Oncology Nursing 9

The icon ✦ denotes content of special importance for NCLEX®.

DETECTION AND PREVENTION OF CANCER

Cancer Incidence and Trends

A. Cancer—a definition.
   1. Term represents a group of more than 200 neoplastic diseases that involve all body organs.
   2. One or more cells lose their normal growth-controlling mechanism and continue to grow uncontrolled. They tend to invade surrounding tissue and to metastasize to distant body sites.

✦ B. Second leading cause of death in United States after heart disease.
   1. Ranks fourth for males and first for females as cause of death; second after accidents as cause of death for children.
   2. Greatest increase seen in lung cancer—consistent with smoking patterns.

C. Incidence rate.
   1. 1.2 million in United States are diagnosed with cancer every year. It is predicted that the incidence of cancer in the United States could double by the middle of the century, due to growth and aging of population.
   2. Number of cancer deaths increased by 11% during past 40 years.
   ✦ 3. Leading causes of cancer death are lungs, prostate, and colorectal for males; lungs, breast, and colorectal for females.
   4. Most common site of cancer for a female is the cervix.

D. Steps in controlling cancer:
   1. Educate the public and professional people about cancer.
   2. Encourage methods of primary prevention.

Identified Causes and Risk Factors

A. Multiplicity theory: Multiple factors lead to the development of cancer; 60–90% thought to be related to environmental factors.

B. Carcinogens: agents known to increase susceptibility to cancer.
   1. Chemical carcinogens: asbestos, benzene, vinyl chloride, by-products of tobacco, arsenic, cadmium, nickel, radiation, and mustard gas.
   2. Iatrogenic chemical agents: diethylstilbestrol (DES); chemotherapy; hormone treatment; immunosuppressive agents, radioisotopes, cytotoxic drugs.
   3. Radiation carcinogens: x-rays; sunlight (ultraviolet light); nuclear radiation.
   4. Viral factors: herpes simplex; Epstein–Barr; hepatitis B, and retroviruses.
   5. Genetic factors: hereditary or familial tendencies.
   6. Demographic and geographic factors.
   7. Dietary factors: obesity; high-fat diet; diets low in fiber; diets high in smoked or salted foods; preservatives and food additives; alcohol.
   8. Psychological factors: stress.
   9. Age.

Primary Prevention Measures

✦ A. Optimal dietary patterns and lifestyle changes.*
   1. Dietary factors are related to 50% of all environmental cancers.
   2. Avoid obesity (at 40% overweight, there is a 55% increased risk of cancer in females and 33% increased risk in males).
   3. Decrease fat intake of both saturated and unsaturated fats—maximum 30% of total calories.
   4. Increase total fiber in diet—decreases risk of colon cancer.
   5. Increase cruciferous vegetables (cabbage, broccoli, carrots, Brussels sprouts).
   6. Increase vitamin A—reduced incidence of larynx, esophagus, and lung cancers.
   7. Increase vitamin C—aids tumor encapsulation and promotes longer survival time.
   8. Increase vitamin E—inhibits growth of brain tumors, melanomas, and leukemias.
   9. Decrease alcohol consumption.
   10. Avoid salt—cured, smoked, or nitrate-cured foods.

✦ B. Minimize exposure to carcinogens.
   1. Avoid smoking—thought to be a cause of 75% of lung cancers in United States.
   2. Avoid oral tobacco—increases incidence of oral cancers.
   3. Avoid exposure to asbestos fibers and constant environmental dust.
   4. Avoid exposure to chemicals.
   5. Avoid radiation exposure and excessive exposure to sunlight.

C. Obtain adequate rest and exercise to decrease stress.
   1. Chronic stress associated with decreased immune system functioning.
   2. Strong immune system responsible for destruction of developing malignant cells.
   3. Participate in a regular exercise program.
   4. Get adequate rest (6–8 hours per night).
   5. Have a physical exam on a regular basis, including recommended diagnostic tests.

** Core curriculum for Oncology Nursing.*

THE SEVEN EARLY WARNING SIGNS OF CANCER

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

Secondary Prevention—Early Detection

A. Risk assessment (see Identified Causes and Risk Factors, p. 470).
B. Health history and physical assessment.
✦ C. Screening methods.
1. Mammography, Pap test, prostate exam, prostate-specific antigen (PSA) blood test, etc.
2. Self-care practices: breast self-examination (BSE) done every month on a regular time schedule; testicular self-examination (TSE) done every month; skin inspection.
3. Colonoscopy for males and females 50 years and older.
4. Fecal occult blood test for males and females 40 years and older.

Characteristics

A. **Benign neoplasms**: usually encapsulated, remain localized, and are slow growing.
B. **Malignant neoplasms**: not encapsulated, will metastasize and grow, and exert negative effects on host. (See **Table 9-1**.)
C. Categories of malignant neoplasms.

Table 9-1 COMPARISON OF CHARACTERISTICS OF BENIGN AND MALIGNANT TUMORS

	Malignant	Benign
Cell type	Abnormal, more unlike parent cells	Close to those of original tissues
Growth	Variable and usually rapid; infiltrates surrounding tissues in all directions	Slow and noninfiltrating, expansive
Encapsulated	Rare	Usually
Metastasis	Frequent, through blood, lymph, or new tumor sites	Absent
Effect	Terminal without treatment	Can become malignant or obstruct vital organs
Differentiation	Poorly	Partially
Recurrence	Frequent	Rare
Vascularity	Moderate to marked	Slight

1. Carcinomas—grown from epithelial cells; usually solid tumors (skin, stomach, colon, breast, rectal).
2. Sarcomas—arise from muscle, bone, fat, or connective tissue—may be solid.
3. Lymphomas—arise from lymphoid tissue (infection-fighting organs).
4. Leukemias and myelomas—grow from blood-forming organs.

D. Mechanisms of metastases.
1. Transport of cancer cells occurs through the lymph system and either the cells reside in lymph nodes or pass between venous and lymphatic circulation.
a. Tumors that begin in areas of the body that have extensive lymph circulation are at high risk for metastasis (breast tissue).
b. The speed of metastasis is directly related to the vascularity of the tumor.
c. Angiogenesis: Cancer cells induce growth of new capillaries; thus cells can spread through this network.
d. Hematogenous: Cancer cells are disseminated through the bloodstream. The bloodstream may carry cells from one site to another (liver to bone).
2. Direct spread of cancer cells (seeding) where there are no boundaries to stop the growth (e.g., ovary and stomach).
3. Transplantation is the transfer of cells from one site to another.

Diagnosis

A. Diagnostic studies will depend on suspected primary site and symptoms.
B. Laboratory and radiologic tests often identify a problem first.
1. Radiographic procedures (e.g., tomography, computed tomography [CT], contrast studies).
2. Ultrasonography.
3. Radioisotopic scanning studies (e.g., brain scan, gallium imaging).
4. Magnetic resonance imaging (MRI).
5. Biologic response markers (useful for diagnosing primary tumors, a parameter used to measure the progress of disease or the effects of treatment).
6. Positron emission tomography (PET). Radioactive glucose is injected prior to scanning. Areas of high glucose uptake, such as rapidly dividing cancer cells, are dramatically displayed in the scam images.
a. PET scans reveal cellular-level metabolic changes occurring in an organ or tissue. This is important and unique because

disease processes often begin with functional changes at cellular level.
   b. PET scan can measure such vital functions as blood flow, oxygen use, and glucose metabolism, which helps doctors identify abnormal from normal-functioning organs and tissues.
   c. Scan can also be used to evaluate the effectiveness of a treatment plan, allowing client's course of care to be adjusted if necessary.

C. Other laboratory tests.
   1. Enzyme tests, such as acid phosphatase.
   2. Tumor marker: ID analysis of substances found in blood or body fluids.

Cancer Classification

Grading

A. Grading refers to classifying tumor cells—done by biopsy, cytology, or surgical excision. (See **Table 9-2**.)
   1. Tumor grade is one of many factors that doctors consider when they develop a treatment plan for a cancer client. *It is not the same as staging.*
   2. Tumor grade refers to the degree of abnormality of cancer cells compared with normal cells under a microscope.
   3. Tumor grade is an indicator of how quickly the tumor is likely to grow and spread.
   4. Tumor grading systems differ depending on the type of cancer.
   5. Tumor grade may be one of the factors considered when planning treatment for a client.

