
 - B only
 - A and B
 - O

ANS: C

Type O individuals have both anti-A and anti-B antibodies but not O.

REF: p. 209

14. In addition to matching ABO antigens, a blood transfusion must also be matched for:
- HLA type.
 - Rh antigen.
 - immunoglobulins.
 - platelet compatibility.

ANS: B

Blood transfusions must also be matched for the Rh antigen. Blood transfusions do not need to be matched to HLA, immunoglobulins, or platelet compatibility.

REF: p. 209

15. A 15-year-old male suffers from severe hemorrhage following a motor vehicle accident. He is given a blood transfusion, but shortly afterward the red blood cells are destroyed by agglutination and lysis. Which of the following blood type/transfusion type matches would cause this?
- A-A
 - B-O
 - AB-O
 - A-AB

ANS: D

A person with type A blood also has circulating antibodies to the B carbohydrate antigen. If this person receives blood from a type AB or B individual, a severe transfusion reaction occurs, and the transfused erythrocytes are destroyed by agglutination or complement-mediated lysis. Type A can receive type A blood. Type B and type AB can receive type O.

REF: p. 209

16. A person is given an attenuated antigen as a vaccine. When the person asks what was given in the vaccine, how should the nurse respond? The antigen is:
- alive, but less infectious.
 - mutated, but highly infectious.
 - normal, but not infectious.
 - inactive, but infectious.

ANS: A

Attenuated vaccines are alive, but less infectious. Attenuated vaccines are not mutated or highly infectious. Inactive infers the virus is killed.

REF: p. 188

17. An immunologist is discussing endotoxin production. Which information should the immunologist include? Endotoxins are produced by:
- gram-negative bacteria.
 - gram-positive bacteria.
 - gram-negative fungi.
 - gram-positive fungi.

ANS: A

Endotoxins are produced by gram-negative bacteria. They are not produced by gram-positive bacteria or any type of fungi.

REF: p. 181

18. A 5-year-old male becomes ill with a severe cough. Histologic examination reveals a bacterial infection, and further laboratory testing reveals cell membrane damage and decreased protein synthesis. Which of the following is the most likely cause of this illness?
- Endotoxin
 - Exotoxin
 - Hemolysis
 - Septicemia

ANS: B

Exotoxins are enzymes that can damage the plasma membranes of host cells or can inactivate enzymes critical to protein synthesis, and endotoxins activate the inflammatory response and produce fever. Endotoxins released by blood-borne bacteria cause the release of vasoactive enzymes that increase the permeability of blood vessels. Hemolysis is the breakdown of red cells. Septicemia is the growth of bacteria in the blood.

REF: p. 180

19. A 50-year-old female experiences decreased blood pressure, decreased oxygen delivery, cardiovascular shock, and subsequent death. A complication of endotoxic shock is suspected. Which of the following is the most likely cause?
- Gram-positive bacteria
 - Fungi
 - Gram-negative bacteria
 - Virus

ANS: C

Symptoms of gram-negative septic shock are produced by endotoxins. Once in the blood, endotoxins cause the release of vasoactive peptides and cytokines that affect blood vessels, producing vasodilation, which reduces blood pressure, causes decreased oxygen delivery, and produces subsequent cardiovascular shock. Gram-positive bacteria nor fungi do not produce endotoxins and thus do not manifest in shock. Viruses do not produce symptoms of shock.

REF: pp. 181-182

20. After studying about viruses, which information indicates the student has a good understanding of viruses? Viruses:
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- contain no DNA or RNA.
 - are capable of independent reproduction.
 - replicate their genetic material inside host cells.
 - are easily killed by antimicrobials.

ANS: C

Virus replication depends totally on the ability of the virus to infect a permissive host cell, a cell that cannot resist viral invasion and replication. Viruses contain both DNA and RNA, are incapable of independent reproduction, and cannot be killed by antimicrobials.

REF: pp. 182-183

21. After studying about fungi, which information indicates a correct understanding of fungi? Fungi causing deep or systemic infections:
- are easily treated with penicillin.
 - are extremely rare.
 - never occur with other infections.
 - are commonly opportunistic.

ANS: D

Diseases caused by fungi are called mycoses. Mycoses are common and can be opportunistic and occur with other infections but are not treatable with penicillin.

REF: p. 184

22. Which information indicates a correct understanding of viral vaccines? Most viral vaccines contain:
- active viruses.
 - attenuated viruses.
 - killed viruses.
 - viral toxins.

ANS: B

Viral vaccines contain live viruses that are weakened (attenuated). Viral vaccines do not contain active viruses, killed viruses, or toxins.

REF: p. 188

23. Which information indicates a good understanding of bacterial vaccines? Most bacterial vaccines contain:
- fully active bacteria.
 - synthetic bacteria.
 - dead bacteria.
 - bacterial toxins.

ANS: C

Vaccines are biological preparations of weakened or dead pathogens that when administered stimulate production of antibodies or cellular immunity against the pathogen without causing disease. Vaccines are not fully active bacteria, nor are they synthetic or toxins.

REF: p. 188

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24. A nurse recalls bacteria become resistant to antimicrobials by:
- proliferation.
 - attenuation.
 - specialization.
 - mutation.

ANS: D

Antibiotic resistance is usually a result of genetic mutations that can be transmitted directly to neighboring microorganisms by plasmid exchange. Antibiotic resistance is not a result of proliferation, attenuation, or specialization.

REF: p. 188

25. What common symptom should be assessed in individuals with immunodeficiency?
- Anemia
 - Recurrent infections
 - Hypersensitivity
 - Autoantibody production

ANS: B

The clinical hallmark of immunodeficiency is a propensity to unusual or recurrent severe infections. The type of infection usually reflects the immune system defect. Neither anemia, autoantibody production, nor hypersensitivity is a manifestation of immunodeficiency.

REF: p. 189

26. A 5-year-old male presents with low-set ears, a fish-shaped mouth, and involuntary rapid muscular contraction. Laboratory testing reveals decreased calcium levels. Which of the following diagnosis is most likely?
- B-lymphocyte deficiency
 - T-lymphocyte deficiency
 - Combined immunologic deficiency
 - Complement deficiency

ANS: B

DiGeorge syndrome results in greatly decreased T cell numbers and function and is evidenced by abnormal development of facial features that are controlled by the same embryonic pouches; these include low-set ears, fish-shaped mouth, and other altered features. B-lymphocyte deficiency is not manifested by these symptoms. Neither combined immunologic deficiency nor complement deficiency is manifested by these symptoms.

REF: p. 191

27. A 22-year-old was recently diagnosed with acquired immunodeficiency syndrome (AIDS). Which decreased lab finding would be expected to accompany this virus?
- CD4+ T-helper
 - CD8 T-helper
 - CDC cells
 - CDC10 cells

ANS: A

The major immunologic finding in AIDS is the striking decrease in the number of CD4+ T cells. The change occurs in CD4 cells, not CD8. Neither CDC nor CDC 10 is a type of cell.

REF: p. 194

28. Which of the following is a characteristic of the human immunodeficiency virus (HIV), which causes AIDS?
- HIV only infects B cells.
 - HIV is a retrovirus.
 - Infection does not require a host cell receptor.
 - After infection, cell death is immediate.

ANS: B

AIDS is an acquired dysfunction of the immune system caused by a retrovirus (HIV) that infects and destroys CD4+ lymphocytes (T-helper cells). HIV infection begins when a virion binds to CD4, not a B cell. Infection requires a host cell receptor. The cell remains dormant but does not die.

REF: p. 194

29. A 30-year-old male was diagnosed with HIV. Which of the following treatments would be most effective?
- Reverse transcriptase inhibitors
 - Protease inhibitors

- c. Entrance inhibitors
- d. Antiretroviral therapy (ART)

ANS: D

The current regimen for treatment of HIV infection is a combination of drugs, termed antiretroviral therapy (ART). The remaining options are individual components of the ART treatment format.

REF: p. 197

30. When the immunologist says that pathogens possess infectivity, what is the immunologist explaining? Infectivity allows pathogens to:
- a. spread from one individual to others and cause disease.
 - b. induce an immune response.
 - c. invade and multiply in the host.
 - d. damage tissue.

ANS: C

Infectivity is the ability of the pathogen to invade and multiply in the host. Communication is the ability to spread from one individual to others and cause disease. Immunogenicity is the ability of pathogens to induce an immune response. Damaging tissues is the pathogen's mechanism of action.

REF: p. 177

31. When the immunologist says that pathogens possess virulence, what does virulence mean?
- a. Spreads from one individual to others and causes disease.
 - b. Induces an immune response.
 - c. Causes disease.
 - d. Damages tissue.

ANS: C

Virulence is the capacity of a pathogen to cause severe disease—for example, measles virus is of low virulence; rabies virus is highly virulent. Communication is the ability to spread from one individual to others and cause disease. Immunogenicity is the ability of pathogens to induce an immune response. Damaging tissues is the pathogen's mechanism of action.

REF: p. 177

32. The nurse would correctly respond that the etiology of a congenital immune deficiency is due to a(n):
- a. negative response to an immunization.
 - b. adverse response to a medication.
 - c. renal failure.
 - d. genetic defect.

ANS: D

A primary (congenital) immune deficiency is caused by a genetic defect. A primary (congenital) immune deficiency is not a response to an immunization, an adverse response to a medication, or due to renal failure.

REF: p. 189

33. An infant is experiencing hemolytic disease of the newborn. Which of the following would the nurse expect to find in the infant's history and physical?
- The mother was exposed to measles.
 - The father was exposed to Agent Orange.
 - The baby is Rh positive.
 - The baby was born 6 weeks prematurely.

ANS: C

Hemolytic disease of the newborn was most commonly caused by IgG anti-D alloantibody produced by Rh-negative mothers against erythrocytes of their Rh-positive fetuses. This disorder is not due to the mother's exposure to measles, the father's exposure to Agent Orange, or the baby's prematurity.

REF: p. 209

MULTIPLE RESPONSE

- A 30-year-old female is diagnosed with systemic lupus erythematosus (SLE). Which symptoms are a result of a type II hypersensitivity?
 - Anemia
 - Seizures
 - Lymphopenia
 - Facial rash
 - Photosensitivity

ANS: A, C

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The patient is experiencing type II hypersensitivity when experiencing anemia and lymphopenia. Seizures, facial rash, and photosensitivity are not associated with type II hypersensitivity reactions.

REF: p. 208

Chapter 09: Stress and Disease

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. A female student is driving to school when another driver nearly hits her. Her heart begins beating harder and faster as she becomes aroused and scared. Which of the following stages of the general adaptation syndrome is she experiencing?
 - a. Alarm stage
 - b. Stage of resistance
 - c. Adaptation
 - d. Exhaustion

ANS: A

The alarm stage, the initial reaction, is manifested by arousal of the body's defenses that prepare the body to fight or flee from threat. This stage involves the secretion of hormones and catecholamines to support physiologic/metabolic activity and boosts the immune system to thwart infection. The stage of resistance/adaptation is the second step as the body attempts to sustain the challenge. Exhaustion marks the breakdown of compensatory mechanisms, when the response can no longer be sustained.

REF: pp. 214-215

2. Exhaustion occurs if stress continues and _____ is not successful.
 - a. flight or fight response
 - b. alarm
 - c. adaptation
 - d. arousal

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ANS: C

Exhaustion occurs if adaptation is not successful. The alarm stage is the emergency reaction that prepares the body to fight or flee from threat. Arousal occurs as the stress is recognized.

REF: p. 215

3. A student arrives at school to find that he/she has an exam for which he/she is unprepared. Which physiological response would be expected?
 - a. Decreased lipolysis
 - b. Bronchoconstriction
 - c. Decreased cortisol release
 - d. Increased glucagon release

ANS: D

The student would experience increased glucagon release to supply the increased glucose requirements. Increased lipolysis and bronchodilation would occur, not constriction. The student would experience increased cortisol release.

REF: p. 219, Table 9-2

4. A 10-year-old female is arriving at a national spelling bee contest. Her heart starts beating faster and harder, and she begins to sweat. Which of the following is she experiencing?
- Anticipatory response
 - Homeostasis
 - Reactive response
 - Exhaustion stage

ANS: A

Anticipation of experiencing these events produces a physiologic stress response. Homeostasis is a steady-state. Reactive response occurs following a stressful event. Exhaustion stage is the final stage of the stressful response, when the body can no longer sustain the response.

REF: p. 215

5. Which of the following hormones enhances myocardial contractility?
- Oxytocin
 - Prolactin
 - Epinephrine
 - Somatotropin

ANS: C

Epinephrine enhances myocardial contractility. Oxytocin activates receptors in the uterus. Prolactin does not activate adrenergic receptors. Somatotropin activates protein and carbohydrate metabolism.

REF: p. 221

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6. A 35-year-old male is diagnosed with a hormone-secreting tumor of the adrenal medulla. He experiences elevated blood pressure and increased anxiety. Which of the following hormones is the predominant one released by the tumor?
- Antidiuretic hormone
 - Acetylcholine
 - Norepinephrine
 - Cortisol

ANS: C

Norepinephrine regulates blood pressure and promotes arousal, increased vigilance, increased anxiety, and other protective emotional responses. Antidiuretic hormone regulates urine output. Acetylcholine will not result in an increase in blood pressure. Cortisol regulates glucocorticoids.

REF: p. 221

7. Stress induces sympathetic stimulation of the adrenal medulla. This causes the secretion of catecholamines, which include:
- epinephrine and aldosterone.
 - norepinephrine and cortisol.
 - epinephrine and norepinephrine.
 - cortisol and aldosterone.

ANS: C

The catecholamines are epinephrine and norepinephrine. Neither aldosterone nor cortisol is a catecholamine.

REF: p. 221

8. A nurse recalls that stress-induced stimulation of the adrenal cortex causes it to secrete:
 - a. estrogen.
 - b. cortisol.
 - c. parathyroid hormone.
 - d. adrenocorticotropin hormone (ACTH).

ANS: B

The adrenal cortex secretes cortisol, not estrogen, parathyroid hormone, or ACTH.

REF: p. 218

9. Stress-induced catecholamine release from the adrenal medulla may result in:
 - a. decreased blood flow to the brain.
 - b. elevated blood pressure.
 - c. decreased glycogen synthesis.
 - d. decreased muscle contraction.

ANS: B

Catecholamine release results in elevated blood pressure as a result of vasoconstriction. Catecholamine release results in increased blood flow to the brain and increased glucose production. Catecholamine release results in increased muscle contraction.

REF: p. 222, Table 9-3

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10. When a patient is diagnosed with a hormone-secreting tumor of the adrenal cortex, which physiological response would be expected?
 - a. Decreased blood pressure
 - b. Increased incidence of gastric ulcers
 - c. Increased lipogenesis of extremities
 - d. Decreased gastric secretion

ANS: B

Increased release of cortisol leads to increased gastric secretions, and therefore an increased incidence of gastric ulcers. Hypertension is a result of increased cortisol. The increase of gastric secretions causes lipolysis, not lipogenesis.

REF: pp. 218-219

11. When assessing the effects of elevated β -endorphins in a patient, which of the following should the nurse monitor?
 - a. Peripheral vasoconstriction
 - b. Hyperglycemia
 - c. Pain inhibition
 - d. Decreased immune cell activity

ANS: C

Elevated β -endorphins activate endorphin (opiate) receptors on peripheral sensory nerves, leading to pain relief or analgesia. None of the other options result from the effects of elevated β -endorphins.

REF: p. 224, Table 9-4

12. After teaching about coping, which information indicates a correct understanding? Coping is best defined as the process of:
- adjusting to disease.
 - preventing psychological distress.
 - mediating anger.
 - managing stressful challenges.

ANS: D

Coping is the process of managing, not adjusting to, stressful challenges that tax the individual's resources. Coping is not preventing psychological distress, nor does it mediate anger.

REF: p. 226

MULTIPLE RESPONSE

1. When teaching about the stress-age syndrome, what information should the nurse include? (select all that apply)
- Decreased cortisol secretion
 - Decreased thyroxine
 - Immunodepression NURSINGTB.COM
 - Increased catecholamine secretion
 - Hypercoagulation of the blood
 - Free-radical damage

ANS: B, C, D, E, F

The stress-age syndrome includes alterations in the excitability of structures of the limbic system and hypothalamus; rise of the blood concentration of catecholamines, ADH, ACTH, and cortisol; decrease in testosterone, thyroxine, and others; alterations of opioid peptides; immunodepression and pattern of chronic inflammation; alterations in lipoproteins; hypercoagulation of the blood; and free-radical damage of cells.

REF: p. 228, Geriatric Considerations

2. When a patient uses repression to deal with psychological stress, which of the following assessment findings should the nurse monitor for? (select all that apply)
- Decreased monocyte counts
 - Increased eosinophil counts
 - Decreased serum glucose
 - Increased pulse rates
 - Increased medication reactions

ANS: A, B, E

Repression is associated with lower monocyte counts, higher eosinophil counts, higher serum glucose, and more self-reported medication reactions in medical outpatients. It is not associated with increased pulse rates and glucose increases, rather than decreases.

REF: p. 227

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Chapter 10: Biology, Clinical Manifestations, and Treatment of Cancer
Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. A patient has a tissue growth that was diagnosed as cancer. Which of the following terms best describes this growth?
 - a. Malignant tumor
 - b. Lipoma
 - c. Meningioma
 - d. Hypertrophy

ANS: A

Some tumors initially described as benign can progress to cancer and then are referred to as malignant tumors. Lipomas are benign growths, while a meningioma is a benign tumor. Hypertrophy refers to tissue overgrowth, but not cancer.

REF: p. 234

2. Which information indicates a nurse understands characteristics of malignant tumors?
 - a. Grows slowly
 - b. Has a well-defined capsule
 - c. Cells vary in size and shape
 - d. Is well differentiated

ANS: C

Malignant tumors have cells ~~NURSINGTB.COM~~ that vary in both size and shape, and they grow rapidly. They are poorly differentiated and not encapsulated.

REF: p. 234

3. A nurse is discussing preinvasive epithelial tumors of glandular or squamous cell origin. What is the nurse describing?
 - a. Tumor in differentiation
 - b. Dysplastic
 - c. Cancer *in situ*
 - d. Cancer beyond (meta) situ

ANS: C

Early-stage growths that are localized to the epithelium and have not invaded are called cancer *in situ*. Cancer *in situ* is early-stage growth and not a tumor in differentiation but is more mature growth. Dysplastic cells do not define cancer *in situ*.

REF: p. 234

4. A 25-year-old male develops a tumor of the breast glandular tissue. What type of tumor will be documented on the chart?
 - a. Carcinoma
 - b. Adenocarcinoma
 - c. Sarcoma

- d. Lymphoma

ANS: B

Tumors that arise from or form ductal or glandular structures are named adenocarcinomas. Cancers arising in epithelial tissue are called carcinomas; mesenchymal tissue (including connective tissue, muscle, and bone) usually have the suffix sarcoma; lymphatic tissue are called lymphomas.

REF: p. 234

5. A 30-year-old female is diagnosed with cancer. Testing reveals that the cancer cells have spread to local lymph nodes. A nurse realizes this cancer would be documented as stage:
- 1.
 - 2.
 - 3.
 - 4.

ANS: C

Cancer that has spread to regional structures, such as lymph nodes, is stage 3. Cancer confined to the organ of origin is stage 1. Cancer that is locally invasive is stage 2. Cancer that has spread to distant sites, such as a liver cancer spreading to lung or a prostate cancer spreading to bone, is stage 4.

REF: p. 259, Figure 10-22

6. An oncologist is discussing when a cancer cell loses differentiation. Which of the following is the oncologist describing?
- Autonomy
 - Anaplasia
 - Pleomorphic
 - Metastasis

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ANS: B

Anaplasia, not autonomy, is the loss of differentiation. The term pleomorphic refers to a marked variability of size and shape. A malignant tumor has the ability to spread far beyond the tissue of origin by the process of metastasis.

REF: p. 234

7. A primary care provider is attempting to diagnose cancer and is looking for a tumor marker. Which of the following could be a possible marker?
- Red blood cells
 - Apoptotic cells
 - Enzymes
 - Neurotransmitters

ANS: C

Tumor markers include hormones, enzymes, genes, antigens, and antibodies, but not red blood cells, apoptotic cells, or neurotransmitters.

REF: p. 258

8. A 52-year-old male with hepatitis C recently developed hepatic cancer. Which of the following markers should be increased?
- Alpha-fetoprotein (AFP)
 - Catecholamines
 - Prostate-specific antigen
 - Homovanillic acid

ANS: A

Liver and germ cell tumors secrete a protein known as AFP, not catecholamines. Prostate tumors secrete prostate-specific antigen. Homovanillic acid is a catecholamine marker.

REF: p. 259, Table 10-7

9. Which information should the nurse include when teaching about angiogenic factors? In cancer, angiogenic factors stimulate:
- release of growth factors.
 - tumor regression.
 - apoptosis.
 - new blood vessel growth.

ANS: D

Cancers can secrete multiple factors that stimulate new blood vessel growth called angiogenesis, not release of growth factors or tumor regression. Apoptosis is cell death.

REF: pp. 245-246

10. What is the effect of telomere caps on cancer cells?
- Repeated divisions
 - Clonal distinction
 - Limited mitosis
 - Mutation abilities

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ANS: A

The presence of telomere caps gives cancer cells the ability to divide over and over again, thus cancer cells have unlimited mitosis. Telomere caps do not give cells clonal distinction. Mutation capability is a characteristic of cancer cells, but this property is not related to telomeres.

REF: p. 245

11. Which of the following indicates a nurse understands a proto-oncogene? A proto-oncogene is best defined as a(n) _____ gene.
- normal
 - altered
 - inactive
 - tumor-suppressor

ANS: A

In its normal, nonmutant state, an oncogene is referred to as a proto-oncogene. A proto-oncogene is not an altered gene, an inactive gene, or a tumor-suppressor gene.

REF: p. 240

12. Which genetic change causes alterations in only one or a few nucleotide bases?
- Insertions
 - Deletions
 - Point mutations
 - Amplification mutations

ANS: C

Genetic changes may occur by both mutational and epigenetic mechanisms. Mutation generally means an alteration in the DNA sequence affecting expression or function of a gene. Mutations include small-scale changes in DNA, such as point mutations, which are the alteration of one or a few nucleotide base pairs. The process involved with insertions, deletions, or amplification mutations is different.

REF: p. 237

13. A 45-year-old female was recently diagnosed with cervical cancer. Which of the following is the most likely cause of her cancer?
- Herpes virus
 - Rubella virus
 - Human papillomavirus (HPV)
 - Hepatitis B virus

ANS: C

The presence of HPV is a factor in cervical cancer. The presence of herpes virus, rubella virus, or hepatitis B virus is not a factor in cervical cancer.

REF: p. 250

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14. A 30-year-old male with HIV is diagnosed with Epstein-Barr virus. After 2 months, the virus is still active. Based upon the Epstein-Barr virus, which of the following cancers is most likely to develop in this patient?
- B-cell lymphoma
 - Kaposi sarcoma
 - T-cell leukemia
 - T-cell lipoma

ANS: A

Epstein-Barr virus is associated with B-cell lymphoma. Kaposi sarcoma is associated with HIV. Retroviruses are associated with leukemia. Lipomas are not associated with HIV.

REF: p. 250

15. A 45-year-old male presents with persistent, severe stomach pain. Testing reveals a peptic ulcer. Further laboratory tests reveal the presence of *Helicobacter pylori*. Which of the following is of concern for this patient?
- Gastric cancer
 - Leukemia
 - Lung cancer
 - Adenocarcinoma of the colon

ANS: A

The presence of *Helicobacter pylori* is associated with gastric cancer, not leukemia, lung cancer, or colon cancer.

REF: p. 249

16. Which statement indicates the patient has a correct understanding of metastasis? The most common route of metastasis is through the blood vessels and:
- lung tissue.
 - body cavities.
 - lymphatics.
 - connective tissues.

ANS: C

The most common route of metastasis is through the lymphatics, not lung tissue, body cavities, or connective tissues.

REF: p. 253

17. A nurse is giving an example of inflammation as an etiology for cancer development. What is the best example the nurse should give?
- Pneumonia and lung cancer
 - Ulcerative colitis and colon cancer
 - Prostatic hypertrophy and prostate cancer
 - Hypercholesterolemia and leukemia

ANS: B

Individuals with a 10+ year history of ulcerative colitis have a 30-fold increase in developing colon cancer. There is no relationship between pneumonia and lung cancer; between prostatic hypertrophy and cancer of the prostate; and between hypercholesterolemia and leukemia.

REF: pp. 248-249

18. A patient asks when adjuvant chemotherapy is used. How should the nurse respond? Adjuvant chemotherapy treatment is used:
- as the primary treatment.
 - before radiation therapy.
 - after surgical removal of a tumor.
 - in cancer with little risk of metastasis.

ANS: C

Adjuvant chemotherapy is given after surgical excision of a cancer with the goal of eliminating micrometastases. Adjuvant chemotherapy is not given as the primary treatment or before radiation therapy. Adjuvant chemotherapy is indicated in the treatment of individuals with metastasis.

REF: p. 261

MULTIPLE RESPONSE

1. Brachytherapy is being used to treat cancer in a patient. What types of cancers respond well to brachytherapy? (select all that apply)

- a. Prostate
- b. Cervix
- c. Head
- d. Neck
- e. Lung

ANS: A, B, C, D

Radiation sources can be temporarily placed into body cavities through a delivery method termed brachytherapy. Brachytherapy is useful in the treatment of cervical, prostate, and head and neck cancers. It is not used in the treatment of lung cancer.

REF: p. 260

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Chapter 11: Cancer Epidemiology

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. The most important environmental risk factor for cancer is exposure to:
 - a. ultraviolet (UV) radiation.
 - b. radon.
 - c. estrogen.
 - d. cigarette smoke.

ANS: D

UV radiation is an important risk factor as are radon and estrogen exposure, but cigarette smoking remains the most important cause of cancer.

REF: p. 274

2. When an oncologist is discussing the degree to which an organism's development is contingent on its environment, which of the following is the oncologist explaining?
 - a. Transgenerational inheritance
 - b. Epigenetics
 - c. Histone modification
 - d. Developmental plasticity

ANS: D

Developmental plasticity is the degree to which an organism's development is contingent on its environment. Transgenerational inheritance is the heritable transmission to future generations of environmentally caused phenotypes. Epigenetics is the role of genes in development and disease. Histone modifications are changes in genetic acetylation.

REF: p. 272

3. Chromosome aberrations and mutations in cells that were not directly irradiated are referred to as:
 - a. bystander effects.
 - b. lethal mutation.
 - c. delayed reproductive death.
 - d. genetic instability.

ANS: A

The directly irradiated cells can lead to genetic effects in the so-called bystander cells or innocent cells. This is termed bystander effects. Lethal mutation and delayed reproductive death are similar phenomena and are not related to bystander effects. Genetic instability is related to chromosomal instability.

REF: p. 286

4. A patient develops skin cancer on the head and neck following years of sunbathing. Which of the following cancers is most likely?
 - a. Lymphoma

- b. Adenoma
- c. Basal cell carcinoma
- d. Leukemia

ANS: C

Basal cell carcinoma is related to UV radiation primarily from the sun. Neither lymphoma, adenoma, nor leukemia is related to sunbathing.

REF: p. 287

5. A nurse recalls physical activity was shown to definitely reduce the risk of which of the following types of cancer?
- a. Prostate
 - b. Lung
 - c. Bone
 - d. Colon

ANS: D

Physical activity has been proven to reduce the risk for breast and colon cancers, but its effect in reducing prostate, lung, or bone cancer is not as strong.

REF: p. 276

6. A 65-year-old patient recently diagnosed with cancer retired from construction work. Which cancer is likely to develop secondarily to occupational hazards?
- a. Mesothelioma
 - b. Bladder cancer
 - c. Prostate cancer
 - d. Bone cancer

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ANS: A

One notable occupational factor is asbestos, which increases the risk of mesothelioma, lung cancer, and possibly others. The same risk of bladder, prostate, or bone cancer does not exist.

REF: p. 293

7. A patient asks why indoor pollution is worse than outdoor pollution. How should the nurse respond? Indoor pollution is considered worse than outdoor pollution because of cigarette smoke and:
- a. fireplace wood smoke.
 - b. radon.
 - c. benzene.
 - d. chlorine.

ANS: B

Indoor pollution is related to cigarette smoke and radon. Indoor pollution is not related to fireplace smoke, benzene, or chlorine.

REF: pp. 292-293

8. A water test recently revealed arsenic levels above 200 mcg/L. Which of the following cancers would be most likely to develop in those who consistently drank the water?

- a. Liver
- b. Skin
- c. Colon
- d. Kidney

ANS: B

Evidence indicates an increased risk of bladder, skin, and lung cancers following consumption of water with high levels of arsenic. Evidence for cancers of the liver, colon, and kidney is weaker following consumption of water with high levels of arsenic.

REF: p. 293

9. When an oncologist is teaching about how radiation induces genomic instability, which topic should the oncologist discuss?
- a. Increasing hypersensitivity
 - b. Facilitating new mutations
 - c. Promoting cell death
 - d. Enhancing mitosis

ANS: B

Radiation induces genomic instability because it facilitates new mutations but it does not promote hypersensitivity. Radiation may promote cell death, but this is not its role in inducing genomic instability. Radiation does not enhance mitosis but halts it.

REF: p. 286

10. Which of the following patients would be at greatest risk for basal cell carcinoma?
- a. Dark complexion, light eyes, underweight. ~~YUFSN.COM~~
 - b. Light complexion, dark eyes, overweight
 - c. Medium complexion, light eyes, smoker
 - d. Light complexion, light eyes, fair hair

ANS: D

Individuals at risk for basal cell carcinoma have light complexions, light eyes, and fair hair.

REF: p. 287

11. The role of physical activity in the prevention of colon cancer is identified by which of the following?
- a. It increases fluid loss, leading to thirst and increased fluid intake, hydrating the colon.
 - b. It increases blood supply, thereby increasing oxygen to the colon.
 - c. It increases gut motility, thereby decreasing the time the bowel is exposed to mutagens.
 - d. It increases the secretion of hydrochloric acid, thereby killing mutants.

ANS: C

Physical activity increases gut motility, thereby decreasing exposure to mutagens. Physical activity does increase fluid loss and blood supply, but neither effect prevents mutagens. Physical activity does not increase hydrochloric acid.

REF: p. 283

MULTIPLE RESPONSE

1. A 50-year-old female confirms chronic alcohol intake. This practice places the patient at risk for cancer in which organs? (select all that apply)
 - a. Larynx
 - b. Esophagus
 - c. Liver
 - d. Lung
 - e. Brain
 - f. Breast

ANS: A, B, C, F

Chronic alcohol consumption is a *strong* risk factor for colorectal cancer and cancer of the oral cavity, pharynx, hypopharynx, larynx, esophagus, liver, and breast. It is not associated with lung or brain cancer.

REF: p. 281

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Chapter 12: Cancer in Children

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. What is the origin of most childhood cancers?
 - a. Placenta
 - b. Environment
 - c. Mesodermal germ layer
 - d. Neural tube

ANS: C

Most childhood cancers originate from the mesodermal germ layer that gives rise to connective tissue, bone, cartilage, muscle, blood, blood vessels, the gonads, the kidney, and the lymphatic system. Most childhood cancers do not originate from the placenta or the environment. Neural tubes are generally not associated with cancer.

REF: p. 301

2. Which characterizes an embryonic cancer tumor?
 - a. Commonly occurring
 - b. Often seen in adults
 - c. Composed of mature, differentiated cells
 - d. Usually manifested around age 5

ANS: D

These types of cancers usually manifest around age 5. These types of cancers are not commonly occurring, seen in adults, or composed of undifferentiated cells.

REF: p. 301

3. A nurse is preparing to teach the most common malignancy in children. Which malignancy should the nurse discuss?
 - a. Leukemia
 - b. Neuroblastoma
 - c. Wilms tumor
 - d. Retinoblastoma

ANS: A

The most common malignancy in children is leukemia. Tumors of the nervous system, Wilms tumors, and retinoblastoma occur less frequently.

REF: p. 302, Table 12-1

4. A 3-year-old female was diagnosed with Wilms tumor. This disease is a tumor of the:
 - a. kidney.
 - b. brain.
 - c. bone marrow.
 - d. liver.

ANS: A

Wilms tumor is a tumor found in the kidney, not the brain, the bone marrow, or the liver.

REF: p. 303

5. The nurse explains to a parent that young children diagnosed with Down syndrome are at higher risk for developing:
 - a. nephroblastoma.
 - b. rhabdomyosarcoma.
 - c. leukemia.
 - d. retinoblastoma.

ANS: C

One of the more recognized syndromes is the association of trisomy 21 and Down syndrome, with an increased susceptibility to acute leukemia, not nephroblastoma, rhabdomyosarcoma, or retinoblastoma.

REF: p. 303

6. What event occurs in about 70% of the cases of childhood cancers?
 - a. Cured
 - b. Required only chemotherapy
 - c. Participated in clinical trials
 - d. Developed a secondary malignancy

ANS: A

More than 70% of children diagnosed with cancer are cured. Some of the factors leading to improved cure rates in pediatric oncology include the use of combination chemotherapy or multimodal treatment for solid childhood tumors and improvements in nursing and supportive care. A partial explanation for the relative lack of progress in curing the adolescent population at the same rate as that realized in the younger pediatric population is the lack of participation in clinical trials. While survivors of childhood cancer are at increased risk of developing a second malignancy later in life, it is not as frequent as 70%.

REF: p. 305

7. A 40-year-old female developed adenocarcinoma of the vagina. Which prenatal event is the most likely cause of her cancer?
 - a. Rb gene mutation
 - b. Exposure to diethylstilbestrol (DES)
 - c. Exposure to solvents
 - d. Exposure to radiation

ANS: B

The patient with adenocarcinoma of the vagina most likely experienced prenatal exposure to DES, not an Rb gene mutation or exposure to solvents or radiation.

REF: pp. 303-304

8. A 16-year-old with aspirations of becoming a bodybuilder spends 3 hours a day in the gym. Five years later a hepatocellular carcinoma is discovered. Which of the following is the most likely cause of the cancer?
 - a. Immunosuppressive agents

- b. Cytotoxic agents
- c. Anabolic steroids
- d. A viral infection

ANS: C

A history of anabolic steroids, not immunosuppressive or cytotoxic agents, places the patient at risk for hepatocellular carcinoma. A viral infection does not place the patient at risk for hepatocellular carcinoma.

REF: p. 305, Table 12-5

9. The most common type of tissue cancer occurring between ages 15 and 19 is:
- a. sarcoma.
 - b. squamous cell.
 - c. carcinoma.
 - d. neuroma.

ANS: C

The most common type of tissue cancer after adolescence is carcinoma, not sarcoma, squamous cell, or neuroma.

REF: p. 301

MULTIPLE RESPONSE

1. When an aide asks why carcinomas rarely occur in childhood, how should the nurse respond? (select all that apply) N_oR_eT₋G₋B₋C₋M
- a. Carcinomas cannot develop in an immunosuppressed environment.
 - b. Carcinomas need a long time from exposure to occurrence.
 - c. Carcinomas are due to environmental exposures.
 - d. Carcinomas occur primarily in secondary sexual organs.
 - e. Carcinomas are mesodermal.

ANS: B, C

Carcinomas rarely occur in children because these cancers most commonly result from environmental carcinogens and require a long period from exposure to the appearance of the carcinoma.

REF: p. 301

Chapter 13: Structure and Function of the Neurologic System

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. When a patient asks what the somatic nervous system controls, how should the nurse respond?
It controls:
 - a. the heart.
 - b. the spinal cord.
 - c. skeletal muscle.
 - d. smooth muscle organs.

ANS: C

The somatic nervous system consists of pathways that regulate voluntary motor control, the skeletal muscle system. The somatic nervous system does not control the heart; the autonomic nervous system controls the heart, the spinal cord, and the smooth muscle organs.

REF: p. 307

2. A nurse is preparing to teach about nerves. Which information should the nurse include? The axon leaves the cell body at the:
 - a. axon hillock.
 - b. Nissl body.
 - c. node of Ranvier.
 - d. myelin sheath.

ANS: A

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The axon hillock is the cone-shaped process where the axon leaves the cell body. The Nissl body is involved in protein synthesis. Axons branch at the node of Ranvier. The myelin sheath covers the entire membrane.

REF: p. 308

3. When a student asks in which region of the neuron do nerve impulses travel the fastest, how should the nurse respond? The:
 - a. large axon.
 - b. axon hillock.
 - c. cell body.
 - d. dendrites.

ANS: A

Large axons transmit impulses at a faster rate than cell bodies. The axon hillock has a low threshold level. The dendrites carry impulses toward the cell body, but not as quickly as large axons.

REF: p. 308

4. A neurologist is teaching the staff about motor neurons. Which structural classification identifies motor neurons?
 - a. Unipolar

- b. Pseudounipolar
- c. Bipolar
- d. Multipolar

ANS: D

A motor neuron is typically multipolar. Unipolar neurons are found in the retina.

Pseudounipolar neurons have one process; the dendritic portion of each of these neurons extends away from the CNS, and the axon portion projects into the CNS. Bipolar neurons are found in the eye.

REF: p. 308

5. An experiment looking at an isolated neuron revealed a sensory nerve with one process containing a dendritic portion extending away from the CNS and an axon extending toward the CNS. Which of the following classifications would this neuron fall into?
- a. Bipolar
 - b. Multipolar
 - c. Pseudounipolar
 - d. Interpolar

ANS: C

Pseudounipolar neurons have one process; the dendritic portion of each of these neurons extends away from the CNS, and the axon portion projects into the CNS. Bipolar neurons have two distinct processes arising from the cell body. Multipolar neurons are the most common and have multiple processes capable of extensive branching. A motor neuron is typically multipolar. Interpolar is not a type of neuron.

REF: p. 308

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6. A cell was isolated from the CNS. A researcher revealed that its main function was to clear cellular debris. What type of cell is the researcher studying?
- a. Astrocyte
 - b. Ependymal cell
 - c. Microglia
 - d. Schwann cell

ANS: C

Microglia remove debris (phagocytosis) in the CNS. Astrocytes and ependymal cells are neuroglial cells and do not have phagocytic properties. Schwann cells help form the myelin sheath in the peripheral nervous system (PNS).

REF: p. 308

7. Which neurons have the capacity for regeneration?
- a. Unmyelinated neurons in the brain
 - b. Myelinated neurons in the spinal cord
 - c. Myelinated peripheral neurons
 - d. Postganglionic motor neurons

ANS: C

Regeneration is limited to myelinated fibers and generally occurs only in the PNS. Regeneration does not occur in unmyelinated neurons, myelinated neurons in the spinal cord, or postganglionic motor neurons.

REF: p. 309

8. When a presynaptic neuron is stimulated in a patient's body by an electrical current, neurotransmitters are released from the:
 - a. synapse.
 - b. synaptic bouton.
 - c. synaptic cleft.
 - d. receptor.

ANS: B

When an impulse originates in a presynaptic neuron, the impulse reaches the vesicles, where chemicals (neurotransmitters) are stored in the synaptic bouton. Neurons are not physically continuous with one another. The region between adjacent neurons is called a synapse. The synaptic cleft is the space between the neurons. Neurotransmitters attach to the receptor.

REF: p. 311

9. Neurotransmitters interact with the postsynaptic membrane by binding to which structure?
 - a. Receptor
 - b. Nissl body
 - c. Glial cell
 - d. Neurofibril

ANS: A

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Neurotransmitters bind to a receptor. The Nissl body is involved in protein synthesis. Neurotransmitters do not bind to glial cells. Neurofibrils provide support for the neuron.

REF: p. 311

10. If a neuron's membrane potential is held close to the threshold potential by excitatory postsynaptic potentials (EPSPs), the neuron is said to be:
 - a. hyperpolarized.
 - b. facilitated.
 - c. integrated.
 - d. inhibited.

ANS: B

Facilitation refers to the effect of EPSP on the plasma membrane potential. The postsynaptic neuron's plasma membrane may be inhibited, which is called hyperpolarized. When the neuron's membrane potential is held close to the threshold potential, the neuron is facilitated, not integrated or inhibited.

REF: p. 311

11. A patient brought to the emergency room (ER) with severe burns is requesting something for the excruciating pain and is medicated with morphine, which blocks which of the following neurotransmitters, thus reducing the pain?
 - a. Enkephalin

- b. Dopamine
- c. Acetylcholine
- d. Substance P

ANS: D

Substance P is a neurotransmitter in pain transmission pathways. Blocking the release of substance P by morphine reduces pain. The opiates morphine and heroin bind to endorphin and enkephalin receptors on presynaptic neurons. Dopamine is a neurotransmitter involved in activity. Acetylcholine plays a role in nerve conduction presynaptically.

REF: p. 312, Table 13-2

12. A 19-year-old college student reports to his primary care provider that he cannot stay awake in class regardless of how much sleep he gets. Under-stimulation of which area of the brain is likely the site of the problem?
- a. Corpora quadrigemina
 - b. Reticular activating system
 - c. Cerebellum
 - d. Hypothalamus

ANS: B

The reticular activating system is responsible for wakefulness, not the corpora quadrigemina, the cerebellum, or the hypothalamus.

REF: p. 313

13. After rehabilitation for severe brain damage following a motor vehicle accident, a patient reports that her thought processes and ability to concentrate are impaired. Which area does the nurse suspect is damaged?
- a. Thalamus
 - b. Limbic
 - c. Prefrontal
 - d. Occipital

ANS: C

The prefrontal area is responsible for goal-oriented behavior (e.g., ability to concentrate), short-term or recall memory, the elaboration of thought, and inhibition of the limbic areas of the CNS. Goal-oriented behavior is not the function of the thalamus, limbic system, or occipital area.

REF: p. 313

14. A neurologist is teaching about the region responsible for motor aspects of speech. Which area is the neurologist discussing?
- a. Wernicke area
 - b. Broca area
 - c. Brodmann area 4
 - d. Brodmann area 6

ANS: B

The Broca area is responsible for the motor aspects of speech. Motor aspects of speech are not the function of the Wernicke area or Brodmann areas 4 and 6.

REF: p. 314

15. A patient is looking at a picture of the brain and points to the convolutions on the surface of the cerebrum. The nurse should tell the patient these are called:
- sulci.
 - fissures.
 - reticular formations.
 - gyri.

ANS: D

The surface of the cerebrum (cerebral cortex) is covered with convolutions called gyri, which greatly increase the cortical surface area and the number of neurons. Neither sulci, fissures, nor reticular formations cover the cerebrum in a fashion that increases its surface.

REF: p. 313

16. Where is the primary visual cortex of the brain located?
- Frontal lobe
 - Temporal lobe
 - Occipital lobe
 - Parietal lobe

ANS: C

The visual cortex is located in the occipital lobe.

REF: p. 314

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17. A nurse is preparing to teach about functions to maintain homeostasis and instinctive behavioral patterns. Which area of the brain is the nurse discussing?
- Thalamus
 - Medulla
 - Cerebellum
 - Hypothalamus

ANS: D

The hypothalamus functions to maintain a constant internal environment and instinctive behavioral patterns. The thalamus serves as a relay center for information from the basal ganglia and cerebellum to the appropriate motor area. The medulla controls reflex activities, such as heart rate, respiration, blood pressure, coughing, sneezing, swallowing, and vomiting. The cerebellum is responsible for reflexive, involuntary fine-tuning of motor control, for maintaining balance and posture through extensive neural connections.

REF: p. 317, Box 13-2

18. When a nurse is teaching about the transverse fiber tract that connects the two cerebral hemispheres, what term should the nurse use?
- Peduncle
 - Corpus callosum
 - Basal ganglia
 - Pons

ANS: B

The corpus callosum connects the two cerebral hemispheres and is essential in coordinating activities between hemispheres. The peduncle is made up of efferent fibers of the corticospinal, corticobulbar, and corticopontocerebellar tracts. The basal ganglia is a portion of the pyramidal system. The pons (bridge) is easily recognized by its bulging appearance below the midbrain and above the medulla.

REF: p. 315

19. A student nurse asks the nurse what controls reflex activities concerned with heart rate and blood pressure. What is the nurse's best response? These reflex activities are controlled by the:
- medulla oblongata.
 - pons.
 - midbrain.
 - cerebrum.

ANS: A

The medulla oblongata, not the pons, controls reflex activities, such as heart rate, respiration, blood pressure, coughing, sneezing, swallowing, and vomiting. The midbrain is primarily a relay center for motor and sensory tracts, as well as a center for auditory and visual reflexes. The cerebrum plays a role in the transfer of information.

REF: p. 317

20. Blockage of which of the following would cause hydrocephalus?
- Cerebral aqueduct
 - Inferior colliculi
 - Red nucleus
 - Tegmentum

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ANS: A

Blockage of the cerebral aqueduct leads to hydrocephalus. Hydrocephalus is not a result of dysfunction of the inferior colliculi, red nucleus, or tegmentum.

REF: p. 317

21. A patient presents with altered respiratory patterns following head trauma. Based on the symptoms, which of the following areas does the nurse suspect is injured?
- Cerebrum
 - Cerebellum
 - Midbrain
 - Reticular formation

ANS: D

The reticular formation is a large network of diffuse nuclei that control vital reflexes, such as those controlling cardiovascular function and respiration. Respiratory function is not controlled by the cerebrum, cerebellum, or midbrain.

REF: p. 313

22. A nurse recalls that characteristics of upper motor neurons include:

- a. directly innervating muscles.
- b. influencing and modifying spinal reflex arcs.
- c. cell bodies located in the gray matter of the spinal cord.
- d. dendritic processes extending out of the CNS.

ANS: B

Upper motor neurons are completely contained within the CNS. Their primary roles are controlling fine motor movement and influencing/modifying spinal reflex arcs and circuits. They do not innervate muscles. Lower motor neurons interact with gray matter. Dendrites are part of neurons.

REF: p. 320

23. A nurse is teaching about the area of the spinal cord that contains cell bodies involved in the autonomic nervous system. Which of the following areas is the nurse discussing?
- a. Anterior horn
 - b. Ventral horn
 - c. Lateral horn
 - d. Dorsal horn

ANS: C

The lateral horn contains cell bodies within the autonomic nervous system. Both the anterior and ventral horns contain the nerve cell bodies for efferent pathways that leave the spinal cord by way of spinal nerves. The dorsal horn contains sensory neurons.

REF: p. 319

24. A neurologist is teaching about sensory pathways. Which information should the neurologist include? Sensory pathways in the spinal cord to the thalamus are included in the:
- a. corticospinal tract.
 - b. pyramids.
 - c. spinothalamic tract.
 - d. anterior column.

ANS: C

The spinothalamic tract carries nerve impulses from the spinal cord to the thalamus in the diencephalon; the corticospinal tract carries motor impulses. The pyramids assist with motor movements. The anterior column carries nerve impulses.

REF: p. 319

25. A nurse is discussing the membrane that separates the cerebellum from the cerebrum. What term should the nurse use to describe this membrane?
- a. Tentorium cerebelli
 - b. Falx cerebri
 - c. Arachnoid membrane
 - d. Temporal lobe

ANS: A

The tentorium cerebelli, a common landmark, is a membrane that separates the cerebellum below from the cerebral structures above. The cerebellum is not separated by the falx cerebri, the arachnoid membrane, or the temporal lobe.

REF: p. 321

26. What term should the nurse use when talking about the outermost membrane surrounding the brain?
- Dura mater
 - Arachnoid mater
 - Pia mater
 - Falx cerebri

ANS: A

The dura mater is the outer layer of the brain. The arachnoid is a spongy, web-like structure that loosely follows the contours of the cerebral structures. The pia mater adheres to the contours of the brain. The falx cerebri dips between the two cerebral hemispheres along the longitudinal fissure.

REF: p. 321

27. Cerebrospinal fluid (CSF) can accumulate around the brain when there is injury to the sites of CSF reabsorption, which are called the:
- arachnoid villi.
 - epidural foramina.
 - lateral apertures.
 - choroid plexuses.

ANS: A

CSF is reabsorbed through a pressure gradient between the arachnoid villi and the cerebral venous sinuses. CSF absorption does not occur in the epidural foramina, the lateral apertures, or the choroid plexuses.

REF: p. 322

28. Which structure ensures collateral blood flow from blood vessels supplying the brain?
- Carotid arteries
 - Basal artery
 - Circle of Willis
 - Vertebral arteries

ANS: C

The circle of Willis ensures collateral blood circulation. Collateral circulation is not associated with the basal artery or the vertebral arteries. The carotid arteries supply the brain.

REF: p. 323

29. What type of cell supports the forming of the blood-brain barrier (BBB)?
- Endothelial
 - Schwann
 - Oligodendrocyte
 - Astrocyte

ANS: D

Endothelial cells in brain capillaries, with their intracellular tight junctions, are the sites of the BBB. Supporting cells include astrocytes, pericytes, and microglia. Schwann cells provide structural support and nutrition for the neurons. Oligodendrocytes form the myelin sheaths.

REF: p. 324

30. When a patient's vagus nerve is stimulated, what does the nurse expect to observe?
- Increased gastrointestinal activity
 - Increased heart rate
 - Pupil constriction
 - Vasoconstriction

ANS: A

Stimulation of the vagus nerve increases gastrointestinal activity. Stimulation of the vagus decreases heart rate, causes pupil dilation, and leads to vasodilation.

REF: p. 332

31. A patient suffers from head trauma that affects cranial nerve I. Which of the following symptoms would the nurse expect?
- Visual disturbances
 - Loss of sense of smell
 - Loss of ability to taste
 - Hearing disturbances

ANS: B

Cranial nerve I controls the sense of smell. Visual disturbances are associated with cranial nerve II. Cranial nerve VII is related to tasting. Cranial nerve VIII is related to hearing.

REF: p. 328, Table 13-6

32. Which neurotransmitter is released when a patient's parasympathetic motor neurons are stimulated?
- Epinephrine
 - Serotonin
 - Acetylcholine
 - Substance P

ANS: C

Parasympathetic motor neurons release acetylcholine. Adrenergic motor neurons release epinephrine. Serotonin is associated with the brain. Substance P is a neurotransmitter in pain transmission pathways. Blocking the release of substance P by morphine reduces pain.

REF: p. 329

33. Which action will occur when a patient's α_1 -receptors are stimulated?
- Dilation of the coronary arteries
 - Vasoconstriction of arteries
 - Increase in the strength of myocardial contraction
 - Decrease in the rate of myocardial contraction

ANS: C

Stimulation of α_1 -receptors results in increased strength and rate of myocardial contraction. α_1 -receptor stimulation does not affect the coronary arteries. α_1 -receptor stimulation leads to dilation.

REF: pp. 331-332, Table 13-7

34. A patient begins taking a new drug that causes pupil dilation, vasoconstriction, decreased gastrointestinal motility, and goose bumps. Which of the following receptors are activated?
- α_1
 - A_2
 - β_1
 - B_2

ANS: A

α_1 stimulation leads to pupil dilation. α_2 stimulation leads to inhibition of intestinal secretions. β_1 stimulation leads to miosis or pupillary constriction. β_2 stimulation leads to pupillary constriction.

REF: pp. 331-332, Table 13-7

35. The nurse is assessing the patient with a pen light. The integrity of which cranial nerve is being evaluated?
- Olfactory
 - Vagus
 - Oculomotor
 - Trigeminal

ANS: C

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In evaluating the oculomotor nerve, the pupils are examined for size, shape, and equality; pupillary reflex tested with a pen light (pupils should constrict when illuminated); and ability to follow moving objects. The olfactory nerve is assessed using smells. The vagus nerve is assessed using the ophthalmoscope. The trigeminal nerve is assessed with a safety pin and hot and cold objects for sensations of pain, touch, and temperature.

REF: p. 328, Table 13-6

MULTIPLE RESPONSE

- Which of the following is a neuroglial cell? (select all that apply)
 - Astrocyte
 - Oligodendrocyte
 - Neuron
 - Ependymal cell
 - Melanocyte

ANS: A, B, D

Neuroglial cells include astrocytes, oligodendrocytes, and ependymal cells. Neurons and melanocytes are not neuroglial cells.

REF: p. 308

2. A nurse remembers the brain receives approximately ____% of the cardiac output.
- a. 80
 - b. 40
 - c. 20
 - d. 10

ANS: C

The brain receives approximately 20% of the cardiac output.

REF: p. 311

COMPLETION

1. A nurse is monitoring intracranial pressure. A nurse recalls the normal upper limit of intracranial pressure is _____ mm Hg.

ANS: 14

REF: p. 321

2. When a patient wants to know how many vertebrae make up the vertebral column, the nurse responds with _____.

ANS: 33

REF: p. 322

N_U^R_S^I_N^G_T^B. C_O^M

Chapter 14: Pain, Temperature, Sleep, and Sensory Function

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. A patient asks the nurse where nociceptors can be found. How should the nurse respond? One location in which nociceptors can be found is the:
 - a. skin.
 - b. spinal cord.
 - c. efferent pathways.
 - d. hypothalamus.

ANS: A

Nociceptors are pain receptors and can be found in the skin. Nociceptors are not located in the spinal cord. Nociceptors are not located in efferent, but afferent, pathways. Nociceptors are not located in the hypothalamus but can be found in the meninges.

REF: p. 337, Table 14-1

2. A nurse is discussing an individual's conditioned or learned approach or avoidance behavior in response to pain. Which system is the nurse describing?
 - a. Sensory-discriminative system
 - b. Affective-motivational system
 - c. Sensory-motivational system
 - d. Cognitive-evaluative system

ANS: B

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The affective-motivational system determines an individual's conditioned avoidance behaviors and emotional responses to pain. The sensory-discriminative system is mediated by the somatosensory cortex and is responsible for identifying the presence, character, location, and intensity of pain. The sensory-motivational system is not a system in the response to pain. The cognitive-evaluative system overlies the individual's learned behavior concerning the experience of pain and can modulate perception of pain.

REF: p. 338

3. A patient scrapes both knees while playing soccer and reports sharp and well-localized pain. Which of the following should the nurse document to most accurately characterize the pain?
 - a. Chronic pain
 - b. Referred pain
 - c. Somatic pain
 - d. Visceral pain

ANS: C

Somatic pain is superficial, arising from the skin. It is typically well localized and described as sharp, dull, aching, or throbbing. Chronic pain has been defined as lasting for more than 3-6 months. Referred pain is felt in an area removed or distant from its point of origin; the area of referred pain is supplied by the same spinal segment as the actual site of pain. Visceral pain is pain in internal organs and lining of body cavities and tends to be poorly localized, with an aching, gnawing, throbbing, or intermittent cramping quality.

REF: p. 340

4. A nurse should document on the chart that chronic pain is occurring when the patient reports the pain has lasted longer than:
- 1 month.
 - 3-6 months.
 - 1 year.
 - 2-3 years.

ANS: B

Chronic or persistent pain has been defined as lasting for more than 3-6 months.

REF: p. 340

5. Several years after an amputation the patient continues to sporadically feel pain in the absent hand. What type of pain should the nurse document in the chart?
- Neuropathic pain
 - Visceral pain
 - Phantom limb pain
 - Chronic pain

ANS: C

The qualities we normally feel from the body, including pain, also can be felt in the absence of inputs from the body, such as is noted with phantom limb pain. Neuropathic pain is initiated or caused by a primary lesion or dysfunction in the nervous system. Visceral pain refers to pain in internal organs and the lining of body cavities. Chronic pain lasts more than 3-6 months and is not associated with loss of a limb.

REF: p. 341, Table 14-3

6. When planning care for a child in pain, which principle should the nurse remember? The pain threshold in children is _____ that of adults.
- higher than
 - more variable
 - the same as
 - not related to

ANS: B

The pain threshold in children is lower than or the same as that of adults.

REF: p. 338, Table 14-2

7. When the nurse is taking a patient's temperature, which principle should the nurse remember? Regulation of body temperature primarily occurs in the:
- cerebrum.
 - brainstem.
 - hypothalamus.
 - pituitary gland.

ANS: C

Temperature regulation (thermoregulation) is mediated primarily by the hypothalamus, not the cerebrum, the brainstem, or the pituitary gland.

REF: p. 342

8. When the nurse is discussing the patient's cyclical temperature fluctuation occurring on a daily basis, what term should the nurse use?
 - a. Thermogenesis cycle
 - b. Thermoconductive phases
 - c. Adaptive pattern
 - d. Circadian rhythm

ANS: D

Temperature fluctuation is related to circadian rhythm, not the thermogenesis cycle, thermoconductive phases, or adaptive patterns.

REF: p. 342

9. A nurse wants to teach about one of the primary organs responsible for heat production. Which organ should the nurse include?
 - a. Pancreas
 - b. Liver
 - c. Adrenal medulla
 - d. Heart

ANS: C

Thyroxine acts on the adrenal medulla, causing the release of epinephrine into the bloodstream. Epinephrine causes vasoconstriction that increases metabolic rates, thus increasing heat production. Heat production does not involve the pancreas, the liver, or the heart.

REF: p. 342

10. Heat loss from the body via convection occurs by:
 - a. evaporation of electromagnetic waves.
 - b. transfer of heat through currents of liquids or gas.
 - c. dilation of blood vessels bringing blood to skin surfaces.
 - d. direct heat loss from molecule-to-molecule transfer.

ANS: B

Convection occurs by transfer of heat through currents of gases or liquids, exchanging warmer air at the body's surface with cooler air in surrounding spaces. Convection does not involve electromagnetic waves, bringing blood to skin surfaces, or molecule-to-molecule transfer.

REF: p. 343, Table 14-5

11. For evaporation to function effectively as a means of dissipating excess body heat, which one of the following conditions must be present?
 - a. Moisture
 - b. Fever
 - c. Pyrogens
 - d. Trauma

ANS: A

Moisture must be present because heat is lost through evaporation from the surface of skin and lining of mucous membranes, a major source of heat reduction connected with increased sweating in warmer surroundings. Fever is not required for evaporation to occur, but moisture is. Pyrogens are heat producers and do not assist with evaporation, but moisture is required. Trauma is not a portion of the evaporative process of heat loss.

REF: p. 343, Table 14-5

12. A patient received a prescription for a weight loss pill. One effect of the pills is to increase the release of epinephrine. Which of the following would be expected to also occur?
 - a. Decreased vascular tone
 - b. Increased skeletal muscle tone
 - c. Increased heat production
 - d. Decreased basal metabolic rate

ANS: C

Epinephrine causes vasoconstriction, stimulates glycolysis, and increases metabolic rate, thus increasing secondary heat production. Epinephrine does not lead to decreased vascular tone or increased skeletal muscle tone but does increase metabolic rate.

REF: p. 342

13. When a patient has a fever, which of the following thermoregulatory mechanisms is activated?
 - a. The body's thermostat is adjusted to a lower temperature.
 - b. Temperature is raised above the set point.
 - c. Bacteria directly stimulate peripheral thermogenesis.
 - d. The body's thermostat is reset to a higher level.

ANS: D

Fever (febrile response) is a temporary “resetting of the hypothalamic thermostat” to a higher level in response to endogenous or exogenous pyrogens. Fever is the result of the body’s attempt to raise temperature, not adjust it to a lower level. When fever occurs, the temperature is raised, but the rise is due to a reset of the thermostat. Bacteria do not stimulate peripheral thermogenesis, but their endotoxins do.

REF: pp. 342-343

14. Exogenous pyrogens are:
 - a. interleukins.
 - b. endotoxins.
 - c. prostaglandins.
 - d. corticotropin-releasing factors.

ANS: B

Exogenous pyrogens are endotoxins produced by pathogens. They are not interleukins, prostaglandins, or corticotropin-releasing factors.

REF: p. 343

15. Hikers are attempting to cross the Arizona desert with a small supply of water. The temperatures cause them to sweat profusely and become dehydrated. The hikers are experiencing:
- heat cramping.
 - heat exhaustion.
 - heat stroke.
 - malignant hyperthermia.

ANS: B

Heat exhaustion results from prolonged high core or environmental temperatures, which cause profound vasodilation and profuse sweating, leading to dehydration, decreased plasma volumes, hypotension, decreased cardiac output, and tachycardia. Symptoms include weakness, dizziness, confusion, nausea, and fainting. Heat cramping is severe, spasmodic cramps in the abdomen and extremities that follow prolonged sweating and associated sodium loss. Heat cramping usually occurs in those not accustomed to heat or those performing strenuous work in very warm climates. Heat stroke is a potentially lethal result of an overstressed thermoregulatory center. With very high core temperatures ($>40^{\circ}\text{ C}$; 104° F), the regulatory center ceases to function, and the body's heat loss mechanisms fail. Malignant hyperthermia is a potentially lethal complication of a rare inherited muscle disorder that may be triggered by inhaled anesthetics and depolarizing muscle relaxants.

