CHAPTER 44

Oncological and Hematological Problems

http://evolve.elsevier.com/Silvestri/comprehensiveRN/

Priority Concepts

Cellular Regulation; Safety

I. Cancer

A. Description

1. Cancer is a malignant neoplastic disorder that can involve all body organs with manifestations that vary according to the body system affected and type of tumor cells.
2. Cells lose their normal growth-controlling mechanism, and the growth of cells is uncontrolled.
3. Cancer produces serious health problems such as impaired immune and hematopoietic (blood-producing) function, altered gastrointestinal tract structure and function, motor and sensory deficits, and decreased respiratory function.

B. **Metastasis** (Box 44-1)

1. Cancer cells move from their original location to other sites.
2. Routes of metastasis
   a. Local seeding: Distribution of shed cancer cells occurs in the local area of the primary tumor.
   b. Bloodborne metastasis: Tumor cells enter the blood, which is the most common cause of cancer spread.
   c. Lymphatic spread: Primary sites rich in lymphatics are more susceptible to early metastatic spread.

C. Cancer classification

1. Solid tumors: Associated with the organs from which they develop, such as breast cancer or lung cancer
2. Hematological cancers: Originate from blood cell–forming tissues, such as **leukemias, lymphomas**, and multiple **myeloma**

D. Grading and staging (Box 44-2)
    1. Grading and **staging** are methods used to describe the tumor.
    2. These methods describe the extent of the tumor, the extent to which malignancy has increased in size, the involvement of regional nodes, and metastatic development.
    3. Grading a tumor classifies the cellular aspects of the cancer and is an indicator of tumor growth rate and spread.
    4. Staging classifies the severity and clinical aspects of the cancer and degree of metastasis at diagnosis.

E. Factors that influence cancer development
    1. Environmental factors
        a. Chemical **carcinogen**: Factors include industrial chemicals, medications, and tobacco.
        b. Physical carcinogen: Factors include ionizing radiation (diagnostic and therapeutic x-rays) and ultraviolet radiation (sun, tanning beds, and germicidal lights), chronic irritation, and tissue trauma.
        c. Viral carcinogen: Viruses capable of causing cancer are known as *oncoviruses*, such as Epstein-Barr virus, hepatitis B virus, and human papillomavirus.
        d. *Helicobacter pylori* infection is associated with an increased risk of gastric cancer.
    2. Obesity and dietary factors, including preservatives, contaminants, additives, alcohol, and nitrates
    3. Genetic predisposition: Factors include an inherited predisposition to specific cancers, inherited conditions associated with cancer, familial clustering, and chromosomal aberrations.
    4. Age: Advancing age is a significant risk factor for the development of cancer.
    5. Immune function: The incidence of cancer is higher in immunosuppressed individuals, such as those with acquired immunodeficiency syndrome and organ transplant recipients who are taking immunosuppressive medications.

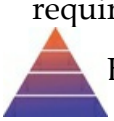
F. Prevention: Avoidance of known or potential carcinogens and avoidance or modification of the factors associated with the development of cancer cells.

G. Early detection (Box 44-3)
    1. Mammography

2. Papanicolaou (Pap) test
3. Rectal exams and stools for occult blood
4. Sigmoidoscopy, colonoscopy
5. Breast self-examination (BSE) and clinical breast examination
6. Testicular self-examination
7. Skin inspection

II. Diagnostic Tests

A. Diagnostic tests to be performed depend on the suspected primary or metastatic site of the cancer; invasive procedures require informed consent (Box 44-4).



B. Biopsy

1. Description
   a. Biopsy is the definitive means of diagnosing cancer and provides histological proof of malignancy.
   b. Biopsy involves the surgical incision to obtain a small piece of tissue for microscopic examination.
2. Types
   a. Needle: Aspiration of cells
   b. Incisional: Removal of a wedge of suspected tissue from a larger mass
   c. Excisional: Complete removal of the entire lesion
   d. Staging: Multiple needle or incisional biopsies in tissues where metastasis is suspected or likely (see Boxes 44-1 and 44-2)
3. Tissue examination
   a. Following excision, a frozen section or a permanent paraffin section is prepared to examine the specimen.
   b. The advantage of the frozen section is the speed with which the section can be prepared and the diagnosis made, because only minutes are required for this test.
   c. Permanent paraffin section takes about 24 hours; however, it provides clearer details than the frozen section.
4. Interventions
   a. The procedure usually is performed in an outpatient surgical setting.
   b. Prepare the client for the diagnostic procedure and provide postprocedure instructions.

c. Ensure that informed consent has been obtained.

III. Pain Control

A. Causes of pain

1. Bone destruction
2. Obstruction of an organ
3. Compression of peripheral nerves
4. Infiltration, distention of tissue
5. Inflammation, necrosis
6. Psychological factors, such as fear or anxiety; a distress screening tool may be used to assess emotional health (see http://www.cancer.org/treatment/treatmentsandsideeffin-people-with-cancer-tools-to-measure-distress).

B. Interventions

1. Collaborate with other members of the health care team to develop a pain management program.
2. Administer oral preparations if possible and if they provide adequate relief of pain; the transdermal or transmucosal route may also be prescribed.
3. Mild or moderate pain may be treated with salicylates, acetaminophen, and nonsteroidal anti-inflammatory drugs (NSAIDs).
4. Severe pain is treated with opioids, such as codeine sulfate, morphine sulfate, methadone, and hydromorphone hydrochloride. Neuropathic pain may be treated with a variety of anticonvulsants and antidepressants, as well as opioids.
5. Subcutaneous injections and continuous intravenous (IV) infusions of opioids provide rapid pain control; equianalgesic comparison charts should be used when switching routes of administration of opioids.
6. Monitor vital signs and for side effects of medications.
7. Monitor for effectiveness of medications and collaborate with the primary health care provider (PHCP) if mediation is ineffective.
8. Provide nonpharmacological techniques of pain control such as relaxation, guided imagery, biofeedback, massage, and heat-cold application.

Assess the client's pain; pain is what the client describes or says that it is. Do not undermedicate the client with cancer who is in pain.

IV. Surgery

A. Description: Surgery is indicated to diagnose, stage, and treat

certain types of cancer.

B. Prophylactic surgery
    1. Prophylactic surgery is performed in clients with an existing premalignant condition or a known family history or genetic mutation that strongly predisposes the person to the development of cancer.
    2. An attempt is made to remove the tissue or organ at risk and thus prevent the development of cancer.

C. Curative surgery: All gross and microscopic tumor is removed or destroyed.

D. Control (cytoreductive or "debulking") surgery
    1. Control surgery is a debulking procedure that consists of removing a large portion of a locally invasive tumor, such as advanced ovarian cancer.
    2. Surgery decreases the number of cancer cells; therefore, it may increase the chance that other therapies will be successful.

E. Palliative surgery
    1. Palliative surgery is performed to improve quality of life during the survival time.
    2. Palliative surgery is performed to reduce pain, relieve airway obstruction, relieve obstructions in the gastrointestinal or urinary tract, relieve pressure on the brain or spinal cord, prevent hemorrhage, remove infected or ulcerated tumors, or drain abscesses.

F. Reconstructive or rehabilitative surgery is performed to improve quality of life by restoring maximal function and appearance, such as breast reconstruction after mastectomy.

G. Adverse effects of surgery
    1. Loss or loss of function of a specific body part
    2. Reduced function as a result of organ loss
    3. Scarring or disfigurement
    4. Grieving about altered body image or imposed change in lifestyle
    5. Pain, infection, bleeding, thromboembolism

V. Chemotherapy

A. Description
    1. Chemotherapy kills or inhibits the reproduction of neoplastic cells and kills normal cells.
    2. The effects are systemic because chemotherapy is usually administered systemically.
    3. Normal cells most profoundly affected include those of the skin, hair, and lining of the gastrointestinal tract; spermatocytes; and hematopoietic cells.
    4. Usually, several chemotherapy and biotherapy agents are used in combination (combination therapy) to increase the therapeutic response.
    5. Combination chemotherapy is planned by the PHCP

so that medications with overlapping toxicities and **nadirs** (the time during which bone marrow activity and white blood cell counts are at their lowest) are not administered at or near the same time; this will minimize immunosuppression.

6. Chemotherapy may be combined with other treatments, such as surgery and radiation.

B. Common side effects include fatigue, alopecia, nausea and vomiting, mucositis, skin changes, and myelosuppression (neutropenia, anemia, and thrombocytopenia).

C. See Chapter 45 for information regarding care of the client receiving chemotherapy.

VI. Radiation Therapy

A. Description

1. Radiation therapy destroys cancer cells, with minimal exposure of normal cells to the damaging effects of radiation; the damaged cells die or become unable to divide.
2. Radiation therapy is effective on tissues directly within the path of the radiation beam.
3. Side effects include local skin changes and irritation, alopecia (hair loss), fatigue (most common side effect of radiation), and altered taste sensation; the effects vary according to the site of treatment.
4. External beam radiation (also called *teletherapy*) and internal radiation (also called *brachytherapy*) are the types of radiation therapy most commonly used to treat cancer.

B. External beam radiation (teletherapy): The actual radiation source is external to the client.

1. Instruct the client regarding self-care of the skin (Box 44-5).
2. The client does not emit radiation and does not pose a hazard to anyone else.

C. Brachytherapy

1. The radiation source comes into direct, continuous contact with tumor tissues for a specific time.
2. The radiation source is within the client; for a period of time, the client emits radiation and can pose a hazard to others.
3. Brachytherapy includes an unsealed source or a sealed source of radiation.
4. Unsealed radiation source
    a. Administration is via the oral or IV

route or by instillation into body cavities.

b. The source is not confined completely to one body area, and it enters body fluids and eventually is eliminated via various excreta, which are radioactive and harmful to others. Most of the source is eliminated from the body within 48 hours; then neither the client nor the excreta is radioactive or harmful.

5. Sealed radiation source (Priority Nursing Actions) (Box 44-6)
   a. A sealed, temporary or permanent radiation source (solid implant) is implanted within the tumor target tissues.
   b. The client emits radiation while the implant is in place, but the excreta are not radioactive.
6. Removal of sealed radiation sources
   a. The client is not radioactive after removal.
   b. Inform the client that cancer is not contagious.
   c. Inform the client to follow the PHCPs prescription regarding resumption of sexual intercourse if the implant was cervical or vaginal.
   d. Advise the client who had a cervical or vaginal implant to notify the PHCP if any of the following occurs: severe diarrhea, frequent urination, urethral burning for more than 24 hours, hematuria, heavy vaginal bleeding, extreme fatigue, abdominal pain, fever over 100° F (38° C), or other signs of infection.

Priority Nursing Actions

Sealed Radiation Implant that Dislodges

1. Encourage the client to lie still.
2. Use a long-handled forceps to retrieve the radioactive source.
3. Deposit the radioactive source in a lead container.
4. Contact the radiation oncologist.

5. Document the occurrence and the actions taken.

Reference

Ignatavicius, Workman, Rebar (2018), p. 389.

VII. Hematopoietic Stem Cell Transplantation

A. Description

1. Bone marrow transplantation (BMT) and peripheral blood stem cell transplantation (PBSCT) are procedures that replace stem cells that have been destroyed by high doses of chemotherapy and/or radiation therapy.
2. BMT and PBSCT are most commonly used in the treatment of leukemia and lymphoma but are also used to treat other cancers, such as neuroblastoma and multiple myeloma.
3. The goal of treatment is to rid the client of all leukemic or other **malignant** cells through treatment with high doses of chemotherapy and whole-body irradiation.
4. Because these treatments are damaging to bone marrow cells, without the replacement of blood-forming stem cell function through transplantation, the client would die of infection or hemorrhage.

B. Types of donor stem cells

1. Allogeneic: Stem cell donor is usually a sibling, a parent with a similar tissue type, or a person who is not related to the client (unrelated donor).
2. Syngeneic: Stem cells are from an identical twin.
3. Autologous
    a. Autologous donation is the most common type.
    b. The client receives his or her own stem cells.
    c. Stem cells are harvested during disease remission and are stored frozen to be reinfused later.

C. Procedure

1. Harvest
    a. The stem cells used in PBSCT come from the bloodstream in a 4- to 6-hour process called *apheresis* or *leukapheresis* (the blood is removed through a central venous catheter, and an apheresis machine removes the stem cells and returns the remainder of the blood to the donor).
    b. In BMT, marrow is harvested through

multiple aspirations from the iliac crest to retrieve sufficient bone marrow for the transplant.

c. Marrow from the client is filtered for residual cancer cells.

d. Allogeneic marrow is transfused immediately; autologous marrow is frozen for later use (cryopreservation).

e. Harvesting is done before the initiation of the conditioning regimen.

2. *Conditioning* refers to an immunosuppression therapy regimen used to eradicate all malignant cells, provide a state of immunosuppression, and create space in the bone marrow for the engraftment of the new marrow.

3. Transplantation

a. Stem cells are administered through the client's central line in a manner similar to that for a blood transfusion.

b. Stem cells may be administered by IV infusion or by IV push directly into the central line.

4. Engraftment

a. The transfused stem cells move to the marrow-forming sites of the recipient's bones.

b. Engraftment occurs when the white blood cell (WBC), erythrocyte, and platelet counts begin to rise.

c. When successful, the engraftment process takes 2 to 5 weeks.

D. Posttransplantation period: Infection, bleeding, or neutropenia and thrombocytopenia are major concerns until engraftment occurs.

During the posttransplantation period, the client remains without any natural immunity until the donor stem cells begin to proliferate and engraftment occurs.

E. Complications

1. Failure to engraft: If the transplanted stem cells fail to engraft, the client will die unless another transplantation is attempted and is successful.

2. Graft-versus-host disease in allogeneic transplants

a. Although the recipient cannot recognize the donated stem cells as foreign or nonself because of the total

immunosuppression, the immune-competent cells of the donor recognize the recipient's cells as foreign and mount an immune offense against them.

b. Graft-versus-host disease is managed cautiously with immunosuppressive agents to avoid suppressing the new immune system to such an extent that the client becomes more susceptible to infection, or the transplanted cells stop engrafting.

3. Hepatic veno-occlusive disease

a. The disease involves occlusion of the hepatic venules by thrombosis or phlebitis.

b. Signs include right upper quadrant abdominal pain, jaundice, ascites, weight gain, and hepatomegaly.

c. Early detection is critical because there is no known way to open the hepatic vessels.

d. The client will be treated with fluids and supportive therapy.

VIII. Skin Cancer (see Chapter 42)

IX. Leukemia (Box 44-7)

A. Description

1. Leukemias are a group of hematological malignancies involving abnormal overproduction of leukocytes, usually at an immature stage, in the bone marrow.
2. The 2 major types of leukemia are lymphocytic (involving abnormal cells from the lymphoid pathway) and myelocytic or myelogenous (involving abnormal cells from the myeloid pathways).
3. Leukemia may be acute, with a sudden onset, or chronic, with a slow onset and persistent symptoms over a period of years.
4. Leukemia affects the bone marrow, causing anemia, leukopenia, the production of immature cells, thrombocytopenia, and a decline in immunity.
5. The cause is unknown and appears to involve genetically damaged cells, leading to the transformation of cells from a normal state to a malignant state.
6. Risk factors include genetic, viral, immunological, and environmental factors and exposure to radiation, chemicals, and medications, such as previous chemotherapy.

B. Assessment

1. Anorexia, fatigue, weakness, weight loss
2. Anemia
3. Overt bleeding (nosebleeds, gum bleeding, rectal bleeding, hematuria, increased menstrual flow) and occult bleeding (e.g., as detected in a fecal occult blood test)
4. Ecchymoses, petechiae
5. Prolonged bleeding after minor abrasions or lacerations
6. Elevated temperature
7. Enlarged lymph nodes, spleen, liver
8. Palpitations, tachycardia, orthostatic hypotension
9. Pallor and dyspnea on exertion
10. Headache
11. Bone pain and joint swelling
12. Normal, elevated, or reduced WBC count
13. Decreased hemoglobin and hematocrit levels
14. Decreased platelet count
15. Positive bone marrow biopsy identifying leukemic blast–phase cells

C. Infection

1. Infection can occur through autocontamination or cross-contamination. The WBC count may be extremely low during the period of greatest bone marrow depression, known as the *nadir*.
2. Common sites of infection are the skin, respiratory tract, and gastrointestinal tract.
3. Initiate protective isolation procedures.
4. Ensure frequent and thorough hand washing by the client, family, and health care providers.
5. Staff and visitors with known infections or exposure to communicable diseases should avoid contact with the client.
6. Use strict aseptic technique for all procedures.
7. Keep supplies for the client separate from supplies for other clients; keep frequently used equipment in the room for the client's use only.
8. Limit the number of staff entering the client's room to reduce the risk of cross-infection.
9. Maintain the client in a private room with the door closed.
10. Place the client in a room with high-efficiency particulate air filtration or a laminar airflow system if possible.

11. Reduce exposure to environmental organisms by eliminating fresh or raw fruits and vegetables (low-bacteria diet) from the diet; eliminate fresh flowers and live plants from the client's room and avoid leaving standing water in the client's room.
12. Be sure that the client's room is cleaned daily.
13. Assist the client with daily bathing, using an antimicrobial soap.
14. Assist the client to perform oral hygiene frequently.
15. Initiate a bowel program to prevent constipation and prevent rectal trauma.
16. Avoid invasive procedures such as injections, insertion of rectal thermometers, and urinary catheterization.
17. Change wound dressings daily, and inspect the wounds for redness, swelling, or drainage.
18. Assess the urine for cloudiness and other characteristics of infection.
19. Assess skin and oral mucous membranes for signs of infection (Box 44-8).
20. Auscultate lung sounds, and encourage the client to cough and deep breathe.
21. Monitor temperature, pulse, respirations, blood pressure, and for pain.
22. Monitor WBC and neutrophil counts.
23. Notify the PHCP if signs of infection are present, and prepare to obtain specimens for culture of the blood, open lesions, urine, and sputum; chest radiograph may also be prescribed.
24. Administer prescribed antibiotic, antifungal, and antiviral medications.
25. Instruct the client to avoid crowds and those with infections.
26. Instruct the client about a low-bacteria diet.
27. Instruct the client to avoid activities that expose the client to infection, such as changing a pet's litter box or working with house plants or in the garden.
28. Instruct the client that neither they nor their household contacts should receive immunization with a live virus such as measles, mumps, rubella, polio, varicella, shingles, and some influenza, including the H1N1 vaccine.

Infection is a major cause of death in the immunosuppressed client.

