60. For a teenage girl, the daily recommendations are:
   - Calories: 2200
   - Bread: 9 servings
   - Vegetables: 4 servings
   - Fruit: 3 servings
   - Milk: 3 servings
   - Meat: 2 servings

61. The benefits of a vegetarian diet are a decreased risk of coronary artery disease, colon cancer, obesity, and type 2 diabetes. The main disadvantage is the need for supplements to make up for nutrients primarily found in animal sources.

62. There is an increased need for nutrients during pregnancy because of rapid fetal growth and increased maternal metabolic needs, tissue growth, and blood volume.

63. For the pregnant woman, supplements of vitamins A, C, B12, and folic acid are recommended.

64. Things to be avoided by the pregnant woman are alcohol, caffeine, smoking, and drugs other than those prescribed by the healthcare provider.

65. During the first year, the infant should not be given honey or cow's milk.

66. Refer to page 632. Good dietary habits in children may be encouraged by eating at regular times, making meals enjoyable, offering a variety of foods, providing small servings, limiting sweets, offering new foods, and promoting physical activity.

67. A large part of the adolescent's diet may be comprised of fast foods.

68. Nursing home residents may have nutritional problems as a result of physical and cognitive impairments, the need for assistance with eating, restricted diets, reduced fluid intake, pressure sores, and food that lacks taste and texture.

69. In evaluating the nursing assistant:
   - Appropriate
   - Requires correction
   - Appropriate
   - Requires correction
   - Appropriate

70. Refer to Box 21-6 on page 636. The following are examples of foods allowed on the prescribed diet:
   - Clear liquid—bouillon, fat-free broth, grape, apple, and cranberry juice, popsicles, gelatin, tea, coffee, ginger ale
   - Full liquid—all clear liquids, strained cereals and soups, fruit and vegetable juices, milk, milkshakes, ice cream
   - Soft-low-fiber foods, with no whole grains, nuts, seeds, bran, fried meats, and no gas-producing vegetables

71. 2

72. 4

CHAPTER 22—FLUIDS AND ELECTROLYTES

Terms
1. d
2. f
3. h
4. a
5. e
6. b
7. c
8. i
9. g
10. j

11. Fluid and Particle Movement
   - The two fluid compartments in the body are extracellular (interstitial and intravascular) and intracellular. The majority of fluid in the body is contained in the intracellular compartment.
   - 1 L of fluid = 1 kg of body weight
   - Hypertonic—pulls fluid from cells
   - Hypotonic—fluid moves into the cells
   - Diffusion—carbon dioxide moves out of cells; sodium moves into nerve cells
   - Filtration—kidney function; water and small solutes move out
   - Osmosis—maintenance of blood components and plasma
   - Active transport—glucose moves into the cells.

12. The minimum hourly rate for urine output is 30 ml.
   The minimum daily urinary output is 600 ml.

Electrolytes
16. Sodium is the major extracellular electrolyte; potassium is the major intracellular electrolyte.

17. Refer to Box 22-1 on page 671. Common signs and symptoms of hypokalemia include headache, fatigue, and postural hypotension. Interventions include: measuring I&O, replacing sodium and fluids, and monitoring fluid losses.

18. Refer to Box 22-8 on page 673. Common signs and symptoms of hypokalemia include muscle weakness, leg cramps, nausea, vomiting, and reduced gastrointestinal function. Interventions include measuring I&O, monitoring patients on digoxin and diuretics, monitoring cardiac status, checking laboratory results, and administering supplements (diet, medications, IV).

19. Refer to Box 22-5 on page 674. The most serious problems associated with hyperkalemia are flaccid paralysis, anuria, and cardiac arrest. Interventions...
include restricting potassium intake, monitoring cardiac status, measuring I&O, anesthetizing bowel sounds, administering Kayexalate, and checking lab results.

20. Calcium is important for the formation of bones and teeth, blood clotting, neuromuscular activity, and enzyme activation.

21. Refer to Box 22-6 on page 675. Common signs and symptoms of hypocalcemia include nausea, vomiting, diarrhea, tingling, and muscle spasms. Interventions include monitoring vital signs, checking laboratory results, supplementing calcium (diet, medications), and implementing safety measures (seizure precautions, tracheostomy set at bedside).

In the figure, the nurse is assessing for the presence of (a) Chvostek's and (b) Trousseau's signs.