B. Biopsy: definitive diagnosis of cancer.
   1. Excisional biopsy—removes all suspicious tissue. Used for small tumors < 2 cm.
   2. Incisional biopsy—removes a sample of tissue from a mass.
   3. Needle aspiration—aspiration of small amount of core tissue from a suspicious area.
   4. Exfoliative cytology—scraping of any endothelium cells in tissue or secretions is applied to a slide and evaluated (e.g., cervix—Pap smear of mucous membranes).

C. Tissue specimens are evaluated by frozen or permanent sections by a pathologist.

D. Results from biopsy and other diagnostic procedures (blood tests, x-ray studies, endoscopic procedures) will determine extent of disease staging.

Table 9-2 GRADING TUMORS

The American Joint Commission on Cancer has recommended the following guidelines for grading tumors:

Grade	Differentiation	Dysplasia
GX	Cannot be assessed	
G1-Low	Well differentiated	Mild dysplasia, cells differ slightly from normal cells
G2-Intermediate	Moderately well differentiated	Moderate dysplasia, more abnormal
G3-High	Poorly differentiated	Severe dysplasia
G4-High	Undifferentiated	Anaplasia, cell of origin unable to be determined

Some cancers also have special grading systems. For example, the Gleason system to describe the degree of differentiation of prostate cancer cells uses scores ranging from Grade 2 to Grade 10. Lower Gleason scores describe well-differentiated, less aggressive tumors. Higher scores describe poorly differentiated, more aggressive tumors.

Staging (see Table 9-3)

✦ A. Staging describes the size of the tumor and extent or metastasis of a malignant tumor; also quantifies severity of disease.

✦ B. A useful system of staging for carcinomas is the TNM system.
   1. T: Primary tumor.
   2. N: Regional nodes.
   3. M: Metastasis.

For many cancers, TNM combinations correspond to one of five stages. Criteria for stages differ for different types of cancer. For example, bladder cancer T3 N0 M0 is stage III, whereas colon cancer T3 N0 M0 is stage II.

C. The extent to which malignancy has increased in size
   1. Primary tumor (T).
      a. T_X: tumor cannot be assessed.
      b. T_0: no evidence of primary tumor.
      c. T_{IS}: carcinoma in situ.
      d. T_1, T_2, T_3, T_4: progressive increase in tumor size and involvement.
   2. Involvement of regional nodes (N).
      a. N_X: regional lymph nodes cannot be assessed clinically.
      b. N_0: regional lymph nodes not abnormal.
      c. N_1, N_2, N_3, N_4: increasing degree of abnormal regional lymph nodes.

Table 9-3 CLINICAL STAGING OF TUMORS

Stage	Treatment
Stage 0	
Cancer in situ—abnormal cells confined to lobule (LCIS) or duct (DCIS) lining. Considered a marker for increased risk of invasive cancer.	No treatment for LCIS but close monitoring of both breasts. Lumpectomy for DCIS and radiation.
Stage I	
Earlier stage of invasive breast cancer: tumor no larger than 2 cm and cancer cells have not spread. More than 70% with Stage I have no evidence of axillary node involvement.	Treated with lumpectomy followed by radiation or mastectomy with dissection of nodes. Alternative treatment is sentinel lymph node biopsy.
Stage II	
One of the following conditions is present: tumor no larger than 2 cm and has spread to axillary nodes; tumor is 2–5 cm with or without regional spread; tumor larger than 5 cm with negative axillary nodes.	Treatment similar to procedures above with one or more adjuvant therapies recommended.
Stage III	
This stage involves extensive local and regional spread to axillary nodes, chest wall, breast skin, or substernal nodes.	Treated with chemotherapy before surgery to shrink tumor. After mastectomy, additional chemotherapy and radiation is given.
Stage IV	
Cancer has metastasized to distant organs, most often lungs, bones, liver, or brain.	Therapy is systemic chemotherapy, hormonal or biological therapy; other treatments may be used to alleviate symptoms.

3. Metastatic development (M).
   a. M_X: not assessed.
   b. M_0: no evidence of distant metastasis.
   c. M_1 to M_4: increasing degree of distant metastasis.

D. Another method of staging: Many cancer registries, such as those supported by the National Cancer Institute's (NCI's) Surveillance, Epidemiology, and End Results (SEER) Program, use "summary staging." This system is used for all types of cancer. It groups cancer cases into five main categories:
   1. **In situ**: Abnormal cells are present only in the layer of cells in which they developed.
   2. **Localized**: Cancer is limited to the organ in which it began, without evidence of spread.
   3. **Regional**: Cancer has spread beyond the primary site to nearby lymph nodes or tissues and organs.
   4. **Distant**: Cancer has spread from the primary site to distant tissues or organs or to distant lymph nodes.
   5. **Unknown**: There is not enough information to determine the stage.

TREATMENT METHODS

✦ A. Broad goals.
   1. Goal of therapy is to cure the client—eradicate the tumor.
   2. When cure is not possible, controlling or arresting the tumor growth becomes the goal—to prolong survival.
   3. Palliation or alleviation of symptoms.

✦ B. The gold standard for cancer treatment remains surgery, radiation therapy, chemotherapy, and combined approaches.

C. The newest weapon against cancer is adoptive immunotherapy (AIT).
   1. AIT uses principles of vaccine therapy.
      a. Cells from tumor tissue are cloned, treated in a lab, and injected back into the client for increased immune response.
      b. Days after the vaccine is administered, lymph nodes are harvested so the T cells can replicate; these are then infused into the client.
      c. Method is currently in clinical trials; side effects minimal (as opposed to radiation and chemotherapy).
   2. With AIT, the biologic response modifier is the reactive T-cell solution; activated T cells in the body fight the tumor.

Surgery

✦ A. Useful as primary treatment for localized cancer (breast, colon, melanoma of skin, etc.).
   1. Highest rate of cure for localized disease.
   2. Disadvantage—deforming or debilitating to client.

✦ B. Types of treatment.
1. Local excision: simple surgery with small margin of normal tissue surrounding tumor—used when tumor is small.
2. En bloc dissection or wide excision; removal of tumor, nodes, tissues, and any contiguous structures.
3. Video-assisted endoscopic surgery is replacing surgery with long incisions; surgery is done through two or three short incisions via a camera to remove tumor.
4. Surgery on cancer in situ.
   a. Electrosurgery—application of electrical current to destroy cancerous cells.
   b. Cryosurgery—deep freezing with liquid nitrogen to cause cell destruction.
   c. Chemosurgery—applied chemotherapeutic agents layer by layer with surgical excision.
   d. CO_2 laser—use of laser for local excision.

C. Other forms of surgery.
1. Prophylactic: removal of tissue or organs that may develop cancer.
2. Cosmetic surgery: follows radical surgery.
   a. May be performed immediately following surgery, postsurgery, or in stages.
   b. Method is appropriate for breast, head, neck, and skin cancers.

D. Palliative surgery—promotes comfort and quality of life without cure.

Implementation

A. Preoperative care.
1. Promote health status prior to surgery.
   a. Malnourished client is at risk for infection, delayed wound healing, and dehiscence.
   b. Mental status may impact surgery results.
   c. Neomycin is often given before bowel surgery to suppresses normal bacterial flora, thereby "sterilizing" the bowel preoperatively to decrease the possibility of postoperative infection. However, it cannot prevent infection.
2. Provide emotional support prior to surgery.
   a. Encourage talking about fears and anxieties.
   b. Provide accurate information—clarify levels of knowledge.
   c. Assess family needs and provide information and support.

B. Postoperative care.
1. Provide traditional postop care.
2. Provide for physical comfort.
   a. Enteral feeding.
   b. Pain relief.
   c. Positioning (to maximize comfort and promote lung expansion).
   d. Activity.
   e. Wound care and healing.
3. Provide emotional support.
   a. Allow for grief process—encourage expression of fears.
   b. Discuss change in body image—support increase in self-esteem.
   c. Provide accurate information.
4. Support rehabilitation process.
   a. Encourage family involvement.
   b. Make referrals to appropriate resources.
   c. Complete discharge planning.

Radiation Therapy

✦ *Definition*: Use of high energy moving through space or medium to interrupt cellular growth at a local level.

A. Indications.
1. Used to treat solid tumors—ionizing radiation transfers energy to molecules present in cancer cell.
2. Different tissues have different radiosensitivities—rapidly dividing tissues (testes, ovaries, lymphoid tissues, and bone marrow) are more sensitive.

✦ B. Types of ionizing radiation.
1. Electromagnetic—radiation in wave form.
   a. X-rays—linear accelerators deposit maximum dose 5 cm or more below the skin.
   b. Electrons—delivered by machines.
   c. Gamma rays—delivered by machines that contain radioactive sources (cobalt-60, cesium-137) or radioactive substances (seeds, threads, or liquids).
2. Particulate—radiation in the form of heavy particles.
   a. Beta particles—high-speed electrons (phosphorus-32; strontium-90).
   b. Protons, neutrons, and alpha particles accelerate subatomic particles through the body tissue.