REF: p. 344

16. What is the physiological response when the body's core temperature is altered due to prolonged exposure to a cold environment?
- Increased respirations
 - Ischemic tissue damage **NURSINGTB.COM**
 - CNS excitation
 - Increased cellular metabolism

ANS: B

Hypothermia (marked cooling of core temperature) produces depression of the central nervous and respiratory systems, vasoconstriction, alterations in microcirculation, coagulation, and ischemic tissue damage. Hypothermia does not lead to increased respirations, CNS excitation, or increased cellular metabolism.

REF: p. 344

17. Which finding indicates the patient is having complications from heat stroke?
- Mild elevation of core body temperatures
 - Cerebral edema and degeneration of the CNS
 - Spasmodic cramping in the abdomen and extremities
 - Alterations in calcium uptake

ANS: B

Symptoms of heat stroke include high core temperature, absence of sweating, rapid pulse, confusion, agitation, and coma, and complications include cerebral edema and degeneration of the CNS. Neither cramping nor alterations in calcium uptake are considered complications of a heat stroke.

REF: p. 344

18. Which condition would be treated with therapeutic hypothermia?
- Malnutrition
 - Hypothyroidism
 - Reimplantation surgery
 - Parkinson disease

ANS: C

Therapeutic hypothermia is seen with reimplantation surgery, not malnutrition, hypothyroidism, or Parkinson disease.

REF: p. 345, Box 14-3

19. A patient is undergoing a sleep lab test. When the sleep lab worker notices EEG patterns with brain activity similar to the normal awake pattern, which phase of sleep is occurring?
- Non-rapid eye movement (REM)
 - Fast wave
 - REM
 - Delta wave

ANS: C

REM sleep is called paradoxical sleep because the EEG pattern is similar to the normal awake pattern and the brain is very active with dreaming. Neither non-REM, fast wave sleep, nor delta wave sleep produces EEG patterns similar to the normal awake pattern.

REF: p. 345

20. Most memorable dreams occur during which sleep phase?
ANS: REM
- Non-REM
 - Alpha wave
 - REM
 - Delta wave

ANS: C

Dreams occur during REM sleep. Dreams are not associated with non-REM, alpha wave, or delta wave sleep.

REF: p. 345

21. During the sleep cycle, when does loss of temperature control occur?
- Non-REM sleep
 - Light sleep
 - REM sleep
 - Delta wave sleep

ANS: C

Loss of temperature control occurs during REM sleep. Loss of temperature control is not associated with non-REM sleep, light sleep, or delta wave sleep.

REF: p. 345

22. A 52-year-old male enters a sleep study to gather information about his sleep disturbances. He reports that his wife will not let him sleep in the bed with her until he stops snoring so loudly. He also reports feeling tired a lot through the day. When the nurse checks the chart, what is the most likely diagnosis?
- Insomnia
 - Obstructive sleep apnea syndrome (OSAS)
 - Somnambulism
 - Jet-lag syndrome

ANS: B

OSAS generally results from upper airway obstruction recurring during sleep with excessive snoring and multiple apneic episodes that last 10 seconds or longer. Insomnia is the inability to fall or stay asleep and may be mild, moderate, or severe. It does not involve snoring. Somnambulism is sleep-walking. Jet-lag syndrome is a disorder of waking and sleeping and does not involve snoring.

REF: p. 346

23. A child suffers from sudden apparent arousals in which she expresses intense fear or other emotion. Her mother reports that she seems to wake screaming, but that she is difficult to waken completely. The child most likely suffers from:
- night terrors.
 - parasomnia.
 - somnambulism.
 - enuresis episodes.

ANS: A

Night terrors are characterized by sudden apparent arousals in which the child expresses intense fear or emotion. Parasomnia is unusual behaviors during sleep. Somnambulism is sleep-walking. Enuresis episodes are bed-wetting.

REF: p. 346

24. The ophthalmologist is teaching about the structure of the eye that prevents light from scattering in the eye. What structure is the ophthalmologist describing?
- Iris
 - Pupil
 - Choroid
 - Retina

ANS: C

The choroid is the deeply pigmented middle layer that prevents light from scattering inside the eye. The iris is a part of the choroid and contains the pupil, which lets light into the eye. The retina is the innermost layer of the eye.

REF: p. 347

25. A 50-year-old diabetic patient experiences visual disturbances and decides to visit his primary care provider. After examination, the primary care provider tells the patient that the cells that allow him to see are degenerated. Which of the following structures is most likely damaged?
- Lens

- b. Pupil
- c. Cornea
- d. Retina

ANS: D

The retina is the innermost layer of the eye, converting light energy into nerve impulses. Light entering the eye is focused on the retina by the lens. The pupil allows light to enter the eye. The cornea is the portion of the sclera in the central anterior region that allows light to enter the eye.

REF: p. 347

26. A young child presents to the ophthalmologist for visual difficulties secondary to eye deviation. One of the child's eyes deviates inward, thereby decreasing the visual field. Which of the following diagnoses is most likely?
- a. Entropia
 - b. Extropia
 - c. Diplopia
 - d. Nystagmus

ANS: A

The deviation of the eye inward is entropia, while deviation of the eye outward is extropia. Diplopia is double vision. Nystagmus is an involuntary unilateral or bilateral rhythmic movement of the eyes.

REF: p. 348

27. A patient has increased intraocular pressure. Which diagnosis will the nurse observe on the chart?
- a. Glaucoma
 - b. Ocular degeneration
 - c. Diplopia
 - d. Nystagmus

ANS: A

Glaucoma is the result of increased intraocular pressure. Ocular degeneration results in changes in vision, but not intraocular pressure. Diplopia is double vision. Nystagmus is an involuntary unilateral or bilateral rhythmic movement of the eyes.

REF: p. 349

28. A 70-year-old patient presents to the primary care provider reporting loss of vision. A history that includes hypertension and cigarette smoking supports which visual diagnosis?
- a. Presbyopia
 - b. Macular degeneration
 - c. Strabismus
 - d. Amblyopia

ANS: B

Age-related macular degeneration (AMD) is a severe and irreversible loss of vision and a major cause of blindness in older individuals. Hypertension and cigarette smoking are risk factors. Presbyopia is a condition associated with aging in which the patient experiences reduced near vision. In strabismus, one eye deviates from the other when the person is looking at an object. In amblyopia, vision is reduced in the affected eye caused by cerebral blockage of the visual stimuli.

REF: p. 349

29. Which group of people is most prone to color blindness?
- Males
 - Females
 - Elderly persons
 - Children

ANS: A

Color blindness, present most often in males, affects 8% of the male population and 0.5% of the female population. Neither the elderly nor children are most prone to color blindness.

REF: p. 349

30. A nurse is teaching about the structure that connects the middle ear with the pharynx. Which structure is the nurse describing?
- Organ of Corti
 - Eustachian tube
 - Semicircular canal
 - Auditory canal

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ANS: B

The Eustachian tube connects the middle ear to the pharynx. The organ of Corti contains the hair cells. The semicircular canal is one of the three bones of the labyrinth. The auditory canal leads to the middle ear.

REF: p. 351

31. The most common form of sensorineural hearing loss in the elderly is:
- conductive hearing loss.
 - acute otitis media.
 - presbycusis.
 - Ménière disease.

ANS: C

Presbycusis is the most common form of sensorineural hearing loss in elderly people. Conductive hearing loss does not occur as frequently as presbycusis. Otitis media is an infection in the middle ear and is not defined as a hearing loss. Ménière disease leads to vertigo, not hearing loss.

REF: p. 352

32. A 15-year-old is diagnosed with an outer ear infection. Which of the following is most likely to cause this infection?
- Haemophilus*

- b. *Streptococcus pneumonia*
- c. *Moraxella catarrhalis*
- d. *Escherichia coli*

ANS: D

The most common causes of acute infections are bacterial microorganisms including *Pseudomonas*, *Escherichia coli*, and *Staphylococcus aureus*.

REF: p. 352

33. The nurse would expect the patient with an alteration in proprioception to experience vertigo, which is manifested by:
- a. headache.
 - b. light sensitivity.
 - c. a sensation that the room is spinning.
 - d. loss of feeling in the lips.

ANS: C

Alterations in proprioception are manifested by a sensation that the room is spinning, not headache, light sensitivity, or loss of feeling in the lips.

REF: p. 353

34. Which system modulates a patient's perception of pain?
- a. Sensory-discriminative system
 - b. Affective-motivational system
 - c. Cognitive-evaluative system
 - d. Reticular-activating system

ANS: C

The cognitive-evaluative system overlies the individual's learned behavior concerning the experience of pain and can modulate perception of pain. The sensory-discriminative system is mediated by the somatosensory cortex and is responsible for identifying the presence, character, location, and intensity of pain. The affective-motivational system determines an individual's conditioned avoidance behaviors and emotional responses to pain. The reticular-activating system does not play a role in the perception of pain.

REF: p. 338

MULTIPLE RESPONSE

1. While planning care for infants, which principles should the nurse remember? (select all that apply) Infants have problems with thermoregulation because they:
 - a. cannot conserve heat.
 - b. do not shiver.
 - c. rarely sweat.
 - d. have decreased metabolic rates.
 - e. have excess subcutaneous fat.

ANS: A, B

Infants cannot conserve heat; thus, they have a problem with thermoregulation because of their small size. Infants are unable to shiver, do have the ability to sweat, have an increased metabolic rate, and have little subcutaneous fat.

REF: p. 342

2. A patient asks the nurse how often REM sleep occurs. The nurse responds, "About every _____ minutes."
- a. 15
 - b. 30
 - c. 60
 - d. 90

ANS: D

REM sleep occurs every 90 minutes.

REF: p. 345

COMPLETION

1. Fever of unknown origin (FUO) is characterized by a fever of ____° F or greater.

ANS:

101

FUO is a fever of greater than 38.3° C (101° F) that remains undiagnosed after 3 days of hospital investigation or three or more outpatient visits.

REF: p. 343

Chapter 15: Alterations in Cognitive Systems, Cerebral Hemodynamics, and Motor Function

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. A neurologist explains that arousal is mediated by the:
 - a. cerebral cortex.
 - b. medulla oblongata.
 - c. reticular activating system.
 - d. cingulate gyrus.

ANS: C

Arousal is mediated by the reticular activating system, which regulates aspects of attention and information processing and maintains consciousness. The cerebral cortex affects movement. The medulla oblongata controls things such as hiccups and vomiting. The cingulate gyrus plays other roles in response.

REF: p. 359

2. A 20-year-old experiences a severe closed head injury as a result of a motor vehicle accident. Which of the following structures is most likely keeping the patient in a vegetative state (VS) 1 month after the accident?
 - a. Cerebral cortex
 - b. Brainstem
 - c. Spinal cord
 - d. Cerebellum

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ANS: B

When a person loses cerebral function, the reticular activating system and brainstem can maintain a crude waking state known as a VS. Cognitive cerebral functions, however, cannot occur without a functioning reticular activating system. A VS is not associated with the cerebral cortex, spinal cord, or cerebellum.

REF: p. 364

3. A 16-year-old's level of arousal was altered after taking a recreational drug. Physical exam revealed a negative Babinski sign, equal and reactive pupils, and roving eye movements. Which of the following diagnoses will the nurse most likely see on the chart?
 - a. Psychogenic arousal alteration
 - b. Metabolically induced coma
 - c. Structurally induced coma
 - d. Structural arousal alteration

ANS: B

Persons with metabolically induced coma generally retain ocular reflexes even when other signs of brainstem damage are present. Psychogenic arousal activation demonstrates a general psychiatric disorder. Structurally induced coma is manifested by asymmetric responses. Structural arousal alteration does not have drug use as its etiology.

REF: p. 360, Table 15-2

4. The breathing pattern that reflects respirations based primarily on carbon dioxide (CO₂) levels in the blood is:
 - a. Cheyne-Stokes.
 - b. ataxic.
 - c. central neurogenic.
 - d. normal.

ANS: A

Cheyne-Stokes respirations occur as a result of CO₂ levels in the blood. Ataxic breathing occurs as a result of dysfunction of the medullary neurons. Central neurogenic patterns occur as a result of uncal herniation. Normal respirations are based on the levels of oxygen (O₂) in the blood.

REF: p. 361

5. A teenager sustains a severe closed head injury following an all-terrain vehicle (ATV) accident and is in a state of deep sleep that requires vigorous stimulation to elicit eye opening. How should the nurse document this in the chart?
 - a. Confusion
 - b. Coma
 - c. Obtundation
 - d. Stupor

ANS: D

Stupor is a condition of deep sleep or unresponsiveness from which a person may be aroused or caused to open his or her eyes only by vigorous and repeated stimulation. Confusion is the loss of the ability to think rapidly and clearly and is characterized by impaired judgment and decision making. Coma is a condition in which there is no verbal response to the external environment or to any stimuli; noxious stimuli such as deep pain or suctioning do not yield motor movement. Obtundation is a mild-to-moderate reduction in arousal (awakeness) with limited response to the environment.

REF: p. 361, Table 15-3

6. A patient experiences a severe head injury hitting a tree while riding a motorcycle. Breathing becomes deep and rapid but with normal pattern. What term should the nurse use for this condition?
 - a. Gasping
 - b. Ataxic breathing
 - c. Apneusis
 - d. Central neurogenic hyperventilation

ANS: D

Central neurogenic hyperventilation is a sustained, deep, rapid, but regular, pattern (hyperpnea) of breathing. Gasping is a pattern of deep “all-or-none” breaths accompanied by a slow respiratory rate. Ataxic breathing is completely irregular breathing that occurs with random shallow and deep breaths and irregular pauses. Apneusis is manifested by a prolonged inspiratory pause alternating with an end-expiratory pause.

REF: p. 362, Table 15-4

7. A patient presents to the emergency room (ER) reporting excessive vomiting. A CT scan of the brain reveals a mass in the:
 - a. skull fractures.
 - b. thalamus.
 - c. medulla oblongata.
 - d. frontal lobe.

ANS: C

Vomiting is due to disruptions in the medulla oblongata. Skull fractures can result in vomiting but would not be related to the mass. The thalamus controls other things such as temperature. The frontal lobe deals with emotions.

REF: p. 363

8. For legal purposes, brain death is defined as:
 - a. cessation of entire brain function.
 - b. lack of cortical function.
 - c. a consistent vegetative state (VS).
 - d. death of the brainstem.

ANS: A

Brain death occurs when there is cessation of function of the entire brain, including the brainstem and cerebellum. Lack of cortical function or brainstem death is not enough to define brain death. A VS is complete unawareness of the self or surrounding environment and complete loss of cognitive function.

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REF: p. 364

9. When thought content and arousal level are intact but a patient cannot communicate and is immobile, the patient is experiencing:
 - a. cerebral death.
 - b. locked-in syndrome.
 - c. dysphagia.
 - d. cerebellar motor syndrome.

ANS: B

Locked-in syndrome occurs when the individual cannot communicate through speech or body movement but is fully conscious, with intact cognitive function. In cerebral death, the person is in a coma with eyes closed. Dysphagia is difficulty speaking. Cerebellar motor syndrome is characterized by problems with coordinated movement.

REF: p. 365

10. What term is used to describe an explosive, disorderly discharge of cortical neurons?
 - a. Reflex
 - b. Seizure
 - c. Inattentiveness
 - d. Brain death

ANS: B

An explosive, disorderly discharge of cortical neurons is a seizure. A reflex is an expected response. Inattentiveness is a form of neglect. Brain death is a cessation of function.

REF: p. 372

11. A patient has memory loss of events that occurred before a head injury. What cognitive disorder does the nurse suspect the patient is experiencing?
 - a. Selective memory deficit
 - b. Anterograde amnesia
 - c. Retrograde amnesia
 - d. Executive memory deficit

ANS: C

Retrograde amnesia is manifested by loss of past personal history memories or past factual memories. In selective memory deficit, the person reports inability to focus attention and has failure to perceive objects and other stimuli. Anterograde amnesia is a loss of the ability to form new memories. Executive memory deficit involves the failure to stay alert and oriented to stimuli.

REF: p. 365

12. A 65-year-old patient who recently suffered a cerebral vascular accident is now unable to recognize and identify objects by touch because of injury to the sensory cortex. How should the nurse document this finding?
 - a. Hypomimesis
 - b. Agnosia
 - c. Dysphasia
 - d. Echolalia

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ANS: B

Agnosia is the failure to recognize the form and nature of objects. Hypomimesis is a disorder of communication. Dysphasia is an impairment of comprehension of language. Echolalia is the ability to repeat.

REF: p. 367

13. A patient experiences a stroke and now has difficulty writing and producing language. This condition is most likely caused by occlusion of the:
 - a. anterior communicating artery.
 - b. posterior communicating artery.
 - c. circle of Willis.
 - d. middle cerebral artery.

ANS: D

Occlusion of the left middle cerebral artery leads to the inability to find words and difficulty with writing. The inability to find words and difficulty with writing are not associated with occlusions of the anterior or posterior communicating arteries or the circle of Willis.

REF: p. 367

14. A patient with an addiction to alcohol checked into a rehabilitation center as a result of experiencing delirium, inability to concentrate, and being easily distracted. What term would be used to document this state?
- Acute confusional state
 - Echolalia
 - Dementia
 - Dysphagia

ANS: A

Delirium and the inability to concentrate are characteristics of acute confusional state. Echolalia is the repeating of words and phrases. Dementia is characterized by loss of recent and remote memory. Dysphagia is difficulty speaking.

REF: p. 367, Box 15-3

15. The patient is experiencing an increase in intracranial pressure. This increase results in:
- brain tissue hypoxia.
 - intracranial hypotension.
 - ventricular swelling.
 - expansion of the cranial vault.

ANS: A

Brain tissue hypoxia occurs as a result of increased intracranial pressure as it places pressure on the brain. Increased intracranial pressure leads to intracranial hypertension.

Ventricular swelling may lead to increased intracranial pressure, but increased pressure does not lead to either ventricular swelling or the expansion of the cranial vault.

REF: p. 374

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16. A compensatory alteration in the diameter of cerebral blood vessels in response to increased intracranial pressure is called:
- herniation.
 - vasodilation.
 - autoregulation.
 - amyotrophy.

ANS: C

Autoregulation is the compensatory alteration in the diameter of the intracranial blood vessels designed to maintain a constant blood flow during changes in cerebral perfusion pressure.

Herniation is the downward protrusion of the brainstem. Vasodilation is an enlargement in vessel diameter and a part of autoregulation, but the vessels should not dilate in the presence of increased intracranial pressure. Amyotrophy is involved with the anterior horn cells of the spinal cord and not related to autoregulation.

REF: p. 374

17. A patient is admitted to the neurological critical care unit with a severe closed head injury. When an intraventricular catheter is inserted, the intracranial pressure (ICP) is recorded at 24 mm Hg. How should the nurse interpret this reading?
- Higher than normal
 - Lower than normal

- c. Normal
- d. Borderline

ANS: A

Normal ICP is 1-15 mm Hg; at 24 mm Hg, the patient's ICP is higher than normal.

REF: p. 374, Box, 15-4

18. A 70-year-old patient is being closely monitored in the neurological critical care unit for a severe closed head injury. After 48 hours, signs of deterioration occur: pupils are small and sluggish, pulse pressure is widening, and heart rate is bradycardic. These clinical findings are evidence of what stage of intracranial hypertension?
- a. Stage 1
 - b. Stage 2
 - c. Stage 3
 - d. Stage 4

ANS: C

Stage 3 is characterized by decreasing levels of arousal or central neurogenic hyperventilation, widened pulse pressure, bradycardia, and pupils that become small and sluggish. Stage 1 is characterized by an ICP that may not change because of the effective compensatory mechanisms, and there may be few symptoms. Stage 2 is characterized by subtle and transient symptoms, including episodes of confusion, restlessness, drowsiness, and slight pupillary and breathing changes. Stage 4 is characterized by cessation of cerebral blood flow.

REF: p. 374

19. The primary care provider states that the patient is experiencing vasogenic edema. The nurse realizes vasogenic edema is clinically important because:
- a. it usually has an infectious cause.
 - b. the blood-brain barrier is disrupted.
 - c. ICP is excessively high.
 - d. it always causes herniation.

ANS: B

Vasogenic edema is clinically important because the blood-brain barrier (selective permeability of brain capillaries) is disrupted, and plasma proteins leak into the extracellular spaces. Vasogenic edema does not have an infectious cause. ICP is increased, but not more so than other forms of edema. Vasogenic edema does not always cause herniation.

REF: p. 375

20. The progress notes read: the cerebellar tonsil has shifted through the foramen magnum due to increased pressure within the posterior fossa. The nurse would identify this note as a description of _____ herniation.
- a. supratentorial
 - b. central
 - c. cingulated gyrus
 - d. infratentorial

ANS: D

In infratentorial herniation, the cerebellar tonsil shifts through the foramen magnum because of increased pressure within the posterior fossa. Supratentorial herniation involves temporal lobe and hippocampal gyrus shifting from the middle fossa to posterior fossa. Central herniation is a type of supratentorial herniation and is the straight downward shift of the diencephalon through the tentorial notch. Gyrus herniation occurs when the cingulate gyrus shifts under the falx cerebri. Little is known about its clinical manifestations.

REF: p. 375, Box 15-5

21. An infant is diagnosed with noncommunicating hydrocephalus. What is an immediate priority concern for this patient?
- Metabolic edema
 - Interstitial edema
 - Vasogenic edema
 - Ischemic edema

ANS: B

An immediate concern for the infant with noncommunicating hydrocephalus is interstitial edema. Neither metabolic, vasogenic, nor ischemic edema is observed as a result of noncommunicating hydrocephalus.

REF: p. 376

22. An adult is diagnosed with communicating hydrocephalus. The form of hydrocephalus in adults is most often caused by:
- overproduction of CSF.
 - intercellular edema.
 - elevated arterial blood pressure.
 - defective CSF reabsorption.

ANS: D

Communicating hydrocephalus occurs because of defective reabsorption of the fluid.

Hydrocephalus can occur because of overproduction of CSF, but in adults it occurs most often because of defective reabsorption of the fluid. Hydrocephalus is not due to either intercellular edema or elevated arterial blood pressure.

REF: p. 376

23. A 16-year-old male fell off the bed of a pickup truck and hit his forehead on the road. He now has resistance to passive movement that varies proportionally with the force applied. He is most likely suffering from:
- spasticity.
 - paratonia.
 - rigidity.
 - dystonia.

ANS: B

Paratonia is manifested by resistance to passive movement that varies in direct proportion to force applied. Spasticity is manifested by a gradual increase in tone causing increased resistance until tone suddenly reduces. Rigidity is manifested by muscle resistance to passive movement of a rigid limb that is uniform in both flexion and extension throughout the motion. Dystonia is manifested by sustained involuntary twisting movement.

REF: p. 377, Table 15-16

24. A patient reports tiring easily, having difficulty rising from a sitting position, and the inability to stand on toes. The nurse would expect a diagnosis of:
- Parkinson disease.
 - hypotonia.
 - Huntington disease.
 - paresis.

ANS: B

Individuals with hypotonia tire easily (asthenia) or are weak. They may have difficulty rising from a sitting position, sitting down without using arm support, and walking up and down stairs, as well as an inability to stand on their toes. Individuals with Parkinson disease have rigidity and stiffness. Symptoms of Huntington disease include irregular, uncontrolled, and excessive movement. Paresis, or weakness, is partial paralysis with incomplete loss of muscle power.

REF: pp. 376-377

25. A patient has paralysis of both legs. What type of paralysis does the patient have?
- Paraplegia
 - Quadriplegia
 - Infraparaplegia
 - Paresthesia

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ANS: A

Paraplegia is the paralysis of both legs. Quadriplegia is the paralysis of all four extremities. Infraparaplegia is not a description of paralysis. Paresthesia is a loss of sensation, not paralysis.

REF: p. 382, Box 15-6

26. Spinal shock is characterized by:
- loss of voluntary motor function with preservation of reflexes.
 - cessation of spinal cord function below the lesion.
 - loss of spinal cord function at the level of the lesion only.
 - temporary loss of spinal cord function above the lesion.

ANS: B

Spinal shock is the complete cessation of spinal cord function below the lesion. The reflexes are not preserved in spinal shock. Spinal shock is the complete cessation of spinal cord function below the lesion, not at the lesion only.

REF: p. 382

27. A patient has excessive movement. What disorder will the nurse see documented on the chart?

- a. Hypokinesia
- b. Akinesia
- c. Hyperkinesia
- d. Dyskinesia

ANS: C

Excessive movement is the definition of hyperkinesia. Hypokinesia is decreased movement. Akinesia is loss of movement. Dyskinesia is abnormal movement.

REF: p. 378

28. A 40-year-old male complains of uncontrolled excessive movement and progressive dysfunction of intellectual and thought processes. He is experiencing movement problems that begin in the face and arms and eventually affect the entire body. The most likely diagnosis is:
- a. tardive dyskinesia.
 - b. Huntington disease.
 - c. hypokinesia.
 - d. Alzheimer disease.

ANS: B

Huntington disease is manifested by chorea, abnormal movement that begins in the face and arms and eventually affects the entire body. There is progressive dysfunction of intellectual and thought processes. Tardive dyskinesia is manifested by rapid, repetitive, and stereotypic movements. Most characteristic is continual chewing with intermittent protrusions of the tongue, lip smacking, and facial grimacing. Hypokinesia is a loss of voluntary movement despite preserved consciousness and normal peripheral nerve and muscle function. Alzheimer disease is manifested by cognitive deficits and not movement problems; motor impairments will occur in the later stages.
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REF: p. 378 | p. 380

29. A nurse notes that a patient walks with the leg extended and held stiff, causing a scraping over the floor surface. What type of gait is the patient experiencing?
- a. Spastic gait
 - b. Cerebellar gait
 - c. Basal ganglion gait
 - d. Scissors gait

ANS: A

An individual who walks with the leg extended and held stiff, causing a scraping over the floor surface, is experiencing a spastic gait. A cerebellar gait is wide based with the feet apart and often turned outward or inward for greater stability. A basal ganglion gait occurs when the person walks with small steps and a decreased arm swing. A scissors gait is associated with bilateral injury and spasticity. The legs are abducted so they touch each other.

REF: p. 385

30. A patient is admitted to the neurological critical care unit with a severe closed head injury. All four extremities are in rigid extension, the forearms are hyperpronated, and the legs are in plantar extension. How should the nurse chart this condition?
- a. Decorticate posturing

- b. Decerebrate posturing
- c. Dystonic posturing
- d. Basal ganglion posturing

ANS: B

The description is of a patient in decerebrate posturing. The description provided is not associated with decorticate, dystonic, or basal ganglion posturing.

REF: p. 385

MULTIPLE RESPONSE

1. A nurse recalls that neural systems basic to cognitive functions include _____ systems. (select all that apply)
 - a. attentional
 - b. memory and language
 - c. affective
 - d. sensory and motor
 - e. tactile

ANS: A, B, C

The neural systems that are essential to cognitive function are: (i) attentional systems that provide arousal and maintenance of attention over time; (ii) memory and language systems by which information is communicated; and (iii) affective or emotive systems that mediate mood, emotion, and intention. The sensory, motor, and somatic systems are not involved. The tactile system is not involved in cognitive functioning.

REF: p. 359

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2. The nurse is explaining clinical manifestations of alterations in the extrapyramidal system. The nurse would correctly include: (select all that apply)
 - a. little or no paralysis of voluntary movement.
 - b. normal or slightly increased tendon reflexes.
 - c. positive (present) Babinski.
 - d. presence of tremor.
 - e. rigidity in muscle tone.

ANS: A, B, D, E

The patient will experience little or no paralysis of voluntary movement. The patient will experience normal or slightly increased deep tendon reflexes. Babinski will be negative (absent). Tremor will be present. Rigidity of muscle tone occurs intermittently.

REF: p. 386, Table 15-19

Chapter 16: Disorders of the Central and Peripheral Nervous Systems and the Neuromuscular Junction

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. A nurse is preparing to teach staff about the most common type of traumatic brain injury. Which type of traumatic brain injury should the nurse discuss?
 - a. Penetrating trauma
 - b. Diffuse axonal injury
 - c. Focal brain injury
 - d. Concussion

ANS: D

A concussion is the most common type of traumatic brain injury. A concussion is a much more common brain injury than penetrating trauma, diffuse axonal injury, or focal injury.

REF: p. 394

2. A coup injury resulting from a blow to the frontal portion of the skull would occur in which region of the brain?
 - a. Frontal
 - b. Temporal
 - c. Parietal
 - d. Occipital

ANS: A

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When there is force applied to the skull, an injury may occur to the corresponding location on the brain. The injury may be coup (injury at site of impact) or contrecoup (injury from brain rebounding and hitting opposite side of skull).

REF: pp. 390-391

3. What is the main source of bleeding in extradural (epidural) hematomas?
 - a. Arterial
 - b. Venous
 - c. Capillary
 - d. Sinus

ANS: A

An artery is the source of bleeding in 85% of extradural hematomas. The bleeding associated with an extradural hematoma is not a result of damage to a vein, a capillary, or a sinus.

REF: p. 391

4. A 69-year-old patient with a history of alcohol abuse presents to the emergency room (ER) after a month-long episode of headaches and confusion. The patient's history and symptomology support which medical diagnosis?
 - a. Concussion
 - b. Chronic subdural hematoma

- c. Epidural hematoma
- d. Subacute subdural hematoma

ANS: B

Chronic subdural hematomas are commonly found in persons who abuse alcohol and develop over weeks to months. A concussion is more acute in nature. Epidural hematomas are not associated with the patient's history or symptoms. Subacute subdural hematomas present with confusion but are more acute in nature.

REF: p. 393

5. Immediately after being struck by a motor vehicle, a patient is unconscious, but the patient regains consciousness before arriving at the hospital and appears alert and oriented. The next morning the patient is confused and demonstrates impaired responsiveness. The patient's history and symptoms support which medical diagnosis?
- a. Mild concussion
 - b. Subdural hematoma
 - c. Extradural (epidural) hematoma
 - d. Mild diffuse axonal injury

ANS: C

Individuals with extradural hematomas lose consciousness at injury; one third then become lucid for a few minutes to a few days. Mild concussion is characterized by immediate but transitory confusion that lasts for one to several minutes, possibly with amnesia for events preceding the trauma. Subdural hematomas begin with headache, drowsiness, restlessness or agitation, slowed cognition, and confusion. These symptoms worsen over time and progress to loss of consciousness, respiratory pattern changes, and pupillary dilation. Individuals with mild diffuse axonal injury display decerebrate or decorticate posturing and may experience prolonged periods of stupor or restlessness.

REF: p. 392

6. Which assessment finding by the nurse characterizes a mild concussion?
- a. A brief loss of consciousness
 - b. Significant behavioral changes
 - c. Retrograde amnesia
 - d. Permanent confusion

ANS: C

Mild concussion is characterized by immediate but transitory confusion that lasts for one to several minutes, possibly with amnesia for events preceding the trauma. Individuals with extradural hematomas lose consciousness at injury; one third then become lucid for a few minutes to a few days. Persons with diffuse brain injury demonstrate behavioral changes. Individuals with a mild concussion experience transient, not permanent, confusion.

REF: p. 394

7. A CT scan reveals that a patient has an open basilar skull fracture. Which major complication should the nurse observe for in this patient?
- a. Hematoma formation
 - b. Meningeal infection

- c. Increased intracranial pressure (ICP)
- d. Cognitive deficits

ANS: B

Individuals with an open basilar skull fractures should be observed for meningitis. Such a basilar skull fracture does not increase a patient's risk for hematoma formation, ICP, or cognitive deficits.

REF: p. 393

8. A patient diagnosed with a diffuse brain injury (DBI) is at increased risk for which complication?
 - a. Complete loss of vision
 - b. Arrhythmia
 - c. Acute brain swelling
 - d. Meningitis infection

ANS: C

DBI is not associated with intracranial hypertension immediately after injury; however, acute brain swelling caused by increased intravascular blood flow within the brain, vasodilation, and increased cerebral blood volume is seen often and can result in death.

Individuals who experience diffuse brain injury may experience visual impairments but do not experience loss of vision. A diffuse brain injury is not associated with arrhythmias.

Individuals experiencing basilar skull fractures are at increased risk for the development of meningitis.

REF: p. 394

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9. After falling, a patient's Glasgow Coma Scale (GCS) was 5 initially and 7 after 1 day. The patient remained unconscious for 2 weeks but is now awake, confused, and experiencing anterograde amnesia. This history supports which medical diagnosis?
 - a. Mild diffuse brain injury
 - b. Moderate diffuse brain injury
 - c. Severe diffuse brain injury
 - d. Postconcussive syndrome

ANS: B

In moderate diffuse axonal injury, the score on the GCS is 4-8 initially and 6-8 by 24 hours, and the person is confused and suffers a long period of posttraumatic anterograde and retrograde amnesia. In mild diffuse axonal injury, coma lasts 6-24 hours, with 30% of persons displaying decerebrate or decorticate posturing. They may experience prolonged periods of stupor or restlessness. In severe diffuse axonal injury, the person experiences immediate autonomic dysfunction that disappears in a few weeks. Increased ICP appears 4-6 days after the injury. In postconcussive syndrome, the individual experiences headache, nervousness or anxiety, irritability, insomnia, depression, inability to concentrate, forgetfulness, and fatigability.

REF: p. 394

10. Who is most at risk of spinal cord injury because of preexisting degenerative disorders?
 - a. Infants

- b. Men
- c. Women
- d. The elderly

ANS: D

Elderly people are particularly at risk from minor trauma that results in serious spinal cord injury because of preexisting degenerative vertebral disorders. Neither females nor infants are at any particular risk for spinal cord injuries. Males are at great risk for spinal cord injury but not as a result of preexisting disorders.

REF: p. 395

11. A patient is brought to the ER for treatment of injuries received in a motor vehicle accident. An MRI reveals spinal cord injury, and his body temperature fluctuates markedly. The most accurate explanation of this phenomenon is that:
- a. he developed pneumonia.
 - b. his sympathetic nervous system has been damaged.
 - c. he has a brain injury.
 - d. he has septicemia from an unknown source.

ANS: B

The patient experiences disturbed thermal control because the sympathetic nervous system is damaged. The hypothalamus cannot regulate body heat through vasoconstriction and increased metabolism; therefore, the individual assumes the temperature of the air. In this situation there is no evidence to support the presence of pneumonia, brain injury, or septicemia.

REF: p. 396

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12. Six weeks ago a patient suffered a T6 spinal cord injury. What complication does the nurse suspect when the patient develops a blood pressure of 200/120, a severe headache, blurred vision, and bradycardia?
- a. Extreme spinal shock
 - b. Acute anxiety
 - c. Autonomic hyperreflexia
 - d. Parasympathetic areflexia

ANS: C

The patient is experiencing autonomic hyperreflexia, which is manifested by paroxysmal hypertension (up to 300 mm Hg, systolic), a pounding headache, blurred vision, sweating above the level of the lesion with flushing of the skin, nasal congestion, nausea, piloerection caused by pilomotor spasm, and bradycardia (30-40 beats/min). The patient in extreme spinal shock experiences paralysis and flaccidity in muscles, absence of sensation, loss of bladder and rectal control, transient drop in blood pressure, and poor venous circulation. The patient may experience acute anxiety, but the symptoms of elevated blood pressure with severe headache are due to autonomic hyperreflexia.

It is autonomic hyperreflexia, not parasympathetic areflexia, that produces paroxysmal hypertension (up to 300 mm Hg, systolic), a pounding headache, blurred vision, sweating above the level of the lesion with flushing of the skin, nasal congestion, nausea, piloerection caused by pilomotor spasm, and bradycardia (30-40 beats/min).

REF: pp. 398-399

13. A patient diagnosed with a spinal cord injury experienced spinal shock lasting 15 days. The patient is now experiencing an uncompensated cardiovascular response to sympathetic stimulation. What does the nurse suspect caused this condition?
- Toxic accumulation of free radicals below the level of the injury
 - Pain stimulation above the level of the spinal cord lesion
 - A distended bladder or rectum
 - An abnormal vagal response

ANS: C

The described symptoms indicate autonomic hyperreflexia and are due to a distended bladder or rectum. The described symptoms are not due to the accumulation of free radicals, pain stimulation, or an abnormal vagal response.

REF: pp. 398-399

14. A patient presents with acute low back pain. There is no history of trauma. An MRI reveals that the vertebra at L5 has slipped forward relative to those below it. Which of the following conditions will be documented on the chart?
- Degenerative disk disease
 - Spondylolysis
 - Spondylolisthesis
 - Spinal stenosis

ANS: C

Spondylolisthesis occurs when there are vertebra slides forward or slips in relation to below it. Degenerative disk disease is ~~NURSINGTB.COM~~ a pathophysiological cause of spondylolisthesis but is not the definition of the displacement. Spondylolysis is a structural defect of the spine. Spinal stenosis is a narrowing of the spinal canal.

REF: p. 400 | p. 401

15. The majority of intervertebral disk herniations occur between which vertebral levels (cervical, C; thoracic, T; lumbar, L; sacral, S)?
- C1-C3
 - T1-T4
 - T12-L3
 - L4-S1

ANS: D

The most common disks affected by herniation are the lumbosacral disks—that is, L5-S1 and L4-L5.

REF: p. 401

16. A 30-year-old white male recently suffered a cerebrovascular accident. Which of the following is the most likely factor that contributed to his stroke?
- Age
 - Gender
 - Diabetes

- d. Race

ANS: C

The most likely contributing factor to the patient's stroke is that he has diabetes with a fourfold increase in stroke incidence and an eightfold increase in stroke mortality. Age greater than 65 years is contributing factor. Men are affected, but for the 30-year-old, his type 2 diabetes mellitus contributes to a fourfold increase in stroke incidence and an eightfold increase in stroke mortality. Blacks are affected more than whites, and it is this patient's diabetes that places him at risk.

REF: p. 402

17. Which of the following would increase a patient's risk for thrombotic stroke?

- a. Hyperthyroidism
- b. Hypertension
- c. Anemia
- d. Dehydration

ANS: D

Dehydration is a risk factor because it increases blood viscosity and decreases cerebral perfusion. Hyperthyroidism would lead to increased blood pressure but does not place the patient at risk for thrombotic stroke. Hypotension, not hypertension, is a risk factor for thrombotic stroke. Anemia would decrease a person's risk for thrombotic stroke.

REF: p. 403

18. Of the following groups, who are at highest risk for a cerebrovascular accident (CVA)?

- a. Blacks over 65 years of age
- b. Whites over 65 years of age
- c. Blacks under 65 years of age
- d. Whites under 65 years of age

ANS: A

The individuals at highest risk for cerebrovascular accident are blacks over 65 years of age. Older adults are at greater risk than younger adults, and blacks are at greater risk than whites.

REF: p. 402

19. A 72-year-old patient demonstrates left-sided weakness of upper and lower extremities. The symptoms lasted less than an hour and resolved with no evidence of infarction. The patient most likely experienced a(n):

- a. stroke in evolution.
- b. arteriovenous malformation.
- c. transient ischemic attack.
- d. cerebral hemorrhage.

ANS: C

When symptoms resolve with complete recovery, it is a transient ischemic attack. A stroke in evolution is an impending stroke, and symptoms would not resolve. An arteriovenous malformation is an abnormal arrangement of blood vessels that could lead to stroke but is not a disorder in itself. Cerebral hemorrhage would not resolve.

REF: p. 402

20. A major contributing process in CVAs is the development of atheromatous plaques in cerebral circulation. Where do these plaques most commonly form?
- In the larger veins
 - Near capillary sphincters
 - In cerebral arteries
 - In the venous sinuses

ANS: C

Over 20-30 years, atheromatous plaques (stenotic lesions) form at branchings and curves in the cerebral circulation, primarily the arteries, not in veins, near the sphincters, or in the venous sinuses.

REF: p. 404

21. A 60-year-old patient with a recent history of head trauma and a long-term history of hypertension presents to the ER for changes in mental status. MRI reveals that the patient has experienced a subarachnoid hemorrhage. What does the nurse suspect caused this type of stroke?
- Rheumatic heart disease
 - Thrombi
 - Aneurysm
 - Hypotension

ANS: C

The primary causative factor of subarachnoid hemorrhagic bleeding is an aneurysm, not thrombi, which would lead to thrombotic stroke. A thrombi would lead to a CVA from blockage, but not to hemorrhagic bleeding. Hypertension, not hypotension, would lead to a hemorrhagic stroke. Rheumatic heart disease is not associated with subarachnoid hemorrhages.

REF: pp. 404-405

22. A 75-year-old patient experienced a lacunar stroke. When looking through the history of the patient's chart, which of the following would the nurse expect to find?
- An embolus
 - An ischemic lesion
 - A hemorrhage
 - An aneurysm

ANS: B

A lacunar stroke is associated with occlusion of a single, deep perforating artery that supplies small penetrating subcortical vessels, causing ischemic lesions, not an embolus, hemorrhage, or aneurysm.

REF: p. 403

23. Upon autopsy of a 25-year-old, abnormalities in the media of the arterial wall and degenerative changes were detected. Which of the following would most likely accompany this finding?

- a. Fusiform aneurysm
- b. Saccular aneurysm
- c. Arteriovenous malformation
- d. Thrombotic stroke

ANS: B

Saccular aneurysms (berry aneurysms) occur frequently (in approximately 2% of the population) and likely result from congenital abnormalities in the media of the arterial wall and degenerative changes. Fusiform aneurysms (giant aneurysms) occur as a result of diffuse arteriosclerotic changes and are found most commonly in the basilar arteries or terminal portions of the internal carotid arteries. Arteriovenous malformation (AVM) is a tangled mass of dilated blood vessels creating abnormal channels between the arterial and venous systems. Thrombotic stroke would show signs of necrotic tissue, not degenerative changes.

REF: p. 404

24. A 48-year-old patient presents at the ER reporting an acute severe headache, nausea, photophobia, and nuchal rigidity. Which medical diagnosis is supported by these signs and symptoms?
- a. Diffuse brain injury
 - b. Subarachnoid hemorrhage
 - c. Epidural hematoma
 - d. Classic concussion

ANS: B

With subarachnoid hemorrhage, meningeal irritation occurs, leading to nuchal rigidity. Nuchal rigidity is not associated with a diffuse brain injury, an epidural hematoma, or a classic concussion.

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REF: pp. 405-406

25. A 65-year-old patient diagnosed with a subarachnoid hemorrhage secondary to uncontrolled hypertension appears drowsy and confused with pronounced focal neurologic deficits. This symptomatology would place this hemorrhage at which grade?
- a. I
 - b. II
 - c. III
 - d. IV

ANS: C

With grade III, the patient experiences drowsiness and confusion with or without focal neurologic deficits and pronounced meningeal signs. With grade I, neurologic status is intact with mild headache and slight nuchal rigidity. With grade II, neurologic deficit is evidenced by cranial nerve involvement and moderate-to-severe headache with more pronounced meningeal signs (e.g., photophobia, nuchal rigidity). With grade IV, the patient is stuporous with pronounced neurologic deficits (e.g., hemiparesis, dysphasia) and nuchal rigidity.

REF: p. 406, Table 16-6

26. A patient presents to a primary care provider reporting fever, headache, nuchal rigidity, and decreased consciousness. History includes a previously treated sinusitis. Which medical diagnosis is best supported by this assessment data?
- Aseptic meningitis
 - Bacterial meningitis
 - Fungal meningitis
 - Nonpurulent meningitis

ANS: B

Bacterial meningitis can occur secondary to sinusitis and is manifested by fever, tachycardia, chills, and a petechial rash with a severe throbbing headache, severe photophobia, and nuchal rigidity. The clinical manifestations of aseptic meningitis are milder than bacterial meningitis and are not associated with a previous infection such as sinusitis. Fungal meningitis presents as dementia. Nonpurulent meningitis is the same as aseptic and is milder and not associated with conditions such as sinusitis.

REF: p. 409

27. Most causes of encephalitis are which of the following?
- Bacterial
 - Viral
 - Fungal
 - Toxoid

ANS: B

Most causes of encephalitis are viral, not bacterial, fungal, or toxoid.

REF: p. 409

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28. A 15-month-old child from Pennsylvania was brought to the ER with symptomology that includes fever, seizure activity, cranial palsies, and paralysis. Which form of encephalitis is best supported by the available assessment data?
- Eastern equine encephalitis
 - Venezuelan encephalitis
 - St. Louis encephalitis
 - West Nile encephalitis

ANS: A

The symptoms indicate encephalitis, and given the residence of the child and the symptoms, the diagnosis is Eastern equine encephalitis. Venezuelan occurs in Texas, Florida, and the South. St. Louis occurs in Canada and the Pacific coast. West Nile occurs throughout the United States but primarily affects the elderly.

REF: p. 410, Table 16-8

29. A patient is newly diagnosed with multiple sclerosis (MS). What physiological change is causing the patient's symptoms?
- Depletion of dopamine in the central nervous system (CNS)
 - Demyelination of nerve fibers in the CNS
 - The development of neurofibril webs in the CNS
 - Reduced amounts of acetylcholine at the neuromuscular junction

ANS: B

The pathophysiology of MS includes demyelination of nerve fibers. Depletion of dopamine is related to Parkinson disease. The development of neurofibrils is related to Alzheimer disease. Myasthenia gravis is due to decreased amounts of acetylcholine at the junction.

REF: p. 411

30. When a patient asks, "What is the cause of multiple sclerosis?" the nurse bases the answer on the interaction between:
- vascular and metabolic factors.
 - bacterial infection and the inflammatory response.
 - autoimmunity and genetic susceptibility.
 - neurotransmitters and inherited genes.

ANS: C

Multiple sclerosis is due to an interaction between the autoimmune response and genetics.

Multiple sclerosis is an autoimmune disorder that is thought to have developed secondary to a viral infection. It is not bacterial, nor is it related to a neurotransmitter dysfunction or vascular or metabolic factors.

REF: p. 411

31. Patient teaching is considered successful regarding myasthenia gravis when the patient identifies its cause as being:
- viral infection of skeletal muscle.
 - atrophy of motor neurons in the spinal cord.
 - demyelination of skeletal motor neurons.
 - autoimmune injury at the neuromuscular junction.

ANS: D

Myasthenia gravis is a disorder resulting from autoimmune injury at the neuromuscular junction, not from a viral infection. It is not due to motor neuron atrophy, but a lack of acetylcholine. Multiple sclerosis (MS) is due to demyelination of skeletal motor neurons.

REF: p. 413

32. Patients diagnosed with myasthenia gravis often have tumors or pathologic changes in the:
- brain.
 - pancreas.
 - thymus.
 - lungs.

ANS: C

Patients diagnosed with myasthenia gravis experience tumors in the thymus, not the brain, the pancreas, or the lungs.

REF: p. 413

33. What are the most common primary central nervous system (CNS) tumors in adults?
- Meningiomas
 - Oligodendrogiomas
 - Astrocytomas

- d. Ependymomas

ANS: C

Astrocytomas are the most common primary tumors in the CNS, accounting for over 50%. Meningioma tumors usually originate from the arachnoidal (meningeal) cap cells in the dura mater and account for 30% of tumors. Oligodendrogiomas account for about 2% of tumors. Ependymomas are more common in children.

REF: p. 416

34. A patient presents with seizures. An MRI reveals a meningioma most likely originating from the:
- dura mater and arachnoid membrane.
 - astrocytes.
 - pia mater.
 - CNS neurons.

ANS: A

Meningioma tumors usually originate from the arachnoidal (meningeal) cap cells in the dura mater. Astrocytes are found in the brain but are not related to meningiomas. The pia mater is the location of the infection meningitis. Neurons are located throughout all regions of the brain.

REF: p. 417

35. The patient reports generalized muscle weakness. The health care provider orders administration of the medication edrophonium chloride (Tensilon). This medication is used in the diagnosis of: **N_UR_SI_NG_TB.C_OM**
- amyotrophic lateral sclerosis (ALS).
 - myasthenia gravis.
 - multiple sclerosis (MS).
 - autonomic hyperreflexia.

ANS: B

The diagnosis of myasthenia gravis is made on the basis of a response to edrophonium chloride (Tensilon). This medication is not associated with the diagnosis of ALS, MS, or autonomic hyperreflexia.

REF: p. 413

36. Which information is basic to the assessment findings associated with a patient diagnosed with an aneurysm?
- A headache is the most common symptom.
 - The majority are asymptomatic.
 - Nosebleeds are an early symptom.
 - Epidural hemorrhage occurs in over 80% of patients.

ANS: B

Aneurysms often are asymptomatic. A headache can occur but is not the most common symptom. Nosebleeds do not occur. Subarachnoid hemorrhage is the first indication.

REF: p. 405

37. What is the most common early symptom of a brain abscess?
- a. Neck rigidity
 - b. Vomiting
 - c. Drowsiness
 - d. Headache

ANS: D

Early manifestations include low-grade fever, headache (most common symptom), nausea and vomiting, neck pain and stiffness, confusion, drowsiness, sensory deficits, and communication deficits.

REF: p. 409

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Chapter 17: Alterations of Neurologic Function in Children

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. Which reflex of infancy will disappear first?
 - a. Stepping
 - b. Rooting
 - c. Palmar grasp
 - d. Moro reflex

ANS: A

The stepping reflex should no longer be obtainable at 6 weeks. The rooting reflex should no longer be obtainable at 4 months. The palmar grasp should no longer be obtainable at 6 months. The Moro reflex should no longer be obtainable at 3 months.

REF: p. 423, Table 17-1

2. A 10-month-old infant presents for a well-baby visit. Which of the following reflexes should be present at this age?
 - a. Stepping
 - b. Sucking
 - c. Landau
 - d. Palmar grasp

ANS: C

The Laundau reflex would be ~~NURSINGTB.COM~~ present up until 24 months. The stepping reflex should no longer be obtainable at 6 weeks. The sucking reflex should have disappeared by 10 months. The palmar grasp should no longer be obtainable at 6 months.

REF: p. 423, Table 17-1

3. During infancy, what is the fastest growing part of the human body?
 - a. Spinal cord
 - b. Limb bones
 - c. Head
 - d. Vertebral column

ANS: C

The head, not the spinal cord, limb bones, or vertebral column, is the fastest growing part of the body during infancy.

REF: p. 422

4. A nurse is preparing to teach about the most common defects of neural tube closure. Which one should the nurse discuss?
 - a. Anterior
 - b. Posterior
 - c. Lateral
 - d. Superior

ANS: B

Posterior neural tube defects are the most common. Neural tube defects associated with the other options are not as common.

REF: p. 424

5. An infant has an anterior midline defect of neural tube closure. What term will the nurse observe written on the chart?
- Anencephaly
 - Myelodysplasia
 - Cyclopia
 - Hydrocephalus

ANS: C

Cyclopia is an example of an anterior midline defect that may cause brain and face abnormalities. In anencephaly, the soft, bony component of the skull and part of the brain are missing. Myelodysplasia is a posterior neural tube disorder. Hydrocephalus is associated with accelerated head growth.

REF: p. 424

6. What nutrient should the nurse encourage a woman in the early stages of pregnancy to consume to prevent neural tube defects?
- Protein
 - Iron
 - Vitamin D
 - Folic acid

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ANS: D

Folic acid deficiency during early stages of pregnancy increases the risk for neural tube defects. Neural tube defects are not associated with deficiencies of protein, iron, or vitamin D.

REF: pp. 424-425

7. What term is used to document a herniation of brain and meninges through a defect in the occipital area of the skull?
- Encephalocele
 - Meningocele
 - Myelomeningocele
 - Craniosynostosis

ANS: A

An encephalocele refers to a herniation or protrusion of brain and meninges through a defect in the occipital region of the skull, resulting in a saclike structure. A meningocele is a saclike cyst of meninges filled with spinal fluid, a mild form of posterior neural tube closure defect. These can occur throughout the cervical, thoracic, and lumbar spine areas. A myelomeningocele is a hernial protrusion of a saclike cyst (containing meninges, spinal fluid, and a portion of the spinal cord with its nerves) through a defect in the posterior arch of a vertebra in the lower spine. Craniosynostosis is the premature closure of one or more of the cranial sutures (sagittal, coronal, lambdoid, and metopic) during the first 18-20 months of the infant's life.

REF: p. 425

8. Which term is used to document a hernial protrusion of a saclike cyst through a defect in the posterior arch of a vertebra?
- Craniosynostosis
 - Meningocele
 - Encephalocele
 - Myelomeningocele

ANS: D

A myelomeningocele is a hernial protrusion of a saclike cyst (containing meninges, spinal fluid, and a portion of the spinal cord with its nerves) through a defect in the posterior arch of a vertebra in the lower spine. Craniosynostosis is the premature closure of one or more of the cranial sutures (sagittal, coronal, lambdoid, metopic) during the first 18-20 months of the infant's life. A meningocele, a saclike cyst of meninges filled with spinal fluid, is a mild form of posterior neural tube closure defect. These can occur throughout the cervical, thoracic, and lumbar spine areas. An encephalocele refers to a herniation or protrusion of brain and meninges through a defect in the occipital region of the skull, resulting in a saclike structure.

REF: p. 425

9. What term is used to describe a premature closure of one or more of the cranial sutures during the first 18 months of life?
- Craniosynostosis
 - Congenital hydrocephalus
 - Microcephaly
 - Acrania

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ANS: A

Craniosynostosis is the premature closure of one or more of the cranial sutures. Congenital hydrocephalus is characterized by enlargement of the cerebral ventricles. Microcephaly is lack of brain growth with retarded mental and motor development. In acrania, the cranial vault is almost completely absent; an extensive defect of the vertebral column is often present.

REF: p. 426

10. A baby is stillborn after 6 hours of labor. Autopsy reveals hydrocephalus caused by cystic dilation of the fourth ventricle and aqueductal compression. Which of the following is the most likely diagnosis?
- Congenital hydrocephalus
 - Microcephaly
 - Dandy-Walker deformity
 - Macewen sign

ANS: C

The Dandy-Walker malformation is a congenital defect of the cerebellum characterized by a large posterior fossa cyst, which communicates with the fourth ventricle, and an atrophic upwardly rotated cerebellar vermis. Congenital hydrocephalus is characterized by enlargement of the cerebral ventricles. Microcephaly is lack of brain growth with retarded mental and motor development. Macewen sign is characterized by separation of the cranial sutures with a resonant sound when the skull is tapped.

REF: p. 428

11. What is the cause of true (primary) microcephaly?
 - a. Viral infection
 - b. An autosomal recessive gene
 - c. Fetal trauma
 - d. Hydrocephalus

ANS: B

True (primary) microcephaly is usually caused by an autosomal recessive genetic or chromosomal defect. Viral infections and fetal trauma can lead to microcephaly but are not the true cause. Hydrocephalus does not lead to microcephaly.

REF: p. 427

12. An infant is diagnosed with congenital hydrocephalus. Which of the following characteristics would the nurse expect to find?
 - a. Enlarged ventricles
 - b. Decreased cerebrospinal fluid (CSF) production
 - c. Increased resorption of CSF
 - d. Smaller than average head circumference

ANS: A

Congenital hydrocephalus is characterized by enlargement of the cerebral ventricles. Increased, not decreased, CSF production would lead to hydrocephalus. Decreased resorption of CSF would lead to hydrocephalus, not increased CSF. An infant with congenital hydrocephalus would have increased head circumference.

REF: p. 428

13. What is the most common type of cerebral palsy?
 - a. Ataxic
 - b. Dystonic
 - c. Spastic
 - d. Mixed

ANS: C

Spastic cerebral palsy accounts for approximately 70-80% of cerebral palsy cases. Ataxic cerebral palsy accounts for 5-10% of cerebral palsy cases. Dystonic cerebral palsy accounts for 10-20% of cerebral palsy cases. Mixed cases account for 13% of cerebral palsy cases.

REF: p. 429

14. A child is diagnosed with cerebral palsy, characterized by extreme difficulty in fine motor coordination and purposeful movement. Which of the following types of cerebral palsy is the child experiencing?
- Ataxic
 - Dystonic
 - Spastic
 - Mixed

ANS: B

Dystonic cerebral palsy is associated with extreme difficulty in fine motor coordination and purposeful movements. Ataxic cerebral palsy manifests with gait disturbances and instability. The infant with this form of cerebral palsy may have hypotonia at birth, but stiffness of the trunk muscles develops by late infancy. Spastic cerebral palsy is associated with increased muscle tone, persistent primitive reflexes, hyperactive deep tendon reflexes, clonus, rigidity of the extremities, scoliosis, and contractures. Mixed cerebral palsy may have symptoms of each of the disorders.

REF: p. 429

15. Which of the following diseases does the nurse screen for in all newborns?
- Epilepsy
 - Tay-Sachs disease
 - Pica
 - Phenylketonuria (PKU)

ANS: D

All newborns are screened for PKU. Not all newborns are screened for epilepsy, Tay-Sachs, or pica.

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REF: p. 430

16. Parents of a 3-month-old bring the infant to the emergency room (ER) after a seizure has caused muscle rigidity. Both parents are of Jewish ancestry. For what genetic disease should this infant be screened?
- Juvenile myoclonic epilepsy
 - Congenital encephalopathy
 - Tay-Sachs disease
 - PKU

ANS: C

Perhaps the best known of the lysosomal storage disorders is Tay-Sachs disease, an autosomal recessive disorder related to a deficiency of the enzyme hexosaminidase A (HEX A).

Approximately 80% of individuals diagnosed are of Jewish ancestry. Jewish ancestry is not necessarily associated with epilepsy, encephalopathy, or PKU.

REF: p. 430

17. A 3-year-old has been diagnosed with bacterial meningitis. What should the nurse expect to find on the lab report for the most common cause of this bacterial meningitis?
- Haemophilus influenzae*
 - Neisseria meningitidis*

- c. *Streptococcus pneumonia*
- d. *Escherichia coli*

ANS: B

The most common cause of bacterial meningitis in children under 4 is *Neisseria meningitidis*. *Haemophilus influenzae* formerly was the most common cause of bacterial meningitis, but vaccines have decreased this. *Streptococcus pneumonia* can cause meningitis and is the most common cause of bacterial meningitis in children under 23 months, while *Escherichia coli* is the most common cause of meningitis in the newborn.

REF: p. 431

18. It is true that viral meningitis:
- a. is always sudden in onset.
 - b. often occurs with measles, mumps, or herpes.
 - c. is effectively treated with antibiotics.
 - d. causes increased sugar in the cerebral spinal fluid (CSF).

ANS: B

Viral meningitis may result from a direct infection of a virus, or it may be secondary to disease, such as measles, mumps, or herpes. Onset may be sudden or gradual. Treatment is symptomatic; antibiotics are not used. Glucose in the CSF is normal.

REF: p. 431

19. A 3-year-old Black child with a history of sickle cell disease and is now diagnosed with meningitis. Which is the most likely microorganism the nurse will find on the lab report?
- a. Virus NURSINGTB.COM
 - b. *Haemophilus influenzae* type B
 - c. *Streptococcus pneumonia*
 - d. *Neisseria meningitidis*

ANS: C

Children with sickle cell disease are at risk for developing bacterial meningitis. These children do not experience an increased risk for the development of a viral infection, *Haemophilus influenzae*, or *Neisseria meningitidis*.

REF: p. 431

20. When should the nurse assess for the vomiting and headache that are the classic symptoms of childhood brain tumors?
- a. Morning
 - b. Early afternoon
 - c. As the sun goes down and darkness begins
 - d. During the middle of the night

ANS: A

Headache and vomiting occur more commonly in the morning.

REF: p. 434

21. A nurse is preparing to teach about brain tumors. Which information should the nurse include? The most common type of brain tumor in children is:
- Neuroblastoma
 - Astrocytoma
 - Meningioma
 - Germ cell

ANS: B

Astrocytoma is the most common type of brain tumor in children.

REF: p. 432

22. What is the most common location of brain tumors in children?
- Above the cerebellum
 - In the posterior fossa
 - In the anterior cerebrum
 - In the ventricular lining

ANS: B

Two thirds of all pediatric brain tumors are found in the posterior fossa, not above the cerebellum, in the cerebrum, or in the ventricular lining.

REF: p. 432

23. A nurse recalls that the most frequent location of a neuroblastoma is the:
- retroperitoneal region.
 - mediastinum.
 - cervical ganglion.
 - lung.

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ANS: A

65% of neuroblastomas occur in the retroperitoneal region. 15% of neuroblastomas occur in the mediastinum. 4% of neuroblastomas occur in the cervical ganglion. Neuroblastomas do not occur in the lung.

