**Chapter 1: Introduction**

*Multiple-Choice Questions:*

*Level I*

1. Which two populations account for the greatest difference in reference intervals?
   1. Adults and 12-year-olds
   2. Newborns and 12-year-olds
   3. Newborns and adults
   4. Whites and blacks

Correct answer: C

(Objective 1)

1. What component of plasma assists in the transport of bilirubin?
   1. Enzymes
   2. Hydrogen
   3. Calcium
   4. Albumin

Correct answer: D

(Objective 3)

1. When bilirubin is increased above the reference range, what disease process should be suspected if liver disease is ruled out?
   1. Increased osmotic pressure
   2. Hormone imbalance
   3. Decreased albumin
   4. Increased metabolism of hemoglobin

Correct answer: D

(Objective 3)

1. Which of the following can explain a decrease of erythrocytes?
   1. Blood loss
   2. Infection
   3. Dehydration
   4. Neutropenia

Correct answer: A

(Objective 4)

1. Platelets and coagulation proteins are circulating components responsible for what process?
   1. Hemolysis
   2. Hemostasis
   3. Normal cell production
   4. Immune defense

Correct answer: B

(Objective 2)

1. The focus of a clinical pathway is on changing structure and processes to achieve what goal?
   1. Provide assistance in difficult diagnostic cases
   2. Provide better patient outcomes
   3. Develop better communication among the health care team
   4. Decrease laboratory test utilization

Correct answer: B

(Objective 5)

1. Under Medicare for laboratory testing, what codes are used for billing purposes?
   1. Fee for service
   2. Prospective payment service
   3. Current procedural terminology
   4. Capitated payment plan

Correct answer: C

(Objective 5)

1. Under a capitated payment plan, the provider is decided upon by whom?
   1. The insurer
   2. The consumer or patient
   3. Health care organizations
   4. Physicians groups

Correct answer: A

(Objective 6)

1. Under managed cost plans, laboratory services must be considered as what?
   1. A source of revenue
   2. A managed resource
   3. A reimbursement source
   4. A cost

Correct answer: B

(Objective 6)

10. The predominant blood leukocyte found in children is the:

1. Monocyte.
2. Lymphocyte.
3. Neutrophil.
4. Eosinophil.

Correct answer: B

(Objective 1)

11. The cellular component of blood that is involved in hemostasis is:

a. Leukocyte.

b. Erythrocyte.

c. Thrombocyte.

d. Hemoglobin.

Correct answer: C

(Objective 2)

12. The protein found in erythrocytes that is responsible for oxygen transport is:

a. Albumin.

b. Gamma globulin.

c. Oxygen protein.

d. Hemoglobin.

Correct answer: D

(Objective 2)

13. Which of the following is NOT a cellular component of blood?

a. Leukocytes

b. Platelets

c. Erythrocytes

d. Albumin

Correct answer: D

(Objective 3)

14. The liquid portion of anticoagulated blood is called:

a. Serum.

b. Plasma.

c. Whole blood.

d. None of the above.

Correct answer: B

(Objective 3)

15. What percentage of the total blood volume is comprised of formed elements?

a. 55

b. 45

c. 100

d. 10

Correct answer: B

(Objective 3)

16. An abnormal test result is defined as:

a. The opposite of a normal test result.

b. A value that is outside the reference interval for a particular analyte.

c. A value that is below the reference range for multiple analytes.

d. A value that is above the reference range for a single analyte.

Correct answer: B

(Objective 4)

17. Payment for health care services under Medicare is based on:

a. PPS.

b. Fee for services.

c. Capitated pay.

d. None of the above.

Correct answer: A

(Objective 6)

18. In disease management, the term “practice guidelines” is synonymous with:

a. Critical pathway.

b. Clinical pathway.

c. Patient-focused approach.

d. Managed care.

