Physiologic Integrity and Therapeutic Nursing Interventions for Patients with Neoplastic Disorders
Cancer/Neoplasm/Malignant Neoplasm/Tumors

- The above terms are often used interchangeably. They are NOT interchangeable.
- Term cancer refers to several disease entities all of which have in common the proliferation of abnormal cells. As a result they may develop new functions, spread and invade uncontrollably and cause death of other cells. Cancer is a term that is used to refer to malignant neoplasms.
Pathophysiology of Cancer

Cancer develops at the molecular level and may begin with mutations or damage of one or more genomes.

Cancerous cells differ from normal cells in appearance, growth and function.

The change from normal to neoplastic cells is a process, not a single event. Series of events that generally occur over many years.
Carcinogenesis

Normal cells

Genotoxic injury from exposure to genotoxic agents or from random errors in DNA replication

Some normal cells are converted to pre-cancerous cells

Genotoxic injury (or injuries) from exposure to genotoxic agents or from random errors in DNA replication

Exposures to "epigenetic" influences??

A pre-cancerous cell is converted to a cancer cell

Time

Exposures to "epigenetic" influences??

A cancer develops from the cancer cell
Cell Cycle Phases

- G0: Resting
- G1: Gap 1
- G2: Gap 2
- S: DNA replication
- M: Mitotic phase
- G2: Gap 2
- G1: Gap 1
- GO: Resting
- Second growth phase
- Growth and preparation for mitosis
- Growth and normal metabolic roles
- Prophase
- Metaphase
- Anaphase
- Telophase
- Interphase
- Synthesis phase
- Mitotic phase
- Interphase
- DNA replication
Clinical Manifestations

- Early stages of cancer
- Cancer can cause many clinical manifestations once the cancer has grown
- Common manifestations secondary to the cancer
Health History

- Detailed Health History
- Psychosocial History
- Head to Toe ** Include every system**

- Detailed History of Chief Complaint

OLDCART
- O-onset
- L-location
- D-duration
- C-characteristics of symptoms
- A-associated manifestations
- R-relief
- T-treatment
Prevention

- Primary prevention
- Screening
- Early Detection
Diagnostic Workup

- Diagnosing cancer
  - Only definitive evidence of cancer is with microscopic evidence of malignant cells from the tumor tissue
    - Usually obtained from a biopsy
- Grading of cancer cells
  Grade I or II: well differentiated and deviate minimally from normal cells
  Grade III or IV: poorly differentiated and the most deviated compared to normal cells
Staging (extent of spread) of Cancer

Diagnostic process involving a systemic search for the characteristics of the
- primary tumor (T)
- Involvement of lymph nodes (N)
- Evidence of Metastasis (M)
- Known as TNM classifications

Four stages
- I through IV
- 0 for carcinoma in situ (without spread)
Laboratory Blood Tests for Cancer

- Acid Phosphatase
- ACTH
- Alkaline Phosphate
- Calcium
- LDH
- Parathyroid Hormone
- SGPT (AST)
- SGOT (ALT)
- Testosterone
- Uric Acid
Tumor Markers

- AFP
- CA-125
- CEA
- HCG
- PSA
- CA-19-9
- Ca-15-3
Treatment Goals

- Control the cancer by slowing the disease process
- Palliation, or alleviation of disease manifestations
- Rehabilitation to maintain the highest quality of life for as long as possible
Treatment Modalities

- Surgical Management
- Radiation Therapy
  - External Beam Radiation Therapy
  - Internal Radiation Therapy
- Regional Chemotherapy
- Biotherapy
- Clinical Trials
- Bone Marrow Transplantation
Surgical Management

- Surgery can be used as treatment for recurrence, palliative, reconstructive, or preventative.
- Diagnostic surgery—through biopsy:
  - Cytologic specimens
  - Needle biopsy
    - Fine-Needle Aspiration
    - Core-Needle Biopsy
  - Excisional (Total) biopsy
  - Incisional (Subtotal) biopsy
Radiation Therapy

- Uses high energy ionizing radiation
- Ionizing radiation destroys cell’s ability to reproduce by damaging its DNA inducing apoptosis
- Also causes a chain of chemical reactions in nearby extracellular fluid, forming free radicals
External Beam Radiation (Teletherapy) Therapy

Advantages:

- skin sparing effect; maximum effects occur at tumor depth in the body and not on the skin surface
- external radiation is painless, you will not need to be given anesthesia.
Internal Beam Radiation Therapy

- High Dose Rate Brachytherapy (HDR)
- Gynecological HDRs
- MammoSite
- Prostate Seed Implants
- Intravascular Brachytherapy (IVB)
Radiation Safety Standards
Protect Yourself