REF: p. 435

24. A 10-year-old presents with headache and seizures. CT scan reveals a tumor that is located near the pituitary gland. Which of the following is the most likely tumor type?
- Astrocytoma
 - Craniopharyngioma
 - Ependymoma
 - Medulloblastoma

ANS: B

A craniopharyngioma originates from the pituitary gland or hypothalamus. Symptoms include headache, seizures, diabetes insipidus, early onset of puberty, and growth delay.

Astrocytomas are located on the surface of the right or left cerebellar hemisphere and cause unilateral symptoms (occurring on the same side as the tumor), such as head tilt, limb ataxia, and nystagmus. Ependymoma develops in the fourth ventricle and arises from the ependymal cells that line the ventricular system. Medulloblastoma occurs as an invasive malignant tumor that develops in the vermis of the cerebellum and may extend into the fourth ventricle. Because both tumors are located in the posterior fossa region along the midline, presenting signs and symptoms are similar and are usually related to hydrocephalus and increased intracranial pressure.

REF: p. 434

MULTIPLE RESPONSE

1. A newborn child is diagnosed with a vertebral arch defect, spina bifida. This condition would lead the nurse to suspect the child may have which of the following as well? (select all that apply)
 - a. Type II Chiari malformation
 - b. Myelomeningocele
 - c. Meningocele
 - d. Acrania
 - e. Craniosynostosis

ANS: B, C

When meningocele and myelomeningocele occur, they are related to an accompanying vertebral defect that allows the protrusion of the neural tube contents. Type II Chiari malformation is a complex malformation of the brainstem and cerebellum in which the cerebellar tonsils are displaced downward into the cervical spinal canal. This does not occur through a spina bifida. In acrania, the cranial vault is almost completely absent; an extensive defect of the vertebral column is often present. Craniosynostosis is the premature closure of one or more of the cranial sutures.

REF: pp. 424-425

2. Assessment signs of neuroblastoma include: (select all that apply)
 - a. weight loss.
 - b. irritability.
 - c. fatigue.
 - d. fever.
 - e. constipation.

ANS: A, B, C, D

Systemic signs of neuroblastoma include weight loss, irritability, fatigue, fever, and intractable diarrhea, not constipation.

REF: p. 435

COMPLETION

1. The percent of retinoblastomas that are inherited as an autosomal dominant trait is ____%.

ANS: 40

REF: p. 436

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Chapter 18: Mechanisms of Hormonal Regulation

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. A nurse recalls that direct stimulation of the insulin-secreting cells of the pancreas by the autonomic nervous system is an example of which type of control?
 - a. Negative feedback
 - b. Positive feedback
 - c. Neural
 - d. Substrate-level dependent

ANS: C

Direct stimulation of the insulin-secreting cells of the pancreas by the autonomic nervous system is a form of neural control. Direct stimulation of insulin-secreting cells is not controlled by a feedback mechanism or by substrate-level dependency.

REF: p. 439

2. Which of the following is an example of the protein hormone?
 - a. Thyroxine (T₄)
 - b. Aldosterone
 - c. Testosterone
 - d. Insulin

ANS: D

Protein hormones are also water-soluble hormones, and insulin is a part of this group. Thyroxine, aldosterone, and testosterone are all lipid-soluble hormones and not protein hormones.

REF: p. 440, Table 18-1

3. A patient who has elevated thyroxine production should be assessed for which accompanying condition?
 - a. Increased thyroid-releasing hormone (TRH)
 - b. Increased anterior pituitary stimulation
 - c. Decreased T₄
 - d. Decreased thyroid-stimulating hormone (TSH)

ANS: D

Secretion of TSH stimulates the synthesis and secretion of thyroid hormones. Increasing levels of T₄ and T₃ then feedback negatively on the pituitary and hypothalamus to inhibit TRH and TSH synthesis. With increased thyroxine production, TRH will be decreased. Increased thyroxine would lead to decreased anterior pituitary stimulation. Thyroxine is T₄; its level will be elevated.

REF: p. 440

4. Which of the following is a water-soluble amine?
 - a. Growth hormone (GH)

- b. Luteinizing hormone (LH)
- c. Antidiuretic hormone (ADH)
- d. Epinephrine

ANS: D

An example of a water-soluble amine is epinephrine. GH is a water-soluble hormone but is a peptide. LH and ADH are water-soluble hormones, but both are polypeptides.

REF: p. 440, Table 18-1

5. What type of effect occurs when insulin binds to its receptors on muscle cells, resulting in an increase in glucose uptake by those muscle cells?
- a. Pharmacologic
 - b. Permissive
 - c. Biphasic
 - d. Direct

ANS: D

Direct effects are the obvious changes in cell function that result specifically from stimulation by a particular hormone as is true with insulin. Pharmacologic effects are the result of high doses of a drug. Permissive effects are less obvious hormone-induced changes that facilitate the maximal response or functioning of a cell. Biphasic effects are twofold effects.

REF: p. 441

6. Which control mechanism will a patient's target cells implement in order to adapt to high hormone concentrations?
- a. Negative feedback
 - b. Positive feedback
 - c. Down-regulation
 - d. Up-regulation

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ANS: C

High concentrations of hormone decrease the number of receptors; this is called down-regulation. Thus, the cell can adjust its sensitivity to the concentration of the signaling hormone. Negative and positive feedbacks regulate hormone release. Up-regulation is a response to low concentrations of hormone, thus increasing the number of receptors per cell.

REF: p. 441

7. How do lipid-soluble hormone receptors cross the plasma membrane?
- a. Diffusion
 - b. Osmosis
 - c. Active transport
 - d. Endocytosis

ANS: A

Lipid-soluble hormones cross by diffusion, not by osmosis, active transport, or endocytosis.

REF: p. 443 | p. 444, Figure 18-6

8. How do the releasing hormones that are made in the hypothalamus travel to the anterior pituitary?
 - a. Vessels of the zona fasciculata
 - b. Chromophils
 - c. Median eminence
 - d. Hypophyseal portal system

ANS: D

Neurons in the hypothalamus secrete releasing hormones into veins that carry the releasing hormones directly to the vessels of the adenohypophysis via the hypophyseal portal system, thus bypassing the normal circulatory route. Zona fasciculata secretes abundant amounts of cortisol from the adrenal gland. Chromophils are the secretory cells of the adenohypophysis. The median eminence is part of the posterior pituitary, not the anterior.

REF: p. 8

9. Which organ contains prolactin-inhibiting factor's target tissue?
 - a. Hypothalamus
 - b. Anterior pituitary
 - c. Mammary glands
 - d. Posterior pituitary

ANS: B

Prolactin-inhibiting factor (PIF) inhibits prolactin secretion by the anterior pituitary, not the hypothalamus, mammary glands, or posterior pituitary.

REF: p. 444, Table18- 4

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10. When a staff member asks the nurse which gland secretes ADH and oxytocin, how should the nurse respond?
 - a. Anterior pituitary
 - b. Posterior pituitary
 - c. Hypothalamus
 - d. Pineal

ANS: B

The posterior pituitary secretes ADH, which is also called vasopressin, and oxytocin. The anterior pituitary secretes ACTH, melanocyte-stimulating hormone (MSH), somatotropic hormones (GH, prolactin), and glycoprotein hormones—follicle-stimulating hormone (FSH), LH, and TSH. The hypothalamus secretes PRF, which stimulates secretion of prolactin; PIF (dopamine), which inhibits prolactin secretion; TRH, which affects release of thyroid hormones; GH-releasing hormone (GHRH), which stimulates the release of GH; somatostatin, which inhibits the release of GH; gonadotropin-releasing hormone (GnRH), which facilitates the release of FSH and LH; corticotropin-releasing hormone (CRH), which facilitates the release of ACTH and endorphins; and substance P, which inhibits ACTH release and stimulates release of a variety of other hormones.

The pineal gland secretes melatonin.

REF: p. 448

11. If a patient's posterior pituitary is removed, which hormone would the nurse expect to decrease?
- PRF
 - ADH
 - ACTH
 - Growth hormone (GH)

ANS: B

The hormones ADH and oxytocin are released from the posterior pituitary gland. PRF is released by the hypothalamus. ACTH is released by the anterior pituitary. GH is released by the hypothalamus.

REF: p. 448

12. ADH release from the posterior pituitary is stimulated by which process?
- Low blood pressure sensed by baroreceptors in the kidneys.
 - High plasma osmolarity sensed by osmoreceptors in the hypothalamus.
 - Low osmolality sensed by osmoreceptors in the kidneys.
 - High concentration of potassium sensed by chemoreceptors in the carotid body.

ANS: B

As plasma osmolality increases, osmoreceptors are stimulated, the rate of ADH secretion increases, more water is reabsorbed from the kidney, and the plasma is diluted back to its set point osmolality. ADH release is stimulated by high serum osmolality, not lowered blood pressure, low osmolality, or high concentrations of potassium.

REF: p. 448

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13. Where are the target cells for oxytocin located?
- Renal tubules
 - Thymus
 - Liver
 - Uterus

ANS: D

Oxytocin causes uterine contraction and lactation in women and may have a role in sperm motility in men. Oxytocin does not stimulate the renal tubules, the thymus, or the liver.

REF: p. 448

14. Which assessment finding would the nurse expect to be increased in a patient with deficient ADH production?
- Blood volume
 - Urine osmolality
 - Urine volume
 - Arterial vasoconstriction

ANS: C

With deficient ADH, the kidneys would not concentrate urine, leading to increased urine output. Blood volume would decrease with increased renal excretion of fluid. Urine osmolality would decrease. Arteries would dilate with deficient ADH production.

REF: p. 448

15. A 70-year-old female has brittle bones secondary to osteoporosis. Her primary care provider prescribes calcitonin to:
- activate vitamin D.
 - stimulate osteoclastic activity.
 - inhibit calcium resorption from bones.
 - promote thyroid hormone release.

ANS: C

Calcitonin lowers serum calcium levels by inhibition of bone-resorbing osteoclasts. Calcitonin does not activate vitamin D, stimulate bone-resorbing osteoclasts, or promote thyroid hormone release.

REF: p. 449

16. Which nutrient would the nurse encourage the patient to consume for thyroid hormone synthesis?
- Zinc
 - Sodium
 - Iodine
 - Calcium

ANS: C

Iodine, not zinc, sodium, or calcium, is necessary for synthesis of thyroid hormone.

REF: p. 450

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17. Which of the following lab results would indicate a slowdown in the rate of parathyroid hormone secretion?
- Increased serum calcium levels
 - Decreased serum calcium levels
 - Decreased levels of TSH
 - Increased levels of TSH

ANS: A

An increase, not a decrease, in serum calcium inhibits parathyroid hormone (PTH) secretion. Thyroid-stimulating hormone would not affect PTH secretion.

REF: p. 450

18. A 40-year-old patient undergoes surgery for a PTH-secreting tumor in which the parathyroid is removed. Which physiological alteration would the nurse expect following surgery?
- Increased serum calcium
 - Decreased bone formation
 - Decreased calcium reabsorption in the kidney
 - Increased calcitonin

ANS: C

PTH acts on the kidney to increase calcium reabsorption and to decrease phosphate reabsorption. None of the remaining options would be expected with such surgery.

REF: p. 450

19. Insulin is primarily regulated by:
- metabolic rate.
 - serum glucose levels.
 - prostaglandins.
 - enzyme activation.

ANS: B

Insulin secretion is promoted when blood levels of glucose rise. Insulin secretion is not only based on metabolic rate, prostaglandins, or enzyme activation but also on blood levels of glucose.

REF: p. 451

20. A patient is diagnosed with a hormone-secreting tumor of the pancreas alpha cells. Which of the following would the nurse expect to be most likely increased in this patient?
- Amylin
 - Glucagon
 - Insulin
 - Somatostatin

ANS: B

Glucagon is produced by the alpha cells of the pancreas. Amylin and insulin are secreted by the beta cells. Somatostatin is produced by the delta cells.

REF: p. 452

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21. A nurse recalls insulin has an effect on which of the following groups of electrolytes?
- Sodium, chloride, phosphate
 - Calcium, magnesium, potassium
 - Hydrogen, bicarbonate, chloride
 - Potassium, magnesium, phosphate

ANS: D

Insulin facilitates the intracellular transport of potassium (K^+), phosphate, and magnesium. Insulin does not facilitate the intracellular transport of sodium, chloride, calcium, hydrogen, or bicarbonate.

REF: pp. 451-452

22. Which is the most potent naturally occurring glucocorticoid?
- Aldosterone
 - Testosterone
 - Cortisol
 - Prolactin

ANS: C

The most potent naturally occurring glucocorticoid is cortisol, not aldosterone, testosterone, or prolactin.

REF: p. 453

23. What can trigger ACTH to be released?
- High serum levels of cortisol
 - Hypotension
 - Hypoglycemia
 - Stress

ANS: D

Stress increases ACTH secretion. ACTH regulates the release of cortisol from the adrenal cortex. It is not stimulated by high serum cortisol levels. Neither hypotension nor hypoglycemia stimulates ACTH secretion.

REF: p. 455

24. A 39-year-old female is recovering from the birth of her third child. Which hormone would help prevent uterine bleeding?
- Aldosterone
 - Cortisol
 - Prolactin
 - Oxytocin

ANS: D

Oxytocin functions near the end of labor to enhance effectiveness of contractions, promote delivery of the placenta, and stimulate postpartum uterine contractions, thereby preventing excessive bleeding. Aldosterone regulates water balance. Cortisol helps protect from stress. Prolactin assists with milk production.

REF: p. 448

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25. Where is the main site of aldosterone synthesis?
- Liver
 - Kidneys
 - Adrenal cortex
 - Hypothalamus

ANS: C

The adrenal cortex, not the liver, kidneys, or the hypothalamus, synthesizes aldosterone.

REF: p. 453

26. A patient with one kidney underwent surgery for an adrenal tumor that removed a large portion of the zona glomerulosa. The nurse would expect a postsurgical decrease in the patient's:
- sodium.
 - aldosterone.
 - potassium.
 - acid.

ANS: B

The zona glomerulosa, the outer layer, constitutes about 15% of the cortex and primarily produces the mineralocorticoid aldosterone. The zona glomerulosa is not associated with sodium, potassium, or acid production.

REF: p. 453

27. What regulates aldosterone secretion?
- The sympathetic nervous system
 - ACTH feedback
 - The renin-angiotensin system
 - Positive feedback

ANS: C

Aldosterone synthesis and secretion are regulated primarily by the renin-angiotensin system. Aldosterone synthesis and secretion are not regulated by the sympathetic nervous system, adrenocorticotrophic hormone feedback, or positive feedback.

REF: p. 455

28. If a patient has a problem with the adrenal medulla, which of the following hormones should the nurse monitor?
- Cortisol
 - Epinephrine
 - Androgens
 - Estrogens

ANS: B

The major products stored and secreted by the adrenal medulla are the catecholamines epinephrine (adrenaline) and norepinephrine. The adrenal cortex secretes cortisol and androgens. The pituitary secretes estrogens.

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REF: p. 456, Figure 18-19

29. When catecholamines are released in a patient, what should the nurse assess for?
- Nutrient absorption
 - Fluid retention
 - Hypotension
 - Hyperglycemia

ANS: D

Catecholamines cause hyperglycemia and immune suppression. Catecholamines do not cause nutrient absorption, fluid retention, or hypotension.

REF: p. 456

30. If the patient has a problem with the pineal gland, which substance would the nurse monitor?
- Melatonin
 - Epinephrine
 - Cortisol
 - Somatostatin

ANS: A

The pineal glands secrete melatonin. The adrenal medulla secretes epinephrine. The adrenal cortex secretes cortisol. The thyroid gland secretes somatostatin.

REF: p. 448

MULTIPLE RESPONSE

1. Elevated levels of glucocorticoids result in which of the following assessment findings?
(select all that apply)
 - a. Polycythemia
 - b. Increased appetite
 - c. Weight loss
 - d. Decreased calcium
 - e. Increased height

ANS: A, B, D

Increased glucocorticoid secretion leads to polycythemia, increased appetite, fat deposition in the face and cervical areas, decreased serum calcium levels, and interference with the action of growth hormone so that somatic growth is inhibited. Weight gain and loss of height are expected.

REF: p. 453

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Chapter 19: Alterations of Hormonal Regulation

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. Besides hyposecretion and hypersecretion, endocrine system dysfunction can result from:
 - a. abnormal receptor activity.
 - b. abnormal hormone levels.
 - c. increased synthesis of second messengers.
 - d. extracellular electrolyte alterations.

ANS: A

Dysfunction may result from abnormal cell receptor function or from altered intracellular response to the hormone-receptor complex. Abnormal hormone levels can occur but are not the cause of endocrine dysfunction. Intracellular storage of second-messenger hormones would not lead to dysfunction; receptor function does. Extracellular electrolyte alterations may result from dysfunction, but they are not a cause.

REF: p. 460

2. What is the most common cause of elevated levels of antidiuretic hormone (ADH) secretion?
 - a. Autoimmune disease
 - b. Cancer
 - c. Pregnancy
 - d. Heart failure

ANS: B

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The most common cause of elevated levels of ADH is cancer, not autoimmune disorders, pregnancy, or heart failure.

REF: p. 461

3. A 54-year-old patient with pulmonary tuberculosis is evaluated for syndrome of inappropriate ADH secretion (SIADH). Which electrolyte imbalance would be expected in this patient?
 - a. Hyponatremia
 - b. Hyperkalemia
 - c. Hypernatremia
 - d. Hypokalemia

ANS: A

Hyponatremia occurs due to increased water reabsorption by kidneys. Hyperkalemia does not occur due to increased water reabsorption. Sodium levels are lowered with hyponatremia; they are not elevated. Hypokalemia does not occur; SIADH is a problem of sodium.

REF: pp. 461-462

4. A 44-year-old patient with pulmonary tuberculosis is evaluated for SIADH. Which assessment finding would support this diagnosis?
 - a. Peripheral edema
 - b. Tachycardia

- c. Low blood pressure
- d. Concentrated urine

ANS: D

Clinical manifestations of SIADH include urine that is inappropriately concentrated with respect to serum osmolarity. Symptomology of SIADH does not include peripheral edema, tachycardia, or low blood pressure.

REF: p. 462

5. A nurse is caring for a patient diagnosed with SIADH. What severe complication should the nurse assess for?
- a. Stroke
 - b. Diabetes insipidus
 - c. Neurologic damage
 - d. Renal failure

ANS: C

When the hyponatremia of SIADH becomes severe, 110-115 milliequivalents per liter, confusion, lethargy, muscle twitching, convulsions, and severe and sometimes irreversible neurologic damage may occur. Neither stroke, diabetes insipidus, nor renal failure is associated with SIADH.

REF: p. 462

6. A patient is admitted to the intensive care unit with a closed head injury sustained in a motorcycle accident. The injury has caused severe damage to the posterior pituitary. Which of the following complications ~~should the nurse anticipate?~~ should the nurse anticipate?
- a. Dilutional hyponatremia
 - b. Dehydration from polyuria
 - c. Cardiac arrest from hyperkalemia
 - d. Metabolic acidosis

ANS: B

Diabetes insipidus is a well-recognized complication of closed head injury and is manifested by polyuria leading to dehydration. The patient will experience hypernatremia, not hyponatremia. Electrolytes other than sodium are typically not affected with diabetes insipidus. Acidosis is not associated with diabetes insipidus.

REF: p. 462

7. While planning care for a patient from general anesthesia, which principle should the nurse remember? A side effect of some general anesthetic agents is _____ diabetes insipidus.
- a. neurogenic
 - b. nephrogenic
 - c. psychogenic
 - d. allogenic

ANS: B

General anesthetics can lead to nephrogenic diabetes insipidus (DI). General anesthetics are not associated with any of the other forms of DI.

REF: p. 462

8. Diabetes insipidus, diabetes mellitus (DM), and SIADH share which of the following assessment manifestations?
- Polyuria
 - Edema
 - Vomiting
 - Thirst

ANS: D

All three share thirst as a common clinical manifestation. SIADH does not have polyuria as a clinical manifestation. Diabetes insipidus does not have edema as a clinical manifestation.

SIADH is manifested by gastrointestinal symptoms; the other two are not.

REF: pp. 461-462 | p. 473

9. A patient presents with polyuria and extreme thirst and is given exogenous ADH. For which of the following conditions would this treatment be effective?
- Neurogenic diabetes insipidus
 - Psychogenic diabetes insipidus
 - Nephrogenic diabetes insipidus
 - SIADH

ANS: A

Neurogenic diabetes insipidus is caused by the insufficient secretion of ADH; thus, exogenous ADH would be useful in the treatment of this disorder. Psychogenic diabetes insipidus is due to increased intake of water and would not respond to exogenous ADH. ADH is high in nephrogenic diabetes insipidus; thus, exogenous ADH would be contraindicated. SIADH is manifested by high levels of ADH; thus, exogenous administration of ADH would be contraindicated.

REF: p. 462

10. A patient presents with breast discharge, dysmenorrhea, and excessive excitability. Tests reveal that all pituitary hormones are elevated. What does the nurse suspect as the most likely cause for these assessment findings?
- A pituitary adenoma
 - Hypothalamic hyposecretion
 - Hypothalamic inflammation
 - Pheochromocytoma

ANS: A

Hormonal effects of pituitary adenomas include hypersecretion from the adenoma itself and hyposecretion from surrounding pituitary cells; in this case, prolactin would be elevated with the manifestation of menstrual irregularities and secretion from the breast.

These symptoms are not indicative of hypothalamic inflammation, which would lead to hyposecretion. Pheochromocytoma is a tumor of the adrenal gland and would be manifested by elevated blood pressure.

REF: p. 464

11. What common neurologic disturbances should the nurse assess for in a patient with a pituitary adenoma?
- Coma
 - Visual disturbances
 - Confused states
 - Breathing abnormalities

ANS: B

The clinical manifestations of pituitary adenomas are visual changes including visual field impairments (often beginning in one eye and progressing to the other) and temporary blindness. Coma, confusion, and breathing abnormalities are not associated with pituitary adenomas.

REF: p. 464

12. Which assessment result would the nurse expect to find associated with a patient diagnosed with Graves disease?
- High levels of circulating thyroid-stimulating autoantibodies
 - Ectopic secretion of thyroid-stimulating hormone (TSH)
 - Low circulating levels of thyroid hormones
 - Increased circulation of iodine

ANS: A

Graves disease results from a form of type II hypersensitivity in which there is stimulation of the thyroid by autoantibodies directed against the TSH receptor. The thyroid-stimulating antibodies stimulate TSH receptors; it is not an ectopic secretion. Graves disease is manifested by elevated levels of thyroid hormones. Iodine deficiency leads to goiter but not Graves disease.

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REF: p. 467

13. While checking the lab results for a patient diagnosed with Graves disease, the nurse would expect the T_3 level to be abnormally:
- low.
 - high.
 - variable.
 - absent.

ANS: B

T_3 levels are elevated in Graves disease.

REF: p. 467

14. A patient diagnosed with Graves disease is admitted to a medical-surgical unit. Which of the following symptoms would the nurse expect to find before treatment?
- Weight gain, cold intolerance
 - Slow heart rate, rash
 - Skin hot and moist, rapid heart rate
 - Constipation, confusion

ANS: C

Symptoms of Graves disease include heat intolerance and increased tissue sensitivity to stimulation by the sympathetic division of the autonomic nervous system. Weight loss, rather than weight gain, and heat intolerance would result. Tachycardia, not slow heart rate, would occur. Diarrhea would occur as opposed to constipation.

REF: p. 467, Figure 19-5

15. Visual disturbances are a common occurrence in patients with untreated Graves disease. The endocrinologist explains to the patient that the main cause of these complications is:
- decreased blood flow to the eye.
 - orbital edema and protrusion of the eyeball.
 - TSH neurotoxicity to retinal cells.
 - local lactic acidosis.

ANS: B

Visual disturbances with Graves disease include orbital fat accumulation, inflammation, and edema of the orbital contents resulting in exophthalmos (protrusion of the eyeball), periorbital edema, and extraocular muscle weakness leading to diplopia (double vision).

Blood flow to the eye is not an effect, but visual changes occur. Functional abilities of the eye result from hyperactivity of the sympathetic system. Lactic acid is not involved with visual changes in the eye.

REF: p. 468

16. Palpation of the neck of a patient diagnosed with Graves disease would most likely reveal:
- a normal-sized thyroid.
 - a small discrete thyroid nodule.
 - multiple discrete thyroid nodules.
 - diffuse thyroid enlargement.

ANS: D

A patient with Graves disease would reveal stimulation of the gland causing diffuse thyroid enlargement. In Graves disease, the thyroid will not have nodules present.

REF: p. 467, Figure 19-5

17. Which hypothyroid diagnosis is supported by low levels of TSH?
- Primary
 - Secondary
 - Autoimmune
 - Atypical

ANS: B

Causes of secondary hypothyroidism are related to either pituitary or hypothalamic failure, which would be evident by low levels of TSH. Primary and autoimmune hypothyroidism would be evident by elevated levels of TSH. Atypical hypothyroidism would be evident by normal or elevated TSH.

REF: p. 469, Figure 19-8

18. When considering hypothyroidism, the basal metabolic rate is unusually:
- high.

- b. low.
- c. steady.
- d. variable.

ANS: B

The metabolic rate with hypothyroidism is low.

REF: p. 469

19. A patient diagnosed with thyroid carcinoma would be expected to have T₃ and T₄ levels that are:
- a. high.
 - b. low.
 - c. normal.
 - d. variable.

ANS: C

Most individuals with thyroid carcinoma have normal T₃ and T₄ levels and are therefore euthyroid.

REF: p. 470

20. A 45-year-old diagnosed with Graves disease underwent surgical removal of the thyroid gland. During the postoperative period, the patient's serum calcium is low. The most probable reason for her low serum calcium is:
- a. hyperparathyroidism secondary to Graves disease.
 - b. myxedema secondary to surgery.
 - c. hypoparathyroidism caused by surgical injury to the parathyroid glands.
 - d. hypothyroidism resulting from lack of thyroid replacement.

ANS: C

Hypoparathyroidism is most commonly caused by damage to the parathyroid glands during thyroid surgery, not secondary to Graves disease, myxedema, or the lack of thyroid replacement.

REF: p. 470

21. A 30-year-old diagnosed with Graves disease is admitted to a hospital unit for the surgical removal of the thyroid gland. During the postoperative period, the nurse notes that the patient's serum calcium is low. The nurse should observe the patient for which of the following signs/symptoms?
- a. Muscle weakness and constipation
 - b. Laryngeal spasms and hyperreflexia
 - c. Abdominal pain and fever
 - d. Anorexia, nausea, and vomiting

ANS: B

Symptoms of low calcium are associated with tetany, a condition characterized by muscle spasms, hyperreflexia, tonic-clonic convulsions, and laryngeal spasms. Symptoms of low calcium are not associated with muscle weakness, constipation, abdominal pain, anorexia, nausea, or vomiting.

REF: p. 471

22. What is the most common cause of hypoparathyroidism?
- Pituitary hyposecretion
 - Parathyroid adenoma
 - Parathyroid gland injury
 - Hypothalamic inactivity

ANS: C

Hypoparathyroidism is most commonly caused by damage to the parathyroid glands, not pituitary hyposecretion, parathyroid adenoma, or inactivity of the hypothalamus.

REF: p. 470

23. A 25-year-old male presents to his primary care provider reporting changes in facial features. CT scan reveals a mass on the anterior pituitary, and lab tests reveal severely elevated growth hormone (GH). Which of the following would the nurse also expect to find?
- Decreased IGF-1
 - Hypotension
 - Muscular atrophy
 - Height increases

ANS: C

With elevated levels of GH, there is resulting bony and soft tissue overgrowth; nerve entrapment occurs, leading to peripheral nerve damage manifested by weakness, muscular atrophy, foot drop, and sensory changes in the hands. IGF-1 increases, and there is an overgrowth of bone but not an increase in height or hypotension.

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REF: p. 465

24. A patient presents reporting visual disturbances. When CT reveals a pituitary tumor and lab tests reveal elevated prolactin, the diagnosis of prolactinoma is made. Which intervention is the treatment of choice for this condition?
- Dopaminergic agonists
 - Calcium
 - Insulin
 - Radiation

ANS: A

Dopaminergic agonists (bromocriptine and cabergoline) are the treatment of choice for prolactinomas. Calcium is used to treat parathyroid disease. Insulin is used to treat diabetes. Radiation is not used to treat prolactinomas.

REF: p. 466

25. What is the cause of type 1 diabetes mellitus (DM)?
- A familial, autosomal dominant gene defect
 - Obesity and lack of exercise
 - Immune destruction of the pancreas
 - Hyperglycemia from eating too many sweets

ANS: C

The most common cause of type 1 DM is a slowly progressive autoimmune T-cell-mediated disease that destroys the beta cells of the pancreas; it is not due to a gene defect. Although obesity can contribute to diabetes, it doesn't cause type 1 DM. Eating too many sweets may contribute to the development of obesity.

REF: p. 472

26. What is the purpose of the glycosylated hemoglobin (hemoglobin A1c) test?
- Measuring fasting glucose levels.
 - Monitoring long-term serum glucose control.
 - Detecting acute complications of diabetes.
 - Checking for hyperlipidemia.

ANS: B

Glycosylated hemoglobin refers to the permanent attachment of glucose to hemoglobin molecules and reflects the average plasma glucose exposure over the life of a red blood cell (approximately 120 days). Glycosylated hemoglobin does not measure fasting, but rather glucose control over time. Glycosylated hemoglobin does not identify complications but could provide data if the patient is at risk. Glycosylated hemoglobin does not check for hyperlipidemia.

REF: p. 471

27. An 11-year-old is newly diagnosed with type 1 DM. Which classic symptoms should the nurse assess the patient for?
- Recurrent infections, visual changes, fatigue, and paresthesia
 - Polydipsia, polyuria, polyphagia, and weight loss
 - Vomiting, abdominal pain, sweet, fruity breath, dehydration, and Kussmaul breathing
 - Weakness, vomiting, hypotension, and mental confusion

ANS: B

Classic symptoms of type 1 DM include polydipsia, polyuria, polyphagia, and weight loss. Recurrent infections and visual changes are complications of diabetes. Vomiting, abdominal pain, and sweet breath are signs of diabetic ketoacidosis. Weakness, hypotension, and mental confusion are signs of hypoglycemia.

REF: p. 473

28. A 19-year-old female with type 1 DM was admitted to the hospital with the following lab values: serum glucose 500 milligrams per deciliter (high), urine glucose and ketones 4+ (high), and arterial pH 7.20 (low). Her parents state that she has been sick with the "flu" for a week. Which of the following statements best explains her acidotic state?
- Increased insulin levels promote protein breakdown and ketone formation.
 - Her uncontrolled diabetes has led to renal failure.
 - Low serum insulin promotes lipid storage and a corresponding release of ketones.
 - Insulin deficiency promotes lipid metabolism and ketone formation.

ANS: D

With insulin deficiency, lipolysis is enhanced, and there is an increase in the amount of nonesterified fatty acids delivered to the liver. The consequence is increased glycogenesis contributing to hyperglycemia and production of ketone bodies (acetoacetate, hydroxybutyrate, and acetone) by the mitochondria of the liver at a rate that exceeds peripheral use. Insulin levels are decreased. There is no evidence that the patient is in renal failure. Insulin is low, but the ketones are the result of fatty acid breakdown due to lack of insulin, not because of lipid storage.

REF: p. 477

29. What causes the chronic microvascular and macrovascular complications of DM?
- Pancreatic changes
 - Hyperglycemia
 - Ketone toxicity
 - Hyperinsulinemia

ANS: B

The underlying cause of the microvascular and macrovascular diseases is related to hyperglycemia, not pancreatic changes, ketone toxicity, or hyperinsulinemia.

REF: p. 478

30. Which condition is considered the ultimate cause of death in the patient with diabetes?
- Renal disease
 - Stroke
 - Cardiovascular disease
 - Cancer

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ANS: C

Cardiovascular disease, not renal disease, stroke, or cancer, is the ultimate cause of death in up to 68% of people with diabetes.

REF: p. 481

31. What is the earliest manifestation of diabetes-induced kidney dysfunction?
- Polyuria
 - Glycosuria
 - Microalbuminuria
 - Decreased glomerular filtration

ANS: C

Polyuria occurs due to increased fluid in the vascular space, and microalbuminuria is the earliest manifestation. While glycosuria occurs due to hyperglycemia, it is not the first sign of kidney dysfunction. Decreased glomerular filtration and polyuria can occur due to changes, but neither are initial manifestations.

REF: p. 479

32. A patient is admitted to the medical unit for complications of long-term, poorly controlled type 2 DM. Which of the following would the nurse expect to find in addition to elevated glucose?
- Atherosclerosis

- b. Metabolic alkalosis
- c. Elevated liver enzymes
- d. Anemia

ANS: A

Macrovascular disease (lesions in large and medium-sized arteries) increases morbidity and mortality and increases risk for accelerated atherosclerosis. Acidosis, rather than alkalosis, would occur in this patient. Neither elevated liver enzymes nor anemia would be expected.

REF: p. 480

33. A nurse checks lab results as both Cushing disease and Addison disease can manifest with elevated levels of:
- a. ADH.
 - b. estrogen.
 - c. adrenocorticotrophic hormone (ACTH).
 - d. aldosterone.

ANS: C

Cushing disease and Addison disease are related to elevated levels of ACTH, not ADH, estrogen, or aldosterone.

REF: p. 482

34. Which of the following alterations would the nurse expect to find in a patient with untreated Cushing disease or syndrome?
- a. Bradycardia
 - b. Tachypnea
 - c. Hyperkalemia
 - d. Hypertension

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ANS: D

With elevated cortisol levels, vascular sensitivity to catecholamines increases significantly, leading to vasoconstriction and hypertension. Tachycardia is more likely than bradycardia due to increased sensitivity to catecholamines. Tachypnea does not occur; the patient experiences hypertension. Hyokalemia, not hyperkalemia, occurs.

REF: p. 482

35. Which physical feature supports the diagnosis of Cushing syndrome?
- a. Weight loss and muscle wasting
 - b. Truncal obesity and moon face
 - c. Pallor and swollen tongue
 - d. Depigmented skin and eyelid lag

ANS: B

Weight gain is the most common feature and results from the accumulation of adipose tissue in the trunk, facial, and cervical areas. These characteristic patterns of fat deposition have been described as “truncal obesity,” “moon face,” and “buffalo hump.”

Weight gain, not loss, is the most common feature of Cushing syndrome. Pallor is not associated with Cushing syndrome. The skin of the patient with Cushing syndrome is bronze in color.

REF: p. 482

36. A 35-year-old female took corticosteroid therapy for several months. Which of the following would the nurse expect to find?
- Renal toxicity
 - Episodes of hypoglycemia
 - Hypotension
 - Type 2 DM

ANS: D

Overt DM develops in approximately 20% of individuals with hypercortisolism. Diabetes develops not renal toxicity, but hyperglycemia and hypertension may occur.

REF: p. 482

37. What is the most common cause of Addison disease?
- An autoimmune reaction
 - Dietary deficiency of sodium and potassium
 - Cancer
 - Viral infection of the pituitary gland

ANS: A

Addison disease is caused by autoimmune mechanisms that destroy adrenal cortical cells and is more common in women. Addison disease is not due to dietary deficiency, to cancer, or to a viral infection.

REF: p. 484

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38. Which symptom would the nurse expect in a patient diagnosed with hyperaldosteronism?
- Hypovolemia
 - Hypotension
 - Hypokalemia
 - Hyponatremia

ANS: C

Hypertension, hypokalemia, and neuromuscular manifestations are the hallmarks of primary hyperaldosteronism. Neither hypovolemia nor hyponatremia is associated with hyperaldosteronism.

REF: p. 483

39. The body's inability to conserve water and sodium when affected by Addison disease is explained by which of the following conditions?
- Elevated levels of cortisol
 - Decreased levels of ACTH
 - Hypersecretion of ADH
 - Aldosterone deficiency

ANS: D

The symptoms of Addison disease are primarily a result of hypocortisolism, elevated serum ACTH, and hypoaldosteronism. ADH does not play a role in Addison disease.

REF: pp. 484-485

40. A patient diagnosed with Addison disease reports weakness and is easily fatigued. What is the root of these symptoms?
- Hyperkalemia
 - Hypoglycemia
 - Hypocortisolism
 - Metabolic acidosis

ANS: C

With mild-to-moderate hypocortisolism, symptoms usually begin with weakness and easy fatigability. The weakness is not due to hyperkalemia, hypoglycemia, or metabolic acidosis.

REF: p. 484

41. What is the cause of the hyperpigmentation seen in people with Cushing syndrome?
- Abnormal levels of cortisol
 - Permissive effects of aldosterone when cortisol levels are altered
 - Elevated levels of ACTH
 - Hypersensitivity of melanocytes with sun exposure

ANS: C

Bronze or brownish hyperpigmentation of the skin, mucous membranes, and hair occurs when there are very high levels of ACTH. The pigmentation changes associated with Cushing syndrome and Addison disease are not due to increased levels of cortisol or hypersensitivity of melanocytes. Aldosterone affects fluid balance.

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REF: p. 482

42. A 30-year-old presents with hypertension, headache, tachycardia, impaired glucose tolerance, and weight loss. Which of the following diagnoses is supported by this symptomatology?
- Addison disease
 - Conn disease
 - Cushing disease
 - Pheochromocytoma

ANS: D

Symptoms of pheochromocytoma include hypertension, palpitations, tachycardia, glucose intolerance, excessive sweating, and constipation. Manifestations of Addison disease include weakness, fatigability, hypoglycemia and related metabolic problems, lowered response to stressors, hyperpigmentation, vitiligo, and manifestations of hypovolemia and hyperkalemia. Hypertension and hypokalemia are the hallmarks of Conn disease. Weight gain is the most common feature in Cushing disease and results from the accumulation of adipose tissue in the trunk, facial, and cervical areas. These characteristic patterns of fat deposition have been described as “truncal obesity,” “moon face,” and “buffalo hump.”

REF: p. 485

MULTIPLE RESPONSE

1. A nurse is assessing a patient with hypoparathyroidism. Clinical manifestations of hypoparathyroidism include: (select all that apply)
 - a. tetany.
 - b. Chvostek sign.
 - c. Trousseau sign.
 - d. oily skin.
 - e. hair loss.

ANS: A, B, C, E

Symptoms of hypoparathyroidism include tetany, Chvostek and Trousseau signs, dry (not oily) skin, and loss of body and scalp hair.

REF: p. 471

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Chapter 20: Structure and Function of the Hematologic System

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. While checking lab results, the nurse remembers that the normal leukocyte count is:
 - a. 1000-2000 per cubic millimeter.
 - b. 5000-10,000 per cubic millimeter.
 - c. 4.2-6.2 million per cubic millimeter.
 - d. 1.2-2.2 million per cubic millimeter.

ANS: B

5000-10,000 per cubic millimeter is the normal leukocyte count. 1000-2000 per cubic millimeter is an abnormally low leukocyte count. 4.2-6.2 million per cubic millimeter is the normal erythrocyte count. 1.2-2.2 million per cubic millimeter would indicate anemia.

REF: p. 492

2. While reviewing lab results, the nurse recalls that the most abundant cells in the blood are:
 - a. leukocytes.
 - b. lymphocytes.
 - c. erythrocytes.
 - d. thrombocytes.

ANS: C

Erythrocytes (red blood cells) are the most abundant cells of the blood, occupying approximately 48% of the blood.

REF: p. 491

3. An adult patient's blood sample is analyzed in a laboratory. Assuming a normal sample, which type of white blood cell accounts for the highest percentage?
 - a. Neutrophil
 - b. Eosinophil
 - c. Basophil
 - d. Lymphocyte

ANS: A

Neutrophils constitute about 40-60% of the total leukocyte count in adults. The eosinophils, which have large, coarse granules, constitute only 1-4% of the normal leukocyte count in adults. Basophils make up less than 1% of the leukocytes. Lymphocytes constitute approximately 36% of the total leukocyte count.

REF: p. 492

4. A group of cells isolated in the laboratory have membrane-bound granules in their cytoplasm, and they show phagocytic activity. Which of the following cells is most similar?
 - a. Monocyte
 - b. Macrophage
 - c. Lymphocyte

- d. Eosinophil

ANS: D

Eosinophils, which have large, coarse granules, are capable of ameboid movement and phagocytosis. Monocytes help fight infection. Macrophages are mature monocytes. Lymphocytes are the primary cells of the immune response.

REF: p. 493

5. The predominant phagocyte of early inflammation is the:
- eosinophil.
 - lymphocyte.
 - macrophage.
 - neutrophil.

ANS: D

Neutrophils are the chief phagocytes of early inflammation. Eosinophils ingest antigen-antibody complexes and are induced by IgE-mediated hypersensitivity reactions to attack parasites. Most lymphocytes transiently circulate in the blood and eventually reside in lymphoid tissues as mature T cells, B cells, or plasma cells. Macrophages migrate out of the vessels in response to infection or inflammation but are not the early responders.

REF: p. 492

6. Which type of white blood cell contains preformed granules of vasoactive amines?
- Neutrophil
 - Eosinophil
 - Monocyte
 - Basophil

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ANS: D

Basophils have cytoplasmic granules that contain vasoactive amines (e.g., histamine) and an anticoagulant (heparin). Their function is similar to tissue mast cells. Neutrophils are the chief phagocytes of early inflammation. Eosinophils ingest antigen-antibody complexes and are induced by IgE-mediated hypersensitivity reactions to attack parasites. Monocytes do not have amines, and their job is to help fight infection.

REF: p. 493

7. Monocytes are blood cells that mature (differentiate) into:
- macrophages.
 - neutrophils.
 - eosinophils.
 - mast cells.

ANS: A

Monocytes mature into macrophages, not neutrophils, eosinophils, or mast cells.

REF: p. 493

8. In addition to playing a role in hemostasis, platelets have the ability to:
- stimulate bone marrow production of erythrocytes.

- b. release biochemical mediators of inflammation.
- c. undergo cell division in response to bleeding.
- d. activate a humoral response.

ANS: B

Platelets contain cytoplasmic granules capable of releasing proinflammatory biochemical mediators when stimulated by injury to a blood vessel. Platelets assist with inflammation; they do not produce erythrocytes, undergo cell division in response to bleeding, or activate the humoral response.

REF: pp. 493-494

- 9. While planning care for a newborn, the pediatric nurse recalls that the site of hematopoiesis in the fetus is the:
 - a. bone marrow.
 - b. kidney.
 - c. lymph nodes.
 - d. spleen.

ANS: D

Hematopoiesis is constantly ongoing, occurring in the liver and spleen of the fetus and only in bone marrow (*medullary hematopoiesis*) after birth. Fetal hematopoiesis does not occur in the bone marrow, kidney, or lymph nodes.

REF: p. 497

- 10. Which of the following assessment findings is most likely to occur following a splenectomy?
 - a. Leukocytosis
 - b. Hypoglycemia
 - c. Decreased red blood cell count
 - d. Decreased platelets

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ANS: A

Leukocytosis often occurs after splenectomy. A splenectomy is not a trigger for hypoglycemia or decreased levels of either red blood cells or platelets.

REF: p. 496

- 11. During an infection, lymph nodes enlarge and become tender because:
 - a. lymphocytes are rapidly dividing.
 - b. edema accumulates within the fibrous capsule.
 - c. microorganisms are accumulating.
 - d. the nodes are not functioning properly.

ANS: A

During an infection, the rate of proliferation of lymphocytes within the nodes is so great that the nodes enlarge and become tender. Edema may be present, but the tenderness is due to proliferation of lymphocytes and is a normal function of the nodes. The tenderness is not due to the microorganisms.

REF: p. 497

12. After birth, red blood cells are normally made only in the:
- liver.
 - spleen.
 - bone marrow.
 - kidney.

ANS: C

Red blood cells are produced in the bone marrow, not the liver, spleen, or kidney.

REF: p. 497

13. A nurse is discussing a cell that can differentiate into any tissue type. Which term is the nurse describing?
- Hematopoietic
 - Pluripotent
 - Blastocyst
 - Progenitor

ANS: B

A pluripotent cell can grow into different kinds of tissue: blood, nerves, heart, bone, and so forth. Hematopoietic cells are not capable of such differentiation. A blastocyst is an embryonic cell. A progenitor becomes a hematologic cell.

REF: p. 499

14. Which cytokines participate in hematopoiesis?

- Stimulating factors (CSFs)
- Eosinophils
- Basophils
- Neutrophils

N_U^R_S^I_N^G_T^B. C_O^M

ANS: A

Several cytokines participate in hematopoiesis, particularly CSFs (or hematopoietic growth factors). Neither eosinophils, basophils, nor neutrophils play a role in hematopoiesis.

REF: p. 499

15. Erythropoietin is produced in the:
- liver.
 - bone marrow.
 - kidneys.
 - spleen.

ANS: C

Erythropoietin is produced in the kidneys, not the liver, bone marrow, or spleen.

REF: p. 500

16. Which condition will cause a patient to secrete erythropoietin?

- Low blood pressure
- Hypercarbia
- Inflammation

- d. Hypoxia

ANS: D

Hypoxia stimulates production of erythropoietin. Erythropoietin is not secreted in response to low blood pressure, hypercarbia, or inflammation.

REF: p. 500

17. An unstable type of hemoglobin that cannot bind with oxygen is termed:
- deoxyhemoglobin.
 - oxyhemoglobin.
 - methemoglobin.
 - glycosylated hemoglobin.

ANS: C

Without reactivation, the Fe^{3+} -containing hemoglobin (methemoglobin) cannot bind with oxygen. Deoxyhemoglobin is reactivated hemoglobin whose oxygen has been released. Binding of oxygen to ferrous iron temporally oxidizes Fe^{2+} to Fe^{3+} as in oxyhemoglobin. Glycosylated hemoglobin is glucose bound to hemoglobin.

REF: p. 501

18. The greatest proportion of total body iron is located in the:
- erythrocytes.
 - spleen pulp.
 - bone marrow.
 - liver tissue.

ANS: A

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Approximately 67% of total body iron is bound to heme in erythrocytes (hemoglobin) and muscle cells (myoglobin).

REF: p. 502

19. Which of the following nutritional components will the nurse encourage a patient to consume as it is needed for erythropoiesis?
- Vitamin B12
 - Vitamin B1
 - Vitamin D
 - Zinc

ANS: A

Vitamin B12 is necessary for erythropoiesis, not vitamin B1. Erythropoiesis is not dependent on vitamin D or zinc.

REF: p. 501

20. Which electrolyte will the nurse check to ensure normal platelet functioning?
- Sodium
 - Potassium
 - Magnesium
 - Calcium

ANS: D

Calcium is necessary for many of the intracellular signaling mechanisms that control platelet activation. Control of platelet activation is not associated with sodium, potassium, or magnesium.

REF: p. 505

21. A nurse is caring for a patient who cannot clot. Which end product of the clotting cascade is this patient unable to make?
- Collagen
 - Fibrinogen
 - Thrombin
 - Fibrin

ANS: D

Fibrin is the end product of the coagulation cascade. While involved in the coagulation cascade, neither collagen, fibrinogen, nor thrombin is considered the end product of the coagulation cascade.

REF: p. 507

22. Fibrinolysis is mediated by:
- heparin.
 - fibrinogen.
 - plasmin.
 - albumin.

ANS: C

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Plasmin is an enzyme that promotes fibrinolysis by degrading fibrin and fibrinogen into fibrin degradation products. Neither heparin, fibrinogen, nor albumin plays this role in the process of fibrinolysis.

REF: p. 508

MULTIPLE RESPONSE

1. When a staff member asks how erythrocytes can carry oxygen, the nurse should describe which of the following properties that allow erythrocytes to function as gas carriers? (select all that apply)
- Biconcavity
 - Reversible deformability
 - Undergoes mitotic division
 - Presence of many mitochondria
 - Presence of a nucleus

ANS: A, B

Erythrocytes are small disks that are biconcave in shape and have the capacity to be reversibly deformed. They cannot undergo mitotic division and do not have many mitochondria.

Erythrocytes do not have a nucleus.

REF: p. 491

2. A nurse is caring for an elderly patient. Which of the following are true regarding the hematological system and aging? (select all that apply)
- a. Total serum iron is decreased.
 - b. Total iron-binding capacity is decreased.
 - c. Intestinal iron absorption is decreased.
 - d. Lymphocyte function is unchanged.
 - e. Platelet aggregation is unchanged.

ANS: A, B, C

Total serum iron, total iron-binding capacity, and intestinal iron absorption are all decreased somewhat in elderly persons. Lymphocyte function decreases with age. Platelet adhesiveness usually increases.

REF: p. 511

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Chapter 21: Alterations of Hematologic Function

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. A patient's anemia is described as having erythrocytes that demonstrate poikilocytosis. The nurse would recognize the erythrocytes would be:
 - a. pale in color.
 - b. present in various sizes.
 - c. able to assume various shapes.
 - d. live only a few days.

ANS: C

Poikilocytosis means the erythrocytes are able to assume various shapes; it does not refer to color, size, and life span.

REF: p. 513

2. A newborn is diagnosed with congenital intrinsic factor deficiency. Which of the following types of anemia will the nurse see documented on the chart?
 - a. Iron deficiency
 - b. Pernicious
 - c. Sideroblastic
 - d. Hemolytic

ANS: B

A lack of the intrinsic factor ~~HUETHER~~ leads to pernicious anemia. Iron deficiency anemia is not related to the intrinsic factor. Pernicious anemia is due to the lack of the intrinsic factor; sideroblastic anemia is not related to the intrinsic factor. Hemolytic anemia results from destruction of cells.

REF: p. 515

3. When a nurse is reviewing lab results and notices that the erythrocytes contain an abnormally low concentration of hemoglobin, the nurse calls these erythrocytes:
 - a. hyperchromic.
 - b. hypochromic.
 - c. macrocytic.
 - d. microcytic.

ANS: B

Hypochromic erythrocytes have low concentrations of hemoglobin. Hyperchromic erythrocytes have high concentrations of hemoglobin. Macrocytic and microcytic refer to cell size.

REF: p. 517

4. A 5-year-old was diagnosed with normocytic-normochromic anemia. Which type of anemia does the nurse suspect the patient has?
 - a. Sideroblastic

- b. Hemolytic
- c. Pernicious
- d. Iron deficiency

ANS: B

Hemolytic anemia is an example of normocytic-normochromic anemia. Sideroblastic anemia is an example of microcytic hypochromic anemia. Pernicious anemia is an example of a macrocytic anemia. Iron deficiency anemia is an example of microcytic hypochromic anemia.

REF: p. 514, Table 21-1

5. After initial compensation, what hemodynamic change should the nurse monitor for in a patient who has a reduction in the number of circulating erythrocytes?
- a. Increased viscosity of blood
 - b. Decreased cardiac output
 - c. Altered coagulation
 - d. Hyperdynamic circulatory state

ANS: D

After initial compensation, the blood flows faster and more turbulently than normal blood, causing a hyperdynamic circulatory state. Blood viscosity decreases rather than increases. Cardiac output increases. Alteration in coagulation does not occur.

REF: p. 513 | p. 515

6. A 25-year-old female has a heavy menses during which she loses a profuse amount of blood. Which of the following adaptations should the nurse expect?
- a. Movement of fluid into the cell
 - b. Decreased cardiac output
 - c. Decreased oxygen release from hemoglobin
 - d. Peripheral vasoconstriction

ANS: D

When the anemia is severe or acute in onset (e.g., hemorrhage), the initial compensatory mechanism is peripheral blood vessel constriction, diverting blood flow to essential vital organs. Fluid moves into the vascular space, not the cell. Blood volume increases; thus, cardiac output increases. There is an increase in hemoglobin release of oxygen.

REF: p. 515

7. A 60-year-old patient diagnosed with emphysema experiences a rapid and pounding heart, dizziness, and fatigue with exertion. Which respiratory assessment findings indicate the respiratory system is compensating for the increased oxygen demand?
- a. Bronchoconstriction
 - b. Increased rate and depth of breathing
 - c. Dyspnea
 - d. Activation of the renin-angiotensin response

ANS: B

The rate and depth of breathing increase in an effort to increase oxygen availability accompanied by an increase in the release of oxygen from hemoglobin. Bronchodilation occurs, not constriction. Dyspnea is not a compensatory mechanism but a side effect of the body's attempt to increase oxygen. The respiratory system does not activate the renin-angiotensin response; the kidneys are involved.

REF: p. 515

8. A 2-year-old malnourished child is diagnosed with vitamin B₁₂ and folate deficiencies. A blood smear suggests the deficiency is macrocytic and normochromic. The nurse would expect the hemoglobin to be:
 - a. normal.
 - b. sporadic.
 - c. low.
 - d. high.

ANS: A

The macrocytic (megaloblastic) anemias are characterized by unusually large stem cells (megaloblasts) in the marrow that mature into erythrocytes that are unusually large in size (macrocytic), thickness, and volume. The hemoglobin content is normal, thus allowing them to be classified as normochromic.

REF: p. 515

9. A 45-year-old is diagnosed with macrocytic, normochromic anemia. The nurse suspects the most likely cause of this condition is:
 - a. defective DNA synthesis.
 - b. abnormal synthesis of hemoglobin.
 - c. defective use of vitamin C.
 - d. blocked protein synthesis.

ANS: A

These anemias are the result of ineffective erythrocyte DNA synthesis; hemoglobin is normal. These anemias are not related to use of vitamin C or blocked protein synthesis.

REF: p. 515

10. A 35-year-old female is diagnosed with vitamin B₁₂ deficiency anemia (pernicious anemia). The most likely cause is a decrease in:
 - a. ferritin.
 - b. gastric enzymes.
 - c. intrinsic factor.
 - d. erythropoietin.

ANS: C

The underlying alteration in pernicious anemia (PA) is the absence of intrinsic factor (IF), an enzyme required for gastric absorption of dietary vitamin B₁₂, a vitamin essential for nuclear maturation, and DNA synthesis in red blood cells. PA is not due to a decrease in ferritin, gastric enzymes, or erythropoietin but to a lack of intrinsic factor.

REF: p. 515

11. A 58-year-old female presents in the clinic with fatigue, weight loss, and tingling in her fingers. Laboratory findings show low hemoglobin and hematocrit, a high mean corpuscular volume, and normal plasma iron. These assessment findings are consistent with which type of anemia?
- Hemolytic anemia
 - Pernicious anemia
 - Iron deficiency anemia
 - Aplastic anemia

ANS: B

Pernicious anemia is manifested by tingling paresthesias of feet and fingers. The symptomology is not associated with hemolytic, iron deficiency, or aplastic anemias.

REF: pp. 515-516

12. Which individual should the nurse assess initially for a vitamin B₁₂ deficiency anemia?
- A 3-year-old female who is a fussy eater
 - A 26-year-old female in the second trimester of her first pregnancy
 - A 47-year-old male who had a gastrectomy procedure
 - A 64-year-old male with a history of duodenal ulcers

ANS: C

With removal of the stomach, the intrinsic factor is also removed, leading to an inability to absorb B₁₂; thus, the person with removal of the stomach is at greatest risk. Being a fussy eater, being pregnant, and having a history of duodenal ulcers are not risk factors for vitamin B₁₂ deficiency anemia.

REF: p. 516

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13. A 65-year-old experienced loss of appetite, weight loss, lemon-yellow skin, liver enlargement, and a beefy red tongue shortly before her death. Autopsy suggested pernicious anemia, and the cause of death would most likely reveal:
- brain hypoxia.
 - liver hypoxia.
 - heart failure.
 - kidney failure.

ANS: C

When the hemoglobin has decreased to 7-8 grams per deciliter, the individual experiences the classic symptoms of anemia: weakness, fatigue, paresthesias of feet and fingers, difficulty walking, loss of appetite, abdominal pain, weight loss, and a sore tongue that is smooth and beefy red. The skin may become lemon yellow (sallow), which is caused by a combination of pallor and jaundice. Hepatomegaly, indicating right-sided heart failure, may be present in the elderly. The symptoms are not associated with brain or liver hypoxia, or kidney failure.

REF: p. 516

14. A 40-year-old male's history includes being a vegetarian and abusing alcohol. Which of the following factors put him at greatest risk for developing folate deficiency anemia?
- Being vegetarian
 - Being alcoholic

- c. Age
- d. Gender

ANS: B

Folate deficiency occurs more often in alcoholics and individuals who are malnourished because of fad diets or diets low in vegetables. Being alcoholic promotes the greatest risk, since this disorder is diet related. A diet high in vegetables would help prevent folate deficiency. Age is not a factor in folate deficiency. Gender is not a factor in folate deficiency.

REF: p. 517

15. A patient who demonstrates chronic gastrointestinal bleeding is diagnosed with anemia. What is the primary cause of the patient's anemia?
- a. Vitamin B₁₂ deficiency
 - b. Iron deficiency
 - c. Folate deficiency
 - d. Bone marrow failure

ANS: B

A continuous loss of blood is one of the most common causes of iron deficiency anemia (IDA). Gastrointestinal bleeding does not lead to vitamin B₁₂ deficiency, folate deficiency, or bone marrow failure.

REF: p. 517

16. The nurse will check which of the following tests to directly measure iron stores?
- a. Serum ferritin
 - b. Transferrin saturation NURSINGTB.COM
 - c. Bone marrow biopsy
 - d. Total iron-binding capacity

ANS: C

Iron stores are measured directly by bone marrow biopsy, not serum ferritin, not transferrin saturation, and not total iron-binding capacity.

REF: p. 518

17. A 21-year-old female was recently diagnosed with iron deficiency anemia. In addition to fatigue and weakness, which of the following clinical signs and symptoms would she most likely exhibit?
- a. Hyperactivity
 - b. Spoon-shaped nails
 - c. Gait problems
 - d. Petechiae

ANS: B

Iron deficiency anemia is manifested by fingernails that become brittle and spoon shaped or concave. It does not involve hyperactivity, gait problems, or petechiae.

REF: pp. 517-518

18. A 21-year-old woman was recently diagnosed with iron deficiency anemia. Her hematocrit is 32%. Which of the following treatments would the nurse expect to be prescribed for her?
- Iron replacement
 - Splenectomy
 - A bone marrow transplant
 - No treatment is necessary

ANS: A

Iron replacement therapy is required and very effective. Initial doses are 150-200 milligrams per day and are continued until the serum ferritin level reaches 50 milligrams per liter. Neither a splenectomy nor a bone marrow transplant is indicated.

REF: p. 518

19. A 45-year-old male is diagnosed with sideroblastic anemia. When he asks what the most likely cause of this disease is, what is the nurse's best response?
- Ineffective iron uptake and abnormal hemoglobin production
 - Misshapen erythrocytes with low hemoglobin
 - Decreased levels of tissue iron with megaloblastic erythrocytes
 - Premature erythrocyte destruction and erythropoietin deficiency

ANS: A

Sideroblastic anemia is due to ineffective iron uptake and hemoglobin production.

Erythrocytes are neither misshapen, premature, nor destroyed in sideroblastic anemia.

Sideroblastic anemia is not associated with decreased levels of tissue iron with megaloblastic erythrocytes.

REF: pp. 518-519

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20. A 50-year-old female was diagnosed with sideroblastic anemia. Which of the following assessment findings would most likely occur?
- Bronze-colored skin
 - Decreased iron
 - Normochromic erythrocytes
 - Aplastic bone marrow

ANS: A

The skin of the patient with sideroblastic anemia is bronze in color. The patient with sideroblastic anemia shows signs of iron overload. The erythrocytes of individuals with sideroblastic anemia are hypochromic. The bone marrow is not aplastic but contains ringed sideroblasts.

REF: p. 519

21. Lab results showing high iron, bilirubin, and transferrin and low hemoglobin and hematocrit would support a diagnosis of which form of anemia?
- Pernicious
 - Folate deficiency
 - Iron deficiency
 - Sideroblastic

ANS: D

Individuals with sideroblastic anemia may show signs of iron overload (hemosiderosis), including mild to moderate enlargement of the liver (hepatomegaly) and spleen (splenomegaly). High levels of iron indicate sideroblastic anemia, not pernicious anemia, folate deficiency, or iron deficiency anemia.

REF: p. 519

22. Considering anemia, what effect do vitamin B₁₂ and folate deficiencies have on red blood cells?
- They are unable to differentiate into erythrocytes.
 - They contain malformed hemoglobin molecules.
 - O₂-carrying capacity is decreased.
 - Their life span is shorter.

ANS: D

These deficiencies lead to defective erythrocytes that die prematurely, which decreases their numbers in the circulation, causing anemia. These deficiencies do not cause the RBCs to lack differentiation, contain malformed hemoglobin, or experience diminished O₂-carrying capacity.