22. Refer to Box 22-8 on page 677. Possible causes of hypomagnesemia include reduced intake, large urinary losses, and impaired absorption (e.g., in alcoholism). Common signs and symptoms include mental changes and paresthesias. Interventions include monitoring vital signs, implementing safety measures (seizure precautions), and observing neuromuscular status.

23. The laboratory results indicate:
   - Hyponatremia
   - Hyperkalemia
   - Hypocalcemia
   - Hypermagnesemia

24. The following factors contribute to hypokalemia: vomiting (a), diarrhea (b), and diuretics (c).

25. 4

26. 4

27. 4

Acid-Base

28. pH range of the blood is 7.35 to 7.45.

29. Base substance—bicarbonate
   Acid substance—carbonic acid
   Ratio—20 bicarbonate to 1 carbonic acid

30. Acid-base balance is regulated by the blood buffers, respiratory system, and kidneys.

31. The pH goes down if carbonic acid is increased, and the respiratory system will respond by increasing the rate and depth of respirations.

32. The kidneys will eliminate bicarbonate if the pH of the blood increases to a more alkaline state.

33. 1

34. 3

35. 3

36. 1

37. 1

Nursing

38. Newborns have 70% to 80% fluid. This decreases to 45% to 55% in the older adult.

39. Older adults have changes in their body fluid amount, reduced kidney function, and may have increased sodium in their diet and decreased fluid intake. These individuals are at a greater risk for dehydration and postural hypotension.

40. Output includes urine, diarrhea, nasogastric suction, drainage, and emesis.

41. Refer to Box 22-10 on page 680. Signs and symptoms of respiratory acidosis include lethargy, disorientation, headache, decreased level of consciousness, dyspnea, tachycardia, and increased blood pressure.

42. Treatment for respiratory acidosis includes intermittent positive pressure breathing (IPPB), low-flow oxygen, antibiotics (for underlying infections, if present), bronchodilators, hydration, and correction of the underlying problem.

43. Refer to Boxes 22-12 and 22-13 on pages 681-682. Metabolic acidosis may be caused by: diarrhea, diabetic ketoacidosis, kidney dysfunction, and dehydration. Treatment includes correction of the underlying problem and administration of bicarbonate.

Metabolic alkalosis may be caused by: vomiting, excessive antacid intake, and gastric suction. Treatment includes correction of the underlying problem and administration of IV solutions.

44. Examples of nursing diagnoses include:
   - Fluid volume deficit or excess
   - Impaired skin integrity
   - Decreased cardiac output
   - Ineffective breathing pattern

Patient outcomes include:
   - Vital signs return to normal/expected range
   - Weight is stable
   - No edema
   - I&O balanced
   - Clear breath sounds
   - Laboratory chemistry and arterial blood gas values within normal/expected range

45. Nursing interventions for fluid, electrolyte, and acid-base imbalances include checking vital signs, measuring I&O, taking daily weights, checking laboratory results, observing patient status, monitoring IV infusions, administering medications and treatments, and promoting appropriate fluid and nutritional intake.

46. 2

47. 1
CHAPTER 47—CARE OF THE PATIENT WITH A BLOOD OR LYMPHATIC DISORDER

Components of Blood

<table>
<thead>
<tr>
<th>Component</th>
<th>Common Name</th>
<th>Normal Value</th>
<th>Function</th>
<th>Significance of Abnormality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erythrocytes</td>
<td>RBC</td>
<td>Men: 5.5 million per mL of blood</td>
<td>Carry oxygen to the cells from the lung and carbon dioxide away from the cells to the lungs.</td>
<td>Unhealthy chain reaction begins. Less oxygen transported to cells, slower breakdown and use of nutrients by cells. Less energy produced by cells, decreased cellular function.</td>
</tr>
</tbody>
</table>

- Factors necessary for the formation of erythrocytes: healthy conditions of the bone marrow, dietary substances such as iron and copper, plus essential amino acids and certain vitamins, especially vitamin B₁₂ and folic acid.
- Leukocytes: differential is an examination in which the different kinds of WBC are counted and reported as percentages of the total examined.