C. Newest option in radiation is intensity-modulated radiation therapy (IMRT).
1. Delivers a high dose of radiation to the tumor, but spares vital, healthy tissue around it.
2. Method targets large or small tumors; type of beam can mold to tumor shape.
3. Therapy is administered by Peacock system.
   a. Conventional radiation delivers single, large beams of uniform intensity.
   b. IMRT bombards tumor with small beams of different intensity from all sides.
4. Heralded as greatest breakthrough in cancer management in 25 years.

External Radiation

✦ A. Teletherapy—external source of radiation. (Machine is a distance from client.) Most common type of treatment.

B. Types.
1. Natural radioactive source—gamma rays delivered via machine to lesion.
2. Machine is the linear accelerator—high-voltage electric current delivers electrons to client.

✦ C. Side effects: fatigue—major systemic effect; headache; nausea and vomiting; skin irritation or injury; scaling, erythema; dryness.

Implementation

A. Offer psychological support and teaching.
1. What to expect from treatment.
2. Explanation of radiotherapy room.
3. Possible side effects and ways to minimize them.

✦ B. Promote diet: high protein, high carbohydrate, fat free, and low residue.
1. Foods to avoid: tough, fibrous meat; poultry; shrimp; all cheeses (except soft); coarse bread; raw vegetables; irritating spices.
2. Foods allowed: soft-cooked eggs, ground meat, pureed vegetables, milk, cooked cereal.
3. Increase fluids.
4. Diet supplement to increase calorie and fluid intake.
5. Do not eat several hours before treatment.

C. Administer medications.
1. Compazine (prochlorperazine)—nausea.
2. Lomotil (diphenoxylate/atropine)—diarrhea.

✦ D. Provide skin care—radiodermatitis occurs 3–6 weeks after start of treatment.
1. Avoid creams, lotions, perfumes to irradiated areas unless directed to apply by physician. Aloe vera cream or gel may be recommended.
2. Wash with lukewarm water, pat dry (some physicians allow mild soap).
3. Avoid exposure to sunlight or artificial heat such as heating pad.

✦ E. Observe for "wet" reaction.
1. Weeping of skin due to loss of upper layer.
2. Promote rest after therapy.
3. Cleanse area with warm water and pat dry BID.
4. Apply antibiotic lotion or steroid cream if ordered.
5. Expose site to air.

Internal Radiation/Brachytherapy

A. Implantation of radioactive substance within the tumor or close to it.

✦ B. Types.
1. Unsealed sources: isotopes (^{131}I and ^{32}P).
   a. Liquid and administered orally.
   b. Half-life generally short but varies with isotope.
   c. Precautions important during high-risk period (usually first 4 days).
2. Sealed sources: radium needles, radon seeds, and ^{137}Cs.
   a. Radioactive substance encased in metal capsule placed in body cavity.
   b. Delivers radiation directly to tumor.
   c. Even though implant is sealed, special precautions are instituted.

C. Side effects.
1. Occur when normal cells are damaged.
2. Acute side effects occur during or shortly after radiation therapy; chronic effects occur months or years following therapy.
✦ 3. Common side effects from radiation therapy: alopecia, mouth dryness, mucositis, esophagitis, nausea and vomiting, diarrhea, cystitis, erythema, and dry and wet desquamation.
4. Factors influencing degree of side effects.
   a. Body site irradiated.
   b. Radiation dose—the higher the dose given, the more potential side effects.
   c. Extent of body area treated (larger area, more potential for side effects).
   d. Method of radiation therapy.

Implementation

✦ A. Maintain bed rest when radiation source in place.
1. Restrict movement to prevent dislodging radiation source.
2. Do not turn or position client except on back (when cesium needle in tongue or cervix).

B. Administer range-of-motion exercises QID.

C. Take vital signs every 4 hours (report temperature over 100°F or 37.8°C).

D. Observe for untoward effects: dehydration or paralytic ileus (if cervical implant).

✦ E. Observe and report skin eruption, discharge, abnormal bleeding; teach client to avoid using lotions, ointments, and powder.

F. Provide clear liquid diet (low residue is sometimes ordered) and force fluids.

G. Insert Teflon Foley catheter (radiation decomposes rubber) to avoid necessity of bedpan.

✦ H. Observe frequently for dislodging of radiation source (especially linen and dressings). Dislodgement can be a major problem.
1. Avoid direct contact around implant site.

✦ 2. When radiation source falls out, do not touch with hands. Pick up source with foot-long applicator.
✦ 3. Put source in lead container and call physician.
4. If unable to locate source, call physician immediately and bar visitors from room.

I. After source is removed, give the following care.
1. Administer Betadine (povidone iodine) douche if cervical implant.
2. Give Fleet (oral sodium phosphate) enema.
3. Client may be out of bed.
4. Avoid direct sunlight to radiation areas.
5. Administer cream to relieve dryness or itching.

J. Instruct that client may resume sexual intercourse within 7 to 10 days.

✦ K. Notify physician if nausea, vomiting, diarrhea, frequent urination or bowel movements, or temperature above 100°F or 37.8°C is present.

Safety Measures

✦ A. Implement radiation safety measures. (See Radiation Safety Measures box.)

✦ B. Follow special principles of time, distance, and shielding.
1. Minimize time.
a. Radiation exposure proportional to amount of time spent with client.
b. Plan care to be delivered in shortest amount of time to meet goals—be efficient with time.
c. Review procedures before beginning them.
2. Maximize distance.
a. Intensity of radiation is related to distance from client.
b. Duration of safe exposure increases as distance is increased; work as far away from source as possible.
3. Utilize shielding.
a. Use lead shields or other equipment to reduce transmission of radiation.
b. Store radioactive material in lead-shielded container when not in use.

✦ C. Follow radiation precautions for isotope implant.
1. All body secretions considered contaminated—use special techniques for disposal.
2. If client vomits within first 4 hours—everything vomitus touches is considered contaminated.
3. Use disposable gown, dishes, etc.
4. Limit contact with hospital personnel and visitors. Visitors must limit exposure to 1 hour/day and keep a distance from the client.

RADIATION SAFETY MEASURES

- Wear radiation badges to monitor total amount of radiation exposure. Cumulative dose (measured in millirems) not to exceed 1250 every 3 months.
- Observe for displacement or dislodgment of radiation source every 4–6 hours.
- Check that sealed lead container is kept in client's room in case of accidental dislodgment.
- Collect body waste until it can be determined that radiation source is not dislodged.
- Radiation source removed at prearranged time—after removal, client is no longer radioactive.
- Do not allow persons under age 18 or pregnant women to visit or care for clients with radioactive implant.
- Never touch a dislodged sealed source—use long-handled tongs or contact radiation safety personnel.
- Mark client's room and chart with radiation safety precautions.

Chemotherapy

Characteristics

A. The medical management of cancer includes the use of chemotherapy. First used in the early 1950s, there are now more than 80 effective drugs available.
1. Chemotherapy is method of choice when there is suspected or confirmed spread of malignant cells.
2. Method used when the risk of recurrence is high.
3. May be used as palliative measure to relieve pain or increase comfort.

B. Mechanism of action.
✦ 1. Functions at cellular level by interrupting cell life—modifies or interferes with DNA synthesis.
2. Chemotherapeutic agents eradicate cells, both normal and malignant, that are in the process of cell reproduction.

Drug Classification

A. Drugs classified by group into those that act on a certain phase of cell reproduction (cell cycle specific) or those that do not reproduce (cell cycle nonspecific).

✦ B. Cell cycle–specific agents: antimetabolites and mitotic inhibitors.
1. Act on the cell during a particular phase of reproduction.
2. Most effective in tumors where a large number of cells are dividing.
3. Divided doses produce greater cytotoxic effects (not all cells will be in the same phase at the same time).

4. Antimetabolites.
   a. Specific for the S phase—replaces building blocks of DNA so cell can't divide.
   b. Examples of antimetabolites: Trexall (methotrexate), Purinethol (6-mercaptopurine), Adrucil (5-fluorouracil), Vidaza (azacitidine), Cytosar-U (cytarabine), Hydrea (hydroxyurea).
5. Plant alkaloids.
   a. Specific for the M phase—prevent cell division by destroying the mitotic spindle.
   b. Examples of mitotic inhibitors: plant alkaloids—Oncovin (vincristine), Eldisine (vindesine), Velban (vinblastine), Vumon (teniposide).

