- Oncology
- Branch of medicine that deals with the study of tumors
- 1 of 2 men will have cancer
- 1 of 3 women will have cancer
- Second leading cause of death in the United States
- Cancer is not one disease, but a group of diseases characterized by the uncontrolled growth and spread of abnormal cells
- Lung cancer is the leading cause of cancer-related death in both men and women
- More children 14 years of age and younger die of cancer than of any other disease
- Development, Prevention, and Detection of Cancer
- Carcinogenesis and the primary prevention of cancer
  - Carcinogenesis
    - The process by which normal cells are transformed into cancer cells
    - Various factors are possible origins of cancer
  - Carcinogens
    - Substances known to increase the risk for the development of cancer
- Development, Prevention, and Detection of Cancer
- Carcinogenesis and the prevention of cancer *(continued)*
  - Risk factors
    - Smoking
      - 87% of people who develop lung cancer are smokers
    - Dietary habits
      - Play a role in development of colon, rectum, and breast cancer
    - Exposure to radiation
      - Ultraviolet rays are a factor in the development of basal and squamous cell skin cancers and melanoma

- Development, Prevention, and Detection of Cancer
- Carcinogenesis and the prevention of cancer *(continued)*
  - Risk factors *(continued)*
    - Exposure to environmental carcinogens
      - Fumes from rubber or dust from chloride are examples
    - Smokeless tobacco
      - Increases the risk of cancer of the mouth, larynx, pharynx, and esophagus
    - Frequent, heavy consumption of alcohol
      - May result in oral cancer and cancer of the larynx, throat, esophagus, and liver
- Hereditary Cancers
- About 90% of cancers are NOT inherited
- Genetic susceptibility
  - Incidence of breast cancer is higher in women with a family history of this disease
  - Incidence of lung cancer is high in smokers with a family history of this disease
  - Incidence of leukemia is greater in an identical twin
  - Neuroblastoma occurs with increased frequency among siblings
  - Colon cancer is more likely to occur in women who have a history of breast cancer
- Hereditary Cancers
- Cancer risk assessment and cancer genetic counseling
  - First step toward identifying hereditary cancer predisposition
  - Provides education, health promotion, informed consent, and support
- Cancer Prevention and Early Detection
- Planned periodic examination and recognition of cancer's warning signs
- Colorectal tests
- Prostate cancer detection

- Pelvic examination with Papanicolaou (Pap) smear for women
- Breast cancer detection (self-examinations)
- Skin examinations
- Pathophysiology of Cancer
- Cell mechanisms and growth
  - Normal cells
    - When cells are destroyed, cells of the same type reproduce until the correct number have been replenished
  - Cancer cells
    - Instead of limiting their growth to meet specific needs, they continue to reproduce in a disorderly and unrestricted manner
- Pathophysiology of Cancer
- Cell mechanisms and growth *(continued)*
  - Neoplasm
    - Uncontrolled or abnormal growth of cells
    - Benign: Not recurrent or progressive; nonmalignant
    - Malignant: Growing worse and resisting treatment; cancerous growths; tumors
  - Metastasis
    - Tumor cells spread to distant parts of the body
- Pathophysiology of Cancer
- Description, grading, and staging of tumors
  - Description
    - Carcinoma: Malignant tumors composed of epithelial cells; tend to metastasize
    - Sarcoma:  Malignant tumor of connective tissues, such as bone or muscle
  - Grading

        - Tumors are classified as grade 1 to grade 4
            - Grade 1:  Mild dysplasia—cells only slightly different from normal cells
            - Grade 2:  Moderate dysplasia—moderately well differentiated
            - Grade 3:  Severe dysplasia—poorly differentiated
            - Grade 4:  Anaplasia—cells difficult to determine

- Pathophysiology of Cancer
- Description, grading, and staging of tumors *(continued)*
    - Staging
        - Tumor, nodes, metastasis (TNM) staging system for cancer is used to indicate tumor size, spread to lymph nodes, and extent of metastasis
            - Stage 0: Cancer in situ
            - Stage I: Tumor limited to the tissue of origin
            - Stage II: Limited local spread
            - Stage III: Extensive local and regional spread
            - Stage IV: Metastasis
- Diagnosis of Cancer
- Biopsy
    - Incisional, excisional, needle aspiration
- Endoscopy
- Diagnostic imaging
    - Bone scanning
    - Tomography
    - Computed tomography (CT)
    - Radioisotope studies
    - Ultrasound testing
    - Magnetic resonance imaging
- Figure 57-3
- Diagnosis of Cancer
- Laboratory tests

- Serum alkaline phosphatase
- Serum calcitonin
- Carcinoembryonic antigen (CEA)
- PSA and CA-125
- Stool examination for blood

- Cancer Therapies
- Surgery
  - Preventive
  - Diagnostic
  - Curative
  - Palliative
- Radiation therapy
  - External radiation therapy
  - Internal radiation therapy
- Cancer Therapies
- Chemotherapy
  - Side effects
    - Leukopenia
    - Anemia
    - Thrombocytopenia
    - Alopecia
    - Stomatitis
    - Nausea, vomiting, and diarrhea
    - Tumor lysis syndrome
- Cancer Therapies
- Biotherapy
  - Three major mechanisms of biological response modifiers (BRMs)

        - Increases, restores, or modifies the host defenses against the tumor
        - Toxic to tumors
        - Modifies the tumor biology

- Cancer Therapies

- Bone marrow transplantation
    - Process of replacing diseased or damaged bone marrow with normally functioning bone marrow

- Peripheral stem cell transplantation
    - Alternative to bone marrow transplant
    - This procedure is based on the fact that peripheral or circulating stem cells are capable of repopulating the bone marrow

- Advanced Cancer

- Pain management
    - Opioids
        - Morphine, hydromorphone, fentanyl, methadone
        - Sustained-release morphine
            - MS Contin, Roxanol SR
        - Administration
            - IV drips, intrathecally, and epidurally
            - Avoid peaks and valleys
        - Patient self-control
            - Distraction, massage, relaxation, biofeedback, hypnosis, and imagery

- Advanced Cancer

- Pain management *(continued)*
    - Patients should not be subjected to severe suffering from potentially controllable pain
    - Fear of addiction should not be a factor when considering pain relief for the terminally ill

- Advanced Cancer

- Nutritional therapy
  - Problems
    - Malnutrition
    - Anorexia
    - Altered taste sensation
    - Nausea/vomiting
    - Diarrhea
    - Stomatitis
    - Mucositis
- Advanced Cancer
- Communication and psychological support
  - Factors that may determine how the patient copes
    - Ability to cope with stressful events in the past
    - Availability of significant others
    - Ability to express feelings and concerns
    - Age at the time of diagnosis
    - Extent of disease
    - Disruption of body image
    - Presence of symptoms
    - Past experience with cancer
    - Attitude associated with cancer
- Advanced Cancer
- Terminal prognosis
  - Most patients with advanced cancer know they are dying
  - Honesty and openness are the best approaches
  - Spiritual activities may provide mental and emotional strength
  - Social worker assists the patient and family in planning for home care

- Hospice services can be arranged—efforts are directed toward relief from pain and other problems

- Nursing Process

- Nursing diagnoses
  - Coping, compromised family
  - Activity intolerance, related to malaise
  - Risk for infection, related to inflammation of protective mucous membranes
  - Pain, acute; Pain, chronic
  - Self-care deficit