<table>
<thead>
<tr>
<th>Component</th>
<th>Common Name</th>
<th>Normal Value</th>
<th>Function</th>
<th>Significance of Abnormality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutrophils</td>
<td>Neutrophils</td>
<td>60–79%</td>
<td>Essential for phagocytosis; ingest bacteria and dispose of dead tissue.</td>
<td>Elevation may indicate infection.</td>
</tr>
<tr>
<td>Eosinophils</td>
<td>Eosinophils</td>
<td>1–4%</td>
<td>Play a role in allergic reactions and against parasitic worms.</td>
<td>May indicate allergic and parasitic disorders.</td>
</tr>
<tr>
<td>Basophils</td>
<td>Basophils</td>
<td>0.5–1%</td>
<td>Essential to nonspecific immune response.</td>
<td>Elevation may indicate tissue damage.</td>
</tr>
<tr>
<td>Monocytes</td>
<td>Monocytes</td>
<td>2–6%</td>
<td>Engulf foreign antigens and cell debris.</td>
<td>Increased in the recovery phase of bacterial infections, chronic inflammatory conditions, and monocytic leukemia.</td>
</tr>
<tr>
<td>Thrombocytes</td>
<td>Platelets</td>
<td>150,000 to 400,000 million per mL of blood</td>
<td>Function in the process of hemo-stasis. Assist in clotting formation.</td>
<td>Increased in granulocytic leukemia and decreased in thrombocytopenia or aplastic anemia.</td>
</tr>
</tbody>
</table>

Blood Clotting
See Figure 47-2 in the text.

Blood Groups
1. Type A: the red blood cells contain type A antigen and the plasma contains anti-B antibodies
2. Type B: the red blood cells contain B antigen and the plasma contains anti-A antibodies
3. Type AB (universal recipient): the red blood cells contain both type A and B antigens and the plasma contains neither anti-A nor anti-B antibodies
4. Type O (universal donor): contains neither anti-A or anti-B antibodies

Organs of the Lymphatic System
See Figure 47-4 in the text.

Lymphatic System
- Functions:
  1. Maintenance of fluid balance
  2. Production of lymphocytes
  3. Absorption and transportation of lipids from the intestine to the blood system.
- Structures:
  - Lymph and lymph vessels: maintaining the constancy of the fluid around each body cell.
  - Lymphatic tissues: filter impurities from the lymph and produce lymphocytes.
### Terms

1. F  
2. A  
3. R  
4. S  
5. P  
6. M  
7. L  
8. I  
9. N  
10. D  
11. J  
12. H  
13. G  
14. K  
15. O  
16. E  
17. C  
18. B  
19. Q

### Diagnostic Tests

<table>
<thead>
<tr>
<th>Diagnostic Test</th>
<th>Explanation of Procedure</th>
<th>Significance of Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBC</td>
<td>Several tests that assess the three major cells formed in bone marrow.</td>
<td>Detects many disorders of the hematological system and provides data for the diagnosis and evaluation of disorders of other body systems.</td>
</tr>
<tr>
<td>Red cell indices</td>
<td>Measurement of the size and hemoglobin content of erythrocytes.</td>
<td>Provides information about the average volume or size of a single RBC.</td>
</tr>
<tr>
<td>Peripheral smear</td>
<td>Often accompanies the differential WBC count and permits examination of the size, shape, and structure of individual RBCs and platelets.</td>
<td>A smear of peripheral blood is the most informative of all hematologic tests.</td>
</tr>
<tr>
<td>Schilling test</td>
<td>Measures the absorption of radioactive vitamin B$_12$ before and after parenteral injection of the intrinsic factor, by examination of the urinary excretion of vitamin B$_12$.</td>
<td>Diagnosing pernicious anemia.</td>
</tr>
<tr>
<td>Gastric analysis</td>
<td>In pernicious anemia, gastric secretions are minimal and pH remains elevated, even after injections of histamine.</td>
<td>Used to determine pernicious anemia.</td>
</tr>
<tr>
<td>Lymphangiography</td>
<td>Radiological examination in which contrast medium is injected into the lymphatic vessel of the foot or hand, followed by radiological visualization of the lymphatic system.</td>
<td>Used to detect metastatic involvement of the lymph nodes.</td>
</tr>
<tr>
<td>Bone marrow aspiration or biopsy</td>
<td>When the diagnosis is not clearly established by peripheral blood smears, bone marrow aspiration or biopsy is specific for establishing the diagnosis and for treatment response.</td>
<td>Done in persons with marked anemia, neutropenia (decreased number of WBCs), acute leukemia, and thrombocytopenia (decreased number of platelets).</td>
</tr>
</tbody>
</table>
Nursing Process