D. Bleeding

1. During the period of greatest bone marrow suppression (the nadir), the platelet count may be extremely low.
2. The client is at risk for bleeding when the platelet count falls below 50,000 mm^3 (50×10^9/L), and spontaneous bleeding frequently occurs when the platelet count is lower than 20,000 mm^3 (20×10^9/L).
3. Clients with platelet counts lower than 20,000 mm^3 (20×10^9/L) may need a platelet transfusion.
4. For clients with anemia and fatigue, packed red blood cells may be prescribed.
5. Monitor laboratory values.
6. Examine the client for signs and symptoms of bleeding, such as petechiae; examine all body fluids and excrement for the presence of blood.
7. Handle the client gently; use caution when taking blood pressures to prevent skin injury.
8. Monitor for signs of internal hemorrhage (e.g., pain, rapid and weak pulse, increased abdominal girth, abdomen guarding, change in mental status).
9. Provide soft foods that are cool to warm to avoid oral mucosa damage.
10. Avoid injections, if possible, to prevent trauma to the skin and bleeding; apply firm and gentle pressure to a needle-stick site for at least 5 minutes, or longer if needed.
11. Pad side rails and sharp corners of the bed and furniture.
12. Avoid rectal suppositories, enemas, and thermometers.
13. If the female client is menstruating, count the number of pads or tampons used.
14. Administer blood products as prescribed.
15. Instruct the client to use a soft toothbrush and avoid dental floss.
16. Instruct the client to use only an electric razor for shaving.
17. Instruct the client to avoid blowing the nose.
18. Discourage the client from engaging in activities involving the use of sharp objects; contact sports also need to be avoided.
19. Instruct the client to avoid using NSAIDs and products that contain aspirin.

E. Fatigue and nutrition

1. Assist the client in selecting a well-balanced diet.
2. Provide small, frequent meals (high calorie, high protein, high carbohydrate) that require little chewing

to reduce energy expenditure at mealtimes.
3. Assist the client in self-care and mobility activities.
4. Allow adequate rest periods during care.
5. Do not perform activities unless they are essential; assist the client in scheduling important or pleasurable activities during periods of highest energy.
6. Administer blood products for anemia as prescribed.

F. Additional interventions
1. Chemotherapy
a. Induction therapy is aimed at achieving a rapid, complete remission of all manifestations of the disease.
b. Consolidation therapy is administered early in remission with the aim of curing.
c. Maintenance therapy may be prescribed for months or years after successful induction and consolidation therapy; the aim is to maintain remission.
2. Administer antibiotic, antibacterial, antiviral, and antifungal medications as prescribed.
3. Administer colony-stimulating factors as prescribed.
4. Administer blood replacements as prescribed.
5. Maintain infection and bleeding precautions.
6. Prepare the client for transplantation if indicated.
7. Instruct the client in appropriate home care measures.
8. Provide psychosocial support and support services for home care.

X. Lymphoma: Hodgkin's Disease
A. Description
1. Lymphomas, classified as Hodgkin's and non-Hodgkin's depending on the cell type, are characterized by abnormal proliferation of lymphocytes.
2. Hodgkin's disease is a malignancy of the lymph nodes that originates in a single lymph node or a chain of nodes.
3. Metastasis occurs to other, adjacent lymph structures and eventually invades nonlymphoid tissue.
4. The disease usually involves lymph nodes, tonsils, spleen, and bone marrow and is characterized by the presence of Reed-Sternberg cells in the nodes.
5. Possible causes include viral infections; clients treated with combination chemotherapy for Hodgkin's disease have a greater risk of developing acute leukemia and non–Hodgkin's lymphoma, among other secondary malignancies.

6. Prognosis depends on the stage of the disease.

B. Assessment

1. Fever
2. Malaise, fatigue, and weakness
3. Night sweats
4. Loss of appetite and significant weight loss
5. Anemia and thrombocytopenia
6. Enlarged lymph nodes, spleen, and liver

7. Positive biopsy of lymph nodes, with cervical nodes most often affected first

8. Presence of Reed-Sternberg cells in nodes
9. Positive computed tomography (CT) scan of the liver and spleen

C. Interventions

1. For earlier stages (stages I and II), without mediastinal node involvement, the treatment of choice is extensive external radiation of the involved lymph node regions.
2. With more extensive disease, radiation and multiagent chemotherapy are used.
3. Monitor for side effects related to chemotherapy or radiation therapy.
4. Monitor for signs of infection and bleeding.
5. Maintain infection and bleeding precautions.
6. Discuss the possibility of sterility with the client receiving chemotherapy and/or radiation, and inform the client of fertility options such as sperm banking.

XI. Multiple **Myeloma**

A. Description

1. A malignant proliferation of plasma cells within the bone
2. Excessive numbers of abnormal plasma cells invade the bone marrow and ultimately destroy bone; invasion of the lymph nodes, spleen, and liver occurs.
3. The abnormal plasma cells produce an abnormal antibody (myeloma protein or the Bence Jones protein) found in the blood and urine.
4. Multiple myeloma causes decreased production of immunoglobulin and antibodies and increased levels of uric acid and calcium, which can lead to kidney failure.
5. The disease typically develops slowly, and the cause is unknown.

B. Assessment

1. Bone (skeletal) pain, especially in the ribs, spine, and pelvis
2. Weakness and fatigue
3. Recurrent infections
4. Anemia
5. Urinalysis shows Bence Jones proteinuria and elevated total serum protein level.
6. Osteoporosis (bone loss and the development of pathological fractures)
7. Thrombocytopenia and leukopenia
8. Elevated calcium and uric acid levels
9. Kidney failure
10. Spinal cord compression and paraplegia
11. Bone marrow aspiration shows an abnormal number of immature plasma cells.

The client with multiple myeloma is at risk for pathological fractures. Therefore, provide skeletal support during moving, turning, and ambulating and provide a hazard-free environment.

C. Interventions

1. Administer chemotherapy as prescribed.

2. Provide supportive care to control symptoms and prevent complications, especially bone fractures, hypercalcemia, kidney failure, and infections.
3. Maintain neutropenic and bleeding precautions as necessary.
4. Monitor for signs of bleeding, infection, and skeletal fractures.

5. Encourage the consumption of at least 2 L of fluids per day to offset potential problems associated with hypercalcemia, hyperuricemia, and proteinuria, and encourage additional fluid as indicated and tolerated.
6. Monitor for signs of kidney failure. Collect 24-hour urine as prescribed.
7. Encourage ambulation to prevent renal problems and to slow down bone resorption.
8. Administer IV fluids and diuretics as prescribed to increase renal excretion of calcium.
9. Administer blood transfusions as prescribed for anemia.
10. Administer analgesics as prescribed and provide nonpharmacological therapies to control pain.
11. Administer antibiotics as prescribed for infection.

12. Prepare the client for local radiation therapy if prescribed.
13. Instruct the client in home care measures and the signs and symptoms of infection.
14. Administer bisphosphonate medications as prescribed to slow bone damage and reduce pain and risk of fractures.

XII. Testicular Cancer

A. Description

1. Testicular cancer arises from germinal epithelium from the sperm-producing germ cells or from nongerminal epithelium from other structures in the testicles.
2. Testicular cancer most often occurs between the ages of 15 and 40 years.
3. The cause of testicular cancer is unknown, but a history of undescended testicle (cryptorchidism) and genetic predisposition have been associated with testicular tumor development.
4. Metastasis occurs to the lung, liver, bone, and adrenal glands via the blood and to the retroperitoneal lymph nodes via lymphatic channels.

B. Early detection: Perform monthly testicular self-examination (Fig. 44-1).

1. Performing testicular self-examination: Perform monthly; a day of the month is selected and the examination is performed on the same day each month.
2. Client instructions (see Fig. 44-1)

C. Assessment

1. Painless testicular swelling occurs.
2. "Dragging" or "pulling" sensation is experienced in the scrotum.
3. Palpable lymphadenopathy, abdominal masses, and gynecomastia may indicate metastasis.
4. Late signs include back or bone pain and respiratory symptoms.

D. Interventions

1. Administer chemotherapy as prescribed.
2. Prepare the client for radiation therapy as prescribed.
3. Prepare the client for unilateral orchiectomy, if prescribed, for diagnosis and primary surgical management or radical orchiectomy (surgical removal of the affected testis, spermatic cord, and regional lymph nodes).

4. Prepare the client for retroperitoneal lymph node dissection, if prescribed, to stage the disease and reduce tumor volume so that chemotherapy and radiation therapy are more effective.
5. Discuss reproduction, sexuality, and fertility information and options with the client.
6. Identify reproductive options such as sperm storage, donor insemination, and adoption.

E. Postoperative interventions

1. Monitor for signs of bleeding and wound infection; antibiotics may be administered to prevent wound infection.
2. Monitor intake and output.
3. Provide and explain pain management methods; to reduce swelling in the first 48 hours, apply an ice pack with an intervening protective layer of cloth.
4. Notify the PHCP if chills, fever, increasing pain or tenderness at the incision site, or drainage from the incision occurs.
5. After the orchiectomy, instruct the client to avoid heavy lifting and strenuous activity for the length of time prescribed by the PHCP.
6. Instruct the client to perform a monthly testicular self-examination on the remaining testicle (see Fig. 44-1).
7. Inform the client that sutures will be removed approximately 7 to 10 days after surgery.

XIII. Cervical Cancer

A. Description

1. Preinvasive cancer is limited to the cervix (Box 44-9).
2. Invasive cancer is in the cervix and other pelvic structures.
3. Metastasis usually is confined to the pelvis, but distant metastasis occurs through lymphatic spread.
4. Premalignant changes are described on a continuum from dysplasia, which is the earliest premalignancy change, to **carcinoma in situ**, the most advanced premalignant change.

B. Risk factors

1. Human papillomavirus (HPV) infection (vaccination against HPV is effective to avoid HPV infection, and thus cervical cancer)
2. Cigarette smoking, both active and passive
3. Reproductive behavior, including early first intercourse (before age 17 years), multiple sex partners, or male partners with multiple sex partners

4. Screening via regular gynecological examinations and Pap test, with treatment of precancerous abnormalities, decreases the incidence and mortality of cervical cancer.

C. Assessment

1. Painless vaginal postmenstrual and postcoital bleeding
2. Foul-smelling or serosanguineous vaginal discharge
3. Pelvic, lower back, leg, or groin pain
4. Anorexia and weight loss
5. Leakage of urine and feces from the vagina
6. Dysuria
7. Hematuria
8. Cytological changes on Pap test

D. Interventions (Box 44-10)

E. Laser therapy

1. Laser therapy is used when all boundaries of the lesion are visible during colposcopic examination.
2. Energy from the beam is absorbed by fluid in the tissues, causing them to vaporize.
3. Minimal bleeding is associated with the procedure.
4. Slight vaginal discharge is expected following the procedure, and healing occurs in 6 to 12 weeks.

F. Cryosurgery

1. Cryosurgery involves freezing of the tissues, using a probe, with subsequent necrosis and sloughing.
2. No anesthesia is required, although cramping may occur during the procedure.
3. A heavy watery discharge will occur for several weeks following the procedure.
4. Instruct the client to avoid intercourse and the use of tampons while the discharge is present.

G. Conization

1. A cone-shaped area of the cervix is removed.
2. Conization allows the woman to retain reproductive capacity.
3. Long-term follow-up care is needed, because new lesions can develop.
4. The risks of the procedure include hemorrhage, uterine perforation, incompetent cervix, cervical stenosis, and preterm labor in future pregnancies.

H. Hysterectomy

1. Description
    a. Hysterectomy is performed for microinvasive cancer if childbearing is

not desired.
b. A vaginal approach is most commonly used.
c. A radical hysterectomy and bilateral lymph node dissection may be performed for cancer that has spread beyond the cervix but not to the pelvic wall.

2. Postoperative interventions

a. Monitor vital signs
b. Assist with coughing and deep-breathing exercises.
c. Assist with range-of-motion exercises and provide early ambulation.
d. Apply antiembolism stockings or sequential compression devices as prescribed.
e. Monitor intake and output, urinary catheter drainage, and hydration status.
f. Monitor bowel sounds.
g. Assess incision site for signs of infection.
h. Administer pain medication as prescribed.
i. Instruct the client to limit stair climbing for 1 month as prescribed and to avoid tub baths and sitting for long periods.
j. Avoid strenuous activity or lifting anything weighing more than 20 pounds (9 kg).
k. Instruct the client to consume foods that promote tissue healing.
l. Instruct the client to avoid sexual intercourse for 3 to 6 weeks as prescribed.
m. Instruct the client in the signs associated with complications.

Monitor vaginal bleeding following hysterectomy. More than 1 saturated pad per hour may indicate excessive bleeding.

I. Pelvic exenteration (Box 44-11)

1. Description

a. Pelvic exenteration, the removal of all

pelvic contents, including bowel, vagina, and bladder, is a radical surgical procedure performed for recurrent cancer if no evidence of tumor outside the pelvis and no lymph node involvement exist.

b. When the bladder is removed, an ileal conduit is created and located on the right side of the abdomen to divert urine.

c. A colostomy may need to be created on the left side of the abdomen for the passage of feces.

2. Postoperative interventions

a. Similar to postoperative interventions following hysterectomy.

b. Monitor for signs of altered respiratory status.

c. Monitor incision site for infection.

d. Monitor intake and output and for signs of dehydration.

e. Monitor for hemorrhage, shock, and deep vein thrombosis.

f. Apply antiembolism stockings or sequential compression devices as prescribed.

g. Administer prophylactic heparin as prescribed.

h. Administer perineal irrigations and sitz baths as prescribed.

i. Instruct the client to avoid strenuous activity for 6 months.

j. Instruct the client that the perineal opening, if present, may drain for several months.

k. Instruct the client in the care of the ileal conduit and colostomy, if created.

l. Provide sexual counseling, because vaginal intercourse is not possible after anterior and total pelvic exenteration.

XIV. Ovarian Cancer

A. Description

1. Ovarian cancer grows rapidly, spreads fast, and is often bilateral.

2. Metastasis occurs by direct spread to the organs in the pelvis, by distal spread through lymphatic drainage, or by peritoneal seeding.

3. In its early stages, ovarian cancer is often asymptomatic; because most women are diagnosed in advanced stages, ovarian cancer has a higher mortality rate than any other cancer of the female reproductive system, particularly among white women between 55 and 65 years of age of North American or European descent.
4. An exploratory laparotomy is performed to diagnose and stage the tumor.
5. A transvaginal ultrasound may also be done for screening purposes but will not provide a definitive diagnosis.

B. Assessment

1. Abdominal discomfort or swelling
2. Gastrointestinal disturbances
3. Dysfunctional vaginal bleeding
4. Abdominal mass
5. Elevated **tumor marker** (i.e., CA-125)

C. Interventions

1. External radiation may be used if the tumor has invaded other organs; intraperitoneal radioisotopes may be instilled for stage I disease.
2. Chemotherapy is used postoperatively for most stages of ovarian cancer.
3. Intraperitoneal chemotherapy involves the instillation of chemotherapy into the abdominal cavity.
4. Total abdominal hysterectomy and bilateral salpingo-oophorectomy with tumor debulking may be necessary.

XV. Endometrial (Uterine) Cancer

A. Description

1. Endometrial cancer is a slow-growing tumor arising from the endometrial mucosa of the uterus, associated with the menopausal years.
2. Metastasis occurs through the lymphatic system to the ovaries and pelvis; via the blood to the lungs, liver, and bone; or intra-abdominally to the peritoneal cavity.

B. Risk factors

1. Use of estrogen replacement therapy (ERT)
2. Nulliparity
3. Polycystic ovary disease
4. Increased age
5. Late menopause
6. Family history of uterine cancer or hereditary nonpolyposis colorectal cancer
7. Obesity

8. Hypertension
9. Diabetes mellitus

C. Assessment

1. Abnormal bleeding, especially in postmenopausal women
2. Vaginal discharge
3. Low back, pelvic, or abdominal pain (pain occurs late in the disease process)
4. Enlarged uterus (in advanced stages)

D. Nonsurgical interventions

1. External or internal radiation is used alone or in combination with surgery, depending on the stage of cancer.
2. Chemotherapy is used to treat advanced or recurrent disease.
3. Progesterone therapy with medication may be prescribed for estrogen-dependent tumors.
4. Antiestrogen medication may also be prescribed.

E. Surgical interventions: Total abdominal hysterectomy and bilateral salpingo-oophorectomy

XVI. Breast Cancer

A. Description

1. Breast cancer is classified as invasive when it penetrates the tissue surrounding the mammary duct and grows in an irregular pattern.
2. Metastasis occurs via lymph nodes.
3. Common sites of metastasis are the bone and lungs; metastasis may also occur to the brain and liver.
4. Diagnosis is made by breast biopsy through a needle aspiration or by surgical removal of the tumor with microscopic examination for malignant cells.

B. Risk factors

1. Age
2. Family history of breast cancer due to genetic predisposition
3. Early menarche and late menopause
4. Previous cancer of the breast, uterus, or ovaries
5. Nulliparity, late first birth
6. Obesity
7. High-dose radiation exposure to chest

C. Assessment

1. Mass felt during BSE (usually felt in the upper outer quadrant, beneath the nipple, or in axilla)
2. Presence of the lesion on mammography
3. A fixed, irregular nonencapsulated mass; typically

painless except in the late stages
4. Asymmetry
5. Bloody or clear nipple discharge
6. Nipple retraction or elevation
7. Skin dimpling, retraction, or ulceration
8. Skin edema or peau d'orange skin
9. Axillary lymphadenopathy
10. Lymphedema of the affected arm
11. Symptoms of bone or lung metastasis in late stage

D. Early detection: Regular BSE

1. Performing BSE
    a. Perform regularly 7 to 10 days after menses.
    b. Postmenopausal clients or clients who have had a hysterectomy should perform BSE regularly as well.
2. Client instructions (Fig. 44-2)

E. Nonsurgical interventions
1. Chemotherapy
2. Radiation therapy
3. Hormonal manipulation via the use of medication in postmenopausal women or other medications for estrogen receptor–positive tumors
4. Monoclonal antibodies such as trastuzumab for human epidermal growth factor receptor 2–positive (HER-2 +) breast cancer

F. Surgical interventions: Surgical breast procedures, with possible breast reconstruction (Box 44-12)

G. Postoperative interventions
1. Monitor vital signs.

2. Position the client in a semi-Fowler's position; turn from the back to the unaffected side, with the affected arm elevated above the level of the heart to promote drainage and prevent lymphedema.
3. Encourage coughing and deep breathing.
4. If a drain (usually a Jackson-Pratt) is in place, maintain suction and record the amount of drainage and drainage characteristics; teach the client about home management of the drain (Fig. 44-3).
5. Assess operative site for infection, swelling, or the presence of fluid collection under the skin flaps or in the arm.
6. Monitor incision site for restriction of dressing, impaired sensation, or color changes of the skin.
7. If breast reconstruction was performed, the client will

return from surgery usually with a surgical brassiere and a prosthesis in place.

8. Provide the use of a pressure sleeve as prescribed if edema is severe.
9. Maintain fluid and electrolyte balance; administer diuretics and provide a low-salt diet as prescribed for severe lymphedema.
10. Consult with the PHCP and physical therapist regarding the appropriate exercise program, and assist the client with prescribed exercise.
11. Instruct the client about home care measures (Box 44-13).

No IVs, no injections, no blood pressure measurements, and no venipunctures should be done in the arm on the side of the mastectomy. The arm on the side of the mastectomy is protected, and any intervention that could traumatize the affected arm is avoided because of the risk for lymphedema on this side.