REF: p. 515

23. Aplastic anemia is caused by:
- iron deficiency.
 - excess levels of erythropoietin.
 - hemolysis.
 - stem cell deficiency.

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ANS: D

In aplastic anemia, erythrocyte stem cells are underdeveloped, defective, or absent; iron is not deficient, there are no excess levels of erythropoietin, nor do cells undergo hemolysis.

REF: p. 520, Table 21-2

24. A 57-year-old male presents to his primary care provider for red face, hands, feet, ears, and headache and drowsiness. A blood smear reveals an increased number of erythrocytes, indicating:
- polycythemia vera (PV).
 - leukemia.
 - sideroblastic anemia.
 - hemosiderosis.

ANS: A

PV is characterized by excessive proliferation of erythrocyte precursors in the bone marrow. Leukemia is not manifested by changes in erythrocytes. Sideroblastic anemia is characterized by sideroblastic rings. Hemosiderosis is iron overload.

REF: p. 521

25. A 67-year-old female is admitted to the emergency department with a diagnosis of polycythemia vera. Upon taking the history, the patient will most likely report:
- hyperactivity.

- b. decreased blood pressure.
- c. chest pain.
- d. a pale skin color.

ANS: C

Coronary blood flow may be affected, precipitating angina. Patients will experience signs of interrupted blood flow due to increased blood viscosity. They will not experience hyperactivity. Blood pressure will be increased, not decreased. The skin will be red over the face hands, feet, and ears.

REF: p. 521

26. A 68-year-old is admitted to the emergency department with a diagnosis of polycythemia vera (PV). A nurse realizes the patient's symptoms are mainly the result of:
- a. a decreased erythrocyte count.
 - b. rapid blood flow to the major organs.
 - c. increased blood viscosity.
 - d. vessel injury.

ANS: C

The symptoms of PV are due to increased blood viscosity, the erythrocyte count is elevated, there will be decreased blood flow to tissues and organs but vessel injury does not occur.

REF: p. 521

27. A patient is admitted to the emergency department with a diagnosis of polycythemia vera (PV). Which treatment should the nurse discuss with the patient?
- a. Therapeutic phlebotomy **NURSINGTB.COM**
 - b. Restoration of blood volume by plasma expanders
 - c. Administration of packed red blood cells
 - d. Iron replacement therapy

ANS: A

Treatment of PV is phlebotomy to reduce red cell mass and blood volume; increasing blood volume will increase symptoms as will the administration of additional cells and iron replacement therapy.

REF: p. 522

28. A 70-year-old is brought to the emergency department, where he dies shortly thereafter. Autopsy reveals polycythemia vera (PV). His death was most likely the result of:
- a. acute renal failure.
 - b. cerebral thrombosis.
 - c. sepsis.
 - d. acute leukemia.

ANS: B

Fifty percent of individuals with PV die within 18 months of the onset of initial symptoms because of thrombosis or hemorrhage, not renal failure, not infection and sepsis, and not acute leukemia.

REF: pp. 521-522

29. When the nurse sees a diagnosis of hereditary hemochromatosis on the chart, the nurse knows this is a disorder of:
- intravascular coagulation.
 - iron overload.
 - leukocytosis.
 - granulocytosis.

ANS: B

Iron overload can be primary, as in hereditary hemochromatosis. Hemochromatosis is not associated with coagulation, leukocytosis, or granulocytosis.

REF: p. 522

30. A 67-year-old male was diagnosed with polycythemia vera (PV) but refused treatment. His condition is at risk for converting to:
- chronic lymphocytic leukemia.
 - Burkitt lymphoma.
 - multiple myeloma.
 - acute myeloid leukemia.

ANS: D

A significant potential outcome of PV is the conversion to acute myeloid leukemia (AML), occurring spontaneously in 10% of individuals and generally being resistant to conventional therapy. Neither chronic lymphocytic leukemia, Burkitt lymphoma, nor multiple myeloma is a significant outcome of PV.

REF: p. 522

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31. Leukocytosis can be defined as:
- a normal leukocyte count.
 - a high leukocyte count.
 - a low leukocyte count.
 - another term for leukopenia.

ANS: B

Leukocytosis is present when the count is higher than normal. It is not another term for leukopenia.

REF: p. 523

32. What is the most likely cause of the eosinophilia?
- Parasitic invasion and allergic reactions
 - Viral and bacterial infections
 - Stress and anxiety reactions
 - Fungal infections and delayed hypersensitivity

ANS: A

Parasitic invasions and allergic disorders are associated with eosinophilia. Viral infections do not lead to eosinophilia nor do stress and anxiety reactions or fungal infections.

REF: p. 523

33. A 15-year-old female presents with splenomegaly, hepatomegaly, and lymph node enlargement. She is diagnosed with infectious mononucleosis. What should the nurse tell the patient about the recovery time?
- 72 hours
 - 3-5 days
 - A few weeks
 - 6 months

ANS: C

Infectious mononucleosis (IM) is usually self-limiting, and recovery occurs in a few weeks; severe clinical complications are rare (5%). Fatigue may last for 1-2 months after resolution of other symptoms.

REF: p. 525

34. A 35-year-old male with hyperthyroidism begins treatment to decrease thyroid activity. A nurse monitors for which of the following conditions that could result secondary to the treatment?
- Eosinophilia
 - Basophilia
 - Monocytosis
 - Lymphocytosis

ANS: B

Basophilia results from antithyroid therapy. Antithyroid therapy is not associated with eosinophilia, monocytosis, or lymphocytosis.

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REF: p. 524, Table 21-4

35. A 15-year-old male is diagnosed with infectious mononucleosis (IM). When the patient asks how he got this disease, how should the nurse respond? The most likely cause is:
- adenovirus
 - Epstein-Barr virus (EBV)
 - cytomegalovirus (CMV)
 - Toxoplasma gondii*

ANS: B

Infectious mononucleosis (IM) is an acute infection of B lymphocytes (B cells) with EBV. IM is not associated with adenovirus, cytomegalovirus, or *Toxoplasma gondii*.

REF: p. 525

36. A 15-year-old male with infectious mononucleosis is being given instructions on how to prevent the spread of this infection to others. Which statement represents a correct instruction?
- Wear a surgical mask when others are in the room.
 - Do not share drinking glasses or eating utensils.
 - Avoid all contact with other people.
 - No precautions are necessary.

ANS: B

Transmission of mononucleosis is usually through saliva from close personal contact. The virus also may be secreted in other mucosal secretions of the genital, rectal, and respiratory tract, as well as blood. A surgical mask is not necessary because the disorder is not airborne. The patient does not need to avoid all contact, but precautions should be taken.

REF: p. 525

37. A 10-year-old is diagnosed with leukemia. The nurse assesses for which other condition that could be associated with his disease?
- Down syndrome
 - Hemophilia
 - Hyperthyroidism
 - Pheochromocytoma

ANS: A

There is also an increased incidence of leukemia in association with other hereditary abnormalities such as Down syndrome, not hemophilia, not hyperthyroidism, and not pheochromocytoma.

REF: p. 526

38. A 5-year-old is diagnosed with acute leukemia. The patient will mostly likely be treated with:
- bone marrow transplant.
 - immunotherapy.
 - chemotherapy.
 - localized radiation therapy.

ANS: C

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Chemotherapy, used in various combinations, is the treatment of choice for leukemia.

Neither bone marrow transplant, immunotherapy, nor localized radiation therapy is considered the treatment of choice for leukemia.

REF: p. 530

39. A 35-year-old female is diagnosed with lymphadenopathy. Which assessment finding will help confirm this diagnosis?
- Small, hard lymph nodes
 - Disordered lymph nodes
 - Nonpalpable, nontender lymph nodes
 - Enlarged lymph nodes

ANS: D

Lymphadenopathy is evidenced by enlarged lymph nodes, not small, hard, disordered, or nonpalpable nodes.

REF: p. 531

40. A 35-year-old male has enlarged lymph nodes in the neck and a mediastinal mass. He was diagnosed with Hodgkin lymphoma. Which of the following abnormal cells would the nurse expect to find with this disease?
- Merkel cell
 - Schwann cell

- c. Reed-Sternberg cell
- d. Kupffer cell

ANS: C

Hodgkin lymphoma is manifested by Reed-Sternberg cells, not Merkel cells, not Schwann cells, and not Kupffer cells.

REF: p. 533

41. The people from which country have the lowest risk for Hodgkin lymphoma?
- a. United States
 - b. Japan
 - c. Denmark
 - d. Netherlands

ANS: B

Japan has the lowest rate of Hodgkin lymphoma. The United States, the Netherlands, and Denmark have among the highest rates.

REF: p. 533

42. A 62-year-old reports experiencing regular night sweats and unintentionally losing weight. Physical exam reveals enlarged neck lymph nodes that do not appear to be painful. These findings support a diagnosis of which type of cancer?
- a. Epstein-Barr virus
 - b. Hodgkin lymphoma
 - c. Acute leukemia
 - d. Burkitt lymphoma

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ANS: B

The patient has symptoms of Hodgkin lymphoma. About a third of individuals will have some degree of systemic symptoms. Intermittent fever, without other symptoms of infection, drenching night sweats, itchy skin (pruritus), and fatigue are relatively common. The patient with Epstein-Barr virus does not have night sweats. The patient with acute leukemia does not have night sweats or enlarged lymph nodes. The patient with Burkitt lymphoma does not have enlarged lymph glands or night sweats.

REF: p. 533

43. A 10-year-old presents with abdominal swelling, night sweats, fever, and weight loss. He is diagnosed with Burkitt lymphoma. Upon obtaining the history, which of the following is the most likely cause?
- a. Cytomegalovirus (CMV)
 - b. Adenovirus
 - c. Human papillomavirus (HPV)
 - d. Epstein-Barr virus (EBV)

ANS: D

EBV is associated with almost all cases of Burkitt lymphoma. Burkitt lymphoma is not associated with CMV, adenovirus, or HPV.

REF: p. 535

44. A patient diagnosed with multiple myeloma reports severe pain. This pain can be attributed to:
- neuropathic infiltrations.
 - destruction of bone tissue.
 - tissue hypoxia.
 - accumulation of toxic proteins.

ANS: B

Multiple myeloma is a B-cell cancer characterized by the proliferation of malignant plasma cells that infiltrate the bone marrow and aggregate into tumor masses throughout the skeletal system; thus, the pain is related to bone destruction, not neuropathic infiltrations, tissue hypoxia, or accumulation of toxic proteins.

REF: pp. 536-537

45. For a patient experiencing hypersplenism, the nurse expects the erythrocytes to be:
- proliferated.
 - activated.
 - sequestered.
 - infected.

ANS: C

Hypersplenism results in sequestering, not proliferation, activation, or infection, of the blood cells.

REF: pp. 539-540

46. Thrombocytopenia may be: **N_UR_SI_NG_TB.C_OM**
- transient or consistent.
 - normal or abnormal.
 - congenital or acquired.
 - active or inactive.

ANS: C

The condition may also be either congenital or acquired and may be either primary or secondary to other conditions. It is not referred to as transient or consistent, normal or abnormal, or active or inactive.

REF: p. 541

47. A 30-year-old presents with hematuria, menorrhagia, and bleeding gums, and is diagnosed with immune thrombocytic purpura (ITP). A nurse realizes the most likely cause is:
- allergy-induced platelet lysis.
 - an immune response to hypersplenism.
 - antibody destruction of platelets.
 - T-cell injury to megakaryocytes.

ANS: C

The majority of cases of ITP are due to immune-driven destruction of platelets. It is not due to allergies, hypersplenism, or T-cell injury.

REF: pp. 541-542

48. A patient is diagnosed with primary thrombocythemia. A nurse would expect the blood smear to reveal _____ platelets.
- defective
 - fragmented
 - consumed
 - overproduced

ANS: D

Thrombocythemia is characterized by a platelet count more than 400,000 platelets per cubic millimeter of blood and is symptomatic when the count exceeds 1,000,000 platelets per cubic millimeter, at which time the risk for intravascular clotting (thrombosis) is high.

Thrombocythemia is characterized by a high platelet count, not a defective one, a fragmented one, or a consumed one.

REF: p. 543

49. An IV drug user was diagnosed with hepatitis C 5 years ago. The patient is now experiencing impaired blood clotting. The nurse suspects a decrease in which of the following vitamins?
- K
 - D
 - E
 - B₁₂

ANS: A

Lack of vitamin K, not D, E, or B₁₂, interferes with clotting.

REF: p. 544

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50. A nurse checks individuals with liver disease for clotting problems because:
- the liver is often the site of platelet pooling.
 - clotting factors are produced in the liver.
 - high levels of bilirubin interfere with the clotting system.
 - treatment medications for liver failure cause fibrinolysis.

ANS: B

Clotting factors are produced by the liver; the liver is not the site of platelet pooling. Bilirubin does not interfere with clotting. The treatment of liver failure does not affect clotting.

REF: p. 544

51. A 40-year-old develops disseminated intravascular coagulation (DIC). Upon obtaining the history, which finding is the most likely cause of this condition?
- Snakebite
 - Blood transfusion
 - Sepsis
 - Immune thrombocytopenic purpura (ITP)

ANS: C

Sepsis is one of the most common conditions associated with DIC. While snake venom, blood transfusions, and ITP may cause DIC, sepsis is the most likely cause.

REF: p. 545

52. In disseminated intravascular coagulation (DIC), the nurse assesses for active bleeding after intravascular clotting because:
- prothrombin is activated.
 - clotting factors are depleted.
 - inflammatory mediators are released.
 - tissue factor (TF) is inactivated.

ANS: B

Intravascular clotting leads to depletion of clotting factors. DIC is due to depletion of clotting factors, not activation of prothrombin. Activation of clotting associated with DIC leads to inflammation, but inflammation does not cause DIC. TF is activated during DIC.

REF: pp. 545-546

MULTIPLE RESPONSE

1. A patient has microcytic hypochromic anemia. Which of the following pathogenic mechanisms may cause anemia in this patient? (select all that apply)
- Decreased erythrocyte life span
 - Failure of mechanisms of compensatory erythropoiesis
 - Disturbances of the iron cycle
 - Increased basal metabolic rate
 - Swelling in the tissues

ANS: A, B, C

Causes of microcytic hypochromic anemia are decreased erythrocyte life span, failure of mechanisms of compensatory erythropoiesis, or disturbance of the iron cycle. Increased metabolic rate and swelling of tissues does not lead to anemia.

REF: p. 514, Table 21-1

2. A 15-year-old male is diagnosed with infectious mononucleosis. Which of the following assessment findings would he most likely demonstrate? (select all that apply)
- Lymph node enlargement
 - Fever and sore throat
 - Rash on the trunk and extremities
 - Fatigue
 - Enlargement of liver and spleen

ANS: A, B, D, E

At the time of diagnosis, the individual commonly presents with the classic group of symptoms: fever, sore throat, cervical lymph node enlargement, and fatigue; generalized lymph node enlargement also may develop, as well as enlargement of the spleen and liver.

REF: p. 525

3. A patient wants to know about risk factors for acute leukemia. Which of the following should the nurse include? (select all that apply)
- Cytomegalovirus (CMV) infection

- b. Eating genetically modified food
- c. Chemotherapy treatment for other cancers
- d. Excessive ultraviolet radiation exposure
- e. Ovarian cancer

ANS: C, D, E

Hepatitis C or HIV can predispose the patient to leukemia, not CMV. Drugs that cause bone marrow depression, such as chemotherapeutic agents, predispose an individual to leukemia; eating genetically modified food is not a predisposing factor. Excessive ultraviolet radiation exposure can predispose an individual to myelogenous leukemia. Acute leukemia may also develop secondary to certain acquired disorders, including ovarian cancer.

REF: p. 527

COMPLETION

1. A 35-year-old male was diagnosed with hepatitis B. Further tests revealed neutropenia characterized by a neutrophil count less than _____ per milliliter.

ANS: 2000

REF: p. 523

2. A nurse realizes a patient has thrombocytopenia when the platelet count is below _____ platelets per cubic millimeter.

ANS: 150,000

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REF: p. 541

Chapter 22: Alterations of Hematologic Function in Children

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. A 2-year-old male presented with growth and maturation retardation and splenomegaly. He died shortly after arriving at the ER. Autopsy revealed thalassemia secondary to defective:
 - a. erythrocyte membranes.
 - b. iron metabolism.
 - c. stem cell formation.
 - d. hemoglobin synthesis.

ANS: D

Thalassemia would be secondary to defective hemoglobin synthesis; it is not due to erythrocyte membrane abnormalities, defective iron metabolism, or defective stem cell formation.

REF: p. 561

2. A 1-year-old female is diagnosed with anemia secondary to insufficient erythropoiesis. The most likely cause is:
 - a. genetic factors.
 - b. an iron deficiency.
 - c. a hemoglobin abnormality.
 - d. an erythrocyte structural abnormality.

ANS: B

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The most common cause of insufficient erythropoiesis is iron deficiency, not genetic factors, not a hemoglobin abnormality, not an erythrocyte structural abnormality.

REF: p. 554

3. A 12-month-old toddler weighing 18 pounds is brought to the clinic because of weakness, slow physical growth, and developmental delays. His mother reports that the only food he will consume is cow's milk. The symptoms support a diagnosis of which form of anemia?
 - a. Pernicious
 - b. Iron deficiency
 - c. Aplastic
 - d. Hemolytic

ANS: B

As many as one-third of infants with severe iron deficiency anemia have chronic intestinal blood loss induced by exposure to a heat-labile protein in cow's milk. Such exposure causes an inflammatory gastrointestinal reaction that damages the mucosa and results in diffuse hemorrhage. This situation does not lead to pernicious anemia, aplastic anemia, or to hemolytic anemia.

REF: pp. 554-555

4. A 16-month-old female presents with tachycardia, pallor, anorexia, and systolic murmur. The nurse is checking the lab results, and the hemoglobin determination indicates a level below _____ grams per deciliter.
- 5
 - 7
 - 10
 - 14

ANS: A

When hemoglobin levels fall below 5 grams per deciliter, pallor, anorexia, tachycardia, and systolic murmurs may occur.

REF: pp. 555-556

5. Which mother-fetus combination is at most risk for a maternal-fetal blood incompatibility?
- Mother is Rh-positive, and fetus is Rh-negative.
 - Mother is Rh-negative, and fetus is Rh-positive.
 - Mother has type A blood, and fetus has type O blood.
 - Mother has type AB blood, and fetus has type B blood.

ANS: B

Maternal-fetal incompatibility exists if mother and fetus differ in AB and O blood type or if the fetus is Rh-positive and the mother is Rh-negative. Symptoms do not occur in a type O fetus. Symptoms do not occur in type AB mothers.

REF: p. 556

6. Which of the following amino acids is present in HbS and not present in normal Hb?
- Valine
 - Glutamic acid
 - Proline
 - Histidine

ANS: A

Hb S is formed by a genetic mutation in which one amino acid (valine) replaces glutamic acid. Valine has replaced glutamic acid. Hb S is formed by a genetic mutation in the amino acid (valine), not proline, or histidine.

REF: p. 557

7. In the United States, which group of people should be assessed first for sickle cell disease?
- Asians
 - Blacks
 - Hispanics
 - Whites

ANS: B

In the United States, sickle cell disease is most common in Blacks.

REF: p. 558

8. A mother has a child that is diagnosed with sickle cell anemia. While the mother does not have the disease, which characteristic of her genetic makeup is responsible for the child's disease?
- Hb S and Hb S
 - Hb S and Hb A
 - Hb S and Hb C
 - Hb A and Hb C

ANS: B

In this instance, the child inherits Hb S from one parent and normal hemoglobin (Hb A), not Hb S, from both. Hb C is not inherited.

REF: p. 559, Table 22-2

9. Sickled cells will be removed from circulation mostly by the:
- liver.
 - pancreas.
 - kidney.
 - spleen.

ANS: D

Sickled cells undergo hemolysis in the spleen or become sequestered there, causing blood pooling and infarction of splenic vessels. The hemolysis of sickled cells does not occur mainly in the liver, the pancreas, or the kidneys.

REF: p. 559

10. Which major symptom indicates to the nurse that a patient diagnosed with sickle cell anemia is experiencing a vasoocclusive crisis? **ANSWER**
- Peripheral edema
 - Pain
 - Petechiae
 - An enlarged spleen

ANS: B

Vasoocclusive crisis is extremely painful and may last for days or even weeks, with an average duration of 4-6 days. Vasoocclusive crisis does not promote peripheral edema, petechiae, or an enlarged spleen.

REF: p. 560

11. Which type of sickle cell crisis occurs only in young children?
- Hyperhemolytic crisis
 - Vaso-occlusive crisis
 - Aplastic crisis
 - Sequestration crisis

ANS: D

Sequestration occurs when large amounts of blood become acutely pooled in the liver and spleen. This type of crisis is seen only in a young child. Hyperhemolytic, vaso-occlusive, and aplastic crises are not age specific.

REF: p. 560

12. A 6-year-old male presents with fatigue, jaundice, and irritability. A blood smear shows the presence of sickled cells. Erythropoiesis is compromised in this child; which crisis should the nurse monitor the patient for?
- Vaso-occlusive crisis
 - Sequestration crisis
 - Aplastic crisis
 - Hyperhemolytic crisis

ANS: C

Aplastic anemia is caused by diminished erythropoiesis despite an increased need for new erythrocytes. Vaso-occlusive crisis is manifested by pain. Sequestered crisis is manifested by enlarged spleen. Hyperhemolytic crisis is due to infection.

REF: p. 560

13. What is the most likely cause of death associated with sickle cell disease?
- Decreased hemoglobin
 - Infection
 - An obstructive crisis
 - A hyperhemolytic crisis

ANS: B

Infection is the most common cause of death related to sickle cell disease. The most common cause of sickle cell disease related to death is not associated with decreased hemoglobin or with either an obstructive or hyperhemolytic crisis.

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REF: p. 560

14. The alpha and beta thalassemias are inherited in an _____ fashion.
- autosomal recessive
 - autosomal dominant
 - X-linked recessive
 - X-linked dominant

ANS: A

The alpha and beta thalassemias are inherited autosomal recessive disorders. The alpha and beta thalassemias are not inherited autosomal dominant disorders. They are not an X-linked disorder.

REF: p. 561

15. Autopsy on a stillborn fetus reveals cardiomegaly, hepatomegaly, edema, and ascites as well as fulminant intrauterine congestive heart failure. Considering these findings, what is the most likely cause of death?
- Alpha thalassemia minor
 - Alpha thalassemia major
 - Hemoglobin H disease
 - Alpha trait

ANS: B

Alpha thalassemia major causes hydrops fetalis and fulminant intrauterine congestive heart failure. In addition to edema and massive ascites, the fetus has a grossly enlarged heart and liver. These findings are not associated with alpha thalassemia minor, hemoglobin H disease, or alpha trait, which is the mildest form of the disease.

REF: p. 562

16. If an infant has hydrops fetalis, which type of thalassemia does the nurse suspect?
- Beta minor
 - Beta major
 - Alpha minor
 - Alpha major

ANS: D

Hydrops fetalis is due to alpha thalassemia major, not either beta form or alpha minor.

REF: p. 562

17. Testing reveals that a child has hemophilia A. This bleeding disorder results from a deficiency in factor:
- IX.
 - XII.
 - XIII.
 - VIII.

ANS: D

Hemophilia A is a deficiency in factor VIII. Hemophilia A is not associated with a deficiency in factor IX, XII, or XIII. **N_UR_SI_NG_TB.C_OM**

REF: p. 563

18. By what other name is the clotting factor IX disorder, hemophilia B known as?
- Classic hemophilia
 - Christmas disease
 - Thalassemia
 - von Willebrand disease

ANS: B

Hemophilia B is also known as Christmas disease; not classic hemophilia. Thalassemia is not a clotting disorder. von Willebrand disease is a factor VIII disorder.

REF: p. 563

19. A 3-year-old child presents with bruising on the legs and trunk and a petechial rash. The mother also reports frequent nosebleeds. Lab tests reveal a decreased platelet count. This symptomology supports which medical diagnosis?
- Immune thrombocytopenic purpura (ITP)
 - Leukemia
 - Thalassemia
 - Hemophilia

ANS: A

A decreased platelet count is the cause of ITP. Neither leukemia, thalassemia, nor hemophilia is related to platelets.

REF: p. 564

20. A 5-year-old male is diagnosed with immune thrombocytopenic purpura (ITP). What is the most common cause of this condition?
- Normal postnatal platelet lysis
 - Virally induced antibody destruction of platelets
 - An allergic reaction to vaccinations
 - Maternal antibodies that target platelets in the neonate

ANS: B

In approximately 70% of cases of ITP, there is an antecedent viral disease. ITP is not associated with postnatal platelet lysis, an allergic reaction, or contact with maternal antibodies.

REF: p. 564

21. Which of the following clusters of symptoms would lead the nurse to suspect a child has immune thrombocytopenic purpura (ITP)?
- Multiple infections; bruising; abnormal bone marrow aspiration
 - Lower extremity that is warm to touch, edematous, and painful
 - Spontaneous nosebleeds, bruising, and petechiae
 - Increased platelet count; recent-onset venous thrombosis

ANS: C

Nosebleeds, bruising, and petechiae are signs of a lack of clotting due to low platelets and ITP. The symptoms associated with ITP are not associated with infections, warm extremities that are edematous and painful, or an increased platelet count.

REF: p. 564

22. What is the most serious complication of immune thrombocytopenic purpura (ITP)?
- Respiratory infection
 - Asymmetric bruising
 - Intracranial bleeding
 - Immunosuppression

ANS: C

Although the incidence is less than 1%, intracranial hemorrhage is the most serious complication of ITP.

REF: p. 564

23. What is the most common form of childhood leukemia?
- Acute lymphoblastic leukemia (ALL)
 - Chronic myelocytic leukemia (CML)
 - Acute myeloid leukemia (AML)
 - Chronic lymphocytic leukemia (CLL)

ANS: A

Approximately 75% of leukemias in children are ALL.

REF: p. 564

24. What is a priority assessment for Hodgkin lymphoma in children?
- Painless adenopathy in cervical nodes
 - Significant bruising
 - Weight gain
 - Petechiae

ANS: A

Painless adenopathy in the lower cervical chain, with or without fever, is the most common symptom in children with Hodgkin lymphoma. Bruising, weight gain, or petechiae are associated with Hodgkin lymphoma in children.

REF: p. 566

25. Which laboratory test will assist the nurse in identifying infants who are prone to develop hemolytic disease of the newborn (HDN)?
- Total bilirubin
 - Coombs
 - Rh antibodies
 - Platelets

ANS: B

Routine evaluation of fetuses at risk for HDN includes the Coombs test. Routine evaluation of fetuses at risk for HDN would not include total bilirubin, Rh antibodies, or platelets.

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REF: p. 557

MULTIPLE RESPONSE

1. A nurse is planning care for a child with iron deficiency anemia. Characteristics of iron deficiency anemia include which of the following? (select all that apply)
- It is most common between the ages of 6 months and 2 years.
 - It is related to gender and race.
 - It may be related to socioeconomic factors.
 - It is rare among teenagers.
 - It is difficult to diagnose in early stages.

ANS: A, C, E

Iron deficiency anemia is the most common nutritional disorder of infancy and childhood, with the highest incidence occurring between 6 months and 2 years of age. Incidence is not related to gender or race, but socioeconomic factors are important because they affect nutrition. The symptoms of mild anemia—listlessness and fatigue—usually are not present or are undetectable in infants and young children who are unable to describe these symptoms. Therefore, parents generally do not note any change in the child's behavior or appearance until moderate anemia has developed.

REF: pp. 554-555

2. A 5-year-old male is diagnosed with leukemia. Which of the following symptoms would the nurse expect? (select all that apply)
- a. Fatigue
 - b. Jaundice
 - c. Pallor
 - d. Petechiae
 - e. Fever

ANS: A, C, D, E

Pallor, fatigue, petechiae, purpura, bleeding, and fever generally are present. Jaundice is not.

REF: p. 564

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Chapter 23: Structure and Function of the Cardiovascular and Lymphatic Systems
Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. The pericardium is:
 - a. the outer muscular layer of the heart.
 - b. the innermost layer of the heart chambers.
 - c. a membranous sac that encloses the heart.
 - d. the heart's fibrous skeleton.

ANS: C

The pericardium is the membranous sac that surrounds the heart. The outer layer that acts as the fibrous skeleton of the heart is the myocardium. The innermost layer of the heart is the endocardium.

REF: p. 570

2. A function of the pericardium is to:
 - a. provide a barrier against extracardial infections.
 - b. improve blood flow through the heart.
 - c. play a role in cardiac conduction.
 - d. assist in cardiac contraction.

ANS: A

A function of the pericardium is to provide a barrier against extracardial infections. The pericardium does not improve blood flow through the heart as it is on the outside. The inner portions of the heart control cardiac conduction. The muscular layers assist with cardiac contraction.

REF: p. 570

3. As a result of blockage in the pulmonary artery, blood would first back up into the:
 - a. aorta.
 - b. left ventricle.
 - c. pulmonary veins.
 - d. right ventricle.

ANS: D

Blockage in the pulmonary artery would cause blood to back up into the right ventricle, not the aorta since these two vessels do not communicate. The pulmonary artery and left ventricle do not communicate. Blockage in the pulmonary artery would not cause blood to back up into the pulmonary vein since the pulmonary vein takes blood to the left atrium.

REF: p. 571

4. Which chamber of the heart generates the highest pressure?
 - a. Right atrium
 - b. Left atrium
 - c. Left ventricle

- d. Right ventricle

ANS: C

The left ventricle generates the highest pressure of all the heart's chambers.

REF: p. 571

5. The internal lining of the cardiovascular system is formed by what tissue?

- a. Tunica adventitia
- b. Connective
- c. Mesothelium
- d. Endothelium

ANS: D

The endothelium, not the tunica adventitia, is the lining of blood vessels. Connective tissues help make up arterial walls but are not the lining of blood vessels. The mesothelium is a part of the pericardial cavity.

REF: p. 570

6. A 20-year-old underwent an echocardiogram to assess chest pain. Results revealed a congenital defect in the papillary muscles. Which of the following would the nurse expect to occur?

- a. Closure of the semilunar valve
- b. Backward expulsion of the atrioventricular valves
- c. Closure of the atrioventricular valve
- d. Backward expulsion of the semilunar valves

ANS: B

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The papillary muscles are extensions of the myocardium that pull the cusps together and downward at the onset of ventricular contraction, thus preventing their backward expulsion into the atria. Defects in the papillary muscles would not affect either the semilunar or atrioventricular valves.

REF: p. 572

7. Which structures act as anchors for the atrioventricular valves?

- a. Chordae tendineae
- b. Great vessels
- c. Coronary ostia
- d. Trabeculae carneae

ANS: A

The atrioventricular valve openings are attached to the papillary muscles by the chordae tendineae. The great vessels are the vessels that bring blood to and out of the heart and are not attached to the chordae tendineae. The coronary ostia are openings in the aorta for the coronary arteries. The trabeculae carneae are a portion of the myocardium.

REF: p. 572

8. Which statement indicates the nurse understands coronary ostia? The coronary ostia (the openings to the coronary arteries) are found in the:

- a. left ventricle.
- b. inferior vena cava.
- c. coronary sinus.
- d. aorta.

ANS: D

The ostia are found on the aorta, not the ventricle, the vena cava, or the coronary sinus.

REF: p. 573

9. What structure conducts action potentials down the atrioventricular septum?
- a. Bachmann bundle
 - b. Bundle of His
 - c. Sinoatrial node
 - d. Atrioventricular node

ANS: B

The bundle of His conducts action potentials down the atrioventricular septum, not the Bachmann bundle. The sinoatrial node conducts the potential along the atria while the atrioventricular node conducts impulses to the ventricles.

REF: p. 576

10. The cardiac electrical impulse normally begins spontaneously in the sinoatrial (SA) node because it:
- a. has a superior location in the right atrium.
 - b. is the only area of the heart capable of spontaneous depolarization.
 - c. has rich sympathetic innervation via the vagus nerve.
 - d. depolarizes more rapidly than other automatic cells of the heart.

ANS: D

Cardiac impulses occur in the SA node because its cells depolarize more rapidly than other automatic cells, not because of its superior location. The SA node is not the only area of the heart capable of spontaneous depolarization. The SA node does have rich innervations but by parasympathetic innervation from the vagus nerve.

REF: p. 576

11. Which structures would not receive an electrical impulse when the patient is experiencing a left bundle branch block?
- a. Atrioventricular (AV) node
 - b. Sinoatrial (SA) node
 - c. Bundle of His
 - d. The left ventricle

ANS: D

The left bundle branch conducts impulses to the left ventricle; the AV node feeds conduction of the bundles. The SA node initiates conduction while the bundle of His precedes the division of the left and right bundles.

REF: p. 576

12. Depolarization of a cardiac muscle cell occurs as the result of:
- a decrease in the permeability of the cell membrane to ions.
 - the rapid movement of ions across the cell membrane.
 - a blockade by calcium ions.
 - stimuli instigated during the refractory period.

ANS: B

Depolarization is caused by the movement of electrically charged solutes (ions) across cardiac cell membranes. Permeability must be increased for movement to occur. A blockage of calcium ions would decrease depolarization. No cardiac action potential can be initiated in the refractory period.

REF: p. 576

13. What is the nurse monitoring when observing the QRS complex on the electrocardiogram?
- Ventricular activity
 - Pulmonary artery closure
 - Mitral valve opening
 - Aortic valve closing

ANS: A

The QRS complex represents the sum of all ventricular muscle cell depolarizations, not the closure of the pulmonary artery. The QRS complex does not reflect activity of either the mitral or aortic valves.

REF: p. 577

14. What term is used to identify the period that follows depolarization of the myocardium and represents a period during which no new cardiac potential can be propagated?
- Absolute refractory
 - Hyperpolarization
 - Resting
 - Threshold

ANS: A

A refractory period is the time during which no new cardiac action potential can be initiated by a stimulus. It follows depolarization. Neither hyperpolarization nor resting correctly identifies this period. Threshold is related to depolarization.

REF: p. 577

15. The PR interval viewed on a normal electrocardiogram represents:
- atrial depolarization.
 - ventricular depolarization.
 - onset of atrial activation to onset of ventricular activity.
 - “electrical systole” of the ventricles.

ANS: C

The PR interval represents the onset of atrial activation to the onset of ventricular activity. The P wave represents atrial depolarization. The QRS complex represents ventricular depolarization. The QT interval represents “electrical systole” of the ventricles.

REF: p. 577

16. What represents the sum of all ventricular muscle cell depolarization?
 - a. PR interval
 - b. QRS complex
 - c. QT interval
 - d. P wave

ANS: B

The QRS complex represents the sum of all ventricular muscle cell depolarizations. The PR interval represents the onset of atrial activation to the onset of ventricular activity. The QT interval represents “electrical systole” of the ventricles. The P wave represents atrial depolarization.

REF: p. 577

17. A 13-year-old took a weight loss drug that activated the sympathetic nervous system. Which of the following assessment findings would the nurse expect?
 - a. Decreased myocardial contraction
 - b. Decreased heart rate
 - c. Increased cardiac conduction
 - d. Increased intranodal conduction time

ANS: C

Stimulation of the SA node by the sympathetic nervous system rapidly increases cardiac conduction. Stimulation of the sympathetic nervous system would increase myocardial contraction and heart rate. Such stimulation would not affect conduction time within the node. These are inherent rates. **N_UR_SI_NG_TB.C_OM**

REF: p. 576

18. A 50-year-old received trauma to the chest that caused severe impairment of the primary pacemaker cells of the heart. Which of the following areas received the greatest damage?
 - a. Atrioventricular (AV) node
 - b. Sinoatrial (SA) node
 - c. Bundle of His
 - d. Ventricles

ANS: B

The SA node, not the AV node, is considered the pacemaker of the heart. Neither the bundle of His nor the ventricles are involved.

REF: p. 576

19. A 28-year-old with seizure disorder has a vagus nerve stimulator implanted to help control seizure activity. Which result will the nurse expect to occur?
 - a. Increased speed of cardiac cycle
 - b. Increased cardiac contractility
 - c. Decreased vasodilation
 - d. Decreased cardiac conduction

ANS: D

The vagus nerve releases acetylcholine. Acetylcholine causes decreased heart rate and slows conduction through the AV node, thus decreasing the speed of the cardiac cycle. This reaction also decreases contractility but does not cause decreased vasodilation.

REF: p. 576 | p. 578

20. A nurse assesses the heart after acetylcholine because the effect of acetylcholine on the heart is to:
- decrease the refractory period.
 - increase calcium influx.
 - increase the strength of myocardial contraction.
 - decrease the heart rate.

ANS: D

Acetylcholine causes decreased heart rate and slows conduction through the AV node; it does not decrease the refractory period nor does it increase calcium influx. It does not increase the strength of myocardial contraction.

REF: p. 578

21. One difference between cardiac muscle and skeletal muscle is that:
- cardiac muscle cells are arranged in branching networks.
 - skeletal muscle cells have only one nucleus.
 - cardiac muscle cells appear striped.
 - skeletal muscle cells contain sarcomeres.

ANS: A

Cardiac cells are arranged in branching networks throughout the myocardium, whereas skeletal muscle cells tend to be arranged in parallel units throughout the length of the muscle. Cardiac muscle cells have only one nucleus, whereas skeletal muscle cells have many nuclei. Both cardiac and muscle cells appear striped and contain sarcomeres.

REF: p. 578

22. What are the thickened areas of the sarcolemma of myocardial cells that enable electrical impulses to travel in a continuous cell-to-cell fashion called?
- Myosins
 - Intercalated disks
 - Troponin Ts
 - I bands

ANS: B

Intercalated disks allow electrical impulses to be transmitted rapidly from cardiac fiber to cardiac fiber because the network of fibers is connected at these disks. Myosins do not play a role in conduction. Troponin Ts are involved in contraction but are not part of the sarcolemma. I bands are a part of the filaments bud, which do not conduct impulses in a cell-to-cell fashion.

REF: p. 578

23. Muscle contractions occur when there is a decreased:
- distance between Z lines.

- b. A band length.
- c. Z line length.
- d. H zone distance.

ANS: A

Anatomically, contraction occurs when the sarcomere shortens, so adjacent Z lines move closer together. Such a contraction does not occur in relationship to a decrease in A band or Z line length or a decrease in H zone distance.

REF: p. 581

24. The process by which an action potential in the plasma membrane of a myocardial cell triggers the events that directly cause contraction of the myocardial cells is referred to as:
- a. electrocontraction.
 - b. intercalated communication.
 - c. excitation-contraction coupling.
 - d. myosin communication.

ANS: C

Excitation-contraction coupling, not electrocontraction, is the process by which an action potential in the plasma membrane of the muscle fiber triggers the cycle, leading to cross-bridge activity and contraction. Neither intercalated nor myosin communication is associated with leading to cross-bridge activity and contraction.

REF: p. 581

25. The molecule that aids in bonding of the troponin complex to actin and tropomyosin is troponin:
- NURSINGTB.COM
- a. C.
 - b. I.
 - c. T.
 - d. M.

ANS: C

Troponin T aids in the binding of the troponin complex to actin and tropomyosin. Troponin C contains binding sites for the calcium ions involved in contraction. Troponin I inhibits the ATPase of actomyosin. Troponin M is not a substance.

REF: p. 580

26. A nurse is discussing the pressure generated at the end of diastole. Which term is the nurse describing?
- a. Preload
 - b. Afterload
 - c. Systemic vascular resistance
 - d. Total peripheral resistance

ANS: A

Preload, not afterload, is the volume and associated pressure generated in the ventricle at the end of diastole. Afterload is the resistance to ejection of blood from the left ventricle. Systemic vascular resistance is related to afterload. Total peripheral resistance increases afterload.

REF: p. 581

27. As stated by the Frank-Starling law, there is a direct relationship between the _____ of the blood in the heart at the end of diastole and the _____ of contraction during the next systole.
- pressure; duration
 - volume; force
 - viscosity; force
 - viscosity; duration

ANS: B

The Frank-Starling law of the heart describes the length-tension relationship of ventricular end-diastolic volume (VEDV) (preload) to myocardial contractility (as measured by stroke volume). It does not refer to duration, pressure, or viscosity.

REF: p. 582

28. Within a normal physiologic range, an increase in left ventricular end-diastolic volume would lead the nurse to monitor for:
- an increased force of contraction.
 - a decrease in cardiac output.
 - an increase in heart rate.
 - heart failure.

ANS: A

An increase in end-diastolic volume leads to an increased force of contraction because fibers are stretched to handle increased volume. Cardiac output would increase. Although volume increases, heart rate does not respond accordingly. An increase in end-diastolic volume would not lead to heart failure since failure results in output decrease.

REF: p. 582

29. A 50-year-old was prescribed a drug that acts as a negative inotrope. Which endogenous substances would be most similar?
- Acetylcholine
 - Dopamine
 - Epinephrine
 - Thyroid hormone

ANS: A

The most important negative inotropic agent is acetylcholine. Dopamine, epinephrine, and thyroid hormone are positive inotropes.

REF: p. 583

30. The primary cardiovascular control center is located in the:
- cerebral cortex.
 - thalamus.
 - medulla.
 - hypothalamus.

ANS: C

The primary cardiovascular control center is in the brainstem in the medulla. The cerebral cortex, the thalamus, and hypothalamus are secondary control sites.

REF: p. 583

31. After activation of the Bainbridge reflex in a patient, the nurse assesses for:
- increased heart rate.
 - decreased blood pressure.
 - increased rate and depth of respirations.
 - decreased myocardial contractility.

ANS: A

Activation of the Bainbridge reflex increases heart rate. It does not decrease blood pressure, it does not increase rate and depth of respirations, and it does not decrease myocardial contractility.

REF: p. 583

32. A nurse observes a cardiologist multiplying the heart rate by stroke volume. What is the cardiologist measuring?
- Vascular resistance
 - Preload
 - Cardiac output
 - Ejection fraction

ANS: C

Cardiac output is found by the heart rate times stroke volume. Vascular resistance is not a factor in the calculation of cardiac output; it does play a role in blood pressure. Preload affects cardiac output but is not the result of heart rate times stroke volume. Ejection fraction is the amount ejected per beat.

REF: p. 581

33. Baroreceptors are located in the:
- renal artery.
 - superior vena cava.
 - carotid artery.
 - circle of Willis.

ANS: C

Baroreceptors are found in the carotid arteries. They are not found in the renal artery, the superior vena cava, or the circle of Willis.

REF: p. 583

34. Local myogenic regulation of blood vessel diameter and thus blood flow through a vessel is an example of:
- autonomic regulation.
 - somatic regulation.
 - autoregulation.
 - metabolic regulation.

ANS: C

The myogenic hypothesis proposes that autoregulation originates in vascular smooth muscle, presumably of the arterioles, as a response to changes in arterial perfusion pressure. It is not a part of autonomic, somatic, or metabolic regulation.

REF: p. 592

35. The thoracic lymphatic duct drains into the:
- left subclavian artery.
 - right atrium.
 - right subclavian vein.
 - left subclavian vein.

ANS: D

The thoracic duct drains lymph into the left subclavian vein, not the right subclavian vein. The right lymphatic duct drains into the right subclavian vein. The thoracic duct does not drain lymph into the right atrium.

REF: p. 593

MULTIPLE RESPONSE

1. Blood flow is affected by: (select all that apply)
- blood viscosity.
 - blood vessel diameter.
 - blood pressure.
 - blood vessel length.
 - blood composition.

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ANS: A, B, C, D

Resistance to flow is generally greater in longer tubes because resistance increases with length but decreases with a wider diameter. Blood flow varies inversely with the viscosity of the fluid. Thick fluids move more slowly and experience greater resistance to flow than thin fluids. Increased blood pressure decreases blood flow because resistance is increased. Blood volume, not composition, plays a role in blood flow.

REF: p. 587

2. A nurse is evaluating stroke volume. Which of the following factors affect stroke volume? (select all that apply)
- Preload
 - Peripheral vascular resistance
 - Afterload
 - Ejection fraction
 - Contractility

ANS: A, C, E

Preload, afterload, and contractility affect stroke volume.

REF: p. 581

Chapter 24: Alterations of Cardiovascular Function

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. A 75-year-old obese female presents to her primary care provider reporting edema in the lower extremities. Physical exam reveals that she has varicose veins. Upon performing the history, which of the following is a possible cause for the varicose veins?
 - a. Extreme exercise
 - b. Long periods of standing
 - c. Trauma to the deep veins
 - d. Ischemia

ANS: B

The probable cause of the patient's varicose veins is gradual venous distention caused by the action of gravity on blood in the legs due to long periods of standing. Varicose veins are most likely due to long periods of standing leading to the action of gravity promoting venous distention. Exercise would help prevent this. Trauma can occur, but usually this affects the more superficial veins. Ischemia affects arteries not veins.

REF: p. 598

2. A 52-year-old male presents with pooling of blood in the veins of the lower extremities and edema. The diagnosis is chronic venous insufficiency, and an expected assessment finding of this disorder is:
 - a. deep vein thrombus formation.
 - b. skin hyperpigmentation.
 - c. gangrene.
 - d. edema above the knee.

ANS: B

Symptoms include edema of the lower extremities and hyperpigmentation of the skin of the feet and ankles but deep vein thrombi do not form. Edema in these areas may extend to the knees but not above. Gangrene does not occur in veins but in arteries.

REF: p. 598

3. Superior vena cava syndrome (SVCS), causing venous distention in the upper extremities, is a result of progressive superior vena cava:
 - a. inflammation.
 - b. occlusion.
 - c. distention.
 - d. sclerosis.

ANS: B

SVCS is a progressive occlusion of the SVC that leads to venous distention in the upper extremities and head. This distention is not a result of progressive inflammation, distention, or sclerosis.

REF: p. 599

4. A 50-year-old male with a 30-year history of smoking was diagnosed with bronchogenic cancer. He developed edema and venous distention in the upper extremities and face. Which of the following diagnosis will the nurse observe on the chart?
- Thromboembolism
 - Deep vein thrombosis
 - Superior vena cava syndrome (SVCS)
 - Chronic venous insufficiency

ANS: C

SVCS is a progressive occlusion of the superior vena cava that leads to venous distention in the upper extremities and head. Thromboembolism would not lead to the generalized symptoms described in the patient. Deep vein thrombosis would not lead to upper extremity symptoms. Chronic venous insufficiency would primarily affect one extremity.

REF: p. 599

5. When a patient is diagnosed with coronary artery disease, the nurse assesses for myocardial:
- hypertrophy.
 - ischemia.
 - necrosis.
 - inflammation.

ANS: B

Coronary artery disease leads to myocardial ischemia. Coronary artery disease would not lead to hypertrophy, but not to ischemia, necrosis, or inflammation.

REF: p. 610

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6. A nurse takes an adult patient's blood pressure and determines it to be normal. What reading did the nurse obtain?
- Systolic pressure between 140 and 150 mm Hg
 - Systolic pressure less than 120 mm Hg and diastolic pressure less than 80 mm Hg
 - Systolic pressure less than 100 mm Hg regardless of diastolic pressure
 - Systolic pressure greater than 140 mm Hg and a diastolic pressure of 100 mm Hg

ANS: B

Normal blood pressure has a systolic pressure less than 120 mm Hg and diastolic pressure less than 80 mm Hg. A systolic pressure of 140 mm Hg or more would indicate stage I hypertension. A systolic pressure of less than 100 mm Hg would indicate low blood pressure. A diastolic pressure greater than 90 mm Hg would indicate hypertension.

REF: p. 600, Table 24-1

7. Most cases of combined systolic and diastolic hypertension have no known cause and are documented on the chart as _____ hypertension.
- primary
 - secondary
 - congenital
 - acquired

ANS: A

Most cases of hypertension are diagnosed as primary hypertension, not secondary, which is due to a known cause. Most cases of hypertension are not a result of congenital or acquired causes.

REF: p. 600

8. A 30-year-old White female was recently diagnosed with primary hypertension. She reports that she eats fairly well, usually moderate red meat consumption. She also reports that her father has hypertension as well. A nurse determines which of the following risk factors is most likely associated with this diagnosis?
- a. Race
 - b. Diet
 - c. Age
 - d. Genetic

ANS: D

Genetic factors, such as family history of hypertension, are the number one factor in the development of hypertension. Race and diet may be factors, but genetic factors are primary. Age is a factor, but not in this case; since the patient is 30, genetics are a greater factor.

REF: p. 600

9. A 52-year-old is diagnosed with primary hypertension but has no other health problems. Present treatment would cause the nurse to anticipate administering which drug to the patient?
- a. A beta-adrenergic agonist
 - b. An alpha-adrenergic agonist
 - c. A diuretic
 - d. A calcium channel agonist

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ANS: C

Diuretics have been shown to be the safest and most effective medications for lowering blood pressure and preventing the cardiovascular complications of hypertension. A beta-adrenergic, an alpha-adrenergic, or a calcium channel agonist drug would be used for patients with other concurrent health problems.

REF: p. 604

10. When a nurse checks the patient for orthostatic hypotension, what activity did the nurse have the patient engage in?
- a. Physical exertion
 - b. Eating
 - c. Standing up
 - d. Lying down

ANS: C

Orthostatic hypotension refers to a drop in blood pressure when standing up, not a drop with exertion, eating, or lying down.

REF: p. 604

11. A patient is diagnosed with orthostatic hypotension. Which of the following symptoms would most likely be reported?

- a. Headache and blurred vision
- b. Nausea and vomiting
- c. Chest pain and palpitations
- d. Syncope and fainting

ANS: D

Orthostatic hypotension is often accompanied by dizziness, blurring or loss of vision, and syncope or fainting, not by headache or blurred vision, which are symptoms of hypertension. Chest pain and palpitations may be symptomatic of myocardial infarction. Nausea and vomiting are associated with gastrointestinal issues.

REF: p. 604

12. A patient presents to the emergency department reporting difficulty swallowing and shortness of breath. A CT scan would most likely reveal an aneurysm in the:
- a. cerebral vessels.
 - b. renal arteries.
 - c. inferior vena cava.
 - d. thoracic aorta.

ANS: D

Thoracic aortic aneurysms can cause dysphagia (difficulty swallowing) and dyspnea (breathlessness). Aneurysms in cerebral vessels will produce a headache. Aneurysms in the renal arteries will produce flank pain. Aneurysms in the inferior vena cava may produce chest pain.

REF: p. 605

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13. An older adult is diagnosed with cerebral aneurysm. Where does the nurse suspect the cerebral aneurysm is located?
- a. Vertebral arteries
 - b. Basilar artery
 - c. Circle of Willis
 - d. Carotid arteries

ANS: C

Cerebral aneurysms often occur in the circle of Willis. Such an aneurysm is not associated with the vertebral arteries, the basilar artery, or the carotid arteries.

REF: p. 605

14. What term should the nurse use to document a detached blood clot?
- a. Thrombus
 - b. Embolus
 - c. Thromboembolus
 - d. Infarction

ANS: C

A thrombus is a clot that remains attached to a vessel wall; a detached thrombus is a thromboembolus. An embolus is a bolus of material floating in the bloodstream. An infarction is death of tissue.

REF: p. 599

15. A patient presents with severe chest pain and shortness of breath and is diagnosed with pulmonary embolism. The embolism most likely originated from the:
- left ventricle.
 - systemic arteries.
 - deep veins of the leg.
 - superficial veins of the arm.

ANS: C

The most likely origin of the embolism is from the deep veins of the legs. An embolism is not likely to originate in the left ventricle, the systemic arteries, or the arms.

REF: p. 606

16. Individuals with Raynaud disease need to be counseled to avoid which of the following conditions to prevent severe symptoms?
- Allergic reactions
 - Cold exposure
 - Hot water immersion
 - Tissue injury

ANS: B

Raynaud disease demonstrates symptoms when extremities are exposed to cold. It is not an allergic reaction, and it is not due to hot water immersion or tissue injury.

REF: p. 607

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17. A patient is diagnosed with coronary artery disease. Which of the following modifiable risk factors would the nurse suggest the patient change?
- Eating meat
 - Living arrangements
 - Drinking tomato juice
 - Smoking cigarettes

ANS: D

Cigarette smoking leads to vasoconstriction and should be the first behavior the patient changes. Eating meat alone would not lead to the development of coronary artery disease. The living arrangement of the patient's home would not lead to the development of coronary artery disease. Drinking tomato juice would not lead to the development of coronary artery disease.

REF: p. 611| p. 612

18. A patient presents to a primary care provider reporting chest pain and is diagnosed with atherosclerosis. This disease is caused by:
- arterial wall thinning and weakening.
 - abnormally dilated arteries and veins.
 - abnormal thickening and hardening of vessel walls.
 - autonomic nervous system imbalances.

ANS: C

Atherosclerosis is a form of arteriosclerosis characterized by thickening and hardening of the vessel wall. Affected arteries are narrowed, not dilated. Atherosclerosis is not related to autonomic nervous system imbalances, which would lead to changes in rate or rhythm.

REF: p. 607

19. Foam cells in a fatty streak are:
- deposited adipose cells.
 - injured neutrophils.
 - macrophages that engulf low-density lipoprotein (LDL).
 - lipid-laden mast cells.

ANS: C

Foam cells are lipid-laden macrophages that engulf LDL. They are deposited in vessels, not adipose cells. Foam cells are not injured neutrophils nor are they mast cells.

REF: p. 607 | p. 609

20. The most common cause of myocardial ischemia is:
- idiopathic vasospasm.
 - arterial emboli from a heart valve.
 - atherosclerosis.
 - venous emboli.

ANS: C

The most common cause of myocardial ischemia is atherosclerosis. Myocardial ischemia is not caused by idiopathic vasospasms or venous emboli. Arterial emboli may cause ischemia, but atherosclerosis is the major cause of myocardial ischemia.

REF: p. 610

21. A 51-year-old male presents with recurrent chest pain on exertion and is diagnosed with angina pectoris. The pain occurs when:
- cardiac output has fallen below normal levels.
 - the myocardial oxygen supply has fallen below demand.
 - myocardial stretch has exceeded the upper limits.
 - the vagus nerve is stimulated.

ANS: B

Angina is chest pain caused by myocardial ischemia, which develops if the flow or oxygen content of coronary blood is insufficient to meet the metabolic demands of myocardial cells. A decrease in cardiac output would lead to general systemic symptoms, not just chest pain, which is due to a decrease in myocardial oxygenation. Myocardial stretch does not affect angina symptoms. When the vagus nerve is stimulated, a change in rate occurs; it does not precipitate chest pain.

REF: p. 614

22. A 62-year-old male presents to his primary care provider reporting chest pain at rest and with exertion. He does not have a history of coronary artery disease and reports that the pain often occurs at night. He is most likely experiencing which type of angina?
- Unstable

- b. Stable
- c. Prinzmetal
- d. Silent

ANS: C

Chest pain that occurs at rest and at night is descriptive of Prinzmetal angina. Unstable angina is a form of acute coronary syndrome that results from reversible myocardial ischemia. Stable angina is predictable and occurs with activity. Silent angina has few, if any, symptoms.

REF: p. 614

23. A 51-year-old male is at the health clinic for an annual physical exam. After walking from the car to the clinic, he developed substernal pain. He also reported discomfort in his left shoulder and his jaw, lasting 2-3 minutes and then subsiding with rest. He indicates that this has occurred frequently over the past few months with similar exertion. The nurse suspects he is most likely experiencing:
- a. Stable angina
 - b. Unstable angina
 - c. Prinzmetal angina
 - d. Myocardial infarction (MI)

ANS: A

Stable angina is associated with activity and subsides with rest. Unstable angina is a form of acute coronary syndrome that results from reversible myocardial ischemia and occurs at rest. Chest pain that occurs at rest and at night is descriptive of Prinzmetal angina. MI pain does not subside with rest.

REF: p. 614

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24. A 49-year-old male presents reporting chest pain. EKG reveals ST elevation. He is diagnosed with myocardial ischemia. Which of the following interventions would be most beneficial?
- a. Administer a diuretic to decrease volume.
 - b. Apply oxygen to increase myocardial oxygen supply.
 - c. Encourage exercise to increase heart rate.
 - d. Give an antibiotic to decrease infection.

ANS: B

Increasing the myocardial oxygen supply is indicated to treat ischemia. A decrease in fluid volume is not appropriate. Heart rate should be decreased to decrease cardiac workload. Antibiotics are not the most beneficial; oxygen is.

REF: pp. 615-616

25. A 68-year-old male presents to the ER reporting chest pain. He has a history of stable angina that now appears to be unstable. He most likely has:
- a. mild to moderate atherosclerosis.
 - b. impending myocardial infarction (MI).
 - c. electrical conduction problems in the heart.
 - d. decreased myocardial oxygen demand.

ANS: B

Unstable angina is an indication of impending MI. Unstable angina could be caused by moderate atherosclerosis, altered electrical conduction, or a decrease in myocardial oxygen, but it is an indication of impending MI.

REF: p. 616

26. A 55-year-old male died of a myocardial infarction. Autopsy would most likely reveal:
- embolization of plaque from the aorta.
 - decreased ventricular diastolic filling time.
 - platelet aggregation within the atherosclerotic coronary artery.
 - smooth muscle dysplasia in the coronary artery.

ANS: C

The autopsy would reveal platelet aggregation within an atherosclerotic coronary artery. The cause of death is most likely occlusion of the coronary artery, not emboli from the aorta, decreased filling time, or dysplasia in the artery.

REF: p. 613

27. A 75-year-old male has severe chest pain and dials 911. Based upon the lab findings indicating a patient has elevated levels of cardiac troponins I and T, the nurse suspects which of the following has occurred?
- Raynaud disease
 - Myocardial infarction (MI)
 - Orthostatic hypotension
 - Angina

ANS: B

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The diagnosis of acute MI is made on the basis of serial cardiac biomarker alterations. The cardiac troponins (troponins I and T) are the most specific indicators of MI. Elevated troponins I and T are indicative of MI, not Raynaud disease, orthostatic hypotension, or angina

REF: p. 620

28. A 28-year-old presents to the ER reporting severe chest pain that worsens with respirations or lying down. Other signs include a fever, tachycardia, and a friction rub. Assessment findings support which medical diagnosis?
- Acute pericarditis
 - Myocardial infarction (MI)
 - Stable angina
 - Pericardial effusion

ANS: A

Severe chest pain that worsens with respirations or lying down in a patient with fever, tachycardia, and a friction rub is characteristic of acute pericarditis. MI pain does not worsen with respirations. Stable angina does not worsen with respiration or lying down. Pericardial effusion is not manifested by these symptoms.

REF: p. 622

29. A 56-year-old presents to his primary care provider for a checkup. Physical exam reveals edema, hepatomegaly, and muffled heart sounds. Which of the following is of greatest concern to the nurse?
- Tamponade
 - Exudate
 - Aneurysm
 - Pulsus paradoxus

ANS: A

Muffled heart sounds are an indication of tamponade, and with tamponade the blood backs up into the venous system, leading to hepatomegaly. Muffled heart sounds with hepatomegaly are symptoms of tamponade, not exudates. An aneurysm would present without symptoms. Pulsus paradoxus is manifested by a change in blood pressure during inspiration and expiration.

REF: p. 623

30. A 42-year-old is diagnosed with constrictive pericarditis. The nurse assesses the blood pressure for decreased cardiac output because of:
- pericardial effusions.
 - fibrosis and calcification of the pericardial layers.
 - cardiomyopathy.
 - hemorrhage in the pericardial cavity.

ANS: B

In constrictive pericarditis, fibrous scarring compresses the heart and eventually reduces cardiac output. Pericardial effusion is manifested by chest pain. Cardiomyopathy is a general term for pathophysiological changes in the heart. ~~NURSINGTB.COM~~ Hemorrhage in the pericardial cavity will lead to tamponade.

REF: pp. 623-624

31. A 60-year-old female has survived a myocardial infarction. The nurse is providing care for impaired ventricular function because:
- there is a temporary alteration in electrolyte balance.
 - there is too much stress on the heart.
 - the cells become hypertrophic.
 - the resulting ischemia leads to hypoxic injury and myocardial cell death.

ANS: D

The patient has impaired ventricular functioning because a portion of the myocardium has died due to ischemia. Impaired ventricular function is due to damage to the myocardium; it is not due to electrolyte imbalance. There was stress on the heart, but the impaired functioning is due to myocardial damage secondary to ischemia. The impaired ventricular dysfunction is due to myocardial cell death, not hypertrophy.

REF: p. 620

32. Many valvular stenosis and regurgitation disorders in adults have a common etiology. Which of the following conditions should alert the nurse that the patient may have both types of valve dysfunctions?