| Assessment | Malaise, fatigue, and weakness. Patient may relate history of illness, easy bruising, bleeding tendencies with petechiae and ecchymosis. Non-healing cuts and bruises, draining lesions, jaundice, and palpable subcutaneous nodules. Edema and tenderness in lymph nodes. Gastrointestinal symptoms, cardiovascular and respiratory changes. Neurological symptoms such as headache, numbness, tingling, paresthesia, and behavioral alternation. System-by-system approach to confirm patient complaints. |
| Nursing diagnoses | Risk for infection; risk for injury (bleeding, falls); fatigue; deficient knowledge; pain, acute; pain, chronic; ineffective tissue perfusion; impaired gas exchange; activity intolerance; ineffective coping; impaired skin integrity. |
| Planning | Determine the priority for nursing interventions from the list of nursing diagnoses according to Maslow’s hierarchy of needs and set goals accordingly. |
| Implementation | Place patient in private room. Avoid contact with visitors or staff members who have an infection. Stress careful hand washing to the patient and other caregivers. Assist in planning daily activities to include rest periods to decrease fatigue and weakness. Oxygen is given for dyspnea or excessive fatigue with exertion. Patient teaching stresses the disease process and continued medical follow-up. |
| Evaluation | Patient shows no signs of infections; temperature and WBC count are within normal limits. Patient has not fallen. Patient shows no signs of bleeding, or bleeding is controlled quickly. Patient is able to bathe self in 30 minutes without fatigue. Patient is able to explain measures to prevent infection and measures to prevent hemorrhage. Patient states no shortness of breath. |

Anemia

1. Hypovolemic anemia: deficiency in RBCs and other components due to hemorrhage
   - Aplastic anemia: unknown cause, may be congenital
   - Pernicious anemia: results from a metabolic defect
   - Iron deficiency anemia: red blood cells have decreased levels of hemoglobin
   - Sickle cell anemia: due to an abnormal crescent-shaped red blood cell

2. Aplastic anemia has two types. Congenital is caused by chromosomal abnormalities. Acquired aplastic anemia is caused by exposure to viruses, medications, chemicals, radiation, or chemotherapy.

3. Recurring infections accompanied by fever, fatigue, weakness, and general malaise. Dyspnea and palpitations may occur.

4. Transfusions are to be avoided if possible. This will aid in the prevention of iron overloading and the development of antibodies to tissue antigens.

5. Sickle cell anemia

6. Do not administer with antacids, may interfere with oral tetracycline
   - If taking liquid preparations use a straw to drink and dilute with juice or water
   - Store medications out of reach of children
   - Taking with vitamin C will enhance absorption

7. Pain

8. Management is supportive. Morphine and hydromorphone are preferred. Continuous delivery is preferred over pm administration.

9. The Z-track method is used to prevent tissue irritation
2. Yes, TIAs are significant because at least one in three people who experience them will experience a cerebrovascular accident within 2 to 3 years.
3. Carotid Doppler studies

CHAPTER 55—CARE OF THE PATIENT WITH AN IMMUNE DISORDER

Terms
Sentences will vary according to each learner’s sentence construction. Ensure that each sentence has a clear expression of the term so a patient could understand.

Organization of the Immune System
See Figure 55-2 in the textbook.

Types of Immunity
1. By activation of T cells
2. They are released indefinitely into the blood and body tissues.
3. Immunity against pathogens that survive inside of cells, fungal infections, rejection of transplanted tissues, contact hypersensitivity reactions, tumor immunity, and certain autoimmune diseases
4. B cells
5. Active
6. In active immunity, the antibodies are produced by the individual. Antibodies produced by another source and given to a patient is an example of passive immunity.
7. B cells
8. Histamine is released
9. Bacteria and foreign tissue

Immunity

Natural Immunity
• Purpose: To provide physical and chemical barriers to invading pathogens and protect against the external environment.
• Pathophysiology: Innate system is composed of the skin and mucous membranes, cilia, stomach acid, tears, saliva, sebaceous glands, and secretions and flora of the intestine and vagina. These organs, tissues, and secretions provide biochemical and physical barriers to disease.

Acquired Immunity
• Purpose: The body’s secondary line of defense against disease. Provides a specific reaction to each invading antigen and has the unique ability to remember the antigen.
• Pathophysiology: This specific immunity results from the production of antibodies in the cells. Antibodies develop naturally after infection or artificially after vaccinations.