XVII. Esophageal Cancer

A. Description

1. Esophageal cancer is a malignancy found in the esophageal mucosa, formed by squamous cell carcinoma (SCC) or **adenocarcinoma**.
2. The cause is unknown but major risk factors include cigarette smoking, alcohol consumption, chronic reflux, Barrett's esophagus, and vitamin deficiencies.
3. Complications include dysphagia, painful swallowing, loss of appetite, and malaise.
4. The goal of treatment is to inhibit tumor growth and maintain nutrition.

B. Assessment

1. Dysphagia
2. Odynophagia
3. Epigastric pain or sternal pain

C. Interventions

1. Monitor nutritional status, including daily weight, intake and output, and calories consumed.
2. Instruct the client about diet changes that make eating easier and less painful.
3. Prepare the client for chemotherapy and radiation as prescribed.
4. Prepare the client for surgical resection of the tumor as prescribed.

XVIII. Gastric Cancer

A. Description

1. Gastric cancer is a malignant growth of the mucosal

cells in the inner lining of the stomach, with invasion to the muscle and beyond in advanced disease.

2. No single causative agent has been identified, but it is believed that *H. pylori* infection and a diet of smoked, highly salted, processed, or spiced foods have carcinogenic effects; other risk factors include smoking, alcohol and nitrate ingestion, and a history of gastric ulcers.
3. Complications include hemorrhage, obstruction, metastasis, and dumping syndrome.
4. The goal of treatment is to remove the tumor and provide a nutritional program.

B. Assessment

1. Early
    a. Indigestion
    b. Abdominal discomfort
    c. Full feeling
    d. Epigastric, back, or retrosternal pain
2. Late
    a. Weakness and fatigue
    b. Anorexia and weight loss
    c. Nausea and vomiting
    d. A sensation of pressure in the stomach
    e. Dysphagia and obstructive symptoms
    f. Iron deficiency anemia
    g. Ascites
    h. Palpable epigastric mass

C. Interventions

1. Monitor vital signs.
2. Monitor hemoglobin and hematocrit and administer blood transfusions as prescribed.
3. Monitor weight.
4. Assess nutritional status; encourage small, bland, easily digestible meals with vitamin and mineral supplements.
5. Administer pain medication as prescribed.
6. Prepare the client for chemotherapy or radiation therapy as prescribed.
7. Prepare the client for surgical resection of the tumor as prescribed (Box 44-14).

D. Postoperative interventions

1. Monitor vital signs.

2. Place in Fowler's position for comfort.
3. Administer analgesics and antiemetics, as prescribed.
4. Monitor intake and output; administer fluids and electrolyte replacement by IV as prescribed; administer parenteral nutrition as indicated.

5. Maintain NPO (nothing by mouth) status as prescribed for 1 to 3 days until peristalsis returns; assess for bowel sounds.
6. Monitor nasogastric suction. Following gastrectomy, drainage from the nasogastric tube is normally bloody for 24 hours postoperatively, changes to brown-tinged, and is then yellow or clear.
7. Do not irrigate or remove the nasogastric tube (follow agency procedures); assist the PHCP with irrigation or removal.
8. Advance the diet from NPO to sips of clear water to 6 small bland meals a day, as prescribed.
9. Monitor for complications such as hemorrhage, dumping syndrome, diarrhea, hypoglycemia, and vitamin B_{12} deficiency.

XIX. Pancreatic Cancer

A. Description

1. Most pancreatic tumors are highly malignant, rapidly growing adenocarcinomas originating from the epithelium of the ductal system.
2. Pancreatic cancer is associated with increased age, a history of diabetes mellitus, alcohol use, history of previous pancreatitis, smoking, ingestion of a high-fat diet, and exposure to environmental chemicals.
3. Symptoms usually do not occur until the tumor is large; therefore, the prognosis is poor.
4. Endoscopic retrograde cholangiopancreatography for visualization of the pancreatic duct and biliary system and collection of tissue and secretions may be done.

B. Assessment

1. Nausea and vomiting
2. Jaundice
3. Unexplained weight loss
4. Clay-colored stools
5. Glucose intolerance
6. Abdominal pain

C. Interventions

1. Radiation
2. Chemotherapy
3. Whipple procedure, which involves a pancreaticoduodenectomy with removal of the distal third of the stomach, pancreaticojejunostomy, gastrojejunostomy, and choledochojejunostomy (Fig. 44-4)

4. Postoperative care measures and complications are similar to those for the care of a client with pancreatitis and the client following gastric surgery; monitor blood glucose levels for transient hyperglycemia or hypoglycemia resulting from surgical manipulation of the pancreas.

XX. Intestinal Tumors

A. Description

1. Intestinal tumors are malignant lesions that develop in the cells lining the bowel wall or develop as adenomatous polyps in the colon or rectum.
2. Tumor spread is by direct invasion and through the lymphatic and circulatory systems.
3. Complications include bowel perforation with peritonitis, abscess and fistula formation, hemorrhage, and complete intestinal obstruction.

B. Risk factors for colorectal cancer

1. Age older than 50 years
2. Familial polyposis, family history of colorectal cancer
3. Previous colorectal polyps, history of colorectal cancer
4. History of chronic inflammatory bowel disease
5. History of ovarian or breast, endometrial, and stomach cancers

C. Assessment

1. Blood in stool (most common manifestation) detected by fecal occult blood testing, sigmoidoscopy, and colonoscopy
2. Anorexia, vomiting, and weight loss
3. Anemia
4. Abnormal stools
    a. Ascending colon tumor: Diarrhea
    b. Descending colon tumor: Constipation or some diarrhea, or flat, ribbon-like stool caused by a partial obstruction
    c. Rectal tumor: Alternating constipation and diarrhea
5. Guarding or abdominal distention, abdominal mass (late sign)
6. Cachexia (late sign)
7. Masses noted on barium enema, colonoscopy, CT scan, sigmoidoscopy

D. General interventions

1. Monitor for signs of complications, which include bowel perforation with peritonitis, abscess or

fistula formation (fever associated with pain), hemorrhage (signs of shock), and complete intestinal obstruction.

2. Monitor for signs of bowel perforation, which include low blood pressure, rapid and weak pulse, distended abdomen, and elevated temperature.
3. Monitor for signs of intestinal obstruction, which include vomiting (may be fecal contents), pain, constipation, and abdominal distention; provide comfort measures.
4. Note that an early sign of intestinal obstruction is increased peristaltic activity, which produces an increase in bowel sounds; as the obstruction progresses, hypoactive bowel sounds may be heard.
5. Prepare for radiation preoperatively to facilitate surgical resection, and postoperatively to decrease the risk of recurrence or to reduce pain, hemorrhage, bowel obstruction, or metastasis.

E. Nonsurgical interventions

1. Preoperative radiation for local control and postoperative radiation for palliation may be prescribed.
2. Postoperative chemotherapy to control symptoms and the spread of disease

F. Surgical interventions: Bowel resection, local lymph node resection, and creation of a colostomy or ileostomy

G. Colostomy, ileostomy

1. Preoperative interventions
    a. Consult with the enterostomal therapist to assist in identifying optimal placement of the ostomy.
    b. Instruct the client in prescribed preoperative diet; bowel preparation (laxatives and enemas) may be prescribed per surgeon preference.
    c. Intestinal antiseptics and antibiotics may be prescribed to decrease the bacterial content of the colon and to reduce the risk of infection from the surgical procedure.

2. Postoperative: Colostomy
    a. If a pouch system is not in place, apply a petroleum jelly gauze over the stoma to keep it moist, covered with a dry sterile dressing; place a pouch system on the stoma as soon as possible.
    b. Monitor the pouch system for proper fit

and signs of leakage; empty the pouch when one-third full.

c. Monitor the stoma for size, unusual bleeding, color changes, or necrotic tissue.

d. Note that the normal stoma color is red or pink, indicating high vascularity.

e. Note that a pale pink stoma indicates low hemoglobin and hematocrit levels.

f. Assess the functioning of the colostomy.

g. Expect that stool will be liquid postoperatively but will become more solid, depending on the area of the colostomy.

h. Expect liquid stool from an ascending colon colostomy, loose to semiformed stool from a transverse colon colostomy, or close to normal stool from a descending colon colostomy.

i. Fecal matter should not be allowed to remain on the skin.

j. Administer analgesics and antibiotics as prescribed.

k. Irrigate perineal wound if present and if prescribed, and monitor for signs of infection; provide comfort measures for perineal itching and pain.

l. Instruct the client to avoid foods that cause excessive gas formation and odor.

m. Instruct the client in stoma care and irrigations as prescribed.

n. Instruct the client on when to resume normal activities, including work, travel, and sexual intercourse, as prescribed; provide psychosocial support.

3. Postoperative: Ileostomy

a. Healthy stoma is red in color.

b. Postoperative drainage will be dark green and progress to yellow as the client begins to eat.

c. Stool is liquid.

d. Risk for dehydration and electrolyte imbalance exists.

Monitor stoma color. A dark blue, purple, or black stoma indicates compromised circulation, requiring surgeon notification.

XXI. Lung Cancer

A. Description

1. Lung cancer is a malignant tumor of the bronchi and peripheral lung tissue.
2. The lungs are a common target for metastasis from other organs.
3. Bronchogenic cancer (tumors originate in the epithelium of the bronchus) spreads through direct extension and lymphatic dissemination.
4. Classified according to histological cell type; types include small cell lung cancer (SCLC) and non–small cell lung cancer (NSCLC); epidermal (squamous cell), adenocarcinoma, and large cell anaplastic **carcinoma** are classified as NSCLC because of their similar responses to treatment.
5. Diagnosis is made by a chest x-ray study, CT and PET scan, or magnetic resonance imaging (MRI), which shows a lesion or mass, and by bronchoscopy and sputum studies, which demonstrate a positive cytological study for cancer cells.

B. Causes

1. Cigarette smoking; also exposure to "passive" tobacco smoke
2. Exposure to environmental and occupational pollutants

C. Assessment

1. Cough
2. Wheezing, dyspnea
3. Hoarseness
4. Hemoptysis, blood-tinged or purulent sputum
5. Chest pain
6. Anorexia and weight loss
7. Weakness
8. Diminished or absent breath sounds, respiratory changes

D. Interventions

1. Monitor vital signs.
2. Monitor breathing patterns and breath sounds and for signs of respiratory impairment; monitor for hemoptysis.
3. Assess for tracheal deviation.
4. Administer analgesics as prescribed for pain management.


5. Place in a Fowler's position to help ease breathing.


6. Administer oxygen as prescribed and humidification to moisten and loosen secretions.

7. Monitor pulse oximetry.
8. Provide respiratory treatments as prescribed.
9. Administer bronchodilators and corticosteroids as prescribed to decrease bronchospasm, inflammation, and edema.
10. Provide a high-calorie, high-protein, high-vitamin diet.
11. Provide activity as tolerated, rest periods, and active and passive range-of-motion exercises.

E. Nonsurgical interventions

1. Radiation therapy may be prescribed for localized intrathoracic lung cancer and for palliation of hemoptysis, obstructions, dysphagia, superior vena cava syndrome, and pain.
2. Chemotherapy may be prescribed for treatment of nonresectable tumors or as adjuvant therapy.

F. Surgical interventions

1. Laser therapy: To relieve endobronchial obstruction
2. Thoracentesis and pleurodesis: To remove pleural fluid and relieve hypoxia
3. Thoracotomy (opening into the thoracic cavity) with pneumonectomy: Surgical removal of 1 entire lung
4. Thoracotomy with lobectomy: Surgical removal of 1 lobe of the lung for tumors confined to a single lobe
5. Thoracotomy with segmental resection: Surgical removal of a lobe segment

G. Preoperative interventions

1. Explain the potential postoperative need for chest tubes.


2. Note that closed chest drainage usually is not used for a pneumonectomy, and the serous fluid that accumulates in the empty thoracic cavity eventually consolidates, preventing shifts of the mediastinum, heart, and remaining lung.

H. Postoperative interventions

1. Monitor vital signs.


2. Assess cardiac and respiratory status; monitor lung sounds.

3. Maintain the chest tube drainage system, which drains air and blood that accumulates in the pleural space; monitor for excess bleeding. (See Chapter 69 for care of the client with a chest tube.)
4. Administer oxygen as prescribed.
5. Check the surgeon's prescriptions regarding client positioning; avoid complete lateral turning.
6. Monitor pulse oximetry.
7. Provide activity as tolerated.
8. Encourage active range-of-motion exercises of the operative shoulder as prescribed.

The airway is the priority for a client with lung or laryngeal cancer.

XXII. Laryngeal Cancer

A. Description

1. Laryngeal cancer is a malignant tumor of the larynx (Fig. 44-5).
2. Laryngeal cancer presents as malignant ulcerations with underlying infiltration and is spread by local extension to adjacent structures in the throat and neck and by the lymphatic system.
3. Diagnosis is made by laryngoscopy and biopsy showing a positive cytological study for cancer cells.
4. Laryngoscopy allows for evaluation of the throat and biopsy of tissues; chest radiography, CT, and MRI are used for staging.

B. Risk factors

1. Cigarette smoking
2. Heavy alcohol use and the combined use of tobacco and alcohol
3. Exposure to environmental pollutants (e.g., asbestos, wood dust)
4. Exposure to radiation

C. Assessment

1. Persistent hoarseness or sore throat and ear pain
2. Painless neck mass
3. Feeling of a lump in the throat
4. Burning sensation in the throat
5. Dysphagia
6. Change in voice quality
7. Dyspnea
8. Weakness and weight loss
9. Hemoptysis

10. Foul breath odor

D. Interventions

1. Place in Fowler's position to promote optimal air exchange.
2. Monitor respiratory status.
3. Monitor for signs of aspiration of food and fluid.

4. Administer oxygen as prescribed.
5. Provide respiratory treatments as prescribed.
6. Provide activity as tolerated.
7. Provide a high-calorie and high-protein diet.
8. Provide nutritional support via parenteral nutrition, nasogastric tube feedings, or gastrostomy or jejunostomy tube, as prescribed.
9. Administer analgesics as prescribed for pain.
10. Encourage clients to stop smoking and drinking alcohol to increase effectiveness of treatments.

E. Nonsurgical interventions

1. Radiation therapy in specified situations
2. Chemotherapy, which may be given in combination with radiation and surgery

F. Surgical interventions

1. The goal is to remove the cancer while preserving as much normal function as possible.
2. Surgical intervention depends on the tumor size, location, and amount of tissue to be resected.
3. Types of resection include cordal stripping, cordectomy, partial laryngectomy, and total laryngectomy.
4. A tracheostomy is performed with a total laryngectomy; this airway opening is permanent and is referred to as a *laryngectomy stoma*.

G. Preoperative interventions

1. Discuss self-care of the airway, alternative methods of communication, suctioning, pain control methods, the critical care environment, and nutritional support.
2. Encourage the client to express feelings about changes in body image and loss of voice.
3. Describe the rehabilitation program and information about the tracheostomy and suctioning.

H. Postoperative interventions

1. Monitor vital signs.

2. Monitor respiratory status; monitor airway

patency and provide frequent suctioning to remove bloody secretions.

3. Place the client in a high-Fowler's position.
4. Maintain mechanical ventilator support or a tracheostomy collar with humidification, as prescribed.
5. Monitor pulse oximetry.
6. Maintain surgical drains in the neck area if present.
7. Observe for hemorrhage and edema in the neck.
8. Monitor IV fluids or parenteral nutrition until nutrition is administered via a nasogastric, gastrostomy, or jejunostomy tube.
9. Provide oral hygiene.
10. Assess gag and cough reflexes and the ability to swallow.
11. Increase activity as tolerated.
12. Assess the color, amount, and consistency of sputum.
13. Provide stoma and laryngectomy care (Box 44-15).
14. Provide consultation with speech and language pathologist as prescribed.
15. Reinforce method of communication established preoperatively.
16. Prepare the client for rehabilitation and speech therapy (Box 44-16).

XXIII. Prostate Cancer

A. Description

1. Prostate cancer, a slow-growing malignancy of the prostate gland, is a common cancer in American men; most prostate tumors are adenocarcinomas arising from androgen-dependent epithelial cells.
2. The risk increases in men with each decade after the age of 50 years.
3. Prostate cancer can spread via direct invasion of surrounding tissues or by metastasis through the bloodstream and lymphatics, to the bony pelvis and spine.
4. Bone metastasis is a concern, as is spread to the lungs, liver, and kidneys.
5. The cause of prostate cancer is unclear, but advancing age, heavy metal exposure, smoking, and history of sexually transmitted infection are contributing factors; it is more common among men of African American descent.

B. Assessment

1. Asymptomatic in early stages

2. Hard, pea-sized nodule or irregularities palpated on rectal examination
3. Gross, painless hematuria
4. Late symptoms such as weight loss, urinary obstruction, and bone pain radiating from the lumbosacral area down the leg
5. The prostate-specific antigen level is elevated in various noncancerous conditions; therefore, it should not be used as a screening test without a digital rectal examination. It is routinely used to monitor response to therapy.
6. Diagnosis is made through biopsy of the prostate gland.

C. Nonsurgical interventions

1. Prepare the client for hormone manipulation therapy (androgen suppression therapy) as prescribed or active surveillance with prostate-specific antigen (PSA) and digital rectal examination (DRE).
2. Luteinizing hormone may be prescribed to slow the rate of growth of the tumor.
3. Medication adverse effects include reduced libido, hot flashes, breast tenderness, osteoporosis, loss of muscle mass, and weight gain. The client should be informed of these effects.
4. Pain medication, radiation therapy, corticosteroids, and bisphosphonates may be prescribed for palliation of advanced prostate cancer.
5. Prepare the client for external beam radiation or brachytherapy, which may be prescribed alone or with surgery, preoperatively or postoperatively, to reduce the lesion and limit metastasis.
6. Prepare the client for the administration of chemotherapy in cases of hormone treatment resistant tumors.

D. Surgical interventions

1. Prepare the client for orchiectomy (palliative), if prescribed, which will limit the production of testosterone.
2. Prepare the client for prostatectomy, if prescribed.
3. The radical prostatectomy can be performed via a retropubic, perineal, or suprapubic approach.
4. Cryosurgical ablation is a minimally invasive procedure that may be an alternative to radical prostatectomy; liquid nitrogen freezes the gland, and the dead cells are absorbed by the body.

E. Transurethral resection of the prostate (TURP) may be performed for palliation in prostate cancer clients.

1. The procedure involves insertion of a scope into the urethra to excise prostatic tissue.
2. Monitor for hemorrhage; bleeding is common following TURP.
3. Postoperative continuous bladder irrigation (CBI) may be prescribed, which prevents catheter obstruction from clots.
4. Assess for signs of transurethral resection syndrome, which include signs of cerebral edema and increased intracranial pressure, such as increased blood pressure, bradycardia, confusion, disorientation, muscle twitching, visual disturbances, and nausea and vomiting.
5. Antispasmodics may be prescribed for bladder spasm.
6. Instruct the client to monitor and report dribbling or incontinence postoperatively and teach perineal exercises.
7. Sterility is possible following the surgical procedure.