✦ C. Cell cycle–nonspecific drugs: alkylating agents, antitumor antibiotics, and nitrosoureas.
1. Act on cells during any phase of reproduction—some drugs will attack cells in the resting phase (not actively dividing).
✦ 2. Agents are dose dependent—the more drug given, the more cells destroyed.
3. These drugs are more toxic to normal tissue because they are less selective.
4. Alkylating agents.
   a. These drugs prevent cell division by damaging the DNA "ladder" structure and are effective in all phases of the cell cycle.
   b. Included in almost all chemotherapy regimens.
   c. Examples of alkylating agents: Cytoxan (cyclophosphamide), Myleran (busulfan), Alkeran (melphalan [L-PAM]), Thioplex (thiotepa), Platinol (cisplatin).
5. Antitumor antibiotics.
   a. These drugs attack DNA (they act like alkylating drugs) by slipping between the DNA strands and preventing replication.
   b. Examples of antitumor antibiotics: Adriamycin (doxorubicin), Cosmegen (dactinomycin).
6. Nitrosoureas.
   a. Alkylating agents that are stronger and have a greater ability to attack cells in the resting phase of cell growth.
   b. These drugs can cross the blood–brain barrier.
   c. Examples of nitrosoureas: Zanosar (streptozocin), semustine (methyl-CCNU), Gliadel (carmustine or BCNU), azacitidine (chlorozotocin or DCNU).

D. Other miscellaneous agents (such as Matulane [procarbazine]) are used in the chemotherapy group, but their exact mechanism of action is unknown.

✦ E. Hormonal agents (estrogens, androgen, progestins) work in all cycles and are used in therapy to affect the hormonal environment (Decadron [dexamethasone], DES, Halotestin [fluoxymesterone], Nolvadex [tamoxifen], Deltasone [prednisone]).
1. Affect the growth of hormone-dependent tumors.
2. Steroids interfere with the synthesis of protein and alter cell metabolism (lymphomas and leukemias).
3. Antihormones (Nolvadex and Evista [Raloxifene]) block tumor growth by depriving the tumor of the necessary hormones.

✦ F. Combination chemotherapy.
1. Most often administered in combination, which enhances the response rate: for example, Adriamycin, Blenoxane (bleomycin), Velban, and dacarbazine (ABVD) used for Hodgkin's lymphoma.
2. Studies at Stanford University now suggest ABVD and a fifth or sixth chemotherapy drug be combined with Deltasone (for its anti-inflammatory effect) for 3 months for Hodgkin's disease.
3. Cancer cells divide erratically on different schedules; thus drugs that are effective alone and have different mechanisms of action can combine to destroy even more cells.
4. Drugs used in combination for synergistic activity.
5. Guidelines for drug administration are carefully planned and referred to as protocols or regimens.
   a. Package inserts are based on single-agent therapy, so it is important to adhere to the ordered protocol.
   b. Dosages of drugs are based on height and weight calculated as body surface area.

G. Other chemotherapeutic agents that do not fall into specific categories.
1. Elspar (asparaginase)—an enzyme used to treat lymphocytic leukemia; Eulexin (flutamide)—antiandrogen used to treat prostate cancer; and Taxol (paclitaxel)—used to treat ovarian, breast, and cell lung cancers.
✦ 2. Chemotherapeutic drugs cause myelosuppression; nursing interventions include blood counts and instituting precautions if blood count falls below normal, and assess for infection.

Goals of Treatment

A. The major goal is to cure the malignancy.
1. Chemotherapy, as primary mode of treatment, may include curing certain malignancies such

as acute lymphocytic leukemia, Hodgkin's disease, lymphosarcomas, Wilms' tumor.
2. Cure may also occur in combination with other modes of treatment, radiation, or surgery.

B. Control may be the goal when cure is not realistic; the aim is to extend survival and improve the quality of life.

C. Palliation may be the goal when neither cure nor control may be achieved; this goal is directed toward client comfort.

Chemotherapeutic Administration

A. Chemotherapeutic agents are administered through a variety of routes.
1. Oral route—used frequently. Safety precautions must be observed.
2. Intramuscular and subcutaneous used infrequently, as drugs are not vesicants.
✦ 3. Intravenous is the most common route—provides for better absorption.
   a. Potential complications: infection, phlebitis.
   b. Prevention of complications: Use smallest gauge needle possible; maintain aseptic technique; monitor intravenous (IV) site frequently; change IV fluid every 4 hours.
✦ 4. Central venous catheter infusion—used for continuous or intermittent infusions.
   a. Potential complications: infection, catheter clotting, sepsis, malposition of needle.
   b. Prevention of complications: Maintain aseptic technique and monitor site daily; flush catheter daily and between each use with heparin solution; assess client for signs of sepsis.
✦ 5. Venous access devices (VADs)—used for prolonged infusions.
   a. Potential complications: infection and infiltration from malposition.
   b. Assess site frequently and assess for systemic infection.
6. Intra-arterial route—delivers agents directly to tumor in high concentrations while decreasing drug's systemic toxic effect.
   a. Potential complications: infection or bleeding at catheter site, catheter clotting, or pump malfunction.
   b. Change dressing site daily and assess for signs of infection; irrigate catheter with heparin solution and avoid kinks in tubing.
7. Intraperitoneal—used for ovarian and colon cancer. High concentration of agents delivered to peritoneal cavity via catheter, then drained.
8. Other less frequently used routes are intrapleural, intrathecal, and ventricular reservoir.

B. Factors for deciding dosage and timing of drugs.
1. Dosage calculated on body surface area and kilograms of body weight.
2. Time lapse between doses to allow recovery of normal cells.
3. Side effects of each drug and when they are likely to occur.
4. Liver and kidney function, as most antineoplastics are metabolized in one of these organs.

Chemotherapy Safety Guidelines

✦ A. Antineoplastic drugs are potentially hazardous to personnel and may have teratogenic and/or carcinogenic effects.

✦ B. Safety guidelines have been issued by the Occupational Safety and Health Administration (OSHA).
1. Obtain special training for drug administration.
2. Use two pairs of powder-free, dispensable chemotherapy gloves, and a disposable, closed, long-sleeved gown with outer pair of gloves covering gown cuff whenever there is risk of exposure to hazardous drugs.
3. Provide syringes and IV sets with Luer lock fittings for preparing and administering hazardous drugs. Also provide containers for their disposal.
4. Use a closed-system drug-transfer device and needleless system to protect nursing personnel during drug administration.
5. Label all prepared drugs appropriately.
6. Double-bag chemotherapy drugs once prepared, before transport.
7. Have equipment ready to clean up any accidental spill (spill kit).
8. Dispose of all materials in marked containers labeled hazardous waste.
9. Dispose of all needles and syringes intact.
10. Follow facility's policies and procedures when preparing to administer chemotherapy.
11. Double-check chemotherapy orders with another oncology nurse.
12. Read material safety data sheets (MSDS) prior to administration.
13. Use personal protective equipment (PPE).
14. Wash your hands both before you put on and after you take off gloves.
15. After infusion is complete, promptly dispose of any equipment that contained the drug in a puncture-proof container that is clearly marked.
16. Chemotherapy agents may be excreted in body fluids; these may be contaminated for 48 hours

after the last drug dose. Wear PPE when handling such excreta, and wash your hands after removing gloves.

17. Check facility's policies about handling linen that's been contaminated with chemotherapy.
18. If a chemotherapy drug comes into contact with your skin or a client's skin, thoroughly wash the affected area with soap and water, but don't abrade the skin with a scrub brush.
19. If the drug gets in your eyes, flush with copious amounts of water for at least 15 minutes while holding back your eyelids. Then get evaluated by employee health or the emergency department (ED).

✦ C. When infusing vesicant drugs, monitor IV carefully—at first sign of extravasation, remove IV and implement Rx protocol.

Side Effects and Nursing Management

✦ A. Side effects occur primarily due to the mechanism of action of potent drugs on normal cells.
1. Normal cells most affected are bone marrow cells, epithelial cells of the gastrointestinal (GI) tract and hair follicles, and cells of the gonads.
2. Since other normal cells are not actively reproducing (except with tissue injury and repair), they are not severely affected.
3. Time of most severe depression of cells (termed *nadir*) is different for each type of cell.