Immunity Differences
• Immunocompetence is the ability of the immune system to make antibodies and respond to an antigen such as bacteria.
• Immunodeficiency means that there is an altered and failed immune response.
• Autoimmunity is the ability to develop an immune response and build antibodies.

Hypersensitivity Development
1. Hypersensitivity disorders arise when harmless substances are recognized as foreign. These substances include pollens, danders, foods, and chemicals.
2. Exposure may take place by inhalation, ingestion, injection, or contact.
3. Integumentary, gastrointestinal, respiratory, and cardiovascular
4. Patient history and physical examination
5. Host response to allergen, exposure amount, nature of the allergen, route of allergen entry, repeated exposure
6. Risk for injury, related to exposure to allergen; Activity intolerance, related to malaise; and Risk for infection, related to inflammation of protective mucous membranes

Anaphylaxis
1. Respiratory: dyspnea, wheezing, decreased breath sounds
2. Circulatory: dysrhythmias, tachycardia, hypotension
3. Urinary: decreased urine output
4. Neurological: mental confusion, anxiety, malaise, coma
Treatment: 0.05 epinephrine 1:100 given subcutaneously. Repeat in 15-minute intervals as ordered. Benadryl 50-100 mg may be given IM or IV as indicated. IV therapy to prevent vascular collapse; patient may be intubated to prevent airway obstruction. Oxygen by mask may be ordered. Aminophylline may be given for bronchospasm.

Transfusion Reaction
• Selection of blood donors: Careful selection is important because hypersensitivity disorder may occur.
• Typing and cross-matching: must be accurate.
• Storage of blood: important, along with administration protocol. Blood components must be refrigerated at specific temperatures until ½ hour before
administration. Blood must be given within 4 hours of refrigeration.

- Administration of blood: Donor and recipient numbers are specific and must be thoroughly checked. The numbers on the bag are checked with the patient's armband.

Autoimmune Disorders
Autoimmune disorders are failures of the tolerance of "self." They may be described as an immune attack on the self and result from the failure to distinguish "self" protein from "foreign" protein. Plasmapheresis is the removal of plasma containing components causing or thought to cause disease. This procedure removes pathologic substances ("self" or autoantibodies) in the plasma, thus reducing the immune response.

Immunodeficiency Disease
- First evidence: an increased susceptibility to infection, because of the immune system not being able to adequately protect the body.
- Result of immunodeficient state: the immunodeficient state involves an impairment of one or more immune mechanisms, which include phagocytosis, humoral response, cell-mediated response, complement, and a combined humoral and cell-mediated deficiency.
- Two types: primary immunodeficiency and secondary immunodeficiency disorder.
- Factors that alter immune response: stress, hypofunctional state of the immune system; malnutrition; and radiation or surgical removal of lymph nodes, thymus, or spleen.

Multiple Choice
1. 1
2. 4
3. 1, 2, 3, 4
4. 2

Critical Thinking Activities

Activity 1
1. The patient should be monitored after the allergy shot. This monitoring should include observation for adverse reactions and take place for at least 20 minutes.
2. The patient should be taught signs and symptoms to look for regarding hypersensitivity reactions. The patient should have an epi pen on hand at home.
3. The physician should be notified. Interrupted doses put the patient at risk for hypersensitive reactions.

Activity 2
1. As a normal part of aging, a person's immune system will often weaken. The risk of inflammation and infection increases with age. Skin becomes more fragile and may allow pathogens to enter. Infection in most body systems also increases due to a reduction of activity and of secretion mobility and production.

Aging often brings on diseases and disorders of several body systems. These may further complicate the patient's health status.

Since the patient has demonstrated an increase in illness, preventive measures should be discussed. The importance of hand washing, avoiding potentially harmful situations, and the need for yearly flu shots should be addressed.

The signs of early illness may be subtle. To best counteract illness, early intervention is key. Patients are advised to contact their health care providers when illness occurs.