F. Suprapubic prostatectomy

1. Suprapubic prostatectomy is removal of the prostate gland by an abdominal incision with a bladder incision.

2. The client will have an abdominal dressing that may drain copious amounts of urine, and the abdominal dressing will need to be changed frequently.
3. Severe hemorrhage is possible, and monitoring for blood loss is an important nursing intervention.
4. Antispasmodics may be prescribed for bladder spasms.
5. CBI is prescribed and carried out to maintain pink-colored urine.
6. Sterility occurs with this procedure.

G. Retropubic prostatectomy

1. Retropubic prostatectomy is removal of the prostate gland by a low abdominal incision without opening the bladder.
2. Less bleeding occurs with this procedure compared with the suprapubic procedure, and the client experiences fewer bladder spasms.
3. Abdominal drainage is minimal.
4. CBI may be used.
5. Sterility occurs with this procedure.

H. Perineal prostatectomy

1. The prostate gland is removed through an incision made between the scrotum and anus.
2. Minimal bleeding occurs with this procedure.

3. The client needs to be monitored closely for infection, because the risk of infection is increased with this type of prostatectomy.
4. Urinary incontinence is common.
5. The procedure causes sterility.
6. Teach the client how to perform perineal exercises.

I. Postoperative interventions

1. Monitor vital signs.
2. Monitor urinary output and urine for hemorrhage or clots.
3. Increase fluids to 2400 to 3000 mL/day, unless contraindicated.
4. Monitor for arterial bleeding as evidenced by bright red urine with numerous clots; if it occurs, increase CBI and notify the surgeon immediately.
5. Monitor for venous bleeding as evidenced by burgundy-colored urine output; if it occurs, inform the surgeon, who may apply traction on the catheter.
6. Monitor hemoglobin and hematocrit levels.
7. Expect red to light pink urine for 24 hours, turning to amber in 3 days.
8. Ambulate the client as early as possible and as soon as urine begins to clear in color.
9. Inform the client that a continuous feeling of an urge to void is normal.
10. Instruct the client to avoid attempts to void around the catheter, because this will cause bladder spasms.
11. Administer antibiotics, analgesics, stool softeners, and antispasmodics as prescribed.
12. Monitor the 3-way urinary catheter, which usually has a 30- to 45-mL retention balloon.
13. Maintain CBI with sterile bladder irrigation solution as prescribed to keep the catheter free of obstruction and keep the urine pink in color (Box 44-17).

Following TURP, monitor for transurethral resection syndrome or severe hyponatremia (water intoxication) caused by the excessive absorption of bladder irrigation during surgery. (Signs include altered mental status, bradycardia, increased blood pressure, and confusion.)

J. Postoperative interventions: Suprapubic prostatectomy

1. Monitor suprapubic and urinary catheter drainage.
2. Monitor CBI if prescribed.
3. Note that the urinary catheter will be removed 2 to 4 days postoperatively if the client has a suprapubic

catheter.

4. If prescribed, clamp the suprapubic catheter after the urinary catheter is removed, and instruct the client to attempt to void; after the client has voided, assess the residual urine in the bladder by unclamping the suprapubic catheter and measuring the output.
5. Prepare for removal of the suprapubic catheter when the client consistently empties the bladder and residual urine is 75 mL or lessor as prescribed.
6. Monitor the suprapubic incision dressing, which may become saturated with urine, until the incision heals; dressing may need to be changed frequently.

K. Postoperative interventions: Retropubic prostatectomy

1. Note that because the bladder is not entered, there is no urinary drainage on the abdominal dressing; if urinary or purulent drainage is noted on the dressing, notify the surgeon.
2. Monitor for fever and increased pain, which may indicate an infection.

L. Postoperative interventions: Perineal prostatectomy

1. Note that the client will have an incision, which may or may not have a drain.
2. Avoid the use of rectal thermometers, rectal tubes, and enemas, because they may cause trauma and bleeding.

XXIV. Bladder Cancer

A. Description

1. Bladder cancer is a papillomatous growth in the bladder urothelium that undergoes malignant changes and that may infiltrate the bladder wall.
2. Predisposing factors include cigarette smoking, exposure to industrial chemicals, and exposure to radiation.
3. Common sites of metastasis include the liver, bones, and lungs.
4. As the tumor progresses, it can extend into the rectum, vagina, other pelvic soft tissues, and retroperitoneal structures.

B. Assessment

1. Gross or microscopic, painless hematuria (most common sign)
2. Frequency, urgency, dysuria
3. Clot-induced obstruction
4. Bladder wash specimens and biopsy confirm diagnosis

C. Radiation

1. Radiation therapy is indicated for advanced disease that cannot be eradicated by surgery; palliative radiation may be used to relieve pain and bowel obstruction and control potential hemorrhage and leg edema caused by venous or lymphatic obstruction.
2. Intracavitary radiation may be prescribed, which protects adjacent tissue.
3. External beam radiation combined with chemotherapy or surgery may be prescribed to improve survival.
4. Complications of radiation
    a. Abacterial cystitis
    b. Proctitis
    c. Fistula formation
    d. Ileitis or colitis
    e. Bladder ulceration and hemorrhage

D. Chemotherapy

1. Intravesical instillation
    a. An alkylating chemotherapeutic agent is instilled into the bladder.
    b. This method provides a concentrated topical treatment with little systemic absorption.
    c. The medication is injected into a urethral catheter and retained for 2 hours.
    d. Following instillation, the client's position is rotated every 15 to 30 minutes, starting in the supine position, to avoid lying on a full bladder.
    e. After 2 hours, the client voids in a sitting position and is instructed to increase fluids to flush the bladder.
    
    f. Treat the urine as a biohazard and send to the radioisotope laboratory for monitoring.
    g. For 6 hours following intravesical chemotherapy, disinfect the toilet with household bleach after the client has voided.
2. Systemic chemotherapy: Used to treat inoperable tumors or distant metastasis.
3. Complications of chemotherapy
    a. Bladder irritation
    b. Hemorrhagic cystitis

E. Surgical interventions

1. Transurethral resection of bladder tumor
    a. Local resection and fulguration (destruction of tissue by electrical current through electrodes placed in direct contact with the tissue)
    b. Performed for early tumors for cure or for inoperable tumors for palliation
2. Partial cystectomy
    a. Partial cystectomy is the removal of up to half the bladder.
    b. The procedure is done for early-stage tumors and for clients who cannot tolerate a radical cystectomy.
    c. During the initial postoperative period, bladder capacity is reduced greatly to about 60 mL; however, as the bladder tissue expands, the capacity increases to 200 to 400 mL.
    d. Maintenance of a continuous output of urine following surgery is critical to prevent bladder distention and stress on the suture line.
    e. A urethral catheter and a suprapubic catheter may be in place, and the suprapubic catheter may be left in place for 2 weeks until healing occurs.
3. Cystectomy and urinary diversion (Fig. 44-6)
    a. Various surgical procedures are performed to create alternative pathways for urine collection and excretion.
    b. Urinary diversion may be performed with or without cystectomy (bladder removal).
    c. The surgery may be performed in 2 stages if the tumor is extensive, with the creation of the urinary diversion first and the cystectomy several weeks later.
    d. If a radical cystectomy is performed, lower extremity lymphedema may occur as a result of lymph node dissection, and male impotence may occur.
4. Ileal conduit
    a. The ileal conduit is also called a *ureteroileostomy,* or Bricker's procedure.
    b. Ureters are implanted into a segment of

the ileum, with the formation of an abdominal stoma.

c. The urine flows into the conduit and is propelled continuously out through the stoma by peristalsis.

d. The client is required to wear an appliance over the stoma to collect the urine (Box 44-18).

e. Complications include obstruction, pyelonephritis, leakage at the anastomosis site, stenosis, hydronephrosis, calculi, skin irritation and ulceration, and stomal defects.

5. Kock pouch

a. The Kock pouch is a continent internal ileal reservoir created from a segment of the ileum and ascending colon.

b. The ureters are implanted into the side of the reservoir, and a special nipple valve is constructed to attach the reservoir to the skin.

c. Postoperatively, the client will have a urinary catheter in place to drain urine continuously until the pouch has healed.

d. The urinary catheter is irrigated gently with normal saline to prevent obstruction from mucus or clots.

e. Following removal of the urinary catheter, the client is instructed in how to self-catheterize and to drain the reservoir at 4- to 6-hour intervals (Box 44-19).

6. Indiana pouch

a. A continent reservoir is created from the ascending colon and terminal ileum, making a pouch larger than the Kock pouch (additional continent reservoirs include the Mainz and Florida pouch systems).

b. Postoperatively, care is similar to that for the Kock pouch.

7. Creation of a neobladder

a. Creation of a neobladder is similar to creation of an internal reservoir, with the difference being that instead of emptying through an abdominal stoma, the bladder empties through a

pelvic outlet into the urethra.

b. The client empties the neobladder by relaxing the external sphincter and creating abdominal pressure or by intermittent self-catheterization.

8. Percutaneous nephrostomy or pyelostomy

a. These procedures are used to prevent or treat obstruction.

b. The procedures involve a percutaneous or surgical insertion of a nephrostomy tube into the kidney for drainage.

c. Nursing interventions involve stabilizing the tube to prevent dislodgment and monitoring output.

9. Ureterostomy

a. Ureterostomy may be performed as a palliative procedure if the ureters are obstructed by the tumor.

b. The ureters are attached to the surface of the abdomen, where the urine flows directly into a drainage appliance without a conduit.

c. Potential problems include infection, skin irritation, and obstruction to urinary flow as a result of strictures at the opening.

10. Vesicostomy

a. The bladder is sutured to the abdomen, and a stoma is created in the bladder wall.

b. The bladder empties through the stoma.

F.  Preoperative interventions

1. Instruct the client in preoperative, operative, and postoperative management, including diet, medications, nasogastric tube placement, IV lines, NPO status, pain control, coughing and deep breathing, leg exercises, and postoperative activity.
2. Demonstrate appliance application and use for those clients who will have a stoma.
3. Arrange an enterostomal nurse consult and for a visit with a person who has had urinary diversion.
4. Administer antimicrobials for bowel preparation as prescribed.
5. Encourage discussion of feelings, including the effects on sexual activities.

G. Postoperative interventions

Monitor urinary output closely following bladder surgery. Irrigate the ureteral catheter (if present and if prescribed) gently to prevent obstruction. Follow the surgeon's prescriptions and agency policy regarding irrigation.

1. Monitor vital signs.
2. Assess incision site.
3. Assess stoma (should be red and moist) every hour for the first 24 hours.
4. Monitor for edema in the stoma, which may be present in the immediate postoperative period.
5. Notify the surgeon if the stoma appears dark and dusky (indicates necrosis).
6. Monitor for prolapse or retraction of the stoma.
7. Assess bowel function; monitor for expected return of peristalsis in 3 to 4 days.
8. Maintain NPO status as prescribed until bowel sounds return.
9. Monitor for continuous urine flow (30 to 60 mL/hr).
10. Notify the surgeon if the urine output is less than 30 mL/hr or if no urine output occurs for more than 15 minutes.
11. Ureteral stents or catheters, if present, may be in place for 2 to 3 weeks or until healing occurs; maintain stability with catheters to prevent dislodgment.
12. Monitor for hematuria.
13. Monitor for signs of peritonitis.
14. Monitor for bladder distention following a partial cystectomy.
15. Monitor for shock, hemorrhage, thrombophlebitis, and lower extremity lymphedema after a radical cystectomy.
16. Monitor the urinary drainage pouch for leaks, and check skin integrity (see Box 44-18).
17. Monitor the pH of the urine (do not place the dipstick in the stoma), because highly alkaline or acidic urine can cause skin irritation and facilitate crystal formation.
18. Instruct the client regarding the potential for urinary tract infection or the development of calculi.
19. Instruct the client to assess the skin for irritation, monitor the urinary drainage pouch, and report any leakage.
20. Encourage the client to express feelings about changes in body image, embarrassment, and sexual dysfunction.

XXV. Oncological Emergencies

A. Sepsis and disseminated intravascular coagulation (DIC)

1. Description: The client with cancer is at increased risk for infection, particularly gram-negative organisms, in the bloodstream (sepsis or septicemia) and DIC, a life-threatening problem frequently associated with sepsis.
2. Interventions
    a. Prevent the complication through early identification of clients at high risk for sepsis and DIC.
    b. Maintain strict aseptic technique with the immunocompromised client and monitor closely for infection and signs of bleeding.
    c. Administer antibiotics intravenously as prescribed.
    d. Administer anticoagulants as prescribed during the early phase of DIC.
    e. Administer cryoprecipitated clotting factors, as prescribed, when DIC progresses and hemorrhage is the primary problem.

Notify the PHCP immediately if signs of an oncological emergency occur.

B. Syndrome of inappropriate antidiuretic hormone (SIADH)
1. Description
    a. Tumors can produce, secrete, or stimulate substances that mimic antidiuretic hormone.
    b. Mild symptoms include weakness, muscle cramps, loss of appetite, and fatigue; serum sodium levels range from 115 to 120 mEq/L (115 to 120 mmol/L).
    c. More serious signs and symptoms relate to water intoxication and include weight gain, personality changes, confusion, and extreme muscle weakness.
    d. As the serum sodium level approaches 110 mEq/L (110 mmol/L), seizures, coma, and eventually death will occur, unless the condition is treated rapidly.
2. Interventions
    a. Initiate fluid restriction and increased

sodium intake as prescribed.
b. As prescribed, administer an antagonist to antidiuretic hormone.
c. Monitor serum sodium levels.
d. Treat the underlying cause with chemotherapy or radiation to achieve tumor regression.

C. Spinal cord compression
1. Description
a. Spinal cord compression occurs when a tumor directly enters the spinal cord or when the vertebral column collapses from tumor entry, impinging on the spinal cord.
b. Spinal cord compression causes back pain, usually before neurological deficits occur.
c. Neurological deficits relate to the spinal level of compression and include numbness; tingling; loss of urethral, vaginal, and rectal sensation; and muscle weakness.
2. Interventions
a. Early recognition: Assess for back pain and neurological deficits.
b. Administer high-dose corticosteroids to reduce swelling around the spinal cord and relieve symptoms.
c. Prepare the client for immediate radiation and/or chemotherapy to reduce the size of the tumor and relieve compression.
d. Surgery may need to be performed to remove the tumor and relieve the pressure on the spinal cord.
e. Instruct the client in the use of neck or back braces if they are prescribed.

D. Hypercalcemia
1. Description
a. Hypercalcemia is a late manifestation of extensive malignancy that occurs most often with bone metastasis, when the bone releases calcium into the bloodstream.
b. Decreased physical mobility contributes to or worsens hypercalcemia.
c. Early signs include fatigue, anorexia, nausea, vomiting, constipation, and

polyuria.
d. More serious signs and symptoms include severe muscle weakness, diminished deep tendon reflexes, paralytic ileus, dehydration, and changes in the electrocardiogram.

2. Interventions
a. Monitor serum calcium level and electrocardiographic changes.
b. Administer oral or parenteral fluids as prescribed.
c. Administer medications that lower the calcium level and control nausea and vomiting as prescribed.
d. Prepare the client for dialysis if the condition becomes life-threatening or is accompanied by renal impairment.
e. Encourage walking to prevent breakdown of bone.

E. Superior vena cava syndrome
1. Description
a. Superior vena cava (SVC) syndrome occurs when the SVC is compressed or obstructed by tumor growth (commonly associated with lung cancer and lymphoma).
b. Signs and symptoms result from blockage of blood flow in the venous system of the head, neck, and upper trunk.
c. Early signs and symptoms generally occur in the morning and include edema of the face, especially around the eyes, and tightness of the shirt or blouse collar (Stokes' sign).
d. As the condition worsens, edema in the arms and hands, dyspnea, erythema of the upper body, swelling of the veins in the chest and neck, and epistaxis occur.
e. Life-threatening signs and symptoms include airway obstruction, hemorrhage, cyanosis, mental status changes, decreased cardiac output, and hypotension.

2. Interventions
a. Assess for early signs and symptoms of SVC syndrome.

b. Place the client in semi-Fowler's position and administer corticosteroids and diuretics as prescribed.
c. Prepare the client for high-dose radiation therapy to the mediastinal area and possible surgery to insert a metal stent in the vena cava.

F. Tumor lysis syndrome

1. Description

a. Tumor lysis syndrome occurs when large quantities of tumor cells are destroyed rapidly and intracellular components such as potassium and uric acid are released into the bloodstream faster than the body can eliminate them.
b. Tumor lysis syndrome can indicate that cancer treatment is destroying tumor cells; however, if left untreated, it can cause severe tissue damage and death.
c. Hyperkalemia, hyperphosphatemia with resultant hypocalcemia, and hyperuricemia occur; hyperuricemia can lead to acute kidney injury.

2. Interventions

a. Encourage oral hydration; IV hydration may be prescribed; monitor renal function and intake and output, and ensure that the client is on a renal diet low in potassium and phosphorus.
b. Administer diuretics to increase the urine flow through the kidneys as prescribed.
c. Administer medications that increase the excretion of purines, such as allopurinol, as prescribed.
d. Prepare to administer IV infusion of glucose and insulin to treat hyperkalemia.
e. Prepare the client for dialysis if hyperkalemia and hyperuricemia persist despite treatment.

XXVI. Anemia

A. Description

1. Condition in which the blood lacks adequate healthy red blood cells or hemoglobin, with most common causes being acute blood loss, decreased or faulty red blood cell production, or the destruction of red blood

cells.

2. There are several types of anemia, with the main types being anemia related to acute and chronic blood loss, anemia of chronic diseases (including cancers, immunodeficiency syndrome, renal disease, liver diseases, and autoimmune conditions), anemias caused by nutritional deficiencies (such as iron, folate, or vitamin B_{12} deficiency), and hereditary anemias (including sickle cell anemia and thalassemia).
3. Treatment of anemia focuses on treating the cause of the condition and varies based on the type of anemia.
4. Acute blood loss anemia is characterized by normal red blood cell size, shape, and color. Clients at risk include postoperative clients, clients with an active bleeding problem, or immunocompromised clients with a reduction in blood components. Hemoglobin, hematocrit, or red blood cell levels can be low.

B. Assessment

1. Fatigue
2. Weakness
3. Pallor or slight jaundice if red blood cell destruction occurs
4. Shortness of breath
5. Dysrhythmias
6. Chest pain
7. Tachycardia
8. Cool extremities

C. Interventions

1. Administer blood products and hematopoietic medications as prescribed, which are used to treat anemia related to acute and chronic conditions.
2. Encourage a diet rich in the deficient nutrient if the anemia is caused by malnutrition, such as iron, folate, or vitamin B_{12} supplementation.
3. Control and address the source of bleeding if anemia is caused by acute blood loss and assess client for sources of frank and occult bleeding. Contact the PCHP and prepare for replacement therapy if acute blood loss occurs.