- a. Heart failure
- b. Connective tissue disorders
- c. Rheumatic fever or heart disease
- d. Syphilis infection

ANS: C

Valvular dysfunction is often related to rheumatic fever. Heart failure decreases cardiac output but does not affect valvular function. It is not due to connective tissue disorders. Syphilis infection could affect valves, but it is not the most common cause.

REF: p. 625

33. Which valvular condition is characterized by the valve opening being constricted and narrowed, causing the valve leaflets, or cusps, to fail to open completely?
- a. Regurgitation
 - b. Insufficiency
 - c. Stenosis
 - d. Incompetence

ANS: C

Valvular stenosis occurs when the valve opening is constricted and narrowed. Valvular regurgitation occurs when blood moves backward into the chamber from which it came. Valvular insufficiency occurs when blood regurgitates backward into the chamber from which it came. Valvular incompetence leads to regurgitation.

REF: p. 625

34. A 67-year-old was previously diagnosed with ~~rheumatic heart disease~~. Tests now reveal lipoprotein deposition with chronic inflammation that impairs blood flow from the left ventricle into the aorta. Which diagnosis does this history support?
- a. Aortic regurgitation
 - b. Aortic stenosis
 - c. Mitral regurgitation
 - d. Mitral stenosis

ANS: B

Aortic stenosis would impair blood flow from the left ventricle to the aorta. Aortic regurgitation would allow blood to flow back into the left ventricle. Mitral regurgitation would allow blood to flow from the left ventricle to the left atrium. Mitral stenosis would impair blood flow from the left atrium to the left ventricle.

REF: p. 626

35. The nurse realizes the patient diagnosed with mitral stenosis has incomplete emptying of the:
- a. right atrium.
 - b. right ventricle.
 - c. left atrium.
 - d. left ventricle.

ANS: C

Mitral stenosis would result in incomplete emptying of the left atrium, as the mitral valve is located between the left atrium and left ventricle.

REF: p. 627

36. A 72-year-old has a history of hypertension and atherosclerosis. An echocardiogram reveals backflow of blood into the left ventricle. Which of the following is the most likely diagnosis documented on the chart?
- Mitral regurgitation
 - Mitral stenosis
 - Aortic regurgitation
 - Aortic stenosis

ANS: C

Aortic regurgitation would allow backward flow of blood into the left ventricle. Mitral regurgitation would allow backward flow of blood into the left atrium. Mitral stenosis would impede blood flow from the right atrium into the right ventricle. Aortic stenosis would impede blood flow into the aorta.

REF: p. 627

37. Upon assessment of the patient, the nurse finds a widened pulse pressure and throbbing peripheral pulses. Which valve disorder does the nurse suspect?
- Mitral regurgitation
 - Mitral stenosis
 - Aortic regurgitation
 - Aortic stenosis

ANS: C

Aortic regurgitation is manifested by widened pulse pressure resulting from increased stroke volume and diastolic backflow. Mitral regurgitation is manifested by heart failure.

Mitral stenosis is manifested by pulmonary edema and heart failure. Aortic stenosis is manifested by narrowed pulse pressure.

REF: p. 627

38. A 35-year-old presents with pulmonary hypertension and is diagnosed as being in right heart failure. Which is the most likely cause of this condition?
- Aortic stenosis
 - Tricuspid regurgitation
 - Aortic regurgitation
 - Mitral regurgitation

ANS: B

Tricuspid regurgitation leads to volume overload in the right atrium and ventricle, increased systemic venous blood pressure, and right heart failure. Aortic stenosis is manifested by narrowed pulse pressure. Aortic regurgitation is manifested by widened pulse pressure resulting from increased stroke volume and diastolic backflow. Mitral regurgitation is manifested by heart failure but not pulmonary hypertension.

REF: p. 627

39. A nurse recalls the most common cardiac valve disease in the United States is:
- mitral valve prolapse.

- b. pulmonary stenosis.
- c. tricuspid valve prolapse.
- d. aortic stenosis.

ANS: A

Mitral valve prolapse is the most common valve disorder in the United States.

Neither pulmonary stenosis, tricuspid valve prolapse, nor aortic stenosis is the most common valve disorder in the United States.

REF: p. 628

40. A 10-year-old male presents with fever, lymphadenopathy, arthralgia, and nosebleeds. He is diagnosed with rheumatic heart disease. The most likely cause of this disease is:
- a. congenital heart defects.
 - b. human immunodeficiency virus (HIV) infections.
 - c. group A beta-hemolytic streptococcus infections.
 - d. acute pericarditis.

ANS: C

Rheumatic fever is a systemic, inflammatory disease caused by a delayed exaggerated immune response to infection by the group A beta-hemolytic streptococcus, not by congenital heart defects, HIV infections, or acute pericarditis.

REF: pp. 628-629

41. A 10-year-old male presents with fever, lymphadenopathy, arthralgia, and nosebleeds and is diagnosed with rheumatic heart disease. While planning care, which characteristic changes should the nurse remember? **NURSINGTB.COM**
- a. Blood-borne organisms that adhere to the valvular surface
 - b. Antigens that bind to the valvular lining, triggering an autoimmune response
 - c. High fevers that damage collagen in valve leaflets
 - d. Rheumatoid factor in the blood, stimulating valvular degeneration

ANS: B

The immune response cross-reacts with molecularly similar self-antigens in heart, muscle, joints, and the brain, causing an autoimmune response resulting in diffuse, proliferative, and exudative inflammatory lesions in these tissues. It is not due to blood-borne organisms, high fevers, or rheumatoid factors.

REF: p. 628

42. A 30-year-old female presents to her primary care provider with fever, cardiac murmur, and petechial skin lesions and is diagnosed with infective endocarditis. The most likely cause of the disease is:
- a. bacteria.
 - b. viruses.
 - c. fungi.
 - d. parasites.

ANS: A

Infective endocarditis is due to a bacterial infection, not a viral, fungal, or parasitic infection.

REF: p. 629

43. Inflammatory cells have difficulty limiting the colonization of microorganisms in infective endocarditis because the:
- microorganisms are resistant.
 - valves are avascular.
 - microorganisms are sequestered in a fibrin clot.
 - colonies overwhelm the phagocytes.

ANS: C

In endocarditis, bacterial colonies are inaccessible to host defenses because they are embedded in the protective fibrin clots; it is not because the microorganisms are resistant, that the valves are avascular, or that the colonies overwhelm the phagocytes.

REF: p. 630

44. Which characteristic changes should the nurse keep in mind while caring for a patient with left heart failure? As left heart failure progresses:
- left ventricular preload increases.
 - systemic vascular resistance decreases.
 - left end-diastolic volume decreases.
 - pulmonary vascular resistance decreases.

ANS: A

Left ventricular preload increases in left heart failure because less blood is ejected from the left ventricle. Left heart failure does not lead to a decrease in systemic resistance; it leads to an increase in resistance. Left end-diastolic volume will increase. Pulmonary vascular resistance will increase.

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REF: p. 632

45. A 65-year-old male with a history of untreated hypertension is now experiencing left heart failure. A nurse recalls his untreated hypertension led to:
- ventricular dilation and wall thinning.
 - myocardial hypertrophy and ventricular remodeling.
 - inhibition of renin and aldosterone.
 - alterations in alpha and beta receptor function.

ANS: B

With hypertension comes increased afterload and resistance to ventricular emptying and more workload for the ventricle, which responds with hypertrophy of the myocardium and ventricular remodeling. Ventricular dilation can occur, but the wall will thicken, not thin. Renin and aldosterone release are increased, not inhibited. Alterations in alpha and beta functioning may occur, but the response to hypertension is myocardial hypertrophy and ventricular remodeling.

REF: p. 632

46. A patient with left heart failure starts to have a cough and dyspnea. Pulmonary symptoms common to left heart failure are a result of:
- inflammatory pulmonary edema.

- b. decreased cardiac output.
- c. pulmonary vascular congestion.
- d. bronchoconstriction.

ANS: C

The clinical manifestations of left heart failure are the result of pulmonary vascular congestion and inadequate perfusion of the systemic circulation. Pulmonary edema does occur, but it is not due to inflammation. Decreased cardiac output does occur, but the pulmonary symptoms are related to pulmonary congestion. Pulmonary symptoms are not due to bronchoconstriction.

REF: p. 633

47. A patient was admitted to the intensive care unit with a diagnosis of acute myocardial infarction (MI) and is being treated for shock. The primary cause of shock is most likely:
- a. rapid heart rate.
 - b. decreased cardiac contractility.
 - c. increased capillary permeability.
 - d. decreased afterload due to vasodilation.

ANS: B

MI leads to decreased cardiac contractility due to a damaged myocardium and would lead to shock. A rapid heart rate would not cause shock. Increased capillary permeability would not lead to shock. Decreased afterload will not lead to shock associated with MI.

REF: p. 637

48. A 73-year-old has increased pulmonary pressure resulting in right heart failure. A potential cause for the right heart to fail is:
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- a. hypertension.
 - b. left heart failure.
 - c. acute pneumonia.
 - d. pericarditis.

ANS: B

Right-sided failure often follows left-sided failure when pulmonary congestion forces backward flow of blood into the left ventricle. It is not due to hypertension, pneumonia, or pericarditis.

REF: p. 636

49. A 65-year-old male is diagnosed with chronic pulmonary disease and elevated pulmonary vascular resistance. Which of the following heart failures should the nurse assess for in this patient?
- a. Right heart
 - b. Left heart
 - c. Low-output
 - d. High-output

ANS: A

Right-sided failure occurs when the patient experiences chronic pulmonary disease and elevated pulmonary vascular resistance because the blood has difficulty overcoming the pressure and blood builds up in the right side of the heart. Pulmonary congestion leads to right-sided failure, not left, not low-output failure, and not high-output failure.

REF: p. 636

50. A 72-year-old female has a history of right heart failure caused by a right ventricular myocardial infarction. Which of the following symptoms are specifically related to her right heart failure?
- Significant edema to both lower legs and feet
 - Hypertension
 - Decreased urine output
 - Dyspnea upon exertion

ANS: A

Right-sided failure allows blood to back up into the systemic circulation, leading to peripheral edema. Since it is backed up into the venous system, hypertension is less likely. Right-sided failure leads to edema and a greater venous blood volume, which would lead to increased urinary output. Dyspnea upon exertion is more indicating of left-sided failure.

REF: p. 636

51. Which condition should cause the nurse to assess for high-output failure in a patient?
- Metabolic alkalosis
 - Hypothyroidism
 - Hypovolemia
 - Anemia

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ANS: D

Common causes of high-output failure include anemia, not metabolic alkalosis, not hypothyroidism, and not hypovolemia.

REF: p. 636

52. When a person is in shock, a nurse remembers impairment in cellular metabolism is caused by:
- release of toxic substances.
 - free radical formation.
 - inadequate tissue perfusion.
 - lack of nervous or endocrine stimulation.

ANS: C

In shock, impaired cellular metabolism is caused by inadequate tissue perfusion.

Impairment of cellular metabolism is the result of inadequate tissue perfusion; toxic substances could develop, but it would be secondary to the inadequate perfusion. Free radicals are not the cause of impaired cellular metabolism. The lack of nervous control would lead to vasodilation, but perfusion still occurs.

REF: p. 637

53. One consequence of switching from aerobic to anaerobic cellular metabolism during shock states is:
- decreased adenosine triphosphate (ATP) production.
 - cellular dehydration.
 - cellular alkalosis.
 - free radical formation.

ANS: A

Anaerobic metabolism leads to decreased ATP production, not cellular dehydration, not cellular alkalosis, and not free radical formation.

REF: p. 637

54. During shock states, glucose uptake is usually:
- enhanced.
 - normal.
 - impaired.
 - energy intensive.

ANS: C

Some compensatory mechanisms activated by shock contribute to decreased glucose uptake by the cells, not enhanced uptake, not normal uptake, and not energy-intensive uptake.

REF: p. 637

55. A 20-year-old female is being admitted to the hospital with fever and septic shock. Which set of assessment findings would the nurse expect the patient to exhibit?
- Bradycardia, palpitations, confusion, truncal rash
 - Severe respiratory distress, jugular venous distention, chest pain
 - Low blood pressure and tachycardia
 - Reduced cardiac output, increased systemic vascular resistance, moist cough

ANS: C

Clinical manifestations of shock will include a low blood pressure and tachycardia.

Tachycardia, not bradycardia, will occur. Severe respiratory distress, jugular vein distention, and chest pain are symptoms of heart failure, particularly pulmonary edema. Cardiac output is reduced, but there is a decrease in systemic vascular resistance.

REF: p. 637

56. An 82-year-old female was admitted to the hospital with confusion and severe hypotension. Her body's compensatory mechanisms are increased heart rate, vasoconstriction, and movement of large volumes of interstitial fluid to the vascular compartment. What kind of shock does the nurse suspect the patient is experiencing?
- Anaphylactic
 - Hypovolemic
 - Neurogenic
 - Septic

ANS: B

In hypovolemic shock, heart rate and SVR increase, boosting both cardiac output and tissue perfusion pressures. Interstitial fluid moves into the vascular compartment. In anaphylactic shock, bronchoconstriction occurs with hypotension. In neurogenic shock, hypotension occurs, but fluid does not shift. In septic shock, interstitial fluid shift does not occur.

REF: p. 642

57. A 27-year-old male is admitted to a neurologic unit with a complete C-5 spinal cord transection. On initial assessment, he is bradycardic, hypotensive, and hyperventilating. He appears to be going into shock. The most likely mechanism of his shock is:
- hypovolemia caused by blood loss.
 - hypovolemia caused by evaporative fluid losses.
 - vasodilation caused by gram-negative bacterial infection.
 - vasodilation caused by a decrease in sympathetic stimulation.

ANS: D

The patient is experiencing neurogenic shock in which blood volume has not changed, but SVR decreases drastically so that the amount of space containing the blood has increased, leading to hypotension. In this type of shock, blood loss has not occurred. In this type of shock, fluid loss has not occurred. Vasodilation due to infection would be septic shock; the type of shock described in the patient is due to loss of sympathetic stimulation.

REF: pp. 642-643

58. Neurogenic shock can be caused by any factor that inhibits the:
- parasympathetic nervous system.
 - sympathetic nervous system.
 - somatic nervous system. **NURSINGTB.COM**
 - thalamus.

ANS: B

Neurogenic shock is caused by any factor that inhibits the sympathetic nervous system or overstimulates the parasympathetic nervous system. Neurogenic shock is not caused by inhibition of the somatic system or of the thalamus.

REF: pp. 642-643

59. A 15-year-old male who is allergic to peanuts eats a peanut butter cup. He then goes into anaphylactic shock. Which assessment findings will the nurse assess for?
- Bradycardia, decreased arterial pressure, and oliguria
 - Bronchoconstriction, hives or edema, and hypotension
 - Hypertension, anxiety, and tachycardia
 - Fever, hypotension, and erythematous rash

ANS: B

Anaphylactic shock is characterized by bronchoconstriction, hives, and hypotension; it does not involve oliguria, bradycardia, or hypertension. Septic shock, not anaphylactic shock, is manifested by fever and rash.

REF: pp. 643-644

60. The onset of anaphylactic shock is usually:

- a. mild.
- b. sudden and life threatening.
- c. delayed by several hours.
- d. delayed by 24 hours.

ANS: B

The onset of anaphylactic shock is usually sudden and life threatening, not mild or delayed.

REF: p. 644

61. For an infection to progress to septic shock, what must occur?
- a. The individual must be immunosuppressed.
 - b. The myocardium must be impaired.
 - c. The infection must be gram negative.
 - d. Bacteria must enter the bloodstream.

ANS: D

For septic shock to occur, bacteria must enter the bloodstream. Septic shock can occur in individuals who are not immunosuppressed. In septic shock, the myocardium is not impaired. Many organisms in addition to gram-negative bacteria can cause septic shock.

REF: p. 645

62. A patient most prone to multiple organ dysfunction syndrome (MODS) is a patient with:
- a. myocardial infarction (MI).
 - b. pulmonary disease.
 - c. septic shock.
 - d. autoimmune disease.

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ANS: C

The most common cause of MODS is septic shock, not MI, not pulmonary disease, and not autoimmune disease.

REF: p. 644

63. A 75-year-old female has been critically ill with multiple organ dysfunction syndrome (MODS) for longer than a week and has developed a severe oxygen supply and demand imbalance. The statement that best describes this imbalance is which of the following?
- a. Increased oxygen delivery to cells fails to meet decreased oxygen demands.
 - b. The amount of oxygen consumed by cells depends only on the needs of cells, because there is oxygen in reserve.
 - c. The situation results in supply-independent consumption.
 - d. The reserve has been exhausted, and the amount of oxygen consumed depends on the amount the circulation is able to deliver.

ANS: D

In MODS, the reserve has been exhausted and the body cannot meet the oxygenation demands. It is true that oxygen fails to meet demand, but there is no increase in oxygen because reserves are exhausted. There is no oxygen in reserve. The situation is supply and demand, but the demand cannot be met.

REF: p. 648

64. Which of the following findings in the patient with Raynaud disease would indicate a need for further teaching?
- The patient eats bananas twice a day.
 - The patient smokes cigarettes.
 - The patient wears mittens outside.
 - The patient takes calcium channel blockers.

ANS: B

Cigarette smoking should be stopped to eliminate the vasoconstricting effects of nicotine. The bananas do not cause problems in this patient. The patient should wear mittens outside. Calcium channel blockers are an acceptable treatment for Raynaud disease.

REF: p. 607

MULTIPLE RESPONSE

- A nurse recalls acute orthostatic hypotension can be caused by: (select all that apply)
 - prolonged immobility.
 - drug action.
 - starvation.
 - volume depletion.
 - exercise.

ANS: A, B, C, D

Acute orthostatic hypotension occurs as a result of drug action, prolonged immobility, starvation, and volume depletion. Physical exhaustion, rather than exercise, could cause orthostatic hypotension.

REF: p. 604

COMPLETION

- Cardiac cells can withstand ischemic conditions for _____ minutes before irreversible cell injury occurs.

ANS:

20

Cardiac cells can withstand ischemic conditions for about 20 minutes before irreversible hypoxic injury causes cellular death (apoptosis) and tissue necrosis.

REF: p. 618

Chapter 25: Alterations of Cardiovascular Function in Children

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. An 8-week-old infant presents to the pediatrician for a well-baby checkup. Physical exam reveals a murmur, and an echocardiogram confirms a ventricular septal defect. Which genetic disorder is likely to accompany this diagnosis?
 - a. Huntington disease
 - b. Color blindness
 - c. Down syndrome
 - d. Hemophilia

ANS: C

Down syndrome is the genetic factor that would most likely accompany the diagnosis of a congenital heart defect. Neither Huntington disease, color blindness, nor hemophilia is a genetic disorder that would most likely accompany a diagnosis of congenital heart defect.

REF: p. 655

2. Intrauterine exposure to which factor could be responsible for a diagnosis of congenital heart disease?
 - a. Diabetes
 - b. Alcohol exposure
 - c. Viral infection
 - d. Dextroamphetamine

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ANS: C

One of the identified causes of cardiac defects is an intrauterine viral infection, especially rubella. Diabetes contributes to large babies. Alcohol exposure contributes to abnormalities such as facial changes while exposure to dextroamphetamines leads to other abnormalities.

REF: p. 655

3. Coarctation of the aorta is the local narrowing of the aorta near the:
 - a. aortic valve.
 - b. ductus arteriosus.
 - c. diaphragm.
 - d. bifurcation into the common iliac arteries.

ANS: B

Coarctation of the aorta is narrowing of the aorta near the ductus arteriosus, not near the aortic valve, the diaphragm, or the bifurcation site.

REF: p. 656

4. A newborn is suspected of having coarctation of the aorta. Which of the following assessments would aid in diagnosis?
 - a. Cyanosis
 - b. Bounding pedal pulses

- c. Cool arms
- d. Weak or absent femoral pulses

ANS: D

The newborn will have weak or absent femoral pulses because blood flow is obstructed near the lower extremities, not bounding pedal pulses. Coarctation is not a cyanotic defect. The infant will have warm arms because blood flow is present in the upper extremities.

REF: p. 656

5. A 1-month-old infant visits his primary care provider for a well-baby check. Physical exam reveals decreased cardiac output, hypotension, tachycardia, and a loud murmur suggestive of aortic stenosis. Which condition would be expected with this diagnosis?
- a. Atrial dilation
 - b. Ventricular hypertrophy
 - c. Atrial rigidity
 - d. Decreased contractility

ANS: B

The infant with aortic stenosis will also be experiencing ventricular hypertrophy because of the resistance of blood flow from the left ventricle into the aorta. Aortic stenosis is not associated with either atrial dilation, rigidity, or decreased contractility.

REF: p. 657

6. A newborn develops a murmur and cyanosis shortly after birth. A diagnosis of pulmonic stenosis (PS) is made after an echocardiogram revealed narrowing of the pulmonary:
- a. tree.
 - b. artery.
 - c. valve.
 - d. vein.

N_U^R_S^I_N^G_T^B. C_O^M

ANS: C

PS is a narrowing or stricture of the pulmonary valve causing resistance to blood flow from the right ventricle to the pulmonary artery. PS is not associated with an abnormality of the pulmonary tree, the pulmonary artery, or the vein.

REF: pp. 658-659

7. What term is used to describe the patent opening between the aorta and pulmonary artery in a fetus?
- a. Foramen ovale
 - b. Sinus venosus
 - c. Ductus arteriosus
 - d. Septal defect

ANS: C

In the fetal circulation, the ductus arteriosus is an opening between the aorta and the pulmonary artery. The foramen ovale allows flow of blood between the left and right atrium. The sinus venosus is a type of atrial septal defect. The septal defect is an opening in the heart's septum.

REF: p. 659

8. A 2-week-old infant who presents with poor feeding, fatigue, dyspnea, and a murmur is diagnosed with a patent ductus arteriosus (PDA). This condition results in a(n):
 - a. decreased pulmonary blood flow.
 - b. right-to-left shunt.
 - c. left-to-right shunt.
 - d. increased systemic blood flow.

ANS: C

PDA is failure of the fetal ductus arteriosus to close. The continued patency of this vessel allows blood to flow from the higher-pressure aorta to the lower-pressure pulmonary artery, causing a left-to-right shunt. It does not cause decreased pulmonary blood flow. It could decrease systemic blood flow, not increase it.

REF: p. 659

9. An infant undergoes an echocardiogram for a suspected heart defect. Tests reveal an opening in the middle of the atrial septum. What term would the nurse use to describe this defect?
 - a. Ostium primum
 - b. Ostium secundum
 - c. Sinus venosus
 - d. Eisenmenger syndrome

ANS: B

An opening in the middle of the atrial septum is referred to as an ostium secundum ASD. An ostium primum ASD is an opening low in the atrial septum and may be associated with abnormalities of the mitral valve. A sinus venosus ASD is an opening usually high in the atrial wall and may be associated with partial anomalous pulmonary venous connection. Eisenmenger syndrome is a condition in which shunting of blood is reversed because of high pulmonary pressure and resistance.

REF: p. 659

10. What is the most common type of congenital heart defect assessed for in infants?
 - a. Atrial septal defect (ASD)
 - b. Ventricular septal defect (VSD)
 - c. Tetralogy of Fallot
 - d. Atrioventricular canal defect

ANS: B

The most common type of congenital heart defect is a VSD.

REF: p. 660

11. An 8-week-old infant's well-baby check reveals a murmur, and an echocardiogram shows a large ventricular septal defect. If left untreated, what condition could develop?
 - a. Pulmonary hypertension
 - b. Cyanosis
 - c. Dysrhythmias
 - d. Valve damage

ANS: A

If the degree of shunting is significant and not corrected, the child is at risk for developing pulmonary hypertension. Cyanosis is not present at first if the shift is left to right. Dysrhythmias do not occur. The defect does not lead to valve damage.

REF: p. 660

12. A 22-year-old pregnant woman presents to her OB/GYN for a prenatal checkup. The fetal heartbeat sounds irregular, and a fetal echocardiogram reveals an atrioventricular canal (AVC) defect. This defect is the result of:
- failure of the ductus arteriosus to close.
 - incomplete fusion of the endocardial cushions.
 - a patent foramen ovale.
 - a right-to-left shunt.

ANS: B

AVC defect is the result of incomplete fusion of endocardial cushions. A patent ductus is the failure of the ductus arteriosus to close. The infant will not experience a patent foramen ovale. Flow is generally left to right, not right to left.

REF: p. 660

13. A newborn experiences frequent periods of cyanosis, usually occurring during crying or after feeding. Which cardiac diagnosis does this history support?
- Atrioventricular canal (AVC) defect
 - Ventricular septal defect (VSD)
 - Tetralogy of Fallot
 - Atrial septal defect (ASD)

ANS: C

Infants with tetralogy of Fallot experience cyanosis after crying or during feeding. Infants with AVC defect may experience cyanosis, but it is not related to feeding or crying. Infants do not experience cyanosis with either VSD or ASD.

REF: p. 661

14. A newborn child has a murmur and is cyanotic. An echocardiogram reveals that the tricuspid valve failed to develop and so no blood flows between the right atrium and ventricle. This condition is described with the term tricuspid:
- regurgitation.
 - stenosis.
 - atresia.
 - transposition.

ANS: C

Tricuspid atresia is failure of the tricuspid valve to develop; consequently, there is no communication from the right atrium to the right ventricle. In regurgitation, blood moves backward, but is not obstructed. In stenosis, blood flow is narrowed, but not totally obstructed. In transposition, the two great vessels are on opposite sides.

REF: p. 662

15. A newborn child is diagnosed with tetralogy of Fallot. What symptoms would the nurse expect to observe in the child?
- High-pitched cry and dyspnea
 - Cyanosis and hypoxia
 - Leg pain and twitching
 - Epistaxis and anemia

ANS: B

The child will experience cyanosis and hypoxia. This type of shunt decreases flow through the pulmonary system, causing less than normal oxygen delivery to the tissues and resultant cyanosis. It will not cause a high-pitched cry. It will not cause leg pain; leg pain occurs in coarctation of the aorta. Epistaxis is associated with coarctation of the aorta.

REF: p. 661

16. A newborn is severely cyanotic. An echocardiogram reveals transposition of the great arteries. What is the characteristic defect associated with this condition?
- The pulmonary artery leaving the right ventricle
 - The aorta leaving the right ventricle
 - Ventricular septal defect (VSD)
 - Atrial septal defect (ASD)

ANS: B

In transposition of the great arteries, the pulmonary artery leaves the left ventricle and the aorta exits from the right ventricle. The pulmonary artery normally leaves the right ventricle. Neither VSD nor ASD is associated with transposition of the great arteries.

REF: p. 663

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17. A 1-month-old infant was diagnosed with truncus arteriosus (TA) with a ventricular septal defect. This condition results in:
- hypertrophy of the aorta and major arteries.
 - transposition of the aorta and the pulmonary trunk.
 - the aorta returning blood to the right atrium.
 - blood from both ventricles mixing in a common vessel.

ANS: D

TA is failure of normal separation and division of the embryonic outflow track into a pulmonary artery and an aorta, resulting in a single vessel that exits the heart. It does not involve hypertrophy of the aorta. It does not involve transposition of the aorta. It does not involve the aorta returning blood to the right atrium.

REF: p. 664

18. A 1-year-old female with a ventricular septal defect is experiencing left-sided heart failure. Which symptom will most likely occur?
- Failure to thrive
 - Increased urinary output
 - Jaundice
 - Flat neck veins

ANS: A

Left heart failure in infants is manifested as poor feeding and sucking, often leading to failure to thrive. None of the other symptoms is associated with left-sided failure.

REF: pp. 665-666

19. A 3-year-old male is diagnosed with Kawasaki disease. What is the most likely cause of Kawasaki disease?
- A genetic defect causing left heart failure
 - Autoimmune injury to the lymphatic vessels
 - Infectious pericarditis
 - Inflammation of the small capillaries, arteries, and veins

ANS: D

Kawasaki disease is related to inflammation of small capillaries. Kawasaki disease is not a result of a genetic defect, an autoimmune disease, or infectious pericarditis.

REF: p. 666

20. A 5-year-old female is found to have hypertension during three separate visits to her primary care provider. The nurse would expect tests to suggest that the hypertension is secondary to:
- renal disease.
 - brain tumor.
 - hypocalcemia.
 - hyponatremia.

ANS: A

Hypertension in a 5-year-old is related to renal disease. Secondary hypertension in a 5-year-old is not usually related to a brain tumor, hypocalcemia, or hyponatremia.

REF: p. 667

21. When the pediatrician cardiologist discusses total anomalous pulmonary venous connection, which of the following statements BEST describes this condition?
- The foramen ovale closes after birth.
 - Pulmonary venous return is introduced into the right atrium.
 - Pulmonary venous return is introduced into the left atrium.
 - The foramen ovale does not close.

ANS: B

The pulmonary venous return is connected to the right side of the circulation, rather than to the left atrium. It does not include closure of the foramen ovale after birth.

REF: p. 663

MULTIPLE RESPONSE

1. A 40-year-old pregnant woman is concerned about the health of her unborn child. She has phenylketonuria (PKU) and recently had a viral infection. If the child is born with a congenital heart defect, which of the following is the most likely based on the mother's history? (select all that apply)
- Coarctation of the aorta

- b. Pulmonic stenosis
- c. Ventricular septal defect
- d. Patent ductus arteriosus
- e. Tetralogy of Fallot

ANS: A, D

Coarctation of the aorta and patent ductus arteriosus are the disorders found in infants of mothers with PKU and a history of viral infections during pregnancy.

REF: p. 656, Table 25-1

2. A newborn child is diagnosed with trisomy 18. Which of the following congenital heart defects should the nurse assess for in the infant? (select all that apply)
- a. Patent ductus
 - b. Coarctation of the aorta
 - c. Atrioventricular canal defect
 - d. Ventricular septal defect
 - e. Pulmonary stenosis

ANS: A, D, E

The infant with trisomy 18 could present with a ventricular septal defect, a patent ductus, or pulmonary stenosis.

REF: p. 656, Table 25-2

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Chapter 26: Structure and Function of the Pulmonary System

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. The nasopharynx is lined with a ciliated mucosal membrane with a highly vascular blood supply. One function of this membrane is to:
 - a. absorb air.
 - b. humidify air.
 - c. cool air.
 - d. exchange gases.

ANS: B

These structures are lined with a ciliated mucosa that warms and humidifies inspired air and removes foreign particles from it. Air is not absorbed or cooled by the ciliated mucosal membrane. Gas exchange occurs in the alveoli.

REF: p. 671

2. The nurse is describing the slit-shaped space between the true vocal cords. What term should the nurse use?
 - a. Glottis
 - b. Epiglottis
 - c. Larynx
 - d. Carina

ANS: A

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The slit-shaped space between the true vocal cords forms the glottis. The slit-shaped space between the true vocal cords is not referred to as the epiglottis, the larynx, or the carina.

REF: p. 671

3. The nurse is describing the movement of blood into and out of the capillary beds of the lungs to the body organs and tissues. What term should the nurse use to describe this process?
 - a. Perfusion
 - b. Ventilation
 - c. Diffusion
 - d. Circulation

ANS: A

Perfusion is the movement of blood into and out of the capillary beds of the lungs to body organs and tissues. Ventilation is the movement of air into and out of the lungs. Diffusion is the movement of gases between air spaces in the lungs and the bloodstream. Circulation is the movement of blood throughout the bloodstream.

REF: p. 671

4. After entering a room of chemical fog, a 20-year-old male cannot stop coughing. Which of the following structures are primarily responsible for his response?
 - a. Upper respiratory tract mucosa

- b. Irritant receptors in the trachea and large airways
- c. Irritant receptors in the nostrils
- d. Upper respiratory nasal hairs and turbinates

ANS: C

The irritant receptors in the nostrils are responsible for coughing, not those found in the upper respiratory tract mucosa or in the trachea. The cough is not related to stimulation of upper respiratory nasal hairs or the turbinates.

REF: p. 672, Table 26-1

- 5. One of the functions of the pulmonary system is the:
 - a. expelling of bacteria.
 - b. exchange of gases between the environment and blood.
 - c. movement of blood into and out of the capillaries.
 - d. principal mechanism for cooling of the heart.

ANS: B

The pulmonary system promotes exchange of gases between the environment and the blood. Neither expelling bacteria, moving blood in and out of the capillaries, nor cooling of the heart is considered a function of the pulmonary system.

REF: p. 671

- 6. A nurse recalls the pleural membranes are examples of _____ membranes.
 - a. mucous
 - b. serous
 - c. synovial
 - d. peritoneal

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ANS: B

The pleural membranes are serous membranes. Mucous membranes are found in the mouth. Synovial membranes are found in joints. Peritoneal membranes would be found in the bowel.

REF: p. 675

- 7. A newborn is in respiratory distress and requires ventilation. Tests reveal that he does not produce surfactant due to the absence of:
 - a. mucus-producing cells.
 - b. type II alveolar cells.
 - c. alveolar macrophages.
 - d. goblet cells.

ANS: B

Surfactant is produced by the type II alveolar cells. Surfactant is not produced by mucus-producing cells, alveolar macrophages, or goblet cells.

REF: p. 672

- 8. A patient involved in a motor vehicle accident experiences a severe head injury and dies as a result of the loss of respirations. The nurse suspects the area of the brain most likely damaged is the:

- a. cerebral cortex.
- b. thalamus.
- c. basal ganglia.
- d. brainstem.

ANS: D

The respiratory center in the brainstem controls respiration by transmitting impulses to the respiratory muscles, causing them to contract and relax. Respirations are not controlled by the cerebral cortex, the thalamus, or the basal ganglia.

REF: p. 676

9. What term is used to describe receptors that respond to increased pulmonary capillary pressure?
- a. Irritant receptors
 - b. Chemoreceptors
 - c. Stretch receptors
 - d. J-receptors

ANS: D

J-receptors (juxtapulmonary capillary receptors) are located near the capillaries in the alveolar septa. They are sensitive to increased pulmonary capillary pressure, which stimulates them to initiate rapid, shallow breathing, hypotension, and bradycardia.

Neither irritant receptors, chemoreceptors, nor stretch receptors respond to increased pulmonary capillary pressure.

REF: p. 676

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10. The nurse is describing the receptors in the lung that decrease ventilatory rate and volume when stimulated. Which receptors is the nurse discussing?
- a. Carbon dioxide receptors
 - b. Baroreceptors
 - c. Stretch receptors
 - d. Chemoreceptors

ANS: C

Stretch receptors, not carbon dioxide receptors, decrease ventilatory rate and volume when stimulated. Baroreceptors regulate blood pressure. Chemoreceptors increase the rate and depth of respiration.

REF: p. 676

11. What nerve provides the lungs with parasympathetic innervation?
- a. Vagus
 - b. Phrenic
 - c. Brachial
 - d. Pectoral

ANS: A

Parasympathetic innervations for the lung are via the vagus nerve. Parasympathetic innervations of the lung are not associated with the phrenic, brachial, or pectoral nerves.

REF: p. 676

12. A patient is experiencing respiratory difficulty and retaining too much carbon dioxide. Which receptor sites would be stimulated in an attempt to maintain a normal homeostatic state?
- Irritant
 - Stretch
 - Peripheral
 - Central

ANS: D

Chemoreceptors monitor arterial blood indirectly by sensing changes in the pH of cerebrospinal fluid (CSF). The central chemoreceptors are sensitive to very small changes in the pH of CSF and can maintain a normal PaCO_2 . Irritant receptors sense the need to expel unwanted substances. Stretch receptors decrease ventilatory rate and volume when stimulated. The peripheral chemoreceptors become the major stimulus to ventilation when the central chemoreceptors are reset.

REF: p. 677

13. If an individual with respiratory difficulty were retaining too much carbon dioxide, which of the following compensatory responses would the nurse expect to be initiated?
- Increase in respiratory rate
 - Decrease in ventilation rate
 - Increase in tidal volume
 - Vasodilation of the pulmonary arterioles

ANS: A

To rid the body of excess carbon dioxide, the rate and depth of respiration are increased. A decrease in ventilation rate would increase carbon dioxide. An increase in tidal volume would not decrease carbon dioxide. Vasodilation of the pulmonary arterioles will not rid the body of carbon dioxide.

REF: p. 677

14. During inspiration, muscular contraction of the diaphragm causes air to move into the lung. The mechanism that drives air movement during inspiration results in a(n):
- decrease in intra-alveolar pressure and shortening of the rib cage.
 - decrease in the size of the thorax and alveolar expansion.
 - increase in the size of the thorax and decrease in intrapleural pressure.
 - increase in atmospheric pressure and intrapleural pressure.

ANS: C

Inhalation occurs due to an increase in the size of the thorax and a decrease in intrapleural pressure, thus creating a negative pressure that draws air into the lungs. The rib cage lengthens, not shortens. The size of the thorax increases, not decreases. Intrapleural pressure decreases, not increases.

REF: p. 678

15. The pressure required to inflate an alveolus is inversely related to:
- wall thickness.

- b. surface tension.
- c. minute volume.
- d. alveolar radius.

ANS: D

The radius of the alveoli is inversely related to the pressure required to inflate it. The pressure required is not associated with wall thickness, surface tension, or minute volume.

REF: p. 678

16. Surfactant facilitates alveolar distention and ventilation by:
- a. decreasing thoracic compliance.
 - b. attracting water to the alveolar surface.
 - c. decreasing surface tension in alveoli.
 - d. increasing diffusion in alveoli.

ANS: C

Surfactant decreases surface tension in alveoli, allowing the lungs to inflate. Surfactant does not decrease thoracic compliance, attract water, or increase diffusion.

REF: p. 678

17. A nurse remembers the majority of total airway resistance occurs in the:
- a. bronchi.
 - b. nose.
 - c. oral pharynx.
 - d. diaphragm.

ANS: B

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One-half to two-thirds of total airway resistance occurs in the nose, not the bronchi, the oral pharynx, or the diaphragm.

REF: p. 680

18. Which of the following terms should the nurse use when there is a balance between outward recoil of the chest wall and inward recoil of lungs at rest?
- a. Functional residual capacity (FRC) is reached.
 - b. Vital capacity (VC) is reached.
 - c. Total lung capacity (TLC) is reached.
 - d. Residual volume (RV) is reached.

ANS: A

Balance between the outward recoil of the chest wall and inward recoil of the lungs occurs at the resting level, the end of expiration, where the FRC is reached. VC is the amount of air that can be forcibly expired after a maximal inspiration. TLC is not reflected by outward and inward recoil. RV is the air that remains trapped in the alveoli.

REF: p. 679

19. While reviewing the results of the pulmonary functions test, the nurse is aware that the maximum amount of gas that can be displaced (expired) from the lung is called:
- a. vital capacity (VC).

- b. total lung capacity.
- c. functional capacity.
- d. residual volume.

ANS: A

VC is the amount of air that can be forcibly expired after a maximal inspiration. Total lung capacity is the volume of lung capacity at full inhalation. Functional capacity is not a term used to describe function tests. Residual volume is the amount of air remaining after exhalation.

REF: p. 680, Figure 26-11

20. Under most circumstances, increased work of breathing results in:
- a. increased partial pressure of O₂ in the lungs.
 - b. increased oxygen consumption.
 - c. decreased PaCO₂.
 - d. alterations in alveolar perfusion.

ANS: B

An increase in the work of breathing can result in a marked increase in oxygen consumption. A marked increase in oxygen consumption is not associated with an increase in partial pressure, lower CO₂, or altered alveolar perfusion.

REF: p. 680

21. What is the partial pressure of oxygen in the lung given the following conditions?

Percentage of oxygen in air: 20

Barometric pressure: 700 mm Hg

- a. 111 mm Hg
- b. 124 mm Hg
- c. 131 mm Hg
- d. 140 mm Hg

ANS: D

The partial pressure of oxygen is equal to the percentage of oxygen in the air, 20, times the total pressure (700 mm Hg), or 140 mm Hg ($700 \times 0.20 = 140$).

REF: p. 681

22. What physiology is present at the base of the lungs?

- a. Arterial perfusion pressure is less than that of alveolar gas pressure.
- b. Arterial perfusion pressure and alveolar gas pressure are less than they are at the apex.
- c. Arterial perfusion pressure exceeds alveolar gas pressure.
- d. Arterial perfusion and alveolar gas pressure are equal.

ANS: C

In the base of the lungs, both arterial and venous pressures are greater than alveolar pressure, and blood flow is not affected by alveolar pressure. It is in the apex that alveolar pressure exceeds pulmonary arterial and venous pressures. In zone II, also part of the apex, alveolar pressure is greater than venous pressure, but not arterial pressure.

REF: pp. 681-682

23. While auscultating a patient's lungs, a nurse recalls the alveoli in the apices of the lungs are _____ than alveoli in the bases.
- larger
 - more numerous
 - more compliant
 - less perfused

ANS: A

The alveoli in the upper portions, or apices, of the lungs contain a greater residual volume of gas and are larger and less numerous, not more numerous, than those in the lower portions. The apices are less compliant but better perfused.

REF: p. 681

24. A patient asks how oxygen is transported in the body. The nurse's best response is that most oxygen (O_2) is transported:
- dissolved in the plasma.
 - bound to hemoglobin.
 - in the form of carbon dioxide (CO_2).
 - as a free-floating molecule.

ANS: B

Most O_2 is transported bound to hemoglobin, not as a free-floating molecule; only a small amount is dissolved in plasma. O_2 is not transported in the form of CO_2 . O_2 is transported bound to hemoglobin.

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REF: p. 682

25. Diffusion of respiratory gases takes place at the:
- alveolocapillary membrane.
 - visceral pleurae.
 - parietal pleurae.
 - respiratory center.

ANS: A

Diffusion of respiratory gases takes place across the alveolocapillary membrane. The visceral and parietal pleurae are the linings of the lung; gas exchange does not occur here. The respiratory center is where impulses to the respiratory muscles are generated.

REF: p. 682

26. In a patient with acidosis, the nurse would expect the oxyhemoglobin dissociation curve to shift:
- to the right, causing more O_2 to be released to the cells.
 - to the left, allowing less O_2 to be released to the cells.
 - downward, allowing less O_2 to dissolve in the plasma.
 - upward, allowing more O_2 to dissolve in the plasma.

ANS: A

The oxyhemoglobin dissociation curve is shifted to the right, not the left, by acidosis (low pH) and hypercapnia (increased PaCO₂); more, not less, O₂ is released to cells. The oxyhemoglobin dissociation curve is not downward or upward, by acidosis.

REF: p. 683

27. Carbon dioxide (CO₂) is mainly transported in the blood:
- attached to oxygen (O₂).
 - dissolved in red blood cells.
 - combined with albumin.
 - in the form of bicarbonate.

ANS: D

CO₂ is carried in the blood as bicarbonate and not attached to O₂, dissolved in red blood cells, or combined with albumin.

REF: p. 684

28. Pulmonary function tests reveal that an 80-year-old dyspneic patient has an increase in residual volume. A nurse suspects the most likely cause of the increased residual volume is _____ in lung compliance.
- an increase
 - a decrease
 - no change
 - an absence

ANS: A

The patient is experiencing an increase in lung compliance. Increased compliance indicates that the lungs or chest wall is abnormally easy to inflate and has lost some elastic recoil. Decreased compliance is seen in acute breathing disorders.

REF: p. 684, Geriatric Considerations

MULTIPLE RESPONSE

1. Which structures may be found in the walls of the respiratory bronchi? (select all that apply)
- Smooth muscle
 - Surfactant-producing glands
 - Goblet cells
 - Ciliated cells
 - Epithelial lining

ANS: A, C, D, E

The bronchial walls have three layers: an epithelial lining, a smooth muscle layer, and a connective tissue layer. The epithelial lining of the bronchi contains single-celled exocrine glands—the mucus-secreting goblet cells—and ciliated cells. Surfactant-producing glands are found in the alveoli.

REF: pp. 671-672

COMPLETION

1. _____ seconds is required for oxygen (O_2) concentration to equilibrate (equalize) across the alveolocapillary membrane.

ANS: 0.25

REF: p. 682

2. _____% of oxygen (O_2) enters the bloodstream bound to hemoglobin.

ANS: 97

REF: p. 683

3. At sea level, the partial pressure of oxygen is approximately ____% (round to the nearest whole number).

ANS:

21

At sea level, the air is made up of oxygen (20.9%).

REF: p. 681

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Chapter 27: Alterations of Pulmonary Function

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. A 10-year-old develops pneumonia. Physical exam reveals subcostal and intercostal retractions. The child reports that breathing is difficult with feelings that, "I cannot get enough air." What term should the nurse use to document this condition?
 - a. Cyanosis
 - b. Dyspnea
 - c. Hyperpnea
 - d. Orthopnea

ANS: B

Dyspnea is defined as "a subjective experience of breathing discomfort that consists of qualitatively distinct sensations that vary in intensity." Cyanosis is a bluish discoloration to the skin. Hyperpnea is an increased ventilatory rate and orthopnea is dyspnea that occurs when an individual lies flat.

REF: p. 687

2. A 20-year-old presents reporting difficulty breathing when lying down. What term should the nurse use to document this condition?
 - a. Dyspnea
 - b. Orthopnea
 - c. Apnea
 - d. Tachypnea

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ANS: B

Orthopnea is dyspnea that occurs when an individual lies flat. Dyspnea is shortness of breath that occurs with activity. Apnea is cessation of breathing, and tachypnea is rapid breathing.

REF: p. 687

3. What type of breathing will the nurse observe while assessing a patient experiencing both metabolic acidosis and Kussmaul respirations?
 - a. Audible wheezing or stridor
 - b. Increased rate, large tidal volumes, and no expiratory pause
 - c. Rapid respirations with periods of apnea
 - d. Very slow inhalations and rapid expirations

ANS: B

Kussmaul respirations are characterized by a slightly increased ventilatory rate, very large tidal volumes, and no expiratory pause. Audible wheezing is usually associated with conditions such as asthma, and stridor indicates a narrowed airway. Cheyne-Stokes respirations are characterized by alternating periods of deep and shallow breathing, with periods of apnea lasting from 15 to 60 seconds. Kussmaul respirations do not have slow inhalations; bronchiolar disorders have these characteristics.

REF: p. 688

4. As a result of a severe head injury, a patient is now experiencing respiratory abnormalities characterized by alternating periods of deep and shallow breathing with periods of apnea. What term should the nurse use when charting this condition?
- Cheyne-Stokes
 - Frank-Starling
 - Apnea
 - Orthopnea

ANS: A

Cheyne-Stokes respirations are characterized by alternating periods of deep and shallow breathing, with periods of apnea lasting from 15 to 60 seconds. Frank-Starling is related to the stretch of fibers. Apnea is cessation of respirations. Orthopnea is dyspnea that occurs when an individual lies flat.

REF: p. 688

5. A patient's arterial blood gas reveals decreased carbon dioxide (CO₂) levels. What is the most likely cause of this situation?
- Hyperventilation
 - Hypoventilation
 - Apnea
 - Cyanosis

ANS: A

Individuals with hyperventilation blow off CO₂ while individuals with hypoventilation retain CO₂. Apnea is cessation of breathing. Cyanosis is a blue color to the skin.

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REF: p. 688

6. When giving report, what term should the nurse use to describe the coughing up of bloody secretions?
- Hematemesis
 - Cyanosis
 - Rhinitis
 - Hemoptysis

ANS: D

Hemoptysis is the coughing up of bloody secretions. Hematemesis is bloody vomiting. Cyanosis is a bluish color to the skin. Rhinitis is a runny nose.

REF: p. 688

7. A 65-year-old diagnosed with emphysema presents to the ER for difficulty breathing. Physical exam reveals both bluish skin and mucous membranes. What term will the nurse use to document these observations?
- Cyanosis
 - Hemoptysis
 - Hematemesis
 - Ischemia

ANS: A

Cyanosis is a blue color to the skin. Hemoptysis is the coughing up of blood or bloody secretions, and hematemesis is blood in the vomitus. Ischemia is a lack of blood supply to tissues.

REF: p. 688

8. A nurse is reviewing the results of an arterial blood gas (ABG) and finds reduced oxygenation of arterial blood. What term should the nurse use to describe this condition?
- Ischemia
 - Hypoxia
 - Hypoxemia
 - Hypocapnia

ANS: C

Hypoxemia is a reduction of oxygen in arterial blood. Ischemia is a lack of blood supply to tissues. Hypoxia is reduced oxygen in tissues. Hypocapnia is decreased CO₂.

REF: p. 689

9. A low ventilation-perfusion ratio of the lung will result in:
- increased dead space.
 - shunting.
 - alveolar collapse.
 - bronchoconstriction.

ANS: B

Hypoxemia caused by inadequate ventilation of well-perfused areas of the lung is a form of mismatching called shunting, ~~not bronchoconstriction~~. Inadequate ventilation of well-perfused areas of the lung is not referred to as dead space. Alveolar collapse is called atelectasis.

REF: p. 690

10. What phrase describes the condition in which a series of alveoli in the left lower lobe receive adequate ventilation but lack adequate perfusion?
- A right-to-left shunt
 - Alveolar dead space
 - A low ventilation-perfusion ratio
 - Pulmonary hypotension

ANS: B

When certain areas of the alveoli experience inadequate perfusion, it is referred to as dead space. The situation is not referred to as either a right-to-left shunt or as pulmonary hypotension. Shunting is due to a low ventilation-perfusion ratio.

REF: p. 690

11. Which of the following lab values would the nurse expect in a patient who has sustained trauma to the lungs and chest wall and is experiencing respiratory failure?
- Electrolyte imbalances
 - Elevated PaCO₂
 - Low hematocrit
 - Elevated pH

ANS: B

In respiratory failure, inadequate gas exchange occurs such that $\text{PaO}_2 \leq 60 \text{ mm Hg}$ or $\text{PaCO}_2 \geq 50 \text{ mm Hg}$ with $\text{pH} \leq 7.25$. Electrolyte imbalances do not occur, but changes in blood gas values do. Hematocrit may be unaffected. pH will be decreased.

REF: p. 690

12. A 50-year-old presents with hypotension, hypoxemia, and tracheal deviation to the left. Tests reveal that the air pressure in the pleural cavity exceeds barometric pressure in the atmosphere. Based upon these assessment findings, what does the nurse suspect the patient is experiencing?
- Pleural effusion
 - Tension pneumothorax
 - Open pneumothorax
 - Transudative pneumothorax

ANS: B

Tracheal deviation suggests tension pneumothorax, not pleural effusion. With an open pneumothorax, a sucking sound would be heard without tracheal deviation. Tracheal deviation suggests a tension, not transudative pneumothorax.

REF: p. 692

13. A 60-year-old with a history of cirrhosis presents with dyspnea, impaired ventilation, and pleural pain. A diagnosis of pleural effusion is made, and a watery fluid is drained. When giving report, the nurse will refer to this fluid as:
- exudative.
 - purulent.
 - infected.
 - transudative.

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ANS: D

Pleural effusions that enter the pleural space from intact blood vessels can be transudative (watery). The fluid is watery; thus, it is not exudative, which is composed of white cells. Effusion is not purulent or infected.

REF: p. 692

14. An 80-year-old develops pneumonia in the hospital. An assessment identifies that the patient is cyanotic and tachycardic and has developed a fever and a cough. Chest x-ray reveals pus in the pleural space. This symptomology supports which medical diagnosis?
- Empyema
 - Emphysema
 - Pleurisy
 - Chyle

ANS: A

The presence of pus in the pleural space is termed empyema; emphysema is a total lung disorder. Pleurisy causes pain with inspiration. Chyle is milky fluid with lymph and fat.

REF: p. 692

15. Which organism does the nurse suspect is the most likely cause of empyema?
- Virus
 - Staphylococcus aureus*
 - Fungus
 - Moraxella catarrhalis*

ANS: B

The most likely cause of empyema is *Staphylococcus aureus*; it is not due to a virus.

Empyema is not due to *Moraxella catarrhalis* or to a fungal infection.

REF: p. 692

16. A 26-year-old recently underwent surgery and is now experiencing dyspnea, cough, fever, and leukocytosis. Tests reveal a collapsed lung caused by the removal of air from obstructed alveoli. Which term is used to document this condition?
- Compression atelectasis
 - Bronchiectasis
 - Absorption atelectasis
 - Hypoventilation

ANS: C

Absorption atelectasis results from removal of air from obstructed or hypoventilated alveoli or from inhalation of concentrated oxygen or anesthetic agents. Compression atelectasis is caused by external pressure exerted by tumor, fluid, or air in the pleural space or by abdominal distention pressing on a portion of lung. Bronchiectasis is a dilation of the bronchi, not atelectasis. Hypoventilation is inadequate alveolar ventilation of the lungs; it is not due to removal of air.

N_UR_SI_NG_TB.C_OM

REF: p. 693

17. A 15-year-old is diagnosed with restrictive lung disease caused by fibrosis. Which pulmonary function test finding is expected?
- Increased compliance
 - Increased tidal volume
 - Decreased respiratory rate
 - Decreased functional residual capacity

ANS: D

Fibrosis progressively obliterates the alveoli, respiratory bronchioles, and interstitium (fibrosing alveolitis), which can result in chronic pulmonary insufficiency, and functional residual capacity declines. Compliance decreases in restrictive disease. In restrictive disease, tidal volume decreases. Respirations may increase with restrictive disease.

REF: p. 696

18. A 57-year-old presents with cough, sputum production, dyspnea, and decreased lung volume and is diagnosed with pneumoconiosis. When taking the patient's history, which finding is the most probable cause of the illness?
- Inhalation of silica
 - Autoimmune disease

- c. Allergic reactions
- d. Flail chest

ANS: A

The dusts of silica, asbestos, and coal are the most common causes of pneumoconiosis. Pneumoconiosis is neither an autoimmune nor an allergic disorder; it is not due to flail chest.

REF: p. 695

19. The most common cause of pulmonary edema is:
- a. right heart failure.
 - b. left heart failure.
 - c. asthma.
 - d. lung cancer.

ANS: B

The most common cause of pulmonary edema is left-sided heart disease, not right-sided. Pulmonary edema is not commonly caused by asthma or lung cancer.

REF: p. 695

20. Which assessment findings will the nurse observe in a patient diagnosed with severe pulmonary edema?
- a. Thick mucous secretions
 - b. Pink, frothy sputum
 - c. Hypocapnia
 - d. Wheezing

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ANS: B

In severe edema, pink frothy sputum is expectorated, not thick mucous secretions. Neither hypocapnia nor wheezing is an expected assessment finding associated with pulmonary edema.

REF: p. 695

21. A 42-year-old presents with dyspnea; rapid, shallow breathing; inspiratory crackles; decreased lung compliance; and hypoxemia. Tests reveal a fulminant form of respiratory failure characterized by acute lung inflammation and diffuse alveolocapillary injury. What is the most likely diagnosis supported by the patient's condition?
- a. Acute respiratory distress syndrome (ARDS)
 - b. Sarcoidosis
 - c. Postoperative respiratory failure
 - d. Malignant respiratory failure

ANS: A

The patient is experiencing ARDS. The patient's symptoms do not support a diagnosis of sarcoidosis or either postoperative or malignant respiratory failure.

REF: p. 696

22. Asthma is thought to be caused by:
- a. an autosomal recessive trait.

- b. autoimmunity.
- c. excessive use of antibiotics as a young child.
- d. interactions between genetic and environmental factors.

ANS: D

Asthma is an interaction between genetic and environmental factors. Asthma is not a recessive trait or an autoimmune response. Asthma is not due to excessive antibiotic use in childhood.

REF: p. 698

23. Airway hyperresponsiveness in asthma is related to:
- a. increased sympathetic nervous system response.
 - b. the release of stress hormones.
 - c. exposure to an allergen causing mast cell degranulation.
 - d. hereditary decrease in IgE responsiveness.

ANS: C

Hyperresponsiveness is due to mast cell degranulation. An increased sympathetic response would lead to bronchiolar dilation. Hyperresponsiveness is not due to release of stress hormones. Heredity is associated with asthma, but the problem is the mast cells.

REF: p. 698

24. Airway obstruction contributing to increased airflow resistance and hypoventilation in asthma is caused by:
- a. type II alveolar cell injury and decreased surfactant.
 - b. alveolar fibrosis and pulmonary edema.
 - c. mucous secretion, bronchoconstriction, and airway edema.
 - d. collapse of the cartilaginous rings in the bronchi.

ANS: C

The mediators of asthma cause vasodilation, increased capillary permeability, mucosal edema, bronchial smooth muscle contraction (bronchospasm), and mucous secretion from mucosal goblet cells with narrowing of the airways and obstruction to airflow. Acute respiratory distress syndrome involves type II injury. Alveolar fibrosis with pulmonary edema is not associated with asthma. Asthma is not associated with collapse of bronchiolar rings.

REF: p. 698

25. A 10-year-old is brought to the ER with prolonged bronchospasm and severe hypoxemia. The symptomology supports which diagnosis?
- a. Exercise-induced asthma
 - b. Chronic obstructive pulmonary disease (COPD)
 - c. Status asthmaticus
 - d. Bronchiectasis

ANS: C

When bronchospasm is not reversed by the usual measures, the individual is considered to have severe bronchospasm or status asthmaticus since exercise-induced asthma resolves.

COPD is manifested by air trapping and hypercapnia, not by bronchospasm. Bronchiectasis is manifested by bronchiolar changes, not by bronchospasm.

REF: p. 699

26. A 22-year-old presents with chronic bronchitis. Tests reveal closure of the airway during expiration. This condition is most likely caused by:
- thick mucus from hypertrophied glands.
 - ventilation-perfusion mismatch.
 - hyperventilation.
 - thinning smooth muscle in the bronchioles.

ANS: A

Chronic bronchitis is defined by hypersecretion of thick mucus. Ventilation-perfusion mismatch may occur, but chronic bronchitis is defined as hypersecretion of mucus. Neither hyperventilation nor thinning of smooth muscle occurs.

REF: p. 701

27. Individuals with a recent diagnosis of emphysema should be assessed for which most common presenting factor?
- A productive cough
 - Cyanosis
 - Dyspnea
 - Cor pulmonale

ANS: C

Dyspnea, not a productive cough, is the most common presenting factor of emphysema. Neither cyanosis nor cor pulmonale is a common presenting factor of emphysema.

REF: p. 701, Table 27-2 **N_UR_SI_NG_TB.C_OM**

28. A 60-year-old with a 25-year history of smoking is diagnosed with emphysema. Assessment shows an increased anterior-posterior chest diameter. The nurse attributes this finding to:
- air trapping.
 - decreased inspiratory reserve volumes.
 - increased flow rates.
 - alveolar destruction.

ANS: A

Air trapping, not increased flow rates, expands the thorax, putting the respiratory muscles at a mechanical disadvantage. Neither decreased inspiratory reserve volumes nor alveolar destruction is associated with an increased anterior-posterior chest diameter.

REF: p. 701

29. Pneumonia is caused by:
- use of anesthetic agents in surgery.
 - atelectasis.
 - chronic lung changes seen with aging.
 - viral or bacterial infections.

ANS: D

Pneumonia is caused by a viral or bacterial infection; infections are not caused by anesthetic agents. Neither atelectasis nor lung changes associated with normal aging cause pneumonia.

REF: p. 703

30. The patient generally acquires nosocomial pneumonia:
- at daycare centers.
 - on airplanes.
 - during hospitalization.
 - in the winter season.

ANS: C

Nosocomial infections are acquired in the hospital. Nosocomial infections are not associated with daycare centers or airplanes and may happen in any season.

REF: p. 703

31. What is the most likely cause of chronic bronchitis in a 25-year-old?
- Chronic asthma
 - Air pollution
 - Cigarette smoke
 - Recurrent pneumonias

ANS: C

The most likely cause of chronic bronchitis is cigarette smoke. Chronic bronchitis in such a patient is not commonly associated with chronic asthma. Air pollution and recurrent infections may contribute, but smoking is the most common cause.

REF: p. 701

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32. A 20-year history of smoking causes airways to be obstructed as a result of:
- excessive mucus production.
 - loss of elastic recoil.
 - infection and inflammation.
 - airway edema.

ANS: B

The major mechanism of airflow limitation is a loss of elastic recoil, not excessive mucus as with bronchitis. The major mechanism of airflow limitation in this situation is not associated with infection or airway edema.

REF: p. 702

33. Aspiration of oral secretions increases a patient's risk for which complication?
- Pneumonia
 - Bronchiectasis
 - Pneumothorax
 - Emphysema

ANS: A

Aspiration could lead to pneumonia; bronchiectasis is related to dilation and is not associated with aspiration. Neither pneumothorax nor emphysema is associated with aspiration.