CHAPTER 56—CARE OF THE PATIENT WITH HIV/AIDS

Terms
- Acquired immunodeficiency syndrome (AIDS): a unique condition characterized by a breakdown in the body's immune system
- Adherence: vigilance with treatment
- CD4+ lymphocyte: laboratory measures concerning the effect of the virus on the immune system
- Centers for Disease Control and Prevention: agency of the U.S. government that provides facilities and services for investigation, identification, control, and prevention of diseases
- Enzyme-linked immunosorbent assay (ELISA): a rapid enzyme immunochemical assay method to detect certain bacterial antigens and antibodies
- HIV disease: broad diagnostic term that includes the pathologic condition and clinical illness caused by HIV infection
- HIV infection: state in which HIV enters the body under favorable conditions and multiplies, producing injurious effects
- Human immunodeficiency virus: a retrovirus that causes HIV infection and HIV disease
- Kaposi's sarcoma: rare cancer of the skin and mucous membrane characterized by blue, red, or purple raised lesions
- Opportunistic: caused by normally nonpathogenic organisms in the host whose resistance has been decreased by such disorders as HIV disease
• Phagocytic: ingestion and digestion of bacteria
• Pneumocystis carinii pneumonia (PCP): unusual pulmonary disease caused by fungus and primarily associated with people who have suppressed immune systems
• Retrovirus: a member of the lentivirus (slow virus) family
• Seroconversion: development of detectable level of HIV antibodies found in the blood
• Seronegative: absence of antibodies to HIV
• Vertical transmission: transmission from a mother to a fetus
• Viral load: amount of measurable HIV virions
• Virulent: toxic
• Western blot test: technique for analyzing small amounts of antibodies

**Cause of HIV**

HIV is a retrovirus that causes HIV infection and HIV disease. The CDC’s definition given in January 1993 includes additional clinical conditions, HIV antibody test results, and laboratory measures concerning the effect of the virus on the immune system. It includes all HIV-infected persons who have CD4+ counts of 200 cells/mm$^3$ or fewer.

HIV disease is the broad diagnostic term that includes the pathologic condition and clinical illness caused by HIV infection.

HIV infection is the state in which HIV enters the body under favorable conditions and multiplies, producing injurious effects and a unique condition characterized by a breakdown in the body’s immune system.

Nurse’s role in the prevention of HIV disease is education in prevention as the only truly effective vaccine available to curb the HIV infection.

Nurses should assess each patient’s risk and how to reduce or eliminate the risk. Teach patients methods to reduce the risk of transmission. Discuss the details of behaviors relating to sexual activity and drug use in a forthright, relaxed, and nonjudgmental manner. Establish rapport before asking sensitive, explicit questions. Encourage patients to use protective barriers at least 50% of the time, which, although not ideal, still results in a reduced risk of HIV transmission.

**Viral Load in the Blood**

**Activity 1**

See Figure 56-1 in the text.

**Activity 2**

1. A series of interrelated factors affects morbidity and mortality of HIV disease. These factors include lower socioeconomic status, lack of access to adequate care, availability of a hospital with experience in caring for patients with HIV disease.

2. Three patterns have been identified:
   1. Typical progressors; accounts for 80-90% of patients
   2. Long-term progressors remain symptom-free for up to 10 years; this accounts for 5% of patients
   3. Rapid progressors advance to a diagnosis of full-blown AIDS within 2-3 years; accounts for 5-10% of patients

3. Seroconversion takes place 5 days to 3 months after exposure in most individuals.

4. Vague signs and symptoms similar to a viral illness may result. These include fatigue, headaches, low-grade fever, and night sweats.

5. The later the diagnosis is, the later the onset of drug therapy will be. Drug therapy initiated sooner has a positive impact on the course of the illness.

6. Viral set point (viral stabilization) is an indicator of long-term survival. The lower the set point, the longer the patient can be expected to live after exposure.
## Diagnostic Tests

<table>
<thead>
<tr>
<th>Diagnostic Test</th>
<th>Implications and Process</th>
</tr>
</thead>
</table>
| HIV antibody testing     | 1. Detects the presence of the HIV antibodies. If present, the blood is tested a second time. If positive, the Western blot test is done. If positive to all three, patients are reported HIV positive.  
2. If indeterminate results, the person is tested again in 4-6 weeks. If consistent indeterminate results then a viral culture is done.  
3. The series of laboratory tests confirms the presence of the antibodies to HIV and does not mean the person has AIDS. AIDS is diagnosed according to the 1993 definition by CDC.  
4. Seronegative test is not an assurance that the individual is free of HIV infection, because seroconversion may not have occurred yet.  
5. Seronegative test does not mean that the individual is free of the risk of infection. If risky behaviors continue, the patient may acquire the infection. |
| CD4+ cell monitoring     | Used to monitor the progression of HIV disease and is the best marker for the immunodeficiency associated with HIV infection. It measures the number of CD4+ cells per cubic millimeter or per microliter of blood. Thus, the CD4+ count is a marker of the net level of cells represented per mm³. It is advised to draw two separate samples a few weeks apart. |
| Viral load monitoring    | HIV viral load measurement refers to a quantitative measure of HIV viral RNA in the peripheral blood or the level of virus in the blood. This indicates the set point as an adequate predictor of long-term progression of the virus. Measurement of CD4+ cells measurements can indicate the damage sustained by the immune system and the short-term risk for developing opportunistic infections. A baseline is determined with repeat testing every 3-4 months. |
| CBC                      | Decreased count is often seen in conjunction with lymphopenia. Anemia results from chronic disease process, to HIV invasion of the bone marrow, and is a common adverse effect of antiretroviral. |
| Liver function           | It is not uncommon for HIV-positive patients to also be positive for hepatitis B. |
| Syphilis                 | Syphilis is more complicated and aggressive in HIV-infected individuals. |