XXVII. Iron Deficiency Anemia

A. Description

1. Iron stores are depleted, resulting in a decreased iron supply for the manufacture of hemoglobin in red blood cells.
2. Commonly results from blood loss, increased metabolic demands, syndromes of gastrointestinal malabsorption, and dietary inadequacy.

B. Assessment

1. Pallor
2. Weakness and fatigue
3. Low hemoglobin, hematocrit, and mean cellular volume (MCV) levels
4. Red blood cells that are microcytic and hypochromic

C. Interventions

1. Increase oral intake of iron and instruct client in food choices that are high in iron (see Box 11-2 in Chapter 11 for iron-rich foods).
2. Administer iron supplements as prescribed.
3. Intramuscular injections of iron (using Z-track method) or IV administration of iron may be prescribed in severe cases of anemia.
4. Teach clients how to administer the iron supplements.
    a. Take between meals for maximum absorption.
    b. Take with a multivitamin or fruit juice, because vitamin C increases absorption.
    c. Do not take with milk or antacids, because these items decrease absorption.
    d. Instruct the client about the side effects of iron supplements (black stools, constipation, and foul aftertaste).
    e. Liquid iron preparations stains the teeth. Teach the client that liquid iron should be taken through a straw and that the teeth should be brushed after administration.

XXVIII. Vitamin B_{12} Deficiency Anemia

A. Description

1. A macrocytic anemia that results from an inadequate intake of vitamin B_{12} or lack of absorption of ingested vitamin B_{12} from the intestinal tract.
2. Pernicious anemia results from a deficiency of intrinsic factor (normally secreted by the gastric mucosa), necessary for intestinal absorption of vitamin B_{12}; gastric disease or surgery can result in a lack of intrinsic factor.

B. Assessment

1. Severe pallor
2. Fatigue
3. Weight loss
4. Smooth, beefy red tongue
5. Slight jaundice
6. Paresthesias of the hands and feet

7. Disturbances with gait and balance

C. Interventions

1. Increase dietary intake of foods rich in vitamin B_{12} such as citrus fruits, dried beans, green leafy vegetables, liver, nuts, organ meats, and brewer's yeast if the anemia is a result of a dietary deficiency.
2. Administer vitamin B_{12} injections as prescribed, weekly initially and then monthly for maintenance (lifelong) if the anemia is the result of a deficiency of intrinsic factor or disease or surgery of the ileum.

XXIX. Folate Deficiency Anemia

A. Description

1. A macrocytic anemia in which red blood cells are larger than normal and are oval-shaped rather than round-shaped due to the lack of inadequate intake of folate (vitamin B_9).
2. Folic acid is required for DNA synthesis required for red blood cell formation and maturation.
3. Common causes include dietary deficiency; malabsorption syndromes such as Celiac disease, Crohn's disease, or small bowel resection; medications (such as antiseizure medications) that decrease the absorption of folic acid, a condition (including pregnancy) that increases the requirement of folic acid; chronic alcoholism; and chronic hemodialysis.

B. Assessment

1. Dyspepsia
2. Smooth, beefy red tongue
3. Pallor, fatigue and weakness
4. Tinnitus
5. Tachycardia

C. Interventions

1. Encourage the client to eat foods rich in folic acid, such as green leafy vegetables, meat, liver, fish, legumes, peanuts, orange juice, and avocado.
2. Administer folic acid as prescribed.

XXX. Sickle Cell Anemia: See Chapter 30 for more information regarding sickle cell anemia

XXXI. Thalassemia: See Chapter 30 for more information regarding thalassemia

XXXII. Aplastic Anemia

A. Description

1. Aplastic anemia is a deficiency of circulating erythrocytes and all other formed elements of blood, resulting from the arrested development of cells within the bone marrow.
2. It can be primary (present at birth) or secondary (acquired).

3. Several possible causes exist, including chronic exposure to myelotoxic agents, viruses and infections such as hepatitis, Epstein-Barr virus, autoimmune disorders such as human immunodeficiency virus, and allergic states.
4. The definitive diagnosis is determined by bone marrow aspiration (shows conversion of red bone marrow to fatty bone marrow).
5. Therapeutic management focuses on restoring function to the bone marrow and involves immunosuppressive therapy and bone marrow transplantation (treatment of choice if a suitable donor exists).
6. If the cause is a myelotoxic medication that is being administered for another purpose, the medication may be discontinued to improve bone marrow function.

B. Assessment

1. Pancytopenia (deficiency of erythrocytes, leukocytes, and thrombocytes)
2. Petechiae, purpura, bleeding, pallor, weakness, tachycardia, and fatigue

C. Interventions

1. Prepare the client for bone marrow transplantation if planned.
2. Administer immunosuppressive medications as prescribed; antilymphocyte globulin or antithymocyte globulin may be prescribed to suppress the autoimmune response.
3. Colony-stimulating factors may be prescribed to enhance bone marrow production.
4. Corticosteroids and cyclosporine may be prescribed.
5. Administer blood transfusions if prescribed and monitor for transfusion reactions.

Box 44-1

Common Sites of Metastasis

Bladder Cancer

- Lung
- Bone
- Liver
- Pelvic, retroperitoneal structures

Brain Tumors

- Central nervous system

Breast Cancer

- Bone
- Lung
- Brain
- Liver

Colorectal Cancer

- Liver

Lung Cancer

- Brain
- Liver

Prostate Cancer

- Bone
- Spine
- Lung
- Liver
- Kidneys

Testicular Cancer

- Lung
- Bone
- Liver
- Adrenal glands
- Retroperitoneal lymph nodes

Box 44-2

Grading and Staging

Grading

Grade I: Cells differ slightly from normal cells and are well differentiated (mild dysplasia).
Grade II: Cells are more abnormal and are moderately differentiated (moderate dysplasia).
Grade III: Cells are very abnormal and are poorly differentiated (severe dysplasia).
Grade IV: Cells are immature (anaplasia) and undifferentiated; cell of origin is difficult to determine.

Staging

Stage 0: Carcinoma in situ
Stage I: Tumor limited to the tissue of origin; localized tumor growth
Stage II: Limited local spread
Stage III: Extensive local and regional spread
Stage IV: Distant metastasis

Box 44-3

Warning Signs of Cancer—CAUTION

- **C**hange in bowel or bladder habits
- **A**ny sore that does not heal
- **U**nusual bleeding or discharge
- **T**hickening or lump in breast or elsewhere
- **I**ndigestion
- **O**bvious change in wart or mole
- **N**agging cough or hoarseness

Data from WebMD: *Understanding cancer—symptoms*. www.webmd.com/cancer/understanding-cancer-symptoms; and Ignatavicius, Workman (2016), p. 367.

Box 44-4

Diagnostic Tests

- Biopsy
- Bone marrow examination (particularly if a hematolymphoid malignancy is suspected)
- Chest radiograph
- Complete blood count (CBC)

- Computed tomography (CT); positron emission tomography (PET)
- Cytological studies (Papanicolaou test)
- Evaluation of serum tumor markers (e.g., carcinoembryonic antigen and alpha-fetoprotein)
- Liver function studies
- Magnetic resonance imaging (MRI)
- Proctoscopic examination (including guaiac test for occult blood)
- Radiographic studies (mammography)
- Radioisotope scanning (liver, brain, bone, lung)
- Tumor markers

Box 44-5

Client Education Guide: Radiation Therapy for Cancer

- Wash the irradiated area gently each day with warm water alone or with mild soap and water.
- Use the hand rather than a washcloth to wash the area.
- Rinse soap thoroughly from the skin.
- Take care not to remove the markings that indicate exactly where the beam of radiation is to be focused.
- Dry the irradiated area with patting motions rather than rubbing motions; use a clean, soft towel or cloth.
- Use no powders, ointments, lotions, or creams on the skin at the radiation site unless they are prescribed by the radiologist.
- Wear soft clothing over the skin at the radiation site.
- Avoid wearing belts, buckles, straps, or any type of clothing that binds or rubs the skin at the radiation site.
- Avoid exposure of the irradiated area to the sun.
- Avoid heat exposure.

Box 44-6

Care of the Client with a Sealed Radiation Implant

- Place the client in a private room with a private bath.
- Place a radiation precaution sign on the client's door.
- Organize nursing tasks to minimize exposure to the radiation source.
- Nursing assignments to a client with a radiation implant should be rotated.

- Limit time to 30 minutes per care provider per shift.
- Wear a dosimeter film badge to measure radiation exposure.
- Lead shielding may be used to reduce exposure to radiation.
- The nurse should never care for more than 1 client with a radiation implant at 1 time.
- Do not allow a pregnant nurse to care for the client.
- Do not allow children younger than 16 years or a pregnant woman to visit the client.
- Limit visitors to 30 minutes per day; visitors should be at least 6 feet from the source.
- Save bed linens and dressings until the source is removed; then dispose of the linens and dressings in the usual manner.
- Other equipment can be removed from the room at any time.

Box 44-7

Classification of Leukemia

Acute Lymphocytic Leukemia

- Mostly lymphoblasts present in bone marrow
- Age of onset is younger than 15 years.

Acute Myelogenous Leukemia

- Mostly myeloblasts present in bone marrow
- Age of onset is between 15 and 39 years.

Chronic Myelogenous Leukemia

- Mostly granulocytes present in bone marrow
- Age of onset is in the fourth decade.

Chronic Lymphocytic Leukemia

- Mostly lymphocytes present in bone marrow
- Age of onset is after 50 years.

Box 44-8

Mouth Care for the Client with Mucositis

- Inspect the mouth daily.
- Offer complete mouth care before and after every meal and at bedtime.
- Brush the teeth and tongue with a soft-bristled toothbrush or sponges.
- Provide mouth rinses every 12 hours with the prescribed solution.
- Administer topical anesthetic agents to mouth sores as prescribed.
- Avoid the use of alcohol- or glycerin-based mouthwashes or swabs because they are irritating to the mucosa.
- Offer soft foods that are cool to warm in temperature rather than foods that are hard or spicy or cold or hot.

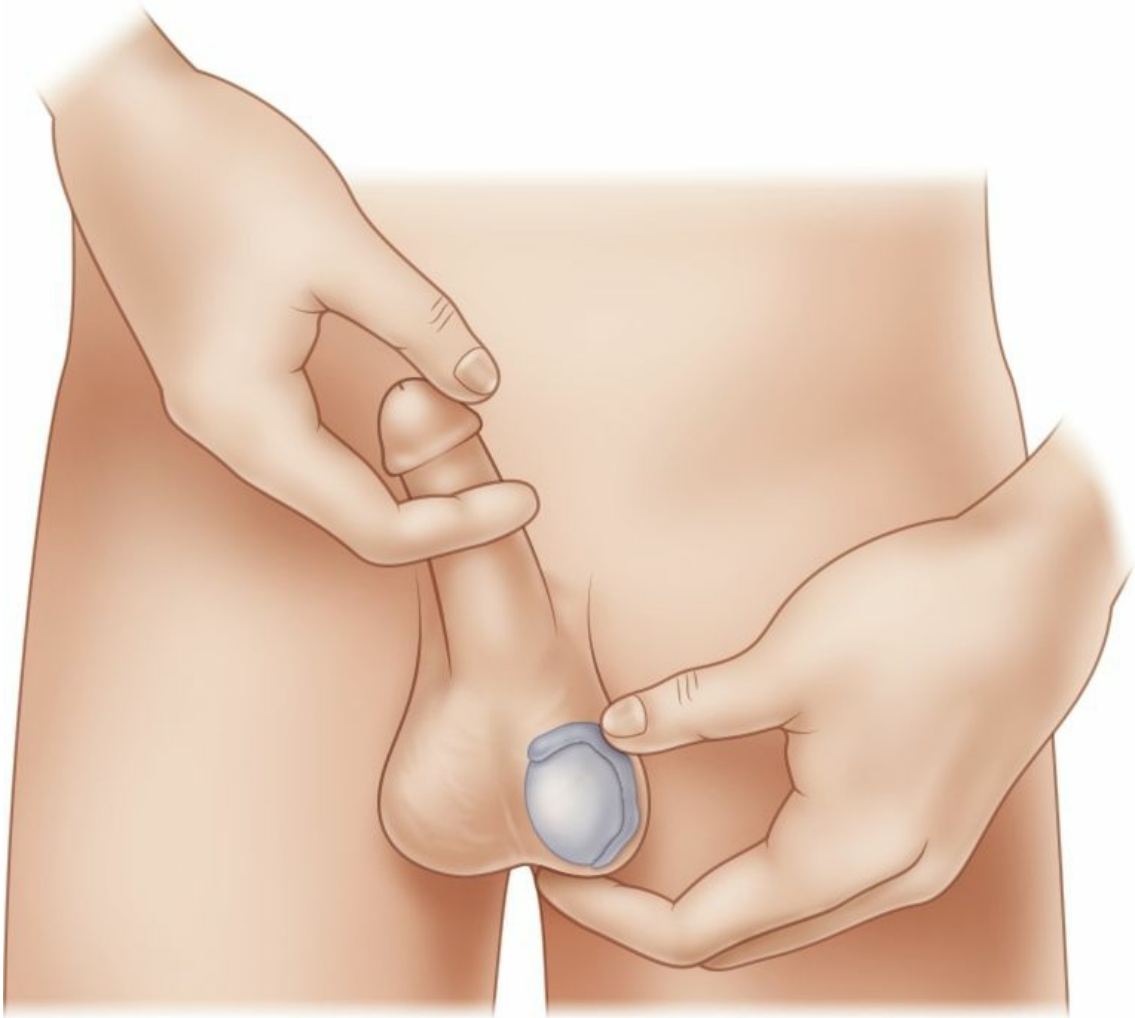


FIG. 44-1 Testicular self-examination. The best time to perform this examination is right after a shower when your scrotal skin is moist and relaxed, making the testicles easy to feel. First, gently lift each testicle. Each one should feel like an egg, firm but not hard, and smooth with no lumps. Then, using both hands, place your middle fingers on the underside of each testicle and your thumbs on top. Gently roll the testicle between the thumb and fingers to feel for any lumps, swelling, or mass. If you notice any changes from 1 month to the next, notify your primary health care provider.

Box 44-9

Premalignant Cancers: Stages of Cervical Intraepithelial Neoplasia

Stage I: Mild dysplasia
Stage II: Moderate dysplasia
Stage III: Severe dysplasia to carcinoma in situ

Box 44-10

Treatment for Cervical Cancer

Nonsurgical

- Chemotherapy
- Cryosurgery
- External radiation
- Internal radiation implants (intracavitary)
- Laser therapy

Surgical

- Conization
- Hysterectomy
- Pelvic exenteration

Note: Internal radiation therapy is used for clients for whom surgery is not an option.

Box 44-11

Types of Pelvic Exenteration

Anterior

- Removal of the uterus, ovaries, fallopian tubes, vagina, bladder, urethra, and pelvic lymph nodes

Posterior

- Removal of the uterus, ovaries, fallopian tubes, descending colon, rectum, and anal canal

Total

- Combination of anterior and posterior

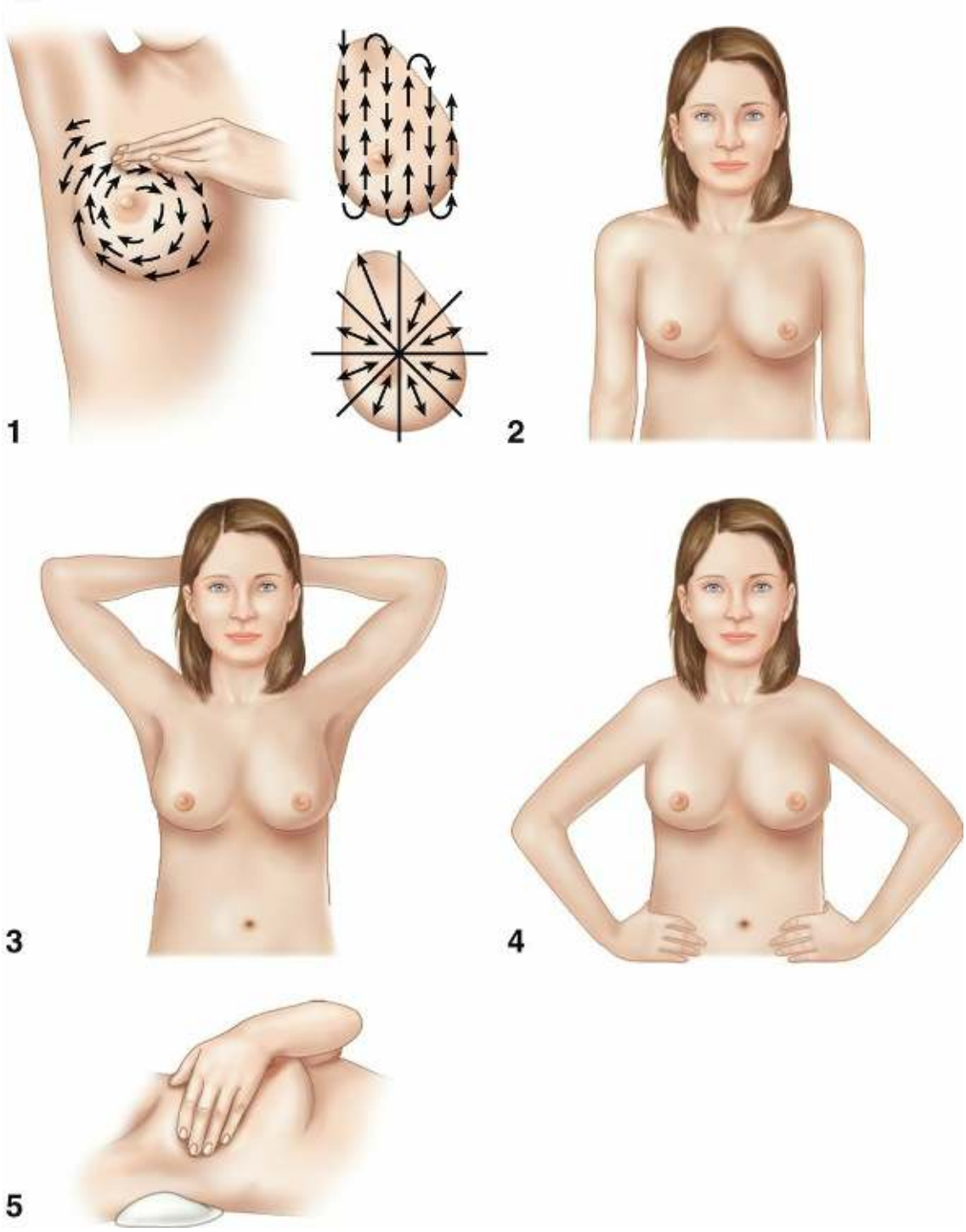


FIG. 44-2 Breast self-examination and client instructions. ***1*,** While in the shower or bath, when the skin is slippery with soap and water, examine your breasts. Use the pads of your second, third, and fourth fingers to press every part of the breast firmly. Use your right hand to examine your left breast, and use your left hand to examine your right breast. Using the pads of the fingers on your left hand, examine the entire right breast using small circular motions in a spiral or up-and-down motion so that the entire breast area is examined. Repeat the procedure using your right hand to examine your left breast. Repeat the pattern of palpation under the arm. Check for any lump, hard knot, or thickening of the tissue. ***2*,** Look at your breasts in a mirror. Stand with your arms at your side. ***3*,** Raise your arms overhead and check for any changes in the shape of your breasts, dimpling of the skin, or any changes in the nipple. ***4*,** Next, place your hands on your hips and press down firmly, tightening the pectoral muscles. Observe for asymmetry or changes, keeping in mind that your breasts probably do not match exactly. ***5*,** While lying down, feel your

breasts as described in step *1*. When examining your right breast, place a folded towel under your right shoulder and put your right hand behind your head. Repeat the procedure while examining your left breast. Mark your calendar that you have completed your breast self-examination; note any changes or unique characteristics you want to check with your primary health care provider.