REF: p. 704

34. A 30-year-old is diagnosed with emphysema. Changes in this patient's lungs are caused by:
- viral infections.
 - destruction of alveolar macrophages.
 - α_1 -antitrypsin deficiency.
 - fibrotic lung disease.

ANS: C

α_1 -Antitrypsin deficiency is suggested in individuals who develop emphysema before 40 years of age; it is not due to viral infections. Changes in the lungs are not associated with alveolar macrophage destruction or with fibrotic lung disease.

REF: p. 702

35. The organism that causes tuberculosis is a:
- bacterium.
 - fungus.
 - virus.
 - parasite.

ANS: A

The organism that causes tuberculosis is a bacterium. Tuberculosis is not a fungus, a virus, or a parasite.

REF: p. 706

36. The patient diagnosed with tuberculosis can transmit this disease through:
- skin contact.
 - fecal-oral contact.
 - airborne droplets.
 - blood transfusions.

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ANS: C

Tuberculosis is transmitted through airborne droplets. Tuberculosis is not transmitted through skin contact, fecal-oral contact, or through a blood transfusion.

REF: p. 706

37. A 70-year-old hospitalized for a pelvic fracture develops a pulmonary embolism. The nurse realizes this embolus is most commonly composed of:
- fat.
 - air.
 - tissue fragment.
 - blood clot.

ANS: D

A thromboembolism is most commonly composed of a blood clot. A thromboembolism is less commonly composed of fat, air, or tissue fragments.

REF: p. 706

38. Which of the following patients is at highest risk for developing pulmonary embolism (PE)?

- a. 21-year-old male with a hemophilia bleeding disorder
- b. 28-year-old woman who had a baby 6 months earlier
- c. 36-year-old woman with a history of alcohol abuse who is recovering from a gastric ulcer
- d. 72-year-old male who is recovering from hip replacement surgery in the hospital

ANS: D

A 72-year-old is at risk for immobility and at increased risk for PE.

REF: p. 707

39. A 50-year-old male is diagnosed with pulmonary embolism (PE). Which of the following symptoms most likely occurred before treatment is initiated?
- a. Dry cough and inspiratory crackles
 - b. Shallow respirations and wheezing
 - c. Chest pain and shortness of breath
 - d. Kussmaul respirations and back pain

ANS: C

An individual with PE usually presents with the sudden onset of pleuritic chest pain, dyspnea, tachypnea, tachycardia, and unexplained anxiety. Individuals with PE do not experience a cough or wheezing. Kussmaul respirations are associated with acidosis.

REF: p. 707

40. A 60-year-old undergoes surgery for a bone fracture. Which nursing measure would be most effective for preventing pulmonary embolism (PE) in this patient?
- a. Ensure that patient uses supplemental oxygen.
 - b. Prevent deep vein thrombosis formation.
 - c. Check hematocrit and hemoglobin levels frequently during the postoperative period.
 - d. Promote aggressive fluid intake.

ANS: B

PE most commonly results from embolization of a clot from deep venous thrombosis (DVT) involving the lower leg; thus, preventing these will help prevent pulmonary emboli. Oxygen will neither prevent emboli nor check hemoglobin and hematocrit.

Fluid intake will help, but it is not as important as preventing DVT.

REF: p. 706

41. A 50-year-old is diagnosed with lung cancer. The health history includes a 30-year history of smoking, exposure to air pollution, asbestos, and radiation. What had the greatest impact on the development of his cancer?
- a. Radiation
 - b. Cigarette smoke
 - c. Asbestos
 - d. Air pollution

ANS: B

The most common cause of lung cancer is tobacco smoking. While considered risk factors, neither exposure to radiation, asbestos, nor air pollution is the most common of the known triggers.

REF: p. 709

MULTIPLE RESPONSE

1. Which assessment finding would be expected in pulmonary embolism (PE)? (select all that apply)
 - a. Chest pain
 - b. Tachycardia
 - c. Tachypnea
 - d. Fever
 - e. Hemoptysis

ANS: A, B, C, D, E

An individual with PE usually presents with the sudden onset of pleuritic chest pain, dyspnea, tachypnea, tachycardia, and unexplained anxiety. Occasionally syncope (fainting) or hemoptysis occurs. With large emboli, a pleural friction rub, pleural effusion, fever, and leukocytosis may be noted. Recurrent small emboli may not be detected until progressive incapacitation, precordial pain, anxiety, dyspnea, and right ventricular enlargement are exhibited. Massive occlusion causes severe pulmonary hypertension and shock.

REF: p. 707

2. Which is a characteristic of idiopathic pulmonary arterial hypertension (IPAH)? (select all that apply)
 - a. Male gender
 - b. Fatigue
 - c. Dyspnea
 - d. Jugular vein distention
 - e. Weight gain

ANS: B, C, D

IPAH is a rare condition that usually occurs in women between the ages of 20 and 40. Manifestations of fatigue, chest discomfort, tachypnea, and dyspnea (particularly with exercise) are common. Examination may reveal peripheral edema, jugular venous distention, a precordial heave, and accentuation of the pulmonary component of the second heart sound.

REF: p. 708

Chapter 28: Alterations of Pulmonary Function in Children
Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. What is the most likely cause of croup?
 - a. Bacteria
 - b. Acute hyperventilation
 - c. Allergy
 - d. Viral infection

ANS: D

The most common cause of croup is viral, not bacterial. Croup is not caused by acute hyperventilation or an allergic response.

REF: p. 715

2. A 5-year-old presents with high fever, inspiratory stridor, severe respiratory distress, drooling, and dysphagia. Acute epiglottitis is suspected. When assessing the child the nurse would avoid:
 - a. trying to keep the child calm.
 - b. examining the throat for redness.
 - c. auscultating the child's respiratory rate.
 - d. counting the heart rate apically.

ANS: B

Examination of the throat should not be attempted as it may trigger laryngospasm and cause respiratory collapse. It is appropriate to attempt to keep the child calm, listen, and count the child's respiratory and heart rates.

REF: p. 717

3. A 10-year-old is diagnosed with obstructive sleep apnea. When the parents ask, the nurse shares that the initial treatment will be:
 - a. tonsillectomy and adenoidectomy (T&A).
 - b. weight loss.
 - c. continuous positive airway pressure.
 - d. drug therapy.

ANS: A

Children with sleep apnea are most often referred for T&A. Weight loss, continuous positive airway pressure, and drug therapy are not the treatment of choice.

REF: p. 718

4. A newborn is diagnosed with respiratory distress syndrome. When obtaining the patient's history, which of the following is the most important predisposing factor for this condition?
 - a. Low birth weight
 - b. Alcohol consumption by the mother during pregnancy
 - c. Premature birth

- d. Smoking by the mother during pregnancy

ANS: C

Newborn respiratory distress occurs almost exclusively in premature infants, not low birth weight. Newborn respiratory distress is not associated with either maternal alcohol use or smoking.

REF: p. 718

5. A newborn diagnosed with respiratory distress syndrome is monitored for atelectasis because of:
- a lack of surfactant.
 - pulmonary edema.
 - airway obstruction.
 - pulmonary fibrosis.

ANS: A

Atelectasis in newborn respiratory distress is due to lack of surfactant, not pulmonary edema. Atelectasis in newborn respiratory distress is not due to either an airway obstruction or pulmonary fibrosis.

REF: p. 718

6. A cardiovascular alteration seen in a newborn diagnosed with respiratory distress syndrome includes:
- left-to-right shunt.
 - left ventricular dilation.
 - pulmonary hypotension. **NURSINGTB.COM**
 - opening of fetal shunt pathways.

ANS: D

Increased pulmonary vascular resistance may even cause a partial return to fetal circulation, with right-to-left shunting of blood through the ductus arteriosus and foramen ovale. A left-to-right shunt does not occur. This situation is not associated with either ventricular dilation or pulmonary hypotension.

REF: pp. 718-719

7. A newborn experiencing respiratory distress syndrome (RDS) will demonstrate signs:
- within minutes of birth.
 - 2-3 hours after birth.
 - within the first 12-24 hours after birth.
 - 24-48 hours after exposure to an infectious organism.

ANS: A

Signs of RDS appear within minutes of birth. Signs of RDS are not associated with an infectious organism.

REF: p. 719

8. During a respiratory assessment of an infant diagnosed with respiratory distress syndrome, a depression in the supraclavicular and intercostal areas of the thorax was noted with inspiration. This observation is documented as:
- grunting.
 - tachypnea.
 - retractions.
 - nasal flaring.

ANS: C

The sinking of supraclavicular and intercostal areas is termed retractions. The symptoms do not describe grunting, tachypnea, or nasal flaring.

REF: p. 719

9. An infant was born 10 weeks premature and requires mechanical ventilation. Two months later the infant presents with hypoxemia and hypercapnia. Which of the following is the most likely diagnosis the nurse will observe documented on the chart?
- Respiratory distress syndrome of the newborn
 - Bronchopulmonary dysplasia (BPD)
 - Bronchiolitis
 - Pneumonia

ANS: B

Mechanical ventilation can result in a proinflammatory state that may contribute to the development of chronic lung disease, such as BPD but not bronchiolitis or pneumonia. Respiratory distress might have led to the intubation, but BPD is the diagnosis.

REF: p. 720

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10. A 6-month-old presents with rhinorrhea, cough, poor feeding, lethargy, and fever and is diagnosed with bronchiolitis. Which of the following will the nurse most likely observe on the culture report?
- Parainfluenza virus
 - Haemophilus influenzae* type B
 - Respiratory syncytial virus
 - Group A beta-hemolytic streptococcus

ANS: C

The most common cause of bronchiolitis is respiratory syncytial virus. Bronchiolitis is not caused by the parainfluenza virus, *Haemophilus influenzae* type B, or group A beta-hemolytic streptococcus.

REF: p. 721

11. A 2-year-old presents with fever and cough and is diagnosed with pneumonia. While planning treatment for this patient, the nurse recognizes that which of the following is the most likely cause?
- Bacteria
 - Viruses
 - Mycoplasma* species
 - Toxic inhalations

ANS: B

Viral pneumonia is more common than bacterial pneumonia, and children are 2-3 times more likely than adults to acquire these viruses. Neither *Mycoplasma* species nor toxic inhalations are commonly associated with childhood pneumonia.

REF: p. 722

12. An 11-year-old presents with a low-grade fever and cough and is diagnosed with atypical pneumonia. What type of pneumonia does the nurse suspect the patient is experiencing?
- Pneumococcal pneumonia
 - Viral pneumonia
 - Mycoplasma* pneumonia
 - Streptococcal pneumonia

ANS: C

Chlamydophila pneumonia is clinically indistinguishable from and is typically grouped with *Mycoplasma* as “atypical pneumonia.” No other option is considered an atypical pneumonia.

REF: p. 723

13. A 2-week-old female presents with fever, productive cough, respiratory distress, and empyema. Which of the following is the most likely diagnosis the nurse will observe on the chart?
- Viral pneumonia
 - Pneumococcal pneumonia
 - Staphylococcal pneumonia
 - Mycoplasma* pneumonia

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ANS: C

Staphylococcal and group A streptococcal pneumonia can be particularly fulminant (sudden, severe) and necrotizing (causing cell death) with a high incidence of accompanying empyema, pneumatocele, and sepsis. Staphylococcal pneumonia is the more likely diagnosis than viral. Staphylococcal pneumonia is more likely to cause empyema than either pneumococcal or *Mycoplasma* pneumonias.

REF: p. 722

14. A 9-year-old contracted influenza. Which of the following complications is of greatest concern to the nurse?
- Chronic bronchitis
 - Bronchiolitis obliterans
 - Emphysema
 - Respiratory distress syndrome (RDS)

ANS: B

Bronchiolitis obliterans, not just chronic bronchitis, most often occurs as a sequela of a severe viral pulmonary infection (e.g., influenza, adenovirus, pertussis [whooping cough], or measles). Neither emphysema nor RDS is a concern.

REF: p. 723

15. Which pathology is characteristic of asthma?

- a. Increased lung volumes
- b. Expiratory wheezing
- c. Air trapping
- d. Dead space

ANS: B

On physical examination, there is expiratory wheezing that is often described as high pitched and musical, and there is prolongation of the expiratory phase of the respiratory cycle. Lung volumes are decreased. Air trapping and dead space occur in emphysema, not asthma.

REF: p. 724

16. A 13-year-old female is diagnosed with asthma. Which of the following should the nurse teach the patient to recognize as a part of an asthmatic attack?
- a. Headache
 - b. Chest pain
 - c. Wheezing
 - d. Low heart rate

ANS: C

Wheezing but not chest pain occurs in asthma due to narrowing of airways. Headache is not a part of an asthma attack. The heart rate will be increased, not decreased.

REF: p. 724

17. Cystic fibrosis (CF) is an _____ disease.
- a. autosomal recessive
 - b. autosomal dominant
 - c. X-linked recessive
 - d. X-linked dominant

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ANS: A

CF is an autosomal recessive disease. CF is not X-linked.

REF: p. 725

18. After nearly drowning a 2-year-old developed acute respiratory distress syndrome (ARDS). Which of the following should the nurse assess the patient for?
- a. Decreased heart rate
 - b. Increased lung compliance
 - c. Increased surfactant production
 - d. Hypoxemia

ANS: D

The child diagnosed with ARDS will experience severe hypoxemia, an elevated heart rate, and decreased lung compliance. Surfactant production is not affected in ARDS.

REF: p. 725

19. To help confirm a diagnosis of cystic fibrosis in a 1-year-old child which substance will be monitored for in the child's sweat?
- a. Potassium

- b. Chloride
- c. Magnesium
- d. Carbonic acid

ANS: B

The standard method of diagnosis is the sweat test, which reveals sweat chloride concentration in excess of 60 milliequivalents per liter. None of the other substances is relevant for this diagnosis.

REF: p. 726

20. A 7-month-old presents with cystic fibrosis (CF) accompanied by failure to thrive and frequent, loose, and oily stools. Sweat testing confirms the diagnosis. Which of the following is characteristic of CF?
- a. Autoantibodies that target the lungs and pancreas
 - b. Thick mucous sputum
 - c. Enzymes that degrade surfactant in the alveoli
 - d. A toxic amount of electrolytes from secretory glands

ANS: B

In CF, thick mucus is present. CF is not characterized by autoantibodies, degraded surfactant, or elevated electrolytes.

REF: pp. 725-726

21. A young patient is admitted to the pediatric unit with a diagnosis of cystic fibrosis (CF) exacerbation. The nurse monitors the patient closely for which potentially fatal complication of CF? **N_UR_SI_NG_TB.C_OM**
- a. Airway rigidity
 - b. Pulmonary edema
 - c. Respiratory failure
 - d. Asthma-like bronchospasms

ANS: C

Although CF is a multi-organ disease, its most important effects are on the lungs, and respiratory failure is almost always the cause of death. Neither airway rigidity, pulmonary edema, nor asthma-like symptoms are associated with CF-induced death.

REF: p. 725

22. Sudden infant death syndrome (SIDS) peaks between _____ and _____ months of age.
- a. 1; 2
 - b. 2; 4
 - c. 6; 8
 - d. 10; 12

ANS: B

SIDS peaks in children 2-4 months of age.

REF: p. 726

23. The coroner ruled sudden infant death syndrome (SIDS) as the cause of death of a 5-month-old-female. Which risk factor is most likely associated with SIDS?
- Congenital heart disease
 - Female gender
 - White race
 - Frequent respiratory infections

ANS: D

A higher rate of respiratory tract infection during those months will likely decrease sleep arousal, making it a risk factor for SIDS. Congenital anomalies play a role, but respiratory infections play a greater role. SIDS occurs in males more than females. Genetic factors may play a role, but ethnicity does not.

REF: p. 727

24. To prevent sudden infant death syndrome, the nurse should instruct parents to:
- place infants on a soft mattress for sleeping.
 - always lay infants down on their backs to sleep.
 - breast-feed their infants.
 - keep the infant's room very warm.

ANS: B

Infants should be laid on their backs to sleep. A soft mattress is a possible contributing factor to SIDS. Feeding method does not play as great a role as positioning during sleep. Overheated room temperature should be avoided.

REF: p. 727

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MULTIPLE RESPONSE

1. A 1-year-old female is diagnosed with croup. Which of the following symptoms is most likely to be present when the nurse performs an assessment? (select all that apply)
- Barking cough
 - Stridor
 - Hoarseness
 - Drooling
 - Truncal rash

ANS: A, B, C

Typically, the child experiences rhinorrhea, sore throat, and low-grade fever for a few days and then develops a harsh (seal-like) barking cough, inspiratory stridor, and hoarse voice.

REF: p. 715

COMPLETION

1. Asthma affects ____% of children between birth and 17 years of age.

ANS:

10

It is the most prevalent chronic disease in childhood, affecting 10% of U.S. children between birth and 17 years of age.

REF: p. 723

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Chapter 29: Structure and Function of the Renal and Urologic Systems
Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. The region of the kidneys that contains the glomeruli is called the:
 - a. medulla.
 - b. cortex.
 - c. pyramids.
 - d. columns.

ANS: B

The outer layer of the kidney is called the cortex and it contains all of the glomeruli, most of the proximal tubules, and some segments of the distal tubule. The glomeruli are not located in the kidney's medulla, the pyramids, or the columns.

REF: p. 730

2. When discussing the functional unit of the kidney, what term should the nurse use?
 - a. Calyx
 - b. Nephron
 - c. Collecting duct
 - d. Pyramid

ANS: B

The functional unit of the kidney is the nephron. The nephron does not serve the same function as the calyx, the collecting duct, or the pyramid.

REF: p. 730

3. Which type of nephron determines the concentration of the urine?
 - a. Juxtamedullary
 - b. Midcortical
 - c. Cortical
 - d. Medullary

ANS: A

The juxtamedullary nephrons lie close to and extend deep into the medulla and are important for the concentration of urine. Concentration of urine is not associated with midcortical, cortical, or medullary nephrons.

REF: p. 732

4. What type of phagocytic cell lies between the layers of the renal capillaries?
 - a. Podocytes
 - b. Macula densa cells
 - c. Mesangial cells
 - d. Filtration slits

ANS: C

Mesangial cells lie between and support the capillaries. Mesangial cells have phagocytic ability similar to monocytes, release inflammatory cytokines, and can contract to regulate glomerular capillary blood flow. The epithelium has specialized cells called podocytes from which pedicles (foot projections) radiate and adhere to the basement membrane. The macula densa are sodium-sensing cells. The pedicles interlock with the pedicles of adjacent podocytes, forming an elaborate network of intercellular clefts called filtration slits, or slit membranes.

REF: p. 732

5. When the nurse discusses the glomerulus and Bowman's capsule together, it is referred to as the renal:
 - a. corpuscle.
 - b. capsule.
 - c. medulla.
 - d. pyramid.

ANS: A

Together, the glomerulus and Bowman's capsule are called the renal corpuscle. The combination of these structures is not identified as the capsule, the medulla, or the pyramid.

REF: p. 732

6. When a nurse is checking the urinalysis, plasma proteins should be absent from the urine because:
 - a. all filtered proteins are subsequently reabsorbed.
 - b. the texture of the covering surrounding plasma proteins interferes with reabsorption.
 - c. filtered proteins are subsequently degraded before elimination.
 - d. the negative charge of the glomerular filtration membrane repels the plasma proteins.

ANS: D

Like other capillary membranes, the glomerulus is freely permeable to water and relatively impermeable to large colloids, such as plasma proteins. The molecule's size and electrical charge affect the permeability of substances crossing the glomerulus. Protein filtration is not as dependent on size, texture, or on degradation.

REF: p. 732

7. When the nurse is discussing the sodium-sensing cells of the glomerulus, what term should the nurse use?
 - a. Podocytes
 - b. Macula densa
 - c. Mesangial cells
 - d. Loop of Henle

ANS: B

The macula densa are sodium-sensing cells. The epithelium has specialized cells called podocytes from which pedicles (foot projections) radiate and adhere to the basement membrane. Mesangial cells lie between and support the capillaries. Mesangial cells have phagocytic ability similar to that monocytes, release inflammatory cytokines, and can contract to regulate glomerular capillary blood flow. The loop of Henle is where fluid reabsorption occurs.

REF: p. 732

8. What structure does urine pass through prior to entering the ureters?
 - a. Collecting duct
 - b. Renal pelvis
 - c. Urethra
 - d. Major calyx

ANS: B

Urine is collected in the renal pelvis, not the collecting duct or the major calyx, and then is funneled into the ureters. The urethra receives urine from the bladder.

REF: p. 734

9. The trigone is defined as:
 - a. the orifice of the ureter.
 - b. the inner area of the kidney.
 - c. a triangular area between the openings of the two ureters and the urethra.
 - d. the three divisions of the loop of Henle.

ANS: C

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The trigone is a smooth triangular area between the openings of the two ureters and the urethra. This description is not associated with the orifice of a ureter, the inner area of the kidney, or a part of the loop of Henle.

REF: p. 735

10. When describing the male urinary anatomy, which information should the nurse include? The portion of the male urethra that is closest to the bladder is the _____ portion.
 - a. membranous
 - b. prostatic
 - c. cavernous
 - d. vas deferens

ANS: B

In the male, the prostatic urethra is closest to the bladder; the membranous follows after the prostatic; the cavernous follows after the membranous. The vas deferens is not a portion of the male urethra.

REF: p. 735

11. On average, the kidneys receive approximately _____ of the cardiac output.
 - a. 10-14%
 - b. 15-19%
 - c. 20-25%

- d. 26-35%

ANS: C

The kidney receives 20-25% of the cardiac output.

REF: p. 735

12. The glomerular filtration rate (GFR) is directly related to the:
- perfusion pressure in the glomerular capillaries.
 - oncotic pressure in the glomerular capillaries.
 - vascular resistance in the glomerular arterioles.
 - hydrostatic pressure in the Bowman's capsule.

ANS: A

The filtration of the plasma per unit of time is known as the GFR, which is directly related to the perfusion pressure of the glomerular capillaries. The filtration of the plasma per unit of time is not associated with the oncotic pressure of the glomerular capillaries, the vascular resistance in the glomerular arterioles, or the hydrostatic pressure in the Bowman's capsule.

REF: p. 735

13. The blood vessels of the kidneys are innervated by the:
- vagus nerve.
 - sympathetic nervous system.
 - somatic nervous system.
 - parasympathetic nervous system.

ANS: B

N_{UR}C_TN_GB_GM
The blood vessels of the kidney are innervated by the sympathetic nervous system's fibers.
The blood vessels of the kidney are not innervated by the vagus nerve or the parasympathetic system. The somatic system regulates the musculoskeletal system.

REF: p. 736

14. The renin-angiotensin system will be activated by:
- increased blood volume.
 - elevated sodium concentrations.
 - decreased blood pressure in the afferent arterioles.
 - renal hypertension.

ANS: C

The renin-angiotensin system is activated by decreased blood pressure. Activation of the renin-angiotensin system is not associated with the increased blood volume, elevated sodium levels, or renal hypertension.

REF: p. 736

15. A nurse realizes glucose will be excreted in the urine when:
- the maximum rate of glucose filtration is achieved.
 - the carrier molecules have reached their maximum.
 - glucose is consumed.
 - the ability of the kidneys to regulate blood glucose is lost.

ANS: B

When the carrier molecules for glucose become saturated (i.e., with the development of hyperglycemia), the excess will be excreted in the urine. There is no maximum rate of glucose filtration. Glucose should not be found in the urine even when glucose is consumed. The kidneys do not regulate blood glucose.

REF: p. 738

16. Where does the majority of sodium reabsorption take place?
 - a. Proximal tubule
 - b. Loop of Henle
 - c. Distal tubule
 - d. Collecting duct

ANS: A

The majority of sodium reabsorption takes place in the proximal tubule. The majority of sodium reabsorption is not associated with the loop of Henle, the distal tubule, or the collecting duct.

REF: p. 738

17. What structure supplies blood to the medulla?
 - a. Renal artery
 - b. Arcuate artery
 - c. Peritubular capillary
 - d. Vasa recta

ANS: D

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The vasa recta is a network of capillaries that forms loops and closely follows the loops of Henle and is the only blood supply to the medulla. This need is not met by the renal arteries, the arcuate arteries, or the peritubular capillaries.

REF: p. 740

18. The descending segment of the loop of Henle primarily allows for:
 - a. sodium secretion.
 - b. potassium secretion.
 - c. hydrogen ion reabsorption.
 - d. water reabsorption.

ANS: D

The descending segment of the loop of Henle is highly permeable to water and so is involved in the reabsorption of water. The descending segment of the loop of Henle is not associated with the reabsorption of hydrogen ions or the secretion of either sodium or potassium.

REF: p. 740

19. When a staff member asks which of the following substances is actively secreted by the renal tubules, what is the nurse's best response?
 - a. Sodium and chlorine
 - b. Phosphate and calcium

- c. Hydrogen and potassium
- d. Bicarbonate and carbonic acid

ANS: C

Principal cells reabsorb sodium and secrete potassium, and intercalated cells reabsorb potassium and bicarbonate and secrete hydrogen. This process is not associated with the secretion of sodium and chlorine, phosphate and calcium, or bicarbonate and carbonic acid.

REF: p. 739

20. Reabsorption of water in the collecting ducts requires which hormone?
- a. Antidiuretic hormone (ADH)
 - b. Atrial natriuretic factor (ANP)
 - c. Renin
 - d. Aldosterone

ANS: A

ADH increases water permeability and reabsorption in the last segment of the distal tubule and along the entire length of the collecting ducts. ANP inhibits secretion of renin, inhibits angiotensin-induced secretion of aldosterone, relaxes vascular smooth muscle, and inhibits sodium and water absorption by kidney tubules. Renin is secreted to raise blood pressure. Aldosterone regulates water and sodium balance.

REF: p. 740

21. A 35-year-old hypertensive male begins taking a diuretic. Which of the following common side effects of this medication should the nurse monitor?
- a. Hypokalemia
 - b. Hyponatremia
 - c. Increased uric acid secretion
 - d. Hypermagnesemia

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ANS: A

Hypokalemia is a side effect of diuretics. Hypokalemia, not hyponatremia, is a side effect of diuretic therapy. Diuretics promote uric acid retention, not excretion. Hypokalemia is a side effect of diuretics. Hypermagnesemia is not.

REF: p. 742, Table 29-2

22. Which hormone is synthesized and secreted by the kidneys to stimulate bone marrow production of red blood cells?
- a. Creatinine
 - b. Aldosterone
 - c. Erythropoietin
 - d. Renin

ANS: C

Erythropoietin stimulates the bone marrow to produce red blood cells in response to tissue hypoxia. This is not the function of creatinine, aldosterone, or renin.

REF: p. 741

23. If a nurse wants to obtain the best estimate of renal function, which test should the nurse monitor?
- Glomerular filtration rate (GFR)
 - Circulating antidiuretic hormone (ADH) levels
 - Volume of urine output
 - Urine-specific gravity

ANS: A

The GFR provides the best estimate of functioning renal tissue. The best estimate of renal function is not associated with the measurement of circulating ADH levels, urine output, or specific gravity.

REF: p. 742

24. A nurse recalls that the glomerular filtration rate (GFR) and plasma creatinine (P_{cr}) concentration are _____ related.
- directly
 - indirectly
 - inversely
 - not

ANS: C

The GFR and P_{cr} are inversely related.

REF: p. 743

MULTIPLE RESPONSE

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- The components of the nephron include the: (select all that apply)
 - loop of Henle.
 - renal corpuscle.
 - proximal tubule.
 - renal pelvis.
 - convoluted tubule.

ANS: A, B, C, E

The nephron is a tubular structure with subunits that include the renal corpuscle, proximal convoluted tubule, loop of Henle, distal convoluted tubule, and collecting duct, all of which contribute to the formation of final urine. The renal pelvis is not a component of the nephron.

REF: p. 730

- Which renal structures drain directly into the calyces? (select all that apply)
 - Distal tubule
 - Collecting duct
 - Pyramid
 - Renal pelvis
 - Loop of Henle

ANS: A, B

The urine formed by the nephrons flows from the distal tubules and collecting ducts through the duct of Bellini and the renal papillae into the calyces.

REF: p. 734

COMPLETION

1. A nurse recalls the superficial cortical nephrons account for ____% of all nephrons.

ANS: 85

REF: p. 730

2. On average, ____% of renal plasma flow (RPF) to the glomerulus is filtered into the Bowman's capsule.

ANS:

20

From the RPF, 20% (approximately 120-140 milliliters per minute) is filtered at the glomerulus and passes into the Bowman's capsule.

REF: p. 735

3. A nurse would chart that a patient is experiencing oliguria when a 24-hour urine output is less than _____ milliliters per day.

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ANS:

400

Antidiuretic hormone secretion is one cause of oliguria, or diminished excretion of urine, that is less than 400 milliliters per day or 30 milliliters per hour.

REF: p. 735

Chapter 30: Alterations of Renal and Urinary Tract Function

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. A patient is diagnosed with urinary tract obstruction. While planning care, the nurse realizes that the patient is expected to have hydronephrosis and a decreased glomerular filtration rate caused by:
 - a. decreased renal blood flow.
 - b. decreased peritubular capillary pressure.
 - c. dilation of the renal pelvis and calyces proximal to a blockage.
 - d. stimulation of antidiuretic hormone.

ANS: C

Hydronephrosis occurs due to dilation of the renal pelvis and calyces proximal to a blockage. Hydronephrosis is not the result of a decrease in renal blood flow, or peritubular capillary pressure, or stimulation of the antidiuretic hormone.

REF: p. 747

2. A patient has a severe kidney obstruction leading to removal of the affected kidney. Which of the following would the nurse expect to occur?
 - a. Atrophy of the remaining kidney
 - b. Compensatory hypertrophy of the remaining kidney
 - c. Dysplasia in the remaining kidney
 - d. Renal failure

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ANS: B

The remaining kidney would hypertrophy to compensate for the increased workload of the loss of the affected kidney. Compensation for such a situation would not include atrophy or a change in cell structure of the remaining kidney. Renal failure would be avoided.

REF: p. 748

3. A 55-year-old presents reporting urinary retention. Tests reveal a lower urinary tract obstruction. Which of the following is of most concern to the nurse?
 - a. Vesicoureteral reflux and pyelonephritis
 - b. Formation of renal calculi
 - c. Glomerulonephritis
 - d. Increased bladder compliance

ANS: B

Urine stasis occurs with urinary tract obstruction and can lead to the formation of renal calculi. Reflux and pyelonephritis would not lead to calculi as much as stasis would. Neither glomerulonephritis nor increased bladder compliance causes the stasis that would lead to calculus formation.

REF: p. 748

4. What is the most common type of renal stone composed of?

- a. Struvite
- b. Cystine
- c. Calcium
- d. Uric acid

ANS: C

The most common stone types are calcium oxalate or phosphate (70-80%). Struvite (magnesium-ammonium-phosphate) occurs 15% of the time. Cystine stones are rare (less than 1%). Uric acid stones occur 7% of the time.

REF: p. 748

5. While planning care for a patient with renal calculi, the nurse remembers the most important factor in renal calculus formation is:
- a. urine pH.
 - b. body temperature.
 - c. gender.
 - d. serum mineral concentrations.

ANS: A

The most important factor in renal calculus formation is urine pH, not gender, although calculi form more often in men. Neither body temperature nor serum mineral concentrations are as important as urine pH.

REF: p. 749

6. A patient is diagnosed with renal calculus that is causing a urinary obstruction. Which symptoms would be most likely experienced? ~~U P S N T P . C O M~~
- a. Anuria
 - b. Hematuria
 - c. Pyuria
 - d. Flank pain

ANS: D

Significant flank pain is the most common manifestation. Neither anuria nor pyuria is a common manifestation. Hematuria does occur, but it is not the most common manifestation.

REF: p. 749

7. When a patient's CT scan reveals a lesion above the pontine micturition center, which condition would the nurse expect?
- a. Dyssynergia
 - b. Detrusor hyperreflexia
 - c. Detrusor areflexia
 - d. Detrusor sphincter dyssynergia

ANS: B

Neurologic disorders that develop above the pontine micturition center result in detrusor hyperreflexia, also known as an uninhibited or reflex bladder. Lesions that develop in upper motor neurons of the brain and spinal cord result in dyssynergia. Lesions that involve the sacral micturition center (below S1; may also be termed cauda equina syndrome) or peripheral nerve lesions result in detrusor areflexia (acontractile detrusor), a lower motor neuron disorder. Neurologic lesions that occur below the pontine micturition center but above the sacral micturition center (between C2 and S1) are also upper motor neuron lesions and result in detrusor hyperreflexia with vescico-sphincter dyssynergia.

REF: p. 750

8. A 75-year-old reports loss of urine with cough, sneezing, or laughing. These symptoms support which diagnosis?
 - a. Urge incontinence
 - b. Stress incontinence
 - c. Overflow incontinence
 - d. Functional incontinence

ANS: B

Reduced resistance is associated with the symptom of stress incontinence, which is incontinence with coughing or sneezing. Urge incontinence is the inability to hold the urine when the urge is felt. There is coordination between the contracting bladder and the external sphincter, but the detrusor is too weak to empty the bladder, resulting in urinary retention with overflow or stress incontinence. Functional incontinence is similar to overflow and is not associated with coughing.

REF: p. 750, Table 30-1

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9. Which is the most beneficial medication treatment for a patient experiencing detrusor sphincter dyssynergia?
 - a. Alpha-blocker
 - b. Beta-blocker
 - c. Vasodilator
 - d. Diuretic

ANS: A

Because the bladder neck consists of circular smooth muscle with adrenergic innervation, detrusor sphincter dyssynergia may be managed by alpha-adrenergic blocking (antimuscarinic) medications. Treatment for detrusor sphincter dyssynergia is not associated with beta-blockers, vasodilators, or diuretics.

REF: p. 751

10. A 29-year-old female presents with cloudy urine, flank pain, and hematuria. These signs and symptoms support which diagnosis?
 - a. Acute cystitis
 - b. Renal calculi
 - c. Chronic renal failure
 - d. Postrenal renal failure

ANS: A

The patient is demonstrating symptoms of acute cystitis. Although renal calculi can cause pain and hematuria, they are not manifested by fever and cloudy urine. Chronic renal failure is not manifested by cloudy urine. Postrenal renal failure is not manifested by hematuria and cloudy urine.

REF: p. 754

11. A 25-year-old female is diagnosed with a urinary tract infection. When the nurse checks the culture results, which of the following organisms is most likely infecting her urinary tract?
 - a. *Streptococcus*
 - b. *Candida albicans*
 - c. *Chlamydia*
 - d. *Escherichia coli*

ANS: D

The most common infecting microorganisms are uropathic strains of *Escherichia coli*. Urinary tract infections are not associated with *Streptococcus*, *Candida albicans*, or *Chlamydia*.

REF: p. 754

12. When considering pyelonephritis, where is the site of the infection?
 - a. Bladder
 - b. Renal pelvis
 - c. Renal tubules
 - d. Glomerulus

ANS: B

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Pyelonephritis is an infection of one or both upper urinary tracts (ureter, renal pelvis, and interstitium). Pyelonephritis is not associated with the bladder, renal tubules, or glomerulus.

REF: p. 754

13. The most common condition associated with the development of acute pyelonephritis is:
 - a. cystitis.
 - b. renal cancer.
 - c. urinary tract obstruction.
 - d. nephrotic syndrome.

ANS: C

Urinary obstruction and reflux of urine from the bladder are the most common underlying risk factors. Risk factors do not include cystitis, renal cancer, or nephrotic syndrome.

REF: p. 754

14. A 30-year-old male is demonstrating hematuria with red blood cell casts and proteinuria exceeding 3-5 grams per day, with albumin being the major protein. The most probable diagnosis the nurse will see documented on the chart is:
 - a. cystitis.
 - b. chronic pyelonephritis.
 - c. acute glomerulonephritis.
 - d. renal calculi.

ANS: C

Two major symptoms distinctive of more severe glomerulonephritis are: (i) hematuria with red blood cell casts and (ii) proteinuria exceeding 3-5 grams per day with albumin (macroalbuminuria) as the major protein. Cystitis is not associated with proteinuria and so is not relevant to the diagnosis of glomerulonephritis. Chronic pyelonephritis is manifested by dysuria, not proteinuria. Proteinuria is not seen with renal calculi.

REF: p. 755 | p. 757

15. Acute poststreptococcal glomerulonephritis is primarily caused by:
- swelling of mesangial cells in the Bowman space in response to the presence of bacteria.
 - immune complex deposition in the glomerular capillaries and inflammatory damage.
 - inflammatory factors that stimulate cellular proliferation of epithelial cells.
 - accumulation of antiglomerular basement membrane antibodies.

ANS: B

Acute poststreptococcal glomerulonephritis is caused by an antigen-antibody complex. Acute poststreptococcal glomerulonephritis is not due to swelling of the Bowman space. It is not an inflammatory process nor is it caused by an accumulation of antiglomerular basement membrane antibodies.

REF: p. 758, Table 30-6

16. A 54-year-old female is diagnosed with nephritic syndrome. Which of the following is a common symptom of this disease? **U-S-IN-G-T-B-C-O-M**
- Hematuria
 - Dysuria
 - Oliguria
 - Proteinuria

ANS: A

Nephritic syndrome is hematuria and red blood cell casts in the urine. Proteinuria is usually less severe than in nephrotic syndrome. The patient with nephritic syndrome does not experience dysuria or oliguria.

REF: p. 759

17. A 42-year-old male is involved in a motor vehicle accident that has resulted in prerenal failure. What is the most likely cause of this patient's condition?
- Kidney stones
 - Immune complex deposition in the glomerulus
 - Inadequate renal blood flow
 - Obstruction of the proximal tubule

ANS: C

With blood loss, renal failure is due to inadequate blood flow since the trigger occurs outside of the kidney (prerenal). Kidney stones will lead to postrenal renal failure. Intrarenal renal failure is due to glomerular nephritis or obstruction of the proximal tubule.

REF: p. 760

18. A 35-year-old who was severely burned is now demonstrating symptomology associated with acute tubular necrosis (ATN). Which form of renal failure is this patient experiencing?
- Prerenal
 - Intrarenal
 - Extrarenal
 - Postrenal

ANS: B

Intrarenal acute kidney failure is associated with several systemic diseases but is commonly related to ATN. Prerenal renal failure occurs anterior to the kidney. Extrarenal renal failure occurs outside the kidney. Postrenal is due to diseases that obstruct the flow of urine from the kidneys.

REF: p. 761

19. An older male presents with flank pain and polyuria. Tests reveal that he has an enlarged prostate. Which type of renal failure is this patient at risk for?
- Prerenal
 - Intrarenal
 - Extrarenal
 - Postrenal

ANS: D

The patient will experience postrenal renal failure due to obstruction by the prostate.

REF: p. 762

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20. A 45-year-old presents with hypertension, anorexia, nausea and vomiting, and anemia and is diagnosed with chronic renal failure. What is the cause of this patient's anemia?
- Red blood cells being lost in the urine
 - Inadequate production of erythropoietin
 - Inadequate iron absorption in the gut
 - Red blood cells being injured as they pass through the glomerulus

ANS: B

The kidneys are inadequate in their production of erythropoietin; red cells may be lost in the urine, but it is the lack of erythropoietin that leads to anemia. The anemia is not associated with inadequate iron absorption or red cell destruction.

REF: p. 764, Table 30-13

21. When a 42-year-old is diagnosed with chronic renal failure, which dietary restriction will the nurse discuss with the patient?
- Fats
 - Complex carbohydrates
 - Proteins
 - Sugars

ANS: C

Low-protein diets are recommended. Management of chronic renal failure is not associated with diets that limit fats, carbohydrates, or sugars.

REF: p. 767

22. Bone fractures are a risk factor in chronic renal failure because:
- calcium is lost in the urine.
 - osteoblast activity is excessive.
 - the kidneys fail to activate vitamin D.
 - autoantibodies to calcium molecules develop.

ANS: C

Hypocalcemia is accelerated by impaired renal synthesis of 1,25 - dihydroxy-vitamin D₃. The combined effect of vitamin D deficiency can result in renal osteodystrophies with increased risk for fractures. Calcium is not lost in the urine. Osteoblast activity is not accelerated. Antibodies do not develop.

REF: pp. 765-766

MULTIPLE RESPONSE

1. Mechanisms for defense against urinary pathogens in men include: (select all that apply)
- the long length of the urethra.
 - the alkaline pH of urine.
 - the secretion of mucus that traps bacteria.
 - the antimicrobial secretions from the prostate.
 - the implantation of the ureters in the bladder.

ANS: A, D

Both the longer urethra and prostatic secretions decrease the risk of infection in men. The urine is not more alkaline, and they do not secrete mucus that traps bacteria. The ureters in men and women are implanted in similar positions and in their normal position; it is not a factor in the development of cystitis.

REF: p. 753

Chapter 31: Alterations of Renal and Urinary Tract Function in Children

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. Upon examination of a male infant, it is determined that the urethral meatus is located on the undersurface of the penis. The nurse will document this condition as:
 - a. hypospadias.
 - b. epispadias.
 - c. hydronephrosis.
 - d. cryptorchidism.

ANS: A

When the urethral meatus is located on the undersurface of the penis, it is referred to as hypospadias. Epispadias occurs when the urethral meatus is on the dorsal surface of the penis. Hydronephrosis is not associated with the urethra. Cryptorchidism refers to undescended testes.

REF: p. 770

2. An infant male experiences a constant dribbling of urine. His urethral opening is located behind the glans. Which of the following is the most likely diagnosis the nurse will observe on the chart?
 - a. Anterior epispadias
 - b. Posterior epispadias
 - c. Exstrophy of the bladder
 - d. Bladder outlet obstruction

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ANS: A

Anterior epispadias occurs when the urethral opening is small and situated behind the glans. Posterior epispadias occurs when a fissure extends the entire length of the penis and into the bladder neck. Exstrophy of the bladder occurs when the bladder is exposed on the abdominal wall. Bladder outlet obstruction occurs when urinary outflow is obstructed.

REF: p. 771

3. What term is used to describe a chronic renal failure caused by a lack of development of one of the kidneys?
 - a. Renal dysplasia
 - b. Renal agenesis
 - c. Hypoplastic kidney
 - d. Renal aplasia

ANS: D

During embryologic development, the ureteric duct grows into the metanephric tissue, triggering the formation of the kidneys. If this growth does not occur, the kidney is absent, a condition called renal aplasia. Renal dysplasia usually results from abnormal differentiation of the renal tissues. Renal agenesis is the absence of one or both kidneys. Hypoplastic kidney is small with a decreased number of nephrons.

REF: p. 772

4. The life expectancy of infants who are diagnosed with bilateral renal agenesis is expected to be:
- death within 1 year of birth.
 - a fairly normal, healthy life.
 - death within a few hours of birth.
 - good when anomalies are corrected with surgery.

ANS: C

Bilateral renal agenesis is a rare disorder incompatible with extrauterine life. The infant lives only a few hours.

REF: p. 772

5. Physical examination of a newborn who dies shortly after birth reveals wide-set eyes, parrot-beak nose, low-set ears, and receding chin. These abnormalities support which diagnosis?
- Unilateral renal agenesis
 - Potter syndrome
 - Renal aplasia
 - Renal dysplasia

ANS: B

Potter syndrome is manifested by wide-set eyes, parrot-beak nose, low-set ears, and receding chin. Neither unilateral renal agenesis, renal aplasia, nor renal dysplasia is associated with other congenital anomalies.

REF: p. 772

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6. A 15-year-old presents with flank pain, irritability, malaise, and fever and is diagnosed with glomerulonephritis. What is the most likely cause of this condition?
- Poststreptococcal infection
 - Nephropathy
 - Nephrotic syndrome
 - Potter syndrome

ANS: A

Glomerulonephritis is most likely related to a post-strep infection. It is not related to nephropathy, nephrotic syndrome, or Potter syndrome.

REF: pp. 772-773

7. If nephrotic syndrome is not caused initially by kidney disease, it is termed _____ nephrotic syndrome.
- primary
 - secondary
 - tertiary
 - idiopathic

ANS: B

Nephrotic syndrome that is not initially caused by kidney disease is referred to a secondary, not primary, nephrotic syndrome. Nephrotic syndrome is not generally associated with the terms, tertiary or idiopathic.

REF: p. 773

8. A 4-year-old male is diagnosed with nephrotic syndrome. Which of the following assessment findings accompanies this condition?
 - a. Proteinuria
 - b. Decreased blood urea nitrogen (BUN)
 - c. Hematuria
 - d. Sodium loss

ANS: A

Proteinuria accompanies nephrotic syndrome. The BUN may be elevated. Foamy, not bloody, urine accompanies nephrotic syndrome. Sodium loss does not accompany nephrotic syndrome.

REF: p. 773

9. A 7-year-old is diagnosed with nephrotic syndrome. Which sign would support this diagnosis?
 - a. Constipation
 - b. Vesicular skin rash
 - c. Frothy urine
 - d. Jaundice

ANS: C

In the child with nephrotic syndrome, the parents may notice diminished, frothy, or foamy urine output. Nephrotic syndrome is not associated with constipation, a vesicular skin rash, or jaundice.

REF: p. 773

10. Which of the following clusters of symptoms would support a child's diagnosis of glomerulonephritis?
 - a. Pyuria, fever, and abdominal pain
 - b. Proteinuria, hypotension, and ascites
 - c. Dysuria, urinary frequency, and abdominal tenderness
 - d. Gross hematuria, edema, and hypertension

ANS: D

The child with glomerulonephritis typically experiences gross or microscopic hematuria, proteinuria, edema, renal insufficiency, flank pain, and hypertension. Pyuria and abdominal pain are typically not present while dysuria and urinary frequency are symptoms of cystitis.

REF: p. 773

11. A 5-year-old male was diagnosed with glomerulonephritis. History reveals that he had an infection 3 weeks before the onset of this condition. The infection was most likely located in the:
 - a. bone.
 - b. gastrointestinal (GI) tract.

- c. respiratory tract.
- d. ear.

ANS: C

The location of the infection leading to glomerulonephritis is the respiratory tract, not the bone, GI tract, or the ear.

REF: p. 772

12. A 10-year-old male is diagnosed with glomerulonephritis. Tests reveal the deposition of immunoglobulin IgA in the glomerular capillaries. The nurse will monitor for recurrent:
- a. infections.
 - b. hematuria.
 - c. vomiting.
 - d. enuresis.

ANS: B

Recurrent hematuria is associated with glomerulonephritis that is complicated by the presence of immunoglobulin IgA. Neither recurrent infections, vomiting, nor enuresis is associated with this condition.

REF: p. 773

13. When a child is admitted with acute renal failure, a clinician realizes the most common cause of acute renal failure is:
- a. glomerulonephritis.
 - b. obstruction.
 - c. nephrotic syndrome. **NURSINGTB.COM**
 - d. hemolytic uremic syndrome (HUS).

ANS: D

HUS is the most common cause of acute renal failure in children. Glomerulonephritis can lead to renal failure, but it is not the most common. While either obstruction or nephrotic syndrome could contribute to renal failure, neither is not the most common cause.

REF: p. 773

14. What term is used to describe a retrograde flow of urine from the urinary bladder into the ureters that is the cause of recurrent urinary tract infections (UTIs)?
- a. Vesicoureteral reflux (VUR)
 - b. Vesicourethral reflux
 - c. Vesicoureteral influx
 - d. Hydronephrosis

ANS: A

VUR is the retrograde flow of urine from the bladder into the kidney or ureters, or both. The condition is ureteral, not urethral. It results in reflux, not influx. Reflux could lead to pyelonephritis, not hydronephrosis.

REF: p. 775

15. A nurse observes on the chart that a patient is admitted with Wilms tumors. A nurse knows the tumors are found in the:
- kidneys.
 - ureters.
 - bladder.
 - urethra.

ANS: A

Wilms tumor is found in the kidneys. Its location is not associated with the ureters, bladder, or the urethra.

REF: p. 774

16. A 6-year-old male diagnosed with vesicoureteral reflux is experiencing urine reflux from the urinary bladder into a grossly dilated ureter and calyces. This condition would be graded:
- I.
 - II.
 - III.
 - IV.

ANS: D

The patient has symptoms of grade IV reflux. Grade I involves a nondilated ureter. Grade II does not involve dilation. Grade III does not involve gross dilation.

REF: p. 775

17. A 2-year-old male is diagnosed with Wilms tumor. Which clinical condition is often associated with this disease? **NURSINGTB.COM**
- Cystic disease of the liver
 - Aniridia
 - Anemia
 - Hypothyroidism

ANS: B

Children with Wilms tumor often have other congenital anomalies, including aniridia, a lack of an iris in the eye. Wilms tumor is not associated with cystic liver, anemia, or hypothyroidism.

REF: p. 774

18. A 7-year-old male presents to his primary care provider for incontinence. His mother indicates that he has never been continent before. This history supports which form of enuresis?
- Nocturnal
 - Diurnal
 - Primary
 - Secondary

ANS: C

Primary incontinence (enuresis) means the child has never been continent. Nocturnal enuresis is nighttime incontinence while diurnal would indicate during the day. With secondary incontinence, the child would have had a period of continence, which this child did not.

REF: p. 776

MULTIPLE RESPONSE

1. In addition to a mass, the child with Wilms tumor may also exhibit which assessment finding? (select all that apply)
 - a. Abdominal pain
 - b. Enuresis
 - c. Hematuria
 - d. Weight gain
 - e. Fever

ANS: A, C, E

In addition to an abdominal mass, other presenting complaints include vague abdominal pain, hematuria, and fever. Enuresis and weight gain do not occur.

REF: p. 774

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Chapter 32: Structure and Function of the Reproductive Systems
Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. A nurse recalls the major hormonal determinant of sexual differentiation *in utero* is:
 - a. estrogen.
 - b. progesterone.
 - c. growth hormone.
 - d. testosterone.

ANS: D

Testosterone is necessary for the genital tubercle to differentiate into male genitalia; otherwise, female genitalia develop. Sexual differentiation *in utero* is not associated with estrogen, progesterone, or growth hormone.

REF: p. 780

2. The hormone that promotes breast development during puberty is:
 - a. progesterone.
 - b. prolactin.
 - c. oxytocin.
 - d. estradiol.

ANS: D

Estradiol promotes breast development. Breast development during puberty is not associated with progesterone, prolactin, ^{NURSINGTB.COM} oxytocin.

REF: p. 781

3. Which body structure contains the openings to the vagina and urinary meatus?
 - a. Vestibule
 - b. Mons pubis
 - c. Introitus
 - d. Perineal body

ANS: A

The vestibule contains the vagina and the urinary meatus. The mons pubis is composed of fatty layer over the pubic symphysis. The introitus is the vaginal orifice. The perineal body is the area by the anus.

REF: p. 783

4. During the years that a woman is more likely to be sexually active, the vagina mucosa is protected from infection by:
 - a. the presence of autoantibodies.
 - b. an acidic pH.
 - c. low estrogen levels.
 - d. douching.

ANS: B

The acidic pH, not the presence of autoantibodies, protects the vaginal mucosa. This protection is not associated with low levels of estrogen or with douching.

REF: p. 785

5. Which term is used to describe the thick middle layer of the uterine wall?
 - a. Epithelial layer
 - b. Endometrium
 - c. Myometrium
 - d. Perimetrium

ANS: C

The myometrium, not the epithelial layer, is the thick, muscular middle layer. It is thickest at the fundus, apparently to facilitate birth. The endometrium is composed of a functional layer (superficial compact layer and spongy middle layer) and a basal layer. The perimetrium is the outer layer.

REF: p. 785

6. A nurse recalls the _____ is lined with columnar epithelial cells.
 - a. perimetrium
 - b. endocervical canal
 - c. myometrium
 - d. vagina

ANS: B

The endocervical canal does not have an endometrial layer, but it is lined with columnar epithelial cells. The perimetrium is a serous membrane. The myometrium is a muscular layer. The vagina is composed of epithelium.

REF: pp. 785-786

7. The female erectile organ that secretes smegma is called the:
 - a. introitus.
 - b. Bartholin glands.
 - c. clitoris.
 - d. labia minora.

ANS: C

The clitoris is a richly innervated erectile organ between labia minora; it is a small, cylindrical structure having a visible glans and a shaft that lies beneath the skin. It secretes smegma. Smegma secretion is not associated with the introitus, the Bartholin glands, or the labia minora.

REF: p. 783

8. Spinnbarkeit mucus is present during which stage of the menstrual cycle?
 - a. Follicular
 - b. Ovulation
 - c. Luteal
 - d. Menstrual

ANS: B

Spinnbarkeit mucus is present during ovulation. Spinnbarkeit mucus is not associated with the follicular, the luteal, or menstrual stages of the menstrual cycle.

REF: p. 786

9. Which term is used to describe the duct that carries the ovum from the ovary to the uterus?

- a. Isthmus
- b. Corpus
- c. Endocervical canal
- d. Fallopian tube

ANS: D

The duct that carries the ovum is the fallopian tube. The isthmus is a portion of the cervix. The corpus is the body of the uterus. The endocervical canal is the area between the internal and external os of the cervix.

REF: p. 786

10. Progesterone is referred to as “the hormone of pregnancy” because it:

- a. stimulates lactation.
- b. increases ciliary action in the fallopian tubes.
- c. thins the endometrium.
- d. prevents smooth muscle contraction of the uterus.

ANS: D

Progesterone is sometimes called the hormone of pregnancy because it relaxes smooth muscle in the myometrium, which prevents premature contractions and helps the uterus to expand. Progesterone does not stimulate lactation, increase ciliary action in the fallopian tubes, or thin the endometrium.

REF: p. 788

11. Endometrial thickening during the proliferative phase is stimulated by increased levels of:

- a. estrogen.
- b. progesterone.
- c. FSH.
- d. inhibin.

ANS: A

Estrogen, not progesterone, promotes endometrial thickening. Endometrial thickening is not associated with FSH or with inhibin.

REF: p. 791

12. Menstruation is followed by the _____ phase of the menstrual cycle.

- a. follicular
- b. luteal
- c. secretory
- d. ischemic

ANS: A

Menstruation is followed by the follicular phase, not luteal. Ovulation marks the beginning of the secretory phase. The endometrium disintegrates during the ischemic phase.

REF: p. 789

13. When estrogen and progesterone levels drop, the endometrium enters the _____ phase.
- proliferative
 - luteal
 - menstrual
 - recovery

ANS: C

Without progesterone or estrogen to maintain it, the endometrium enters the ischemic (blood-starved) phase and disintegrates; this is referred to as the ischemic or menstrual phase. Drops in estrogen and progesterone levels are not associated with the proliferative, luteal, or recovery phases of the menstrual cycle.

REF: p. 790

14. During the menstrual cycle, what triggers ovulation to occur?
- A gradual decrease in estrogen levels.
 - Inhibin B sharply spikes.
 - A surge in progesterone occurs.
 - Activin is released.

ANS: B

Inhibin B is primarily secreted in the follicular phase of the cycle and sharply spikes when ovulation occurs. Ovulation is not associated with estrogen, progesterone, or activin.

REF: p. 790

15. Cells of the _____ have receptors for gonadotropins.
- uterus
 - breast
 - ovary
 - vagina

ANS: C

The ovaries contain receptors for gonadotropins. Gonadotropin receptors are not associated with the uterus, the breasts, or the vagina.

REF: p. 790

16. The ova are contained within the ovarian:
- corpus luteum.
 - follicle.
 - stroma.
 - infundibulum.

ANS: B

The ova are contained in the ovarian follicle. The ova are not contained in the luteum, the stroma, or the infundibulum.

REF: p. 789

17. Which hormone stimulates the secretion of follicle stimulating hormone (FSH)?
- a. Activin
 - b. Inhibin
 - c. LH
 - d. Follistatin

ANS: A

Activin, not inhibin, stimulates the secretion of FSH. FSH stimulation is not associated with LH or follistatin.

REF: p. 790

18. How should the nurse describe cervical mucus during ovulation?
- a. Blood-tinged
 - b. Thin and watery
 - c. Absent
 - d. Abundant and elastic

ANS: D

Cervical mucus becomes abundant and more elastic during ovulation, not absent. Cervical mucus is not blood-tinged, thin, and watery during ovulation.

REF: p. 791

19. Which hormone promotes the formation of channels in the mucus of the cervical os to facilitate sperm movement into the uterus?
- a. LH
 - b. FSH
 - c. Progesterone
 - d. Estrogen

ANS: D

Increasing estrogen levels apparently contribute to the development of tiny channels in cervical mucus, providing access for sperm into the interior of the uterus. Access for sperm movement is not associated with LH, FSH, or progesterone.

REF: p. 791

20. Having ejected a mature ovum, the ovarian follicle then develops into:
- a. an atretic follicle.
 - b. a theca cell.
 - c. a corpus luteum.
 - d. scar tissue.

ANS: C

Having ejected a mature ovum, the follicle develops into another structure, the corpus luteum, not an atretic follicle or scar tissue. A theca cell is a cell in the ovarian follicle.

REF: p. 791

21. Which hormone plays a role in breast milk ejection (letdown) during lactation?
- Cortisol
 - Prolactin
 - Oxytocin
 - Progesterone

ANS: C

Oxytocin controls milk ejection (let-down) from acini cells. Milk ejection is not associated with cortisol, prolactin, or progesterone.

REF: p. 792

22. The glands of Montgomery are located in the:
- testes.
 - breasts.
 - uterus.
 - vagina.

ANS: B

The glands of Montgomery are located in the breasts. The glands of Montgomery are not located in the testes, the uterus, or the vagina.

REF: p. 791

23. When a patient who is trying to get pregnant asks where the usual site of fertilization is, how should the nurse respond?
- The uterus.
 - The fimbriae.
 - The ampulla of the fallopian tubes.
 - The os of the fallopian tubes.

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ANS: C

The ampulla, or distal third, of the fallopian tube is the usual site of fertilization, not the os. Implantation happens in the uterus. The fimbriae move the egg forward.

REF: p. 786

24. Which paired glands lie posterior to the urinary bladder in the male?
- Seminal vesicles
 - Prostate glands
 - Cowper glands
 - Parabladder glands

ANS: A

The seminal vesicles are glands about 4-6 cm long that lie behind the urinary bladder and in front of the rectum. The prostate glands surround the urethra. The Cowper glands run close to the urethra. The parabladder is not a gland.

REF: p. 795

25. The area of the penis with the most nerve endings is the:

- a. foreskin.
- b. glans.
- c. corpora cavernosa.
- d. corpus spongiosum.

ANS: B

Stimulation of the glans, not the foreskin, which is endowed with copious sensitive nerve endings, provides maximum erotic sensation. The corpora cavernosa lengthens during arousal but is not the most sensitive. The corpus spongiosum contains the urethra and is not the most sensitive.

REF: p. 795

26. Which structure secretes glucose-rich fluid into the semen?
- a. Seminal vesicles
 - b. Ejaculatory duct
 - c. Prostate gland
 - d. Cowper gland

ANS: A

The ducts of the seminal vesicles join the ampulla of the vas deferens to become the ejaculatory duct, which contracts rhythmically during emission and ejaculation. Such glucose secretion is not associated with the ejaculatory duct, the prostate, or the Cowper gland. The Cowper gland secretes the last fluid into the ejaculate.

REF: p. 795

27. Spermatogenesis occurs in the: **NURSINGTB.COM**
- a. epididymis.
 - b. inguinal canals.
 - c. seminiferous tubules.
 - d. vas deferens.

ANS: C

Spermatogenesis takes place within the seminiferous tubules of the testes, not the epididymis. Spermatogenesis does not take place within the inguinal canals or the vas deferens.

REF: p. 796

28. What term should the nurse use when discussing male sex hormones collectively?
- a. Gonadotropins
 - b. Testosterones
 - c. Catabolic steroids
 - d. Androgens

ANS: D

The male sex hormones are androgens. Neither the terms gonadotropins, testosterones, nor catabolic steroids are associated with the collective term for male sex hormones.

REF: p. 796

29. The major difference between male and female sex hormone production is that:

- a. LH has no apparent action in the male.
- b. sex hormone production in the male is relatively constant.
- c. estrogen is not produced in the male.
- d. in the male, GnRH does not cause the release of FSH.

ANS: B

In men, sex hormone production is relatively constant and does not occur in a cyclic pattern, as it does in women. LH has action in the male as it stimulates testosterone. Estrogen is present in the male in regard to the lack of breast development. In the male, GnRH causes the release of FSH.

REF: p. 796

30. Progesterone is primarily secreted by the:
- a. follicle.
 - b. corpus luteum.
 - c. granulosa cells.
 - d. anterior pituitary.