- Distance
- Time
- Shielding
- Patient Teaching
Chemotherapy

- Goals
  - Cure
  - Control
  - Palliation
Cell Kill Hypothesis

- Only a percentage of cancer cells are killed with each course of chemotherapy

- Remember ** cancers are classified according to cell-cycle specific or cell-cycle nonspecific Box 19-1; page 367
# Side Effects of Antineoplastic Drugs

<table>
<thead>
<tr>
<th>SYSTEM Effects of Chemotherapy</th>
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<tbody>
<tr>
<td>GI</td>
<td>Cardiac</td>
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<tr>
<td>Integumentary</td>
<td>Pulmonary</td>
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<tr>
<td>Hematopoietic</td>
<td>Metabolic</td>
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<tr>
<td>GU</td>
<td>Reproductive</td>
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<tr>
<td>Hepatic</td>
<td>Neurologic</td>
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</tbody>
</table>
Administration of Chemotherapy

- ** Most facilities require you be a chemo certified nurse to administer these drugs**

- **Critical Steps:**
  - Verification of drug, dose and administration schedule
  - Remember your “Best Friend” when it comes to drug administration
  - Assure you understand all crucial information regarding drug facts
Almost all chemo drugs are administered via IV

- Be aware of extravasation possibilities
- Vesicant—an agent capable of causing tissue damage
- Select a large vein in the fleshy part of the arm

Optimal delivery with less chance of extravasation

Use VAD and PICC lines for chemotherapy
VAD (venous access devices)
Page 373 in text
Regional Chemotherapy

- Alternative route
  - Allows high concentrations of drugs to be delivered (directed) to localized tumors

- Methods for delivery
  - Topical
  - Intra-arterial
  - Intracavitary
  - Intraperitoneal
  - Intrathecal
**Adverse Reaction**

### Hypersensitivity Reaction
- Dyspnea
- Chest tightness or pain
- Pruritis
- Urticaria
- Tachycardia
- Dizziness
- Anxiety
- Agitation
- Inability to speak
- Cloudy mental status
- Abdominal Pain
- Nausea
- Hypotension
- Cyanosis

**Most common neoplastic drugs:**
- L-asparaginase: Elspar
- Carboplatin: Paraplatin
- Cisplatin: Platinol-AQ
- Paclitaxel: Taxol
- Bleomycin: Blenoxane
- Teniposide: Vumon
Handling an Extravasation

General Rules

☑ Prevention is KEY: Before administration know the vesicant potential of the drug
☑ Stop the Drug Infusion
☑ Leave catheter in place
☑ Aspirate any residual drug from the tubing, needle, site
☑ Contact Pharmacist
☑ Administer Antidote
☑ DO NOT apply direct manual pressure to site
☑ Apply heat or cold as indicated
☑ DOCUMENT
Safe Handling of Chemo

- Exposure may occur from the following 3 routes:
  1. Inhalation of aerosols
  2. Absorption through the skin
  3. Ingestion of contaminated materials
Biotherapy

- Biologic response modifiers to affect a biologic response
- Hematopoietic growth factors
- Biologic response modifiers
- Monoclonal antibodies
Clinical Trials

- A study conducted to evaluate a new treatment. Clinical trials have 4 phases.
  - Phase 1
  - Phase 2
  - Phase 3
  - Phase 4
Bone Marrow Transplantation

- May be considered for the treatment of:
  1. Aplastic anemia
  2. Malignant disorders
  3. Non-malignant hematologic disorders
  4. Immunodeficiency disorders
Major Types of Bone Marrow Transplantation

- Allogenic; obtained from a donor having close HLA (histocompatibility) type (carries highest rate of morbidity and mortality)

- Autologous; removed from intended recipient during remission phase of the disease; relapse is a frequent occurrence
HLA Types

- Cell surface proteins
- Siblings have a 1 in 4 chance of identical match
- Unrelated donors have a 1 in 5000 chance of identical match
Graft-versus-host Disease

- Acute: usually affects gut, skin, lungs or liver
- Chronic: long term form of the disease with less acute manifestation
Nursing Care

- Educate yourself and your patient
- Remember you are also generally treating family or significant others as well
- Appropriate Pain Control-teach the patient how to use pain medication
- Make care-plan according to signs and symptoms that are related to the type of cancer and/or treatment
Nursing Diagnosis for General Cancer Care

- Ineffective Breathing Pattern
- Constipation
- Diarrhea
- Risk for Disuse Syndrome
- Incontinence
- Impaired Urinary Elimination
- Deficient Knowledge
- Acute pain
- Impaired Physical Mobility
- Sexual Dysfunction
- Chronic Pain

- Impaired Skin Integrity
- Impaired Cardiopulmonary Tissue Perfusion
- Ineffective Peripheral Tissue Perfusion
- Activity Intolerance
- Disturbed Body Image
- Risk for Infection
- Risk for Injury
- Imbalanced Nutrition
- Impaired Oral Mucous Membrane
- Impaired Swallowing