### Risk for HIV

**Activity 1**

**Patients at Risk**
- Drug users, directly or indirectly, with injection drug use (using HIV-contaminated needles to inject drugs) or having sexual contact with an HIV-infected drug user.
- Health care workers who are accidentally exposed to contaminated blood or other body fluids.
- Unprotected sex with partners who have the virus.

The HIV virus is transmitted from human to human through infected blood, semen, cervicovaginal secretions, and breast milk. Blood transfusion recipients who have received infected blood are also at risk.

The virus is also in pericardial, synovial, cerebrospinal, peritoneal, and amniotic fluids. Babies may contract the disease from the mother during pregnancy, during delivery, or postpartum breastfeeding.

**Effective Prevention Messages**
- Abstain from sexual contact in which there is exchange of semen, vaginal secretions, or blood.
- Maintain a monogamous relationship.
- Limit number of partners.
- Use protective measures such as condoms, and put them on as soon as the erection occurs.
- Use the condom correctly; space at the tip; only water-based lubricants; hold it firmly when withdrawing from partner.
- Don’t do drugs.
- Stop the use of injectable drugs or at least use clean needles and syringes.
- Avoid pregnancy if HIV-infected.
- Adhere to barrier birth control measures.

**Activity 2**

1. IV drug use
2. The decline is associated with increased compliance with prenatal counselling and testing of pregnant women. Success is also attributed to drug therapy to pregnant HIV patients.
3. Duration of exposure
   - Frequency of exposure
   - Amount of virus inoculated
   - The virulence of the organism
The capability of the host’s immune system

4. Infected blood
   Breast milk
   Sperm
   Cervicovaginal secretions

5. Young people, IV drug users, women, African-Americans, and Hispanics

6. Anal or vaginal intercourse
   Contaminated injecting drug equipment
   Transmission from mother to child

7. Ulcerating genital diseases, syphilis, chancres secondary to STDs, uncircumcised penis, immune suppression due to drug use, alcohol and drug use

8. HIV has been transmitted after percutaneous injury, mucocutaneous exposure, and exposure via open wounds on the skin and mucous membranes. The majority of occupationally acquired HIV infections have been from needle-stick injuries.

9. Prematurity; complicated pregnancies leading to extended labor; the mixing of maternal and fetal blood; newborn ingestion of maternal blood, amniotic fluid, or vaginal secretions; skin excoriation in the newborn; and being the first child born in a multiple gestation.

Issues with Testing

General Guidelines

1. Establish rapport: assess patient’s ability to understand counseling and support system. Explain the following benefits of testing:
2. It provides a chance to get education about the disease. If infected, the patient can get early interventions and support.
3. Negative aspects of testing: breaches in confidentiality have led to discrimination. Positive results affect all parts of patient’s life.

Post-test Counseling

1. Determine risk factors.
2. Educate to decrease risk of exposure.
3. Education to protect usual and drug-sharing partners.
5. Education about false-negative possibilities during the window period.
6. Explain that positive test shows HIV infection, not AIDS.
7. Test does not establish immunity, regardless of the results.
8. Get support system information.
9. Discuss patient-anticipated responses to the test results.

10. Outline assistance that is available if results are positive.

Post-test Counseling

1. If negative, reinforce previous education and remind patient to get repeat test every 6 months.

2. If positive, handle patient’s response. Get medical and emotional support and assess for suicide risk. Determine who else may need to be tested. Offer retesting to verify results. Encourage optimism by reminding patient that treatment is available.