B. Skin and mucosa, protective linings of the body, are damaged.

✦ 1. Mucositis (cells of the mucosa are affected)—may extend from oral cavity and stomach through GI tract.
a. Symptoms may be nausea, vomiting, anorexia, fluid and electrolyte imbalance, dietary insufficiency, and stomatitis.
b. Assess for erythema, tenderness, and ulceration.
2. Clients at high risk are those with dental caries, those with gum disease, smokers, and those who drink alcohol.
3. Nursing interventions include good oral hygiene with soft toothbrush, mouthwashes (viscous Xylocaine [lidocaine]), avoiding foods that are hot, sharp, spicy, or acidic—diet should be soft, bland, tepid.

✦ C. Alopecia, or hair loss, caused by damage to rapidly dividing cells of the hair follicles.
1. Hair loss begins 2–3 weeks after chemotherapy and continues through the cycles of chemotherapy; regrowth occurs following the course of therapy.
2. Nursing interventions include scalp hypothermia (ice cap) and scalp tourniquet; both reduce the amount of drug reaching the hair follicle and may prevent hair loss.

✦ D. Nausea, vomiting, and anorexia are common in clients receiving chemotherapy.
1. Antiemetic regimens (Reglan [metoclopramide], Zofran [ondansetron]) may counteract these symptoms.
2. Nursing interventions include supporting changes in food preferences, additional or less seasoning, small and more frequent high-calorie, high-protein meals.
3. Offer high-calorie and protein supplements.

✦ E. Elimination disturbance occurs when the client does not eat well, is not exercising, or has mucositis.
1. Diarrhea is related to toxicity of the drugs on the mucosal lining and can quickly cause fluid volume deficit; diet bland and low residue.
2. Constipation may be related to the drugs (especially Velban and Oncovin) that affect nerve endings in the GI tract.
a. Add more fiber and liquid to diet (3000 mL/day).
b. Avoid milk and dairy products.
c. Include low-residue foods and foods high in potassium.
d. Stool softeners are ordered to minimize constipation; may add vegetable laxative.

F. Elevated uric acid and crystal urate stone formation may occur.

✦ G. Hematological disruptions: Damage to normal cells in the bone marrow can be life-threatening and is, therefore, the most dangerous side effect.
1. White blood cells (WBCs) and platelets have a shorter life span than red blood cells so they are more susceptible to damage.
2. White blood cell suppression—leukopenia (less than 5000/mm^3 when normal white blood cell count is 5000–10,000/mm^3).
a. Granulocytes are the most suppressed, which places client at risk for bacterial infection.
b. Common sites of infection are the lung, urinary tract, skin, and blood.
c. Implementation includes meticulous aseptic technique for IV therapy as well as hand hygiene; avoid exposure to infected persons.
d. Assess for fever, chills, and sore throat.
e. Teach signs and symptoms of infection to the cancer client with instructions to report symptoms to the doctor or nurse.
f. Medications may be given to stimulate the production of WBCs, e.g., Neupogen (filgrastim).

✦ 3. Platelet suppression to below normal (less than 150,000 mm^3) is called thrombocytopenia.
   a. A number less than 50,000/mm^3 makes the client susceptible to bleeding gums and/or nose, easy bruising, heavier menstrual flow, etc.
   b. Teach client precautions: soft toothbrush, avoidance of douches and enemas, care with trimming nails, avoiding venipunctures when possible, and avoidance of any activity that might increase intracranial pressure (ICP).
4. Red blood cell suppression—anemia is not usually a severe toxicity.

H. All hormonal agents cause fluid retention: Monitor weight gain, intake and output (I&O), edema, and administer diuretics as ordered.

Nutrition in Oncology

A. Maintaining a healthy diet with supplements can affect cancer diagnosis.
   1. Nutrition is a factor in the cause of some cancers.
   2. Poor diet increases cancer risk.
   3. High-fat meat and low fiber is linked to breast, prostate, and colon cancer. Alcohol and tobacco connected to head and neck cancers.
   4. Low calcium is linked to colon cancer, and low vitamin D is linked to prostate cancer.

B. Recommended diets.
   1. Low fat and high fiber—high intake of fruits and vegetables with limited alcohol intake.
   2. Avoid high weight gain and add physical activity.

C. Cancer cachexia—weight loss associated with certain types of cancer.
   1. With this type of weight loss, weight is lost equally from muscle and fat.
   2. Most often seen with lung and pancreatic cancer, but is present with other cancers.

D. Certain nutrients may be deficient in cancer clients—nutrient supplement (vitamins and minerals) recommended.

Psychosocial Impact of Chemotherapy

A. Assessment.
   1. Client's reaction to illness and chemotherapy.
   2. Prior experience with those receiving chemotherapy.
   3. Coping style under stress.
   4. Support network.
   5. Psychosocial changes resulting from cancer.
      a. Threats to the roles client has in life: career, marriage, parent, etc.
      b. Threat to life goals.
      c. Altered independence.

B. Implementation.
   1. Support client's coping style without attempting to change style.
   2. Provide accurate information, encourage questions, and expression of concerns.
   3. Allow time for client to communicate, express fears, concerns, and adjustment to both disease and treatment.
   4. Refer client to appropriate healthcare providers and to support groups.

Targeted Medicine: Pharmacogenomics

A. Medicine targeted to illness and genetic makeup
   1. Advances in genetics are transforming medicine.
   2. Genetic markers can predict how drugs are absorbed and metabolized and how clients will respond.
   3. Increase in serious adverse drug reactions, costs, morbidity, and mortality provide impetus for advancing targeted drugs.

B. Oncology is one area where targeted drugs now are being used.
   1. Breast cancer: Herceptin (trastuzumab) targets a protein found in certain type of cancer; blocks growth of tumor cells.
   2. Has far fewer side effects than traditional chemotherapy.

C. Targeted therapy, used to treat many kinds of diseases, consists of drugs that block the growth and spread of cancer by interfering with specific molecules involved in carcinogenesis (the process by which normal cells are transformed into cancer cells) and tumor growth.
   1. Targeted therapy drugs.
      a. Are technically considered "chemotherapy."
      b. Do not work in the same ways as standard chemotherapy drugs.
      c. Are often able to attack cancer cells while doing less damage to normal cells by going after the cancer cells' inner workings—the programming that sets them apart from normal, healthy cells.
      d. Tend to have different (and often less severe) side effects than standard chemotherapy drugs.
   2. Types of targeted therapies.
      a. **Enzyme inhibitors**
         (1) Block (inhibit) enzymes that are signals for cancer cells to grow.
         (2) Blocking these cell signals can keep the cancer from getting bigger and spreading.
         (3) Even if the tumor is not getting smaller, its out-of-control growth has been interrupted.
         (4) May give regular chemo a better chance to work.
         (5) May also help people live longer, even without adding other drugs.

b. **Apoptosis-inducing drugs.**
   (1) Change proteins within the cancer cells and cause the cells to die.
   (2) Many cancer treatments, including radiation and chemo, cause cell changes that lead to apoptosis. Targeted drugs in this group are different, because they are aimed right at the parts of the cell that control whether cells live or die.

c. **Angiogenesis inhibitors.**
   (1) Block the *vascular endothelial growth factor* (VEGF) made by some tumors.
   (2) VEGF proteins can attach to the VEGF receptors of blood vessel cells causing new blood vessels to form around the tumors. Blocking this process prevents formation of new blood vessels to feed tumors so they could grow.

Pain in Cancer

Characteristics

✦ A. Incidence.
   1. Various studies suggest that 50% of persons with cancer will not experience significant pain.
   2. Severe pain is experienced by about 60–80% of hospitalized clients.
   3. In early stages of cancer there is little pain—pain that is felt is associated with treatment (surgery).

B. Causes of pain in cancer.
   1. Physiological causes.
      a. Bone destruction with infraction results from metastatic lesions secondary to primary carcinomas.
      b. Obstruction of an organ by tumor growth (intestinal obstruction).
      c. Compression of peripheral nerves produces sharp, continuous pain—pain follows nerve distribution.
      d. Infiltration or distention of tissue produces a localized, dull pain that increases in intensity as tumor grows.
      e. Inflammation, infection, and necrosis cause pain from pressure or dilatation and distention of tissue distal to an obstruction.
   2. Psychological causes.
      a. This form of pain depends on client's perceived threat from the condition or stress reaction to it.
         (1) Fear or anxiety generated from the effects the disease may have on the person's lifestyle or relationships.
         (2) Loss or threat of loss may produce a reactive depression with feelings of despair.
         (3) Frustration of drives or lack of need satisfaction may also contribute to psychological pain.
      b. Perception of threat or stress is influenced by client's personality characteristics: self-concept, independence–dependence, emotional stability, education, age, etc.