Box 44-12

Surgical Breast Procedures

Lumpectomy

- Tumor is excised and removed.
- Lymph node dissection may also be performed.

Simple Mastectomy

- Breast tissue and the nipple are removed.
- Lymph nodes are usually left intact.

Modified Radical Mastectomy

- Breast tissue, nipple, and lymph nodes are removed.
- Muscles are left intact.


A


B

FIG. 44-3 Jackson-Pratt device. **A,** Drainage tubes and reservoir. **B,** Emptying drainage reservoir. (From Potter et al., 2013.)

Box 44-13

Client Instructions Following Mastectomy

- Avoid overuse of the arm during the first few months.
- To prevent lymphedema, keep the affected arm elevated; consultation with lymphedema specialist may be prescribed.
- Provide incision care with an emollient as prescribed, to soften and prevent wound contracture.
- Encourage use of support groups.
- Encourage the client to perform breast self-examination on the remaining breast and surgical site once healed.
- Protect the affected hand and arm.
- Avoid strong sunlight on the affected arm.
- Do not let the affected arm hang dependent.
- Do not carry a pocketbook or anything heavy over the affected arm.
- Avoid trauma, cuts, bruises, or burns to the affected side.
- Avoid wearing constricting clothing or jewelry on the affected side.
- Wear gloves when gardening.
- Use thick oven mitts when cooking.
- Use a thimble when sewing.
- Apply hand cream several times daily.
- Use cream cuticle remover.
- Call the primary health care provider if signs of inflammation occur in the affected arm.
- Wear a MedicAlert bracelet stating which arm is at risk for lymphedema.

Box 44-14

Surgical Interventions for Gastric Cancer

Subtotal Gastrectomy

Billroth I

- Also called gastroduodenostomy
- Partial gastrectomy, with remaining segment anastomosed to the duodenum

Billroth II

- Also called gastrojejunostomy
- Partial gastrectomy, with remaining segment anastomosed to the jejunum

Total Gastrectomy

- Also called esophagojejunostomy
- Removal of the stomach, with attachment of the esophagus to the jejunum or duodenum

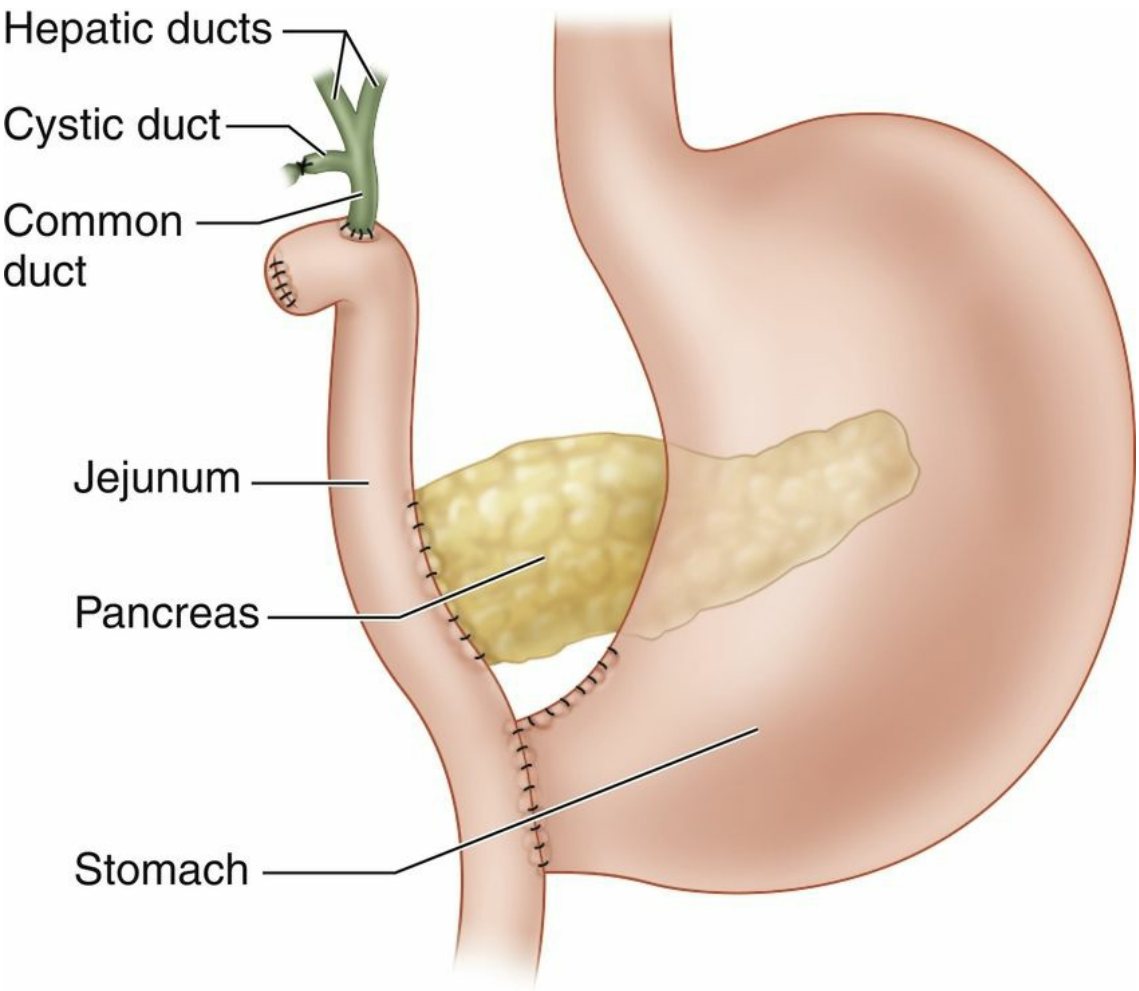


FIG. 44-4 Whipple procedure, or radical pancreaticoduodenectomy.

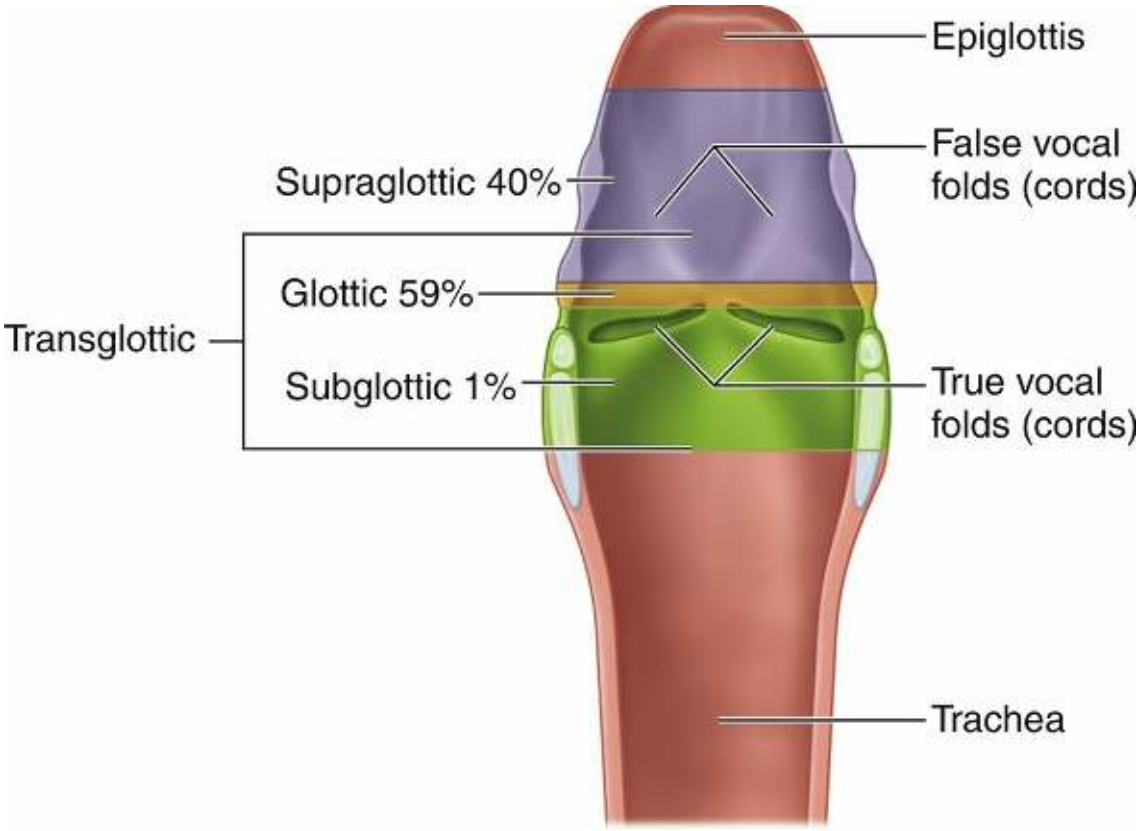


FIG. 44-5 Sites and incidence of primary laryngeal tumors.

Box 44-15

Stoma Care Following Laryngectomy

- Protect the neck from injury.
- Instruct the client in how to clean the incision and provide stoma care.
- Instruct the client to wear a stoma guard to shield the stoma.
- Demonstrate ways to prevent debris from entering the stoma.
- Advise the client to wear loose-fitting, high-collared clothing to cover the stoma.
- Avoid swimming, showering, and using aerosol sprays.
- Teach the client clean suctioning technique.
- Advise the client to increase humidity in the home.
- Increase fluid intake to 3000 mL/day as prescribed.
- Avoid exposure to persons with infections.
- Alternate rest periods with activity.
- Instruct the client in range-of-motion exercises for the arms, shoulders, and neck as prescribed.
- Advise the client to wear a MedicAlert bracelet.

Box 44-16

Speech Rehabilitation Following Laryngectomy

Esophageal Speech

- The client produces esophageal speech by "burping" the air swallowed.
- The voice produced is monotone, cannot be raised or lowered, and carries no pitch.
- The client must have adequate hearing because his or her mouth shapes words as they are heard.

Mechanical Devices

- One device, the electrolarynx, is placed against the side of the neck; the air inside the neck and pharynx is vibrated, and the client articulates.
- Another device consists of a plastic tube that is placed inside the client's mouth and vibrates on articulation.

Tracheoesophageal Fistula

- A fistula is created surgically between the trachea and the esophagus, with eventual placement of a prosthesis to produce speech.
- The prosthesis provides the client with a means to divert air from the trachea into the esophagus, and out of the mouth.
- Lip and tongue movement produce the speech.

Box 44-17

Continuous Bladder Irrigation (CBI)

Description

- A 3-way (lumen) irrigation is used to decrease bleeding and to keep the bladder free from clots—1 lumen is for inflating the balloon (30 mL); 1 lumen is for instillation (inflow); 1 lumen is for outflow.

Interventions

- Maintain traction on the catheter, if appliedand prescribed, to prevent bleeding by pulling the catheter taut and taping it to the abdomen or thigh.
- Instruct the client to keep the leg straight if traction is applied to the catheter and taped to the thigh.

- Catheter traction is not released without the surgeon's prescription; it usually is released after any bright red drainage has diminished.
- Use only sterile bladder irrigation solution or prescribed solution to prevent water intoxication.
- Run the solution at a rate, as prescribed, to keep the urine pink. Run the solution rapidly if bright red drainage or clots are present; monitor output closely. Run the solution at about 40 drops (gtt)/minute when the bright red drainage clears.
- If the urinary catheter becomes obstructed, turn off the CBI and irrigate the catheter with 30 to 50 mL of normal saline, if prescribed; notify the surgeon if obstruction does not resolve.
- Discontinue CBI and the urinary catheter as prescribed, usually 24 to 48 hours after surgery.
- Monitor for continence and urinary retention when the catheter is removed. Inform the client that some burning, frequency, and dribbling may occur following catheter removal.
- Inform the client that he should be voiding 150 to 200 mL of clear yellow urine every 3 to 4 hours by 3 days after surgery.
- Inform the client that he may pass small clots and tissue debris for several days.
- Teach the client to avoid heavy lifting, stressful exercise, driving, the Valsalva maneuver, and sexual intercourse for 2 to 6 weeks to prevent strain, and to call the surgeon if bleeding occurs or if there is a decrease in urinary stream.
- Instruct the client to drink 2400 to 3000 mL of fluid each day, preferably before 8 p.m., to avoid nocturia.
- Instruct the client to avoid alcohol, caffeinated beverages, and spicy foods and overstimulation of the bladder.
- Instruct the client that if the urine becomes bloody, to rest and increase fluid intake and, if the bleeding does not subside, to notify the surgeon.

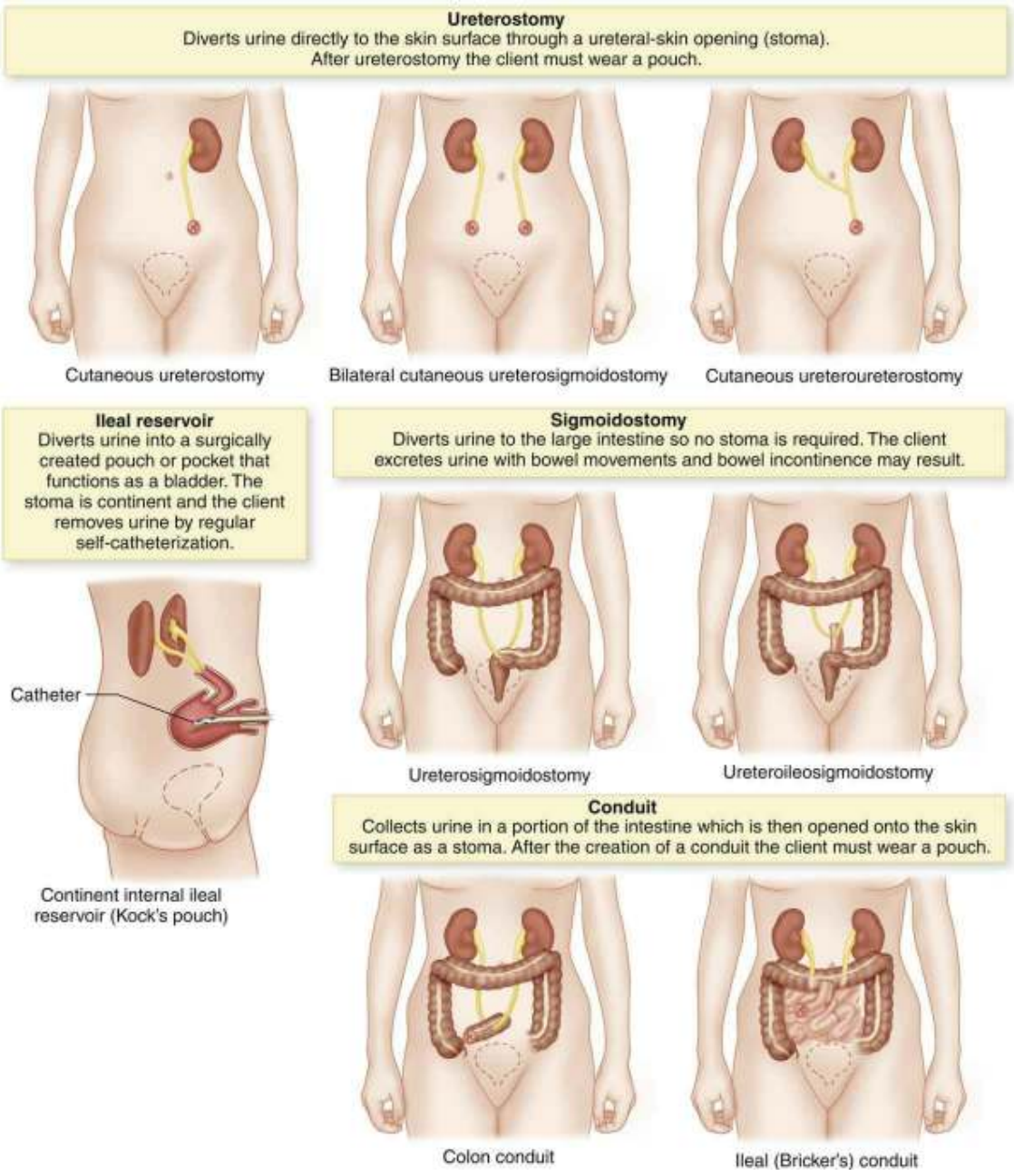


FIG. 44-6 Urinary diversion procedures used in the treatment of bladder cancer.

Box 44-18

Urinary Stoma Care

- Instruct the client to change the appliance in the morning, when urinary production is slowest.
- Collect equipment, remove collection bag, and use water or commercial solvent to loosen adhesive.

- Hold a rolled gauze pad against the stoma to collect and absorb urine during the procedure.
- Cleanse the skin around the stoma and under the drainage bag with mild nonresidue soap and water.
- Inspect the skin for excoriation, and instruct the client to prevent urine from coming into contact with the skin.
- After the skin is dry, apply skin adhesive around the appliance.
- Instruct the client to cut the stoma opening of the skin barrier just large enough to fit over the stoma (no more than 3 mm larger than the stoma).
- Instruct the client that the stoma will begin to shrink, requiring a smaller stoma opening on the skin barrier.
- Apply the skin barrier before attaching the pouch or face plate.
- Place the appliance over the stoma and secure in place.
- Encourage self-care; teach the client to use a mirror.
- Instruct the client that the pouch may be drained by a bedside bag or leg bag, especially at night.
- Instruct the client to empty the urinary collection bag when it is one-third full to prevent pulling of the appliance and leakage.
- Instruct the client to check the appliance seal if perspiring occurs.
- Instruct the client to leave the urinary pouch in place as long as it is not leaking and to change it every 5 to 7 days.
- During appliance changes, leave the skin open to air for as long as possible.
- Use a non–karaya product, because urine erodes karaya.
- To control odor, instruct the client to drink adequate fluids, wash the appliance thoroughly with soap and lukewarm water, and soak the collection pouch in dilute white vinegar for 20 to 30 minutes; a special deodorant tablet can also be placed into the pouch while it is being worn.
- Instruct the client who takes baths to keep the level of the water below the stoma and to avoid oily soaps.
- If the client plans to shower, instruct the client to direct the flow of water away from the stoma.