Nurse’s Role

- Coping: provide continued education about HIV disease and prevention and assist in realistic goal setting. Focus on philosophy of facing life a day at a time and living each day to the fullest. Listening and helping the patient to find a meaning in life. Promote effective coping by focusing on exploring and strengthening healthy coping strategies and maintaining sources of psychological support.
  - Reducing Anxiety: assess normal patterns of periods of anxiety, depression, and grief; refer patients and others for psychological evaluation and counseling for ineffective coping patterns.
  - Social Isolation: assist the patient in finding other sources of social support.
  - Assist with Grieving: referrals to social workers and appropriate community agencies can alleviate many concerns that plague acutely or terminally ill patients.

Multidisciplinary Care

With the complex disease process and so many opportunistic diseases associated with HIV/AIDS, doctors and nurses who specialize in management of each problem will be needed to handle your complex medical and nursing care.

Opportunistic Infections

- Respiratory: *Pneumocystis carinii*, Cryptococcus, Histoplasmosis, mycobacterial tuberculosis, coccidioidomycosis, HSV I, and *Toxoplasmosis gondii*
  - Integumentary: HSV I, HSV II, varicella zoster virus, Kaposi’s sarcoma, bacillary angiomatosis
  - Eye: Cytomegaloviral retinitis, HSV I, varicella zoster virus, *Toxoplasmosis gondii*
  - Neurological: *Toxoplasma gondii*, Jamestown canyon virus, cryptococcal meningitis, CNS lym-
Care Plan
Nursing interventions will focus on infection prevention with actions that will prevent skin breakdown and promote skin integrity. Interventions that handle alterations in body temperature will include fluid intake, intake and output, weight daily, provide tepid sponge baths and linen changes. Instruct patient on deep breathing and coughing exercises. Ensure good nutrition with instruction on high-calorie, high-protein, high-potassium, and low-residue diet. Suggest food that is easy to swallow and avoid spicy or acidic foods, rare meats, and raw fruits and vegetables. Promote self-care by assessing the realistic functional ability. Plan, supervise, and assist with activities of daily living (ADLs) as necessary. Encourage patient to be as active and independent as possible. Provide supportive devices as needed. Provide counseling by assessing and supporting patient coping mechanisms. Assist patient and others with coping, anxiety, grieving process, and reduction of stress.

Multiple Choice
1. 3
2. 1
3. 1, 2, 3
4. 2

Critical Thinking Activities
1. The nursing student should be counseled about treatment options. The discussion should include medications recommended, testing, testing intervals, home care, and follow-up.
2. The risk of exposure is highest if the exposure is to known HIV-positive blood by a blood-filled hollow-bore needle through a deep injury. If the patient is in the end stages of AIDS or dies within 60 days of the exposure to the nurse, the risk also higher.
3. Higher success will occur with rapid onset of preventative drug therapy. An exposed individual may have up to 36 hours, but recommendations are to begin antiretroviral therapy within 1 to 4 hours of exposure.
4. The pros include: minimized chance of development of resistant virus may reduce HIV transmission risk improved quality of life
Cons include: drugs often have unpleasant side effects therapy is expensive drug therapy is complex
5. Knowledge deficit related to plan of care post-exposure

Anxiety related to potential exposure to HIV disease
6. Living with family members will not put them at risk for HIV infection. Hugging, handholding, and sleeping with family members will be safe. She should avoid unprotected sexual contact with her partner.

CHAPTER 57—CARE OF THE PATIENT WITH CANCER

Terms
1. I
2. R
3. D
4. S
5. B
6. O
7. H
8. P
9. G
10. Q
11. E
12. F
13. J
14. A
15. T
16. C
17. M
18. L
19. K
20. N

Risk Factors
1. Smoking, dietary habits, exposure to radiation, exposure to environmental and chemical carcinogens, smokeless tobacco, frequent heavy alcohol consumption
2. This program was developed by the National Cancer Institute. Its goal is to show that adding at least five servings of fruits and vegetables to the daily diet can reduce the risk for cancer.
3. Breast, prostate, gall-bladder, ovarian, and uterine cancers are associated with obesity.
4. Cotton dust, rubber, chlorine, coal, nickel, chromate, asbestos, and vinyl chloride are chemical carcinogens.
5. Those living in urban areas or work with dyes, rubber, or leather.
6. Changes in DNA and reduced effectiveness of the immune may account for the increase of cancers with aging. Those cancers seen to increase with aging include skin, breast, lung, colon, female reproductive system.