C. The nature of cancer pain falls into two general categories: chronic and intractable pain.

Assessment of Pain

✦ A. Physical dimension of cancer pain is variable.
   1. The severity of pain is assessed using a 0- to 10-point scale—0 being pain free and 10 being the worst pain.
   2. Teach "pain tasks" to client.
      a. Encourage client to identify and state what, where, and when pain occurs.
      b. This method will help determine which symptoms are most troublesome.
   3. Evaluate the meaning of the pain experienced by the client—understand pain as the client views it.

B. Scope of pain assessment must encompass several factors.
   1. Severity and duration of pain.
   2. Nature of the disease process.
   3. Probable life expectancy.
   4. Temperament and psychological state.
   5. Occupational, domestic, and economic background of the client.

C. Assess vital signs as indicators of pain.
   1. Low to moderate pain and superficial in origin—the sympathetic nervous system is stimulated.
      a. Increased blood pressure and pulse.
      b. Increased respiratory rate and muscle tension.
   2. Severe pain or visceral in origin—the parasympathetic nervous system is affected.
      a. Decreased blood pressure and pulse.
      b. Nausea, vomiting, and weakness.
   3. Pain present for a month or longer (late-stage pain); there will probably be no change in vital signs.

D. Assess client's behavior as an indicator of pain.
   1. Alterations in body posture/gestures.
   2. Alterations in activities of daily living.

✦ E. Assess verbalizations, both verbal and nonverbal, as indicators of pain.
   1. Ask systematic questions to determine degree of pain: location, radiation, onset, frequency, duration, quality.
   2. Determine situational factors that influence pain level: level of consciousness, meaning of

pain, attitudes and feelings of others, presence of secondary gains, fatigue level, and stressful life events.
3. Assess and document client's pain often and regularly.

Treatment Methods

Medication Management (see Table 9-4)

✦ A. Drug therapy is considered the cornerstone of cancer pain management—begins with least invasive and progresses to opioids as pain intensifies.
1. Acetaminophen, aspirin, nonsteroidal anti-inflammatory drugs (NSAIDs) relieve mild pain.
2. Opioids (codeine or Vicodin [hydrocodone]) added to regimen as pain progresses.
a. Given in fixed-dose combinations with aspirin.
b. Progresses to higher dose or more potent opioid (morphine, Dilaudid [hydromorphone]).
c. Drugs can be given 24/7 with additional "rescue" doses as needed.
3. Intraspinal morphine administration.
a. An implantable infusion pump delivers a continual supply of opiate to the epidural or subarachnoid space.
b. Useful for eliminating intractable pain below the mid- to low-thoracic level where spinal cord opiate receptors respond to morphine.

✦ B. Evaluate client continually for opioid side effects (constipation, nausea, vomiting, sedation, respiratory depression, and urinary retention) that interfere with the goal of the therapy.

Surgical Management

A. Various neurological and neurosurgical interventions effectively manage pain experienced by cancer clients.
✦ 1. Nerve blocks, either peripheral or intrathecal, can relieve pain.
2. Procedures involve interruption of pain pathways someplace along the path of transmission from the periphery to the brain.

B. Electrical stimulation of the periventricular gray matter in the brain is used for pain relief.
1. An electrode is implanted through a burr hole on the side opposite the most intense pain.
2. Electrical pulses are then sent periodically into the brain.

Noninvasive Modalities

✦ A. Electrical stimulation may be used for pain relief.
1. Transcutaneous methods: transcutaneous electrical nerve stimulation (TENS) applies stimulation to the skin surface over the painful area.
2. A peripheral nerve implant applies stimulation to peripheral nerves.
3. Electrodes implanted in the dorsal column stimulate spinal column fibers.

B. Hypnosis is currently viewed as one component of pain management.
1. A hypnotic state can achieve significant analgesia.
2. Self-control over pain and its associated anxieties can be assisted with hypnosis.

Table 9-4 WORLD HEALTH ORGANIZATION THREE-STEP ANALGESIC LADDER

Drug therapy is the cornerstone of cancer pain management. The three-step analgesic ladder proposed by the World Health Organization (WHO) is often followed in managing pain.

Step	Pain Intensity on a 0- to 10-Point Pain Scale	Drugs of Choice	Pain Management
1	Pain is mild and is described by client at 1–3.	Nonopioids for mild pain (e.g., aspirin, acetaminophen, NSAIDs)	Provide appropriate and concurrent treatment for cause of pain; use adjuvant drugs as needed.*
2	Pain is moderate and is described by client at 4–6.	Opioids for mild to moderate pain (e.g., codeine, oxycodone)	**Pain persists or increases**. Add Step 2 opioid; continue Step 1 drugs and add adjuvant drugs as needed.*
3	Pain is moderate to severe and is described by client at 7–10.	Opioids for moderate to severe pain (e.g., morphine, hydromorphone, methadone)	**Pain persists or increases.** Replace Step 2 opioid with Step 3 opioids; continue Step 1 drugs and add adjuvant drugs as needed.*

*Examples of adjuvant drugs: tricyclic antidepressants, antiseizure drugs, anxiolytics, antihistamines, benzodiazepines, caffeine, dextroamphetamine, and corticosteroids.

Psychosocial Implications

✦ A. Key stress periods for client with cancer are time of diagnosis, period of hospitalization, and release from the hospital.
1. Shock and fear are the major reactions.
2. Severe depression is experienced by some clients.
3. The emotional pain of the diagnosis initially outweighs the physical component of the cancer.

B. Adjustment to cancer depends on past life experiences.
1. A client's previous attitude toward medical practices, hospitalization, and treatment methods influence adjustment.
2. The manner in which a client has coped with previous stress or crises will determine, in part, how this stress is handled.

C. Phases of psychological adaptation to terminal illness include denial, anger, bargaining, depression, and acceptance.
1. These phases may be experienced differently, clients may experience them in a different order, or they may not experience all of the phases.
2. It is important for the nurse to understand the characteristics of these phases and to recognize which phase the client is in.

D. The client will experience a range of feelings and defense mechanisms.
✦ 1. Denial may occur initially with the diagnosis; this is a protective mechanism necessary until the diagnosis can be confronted.
a. Allow the client to be in denial until he or she is ready to face reality.
b. Provide opportunities for the client to confront her illness—be open to questions and clarification.
2. Fear and anxiety may manifest in physical symptoms: insomnia, nausea, vomiting, diarrhea, headaches, etc.
3. Anger and resentment, especially in the initial phases of the disease, may be a healthy way of expressing feelings.
a. Encourage expression of anger—let the client know that you are able to listen to anger, resentment, and frustration.
b. Encourage client to focus anger on external problem solving and more adaptive coping patterns.
4. Depression may be considered normal for a period of time following surgery.
a. Observe for the signs of depression.
b. Because suicide is always a risk with depression, interventions should be aimed at safety for the client.

Psychosocial Care for the Cancer Client

✦ A. Develop a collaborative relationship with the client.
1. Identify and attempt to solve problems together.
2. Engage with clients so that they do not feel they have to cope alone.
3. Provide emotional support to help allay fears and anxieties.

✦ B. Always be honest with the client.
1. Truth is easier to cope with than uncertainty and the unknown.
2. Honesty provides the foundation for a nurse–client relationship.
3. Accurate information can be followed by an open discussion of the disease, the prognosis, the client's feelings, etc.
4. Knowing the truth enables the client to begin to accept and work out the future without being immobilized by fears.

C. Assist the client to cope with pain.
1. Stay with the client, especially when the pain is severe.
2. Explore the nature of pain with the client.
3. Respect the client's response to pain and believe what the client tells you.

D. Provide general comfort measures.
1. Position for proper alignment.
2. Use touch and massage for painful areas.
3. Exercise extremities gently to maintain range of motion.
4. Maintain patency of tubes and keep free of infection using meticulous hand hygiene and aseptic techniques.
5. Preserve the client's energy by prioritizing activities.
6. Assist the client to obtain adequate rest at night and during the day to reduce fatigue.

✦ E. DO NOT undermedicate for cancer pain.
1. Undertreatment with analgesics has been identified as a major problem (70% to 80%) for cancer clients—and nursing has a crucial responsibility to correct this problem.
2. Two forms of undertreatment: physicians underprescribe and nurses routinely administer less than half the amount clients could receive.
3. The danger of overuse of narcotics is a potential problem.
a. This concern *should not* result in undertreatment.
b. Only a very small percentage of clients are overmedicated.