Correct answer: B

(Objective 5)

19. Which of the following is NOT a role of the clinical laboratory professional?

a. Correlate lab results with appropriate disease states

b. Correlate lab results with disease pathophysiology

c. Correlate lab results with treatment

d. Order reflex tests

Correct answer: D

(Objective 5)

*Level II*

1. Which of the following is an expected finding in a newborn?

a. WBC count = 2 x 109/L

b. PLT count = 100 x 109/L

c. Hemoglobin = 17.0 g/dL

d. RBC count = 3.50 x 109/L

Correct answer: C

(Objective 1)

2. Which of the following blood cell components would be most influenced in a patient with tonsillitis?

a. Leukocyte

b. Erythrocyte

c. Thrombocyte

d. Hemoglobin

Correct answer: A

(Objective 2)

3. Which of the following formed elements could result in hypoxia if decreased?

a. Leukocytes

b. Erythrocytes

c. Platelets

d. None of the above

Correct answer: B

(Objective 2)

4. Which component of blood passes through blood vessel walls into surrounding tissues to defend the body against invading foreign antigens?

a. Red blood cells

b. Platelets

c. Leukocytes

d. Gamma globulin

Correct answer: C

(Objective 2)

5. Which of the following blood constituents is associated with increased red blood cell destruction?

a. Bilirubin

b. Albumin

c. Blood urea nitrogen

d. Immunoglobulins

Correct answer: A

(Objective 4)

6. All of the following must be taken into consideration when establishing a reference interval for a group of individuals EXCEPT:

a. The geographic area.

b. Age of the population.

c. Occupations of the population.

d. Sex of the population.

Correct answer: C

(Objective 4)

7. What is the main difference between capitated pay and fee-for-service pay?

a. Entity controlling the service and fees

b. Amount of reimbursement

c. Type of health care providers who can participate

d. The selection of beneficiaries by the insurer

Correct answer: A

(Objective 6)

8. What is the main difference between the clinical pathway and the critical pathway?

a. Nothing; they are the same thing.

b. The clinical pathway helps determine a method of diagnosis and treatment, whereas a critical pathway occurs after treatment has begun.

c. Physicians are reimbursed for services based on the clinical pathway used while the laboratory is reimbursed based on a critical pathway.

d. Critical pathways are developed by the physicians and clinical pathways are developed by the laboratory team.

Correct answer: B

(Objective 5)

9. Which of the following tests could be reflexed from an abnormal prothrombin time?

a. Molecular analysis of clotting factors

b. Complete blood count

c. Measurement of albumin

d. Hemoglobin analysis

Correct answer: A

(Objective 5)

10. Which of the following could be reflexed from an abnormal RBC count?

a. Prothrombin time

b. Blood urea nitrogen

c. Reticulocyte count

d. WBC count

Correct answer: C

(Objective 5)

*Short-Answer Questions:*

1. Explain how a reference interval is determined.

*Answer:* A reference interval for a given region is determined by calculating the mean for a group of “normal healthy” individuals. Conditions that must be considered include physiologic differences in a given population as well as the geographic area. Once the mean has been determined, a calculation to determine the standard deviation must be done. The range is calculated by taking the mean and 2 standard deviations above and below the mean value.

(Objective 1, Level II)

1. Name three blood analytes that show significantly different results in adults, children, and infants.

*Answer:* Hemoglobin is higher in infants and children than in adults. WBC counts are higher in infants than in children and adults. Differential results are different in children (inverted ratio of lymphs: neutrophils) than in infants and adults.

(Objective 1, Level I)

1. Explain how the hemostatic pathway is activated in times of need.

*Answer:* Traumatic events to body tissue stimulate the activation of repair mechanisms. As a result of both external and internal stimuli, the hemostatic pathway becomes activated in stages called primary, secondary hemostasis and fibrinolysis

(Objective 4, Level II)

1. List five ways to optimize laboratory test utilization to improve patient outcomes.

*Answer:*  Five ways to optimize laboratory test utilization include: Development of critical pathways, managing the test ordering system, instituting sequential testing protocols, eliminating incorrect use of tests, and designing wellness panels*.*

(Objective 5, Level I)

1. Give two reasons for transfusing leukoreduced, irradiated, packed red blood cells.

*Answer:* Reasons for transfusing leukoreduced packed red blood cells are: to decrease the risk of febrile nonhemolytic transfusion reactions, to decrease risk of HLA sensitization, and to decrease the risk of CMV transmission. Irradiation is used to reduce the risk of graft-versus-host disease.

(Objective 3, Level II)