ANS: B

LH from the anterior pituitary stimulates the corpus luteum to secrete progesterone. Progesterone secretion is not associated with the follicle, the granulosa cells, or the anterior pituitary.

REF: p. 788

31. A 56-year-old female is in menopause. She has ovarian failure. While checking the lab results, which of the following will the nurse find?
- a. Increased FSH
 - b. Increased estrogen
 - c. Decreased GnRH
 - d. Decreased LH

ANS: A

Menopause is characterized by loss of ovarian function, low estrogen and progesterone levels, and high FSH and LH levels. Estrogen is decreased. GnRH and LH are increased.

REF: p. 797

32. A normal characteristic of aging and the male reproductive system includes:
- a. changes in libido are not related to health status.
 - b. tissue responsiveness to testosterone is increased.
 - c. testicles will experience hypertrophy.
 - d. refractory time after ejaculation is prolonged.

ANS: D

Men can expect a prolonged refractory time after ejaculation. Changes in libido are related to health changes. Responsiveness to testosterone is decreased. The testicles undergo atrophy.

REF: p. 798

MULTIPLE RESPONSE

1. The nurse is discussing information about menopause with an older woman. Which characteristics are associated with declining ovarian function with age? (select all that apply)
 - a. Vasomotor flush
 - b. Decline in bone mass
 - c. Decreased risk of coronary disease
 - d. Atrophy of the uterus
 - e. Dysfunctional uterine bleeding

ANS: A, B, D, E

Aging women can expect to experience vasomotor flashing, decline in bone mass, atrophy of the uterus, and dysfunctional uterine bleeding. Cardiovascular risk increases but does not decrease.

REF: pp. 797-798

COMPLETION

1. A 25-year-old female has a menstrual cycle of 28 days' duration and asks the nurse what day of the cycle will ovulation occur. The nurse responds that ovulation will most likely occur on day _____.

ANS: 14

REF: p. 787, Table 32-8 | p. 790

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Chapter 33: Alterations of the Female Reproductive System
Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. An 18-year-old female is diagnosed with dysmenorrhea. Which of the following symptoms will she most likely experience?
 - a. Absence of menstruation
 - b. Painful menstruation
 - c. Unusually long menstrual period
 - d. Menstrual irregularity

ANS: B

Primary dysmenorrhea is painful menstruation associated with the release of prostaglandins in ovulatory cycles. Absence of menstruation is referred to as amenorrhea. Dysfunctional bleeding would describe both unusually long and irregular menstrual periods.

REF: p. 805

2. A 20-year-old female presents with pelvic and back pain severe enough to miss work beginning with the onset of menses. Physical examination supports the diagnosis of primary dysmenorrhea. The most likely cause of her condition is:
 - a. lack of estrogen.
 - b. stress.
 - c. elevated prostaglandins.
 - d. poor nutrition.

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ANS: C

Primary dysmenorrhea is painful menstruation associated with the release of prostaglandins in ovulatory cycles; it is not associated with the lack of estrogen, stress, or poor nutrition.

REF: p. 805

3. A 25-year-old female presents with amenorrhea and hirsutism and is diagnosed with polycystic ovary syndrome (PCOS). Lab testing will most likely reveal:
 - a. estrogen deficit.
 - b. genetic cancerous mutations.
 - c. cortisol excess.
 - d. hyperinsulinemia.

ANS: D

Glucose intolerance/insulin resistance (IR) and hyperinsulinemia often run parallel and markedly aggravate the hyperandrogenic state, thus contributing to the severity of signs and symptoms of PCOS. Estrogen levels are elevated with PCOS. Cancer is not associated with the lab findings of PCOS. Cortisol levels are not elevated in PCOS.

REF: p. 808

4. A 30-year-old female with newly diagnosed polycystic ovary syndrome (PCOS) is being counseled by her OB-GYN. The physician indicates that this condition often results in:

- a. ovarian cancer.
- b. infertility.
- c. early menopause.
- d. pelvic inflammatory disease.

ANS: B

Because FSH levels are not totally depressed, new follicular growth is continuously stimulated, but not to full maturation and ovulation. Symptoms are related to anovulation and hyperandrogenism and include infertility. PCOS is not associated with ovarian cancer, early menopause, or pelvic inflammatory disease.

REF: p. 808

5. A 23-year-old sexually active female presents with white copious discharge and itch and is diagnosed with yeast vaginitis. This condition is caused by overgrowth of which microorganism?
- a. *Escherichia coli*
 - b. *Lactobacillus acidophilus*
 - c. *Candida albicans*
 - d. *Neisseria gonorrhoeae*

ANS: C

The most common cause of yeast vaginitis is *Candida albicans*. Changes in the vaginal pH may predispose a woman to such an infection by destroying normal vaginal flora, facilitating overgrowth of *Candida albicans* and causing a yeast infection. *E. coli* does not cause yeast vaginitis nor does *Lactobacillus acidophilus*. *Neisseria gonorrhoeae* is the cause of gonorrhea.

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REF: p. 812

6. The descent of the bladder and the anterior vaginal wall into the vaginal canal is called a:
- a. rectocele.
 - b. varicocele.
 - c. cystocele.
 - d. urethrocele.

ANS: C

A cystocele is the descent of the bladder into the vaginal canal. A rectocele is the bulging of the rectum and posterior vaginal wall into the vaginal canal. A varicocele is the abnormal dilation of a vein within the spermatic cord. A urethrocele is sagging of the urethra.

REF: p. 814

7. The nurse would anticipate the treatment for pelvic organ prolapse to be:
- a. insertion of a urinary catheter.
 - b. a pessary.
 - c. dietary fiber.
 - d. urinary antispasmodics.

ANS: B

A common first-line treatment is a pessary, which is a removable mechanical device that holds the uterus in position. The physiological problem would not be addressed with the insertion of a urinary catheter, ingestion of dietary fiber, or the administration of urinary antispasmodics.

REF: p. 814

8. During a routine pelvic exam, a 34-year-old female is found to have an ovarian cyst containing skin, hair, cartilage, and bone. This cyst is classified as a _____ cyst.
- follicular
 - dermoid
 - corpus luteal
 - micro

ANS: B

Dermoid cysts are growths that may contain mature tissue including skin, hair, sebaceous and sweat glands, muscle fibers, cartilage, and bone. Neither follicular, corpus luteal, nor micro cysts contain skin, hair, or bone.

REF: p. 816

9. A 40-year-old female presents with cramping and excessive vaginal bleeding. Ultrasound reveals benign uterine tumors in the smooth muscle cells of the myometrium. These tumors are commonly called:
- adenomyosis.
 - endometriosis.
 - leiomyomas.
 - adenomas.

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ANS: C

Leiomyomas are benign tumors that develop from smooth muscle cells in the myometrium. Adenomyosis is the presence of islands of endometrial glands surrounded by benign endometrial stroma within the uterine myometrium. Endometriosis is the presence of functioning endometrial tissue or implants outside the uterus. Adenomas are tumors that can grow anywhere, but are not specific to the myometrium.

REF: p. 816

10. A 35-year-old female is diagnosed with endometriosis. Suppressing which of the following would be the most appropriate medical treatment for this disease?
- Infection
 - Ovulation
 - Prostaglandins
 - Fertilization

ANS: B

Medical therapies include suppression of ovulation with various medications. Endometriosis is not treated by suppressing prostaglandins, infections, or fertilization.

REF: p. 819

11. A 21-year-old female is infected with human papillomavirus (HPV) following unprotected sexual intercourse with a male she recently met. She is now at higher risk of developing which of the following cancers?
- Cervical
 - Ovarian
 - Endometrial
 - Vulvar

ANS: A

HPV is associated with cervical cancer. HPV 16 accounts for about 60% of cervical cancer cases and HPV 18 for about another 10%; other types contribute less than 5% of cases. HPV is not associated with ovarian, endometrial, or vulvar cancers.

REF: p. 819

12. A 38-year-old female was recently diagnosed with cancer. She learns that her mother almost miscarried while pregnant with her and was given diethylstilbestrol (DES) to prevent it. Which of the following cancers does she most likely have?
- Endometrial
 - Vaginal
 - Cervical
 - Uterine

ANS: B

Exposure *in utero* to nonsteroidal estrogens (DES) has been identified as a risk factor for vaginal cancer. DES exposure has not been associated with endometrial, cervical, or uterine cancers.

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REF: p. 823

13. The most commonly occurring cancer of the female reproductive tract is _____ cancer.
- cervical.
 - ovarian.
 - endometrial.
 - fallopian.

ANS: C

Carcinoma of the endometrium is the most common type of uterine cancer and most prevalent gynecologic malignancy. Neither carcinoma of the cervix, the ovary, nor the fallopian tube is the most prevalent gynecologic malignancy.

REF: p. 823

14. A 35-year-old female is diagnosed with ovarian cancer. CT scan reveals that the cancer is limited to the ovaries. It would be classified as stage:
- I.
 - II.
 - III.
 - IV.

ANS: A

In stage I, growth is limited to the ovaries. In stage II, growth involves one or both ovaries and involvement of other organs. In stage III, cancer involves one or both ovaries, and one or both of the following: (i) cancer has spread beyond the pelvis to the lining of the abdomen and (ii) cancer has spread to lymph nodes. In stage IV, growth involves one or both ovaries with distant metastases to lungs, liver, or other organs outside the peritoneal cavity.

REF: p. 829, Table 33-8

15. A 35-year-old nonpregnant female presents with breast discharge and is diagnosed with galactorrhea. The condition is most likely caused by:
- infection.
 - prolactin imbalance.
 - tissue injury.
 - cancer.

ANS: B

The most common cause of galactorrhea is nonpuerperal hyperprolactinemia, or excessive amounts of prolactin in the blood not related to pregnancy or childbirth. These processes are chiefly hormone imbalances caused by hypothalamic-pituitary disturbances, pituitary tumors, or neurologic damage. Galactorrhea is not due to infection, tissue injury, or cancer.

REF: p. 830

16. Which of the following signs is usually the first clinical manifestation of breast cancer?
- Dimpling
 - Nipple discharge
 - Chest pain
 - A painless lump

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ANS: D

The first sign of breast cancer is usually a painless lump. Dimpling, nipple discharge, and chest pain are later signs.

REF: p. 847

MULTIPLE RESPONSE

1. Conditions that contribute to dysfunctional uterine bleeding (DUB) include: (select all that apply)
- polycystic ovarian syndrome (PCOS).
 - obesity.
 - thyroid disease.
 - hepatitis.
 - excessive exercise.

ANS: A, B, C

Polycystic ovary syndrome (PCOS), obesity, and thyroid disease are common contributors to dysfunctional uterine bleeding. Hepatitis and excessive exercise are not.

REF: p. 807

Chapter 34: Alterations of the Male Reproductive System
Huether & McCance: Understanding Pathophysiology, 6th Edition**MULTIPLE CHOICE**

1. In the majority of cases delayed puberty is due to:
 - a. a disruption in the hypothalamus.
 - b. a disruption of the pituitary.
 - c. slow maturation.
 - d. ambiguity in sex determination.

ANS: C

In about 95% of cases, delayed puberty is a normal physiologic event. Hormonal levels are normal, the hypothalamic-pituitary-gonadal axis is intact, and maturation is happening slowly. Only about 5% of the occurrences of delayed puberty are due to a disruption in the hypothalamus or the pituitary. Ambiguity in sex determination could play a role in delayed puberty, but this occurrence is rare.

REF: p. 854

2. A 30-year-old presents with penile tenderness and discharge while the physical examination reveals that his foreskin cannot be retracted back over the glans penis. This assessment data is consistent with what condition?
 - a. Paraphimosis
 - b. Phimosis
 - c. Peyronie disease
 - d. Priapism

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ANS: B

Phimosis is a condition in which the foreskin cannot be retracted back over the glans. Paraphimosis is the opposite: the foreskin is retracted and cannot be moved forward (reduced) to cover the glans. Peyronie disease is a fibrotic condition that causes lateral curvature of the penis during erection. Priapism is a prolonged erection.

REF: pp. 855-856

3. A 38-year-old presents reporting difficulty having sexual intercourse because his penis curves during erection. What term describes this condition?
 - a. Phimosis
 - b. Cryptorchidism
 - c. Paraphimosis
 - d. Peyronie disease

ANS: D

Peyronie disease is a fibrotic condition that causes lateral curvature of the penis during erection. Phimosis is a condition in which the foreskin cannot be retracted back over the glans. Cryptorchidism is a condition of testicular maldescent. Paraphimosis is the opposite: the foreskin is retracted and cannot be moved forward (reduced) to cover the glans.

REF: p. 856

4. _____ is an inflammation of the glans penis.
- Phimosis
 - Balanitis
 - Priapism
 - Hydrocele

ANS: B

Balanitis is an inflammation of the glans penis. Phimosis is a condition in which the foreskin cannot be retracted back over the glans. Priapism is a prolonged erection. A hydrocele is a collection of fluid within the tunica vaginalis.

REF: p. 857

5. Cryptorchidism can be defined as:
- a normal developmental state of the testes.
 - an abnormal state in which the testes are overdeveloped.
 - lack of a scrotum.
 - problems with testicular descent.

ANS: D

Cryptorchidism is a group of abnormalities in which the testis fails to descend completely, whereas an ectopic testis has strayed from the normal pathway of descent. Cryptorchidism is not a condition associated with either testicular overdevelopment or a lack of a scrotum.

REF: p. 859

6. A 21-year-old presents with ~~inflammation of the testes~~ and is diagnosed with orchitis. What is the most likely cause of his symptoms?
- Herpes virus
 - Escherichia coli*
 - Mumps
 - Cytomegalovirus

ANS: C

Mumps is the most common infectious cause of orchitis and usually affects postpubertal males. Herpes would not result in testicular swelling. *Escherichia coli* infection would not result in testicular swelling and redness. Cytomegalovirus is a sexually transmitted disease and is not manifested in testes.

REF: p. 860

7. An important risk factor in the development of benign prostatic hypertrophy (BPH) among Americans is:
- recurrent prostatitis.
 - a diet high in fat.
 - cigarette smoking.
 - increased age.

ANS: D

Prevalence in the United States is about 50% in men 60 years and older and 90% among men 70 years or older. BPH is common and involves a complex pathophysiology with several endocrine and local factors and remodeled microenvironment, but its relationship to aging is well documented. Risk factors for BPH do not include prostatitis, a diet high in fat, or cigarette smoking.

REF: pp. 862-863

8. A common complaint from men with mild to moderate benign prostatic hypertrophy (BPH) is:
 - a. decreased urinary stream.
 - b. infertility.
 - c. sexual dysfunction.
 - d. prostatodynia.

ANS: A

The most common complaint of men with BPH is decreased urine stream. Infertility is not associated with benign prostatic hypertrophy. Sexual dysfunction could be associated with BPH, but it is not as common a complaint as decreased stream. A painful prostate is not a frequent complaint of men with BPH.

REF: p. 864

9. Symptoms of acute bacterial prostatitis are similar to symptoms of:
 - a. prostate cancer.
 - b. benign prostatic hypertrophy (BPH).
 - c. urinary tract infection (UTI).
 - d. epididymitis.

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ANS: C

Clinical manifestations of acute bacterial prostatitis are those of UTI or pyelonephritis. Cancer often has no symptoms. Symptoms could include difficulty with urinary stream, but more commonly it is of UTI. The main symptom of epididymitis is scrotal or inguinal pain caused by inflammation of the epididymis and surrounding tissues.

REF: p. 864

10. The patient's medication has a side effect of gynecomastia. The nurse would respond that gynecomastia is:
 - a. lack of breast development in women.
 - b. overdevelopment of breast tissue in males.
 - c. a type of breast cancer.
 - d. inflammation of the mammary glands.

ANS: B

Gynecomastia is overdevelopment of breast tissues in males. It is not a lack of breast development. It is not a type of breast cancer nor is it associated with inflammation of the mammary glands.

REF: p. 876

11. A 35-year-old presents with symptomology that is associated with syphilis. What organism is responsible for the development of syphilis?

- a. *Treponema pallidum*
- b. *Chlamydia trachomatis*
- c. *Neisseria gonorrhoeae*
- d. *Haemophilus ducreyi*

ANS: A

Neurosyphilis and life-threatening hypersensitivities can develop without treatment.

Syphilis is caused by *Treponema pallidum*. Chlamydia is caused by *Chlamydia trachomatis*.

Gonorrhea is caused by *Neisseria gonorrhoeae*. Chancroid is caused by *Haemophilus ducreyi*.

REF: p. 877, Table 34-1

12. A 25-year-old sexually active male presents with urethritis and epididymitis, and is diagnosed with the most common bacteria STI in the United States. What is this infection?
- a. *Gonorrhea*
 - b. *Syphilis*
 - c. *Chlamydia*
 - d. *Herpes*

ANS: C

Chlamydia is the most common bacterial STI in the United States. It is associated with both urethritis and epididymitis as well as being the leading cause of infertility for both men and women. This is not true for syphilis or gonorrhea. Herpes is a virus.

REF: p. 877, Table 34-1

13. An example of a parasitic sexually transmitted infection (STI) that is transmitted through close skin-to-skin contact is: **N_UR_SI_NG_TB.C_OM**
- a. *Chlamydia*.
 - b. syphilis.
 - c. scabies.
 - d. *Gardnerella*.

ANS: C

Scabies is a parasite that can be transmitted through sexual contact. *Chlamydia* is a bacteria. Syphilis is a bacteria. *Gardnerella* is an anaerobe.

REF: p. 877, Table 34-1

MULTIPLE RESPONSE

1. The risk of testicular cancer is greater for which group? (select all that apply)
- a. With a history of cryptorchidism
 - b. With a history of phimosis
 - c. Who are of white ethnicity
 - d. Who are of black descent
 - e. Between 15 and 35 years of age.

ANS: A, C, E

Cancer of the testis occurs most commonly in men between the ages of 15 and 35 years. In the United States, the lifetime probability of developing testicular cancer is 0.3% for white men, an incidence that is 4.5 times higher than in blacks. Testicular cancer is also a well-established complication of cryptorchidism.

REF: p. 861

2. Which of the following are true regarding prostate cancer? (select all that apply)
- a. It is responsible for the majority of cancer-related deaths in males.
 - b. It usually occurs before age 50.
 - c. It is the leading type of nonskin cancer in men in the United States.
 - d. It is more common in White men in the United States.
 - e. Prostate cancer death rates have been declining in the United States.

ANS: C, E

Prostate cancer is the most commonly diagnosed nonskin cancer in men in the United States with a lifetime risk for diagnosis currently estimated at 15.9%. The incidence varies greatly worldwide, but it is still considered to be the second most frequently diagnosed cancer in men and the sixth leading cause of death worldwide. Black men are more greatly affected. Rates have been declining.

REF: pp. 865-866

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Chapter 35: Structure and Function of the Digestive System
Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. Digestion begins in the mouth with salivary α -amylase (ptyalin) that initiates the digestion of:
 - a. proteins.
 - b. carbohydrates.
 - c. fats.
 - d. amino acids.

ANS: B

Salivary amylase initiates the digestion of carbohydrates. Protein digestion occurs in the stomach and is influenced by pepsin. Fat digestion is aided by bile. Amino acids are not involved in the digestive process.

REF: p. 886

2. When parasympathetic nervous system activity is inhibited what is the expected effect on salivary glands?
 - a. Hyperactive function
 - b. Hypoactive function
 - c. Atrophy
 - d. Enlargement

ANS: B

Inhibition of the parasympathetic nervous system would result in decreased (hypoactive) functions of the salivary glands. The individual would experience dry mouth. Inhibition of the parasympathetic nervous system would not result in hyperactivity, atrophy, or enlargement of the salivary glands.

REF: p. 886

3. Which immunoglobulin is found in normal saliva?
 - a. IgG
 - b. IgD
 - c. IgE
 - d. IgA

ANS: D

Normal saliva contains IgA.

Normal saliva does not contain IgG, IgD, or IgE.

REF: p. 886

4. Food is moved down the esophagus via what process?
 - a. Peristalsis
 - b. Retropulsion
 - c. Haustral segmentation
 - d. Defecation

ANS: A

Swallowed food is moved from the esophagus to the stomach by peristalsis, not retropulsion. Haustral segmentation occurs in the small intestine. Defecation is the process of eliminating stool from the rectum.

REF: p. 886

5. Which cells of the gastric glands secrete hydrochloric acid?

- a. Chief
- b. Parietal
- c. Zymogenic
- d. Surface epithelial

ANS: B

The parietal cells secrete hydrochloric acid. The chief cells secrete pepsinogen. Zymogenic cells do not secrete acid. Epithelial cells line the GI tract and do not secrete acid.

REF: p. 888

6. A young male student becomes very hungry during class. He begins thinking of a cheeseburger and fries, his favorite meal. These thoughts will trigger which phase of gastric secretion?

- a. Cephalic
- b. Gastric
- c. Enteral
- d. Intestinal

ANS: A

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The cephalic phase is stimulated by the thought, smell, and taste of food. The gastric phase is stimulated by distention of the stomach. The enteral phase is not a phase of gastric secretion. The intestinal phase is stimulated by histamine and digested protein.

REF: p. 888

7. Mucus production to form the mucosal barrier in the stomach is stimulated by the release of:

- a. somatostatin.
- b. gastrin.
- c. prostaglandins.
- d. histamine.

ANS: C

Prostaglandins protect the mucosal barrier by stimulating the secretion of mucus and bicarbonate and by inhibiting secretion of acid. Somatostatin is secreted by the pancreas and is not involved in secretion of mucus. Gastrin is not involved in mucus secretion. Histamine initiates secretion of acid, not mucus.

REF: p. 889

8. Which sphincter prevents reflux of digested material from the colon into the small intestine?

- a. Haustral
- b. Lower esophageal
- c. Pyloric

- d. Ileocecal valve

ANS: D

The ileocecal valve prevents reflux of digested material from the colon into the small intestine. The haustral segments facilitate propulsion; they do not prevent reflux. Lower esophageal prevents reflux from the stomach to the esophagus. The pylorus is the opening between the stomach and the duodenum.

REF: p. 890

9. Absorption of nutrients from the intestine occurs initially through the:
- mesentery.
 - villi.
 - lamina propria.
 - splenic veins.

ANS: B

Villi are small finger-like projections that extend from the small intestinal mucosa and increase its absorptive surface area. The ileum and jejunum are suspended in loose folds from the posterior abdominal wall by a peritoneal membrane called the mesentery. The lamina propria (a connective tissue layer of the mucous membrane) lies beneath the epithelial cells of the villi and contains lymphocytes and plasma cells, which produce immunoglobulins. The splenic vein drains the stomach and is not involved in absorption.

REF: p. 890

10. Which reflex inhibits gastric motility when the ileum becomes overdistended?
- Ileogastric
 - Gastroduodenal
 - Gastroileal
 - Gastrocolic

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ANS: A

The ileogastric reflex, not the gastroduodenal, inhibits gastric motility when the ileum becomes distended. The gastroileal reflex, which is activated by an increase in gastric motility and secretion, stimulates an increase in ileal motility and relaxation of the ileocecal valve (sphincter). The gastrocolic reflex initiates propulsion in the entire colon, usually during or immediately after eating, when chyme enters from the ileum.

REF: p. 893

11. The vermiform appendix is attached to the:
- duodenum.
 - ileum.
 - cecum.
 - sigmoid colon.

ANS: C

The vermiform appendix is attached to the cecum. The vermiform appendix is not attached to the duodenum, the ileum, or the sigmoid.

REF: p. 894

12. The _____ sphincter controls the movement of waste from the sigmoid colon into the rectum?
- oddi
 - ileocecal
 - O'Beirne
 - internal anal

ANS: C

The O'Beirne sphincter controls the movement of wastes from the sigmoid colon into the rectum. None of the other options performs this function.

REF: p. 894

13. The _____ reflex initiates propulsion in the entire colon, usually during or immediately after eating.
- gastrocolic
 - ileocolic
 - duodenocolic
 - cephalocolic

ANS: A

The gastrocolic reflex initiates propulsion in the entire colon. None of the other options performs this function.

REF: p. 894

14. The blood supply of the large intestine is derived from which vessel(s)?
- NURSINGTB.COM
- Celiac
 - Superior and inferior mesenteric
 - Hepatic and portal
 - Omental

ANS: B

The blood supply of the large intestine and rectum is derived primarily from branches of the superior and inferior mesenteric arteries. None of the other options performs this function.

REF: p. 894

15. The capillaries of the liver are more commonly known as hepatic:
- canalliculi.
 - ducts.
 - sinusoids.
 - papillae.

ANS: C

Small capillaries, or sinusoids, are located between the plates of hepatocytes of the liver. None of the other options presents an appropriate term.

REF: p. 896

16. Which of the following liver cells are phagocytic?

- a. Glisson
- b. Kupffer
- c. Meissner
- d. Lieberkühn

ANS: B

The sinusoids are also lined with phagocytic Kupffer cells and are part of the mononuclear phagocyte system. The Glisson is the capsule that covers the liver. The Meissner is a part of the nerve plexus that innervates the liver. The Lieberkühn is a part of the liver's secretory cells.

REF: p. 896

17. The primary bile salts are synthesized from _____ by hepatocytes lining the bile canaliculi.
- a. lecithin
 - b. fatty acids
 - c. cholesterol
 - d. testosterone

ANS: C

Bile acids (salts) are synthesized from cholesterol. The process is not reliant on lecithin, fatty acids, or testosterone.

REF: p. 897

18. In the liver, free bilirubin moves from the plasma in the sinusoids into the hepatocytes, where it is converted into:
- a. unconjugated bilirubin. NURSINGTB.COM
 - b. biliverdin.
 - c. conjugated bilirubin.
 - d. urobilinogen.

ANS: C

Within hepatocytes, unconjugated bilirubin joins with glucuronic acid to form conjugated bilirubin, not unconjugated, which is water soluble and is secreted in the bile.

Biliverdin is a precursor of bilirubin. When conjugated bilirubin reaches the distal ileum and colon, it is deconjugated by bacteria and converted to urobilinogen.

REF: p. 898

19. Which information indicates the nurse understands digestion? During the cephalic and gastric phases of digestion, gallbladder contraction is mediated by branches of the:
- a. sympathetic nervous system.
 - b. somatic nervous system.
 - c. vagus nerve.
 - d. glossopharyngeal nerve.

ANS: C

Gallbladder contraction is mediated by cholinergic branches of the vagus nerve, not the sympathetic nervous system. Gallbladder contraction is not mediated by the somatic or glossopharyngeal nerves.

REF: p. 901

20. Which sphincter, when it relaxes, allows bile to flow into the duodenum?
- Pyloric sphincter
 - Sphincter of Oddi
 - Ampulla of Vater
 - Ileocecal valve

ANS: B

When the sphincter of Oddi relaxes, bile flows into the duodenum. The pyloric sphincter controls flow of fluid from the stomach to the duodenum. Secretions from the pancreas empty into the common bile duct at the ampulla of Vater. The ileocecal valve prevents reflux of digested material from the colon into the small intestine.

REF: p. 901

21. The exocrine portion of the pancreas contains:
- alpha cells.
 - beta cells.
 - acinar cells.
 - islets of Langerhans.

ANS: C

The exocrine portion of the pancreas contains acinar cells. It is the endocrine portion that contains the alpha and beta cells as well as the islets of Langerhans.

REF: p. 902

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22. The function of the acinar cells of the pancreas is to secrete:
- bicarbonate.
 - enzymes.
 - mucus.
 - electrolytes.

ANS: B

The exocrine pancreas is composed of acinar cells that secrete enzymes. These cells are not associated with bicarbonate, mucus, or electrolytes.

REF: p. 902

23. Parasympathetic stimulation to the pancreas will cause which of the following reactions?
- Hormonal inhibition
 - Enzyme secretion
 - Vasoconstriction
 - Decreased bicarbonate production

ANS: B

Pancreatic innervation arises from preganglionic parasympathetic fibers of the vagus nerve. These fibers activate postganglionic fibers, which stimulate enzymatic and hormonal secretion. Pancreatic innervations stimulate hormone secretion, not inhibit it. Sympathetic postganglionic fibers from the celiac and superior mesenteric plexuses innervate the blood vessels, cause vasoconstriction, and inhibit pancreatic secretion. Parasympathetic stimulation is not involved in bicarbonate production.

REF: p. 902

24. The pancreas produces which substance to prevent the premature activation of proteolytic enzymes in the pancreas?
- Bicarbonate
 - Carboxypeptidase
 - Secretin
 - Trypsin inhibitor

ANS: D

The pancreas produces trypsin inhibitor, which prevents the activation of proteolytic enzymes while they are in the pancreas. Bicarbonate is responsible for neutralizing fluid.

Carboxypeptidase is a protein-digesting enzyme. Secretin is not produced by the pancreas.

REF: p. 902

MULTIPLE RESPONSE

1. The GI tract performs which of the following processes? (select all that apply)

- Absorption of digested food
- Chemical breakdown of food particles
- Initiates erythropoiesis
- Mechanical breakdown of food particles
- Secretion of mucus

ANS: A, B, D, E

The GI tract carries out the following processes: (i) ingestion of food; (ii) propulsion of food and wastes from the mouth to the anus; (iii) secretion of mucus, water, and enzymes; (iv) mechanical digestion of food particles; (v) chemical digestion of food particles; (vi) absorption of digested food; and (vii) elimination of waste products by defecation.

REF: p. 884

Chapter 36: Alterations of Digestive Function

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. Which of the following types of diarrhea would most likely occur with a bacterial GI infection?
 - a. Osmotic
 - b. Secretory
 - c. Hypotonic
 - d. Motility

ANS: B

Bacterial infections lead to secretory diarrhea. A nonabsorbable substance in the intestine leads to osmotic diarrhea. Hypotonic diarrhea is not a form of diarrhea. Food is not mixed properly, digestion and absorption are impaired, and motility is increased, leading to motility diarrhea.

REF: p. 908

2. A 20-year-old recently diagnosed with lactose intolerance eats an ice cream cone and develops diarrhea. This diarrhea can be classified as _____ diarrhea.
 - a. osmotic
 - b. secretory
 - c. hypotonic
 - d. motility

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ANS: A

A nonabsorbable substance in the intestine leads to osmotic diarrhea. Infections lead to secretory diarrhea. Hypotonic diarrhea is not a form of diarrhea. Food is not mixed properly, digestion and absorption are impaired, and motility is increased leading to motility diarrhea.

REF: p. 908

3. Assuming that midline epigastric pain is caused by a stimulus acting on an abdominal organ, the pain felt is classified as:
 - a. visceral.
 - b. somatic.
 - c. parietal.
 - d. referred.

ANS: A

Visceral pain arises from a stimulus (distention, inflammation, and ischemia) acting on an abdominal organ. Somatic is a form of parietal pain. Parietal pain, from the parietal peritoneum, is more localized and intense than visceral pain, which arises from the organs themselves. Referred pain is visceral pain felt at some distance from a diseased or affected organ.

REF: p. 909

4. The most common disorder associated with upper GI bleeding is:

- a. diverticulosis.
- b. hemorrhoids.
- c. esophageal varices.
- d. cancer.

ANS: C

Esophageal varices is the most common disorder associated with upper GI bleeding.

Diverticulosis could lead to bleeding, but it would be lower GI rather than upper.

Hemorrhoids can lead to bleeding, but they would be lower GI. Cancer could lead to upper GI bleeding, but peptic ulcers and varices are identified as more common.

REF: p. 909

5. Bright red bleeding from the rectum is referred to as:

- a. melena.
- b. occult bleeding.
- c. hematochezia.
- d. hematemesis.

ANS: C

Bleeding from the upper GI tract can also be rapid enough to produce hematochezia (bright red stools). Melena is a black or tarry stool. Occult bleeding is hidden bleeding. Hematemesis is vomiting blood.

REF: p. 909

6. A 50-year-old is diagnosed with ~~gastroesophageal reflux~~. This condition is caused by:

- a. fibrosis of the lower third of the esophagus.
- b. sympathetic nerve stimulation.
- c. loss of muscle tone at the lower esophageal sphincter.
- d. reverse peristalsis of the stomach.

ANS: C

Gastroesophageal reflux is due to loss of muscle tone at the lower esophageal sphincter. The resting tone of the lower esophageal sphincter (LES) tends to be lower than normal from either transient relaxation or weakness of the sphincter. Gastroesophageal reflux is not due to fibrosis, stimulation of sympathetic nerves, or reverse peristalsis.

REF: p. 911

7. A 45-year-old male complains of heartburn after eating and difficulty swallowing. These symptoms support which diagnosis?

- a. Pyloric stenosis
- b. Gastric cancer
- c. Achalasia
- d. Hiatal hernia

ANS: D

Regurgitation, dysphagia, and epigastric discomfort after eating are common in individuals with hiatal hernia. Pyloric stenosis is manifested by projectile vomiting. Gastric cancer is not manifested by heartburn. Achalasia is a form of functional dysphagia caused by loss of esophageal innervation.

REF: p. 912

8. A serious complication of paraesophageal hiatal hernia is:
 - a. hemorrhage.
 - b. strangulation.
 - c. peritonitis.
 - d. ascites.

ANS: B

Strangulation of the hernia is a major complication. Neither hemorrhage, peritonitis, nor ascites is associated with paraesophageal hiatal hernia complications.

REF: p. 912

9. Tests reveal narrowing of the opening between the stomach and the duodenum. This condition is referred to as:
 - a. ileocecal obstruction.
 - b. hiatal hernia.
 - c. pyloric obstruction.
 - d. hiatal obstruction.

ANS: C

The pylorus is the opening between the esophagus and the duodenum; the obstruction is pyloric. Ileocecal obstruction is in the small intestine. Hiatal hernia is related to the esophagus. Hiatal obstruction is related to the esophagus.

REF: p. 912

10. The symptoms and signs of large bowel obstruction are:
 - a. abdominal distention and hypogastric pain.
 - b. diarrhea and excessive thirst.
 - c. dehydration and epigastric pain.
 - d. abdominal pain and rectal bleeding.

ANS: A

Large intestine obstruction usually presents with hypogastric pain and abdominal distention. Neither diarrhea, epigastric pain, nor rectal bleeding occurs.

REF: pp. 913-914

11. Chronic gastritis is classified according to the:
 - a. severity.
 - b. location of lesions.
 - c. patient's age.
 - d. signs and symptoms.

ANS: B

Chronic gastritis is classified as type A (fundal) or type B (antral), depending on the pathogenesis and location of the lesions. Gastritis is not classified by severity, age, or symptoms, but by location.

REF: p. 914

12. Gastroscopy reveals degeneration of the gastric mucosa in the body and fundus of the stomach. This condition increases the risk for the development of:
- pernicious anemia.
 - osmotic diarrhea.
 - increased acid secretion.
 - decreased gastrin secretion.

ANS: A

Pernicious anemia can develop because the damage to the mucosa makes the intrinsic factor less available to facilitate vitamin B₁₂ absorption in the ileum. None of the other options would result from this damage.

REF: p. 914

13. What is the cause of peptic ulcer disease?
- Heredity hormonal imbalances with high gastrin levels
 - Breaks in the mucosa and presence of corrosive secretions
 - Decreased vagal activity and vascular engorgement
 - Gastric erosions related to high ammonia levels and bile reflux

ANS: B

Peptic ulcer disease is caused by breaks in the mucosa and the presence of corrosive substances. High gastrin occurs, but the disease is due to breaks in the mucosa. Vagal activity increases. Gastric erosions occur, but they are not due to high ammonia.

REF: pp. 915-916

14. A 39-year-old is diagnosed with a duodenal ulcer. Which of the following behaviors may have contributed to the development of the ulcer?
- Regular NSAID use
 - Drinking caffeinated beverages
 - Consuming limited fiber
 - Antacid consumption

ANS: A

Duodenal ulcers occur with greater frequency than other types of peptic ulcers and are commonly caused by *H. pylori* infection and NSAID use. Neither antacids nor caffeinated beverages contribute to ulcer formation. Fiber is important, but consuming limited fiber will not contribute to ulcer formation.

REF: p. 916

15. A 22-year-old underwent brain surgery to remove a tumor. Following surgery, the patient experienced a peptic ulcer. This ulcer is referred to as a(n) _____ ulcer.
- infectious
 - Cushing

- c. *H. pylori*
- d. Curling

ANS: B

A Cushing ulcer is a stress ulcer associated with severe head trauma or brain surgery that results from decreased mucosal blood flow and hypersecretion of acid caused by overstimulation of the vagal nerve. Cushing ulcers are not associated with infections or *H. pylori*. Curling ulcers develop secondary to burns.

REF: p. 918

16. What is the primary clinical manifestation of a stress ulcer?
- a. Bowel obstruction
 - b. Bleeding
 - c. Pulmonary embolism
 - d. Hepatomegaly

ANS: B

The primary clinical manifestation of stress-related mucosal disease is bleeding, which is uncommon, but occurs more readily with the presence of coagulopathy and more than 48 hours of mechanical ventilation. None of the other options is associated with stress ulcers.

REF: p. 918

17. Clinical manifestations of bile salt deficiencies are related to poor absorption of:
- a. fats and fat-soluble vitamins.
 - b. water-soluble vitamins.
 - c. proteins.
 - d. minerals.

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ANS: A

Clinical manifestations of bile salt deficiency are related to poor intestinal absorption of fat and fat-soluble vitamins (A, D, E, and K). Neither water-soluble vitamins nor minerals require bile salts for absorption; thus, they are not affected. Protein breakdown is facilitated by bile, but its absorption is not dependent upon it.

REF: p. 920

18. Which complication is associated with gastric resection surgery?
- a. Constipation
 - b. Acid reflux gastritis
 - c. Anemia
 - d. Hiccups

ANS: C

One of the complications is anemia due to iron malabsorption, which may result from decreased acid secretion. Diarrhea, not constipation, occurs. The reflux would be alkaline, not acidic. Hiccups are not associated with gastrectomy.

REF: p. 919

19. A 50-year-old male reports episodes of frequently recurring crampy abdominal pain, diarrhea, and bloody stools. A possible diagnosis would be:
- ulcerative colitis.
 - hiatal hernia.
 - pyloric obstruction.
 - achalasia.

ANS: A

Ulcerative colitis is characterized by abdominal pain, fever, elevated pulse rate, frequent diarrhea (10-20 stools/day), urgency, obviously bloody stools, and continuous, crampy pain. Hiatal hernia is most often asymptomatic and would not be manifested by abdominal pain. Pyloric obstruction would be manifested by forceful or projectile vomiting. Achalasia would be manifested by difficulty or uncomfortable swallowing.

REF: p. 921

20. Pancreatic insufficiency is manifested by deficient production of:
- insulin.
 - amylase.
 - lipase.
 - bile.

ANS: C

Pancreatic insufficiency is the deficient production of lipase by the pancreas. Pancreatic insufficiency is not associated with the deficient production of insulin, amylase, or bile.

REF: p. 919

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21. A 19-year-old presents with abdominal pain in the right lower quadrant. Physical examination reveals rebound tenderness and a low-grade fever. A possible diagnosis would be:
- colon cancer.
 - pancreatitis.
 - appendicitis.
 - hepatitis.

ANS: C

Appendicitis is manifested originally with periumbilical pain that then migrates to the right lower quadrant pain with rebound tenderness. A low-grade fever is common. Colon cancer may be asymptomatic, followed by bleeding. Pancreatitis is manifested by vomiting. Hepatitis would be manifested by upper abdominal pain, not lower.

REF: p. 923

22. A common cause of chronic mesenteric ischemia among the elderly is:
- anemia.
 - aneurysm.
 - lack of nutrition in gut lumen.
 - atherosclerosis.

ANS: D

The most common cause of chronic mesenteric ischemia is atherosclerosis. Neither poor nutrition nor anemia leads to vascular insufficiency. An aneurysm would lead to acute vascular insufficiency.

REF: p. 924

23. Which of the following characteristics is associated with an acute occlusion of mesenteric blood flow to the small intestine?
- Often precipitated by an embolism
 - Commonly associated with disease such as pancreatitis and gallstones
 - Caused by chronic malnutrition and mucosal atrophy
 - Often a complication of hypovolemic shock

ANS: A

Occlusion of blood flow is often precipitated by embolism. This type of occlusion is not associated with pancreatitis, chronic malnutrition, or hypovolemic shock.

REF: pp. 923-924

24. The risk of hypovolemic shock is high with acute mesenteric arterial insufficiency because:
- the resulting liver failure causes a deficit of plasma proteins and a loss of oncotic pressure.
 - ischemia alters mucosal membrane permeability, and fluid loss occurs.
 - massive bleeding occurs in the GI tract.
 - overstimulation of the parasympathetic nervous system results in ischemic injury to the intestinal wall.

ANS: B

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Ischemia and necrosis (intestinal infarction) alter membrane permeability. Initially, there is increased motility, nausea, and vomiting. Mucosal alteration causes fluid to move from the blood vessels into the bowel wall and peritoneum. Fluid loss causes hypovolemia. Arterial insufficiency is not related to liver failure. Bleeding may occur, but hypovolemia is related to fluid shifts. Fluid shifts lead to hypovolemia; it is not due to overstimulation of the parasympathetic nerves.

REF: p. 923

25. Which of the following conditions is thought to contribute to the development of obesity?
- Insulin excess
 - Leptin resistance
 - Adipocyte failure
 - Malabsorption

ANS: B

Leptin, a product of the obesity gene (*Ob* gene), acts on the hypothalamus to suppress appetite and functions to regulate body weight within a fairly narrow range. Leptin levels increase as the number of adipocytes increases; however, for unknown reasons, high leptin levels are ineffective at decreasing appetite and energy expenditure, a condition known as leptin resistance. Leptin resistance fails to inhibit orexigenic hypothalamic satiety signaling and promotes overeating and excessive weight gain. Insulin becomes resistant, not present in excess. Leptin resistance, not adipocyte failure, leads to obesity. Malabsorption does not lead to obesity, but primarily to weight loss.

REF: p. 925

26. A 54-year-old reports vomiting blood. Tests reveal portal hypertension. Which of the following is the most likely cause of this condition?
- Thrombosis in the spleen
 - Cirrhosis of the liver
 - Left ventricular failure
 - Renal stenosis

ANS: B

Portal hypertension occurs secondarily to cirrhosis of the liver. Portal hypertension is not associated with thrombosis of the spleen, left ventricular failure, or renal stenosis.

REF: p. 927

27. The most common clinical manifestation of portal hypertension is _____ bleeding.
- rectal
 - duodenal
 - esophageal
 - intestinal

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ANS: C

Vomiting of blood from bleeding esophageal varices is the most common clinical manifestation of portal hypertension. Neither rectal, duodenal, nor intestinal bleeding is a common clinical manifestation of portal hypertension.

REF: p. 927

28. Manifestations associated with hepatic encephalopathy from chronic liver disease are the result of:
- hyperbilirubinemia and jaundice.
 - fluid and electrolyte imbalances.
 - impaired ammonia metabolism.
 - decreased cerebral blood flow.

ANS: C

Hepatic encephalopathy effect on the liver prevents end products of intestinal protein digestion, particularly ammonia, from being converted to urea by the diseased liver. Impaired ammonia metabolism leads to the symptoms of hepatic encephalopathy. Symptoms are primarily neurologic, not jaundice oriented. Manifestations associated with hepatic encephalopathy are not associated with hyperbilirubinemia and jaundice, fluid, and electrolyte imbalances or decreased cerebral blood flow.

REF: p. 929

29. An increase in the rate of red blood cell breakdown causes which form of jaundice?
- Obstructive
 - Hemolytic
 - Hepatocellular
 - Metabolic

ANS: B

Excessive hemolysis (breakdown) of red blood cells can cause hemolytic jaundice (prehepatic jaundice). Red blood cell breakdown is not associated with the other forms of jaundice.

REF: p. 930

30. The icteric phase of hepatitis is characterized by which clinical manifestations?
- Fatigue, malaise, vomiting
 - Jaundice, dark urine, enlarged liver
 - Resolution of jaundice, liver function returns to normal
 - Fulminant liver failure, hepatorenal syndrome

ANS: B

The icteric phase is manifested by jaundice, dark urine, and clay-colored stools. The liver is enlarged, smooth, and tender, and percussion causes pain. Fatigue and vomiting occur during the prodromal stage. Resolution occurs in the recovery phase. Fulminant liver failure does not involve icterus.

REF: p. 935

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31. The autopsy of a 55-year-old revealed an enlarged liver, testicular atrophy, and mild jaundice secondary to cirrhosis. What is the most likely cause of this condition?
- Bacterial infection
 - Viral infection
 - Alcoholic steatohepatitis
 - Drug overdose

ANS: C

The clinical manifestations of alcoholic steatohepatitis include jaundice, hepatomegaly, and testicular atrophy. These symptoms are not a result of a bacterial or viral infection, or a drug overdose.

REF: p. 932

32. In alcoholic cirrhosis, hepatocellular damage is caused by:
- acetaldehyde accumulation.
 - bile toxicity.
 - acidosis.
 - fatty infiltrations.

ANS: A

Alcoholic cirrhosis is caused by the toxic effects of alcohol metabolism on the liver. Alcohol is transformed to acetaldehyde, and excessive amounts significantly alter hepatocyte function and activate hepatic stellate cells, a primary cell involved in liver fibrosis. Bile toxicity does not cause alcoholic cirrhosis. Acidosis does not cause alcoholic cirrhosis. Fatty infiltrations do not cause alcoholic cirrhosis.

REF: p. 932

33. An analysis of most gallstones would reveal a high concentration of:
- phosphate.
 - bilirubin.
 - urate.
 - cholesterol.

ANS: D

The majority of gallstones are composed of cholesterol. The other options are not found in high quantities.

REF: p. 935

34. A 55-year-old is diagnosed with extrahepatic obstructive jaundice that is a result of the obstruction of the:
- intrahepatic bile canaliculi.
 - gallbladder.
 - cystic duct.
 - common bile duct.

ANS: D

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Jaundice is due to obstruction of the common bile duct. This form of jaundice is not due to obstruction of the intrahepatic canaliculi, gallbladder, or the cystic duct.

REF: p. 930

35. Cholecystitis is inflammation of the gallbladder wall usually caused by:
- accumulation of bile in the hepatic duct.
 - obstruction of the cystic duct by a gallstone.
 - accumulation of fat in the wall of the gallbladder.
 - viral infection of the gallbladder.

ANS: B

Cholecystitis can be acute or chronic, but both forms are almost always caused by a gallstone lodged in the cystic duct. Accumulation of bile in the hepatic duct would not lead to cholecystitis. Neither the accumulation of fat nor a viral infection leads to cholecystitis.

REF: p. 936

36. Tissue damage in pancreatitis is initially triggered by:
- insulin toxicity.
 - autoimmune destruction of the pancreas.
 - backup of pancreatic enzymes.
 - hydrochloric acid reflux into the pancreatic duct.

ANS: C

In pancreatitis there is backup of pancreatic secretions and activation and release of enzymes (activated trypsin activates chymotrypsin, lipase, and elastase) within the pancreatic acinar cells. The enzymes become activated, triggering the resulting autodigestion, inflammation, and oxidative stress. The tissue damage associated with pancreatitis is not due to insulin toxicity or to hydrochloric acid reflux.

REF: p. 936

37. Acute pancreatitis often manifests with pain to which of the following regions?
- Right lower quadrant
 - Right upper quadrant
 - Epigastric
 - Suprapubic

ANS: C

Epigastric or midabdominal pain ranging from mild abdominal discomfort to severe, incapacitating pain is one of the manifestations of pancreatitis. Right lower pain would be a symptom of appendicitis. Right upper quadrant pain would be manifestation of liver inflammation. Suprapubic pain would be related to full bladder or colon problems.

REF: p. 937

38. A 60-year-old male is diagnosed with adenocarcinoma of the esophagus. Which of the following factors most likely contributed to his disease?
- Reflux esophagitis
 - Intestinal parasites
 - Ingestion of salty foods N_UR_SI_NG_TB.C_OM
 - Frequent use of antacids

ANS: A

Adenocarcinomas are more prevalent in males and are associated with cigarette smoking, obesity, and gastroesophageal reflux disease (GERD). Intestinal parasites, ingestion of salty foods, or the use of antacids does not lead to adenocarcinoma of the esophagus.

REF: p. 937

MULTIPLE RESPONSE

- A patient presents to the physician with reports infrequent bowel movements and is diagnosed with functional constipation. What can be a contributing factor to this condition? (select all that apply)
 - Neurogenic disorder
 - Sedentary lifestyle
 - Low residue diet
 - Colon cancer
 - Low fluid intake

ANS: B, C, E

Functional constipation is a type of or primary constipation that is triggered by a low residue diet and low fluid intake. A sedentary lifestyle and lack of regular exercise are other common causes of this type of constipation. Secondary constipation is a result of a pre-existing condition that may be a neurogenic disorder or colon cancer.

REF: p. 907

2. The primary causes of duodenal ulcers include: (select all that apply)
 - a. consumption of spicy foods.
 - b. nonsteroidal anti-inflammatory drugs (NSAIDs).
 - c. *H. pylori* infection.
 - d. trauma.
 - e. side effects of antibiotics.

ANS: B, C

Infection with *H. pylori* and chronic use of NSAIDs are the major causes of duodenal ulcers. Consuming spicy foods, trauma, and antibiotics do not lead to duodenal ulcer disease.

REF: p. 916

3. A 56-year-old is diagnosed with gastric ulcers. Which of the following characterizes this disorder? (select all that apply)
 - a. Pain occurs immediately after eating
 - b. Anorexia
 - c. History of NSAID use
 - d. Occurrence is typically a single event
 - e. Occur more frequently in females

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ANS: A, B, C

The pattern of pain is different from that of duodenal ulcers as it frequently occurs immediately after eating. Gastric ulcers cause more anorexia and are associated with NSAID use. Gastric ulcers also tend to be chronic rather than alternating between periods of remission and exacerbation. There appears to be no gender preference.

REF: p. 917

4. Which of the following type(s) of hepatitis has an incubation period of up to 180 days? (select all that apply)
 - a. A
 - b. B
 - c. C
 - d. D
 - e. E

ANS: B, D

Both hepatitis B and D have incubation periods of up to 180 days.

REF: p. 934, Table 36-8

5. A 31-year-old female is diagnosed with acute pancreatitis. Which of the following will be part of the treatment plan? (select all that apply)
 - a. Narcotic analgesics

- b. Restriction of food intake
- c. Nasogastric suctioning
- d. Steroid therapy
- e. IV fluids

ANS: A, B, C, E

Narcotic medications may be needed to relieve pain. To decrease pancreatic secretions oral food and fluids may be withheld initially and continuous gastric suction instituted. Parenteral fluids are essential to restore blood volume and prevent hypotension and shock. Steroid therapy is not associated with this disorder.

REF: p. 937

6. A 52-year-old female presents with continuous abdominal pain that intensifies after eating. She is diagnosed with chronic pancreatitis. Contributing factors include: (select all that apply)
- a. alcohol abuse.
 - b. history of gallstones.
 - c. trauma.
 - d. smoking.
 - e. bulimia

ANS: A, B, D

Chronic pancreatitis is associated with risk factors that include alcoholism, obstructive biliary tract disease (gallstones), and smoking. Neither trauma nor bulimia is associated with chronic pancreatitis.

REF: p. 937

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COMPLETION

1. Obesity is defined as a body mass index (BMI) greater than _____.

ANS: 30

REF: p. 924

Chapter 37: Alterations of Digestive Function in Children

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. The family learns that a 3D ultrasound of a 9-week fetus shows incomplete fusion of the nasomedial process. What is this defect commonly called?
 - a. Cleft lip
 - b. Nasal passage atresia
 - c. Esophageal atresia
 - d. Lack of dentition

ANS: A

Cleft lip, not nasal passage atresia, occurs when there is lack of or incomplete fusion of the nasomedial or intermaxillary process. In esophageal atresia, the esophagus ends in a blind pouch. Lack of dentition is not due to incomplete fusion of the processes.

REF: p. 950

2. What term is used to document the condition that exists when the esophagus ends in a blind pouch?
 - a. Esophageal atresia
 - b. Tracheoesophageal stenosis
 - c. Esophagitis
 - d. Pyloric stenosis

ANS: A

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When the esophagus ends in a blind pouch, the condition is referred to as esophageal atresia; the trachea is not involved. Esophagitis is inflammation of the esophagus. Pyloric stenosis is a narrowing of the connection between the stomach and the duodenum.

REF: p. 951

3. Which condition should the nurse assess for in mothers carrying fetuses affected by esophageal malformations?
 - a. Enlarged placentas
 - b. Excessive amniotic fluid
 - c. Short umbilical cords
 - d. Foul-smelling vaginal discharge

ANS: B

Polyhydramnios (excessive amniotic fluid) is reported to occur in mothers of affected infants because of alterations in fetal swallowing. Esophageal malformations are not associated with enlarged placentas, short umbilical cords, or vaginal discharge.

REF: p. 951

4. A 2-week-old infant vomits forcefully immediately after feeding for no apparent reason and is frequently constipated. These signs support which diagnosis?
 - a. Pyloric stenosis

- b. Meconium ileus
- c. Esophageal atresia
- d. Galactosemia

ANS: A

Between 2 and 8 weeks after birth, an infant who has fed well and gained weight begins forceful, nonbilious vomiting immediately after feeding. Constipation occurs because little food reaches the intestine. The signs do not support a diagnosis of meconium ileus, esophageal atresia, or galactosemia.

REF: p. 952

5. A sign that a newborn infant may have pyloric stenosis is:
- a. diarrhea.
 - b. bile regurgitation.
 - c. olive-sized mass in the upper abdomen.
 - d. ascites with a fluid wave visible across the abdomen.

ANS: C

A firm, small, movable mass, approximately the size of an olive, is felt in the right upper quadrant in 70-90% of infants with pyloric stenosis. Pyloric stenosis is not associated with diarrhea, bile regurgitation, or ascites.

REF: p. 952

6. A 2-month-old female is brought to the emergency room (ER) for persistent bile-stained vomiting after feeding. Physical examination reveals dehydration, and x-ray reveals gas bubbles in the intestines. What is the most likely cause of this condition?
- a. Malrotation
 - b. Ileocecal displacement
 - c. Pyloric stenosis
 - d. Meconium ileus

ANS: A

In infants, malrotation obstruction causes intermittent or persistent bile-stained vomiting after feedings. Radiographic films of the abdomen and barium studies show intestinal gas bubbles and distention proximal to the site of obstruction. This assessment data does not support a diagnosis of ileocecal displacement. Pyloric stenosis is manifested by vomiting, but it is not bile stained and the colon is not displaced. In meconium ileus, there is an intestinal obstruction caused by meconium formed *in utero*.

REF: p. 953

7. Meconium ileus (MI) is associated with which of the following disorders?
- a. Pyloric stenosis
 - b. Esophageal atresia
 - c. Cystic fibrosis
 - d. Esophagitis

ANS: C

Meconium ileus is associated with cystic fibrosis. Meconium ileus is not associated with pyloric stenosis, esophageal atresias, or esophagitis.

REF: p. 953

8. A 2-month-old is diagnosed with Hirschsprung disease with the resulting development of a megacolon. What is the most likely cause of this condition?
 - a. Absence of intrinsic ganglion cells resulting in impaired peristalsis
 - b. The use of cow's milk instead of formula
 - c. Excessive use of glycerin suppositories to promote bowel elimination
 - d. Additional ganglion cells throughout the length of the colon

ANS: A

Congenital aganglionic megacolon is caused by the absence of the intrinsic ganglion cells (submucosal and myentric plexuses) along a variable length of the colon, resulting in inadequate peristaltic movement in the bowels. The resulting distention of the proximal colon results in the term megacolon. Megacolon is a functional anatomic disorder not related to formula or use of suppositories.

REF: p. 954

9. The primary complication of enterocolitis associated with Hirschsprung disease is related to which neonatal finding?
 - a. Fecal impaction
 - b. Pancreatic insufficiency
 - c. Hyperactive peristalsis
 - d. Ileal atresia

ANS: A

The most serious complication of Hirschsprung disease in the neonatal period is enterocolitis related to fecal impaction. Enterocolitis is not related to pancreatic insufficiency or hyperactive peristalsis but to slowed peristalsis or ileal atresia.

REF: p. 954

10. A 6-month-old male infant is brought to the ER after the sudden development of abdominal pain, irritability, and vomiting followed by passing of "currant jelly" stool. Ultrasound reveals intestinal obstruction in which the ileum collapsed through the ileocecal valve. Which term is used to describe this type of obstruction?
 - a. Prolapse
 - b. Pyloric stenosis
 - c. Intussusception
 - d. Imperforation

ANS: C

In intussusception, the ileum commonly telescopes into the cecum and part of the ascending colon by collapsing through the ileocecal valve. The classic symptoms of intussusception include colicky abdominal pain, irritability, knees drawn to the chest, abdominal mass, vomiting, and bloody (currant jelly) stools. The assessment data does not support a diagnosis of prolapse, pyloric stenosis, or of imperforation.

REF: p. 956

11. An 8-week-old is diagnosed with a congenital heart disease and Down syndrome. The infant is at risk for the development of which gastrointestinal disorder?
- Intussusception
 - Imperforate anus
 - Meckel diverticulum
 - Cystic fibrosis (CF)

ANS: B

Approximately 40% of infants with anorectal malformations have other developmental anomalies (i.e., Down syndrome, Hirschsprung disease, and duodenal atresia). The risk is not present for intussusception, Meckel diverticulum, or cystic fibrosis.

REF: p. 954

12. What is the most common symptom of Meckel diverticulum observed in children?
- Constipation
 - Vomiting
 - Rectal bleeding
 - Ascites

ANS: C

Although most Meckel diverticuli are asymptomatic, the most common symptom is painless rectal bleeding. Intestinal obstruction, intussusception, and volvulus can occur, more commonly in adults. Meckel diverticuli is not associated with constipation, vomiting, or ascites.

REF: p. 953

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13. Occurrence of gastroesophageal reflux (GER) is highest in which pediatric population?
- Premature infants
 - Infants with Down syndrome
 - Children with cystic fibrosis
 - Children with esophageal atresia

ANS: A

The frequency of reflux is highest in premature infants. Frequency is not associated with Down syndrome, cystic fibrosis, or esophageal atresia.

REF: p. 954

14. An 8-week-old male was recently diagnosed with cystic fibrosis (CF). Which of the following digestive alterations would be expected?
- Insufficient bile production
 - Gastric atrophy
 - Hypersecretion of stomach acid
 - Nutrient malabsorption

ANS: D

Approximately 85% of those with CF present early in life with pancreatic insufficiency (PI). PI is the cause of nutrient malabsorption and failure to thrive in children with CF. Infants with CF have normal bile production; they experience pancreatic enzyme deficiency. Diagnosed infants do not experience gastric atrophy or hypersecretion of stomach acid.

REF: p. 956

15. Celiac disease, or sprue, is caused by alterations of the intestinal:
 - a. glands.
 - b. villi.
 - c. smooth muscle wall.
 - d. sphincters.

ANS: B

Gluten-sensitive enteropathy, formerly called celiac sprue or celiac disease, is an autoimmune disease that damages small intestinal villous epithelium. Celiac disease affects the villi, not the glands, the walls of smooth muscle, or sphincters.

REF: p. 957

16. Kwashiorkor is a severe dietary deficiency of:
 - a. fat-soluble vitamins.
 - b. carbohydrates.
 - c. protein.
 - d. calcium and magnesium.

ANS: C

Kwashiorkor is a severe dietary deficiency of protein. Kwashiorkor is not associated with a dietary deficiency of fat-soluble vitamins, carbohydrates, or minerals such as calcium and magnesium.

REF: p. 959

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17. Marasmus is most common in children of which age group?
 - a. Younger than 1 year
 - b. 1-2 years
 - c. 5-6 years
 - d. 12-15 years

ANS: A

Marasmus is most common in children younger than 1 year.

REF: p. 959

18. A 1-week-old female is brought to her pediatrician for abdominal distention and unstable temperature. Physical examination reveals bradycardia and apnea. Tests reveal portal venous gas and an intestinal perforation. This condition is referred to as:
 - a. infective enteropathy.
 - b. necrotizing enterocolitis (NEC).
 - c. mucoviscidosis.
 - d. ileus.

ANS: B

NEC includes feeding intolerance, abdominal distention, and bloody stools after 8-10 days of age, septicemia with elevated white blood cells, and falling platelet counts. Unstable temperature, bradycardia, and apnea are nonspecific signs. NEC is an ischemic, inflammatory condition of the bowel that causes necrosis, perforation, and death, if untreated. Infective enteropathy may be related to infection, but it is not necrotic. Mucoviscidosis is related to cystic fibrosis. Ileus is manifested by decreased bowel sounds but not ischemia.