F. Support family of the client as they move through the grieving process.
1. Be honest with family members to establish a firm relationship.
2. Encourage expression of feelings.

✦ G. Introduce the hospice concept—provides care for the terminally ill client and family.
   1. Primary goal is to provide emotional support for the client and family.
   2. An accompanying goal is to provide for physical care.
   3. Relief of pain is just as important to a dying person as emotional support.

Hospice Care

A. Hospice care provides treatment, comfort, and support for the terminally ill client, as well as relief and solace for the family. Approximately one in three elderly Americans uses hospice service.
B. Hospice neither speeds up nor slows down the dying process—it provides a specialized environment where a dying client may receive medical care in addition to emotional and spiritual support during the dying process.
   1. One of the real advantages of hospice is that the personnel are trained to treat pain aggressively.
   2. The client should be as pain free as possible, while at the same time remaining as alert as possible.
C. Hospice care includes an interdisciplinary team that includes a registered nurse, a social worker, a home health aide, a chaplain, and trained volunteers.
D. Hospice is reimbursed by Medicare in all states and by Medicaid in some states; for most other insurers, the percentage of care paid for varies by insurance carrier.
E. There are several barriers to hospice care.
   1. The client's physician must certify that the life expectancy of the client is 6 months or less.
   2. Some insurance carriers require clients to waive their rights to medical benefits if they are receiving hospice care.
   3. The largest obstacle is that there is a problem with communication—between physician and client, client and family, and family and client.
   4. When the finality of dying cannot be discussed, hospice care may not present itself as an option.

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ONCOLOGY NURSING REVIEW QUESTIONS

1. When the nurse is counseling a client about preventive measures for cancer, one of the most important behaviors to emphasize is to

1. Decrease fat intake.
2. Avoid exposure to the sun.
3. Avoid smoking.
4. Obtain adequate rest and avoid stress.

2. Of the following screening methods for prevention of cancer, the most important one for the client to be aware of is

1. Magnetic resonance imaging (MRI).
2. Breast self-examination.
3. Risk assessment.
4. Sigmoidoscopy.

3. A client has just received a report from her physician that describes a tumor that was recently biopsied. If the result she receives is listed as "T_0, N_0, M_0," the client will know that she has

1. No evidence of a primary tumor, lymph node involvement, and metastasis.
2. No primary tumor, but evidence of a degree of distant metastasis.
3. A primary tumor and regional nodes involved.
4. Carcinoma in situ.

4. A client has just completed a course in radiation therapy and is experiencing radiodermatitis. The most effective method of treating the skin is to

1. Wash the area with soap and warm water.
2. Apply a cream or lotion to the area.
3. Leave the skin alone until it is clear.
4. Avoid applying creams or lotions to the area.

5. You are assigned a client who is to be treated with a cobalt implant for intracavity irradiation for cervical cancer. Her treatment will be completed in 72 hours. Which protective measures are indicated for personnel and visitors? List all of the numbers that apply _____.

1. Place a "Radiation Treatment" sign on the door to the client's room and on the front of the client's chart.
2. All nurses and visitors must wear a protective shield. (Keep a lead shield at the client's doorway.)
3. Complete care of the client as fast as possible and leave the room quickly.
4. Do not allow pregnant women to visit or to be assigned as staff for this client, but children under age 18 may visit.
5. Visitors must limit exposure to 1 hour/day and keep a distance from the client.

6. The nurse is assessing a client with a radiation implant and observes that the implant has been dislodged. The nurse cannot immediately locate the implant. The first nursing action is to

1. Search for the implant in the bed covers and place it in a lead container.
2. Call the physician and bar all visitors from the room.
3. Pick up the source with a foot-long applicator.
4. Notify the radiation safety team.

7. A client with cancer that has metastasized to the liver is started on chemotherapy. His physician has specified divided doses of the antimetabolite. In discharge planning, the nurse instructs the client to take the drug in divided doses. What is the rationale for this instruction?

1. "There really is no reason; your doctor just wrote the orders that way."
2. "This schedule will reduce the side effects of the drug."
3. "Divided doses produce greater cytotoxic effects on the diseased cells."
4. "Because these drugs prevent cell division, they are more effective in divided doses."

8. Intravenous is the most common route for the administration of chemotherapy drugs because it provides for better absorption. When a client is receiving drugs via this route, one of the most important assessments the nurse will perform is for the complication(s) of

1. Catheter clotting.
2. Infection and phlebitis.
3. Malposition of the needle.
4. Sepsis.

9. A client experiencing severe, intractable pain from cancer complains that the pain medication is not handling the pain at all. The nurse has given the client all the medicine she can receive. The next nursing action is to

1. Emotionally support the client and tell her she will receive the next dose of medication as soon as possible.
2. Contact the physician immediately and intervene on the client's behalf to increase the pain dose or change the medication.
3. Suggest the client try breathing or other alternative techniques to cope with the pain.
4. Explore the nature of the pain and help the client perceive it in a different way.

10. A client has been receiving chemotherapy for the treatment of breast cancer. She is now to start receiving daily injections of Neupogen (filgrastim). The nurse would assess for a therapeutic response to this drug by monitoring which laboratory test result?

1. Blood urea nitrogen (BUN).
2. Potassium.
3. Platelets.
4. White blood cell count (WBC).

11. For a client who has received a diagnosis of skin cancer, the type that has the poorest prognosis because it metastasizes so rapidly and extensively via the lymph system is

1. Basal cell epithelioma.
2. Squamous cell epithelioma.
3. Malignant melanoma.
4. Sebaceous cyst.

12. Cancer is the second major cause of death in the United States. What is the first step toward effective cancer control?

1. Increasing government control of potential carcinogens.
2. Changing habits and customs that predispose the individual to cancer.
3. Conducting more mass-screening programs.
4. Educating public and professional people about cancer.

13. Alkylating drugs are used as chemotherapeutic agents in cancer therapy. The nurse understands that these drugs stop cancer growth by

1. Damaging DNA in the cell nucleus.
2. Interrupting the production of necessary cellular metabolites.
3. Creating a hormonal imbalance.
4. Destroying messenger RNA.

14. Antineoplastic drugs are dangerous because they affect normal tissue as well as cancer tissue. Normal cells that divide and proliferate rapidly are more at risk. Which of the following areas of the body would be least at risk?

1. Bone marrow.
2. Nervous tissue.
3. Hair follicles.
4. Lining of the GI tract.

15. To educate clients, the nurse should understand that the most common site of cancer for a female is the

1. Uterine cervix.
2. Uterine body.
3. Vagina.
4. Fallopian tubes.

16. A 45-year-old client has just been admitted to the hospital for an abdominal hysterectomy following a diagnosis of uterine cancer. Results of lab tests indicate that the client's WBC is 9800/mm^3. The nursing intervention is to

1. Call the operating room and cancel the surgery.
2. Notify the surgeon immediately.
3. Take no action as this is a normal value.
4. Call the lab and have the test repeated.

17. While the nurse is orienting a client scheduled for surgery, the client states she is afraid of what will happen the next day. What is the most appropriate response?

1. Assure her that the surgery is very safe and problems are rare.
2. Encourage her to talk about her fears as much as she wishes.
3. Explain that her physician is one of the best and she has nothing to worry about.
4. Explain that worrying will only prolong her hospitalization.

18. A 52-year-old client has had a lobectomy for cancer of the left lower lobe of the lung. He is 18 hours postoperative. The nurse understands that for this client the most appropriate position immediately postoperatively is

1. Flat bed rest.
2. Turned to the unoperative side only.
3. Turned to the operative side only.
4. Semi-Fowler's position, turned to either side.

19. A client has had a partial colectomy and is 2 days postop. During a 6:00 PM assessment, the nurse observed all of the following. A priority concern that would require the earliest intervention is a

1. Dressing that is moderately saturated with serosanguineous drainage.
2. Warm and reddened area on the client's left calf.
3. Distended bladder that is firm to palpation.
4. Decrease in breath sounds on the right side.

20. A client has possible malignancy of the colon, and surgery is scheduled. The rationale for administering neomycin preoperatively is to

1. Prevent infection postoperatively.
2. Eliminate the need for preoperative enemas.
3. Decrease and retard the growth of normal bacteria in the intestines.
4. Treat cancer of the colon.

21. A client has just learned that he has a diagnosis of cancer of the lung. His physician has recommended that the lung be removed. The client says to the nurse that he is sure the doctor made a mistake because he can breathe just fine. The nurse interprets this response as

1. Depression.
2. Denial.
3. Avoidance.
4. Reaction formation.

22. A female client is to be discharged following a simple mastectomy of the right breast for cancer. Discharge instructions should include

1. Follow-up visits with a physical therapist.
2. Referral to a Reach for Recovery group.
3. Returning to her physician for monthly breast exams.
4. How to perform a breast self-exam monthly.