Box 44-19

Self-Irrigation and Catheterization of Stoma

Irrigation

- Instruct the client to wash hands and use clean technique.
- Instruct the client to use a catheter and syringe, instill 60 mL of normal saline or water into the reservoir, and aspirate gently or allow to drain.
- Instruct the client to irrigate until the drainage remains free of mucus but to be careful not to overirrigate.

Catheterization

- Instruct the client to wash hands and use clean technique.
- Initially, instruct the client to insert a catheter every 2 to 3 hours to drain the reservoir; during each week thereafter, increase the interval by 1 hour until catheterization is done every 4 to 6 hours.
- Lubricate the catheter well with water-soluble lubricant, and instruct the client never to force the catheter into the reservoir.
- If resistance is met, instruct the client to pause, rotate the catheter, and apply gentle pressure to insert.
- Instruct the client to notify the surgeon if the client is unable to insert the catheter.
- When urine has stopped, instruct the client to take several deep breaths and move the catheter in and out 2 to 3 inches (5 to 7.5 cm) to ensure that the pouch is empty.
- Instruct the client to withdraw the catheter slowly and pinch the catheter when withdrawn so that it does not leak urine.
- Instruct the client to carry catheterization supplies with him or her.

Practice Questions

443. The nurse is reviewing the laboratory results of a client diagnosed with multiple myeloma. Which would the nurse expect to note specifically in this disorder?
    1. Increased calcium level
    2. Increased white blood cells
    3. Decreased blood urea nitrogen level
    4. Decreased number of plasma cells in the bone marrow
444. The nurse is creating a plan of care for the client with multiple myeloma and includes which **priority** intervention in the plan?
    1. Encouraging fluids
    2. Providing frequent oral care
    3. Coughing and deep breathing
    4. Monitoring the red blood cell count
445. When caring for a client with an internal radiation implant, the nurse should observe which principles? **Select all that apply.**
    1. Limiting the time with the client to 1 hour per shift.
    2. Keeping pregnant women out of the client's room.
    3. Placing the client in a private room with a private bath.
    4. Wearing a lead shield when providing direct client care.
    5. Removing the dosimeter film badge when entering the client's room.
    6. Allowing individuals younger than 16 years old in the room as long as they are 6 feet away from the client.
446. While giving care to a client with an internal cervical radiation implant, the nurse finds the implant in the bed. The nurse should take which **initial** action?
    1. Call the primary health care provider (PHCP).
    2. Reinsert the implant into the vagina.
    3. Pick up the implant with gloved hands and flush it down the toilet.
    4. Pick up the implant with long-handled forceps and place it in a lead container.
447. The nurse should plan to implement which intervention in the care of a client experiencing neutropenia as a result of chemotherapy?
    1. Restrict all visitors.
    2. Restrict fluid intake.
    3. Teach the client and family about the need for hand hygiene.
    4. Insert an indwelling urinary catheter to prevent skin breakdown.
448. The home health care nurse is caring for a client with cancer who is complaining of acute pain. The **most appropriate** determination of the client's pain should include which assessment?
    1. The client's pain rating
    2. Nonverbal cues from the client
    3. The nurse's impression of the client's pain

4. Pain relief after appropriate nursing intervention

449. The nurse is caring for a client who is postoperative following a pelvic exenteration, and the surgeon changes the client's diet from NPO (nothing by mouth) status to clear liquids. The nurse should check which **priority** item before administering the diet?
    1. Bowel sounds
    2. Ability to ambulate
    3. Incision appearance
    4. Urine specific gravity
450. A client is admitted to the hospital with a suspected diagnosis of Hodgkin's disease. Which assessment finding would the nurse expect to note specifically in the client?
    1. Fatigue
    2. Weakness
    3. Weight gain
    4. Enlarged lymph nodes
451. During the admission assessment of a client with advanced ovarian cancer, the nurse recognizes which manifestation as typical of the disease?
    1. Diarrhea
    2. Hypermenorrhea
    3. Abnormal bleeding
    4. Abdominal distention
452. The nurse is caring for a client with lung cancer and bone metastasis. What signs and symptoms would the nurse recognize as indications of a possible oncological emergency? **Select all that apply.**
    1. Facial edema in the morning
    2. Weight loss of 20 lb (9 kg) in 1 month
    3. Serum calcium level of 12 mg/dL (3.0 mmol/L)
    4. Serum sodium level of 136 mg/dL (136 mmol/L)
    5. Serum potassium level of 3.4 mg/dL (3.4 mmol/L)
    6. Numbness and tingling of the lower extremities
453. A client who has been receiving radiation therapy for bladder cancer tells the nurse that it feels as if she is voiding through the vagina. The nurse interprets that the client may be experiencing which condition?
    1. Rupture of the bladder
    2. The development of a vesicovaginal fistula
    3. Extreme stress caused by the diagnosis of cancer
    4. Altered perineal sensation as a side effect of radiation therapy
454. The nurse is instructing a client to perform a testicular self-examination (TSE). The nurse should provide the client with which information about the procedure?
    1. To examine the testicles while lying down
    2. That the best time for the examination is after a shower
    3. To gently feel the testicle with one finger to feel for a growth
    4. That TSEs should be done at least every 6 months
455. The nurse is conducting a history and monitoring laboratory values on a client with multiple myeloma. What assessment findings should the nurse expect to note? **Select all that apply.**

- ☐ 1. Pathological fracture
- ☐ 2. Urinalysis positive for Bence Jones protein
- ☐ 3. Hemoglobin level of 15.5 g/dL (155 mmol/L)
- ☐ 4. Calcium level of 8.6 mg/dL (2.15 mmol/L)
- ☐ 5. Serum creatinine level of 2.0 mg/dL (176.6 mcmol/L)

456. A gastrectomy is performed on a client with gastric cancer. In the immediate postoperative period, the nurse notes bloody drainage from the nasogastric tube. The nurse should take which **most appropriate** action?
    1. Measure abdominal girth.
    2. Irrigate the nasogastric tube.
    3. Continue to monitor the drainage.
    4. Notify the primary health care provider (PHCP).
457. The nurse is teaching a client about the risk factors associated with colorectal cancer. The nurse determines that **further teaching is necessary** related to colorectal cancer if the client identifies which item as an associated risk factor?
    1. Age younger than 50 years
    2. History of colorectal polyps
    3. Family history of colorectal cancer
    4. Chronic inflammatory bowel disease
458. The nurse is assessing the perineal wound in a client who has returned from the operating room following an abdominal perineal resection and notes serosanguineous drainage from the wound. Which nursing intervention is **most appropriate**?
    1. Clamp the surgical drain.
    2. Change the dressing as prescribed.
    3. Notify the surgeon.
    4. Remove and replace the perineal packing.
459. The nurse is assessing the colostomy of a client who has had an abdominal perineal resection for a bowel tumor. Which assessment finding indicates that the colostomy is beginning to function?
    1. The passage of flatus
    2. Absent bowel sounds
    3. The client's ability to tolerate food
    4. Bloody drainage from the colostomy
460. The nurse is reviewing the history of a client with bladder cancer. The nurse expects to note documentation of which **most** common sign or symptom of this type of cancer?
    1. Dysuria
    2. Hematuria
    3. Urgency on urination
    4. Frequency of urination
461. The nurse is assessing a client who has a new ureterostomy. Which statement by the client indicates the **need for more education** about urinary stoma care?

1. "I change my pouch every week."
2. "I change the appliance in the morning."
3. "I empty the urinary collection bag when it is two-thirds full."
4. "When I'm in the shower I direct the flow of water away from my stoma."

462. A client with carcinoma of the lung develops syndrome of inappropriate antidiuretic hormone (SIADH) as a complication of the cancer. The nurse anticipates that the primary health care provider will request which prescriptions? **Select all that apply.**
    1. Radiation
    2. Chemotherapy
    3. Increased fluid intake
    4. Decreased oral sodium intake
    5. Serum sodium level determination
    6. Medication that is antagonistic to antidiuretic hormone
463. The nurse is monitoring a client for signs and symptoms related to superior vena cava syndrome. Which is an **early** sign of this oncological emergency?
    1. Cyanosis
    2. Arm edema
    3. Periorbital edema
    4. Mental status changes
464. The nurse manager is teaching the nursing staff about signs and symptoms related to hypercalcemia in a client with metastatic prostate cancer and tells the staff that which is a **late** sign or symptom of this oncological emergency?
    1. Headache
    2. Dysphagia
    3. Constipation
    4. Electrocardiographic changes
465. As part of chemotherapy education, the nurse teaches a female client about the risk for bleeding and self-care during the period of greatest bone marrow suppression (the nadir). The nurse understands that **further teaching is needed** if the client makes which statement?
    1. "I should avoid blowing my nose."
    2. "I may need a platelet transfusion if my platelet count is too low."
    3. "I'm going to take aspirin for my headache as soon as I get home."
    4. "I will count the number of pads and tampons I use when menstruating."
466. The community health nurse is instructing a group of young female clients about breast self-examination. The nurse should instruct the clients to perform the examination at which time?
    1. At the onset of menstruation
    2. Every month during ovulation
    3. Weekly at the same time of day
    4. One week after menstruation begins
467. A client is diagnosed as having a intestinal tumor. The nurse should monitor the client for which complications of this type of tumor? **Select all that apply.**
    1. Flatulence

2. Peritonitis
3. Hemorrhage
4. Fistula formation
5. Bowel perforation
6. Lactose intolerance

468. The nurse is caring for a client following a mastectomy. Which nursing intervention would assist in preventing lymphedema of the affected arm?
    1. Placing cool compresses on the affected arm
    2. Elevating the affected arm on a pillow above heart level
    3. Avoiding arm exercises in the immediate postoperative period
    4. Maintaining an intravenous site below the antecubital area on the affected side

469. The nurse is providing dietary teaching for a client with a diagnosis of chronic gastritis. The nurse instructs the client to include which foods rich in vitamin B_{12} in the diet? **Select all that apply.**
    - ☐ 1. Nuts
    - ☐ 2. Corn
    - ☐ 3. Liver
    - ☐ 4. Apples
    - ☐ 5. Lentils
    - ☐ 6. Bananas

470. The nurse is instructing a client with iron deficiency anemia regarding the administration of a liquid oral iron supplement. Which instruction should the nurse tell the client?
    1. Administer the iron at mealtimes.
    2. Administer the iron through a straw.
    3. Mix the iron with cereal to administer.
    4. Add the iron to apple juice for easy administration.

471. Laboratory studies are performed for a client suspected to have iron deficiency anemia. The nurse reviews the laboratory results, knowing that which result indicates this type of anemia?
    1. Elevated hemoglobin level
    2. Decreased reticulocyte count
    3. Elevated red blood cell count
    4. Red blood cells that are microcytic and hypochromic

Answers

443. ***Answer:*** 1

Rationale: Findings indicative of multiple myeloma are an increased number of plasma cells in the bone marrow, anemia, hypercalcemia caused by the release of calcium from the deteriorating bone tissue, and an elevated blood urea nitrogen

level. An increased white blood cell count may or may not be present and is not related specifically to multiple myeloma.

Test-Taking Strategy: Focus on the **subject,** laboratory findings in multiple myeloma. Noting the name of the disorder and recalling the pathophysiology of the disease and that proliferation of plasma cells in the bone occurs will direct you to the correct option.

Level of Cognitive Ability: Analyzing
Client Needs: Physiological Integrity
Integrated Process: Nursing Process—Assessment
Content Area: Adult Health: Oncology
Health Problem: Adult Health: Cancer: Multiple Myeloma
Priority Concepts: Cellular Regulation; Clinical Judgment
Reference: Ignatavicius, Workman, Rebar (2018), pp. 829-830.

444. ***Answer:*** 1

Rationale: Hypercalcemia caused by bone destruction is a priority concern in the client with multiple myeloma. The nurse should administer fluids in adequate amounts to maintain a urine output of 1.5 to 2 L/day; this requires about 3 L of fluid intake per day. The fluid is needed not only to dilute the calcium overload but also to prevent protein from precipitating in the renal tubules. Options 2, 3, and 4 may be components of the plan of care but are not the priority in this client.

Test-Taking Strategy: Note the **strategic word,** *priority*. Recalling the pathophysiology of this disorder and that hypercalcemia can occur will direct you to the correct option.

Level of Cognitive Ability: Creating
Client Needs: Physiological Integrity
Integrated Process: Nursing Process—Planning
Content Area: Adult Health: Oncology
Health Problem: Adult Health: Cancer: Multiple Myeloma
Priority Concepts: Cellular Regulation; Clinical Judgment
Reference: Lewis et al. (2017), p. 646.

445. ***Answer:*** 2, 3, 4

Rationale: The time that the nurse spends in the room of a client with an internal radiation implant is 30 minutes per shift. The client must be placed in a private room with a private bath. Lead shielding can be used to reduce the transmission of radiation. The dosimeter film badge must be worn when in the client's room. Children younger than 16 years of age and pregnant women are not allowed in the client's room.

Test-Taking Strategy: Focus on the **subject,** radiation precautions. Recalling the time frame related to exposure to the client will assist in eliminating option 1. From the remaining options, select the correct options because of the possible risks associated with exposure to radiation.

Level of Cognitive Ability: Analyzing
Client Needs: Safe and Effective Care Environment

Integrated Process: Nursing Process—Implementation
Content Area: Foundations of Care: Safety
Health Problem: N/A
Priority Concepts: Cellular Regulation; Safety
Reference: Ignatavicius, Workman, Rebar (2018), p. 389.

446. ***Answer:*** 4

Rationale: In the event that a radiation source becomes dislodged, the nurse would first encourage the client to lie still until the radioactive source has been placed in a safe, closed container. The nurse would use long-handled forceps to place the source in the lead container that should be in the client's room. The nurse should then call the radiation oncologist and document the event and the actions taken. It is not within the scope of nursing practice to insert a radiation implant.
Test-Taking Strategy: Note the **strategic word,** *initial*. The initial action would be to prevent self-contamination from radiation exposure. This will direct you to the correct option.
Level of Cognitive Ability: Applying
Client Needs: Safe and Effective Care Environment
Integrated Process: Nursing Process—Implementation
Content Area: Foundations of Care: Safety
Health Problem: N/A
Priority Concepts: Cellular Regulation; Safety
Reference: Ignatavicius, Workman, Rebar (2018), p. 389.

447. ***Answer:*** 3

Rationale: In the neutropenic client, meticulous hand hygiene education is implemented for the client, family, visitors, and staff. Not all visitors are restricted, but the client is protected from persons with known infections. Fluids should be encouraged. Invasive measures such as an indwelling urinary catheter should be avoided to prevent infections.
Test-Taking Strategy: Eliminate option 1 because of the **closed-ended word***all*. Next, eliminate option 2 because it is not reasonable to restrict fluids in a client receiving chemotherapy who is at risk for fluid and electrolyte imbalances. Eliminate option 4 because of the risk of infection that exists with this measure.
Level of Cognitive Ability: Applying
Client Needs: Safe and Effective Care Environment
Integrated Process: Nursing Process—Implementation
Content Area: Foundations of Care: Safety
Health Problem: N/A
Priority Concepts: Caregiving; Infection
Reference: Ignatavicius, Workman, Rebar (2018), p. 397.

448. ***Answer:*** 1

Rationale: The client's self-report is a critical component of pain assessment. The

nurse should ask the client to describe the pain and listen carefully to the words the client uses to describe the pain. Nonverbal cues from the client are important but are not the most appropriate pain assessment measure. The nurse's impression of the client's pain is not appropriate in determining the client's level of pain. Assessing pain relief is an important measure, but this option is not related to the subject of the question.

Test-Taking Strategy: Note the **strategic words,** *most appropriate*. Eliminate option 3 because the nurse is not the client of the question. From the remaining options, the subjective data from the client will provide the most accurate description of the pain.

Level of Cognitive Ability: Analyzing
Client Needs: Physiological Integrity
Integrated Process: Caring
Content Area: Foundations of Care: Vital Signs
Health Problem: N/A
Priority Concepts: Caregiving; Pain
Reference: Lewis et al. (2017), pp. 107-108.

449. ***Answer:*** 1

Rationale: The client is kept NPO until peristalsis returns, usually in 4 to 6 days. When signs of bowel function return, clear fluids are given to the client. If no distention occurs, the diet is advanced as tolerated. The most important assessment is to assess bowel sounds before feeding the client. Options 2, 3, and 4 are unrelated to the data in the question.

Test-Taking Strategy: Note the **strategic word,** *priority*, and the words *NPO status to clear liquids* in the question. The correct option is the only one that relates to gastrointestinal function.

Level of Cognitive Ability: Analyzing
Client Needs: Physiological Integrity
Integrated Process: Nursing Process—Assessment
Content Area: Foundations of Care: Perioperative Care
Health Problem: N/A
Priority Concepts: Clinical Judgment; Nutrition
Reference: Lewis et al. (2017), pp. 342, 1261.

450. ***Answer:*** 4

Rationale: Hodgkin's disease is a chronic progressive neoplastic disorder of lymphoid tissue characterized by the painless enlargement of lymph nodes with progression to extralymphatic sites, such as the spleen and liver. Weight loss is most likely to be noted. Fatigue and weakness may occur but are not related significantly to the disease.

Test-Taking Strategy: Options 1 and 2 are **comparable or alike** and are rather vague symptoms that can occur in many disorders. Option 3 can be eliminated because, in such a disorder, weight loss is most likely to occur. Also, recalling that Hodgkin's disease affects the lymph nodes will direct you to the correct option.

Level of Cognitive Ability: Analyzing

Client Needs: Physiological Integrity
Integrated Process: Nursing Process—Assessment
Content Area: Adult Health: Oncology
Health Problem: Adult Health: Cancer: Lymphoma: Hodgkin's and non-Hodgkin's
Priority Concepts: Cellular Regulation; Clinical Judgment
Reference: Lewis et al. (2017), pp. 642-643.

451. ***Answer:*** 4

Rationale: Clinical manifestations of ovarian cancer include abdominal distention, urinary frequency and urgency, pleural effusion, malnutrition, pain from pressure caused by the growing tumor and the effects of urinary or bowel obstruction, constipation, ascites with dyspnea, and ultimately general severe pain. Abnormal bleeding, often resulting in hypermenorrhea, is associated with uterine cancer.
Test-Taking Strategy: Eliminate options 2 and 3 first because they are **comparable or alike**. From the remaining options, consider the anatomical location of the cancer. This will assist in directing you to the correct option.
Level of Cognitive Ability: Analyzing
Client Needs: Physiological Integrity
Integrated Process: Nursing Process—Assessment
Content Area: Adult Health: Oncology
Health Problem: Adult Health: Cancer: Cervical/Uterine/Ovarian
Priority Concepts: Cellular Regulation; Clinical Judgment
Reference: Lewis et al. (2017), pp. 1258-1259.