REF: p. 960

19. Prolonged diarrhea is more serious in children than adults because:
- children have lower adipose reserves.
 - fluid reserves are lower in children.
 - children have a lower metabolic rate.
 - children are more resistant to antimicrobial therapy.

ANS: B

Prolonged diarrhea is more dangerous in children because they have much smaller fluid reserves than adults. The danger is not due to lower adipose reserves or microbial resistance. Children have higher metabolic rates.

REF: p. 961

20. When a newborn has a lack of bilirubin uptake, what does the nurse suspect is occurring in the patient?
- Biliary hypertrophy
 - Physiologic jaundice
 - Hepatitis A
 - Infantile cirrhosis

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ANS: B

Physiologic jaundice (newborn jaundice or neonatal bilirubinemia) is a frequently encountered problem in otherwise healthy newborns caused by lack of maturity in bilirubin uptake and conjugation. Impaired excretion of bilirubin does not lead to biliary hypertrophy, hepatitis A, or cirrhosis.

REF: p. 961

21. A 7-month-old female presents with jaundice, clay-colored stool, and an enlarged liver. Testing reveals the absence of intrahepatic bile ducts. This condition is referred to as _____ atresia.
- hepatic
 - portal
 - sinusoidal
 - biliary

ANS: D

Biliary atresia (BA) is a rare congenital malformation (1 in 8000 to 1 in 18,000 live births) characterized by the absence or obstruction of intrahepatic or extrahepatic bile ducts. Jaundice is the primary clinical manifestation of biliary atresia, along with hepatomegaly and acholic (clay-colored) stools. The presenting symptomatology does not support any of the other options.

REF: p. 962

22. A newborn is diagnosed with biliary atresia. What is the long-term treatment for this disorder?
- Immunoglobulins
 - Liver transplant
 - Bone marrow transplant
 - Dietary modifications

ANS: B

The treatment for biliary atresia is liver transplant. Long-term treatment for biliary atresia is not associated with immunoglobulins, bone marrow transplant, or dietary modifications.

REF: p. 962

23. The nurse assessing the patient with biliary atresia would expect to find which primary clinical manifestation?
- Anemia
 - Jaundice
 - Hypobilirubinemia
 - Ascites

ANS: B

The primary clinical manifestation is jaundice. Anemia is not associated with biliary atresia. Hypobilirubinemia is not associated with this disorder. Ascites occurs with other liver disorders but not atresia.

REF: p. 962

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24. Outbreaks of hepatitis ____ often occur in young children attending daycare centers and can be attributed to poor handwashing.
- A
 - B
 - C
 - D

ANS: A

Outbreaks of hepatitis A occur in condition where poor handwashing occurs. Hepatitis B is blood-borne and not related to handwashing. Hepatitis C is blood-borne and not related to handwashing. Hepatitis D is blood-borne and depends on an active HIV infection.

REF: p. 962

25. Where does the nurse expect the obstruction to be in a patient with extrahepatic portal hypertension?
- Sinusoids
 - Bile ducts
 - Hepatic portal vein
 - Hepatic artery

ANS: C

Extrahepatic (prehepatic) portal venous obstruction causes extrahepatic portal hypertension in children. Sinusoids can be inflamed but would not lead to hypertension. Obstruction of the bile ducts would lead to interruption in the flow of bile to the duodenum; it would not cause hypertension. The obstruction is in the vein, not the artery.

REF: p. 963

26. Early identification and treatment for metabolic disorders are important because:
- permanent damage to vital organs can be prevented.
 - surgery is usually necessary.
 - cure rates are higher with early detection.
 - death usually occurs within the first month.

ANS: A

The earliest possible identification of metabolic disorders is essential because early treatment may prevent permanent damage to vital organs, such as the liver or brain. Surgery is not the treatment in most of the metabolic disorders; they are controlled by dietary modifications. A cure is not possible in most disorders. Death does not occur in the first month; dietary control is effective.

REF: p. 963

27. A 3-month-old female presents with intention tremors, dystonia, greenish-yellow rings in the cornea, and hepatomegaly. Tests reveal a defect on chromosome 13. Which of the following is the most likely diagnosis?
- Galactosemia
 - Fructosemia
 - Wilson disease
 - Cirrhosis

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ANS: C

Wilson disease is manifested by dystonia and greenish-yellow rings in the cornea. Galactosemia is manifested by high levels of blood galactose and vomiting. Fructosemia is manifested by high levels of blood fructose and hepatomegaly but not dystonia and rings in the cornea. Cirrhosis is manifested by hepatomegaly but not dystonia and greenish-yellow rings in the cornea.

REF: p. 964, Table 37-2

MULTIPLE RESPONSE

1. Which of the following are complications of gastroesophageal reflux disease (GERD)? (select all that apply)
- Esophagitis
 - Barrett esophagus (BE)
 - Cough
 - Recurrent otitis media (OM)
 - Bloody vomitus

ANS: A, B, C, D

Esophageal complications of GER can be significant, such as esophagitis; hemorrhage; stricture; Barrett esophagus (BE) (see Chapter 36); and, rarely, adenocarcinoma. Extraesophageal symptoms include cough and wheezing, laryngitis, pharyngitis, dental erosions, sinusitis, recurrent otitis media, and Sandifer's syndrome (a neurologic disorder). Bloody vomitus is not a complication of gastroesophageal reflux disease.

REF: p. 955

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Chapter 38: Structure and Function of the Musculoskeletal System

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. Which component of the bone matrix gives bone its tensile strength?
 - a. Calcium
 - b. Phosphate
 - c. Collagen
 - d. Magnesium

ANS: C

While calcium, phosphate, and magnesium all play a role in bone formation, collagen is the component of bone matrix that gives bone tensile strength.

REF: p. 969, Table 38-1

2. Once their initial function is complete, what do osteoblasts become?
 - a. Osteoclasts
 - b. Osteocytes
 - c. Chondroblasts
 - d. Osteoids

ANS: B

Osteoblasts are the bone-forming cells. Their primary function is to lay down new bone. Once this function is complete, osteoblasts become osteocytes. Osteoclasts reabsorb bone.

Chondroblasts are a part of ~~NURSINGTB.COM~~ mature bone. Osteoids are part of nonmineralized bone matrix that the osteoblasts work on.

REF: p. 970

3. Hydroxyapatite found in bone matrix contains a combination of which molecules in its crystalline structure?
 - a. Calcium and magnesium
 - b. Calcium and phosphate
 - c. Phosphate and magnesium
 - d. Magnesium and hydrogen

ANS: B

Calcium and phosphate form amorphous (fluid) calcium phosphate compounds that are converted, in stages, to solid hexagonal crystals of hydroxyapatite. Hydroxyapatite does not contain magnesium or hydrogen.

REF: p. 972

4. What is the major difference between compact and spongy bone?
 - a. Organization of the structural elements
 - b. Location within the body
 - c. Activating chemicals in each
 - d. Types of minerals in the bone matrix

ANS: A

The major difference between the two types of tissue is the organization of the elements. The differences in location in the body, chemical activation, or types of minerals contained are not as relevant.

REF: pp. 972-973

5. How do blood vessels penetrate into the inner structures of the bone?

- a. Volkmann canals
- b. Canaliculi
- c. Sharpey fibers
- d. Lamellae

ANS: A

The outer layer of the periosteum contains blood vessels and nerves, some of which penetrate to the inner structures of the bone through channels called Volkmann canals. Canaliculi are small channels or canals. Sharpey fibers also help hold or attach tendons and ligaments to the periosteum of bones. Concentric layers of bone matrix are called lamellae.

REF: p. 973

6. After puberty, the epiphyseal plate calcifies, and the epiphysis and _____ merge.

- a. epiphyseal line
- b. diaphyseal plate
- c. metaphysis
- d. articular cartilage

ANS: C

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After puberty, the epiphyseal plate calcifies, and the epiphysis and metaphysis merge. None of the other options merges with the epiphysis after puberty.

REF: p. 974

7. Clusters of which type of bone cells are responsible for bone remodeling?

- a. Trabeculae
- b. Osteoclastic cutting cones
- c. Basic multicellular units
- d. Haversian system cells

ANS: C

Remodeling is carried out by clusters of bone cells termed basic multicellular units. The basic multicellular units are made up of bone precursor cells that differentiate into osteoclasts and osteoblasts. Trabeculae are plates found in spongy bone. The osteoclasts form a “cutting cone,” which gradually resorbs bone, not remodels it. Haversian canals are part of compact bone.

REF: pp. 974-975

8. When describing a freely movable joint, which term should be used?

- a. Synarthrosis
- b. Amphiarthrosis
- c. Fibrous

- d. Diarthrosis

ANS: D

A diarthrotic joint is freely moveable. A synarthrotic joint is immovable. An amphiarthrotic joint is slightly movable. A fibrous joint has little, if any, movement.

REF: p. 975

9. A nurse recalls fibrous joints generally are:

- a. rotating.
- b. slightly movable.
- c. freely movable.
- d. calcified.

ANS: B

A fibrous joint has little, if any, movement.

REF: p. 975

10. Which of the following should the nurse include when discussing the different types of cartilaginous joints?

- a. Sutures and gomphosis
- b. Syndesmosis and gomphosis
- c. Symphysis and synchondrosis
- d. Gomphosis and synchondrosis

ANS: C

There are two types of cartilaginous joints: symphysis and synchondrosis.

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REF: p. 975

11. What type of joint normally exists between the teeth and the maxilla or mandible?

- a. Symphysis
- b. Diarthrosis
- c. Gomphosis
- d. Syndesmosis

ANS: C

Gomphosis joints exist between the teeth and the maxilla or mandible. None of the other options fulfills that function.

REF: p. 975

12. A nurse recalls the freely moveable joint is an example of which type of joint?

- a. Amphiarthrosis
- b. Diarthrosis
- c. Synarthrosis
- d. Symphysis

ANS: B

The elbow joint is freely moveable and is an example of a diarthrosis joint; amphiarthrosis joints are only slightly moveable. Synarthrosis joints are immovable. A symphysis is a cartilaginous joint in which bones are united by a pad or disk of fibrocartilage.

REF: p. 975

13. Between which structures will you find a joint that contains synchondrosis costal cartilage?
- a. Vertebrae
 - b. Ribs and sternum
 - c. Sutures of the skull
 - d. Facial bones

ANS: B

Synchondrosis costal cartilage is located between the ribs and the sternum. This type of cartilage is not found between the vertebrae, sutures of the skull, or between the facial bones.

REF: p. 975

14. The skeletal muscles are encased in a connective tissue framework made of:
- a. bone.
 - b. epithelium.
 - c. fascia.
 - d. cartilage.

ANS: C

Each skeletal muscle is a separate organ, encased in a three-part connective tissue framework called fascia. This framework is not made of bone, epithelium, or cartilage.

REF: p. 979

15. Which layer forms the fascicles in skeletal muscle? NURSINGTB.COM
- a. Tendon sheath
 - b. Endomysium
 - c. Epimysium
 - d. Perimysium

ANS: D

The perimysium further subdivides the muscle fibers into bundles of connective tissue called fascicles. None of the other options forms fascicles.

REF: p. 979

16. Which characteristic of a postural muscle is a result of having substantial amounts of type I muscle fibers?
- a. Resists fatigue
 - b. Rapid response time
 - c. Little contractibility
 - d. Lacks a fascia lining

ANS: A

Postural muscles have more type I fibers, allowing them the high resistance to fatigue that is necessary to maintain the same position for extended periods. The ocular muscles have more type II muscle fibers, allowing them to respond rapidly to visual changes.

Little contractibility or lacking a fascia lining is associated with type I muscle fibers.

REF: p. 980

17. The structure of the contractile subunit of the myofibril is called the:
- sarcoplasmic reticulum.
 - actin.
 - motor end plate.
 - sarcomere.

ANS: D

The sarcomere is the contractile portion of the myofibril. In response to a nerve impulse, RyR1 (found in skeletal muscle cells) releases intracellular calcium and initiates muscle contraction at the sarcomere, a portion of the myofibril. The sarcoplasmic reticulum is made like the endoplasmic reticulum in other cells. Actin is a protein of the sarcomere.

It is at the motor nerve end plate where the nerve impulse is transmitted.

REF: p. 982

18. Which ions directly control the contraction of muscles?
- Sodium
 - Potassium
 - Calcium
 - Magnesium

ANS: C

Contraction begins as the calcium ions combine with troponin, a reaction that overcomes the inhibitory function of the troponin-tropomyosin system. The release of intracellular calcium ions is the critical link between a nerve impulse (electrical excitation) and muscle contraction. The critical link that allows for the contraction of muscles is not reliant upon sodium, potassium, or magnesium.

REF: p. 985

19. Which molecule prevents a muscle contraction from occurring when the muscle is at rest?
- Calcium
 - Troponin-tropomyosin
 - Actin
 - Myosin

ANS: B

Contraction begins as the calcium ions combine with troponin, a reaction that overcomes the inhibitory function of the troponin-tropomyosin system. Calcium, actin, and myosin all facilitate muscle contraction.

REF: p. 985

20. During which stage of muscle contraction does actin bind to myosin?
- Coupling
 - Relaxation
 - Discharging
 - Excitation

ANS: A

During coupling, depolarization of the transverse tubules occurs. This triggers the release of calcium ions from the sarcoplasmic reticulum, exposing binding sites on the actin molecule. In the presence of calcium, actin is free to bind with myosin. Relaxation is the last step. It begins as calcium ions are actively transported back into the sarcoplasmic reticulum, removing ions from interaction with troponin. Discharging is not a step in the process. Excitation is the first step of muscle contraction and it begins with the spread of an action potential from the nerve terminal to the neuromuscular junction.

REF: p. 985

21. What is the main energy source or fuel for skeletal muscle contraction?

- a. Potassium
- b. Lactic acid
- c. Adenosine triphosphate (ATP)
- d. Actin

ANS: C

Skeletal muscle requires a constant supply of ATP and phosphocreatine. These substances are necessary to fuel the complex processes of muscle contraction. Neither potassium, lactic acid, nor actin is the main energy source for muscle contraction.

REF: p. 985

22. The nurse observed the patient's muscle contracted, but the limb did not move. How should the nurse chart this muscle contraction?

- a. Isotonic contraction
- b. Isometric contraction
- c. Eccentric contraction
- d. Concentric contraction

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ANS: B

During isometric contraction, the muscle contracts, but the limb does not move. During isotonic contraction, the muscle maintains a constant tension as it moves. Eccentric contraction is a form of isotonic contraction. Concentric contraction is a form of isotonic contraction.

REF: p. 986

23. What term identifies a muscle acting as a contraction's prime mover?

- a. Flexor
- b. Recruiter
- c. Antagonist
- d. Agonist

ANS: D

When a muscle contracts and acts as a prime mover, or agonist, its reciprocal muscle, or antagonist, relaxes. Neither the term flexor nor recruiter identifies this action.

REF: p. 986

24. What does the term "sarcopenia" describe?

- a. Absence of muscle cells

- b. Fatigue of muscle cells
- c. Age-related loss in skeletal muscle
- d. Muscles that are unable to contract

ANS: C

Age-related loss in skeletal muscle is referred to as sarcopenia and is a direct cause of the age-related decrease in muscle strength. The term is not used to describe the absence or fatigue of muscle cells or their inability to contract.

REF: p. 988

MULTIPLE RESPONSE

1. Which molecules are parts of the bone matrix? (select all that apply)
 - a. Collagen fibers
 - b. Elastin fibers
 - c. Proteoglycans
 - d. Glycoproteins
 - e. Epithelial cells

ANS: A, C, D

Bone matrix is composed of collagen fibers, proteoglycans, and glycoproteins.

REF: p. 969, Table 38-1 | p. 972

2. The nursing student has a good understanding of glycoproteins when he states which of the following glycoproteins are present in the bone? (select all that apply)
 - a. Osteocalcin
 - b. Sialoprotein
 - c. Bone albumin
 - d. Alpha-glycoprotein
 - e. Collagen

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ANS: A, B, C, D

Four glycoproteins are present in bone: sialoprotein, which binds easily with calcium; osteocalcin, which binds preferentially to crystallized calcium; bone albumin, which is identical to serum albumin and possibly transports essential nutrients to and from bone cells and maintains the osmotic pressure of bone fluid; and alpha-glycoprotein (α -glycoprotein). Collagen is not a glycoprotein.

REF: p. 972

3. The structures present in compact bone include the: (select all that apply)
 - a. haversian canals.
 - b. trabeculae.
 - c. canaliculi.
 - d. lamellae.
 - e. lacunae.

ANS: A, C, D, E

Compact bone is highly organized, solid, and extremely strong. The basic structural unit in compact bone is the haversian system. Each haversian system is made up of haversian canals, lamellae, and canaliculi. Trabeculae are found in spongy bone.

REF: p. 973

4. The shapes that represent bone classifications include: (select all that apply)
 - a. long.
 - b. flat.
 - c. short.
 - d. irregular.
 - e. round.

ANS: A, B, C, D

Bones can be classified by shape as long, flat, short (cuboidal), or irregular.

REF: p. 974

5. Which terms are used to describe skeletal muscle? (select all that apply)
 - a. Voluntary
 - b. Striated
 - c. Extrafusal
 - d. Fibrotic
 - e. Epithelial

ANS: A, B, C

Skeletal muscle has been termed voluntary, striated, or extrafusal.

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REF: p. 979

Chapter 39: Alterations of Musculoskeletal Function

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. The incidence of fractures of the pelvis is highest in:
 - a. preadolescent boys.
 - b. adolescent boys.
 - c. adolescent girls.
 - d. older adults.

ANS: D

The incidence of fractures of the upper femur, upper humerus, vertebrae, and pelvis is highest in older adults and is often associated with osteoporosis. Fractures of healthy bones, particularly the tibia, clavicle, and lower humerus, tend to occur in young persons and without gender preference.

REF: p. 991

2. A client is admitted to the hospital with a transverse fracture of the femur. Which statement best describes this type of fracture?
 - a. The fracture line is parallel to the bone.
 - b. The fracture line is straight across the bone.
 - c. The fracture line is perpendicular to the bone.
 - d. The fracture line is vertical to the shaft of the bone.

ANS: B

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A transverse fracture occurs straight across the bone. Such a fracture would not occur either perpendicularly or vertically in relationship to the bone. A linear fracture runs parallel to the long axis of the bone.

REF: p. 991

3. A 70-year-old diagnosed with osteoporosis fell and fractures the left leg at a location of pre-existing abnormality. Which term describes the fracture?
 - a. Fatigue
 - b. Stress
 - c. Pathologic
 - d. Greenstick

ANS: C

A pathologic fracture is a break at the site of a pre-existing abnormality, usually by force such as a fall that would not fracture a normal bone. A fatigue fracture is caused by abnormal stress or torque applied to a bone with normal ability to deform and recover. Stress fractures occur in normal or abnormal bone that is subjected to repeated stress, such as occurs during athletics. A greenstick fracture perforates one cortex and splinters the spongy bone.

REF: p. 992

4. A 32-year-old obese male begins a jogging routine. A week after beginning, he fractures his leg. This is referred to as what type of fracture?
- Comminuted
 - Greenstick
 - Fatigue
 - Compound

ANS: C

A fatigue fracture is caused by abnormal stress or torque applied to a bone that usually occurs in individuals who engage in a new activity that is both strenuous and repetitive. A comminuted fracture is one in which a bone breaks into two or more fragments. A greenstick fracture perforates one cortex and splinters the spongy bone. A compound fracture is a complete and incomplete fracture that breaks through the skin.

REF: p. 993

5. Transchondral fractures are most prevalent in:
- adolescents.
 - older adults.
 - infants.
 - premenopausal females.

ANS: A

Transchondral fractures are most prevalent in adolescents. Such fractures are not associated with older adults, infants, or premenopausal females.

REF: p. 993

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6. A 35-year-old suffers a broken clavicle following a motor vehicle accident. X-ray reveals that the bone surfaces in the joint partially lost contact with each other. This condition is called:
- dislocation.
 - subluxation.
 - distortion.
 - nonunion.

ANS: B

Subluxation occurs when contact between the opposing joint surfaces of a fracture are partially lost. Dislocation is the displacement of one or more bones in a joint in which the opposing joint surfaces lose contact entirely. Distortion is not a term applicable to fracture healing. Nonunion is failure of the bone ends to grow together.

REF: p. 994

7. What term is used to describe a torn ligament?
- Sprain
 - Strain
 - Disunion
 - Subluxation

ANS: A

A torn ligament is also called a sprain. Tearing or stretching of a muscle or tendon is commonly known as a strain. Disunion occurs when fracture ends fail to heal. Subluxation occurs when contact between the opposing joint surfaces of a fracture are partially lost.

REF: p. 995

8. A 36-year-old reports pain and weakness in the elbow. MRI reveals inflammation of the tendon and the presence of microtears where it attaches to bone. This condition is called:
- periostitis.
 - muscle strain.
 - bursitis.
 - epicondylopathy.

ANS: D

When force is sufficient to cause microscopic tears (microtears) in tissue, the result is known as epicondylopathy. Such an injury is not referred to as periostitis which involves the presence of inflammation. Muscle strain is local muscle damage that occurs when the muscle is stretched beyond capacity. Bursitis is inflammation of the bursae.

REF: p. 995

9. Which clinical finding would be expected in the patient with rhabdomyolysis?
- Sweating
 - Dark urine
 - Yellow color to the skin
 - Lower extremity swelling

ANS: B

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A classic triad of muscle pain, weakness, and dark urine is considered typical of rhabdomyolysis. Neither sweating, yellow skin, nor lower extremity swelling is associated with rhabdomyolysis.

REF: p. 997

10. The diagnosis of rhabdomyolysis is based on the measurement of which laboratory value?
- White blood cell count (WBC)
 - Antinuclear antibodies
 - Aspartate aminotransferase
 - Creatine kinase (CK)

ANS: D

The most important and clinically useful measurement in rhabdomyolysis is serum CK. A level five times the upper limit of normal (about 1000 units per liter) is used to identify rhabdomyolysis. While the other options may be measured, they are not used as diagnostic criteria.

REF: p. 998

11. A 70-year-old female presents with a hip fracture secondary to osteoporosis. This condition is caused by an increase in bone:
- density.
 - formation.

- c. resorption.
- d. mineralization.

ANS: C

In osteoporosis, old bone is being resorbed faster than new bone is being made, causing the bones to lose density, becoming thinner, and more porous. Mineralization is not increased by osteoporosis.

REF: p. 1001

12. When a 70-year-old female presents with a hip fracture she is diagnosed with osteoporosis. One factor that most likely contributed to her condition is:
- a. increased androgen levels.
 - b. decreased estrogen levels.
 - c. strenuous exercise.
 - d. excessive dietary calcium.

ANS: B

Osteoporosis can be attributed to decreased estrogen levels. Osteoporosis is not attributed to increased androgen levels, excessive exercise, or excessive dietary calcium.

REF: p. 1002

13. Osteomalacia is a result of:
- a. collagen breakdown in the bone matrix.
 - b. excessive bone resorption.
 - c. crowding of bone marrow by excessive bone growth.
 - d. inadequate bone mineralization.

ANS: D

Osteomalacia is a metabolic disease characterized by inadequate and delayed mineralization of osteoid in mature compact and spongy bone. Idiopathic osteoarthritis leads to collagen breakdown. Giant cell tumors promote excessive bone resorption. Abnormal remodeling causes crowding of bone marrow.

REF: p. 1006

14. A 56-year-old male was admitted to the hospital with a diagnosis of osteomalacia. History reveals that he underwent bariatric surgery 3 years earlier. What is the common link between the surgery and the development of osteomalacia?
- a. Impaired phosphate absorption
 - b. Increased calcium excretion
 - c. Vitamin D deficiency
 - d. Impaired vitamin C metabolism

ANS: C

Impaired nutrient absorption from bariatric surgery can result in vitamin D deficiency. Vitamin D deficiency is the most important factor in the development of osteomalacia. Neither impaired phosphate absorption, increased calcium excretion, nor impaired vitamin C metabolism is a cause of osteomalacia.

REF: p. 1006

15. A disorder similar to osteomalacia that occurs in growing bones of children is termed:
- Paget disease.
 - rickets.
 - osteomyelitis.
 - osteosarcoma.

ANS: B

Abnormal bone growth in children is termed rickets. Paget disease is a state of increased metabolic activity in bone characterized by abnormal and excessive bone remodeling, both resorption and formation. Osteomyelitis is a bone infection while osteosarcoma is a form of bone cancer.

REF: p. 1006

16. The cause of Paget disease is:
- fluoride deficiency.
 - unknown at present.
 - excess vitamin A.
 - osteogenic sarcoma.

ANS: B

The cause of Paget disease is unknown, but studies have implicated both genetic and environmental factors. There is no known association between Paget disease and fluoride deficiency, excess vitamin A, or osteosarcoma.

REF: p. 1007

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17. What is the primary organism responsible for osteomyelitis?
- Staphylococcus aureus*
 - Salmonella*
 - Mycobacterium*
 - Haemophilus influenza*

ANS: A

Staphylococcus aureus remains the primary microorganism responsible for osteomyelitis. While the other options are possible causes, they are not as predominant as is *Staphylococcus aureus*.

REF: p. 1008

18. Osteoarthritis, a degenerative joint disease, is characterized by loss of:
- the epiphyses.
 - articular cartilage.
 - synovial fluid.
 - the joint capsule.

ANS: B

Osteoarthritis is caused by loss of the articular cartilage. It is not associated with the epiphyses of bones, synovial fluid, or the joint capsule.

REF: p. 1009

19. Researchers now believe that rheumatoid arthritis (RA) is a result of:
- an ineffective antiviral agent.
 - an autoimmune disease.
 - a complication of rheumatic fever.
 - a superficial joint injury.

ANS: B

RA is now thought to be an autoimmune disease. There is no proof that RA is associated with ineffective antiviral therapy, rheumatic fever, or joint injuries.

REF: p. 1012

20. A 34-year-old female was recently diagnosed with rheumatoid arthritis (RA). Physical examination revealed that inflammation is noted in various:
- synovial membranes.
 - short bones.
 - subchondral bones.
 - bursae sacs.

ANS: A

Inflammation of RA starts in the synovial membrane. The inflammation is not associated with short bones, subchondral bones, or bursae sacs.

REF: p. 1012

21. A 54-year-old male was recently diagnosed with rheumatoid arthritis (RA). Which of the following is the expected treatment of choice?
- Nonsteroidal anti-inflammatory drugs (NSAIDs)
 - Gold salts
 - Methotrexate
 - Colchicine

ANS: C

Methotrexate remains the first line of treatment for RA. Neither NSAIDs, gold salts, nor colchicine is a treatment of choice for RA.

REF: p. 1015

22. A 21-year-old is diagnosed with ankylosing spondylitis (AS). The most likely joint to be affected would be the:
- sacroiliac.
 - carpal.
 - shoulder.
 - knee.

ANS: A

AS is a chronic, inflammatory joint disease characterized by stiffening and fusion (ankylosis) of the spine and sacroiliac joints. AS is not associated initially with the carpal joints, the shoulder, or the knees.

REF: p. 1017

23. Which of the following people is at highest risk for the development of gout?
- Men aged 40-50 years
 - Premenopausal women
 - Male adolescents
 - Female children

ANS: A

People at highest risk for gout are men aged 40-50 years of age. Gout is rare in children, adolescent males, and premenopausal women.

REF: p. 1018

24. The inflammatory symptoms of classic gouty arthritis are caused by the crystallization of _____ within the synovial fluid.
- purines
 - pyrimidines
 - monosodium urate
 - acetic acid

ANS: C

In classic gouty arthritis, monosodium urate crystals form and are deposited in joints and their surrounding tissues, initiating a powerful inflammatory response. Uric acid is a result of purine metabolism, but purine is not present in the joint. Gout is not caused by an increase in pyrimidines or acetic acid.

REF: p. 1018

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25. A 46-year-old male diagnosed with gouty arthritis is at high risk for developing:
- cholelithiasis.
 - myocarditis.
 - renal stones.
 - liver failure.

ANS: C

Renal stones are 1000 times more prevalent in individuals with primary gout than in the general population. Gouty arthritis does not appear to increase the risk for the development of cholelithiasis, myocarditis, or liver failure.

REF: p. 1019

26. What is the most common aggravating trigger of gouty arthritis attacks?
- Trauma
 - Anemia
 - High-fat foods
 - Lack of exercise

ANS: A

Trauma is the most common aggravating factor of an acute gouty exacerbation. Gout is not triggered by anemia or lack of exercise. Gout is not caused by high-fat foods, but rather high-purine foods.

REF: p. 1019

27. The chronic stage of gout, characterized by crystalline deposits in cartilage, synovial membranes, and soft tissue, is called:
- monoarticular arthritis.
 - tophaceous gout.
 - asymptomatic hyperuricemia.
 - complicated gout.

ANS: B

Tophaceous gout is the third and chronic stage of the disease. It is characterized by a progressive inability to excrete uric acid, which expands the urate pool. This causes urate crystal deposits (tophi) to appear in cartilage, synovial membranes, tendons, and soft tissue. The characteristic crystalline deposits are not associated with monarticular or complicated gout. Asymptomatic hyperuricemia would not lead to crystalline deposits.

REF: p. 1019

28. A 32-year-old male was injured in a motor vehicle accident and confined to bed for 3 weeks. During this time, the size and strength of muscle fibers decreased, a condition referred to as:
- myelodysplasia.
 - ischemic atrophy.
 - disuse atrophy.
 - fibromyalgia.

ANS: C

The term disuse atrophy describes the pathologic reduction in normal size of muscle fibers after prolonged inactivity from bed rest, trauma (casting), or local nerve damage as can be seen with spinal cord trauma or polio. Ischemic atrophy is due to decreased blood flow. Such an experience would not result in either myelodysplasia or fibromyalgia.

REF: p. 1021

29. Fibromyalgia is a chronic musculoskeletal disorder characterized by:
- pain resulting from joint and muscle inflammation.
 - muscle pain in the back and gastrointestinal symptoms.
 - neurologic pain in the skeletal muscles.
 - diffuse pain, fatigue, and tender points.

ANS: D

Fibromyalgia is characterized by diffuse pain, fatigue, and point tenderness and the absence of systemic or localized inflammation. Fibromyalgia is not related to specific back pain and is not manifested by gastrointestinal upset. Nor is it related to neurologic pain in muscles.

REF: p. 1022

30. The most common cause of toxic myopathy is:
- infection.
 - a tumor.
 - alcoholism.
 - osteoporosis.

ANS: C

Alcohol remains the most common cause of toxic myopathy.

REF: p. 1026

31. A malignant tumor of striated muscle tissue origin commonly found on the neck is called a:
- myelogenic tumor.
 - giant cell tumor.
 - rhabdomyosarcoma.
 - rhabdomyoma.

ANS: C

The malignant tumor of striated muscle is called rhabdomyosarcoma. They are located in the muscle tissue of the head, neck, and genitourinary tract in 75% of cases. Myelogenic tumors originate from various bone marrow cells. Giant cell tumor is the sixth most common of the primary bone tumors. A rhabdomyoma is an extremely rare benign tumor of muscle that generally occurs in the tongue.

REF: p. 1031

32. A 60-year-old male presents with swelling and pain in the knee. CT reveals a tumor has developed from a pre-existing benign bone lesion. This supports which diagnosis?
- Secondary chondrosarcoma
 - Rhabdomyoma
 - Rhabdomyosarcoma
 - Fibrosarcoma

ANS: A

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Chondrosarcoma is the second most common primary malignant bone tumor and is a tumor of middle-aged and older adults. Chondrosarcomas that develop from a pre-existing benign bone lesion are known as secondary chondrosarcomas. Rhabdomyoma is an extremely rare benign tumor of muscle that generally occurs in the tongue. The malignant tumor of striated muscle is called rhabdomyosarcoma. A fibrosarcoma is a solitary tumor that most often affects the metaphyseal region of the femur or tibia.

REF: p. 1030

MULTIPLE RESPONSE

- Signs and symptoms of subluxation include: (select all that apply)
 - Pain
 - Swelling
 - Hemorrhage
 - Limitation of movement
 - Joint deformity

ANS: A, B, D, E

Signs and symptoms of dislocations or subluxations include pain, swelling, limitation of motion, and joint deformity.

REF: p. 994

2. What is the term used to identify a pattern of bone destruction indicative of an aggressive malignant tumor? (select all that apply)
- Moth-eaten
 - Permeative
 - Geographic
 - Radial
 - Selective

ANS: A, B, C

Three patterns of bone destruction by bone tumors have been identified: (1) the geographic pattern, (2) the moth-eaten pattern, and (3) the permeative pattern. Radial and selective are not considered patterns of malignancy.

REF: p. 1028

COMPLETION

1. To make a diagnosis of fibromyalgia, tenderness must be present in ____ of the 18 points necessary for diagnosis.

ANS:

11

Tenderness in 11 of these 18 points is necessary for diagnosis along with a history of diffuse pain.

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REF: p. 1022

Chapter 40: Alterations of Musculoskeletal Function in Children

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. While performing an assessment of a 2-month-old, the nurse notes a positive Ortolani click. The nurse would suspect the child has:
 - a. a hip fracture.
 - b. hip dysplasia.
 - c. osteogenesis imperfecta.
 - d. osteomyelitis.

ANS: B

Ortolani click is symptomatic of developmental dysplasia of the hip. A hip fracture would be evident by shortening of the leg and external rotation. Osteogenesis imperfecta is diagnosed by fractures. Osteomyelitis is diagnosed by fever and infection.

REF: p. 1039

2. A 9-month-old was diagnosed with osteogenesis imperfecta (OI). This disease is caused by:
 - a. uterine teratogens.
 - b. a genetic defect.
 - c. malnutrition.
 - d. trauma.

ANS: B

OI (brittle bone disease) is a spectrum of disease caused by genetic mutation in the gene that encodes for type I collagen, the main component of bone and blood vessels.

OI (brittle bone disease) is not due to teratogens, malnutrition, or a fracture.

REF: p. 1039

3. A 9-month-old male was diagnosed with osteogenesis imperfecta (OI). This disease is caused by errors in the synthesis of:
 - a. elastin.
 - b. glycoproteins.
 - c. collagen.
 - d. calcium salts.

ANS: C

OI (brittle bone disease) is a spectrum of disease caused by genetic mutation in the gene that encodes for type I collagen. OI (brittle bone disease) is not caused by faulty synthesis of elastin, glycoproteins, or calcium salts.

REF: p. 1039

4. Children with osteogenesis imperfecta (OI) are at high risk for frequent:
 - a. bone fractures.
 - b. shoulder dislocations.
 - c. bone infections.

- d. joint injuries.

ANS: A

Children with OI experience frequent bone fractures. They are not as susceptible for shoulder dislocations, bone infections, or other joint injuries.

REF: p. 1039

5. A 1-year-old female was diagnosed with osteogenesis imperfecta (OI). Which complication must be monitored for?
- Congestive heart failure
 - Liver failure
 - Aortic aneurysm
 - Pulmonary emboli

ANS: C

Because type I collagen is also the main component of blood vessels, vascular deformity, such as aortic aneurysm, can occur. Neither congestive heart failure, liver failure, nor pulmonary emboli are associated with osteogenesis imperfecta (OI).

REF: p. 1039

6. Legg-Calvé-Perthes (LCP) disease affects which of the following joints?
- Vertebral
 - Shoulder
 - Hip
 - Knee

ANS: C

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LCP affects the hip. This condition is not associated with the vertebrae, the shoulder, or the knee.

REF: p. 1044

7. Osgood-Schlatter disease causes inflammation of the:
- shoulder joint.
 - patellar tendon.
 - elbow ligaments.
 - hip cartilage.

ANS: B

Osgood-Schlatter affects the patella, not the shoulder, elbow, or hip.

REF: pp. 1044-1045

8. Which type of scoliosis accounts for the majority of the cases of scoliosis?
- Idiopathic
 - Infectious
 - Iatrogenic
 - Secondary

ANS: A

Eighty percent of all scoliosis is idiopathic.

REF: p. 1046

9. The treatment of Osgood-Schlatter disease includes:
- steroids.
 - restriction from physical activity.
 - intense physical therapy.
 - knee replacement surgery.

ANS: B

The primary treatment of Osgood-Schlatter disease includes restriction from physical activity.

The primary treatment does not include steroids, intense physical therapy, or knee replacement.

REF: p. 1045

10. Duchenne muscular dystrophy (DMD) has a(n) _____ inheritance pattern.
- autosomal recessive
 - X-linked recessive
 - Y-linked dominant
 - autosomal dominant

ANS: B

DMD is X-linked, occurring only in boys.

REF: p. 1046

11. The onset of Duchenne muscular dystrophy (DMD) most often occurs at:
- NURSINGTB.COM
- 3-6 months of age.
 - preschool years.
 - school age.
 - the onset of puberty.

ANS: B

Boys with DMD will present in the preschool years with muscle weakness, difficulty walking, and large calves.

REF: p. 1046

12. A 3-year-old male is diagnosed with Duchenne muscular dystrophy. Treatment will include:
- aspirin.
 - antivirals.
 - steroids.
 - chemotherapy.

ANS: C

Treatment with steroids can prolong the ability to walk by several years and improves life expectancy. Treatment does not include aspirin, antivirals, or chemotherapy.

REF: p. 1046

13. A 22-year-old female whose brother is diagnosed with Duchenne muscular dystrophy (DMD) wants to know if her children will inherit it. A fairly accurate test to identify female carriers of the disease is measurement of serum levels of:
- dystrophin.
 - myoglobin.
 - creatine kinase (CK).
 - troponin 1.

ANS: C

Diagnosis is confirmed by measuring the blood CK level, which is sometimes 100 times the normal level, with confirmation by genetic testing for mutations in the dystrophin gene. None of the other options is relevant to this screening.

REF: p. 1046

14. A 13-year-old presents with pain at night, cough, and dyspnea and is diagnosed with a metastasizing malignant bone tumor. The most likely type of tumor is:
- nonossifying fibroma.
 - chondrosarcoma.
 - Ewing sarcoma.
 - osteosarcoma.

ANS: D

With osteosarcoma, the most common presenting complaint is pain. Night pain, awakening a child from sleep, is a particularly foreboding sign. There may be swelling, warmth, and redness caused by the vascularity of the tumor. Symptoms may also include cough, dyspnea, and chest pain if lung metastasis is present. This symptomatology is not associated with the other options.

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REF: p. 1049

15. Osteosarcoma is most likely present in the _____ of long bones.
- epiphyses
 - metaphyses
 - marrow
 - osteocytes

ANS: B

Osteosarcoma occurs mainly in the metaphyses of long bones near sites of active physical growth, not in the epiphyses. Osteosarcoma is not associated with the marrow or osteocytes.

REF: p. 1049

16. Ewing sarcoma originates from:
- osteoblasts.
 - epithelial cells.
 - the spleen.
 - the bone marrow.

ANS: D

Ewing sarcoma originates from the bone marrow. This tumor does not originate from osteoblasts, epithelial cells, or the spleen.

REF: p. 1049

17. A major predictor of poor prognosis for Ewing sarcoma is:
- age of onset.
 - size of tumor.
 - presence of metastasis.
 - gender of child.

ANS: C

Metastasis at diagnosis is another poor prognostic indicator, with 5-year survival rate dropping to under 40%.

REF: p. 1050

MULTIPLE RESPONSE

- A 6-year-old male presents with fever, pain, swelling, and warmth and is diagnosed with osteomyelitis. In addition to the clinical symptoms, the nurse would expect elevations in which lab tests? (select all that apply)
 - C-reactive protein
 - White blood cell count
 - Red cell count
 - Erythrocyte sedimentation rate (ESR)
 - Liver enzymes

ANS: A, B, D

Children often will present with fever, ~~N~~^R~~P~~~~T~~^N~~G~~~~B~~~~C~~^M elevated white blood cell count (50-70%), elevated C-reactive protein (98%), and elevated ESR (90%).

REF: p. 1042

COMPLETION

- Polyarthritis is a type of juvenile arthritis in which more than _____ joints are affected.

ANS: 3

REF: p. 1043

- Incidence of Legg-Calvé-Perthes (LCP) disease peaks at age_____.

ANS:

6

LCP disease is a common osteochondrosis usually occurring in children between the ages of 3 and 10 years, with a peak incidence at 6 years.

REF: p. 1044

Chapter 41: Structure, Function, and Disorders of the Integument
Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. Fat cells are located in the:
 - a. epidermis.
 - b. dermis.
 - c. hypodermis.
 - d. fascia beneath the skin.

ANS: C

The hypodermis, also referred to as the subcutaneous layer, is an underlying layer of connective tissue that contains macrophages, fibroblasts, and fat cells. Fat cells are not found in the epidermis, the dermis, or the fascia

REF: p. 1053

2. Of the sweat glands, the _____ glands are most abundant in the axillae and genital areas.
 - a. eccrine
 - b. apocrine
 - c. sebaceous
 - d. subcutaneous

ANS: B

The apocrine sweat glands are located in the axillae, scalp, face, abdomen, and genital areas. The eccrine sweat glands are ~~NURSINGTB.COM~~ distributed over the body, with the greatest numbers in the palms of the hands, soles of the feet, and forehead. Neither sebaceous nor subcutaneous glands are located in the axillae and genital areas.

REF: p. 1053

3. To promote efficient wound healing, which dressing should be applied to a superficial ulcer?
 - a. Thick and dry
 - b. Flat and moist
 - c. Bulky and dry
 - d. None

ANS: B

Superficial ulcers should be covered with flat, moisture-retaining dressings.

Superficial ulcers should not be covered with dressings that are dry and thick (bulky).

Dressings should not be avoided.

REF: p. 1060

4. Individuals of which descent are more prone to developing keloids?
 - a. Black
 - b. Northern European
 - c. Asian
 - d. Native American

ANS: A

Blacks are at greater risk for the development of keloids. Neither Northern Europeans, Asians, nor Native Americans are at great risk for the development of keloids.

REF: p. 1060

5. A wound scar that is sharply elevated, irregularly shaped, and progressively enlarging is a result of excessive amounts of _____ accumulated during connective tissue repair.
- elastin
 - collagen
 - keratin
 - calcification

ANS: B

Irregular scar formation is due to excessive fibroblast activity and collagen formation. Irregular scar formation is not due to excessive elastin, keratin, or calcification.

REF: p. 1060

6. An increase in _____ is associated with pruritus.
- substance P
 - norepinephrine
 - dopamine
 - acetylcholine

ANS: D

Acetylcholine, not substance P, is one of the itch mediators. Neither norepinephrine nor dopamine is considered an itch mediator.

REF: p. 1060

7. Which cells are involved in initiating immune responses in the skin?
- Langerhans cells
 - Merkel cells
 - Keratinocytes
 - Melanocyte

ANS: A

The Langerhans cells process the antigen and carry it to T cells. T cells then become sensitized to the antigen, inducing the release of inflammatory cytokines and the symptoms of dermatitis. Merkel cells are associated with nerve cells. Keratinocytes are part of the epidermal layer of the skin and are not involved in immune responses. Melanocytes synthesize the skin's pigment.

REF: p. 1061

8. A 25-year-old paralyzed male develops a dermal pressure ulcer. When assessing the patient's skin, which finding is the first indication of this ulcer?
- Redness
 - Whiteness
 - Indurations
 - Ulceration

ANS: A

The initial sign of a pressure ulcer is redness, not whiteness. Induration and ulceration occur in later stages.

REF: p. 1055

9. Pityriasis rosea is caused by a:

- a. parasite.
- b. virus.
- c. bacteria.
- d. fungus.

ANS: B

Pityriasis rosea is caused by a virus. Pityriasis rosea is not caused by a parasite, a bacterium, or a fungus.

REF: p. 1063

10. A 42-year-old female presents with raised red lesions with a brownish scale. She was diagnosed with discoid lupus erythematosus. This disorder is related to:

- a. infection.
- b. trauma.
- c. autoimmunity.
- d. cancer.

ANS: C

Discoid lupus is related to autoimmunity, not infection, trauma, or cancer.

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REF: p. 1064

11. A 45-year-old male presents with a chronic blister-forming disease of the skin and oral mucous membranes. The nurse would recognize this condition as:

- a. lupus erythematosus.
- b. pemphigus.
- c. psoriasis.
- d. eczema.

ANS: B

Pemphigus is manifested by chronic blister formation. Lupus erythematosus is manifested by rash and arthritis, not blisters. Psoriasis is manifested by gray-white skin plaques. Eczema is not manifested by blisters.

REF: p. 1065

12. If a patient has carbuncles, the infection will be located in the:

- a. hair follicles.
- b. papillary layer of the dermis.
- c. reticular layer of the dermis.
- d. subcutaneous tissue.

ANS: A

Carbuncles are a collection of infected hair follicles and usually occur on the back of the neck, the upper back, and the lateral thighs. Carbuncles are not associated with the papillary or reticular layers of the dermis or the subcutaneous tissue.

REF: p. 1066

13. A 50-year-old male recently underwent a liver transplant and is taking immunosuppressive drugs. He now has painful vesicular eruptions on the face and trunk. He reports that he had chickenpox as a child. Which of the following is the most likely diagnosis based on his chicken pox history?
- a. Erysipelas
 - b. Poliomyelitis
 - c. Warts
 - d. Herpes zoster

ANS: D

Herpes zoster causes shingles, a disorder similar to chicken pox. Erysipelas is caused by strep. Poliomyelitis is not manifested by painful vesicles. Warts are not painful.

REF: p. 1067

14. A 20-year-old female presents with vaginal itch and thin-walled pustular lesions and is diagnosed with candidiasis. This condition is caused by a:
- a. yeast-like fungus.
 - b. virus.
 - c. bacterium.
 - d. parasite.

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ANS: A

Candidiasis is caused by a yeast-like fungus, not a virus, a bacterium, or a parasite.

REF: p. 1068

15. For a patient with candidiasis, which factor will exacerbate the condition?
- a. Poor hygiene
 - b. Older age
 - c. Systemic antibiotics
 - d. Anemia

ANS: C

Candidiasis is exacerbated by the use of systemic antibiotics because the antibiotics eliminate normal flora. Candidiasis is not exacerbated by poor hygiene, advanced age, or anemia.

REF: p. 1068

16. When assessing a patient diagnosed with localized scleroderma, which changes in the skin will be observed?
- a. Cyanosis
 - b. Hyperpigmented
 - c. Necrosis
 - d. Thickening

ANS: D

Localized scleroderma is manifested by thickening, not cyanosis, of the skin. Localized scleroderma is not manifested by necrosis or hyperpigmentation.

REF: p. 1069

17. A 52-year-old female diagnosed with systemic scleroderma is at risk for which complication?
- Cutaneous vasculitis
 - Raynaud phenomenon
 - Cellulitis
 - Infection

ANS: B

Scleroderma can trigger Raynaud phenomenon. Scleroderma is not associated with vasculitis, cellulitis, or infection.

REF: p. 1069

18. A 13-year-old female is concerned about several pigmented skin lesions on her body. Her primary care provider tells her that these lesions must be monitored because of their ability to transform into malignant melanoma. These lesions are referred to as:
- macules.
 - nevi.
 - plaques.
 - keloids.

ANS: B

Nevi may undergo transition to malignant melanoma. Neither macules, plaques, nor keloids undergo transition to malignant melanoma.

REF: p. 1070

19. A patient wants to know which malignant skin lesion is the most serious. The correct response is:
- basal cell carcinoma.
 - squamous cell carcinoma.
 - Kaposi sarcoma (KS).
 - malignant melanoma.

ANS: D

Malignant melanoma is the most serious skin cancer. None of the remaining options poses such a significant health risk.

REF: p. 1070

20. A 40-year-old is diagnosed with skin cancer. It is explained that the most important risk factor for skin cancer is:
- amount of direct sun exposure at a young age.
 - amount of sun exposure over age 50.
 - lifetime amount of sun exposure.
 - living in equatorial regions where the sun is most intense.

ANS: A

Protection from the sun, particularly during the childhood years of life, significantly reduces the risk of skin cancer in later years.

REF: pp. 1070-1071

21. A 27-year-old male lung transplant patient developed Kaposi sarcoma (KS). The nurse knows that the cause of this patient's KS is most likely related to the fact that the patient:
- is malnourished.
 - was exposed to hepatitis B.
 - is immunosuppressed.
 - was diagnosed with cystic fibrosis.

ANS: C

KS is a vascular malignancy associated with immunodeficiency states and occurs among transplant recipients taking immunosuppressive drugs. KS is not directly related to malnourishment, exposure to hepatitis B, or being diagnosed with cystic fibrosis.

REF: p. 1073

22. A client is burned through all the dermis with only a few epidermal appendages intact. This burn is classified as:
- first degree.
 - superficial partial-thickness.
 - deep partial-thickness.
 - third degree.

ANS: C

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Deep partial-thickness burns involve the entire dermis, sparing skin appendages such as hair follicles and sweat glands. First-degree burns involve only the epidermis. Superficial partial-thickness burns involve deeper thickness. Third-degree burns involve destruction of the entire epidermis, dermis, and often underlying subcutaneous tissue.

REF: p. 1074, Table 41-8

23. Which of the following burns is most painful?
- First degree
 - Second degree
 - Charring
 - Third degree

ANS: B

Second degree burns leave tactile and pain sensors intact and are the most painful. All of the other options result in less pain.

REF: p. 1075

24. A 10-year-old male is playing with matches and gets burned. His burn is waxy white in appearance. This burn is classified as:
- first degree.
 - superficial partial-thickness.
 - deep partial-thickness.

- d. third degree.

ANS: C

Deep partial-thickness burns involve the entire dermis, sparing skin appendages such as hair follicles and sweat glands. These wounds look waxy white. First-degree burns are red and have no blisters. Superficial burns involve fluid-filled blisters. Third-degree burns are dry and have a leathery appearance.

REF: p. 1075

25. In burn injury patients, the rule of nines and the Lund and Browder chart are used to estimate:
- depth of burn injury.
 - possibility of infection.
 - degree of systemic involvement.
 - total body surface area burned.

ANS: D

The rule of nines estimates the total body surface area burned, not the depth of burn injury. It does not estimate the degree of systemic involvement. The possibility of infection is 100%.

REF: p. 1075

26. Which process would be expected in the first 24 hours following a serious burn?
- Increased capillary permeability
 - Diuresis
 - Decreased levels of stress hormones
 - Fluid overload

ANS: A

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Increased capillary permeability occurs, leading fluid to shift to interstitial spaces. Blood is shunted from the kidneys, so decreased urination occurs. Increased levels of stress hormones are secreted. Hypovolemia, not fluid overload, occurs.

REF: p. 1076

27. Hypovolemia in the early stages of burn shock is directly related to:
- decreased cardiac contractility and shunting of blood away from visceral organs.
 - increased capillary permeability and evaporative water loss.
 - hypometabolism and renal water loss.
 - bacterial infection of the wound and resulting bacteremia.

ANS: B

Hypovolemia occurs due to increased capillary permeability. Decreased cardiac contractility occurs, but this is not the direct cause of hypovolemia. Blood is shunted from the kidneys, so water loss does not occur. Bacterial infection is a risk, but it is not the cause of hypovolemia.

REF: p. 1076

28. A 28-year-old male is admitted to the burn unit 2 hours after receiving second- and third-degree burns over 50% of his body surface in an industrial explosion. Abnormal vital signs include low blood pressure and tachycardia. Lab results show a high hematocrit due to:
- sickle cell syndrome.

- b. fluid movement out of the vascular space.
- c. renal failure.
- d. increased vascular protein secondary to increased metabolism.

ANS: B

Fluid and protein movement out of the vascular compartment results in an elevated hematocrit. Sickle cell syndrome does not result in increased hematocrit. Renal failure can occur, but this does not result in an increase in the hematocrit. Protein loss leads to decreased protein, not increased.

REF: p. 1076

29. A 36-year-old male is experiencing frontotemporal hair recession. He is diagnosed with male pattern baldness, which is a form of:
- a. alopecia.
 - b. areata.
 - c. hirsutism.
 - d. paronychia.

ANS: A

Male-pattern alopecia is an inherited form of irreversible baldness with hair loss in the central scalp and recession of the frontotemporal hairline. Alopecia areata is an autoimmune T-cell-mediated chronic inflammatory disease directed against hair follicles that results in hair loss. Hirsutism is a form of abnormal hair growth in women. Paronychia is an inflammation of the cuticle.

REF: p. 1078

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30. A 15-year-old female reports abnormal hair growth on her face and body. This condition is referred to as:
- a. alopecia.
 - b. areata.
 - c. hirsutism.
 - d. paronychia.

ANS: C

Abnormal hair growth is referred to as hirsutism. Loss of hair is alopecia. Areata is a specific form of alopecia. Paronychia is an infection around the nail.

REF: p. 1078

MULTIPLE RESPONSE

1. Dermal appendages include which of the following structures? (select all that apply)
- a. Apocrine glands
 - b. Nails
 - c. Dermal papilla
 - d. Hair
 - e. Eccrine glands

ANS: A, B, D, E

The dermal appendages include the nails, hair, sebaceous glands, and the eccrine and apocrine sweat glands.

REF: p. 1053

2. A 70-year-old male nursing home resident developed a dermal pressure ulcer. This condition is most often caused by (select all that apply):
- a. Shearing forces
 - b. Friction
 - c. Moisture
 - d. Unrelieved pressure
 - e. High-carbohydrate diet

ANS: A, B, C, D

Pressure ulcers are ischemic ulcers resulting from unrelieved pressure, shearing forces, friction, and moisture. A high-carbohydrate diet is not a factor in development of pressure ulcers.

REF: p. 1055

3. A 30-year-old female has a history of frequent candidiasis. The area most likely affected includes: (select all that apply)
- a. plantar surface of the foot.
 - b. eyes.
 - c. ears.
 - d. mucous membranes.
 - e. vagina.

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ANS: D, E

Candidiasis does not affect the soles of the feet, the eyes, or the ears. It does affect the mucous membranes and the vagina.

REF: p. 1068

Chapter 42: Alterations of the Integument in Children

Huether & McCance: Understanding Pathophysiology, 6th Edition

MULTIPLE CHOICE

1. Acne vulgaris involves inflammation of the:
 - a. hair follicles.
 - b. sebaceous follicles.
 - c. eccrine glands.
 - d. apocrine glands.

ANS: B

Acne is a disorder of the pilosebaceous units, known as sebaceous follicles. Acne is not associated with inflammation of hair follicles, eccrine glands, or apocrine glands.

REF: p. 1084

2. A 4-month-old brought to his primary care provider for severe itching and skin lesions is diagnosed with atopic dermatitis. Which of the following would be elevated in this patient?
 - a. Immunoglobulin D (IgD)
 - b. Immunoglobulin M (IgM)
 - c. Immunoglobulin E (IgE)
 - d. Immunoglobulin G (IgG)

ANS: C

Most individuals affected with atopic dermatitis show an increased serum IgE level.

Neither IgD, IgM, nor IgG would be elevated. NURSINGTB.COM

REF: p. 1085

3. A 4-month-old is diagnosed with atopic dermatitis (AD). Which assessment finding will most likely support this diagnosis?
 - a. Blistering
 - b. Moist reddened skin
 - c. Dry, itchy skin
 - d. White patches

ANS: C

AD has a constellation of clinical features that include dry, sensitive, itchy, and easily irritated skin because the barrier function of the skin is impaired. Blistering, moist skin is not associated with AD. White patches are characteristic of other disorders, such as measles.

REF: p. 1085

4. A 14-year-old presents with severe acne. Which of the following promotes acne development?
 - a. Androgens
 - b. Estrogens
 - c. Gonadotropins
 - d. Glucocorticoids

ANS: A

Androgens, not estrogens, increase the size and productivity of the sebaceous glands and promote *P. acnes*. Neither gonadotropins nor glucocorticoids increase the size and productivity of the sebaceous glands and promote *P. acnes*.

REF: p. 1084

5. Bullous impetigo is caused by a strain of:

- a. *Staphylococcus aureus*.
- b. Molluscum contagiosum.
- c. *Escherichia coli*.
- d. *Candida albicans*.

ANS: A

S. aureus, not molluscum contagiosum, is currently the most common overall cause of impetigo. The most common overall cause of impetigo is not associated with *E. coli* or *Candida albicans*.

REF: p. 1086

6. A 2-month-old develops diaper dermatitis. A nurse will monitor this patient for which secondary infection?

- a. *Streptococcus*
- b. *Proteus*
- c. *Candida albicans*
- d. *Staphylococcus aureus*

ANS: C

Diaper dermatitis is secondarily infected with *Candida albicans*, not *Streptococcus*, *Proteus*, or *Staphylococcus aureus*.

REF: p. 1086

7. A 10-year-old presents with vesicles consistent with vesicular impetigo. What is the most likely cause of the condition?

- a. Herpes virus
- b. *Candida albicans*
- c. *Streptococcus pyogenes*
- d. Human papillomavirus (HPV)

ANS: C

Vesicular impetigo is caused by *Streptococcus pyogenes*.

Vesicular impetigo is not caused by herpes, *Candida albicans*, or HPV.

REF: p. 1086, Box 42-1

8. A 3-year-old develops tinea capitis after playing with the family dog. This infection is caused by a:

- a. fungus.
- b. bacterium.
- c. virus.
- d. parasite.

ANS: A

Tinea capitis is caused by a fungus, not bacteria, a virus, or a parasite.

REF: p. 1087

9. A 5-year-old is diagnosed with tinea corporis following development of lesions on the nonhairy parts of the face, trunk, and limbs. What is a common source of this condition?
- Kitten
 - Pet bird
 - Hamster
 - Horse

ANS: A

Tinea corporis is usually attributed to contact with young dogs and cats, not birds, hamsters, or horses.

REF: pp. 1087-1088

10. The nurse would correctly identify the medical term for ringworm as:
- impetigo.
 - tinea corporis.
 - thrush.
 - psoriasis.

ANS: B

Ringworm is also known as tinea corporis. Ringworm is not impetigo, thrush, or psoriasis.

REF: p. 1088

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11. A 4-month-old develops oral white spots and shallow ulcers. The pediatrician diagnoses thrush which is caused by:
- Escherichia coli*.
 - Streptococcal bacteria.
 - Candida albicans*.
 - Staphylococcal bacteria.

ANS: C

Thrush is caused by *Candida albicans*. Thrush is not caused by *E coli*, strep, or staph.

REF: p. 1088

12. A 6-year-old presents with slightly umbilicated, dome-shaped lesions on the skin of the trunk, face, and extremities. The child is diagnosed with molluscum contagiosum caused by a highly contagious:
- bacterium.
 - virus.
 - fungus.
 - parasite.

ANS: B

Molluscum contagiosum is caused by a virus. Molluscum contagiosum is not caused by a bacterium, a fungus, or a parasite.

REF: p. 1088

13. Molluscum contagiosum affects the skin and:
- nails.
 - tongue.
 - conjunctiva.
 - hair follicles.

ANS: C

Molluscum contagiosum affects the skin and conjunctiva. Molluscum contagiosum does not affect the nails, the tongue, or the hair.

REF: p. 1088

14. The nurse would be correct in identifying the duration of rubella as:
- 12 hours.
 - 1-3 days.
 - 7days.
 - 12-15 days.

ANS: B

Rubella has a duration of 1-3 days.

REF: p. 1088

15. Rubella, rubeola, and roseola are common communicable diseases caused by _____ infection.
- viral
 - bacterial
 - yeast
 - fungal

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ANS: A

Rubella, rubeola, and roseola are all caused by a virus, not bacteria, yeast, or a fungus.

REF: pp. 1088-1090

16. A 5-year-old develops chickenpox after exposure at a daycare center. This disease is caused by:
- a pox virus.
 - a herpes virus.
 - an adenovirus.
 - human papillomavirus (HPV).

ANS: B

Chickenpox is caused by a herpes virus. Chickenpox is not caused by a pox virus, adenovirus, or HPV.

REF: p. 1090

17. The nurse would correctly identify the etiologic agent of smallpox as:
- a bacterium.

- b. a virus.
- c. insects.
- d. mites.

ANS: B

The etiologic agent of smallpox is a virus, not bacteria, insects, or mites.

REF: p. 1090

18. The nurse would expect the occurrence of scabies to occur more commonly among children who:
- a. attend day care.
 - b. live in unsanitary conditions.
 - c. reside in rural areas.
 - d. play outside.

ANS: B

Scabies does occur in daycare centers, but it occurs more commonly in unsanitary conditions. Scabies is not associated directly with rural areas or outdoor play areas.

REF: p. 1091

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