23. Which nursing diagnosis should receive highest priority in a client who is receiving the chemotherapeutic agent that causes bone marrow suppression?

1. Risk of infection.
2. Activity intolerance.
3. Altered oral mucous membranes.
4. Altered nutrition: less than body requirements.

24. A client is experiencing diarrhea as a side effect of chemotherapy. Which nursing diagnosis should receive the highest priority?

1. Fluid volume deficit.
2. Impaired skin integrity.
3. Body image disturbance.
4. Activity intolerance.

25. A female client with a diagnosis of cancer of the cervix has a radon seed implanted. Which data would it be important for the nurse to assess every few hours?

1. Presence of nausea and vomiting.
2. Hydration status.
3. Ability of the client to change position.
4. Dislodging of radiation source.

ONCOLOGY NURSING ANSWERS WITH RATIONALE

1. (3) Avoiding smoking is a primary cancer preventive behavior. Smoking is believed to be the cause of 75% of lung cancers in the United States. All of the other behaviors are also important preventive measures, but tobacco is a known carcinogen.

   NP:I; CN:H; CA:M; CL:C

2. (2) Breast self-examination (BSE) is the most important method to instruct the client about because it is a primary prevention method. It is performed every month (whereas a mammogram is done every year after age 50), and many breast lumps are first found by the woman when she is examining her breasts. An MRI (1) would be done for diagnosis. Risk assessment (3) and sigmoidoscopy (4) are also important preventive measures, but in priority fall below a BSE.

   NP:P; CN:H; CA:MA; CL:A

3. (1) The staging of the cancer according to cancer classification means that there is no evidence of a primary tumor (T_0), regional lymph nodes are not abnormal (N_0), and there is no evidence of distant metastasis (M_0).

   NP:AN; CN:PH; CA:S; CL:C

4. (4) Irradiated areas are very sensitive; all creams and lotions, which would serve to irritate the skin, should be avoided. The area should be washed with lukewarm water; a mild soap may be used, but most physicians prefer clear water.

   NP:I; CN:PH; CA:M; CL:A

5. Answers are (1), (2), and (5). (3) and (4) are incorrect. Completing care as soon as possible is not the point—limiting exposure to 15 minutes/day is the advised protocol. It is true that pregnant women cannot be exposed; anyone under 18 also cannot be admitted.

   NP:P; CN:S; CA:M; CL:A

6. (2) The first nursing action is to bar all visitors from the room and notify the physician. It is important not to contaminate yourself by searching for the implant (1). The physician will notify the radiation team and make decisions about reimplanting the radiation source in the client.

   NP:I; CN:S; CA:S; CL:AN

7. (3) Because not all cells will be in the same phase at the same time, divided doses will produce greater cytotoxic effects. This schedule will not reduce the side effects of the drug. Even though the drugs may prevent cell division (4), divided doses will not affect this characteristic.

   NP:I; CN:PH; CA:M; CL:C

8. (2) Infection and phlebitis are two of the most common complications of receiving chemotherapy drugs via IV. The other complications are seen with central venous catheter insertion, used for continuous infusions.

   NP:A; CN:PH; CA:M; CL:A

9. (2) It is the nurse's responsibility to intervene with the physician and report that the pain medication is not providing adequate pain relief. Undertreatment with analgesics has been identified as a major problem for cancer clients, and studies have shown that physicians frequently underprescribe. The other responses will help support the client, but they will not be effective enough to relieve severe pain.

   NP:I; CN:PH; CA:M; CL:AN

10. (4) Neupogen stimulates the production of WBCs. It is given to clients experiencing bone marrow depression with leukopenia secondary to cancer chemotherapy.

    NP:E; CN:PH; CA:M; CL:AN

11. (3) Malignant melanoma has the poorest prognosis. Basal cell epithelioma (1) and squamous cell

Coding for Questions/Answers Abbreviations: Nursing Process: NP, Assessment: A, Analysis: AN, Planning: P, Implementation: I, Evaluation: E; Client Needs: CN, Safe, Effective Care Environment: S, Health Promotion and Maintenance: H, Psychosocial Integrity: PS, Physiological Integrity: PH; Clinical Area: CA, Medical Nursing: M, Surgical Nursing: S, Maternal/Newborn Nursing: MA, Pediatric Nursing: P, Psychiatric Nursing: PS; Cognitive Level: CL, Knowledge: K, Comprehension: C, Application: A, Analysis: AN.

epithelioma (2) are both superficial, easily excised, slow-growing tumors. A sebaceous cyst (4) is a benign (non-malignant) growth.

NP:AN; CN:PH; CA:M; CL:K

12. (4) The most important step in controlling cancer is educating the public about cancer and its warning signs. Education will have an effect on early diagnosis and treatment.

NP:AN; CN:PH; CA:M; CL:C

13. (1) Alkylating agents affect production of DNA, which, in turn, disrupts cell growth and division.

NP:AN; CN:PH; CA:M; CL:C

14. (2) Nervous tissue is least at risk. Bone marrow (1), hair follicles (3), and the lining of the GI tract (4) are the cells that are most vulnerable because they have rapid cell division and proliferation similar to cancer cells. The nervous tissue cells do not have rapid cell division.

NP:AN; CN:PH; CA:M; CL:K

15. (1) Cervical cancer is the most common site and squamous cell cancer is the most common cell type.

NP:AN; CN:H; CA:M; CL:C

16. (3) The normal WBC count is 5000 to 10,000/mm^3. If the results were abnormally high or low, the surgeon would have to be notified (2) and the surgery may be canceled (1). Tests with abnormal results are not routinely repeated (4) unless the results are grossly abnormal.

NP:I; CN:H; CA:S; CL:A

17. (2) Allowing the client to express her fears results in a decrease in anxiety and a more realistic and knowledgeable reaction to the situation. Studies have shown that the less anxiety the client has about the surgery, the more positive the postoperative results. (1) and (3) are false reassurances and nontherapeutic.

NP:I; CN:PS; CA:S; CL:A

18. (4) Postoperatively, the client can be turned to both sides to increase full expansion of lung tissue. It is best to place him in semi-Fowler's position when his vital signs are stable to ensure full lung expansion.

NP:P; CN:PH; CA:S; CL:A

19. (3) Inability to void after the Foley catheter has been removed is a common problem resulting from anesthesia or pain medication and requires an early intervention. It is important to be aware of the client's output for several reasons: to ensure adequate intake, to detect renal problems, and to assess for blood pressure problems. The solution to this problem is catheterization, based on a physician's order. The dressing should be closely observed but is not presently a problem (1). The area on the calf may be developing thrombophlebitis (2) and should be reported to the physician immediately. The breath sounds (4) can be improved by turning, coughing, and deep-breathing.

NP:I; CN:PH; CA:S; CL:AN

20. (3) Neomycin suppresses normal bacterial flora, thereby "sterilizing" the bowel preoperatively to decrease the possibility of postoperative infection. It cannot prevent infection (1). Neomycin does not influence the need for preoperative enemas (2) or treat cancer of the colon (4).

NP:P; CN:PH; CA:S; CL:C

21. (2) The first phase of psychological adaptation to terminal illness is denial. It is important for the nurse to recognize this as a natural reaction and support the client until he can deal with the reality of the diagnosis.

NP:AN; CN:PS; CA:S; CL:A

22. (4) It is most important for the client to perform a breast self-exam monthly at a regular time because she would not make monthly visits to her physician. Telling her how to contact a support group (2) would also be helpful.

NP:P; CN:H; CA:S; CL:A

23. (1) Chemotherapeutic drugs that depress the bone marrow interfere with the production of WBCs. The resultant leukopenia can be life-threatening; therefore, risk of infection is the highest priority. The other nursing diagnoses, although appropriate for this client, would be of lower priority.

NP:AN; CN:PH; CA:M; CL:A

24. (1) Although all of these nursing diagnoses could apply to a client with diarrhea, fluid volume deficit is the priority diagnosis because it is potentially life-threatening.

NP:AN; CN:PH; CA:M; CL:C

25. (4) Frequently checking that the radiation source has not become dislodged is the most important assessment. The seed may get lost in the linen or dressing. If the radiation source is dislodged, it must be placed in a lead container for safety. The other assessment parameters are important, but do not have to be done every few hours.

NP:A; CN:S; CA:M; CL:AN