452. ***Answer:*** 1, 3, 6

Rationale: Oncological emergencies include sepsis, disseminated intravascular coagulation, syndrome of inappropriate antidiuretic hormone, spinal cord compression, hypercalcemia, superior vena cava syndrome, and tumor lysis syndrome. Blockage of blood flow to the venous system of the head resulting in facial edema is a sign of superior vena cava syndrome. A serum calcium level of 12 mg/dL (3.0 mmol/L) indicates hypercalcemia. Numbness and tingling of the lower extremities could be a sign of spinal cord compression. Mild hypokalemia and weight loss are not oncological emergencies. A sodium level of 136 mg/dL (136 mmol/L) is a normal level.
Test-Taking Strategy: Note the **subject,** an oncological emergency. Recalling the signs and symptoms of oncological emergencies will help you identify the correct options. Also, recalling the normal calcium, potassium, and sodium levels will direct you to the correct options.
Level of Cognitive Ability: Analyzing
Client Needs: Physiological Integrity
Integrated Process: Nursing Process—Assessment
Content Area: Adult Health: Oncology
Health Problem: Adult Health: Cancer: Laryngeal and Lung
Priority Concepts: Cellular Regulation; Clinical Judgment

Reference: Lewis et al. (2017), pp. 262-263.

453. ***Answer:*** 2

Rationale: A vesicovaginal fistula is a genital fistula that occurs between the bladder and vagina. The fistula is an abnormal opening between these two body parts, and if this occurs, the client may experience drainage of urine through the vagina. The client's complaint is not associated with options 1, 3, or 4.
Test-Taking Strategy: Focus on the **subject,** a complication of bladder cancer. Noting the words *voiding through the vagina* should direct you to the correct option.
Level of Cognitive Ability: Analyzing
Client Needs: Physiological Integrity
Integrated Process: Nursing Process—Analysis
Content Area: Adult Health: Oncology
Health Problem: Adult Health: Cancer: Bladder and Kidney
Priority Concepts: Cellular Regulation; Clinical Judgment
Reference: Lewis et al. (2017), p. 1263.

454. ***Answer:*** 2

Rationale: The TSE is recommended monthly after a warm bath or shower when the scrotal skin is relaxed. The client should stand to examine the testicles. Using both hands, with fingers under the scrotum and thumbs on top, the client should gently roll the testicles, feeling for any lumps.
Test-Taking Strategy: Focus on the **subject,** the procedure for performing TSE. Eliminate option 4 first because of the words *6 months*. Next, eliminate option 3 because of the word *one*. From the remaining options, eliminate option 1 by trying to visualize the process of the self-examination.
Level of Cognitive Ability: Applying
Client Needs: Health Promotion and Maintenance
Integrated Process: Teaching and Learning
Content Area: Health Assessment/Physical Exam: Testicles
Health Problem: Adult Health: Cancer: Testicular
Priority Concepts: Clinical Judgment; Health Promotion
Reference: Ignatavicius, Workman, Rebar (2018), p. 1486.

455. ***Answer:*** 1, 2, 5

Rationale: Multiple myeloma is a B cell neoplastic condition characterized by abnormal malignant proliferation of plasma cells and the accumulation of mature plasma cells in the bone marrow. The client with multiple myeloma may experience pathological fractures, hypercalcemia, anemia, recurrent infections, and renal failure. In addition, Bence Jones proteinuria is a finding. A serum calcium level of 8.6 mg/dL (2.15 mmol/L) and a hemoglobin level of 15.5 g/dL (155 mmol/L) are normal values. A serum creatinine level of 2.0 mg/dL (176.6 mcmol/L) is elevated indicating a renal problem.
Test-Taking Strategy: Focus on the **subject,** characteristics of multiple myeloma.

Think about the pathophysiology of the disorder and analyze the values given to direct you to the correct option.
Level of Cognitive Ability: Analyzing
Client Needs: Physiological Integrity
Integrated Process: Teaching and Learning
Content Area: Adult Health: Oncology
Health Problem: Adult Health: Cancer: Multiple Myeloma
Priority Concepts: Cellular Regulation; Client Education
Reference: Ignatavicius, Workman, Rebar (2018), pp. 829-830.

456. ***Answer:*** 3

Rationale: Following gastrectomy, drainage from the nasogastric tube is normally bloody for 24 hours postoperatively, changes to brown-tinged, and is then yellow or clear. Because bloody drainage is expected in the immediate postoperative period, the nurse should continue to monitor the drainage. The nurse does not need to notify the PHCP (surgeon) at this time. Abdominal girth is measured to detect the development of distention. Following gastrectomy, a nasogastric tube should not be irrigated unless there are specific surgeon prescriptions to do so.
Test-Taking Strategy: Note the **strategic words,** *most appropriate*, and focus on the **subject,** the immediate postoperative period. This should direct you to the correct option. Remember that drainage from the nasogastric tube is normally bloody for 24 hours postoperatively, changes to brown-tinged, and then to yellow or clear.
Level of Cognitive Ability: Analyzing
Client Needs: Physiological Integrity
Integrated Process: Nursing Process—Implementation
Content Area: Foundations of Care: Perioperative Care
Health Problem: Adult Health: Cancer: Esophageal/Gastric/Intestinal
Priority Concepts: Cellular Regulation; Clinical Judgment
Reference: Ignatavicius, Workman, Rebar (2018), pp. 1207-1208.

457. ***Answer:*** 1

Rationale: Colorectal cancer risk factors include age older than 50 years, a family history of the disease, colorectal polyps, and chronic inflammatory bowel disease.
Test-Taking Strategy: Note the **strategic words,** *further teaching is necessary*. These words indicate a **negative event query** and ask you to select an option that is an incorrect statement. Noting the words *younger than* in option 1 will direct you to this option.
Level of Cognitive Ability: Evaluating
Client Needs: Health Promotion and Maintenance
Integrated Process: Teaching and Learning
Content Area: Adult Health: Oncology
Health Problem: Adult Health: Cancer: Esophageal/Gastric/Intestinal
Priority Concepts: Client Education; Health Promotion
Reference: Lewis et al. (2017), p. 954.

458. ***Answer:*** 2

Rationale: Immediately after surgery, profuse serosanguineous drainage from the perineal wound is expected. Therefore, the nurse should change the dressing as prescribed. A surgical drain should not be clamped, because this action will cause the accumulation of drainage within the tissue. The nurse does not need to notify the surgeon at this time. Drains and packing are removed gradually over a period of 5 to 7 days as prescribed. The nurse should not remove the perineal packing.

Test-Taking Strategy: Note the **strategic words,** *most appropriate*. Eliminate options 1 and 4, knowing that these are inappropriate interventions. Recalling that serosanguineous drainage is expected following this type of surgery will assist in directing you to the correct option.

Level of Cognitive Ability: Applying
Client Needs: Physiological Integrity
Integrated Process: Nursing Process—Implementation
Content Area: Adult Health: Oncology
Health Problem: Adult Health: Cancer: Esophageal/Gastric/Intestinal
Priority Concepts: Clinical Judgment; Tissue Integrity
Reference: Lewis et al. (2017), pp. 343-344, 956.

459. ***Answer:*** 1

Rationale: Following abdominal perineal resection, the nurse would expect the colostomy to begin to function within 72 hours after surgery, although it may take up to 5 days. The nurse should assess for a return of peristalsis, listen for bowel sounds, and check for the passage of flatus. Absent bowel sounds would not indicate the return of peristalsis. The client would remain NPO (nothing by mouth) until bowel sounds return and the colostomy is functioning. Bloody drainage is not expected from a colostomy.

Test-Taking Strategy: Focus on the **subject,** the colostomy beginning to function. This should assist in eliminating option 2. Knowledge of general postoperative measures will assist in eliminating option 3. Focus on the **subject** to assist in eliminating option 4 as a correct option.

Level of Cognitive Ability: Analyzing
Client Needs: Physiological Integrity
Integrated Process: Nursing Process—Assessment
Content Area: Foundations of Care: Perioperative Care
Health Problem: Adult Health: Cancer: Esophageal/Gastric/Intestinal
Priority Concepts: Clinical Judgment; Elimination
Reference: Lewis et al. (2017), p. 956.

460. ***Answer:*** 2

Rationale: The most common sign in clients with cancer of the bladder is hematuria. The client also may experience irritative voiding symptoms such as frequency, urgency, and dysuria, and these symptoms often are associated with carcinoma in situ. Dysuria, urgency, and frequency of urination are also symptoms

of a bladder infection.

Test-Taking Strategy: Focus on the **subject,** bladder cancer, and note the **strategic word,** *most*. Options 1, 3, and 4 are symptoms that are associated most often with bladder infection.

Level of Cognitive Ability: Analyzing
Client Needs: Physiological Integrity
Integrated Process: Nursing Process—Assessment
Content Area: Adult Health: Oncology
Health Problem: Adult Health: Cancer: Bladder and Kidney
Priority Concepts: Cellular Regulation; Elimination
Reference: Lewis et al. (2017), pp. 1053-1054.

461. ***Answer:*** 3

Rationale: The urinary collection bag should be changed when it is one-third full to prevent pulling of the appliance and leakage. The remaining options identify correct statements about the care of a urinary stoma.

Test-Taking Strategy: Note the **strategic words,** *need for more education*, and eliminate the options that indicate client understanding. Noting the words *two-thirds full* will assist in directing you to the correct option.

Level of Cognitive Ability: Evaluating
Client Needs: Physiological Integrity
Integrated Process: Teaching and Learning
Content Area: Adult Health: Oncology
Health Problem: Adult Health: Cancer: Bladder and Kidney
Priority Concepts: Client Education; Elimination
Reference: Perry et al. (2018), p. 939.

462. ***Answer:*** 1, 2, 5, 6

Rationale: Cancer is a common cause of SIADH. In SIADH, excessive amounts of water are reabsorbed by the kidney and put into the systemic circulation. The increased water causes hyponatremia (decreased serum sodium levels) and some degree of fluid retention. The syndrome is managed by treating the condition and cause and usually includes fluid restriction, increased sodium intake, and medication with a mechanism of action that is antagonistic to antidiuretic hormone. Sodium levels are monitored closely because hypernatremia can develop suddenly as a result of treatment. The immediate institution of appropriate cancer therapy, usually radiation or chemotherapy, can cause tumor regression so that antidiuretic hormone synthesis and release processes return to normal.

Test-Taking Strategy: Focus on the **subject,** treatment for SIADH, and recall that in SIADH excessive amounts of water are reabsorbed by the kidney and put into the systemic circulation. This will assist in answering this question.

Level of Cognitive Ability: Analyzing
Client Needs: Physiological Integrity
Integrated Process: Nursing Process—Analysis
Content Area: Adult Health: Oncology

Health Problem: Adult Health: Cancer: Laryngeal and Lung
Priority Concepts: Cellular Regulation; Clinical Judgment
Reference: Ignatavicius, Workman, Rebar (2018), pp. 954, 1251-1252.

463. ***Answer:*** 3

Rationale: Superior vena cava syndrome occurs when the superior vena cava is compressed or obstructed by tumor growth. Early signs and symptoms generally occur in the morning and include edema of the face, especially around the eyes, and client complaints of tightness of a shirt or blouse collar. As the compression worsens, the client experiences edema of the hands and arms. Cyanosis and mental status changes are late signs.
Test-Taking Strategy: Note the **strategic word,** *early*. Think about the pathophysiology associated with this disorder and focus on the strategic word to assist in eliminating options 1, 2, and 4.
Level of Cognitive Ability: Analyzing
Client Needs: Physiological Integrity
Integrated Process: Nursing Process—Assessment
Content Area: Adult Health: Oncology
Health Problem: N/A
Priority Concepts: Cellular Regulation; Clinical Judgment
Reference: Ignatavicius, Workman, Rebar (2018), pp. 408-409.

464. ***Answer:*** 4

Rationale: Hypercalcemia is a manifestation of bone metastasis in late-stage cancer. Headache and dysphagia are not associated with hypercalcemia. Constipation may occur early in the process. Electrocardiogram changes include shortened ST segment and a widened T wave.
Test-Taking Strategy: Note the **strategic word,** *late*. Focus on the name of the oncological emergency, *hypercalcemia,* to direct you to the correct option. Eliminate options 1 and 2 because they are not signs of hypercalcemia. Eliminate option 3 because it is an early sign of hypercalcemia.
Level of Cognitive Ability: Applying
Client Needs: Physiological Integrity
Integrated Process: Teaching and Learning
Content Area: Adult Health: Oncology
Health Problem: Adult Health: Cancer: Prostate
Priority Concepts: Cellular Regulation; Fluids and Electrolytes
Reference: Ignatavicius, Workman, Rebar (2018), p. 408.

465. ***Answer:*** 3

Rationale: During the period of greatest bone marrow suppression (the nadir), the platelet count may be low, less than 20,000 cells mm^3 (20.0×10^9/L). The correct option describes an incorrect statement by the client. Aspirin and nonsteroidal antiinflammatory drugs and products that contain aspirin should be avoided

because of their antiplatelet activity. Options 1, 2, and 4 are correct statements by the client to prevent and monitor bleeding.

Test-Taking Strategy: Note the **strategic words,** *further teaching is needed*. Recalling the effects of bone marrow suppression will direct you to the correct option.

Level of Cognitive Ability: Evaluating
Client Needs: Physiological Integrity
Integrated Process: Teaching and Learning
Content Area: Adult Health: Oncology
Health Problem: Adult Health: Hematological: Bleeding/Clotting Disorders
Priority Concepts: Cellular Regulation; Clinical Judgment
Reference: Lewis et al. (2017), pp. 250, 253.

466. ***Answer:*** 4

Rationale: The breast self-examination should be performed regularly, 7 days after the onset of the menstrual period. Performing the examination weekly is not recommended. At the onset of menstruation and during ovulation, hormonal changes occur that may alter breast tissue.

Test-Taking Strategy: Option 3 can be eliminated easily because of the word *weekly*. Eliminate options 1 and 2 next because they are **comparable or alike** in the similarity that exists regarding the hormonal changes that occur during these times.

Level of Cognitive Ability: Applying
Client Needs: Health Promotion and Maintenance
Integrated Process: Teaching and Learning
Content Area: Health Assessment/Physical Exam: Breasts
Health Problem: Adult Health: Cancer: Breast
Priority Concepts: Client Education; Health Promotion
Reference: Ignatavicius, Workman, Rebar (2018), pp. 1443-1444.

467. ***Answer:*** 2, 3, 4, 5

Rationale: Complications of intestinal tumors include bowel perforation, which can result in hemorrhage and peritonitis. Other complications include bowel obstruction and fistula formation. Flatulence can occur but is not a complication; lactose intolerance also is not a complication of intestinal tumor.

Test-Taking Strategy: Focus on the **subject,** complications of an intestinal tumor. Think about the location and pathophysiology associated with this type of tumor to answer correctly.

Level of Cognitive Ability: Analyzing
Client Needs: Physiological Integrity
Integrated Process: Nursing Process—Assessment
Content Area: Adult Health: Oncology
Health Problem: Adult Health: Cancer: Esophageal/Gastric/Intestinal
Priority Concepts: Cellular Regulation; Clinical Judgment
Reference: Lewis et al. (2017), p. 968.

468. ***Answer:*** 2

Rationale: Following mastectomy, the arm should be elevated above the level of the heart. Simple arm exercises should be encouraged. No blood pressure readings, injections, intravenous lines, or blood draws should be performed on the affected arm. Cool compresses are not a suggested measure to prevent lymphedema from occurring.

Test-Taking Strategy: Focus on the **subject,** preventing lymphedema. Note the relationship between the words *lymphedema* in the question and *elevating* in the correct option. Also, using general principles related to gravity will direct you to the correct option.

Level of Cognitive Ability: Applying
Client Needs: Physiological Integrity
Integrated Process: Nursing Process—Implementation
Content Area: Adult Health: Oncology
Health Problem: Adult Health: Cancer: Breast
Priority Concepts: Clinical Judgment; Tissue Integrity
Reference: Ignatavicius, Workman, Rebar (2018), p. 1454.

469. ***Answer:*** 1, 3, 5

Rationale: Chronic gastritis causes deterioration and atrophy of the lining of the stomach, leading to the loss of function of the parietal cells. The source of intrinsic factor is lost, which results in an inability to absorb vitamin B_{12}, leading to development of pernicious anemia. Clients must increase their intake of vitamin B_{12} by increasing consumption of foods rich in this vitamin, such as nuts, organ meats, dried beans, citrus fruits, green leafy vegetables, and yeast.

Test-Taking Strategy: Focus on the **subject,** foods rich in vitamin B_{12}. Note that apples and bananas are **comparable or alike** in that they are not citrus fruits. This will help you eliminate these options first. Option 2 can also be eliminated because it is not a green leafy vegetable. The remaining options are the correct options.

Level of Cognitive Ability: Applying
Client Needs: Physiological Integrity
Integrated Process: Teaching and Learning
Content Area: Adult Health: Hematological
Health Problem: Adult Health: Hematological: Anemias
Reference: Lewis et al. (2017), p. 610.

470. ***Answer:*** 2

Rationale: In iron deficiency anemia, iron stores are depleted, resulting in a decreased supply of iron for the manufacture of hemoglobin in red blood cells. An oral iron supplement should be administered through a straw or medicine dropper placed at the back of the mouth, because the iron stains the teeth. The client should be instructed to brush or wipe their teeth after administration. Iron is administered between meals, because absorption is decreased if there is food in the stomach. Iron requires an acid environment to facilitate its absorption in the duodenum. Iron is not mixed with cereal or other food items.

Test-Taking Strategy: Eliminate options 3 and 4 first because they are **comparable**

or alike and because medication should not be added to formula and food. Next, note the word *liquid* in the question. This should assist you in recalling that iron in liquid form stains teeth.

Level of Cognitive Ability: Applying
Client Needs: Physiological Integrity
Integrated Process: Teaching and Learning
Content Area: Adult Health: Hematological
Health Problem: Adult Health: Hematological: Anemias
Priority Concepts: Client Education; Health Promotion
Reference: Burchum, Rosenthal (2016), pp. 652-653.

471. ***Answer:*** 4

Rationale: In iron deficiency anemia, iron stores are depleted, resulting in a decreased supply of iron for the manufacture of hemoglobin in red blood cells. The results of a complete blood cell count in clients with iron deficiency anemia show decreased hemoglobin levels and microcytic and hypochromic red blood cells. The red blood cell count is decreased. The reticulocyte count is usually normal or slightly elevated.

Test-Taking Strategy: Focus on the **subject,** laboratory findings. Eliminate options 1 and 3 first, knowing that the hemoglobin and red blood cell counts would be decreased. From the remaining options, select the correct option over option 2 because of the relationship between anemia and red blood cells.

Level of Cognitive Ability: Analyzing
Client Needs: Physiological Integrity
Integrated Process: Nursing Process—Assessment
Content Area: Adult Health: Hematological
Health Problem: Adult Health: Hematological: Anemias
Priority Concepts: Cellular Regulation; Gas Exchange
Reference: Ignatavicius, Workman, Rebar (2018), p. 803.