

Assessment of the Cancer Patient Nursing 101

History

- Complete Nursing History
- Chief complaint - "Why is person here?"; early symptoms
- Chronological sequence of events
- Past medical history
- Personal & social history (risk factors)

- Review of systems - specific questions on each system

Risk factors explored: family hx? Exposure to carcinogens? Drug ingestion? Diseases?

Physical Assessment

Utilize head-to-toe approach

Thorough / complete physical exam

Focus on problem area

Diagnostic Studies

- *Diagnostic tests performed depending on symptoms & suspected site of cancer.*
- Complete Blood Count (CBC)
- RBC- carries O₂ to tissues

- WBC- fight infection

- Platelets- clotting

- Serum Chemistries: detecting and monitoring specific types of CA

- Alkaline Phosphatase= increased with bone mets and liver site

- Calcium= increased with bone mets

- Liver function- common site of mets

- Fecal Studies
- Guaiac / hemoccult test- hidden stool

- Urine Studies- determines presence of certain characteristics specific to types of tumors-
ex: Bence Jones Protein = multiple myeloma

- Cytological Studies
 - Sloughed or exfoliated cells
 - Looks at secretions
 - urine / sputum cytology; PAP smear

- Histological Studies
- Biopsies: benign or malignant;
 - Needle (aspirate with use of a large bore needle); bone marrow, breast, prostate
 - Incisional (incision made to remove suspicious tissue); soft tissue & bony sarcomas
 - Excisional (entire tumor removed and examined); small accessible tumors
- Sentinel lymph node biopsy – lymph nodes with dye, creates “map”

- Endoscopic Studies <https://www.youtube.com/watch?v=uUpUWtyuX8c>
- Scopes: direct visualization, uses a fibrotic scope
Ex: bronchoscopy, EGD, sigmoidoscopy, colonoscopy, laparoscopy

- Radiological Studies
- X-rays: conventional, dye or contrast

- CT scans
 - a. Constructs a tumor’s shape and location more accurately than conventional x-rays
 - b. Gives progressive sections – slices
 - c. 3dimensional
 - d. w/ or w/o contrast

- MRI
 - a. More detailed than ct scan
 - b. No metal allowed, survey
 - c. Open vs closed units

- Scans
 - a. Use of radioactive material - tracer
 - b. Concentration of radionuclide
 - c. Thermography- infrared; temperature changes, increase blood flow = inc temp
 - d. PET Scan- radioactive chemicals injected; tumors exhaust nutrition and O₂=increased metabolic rate, shows as increased uptake on scan

- Mammography – low dose xray – breast

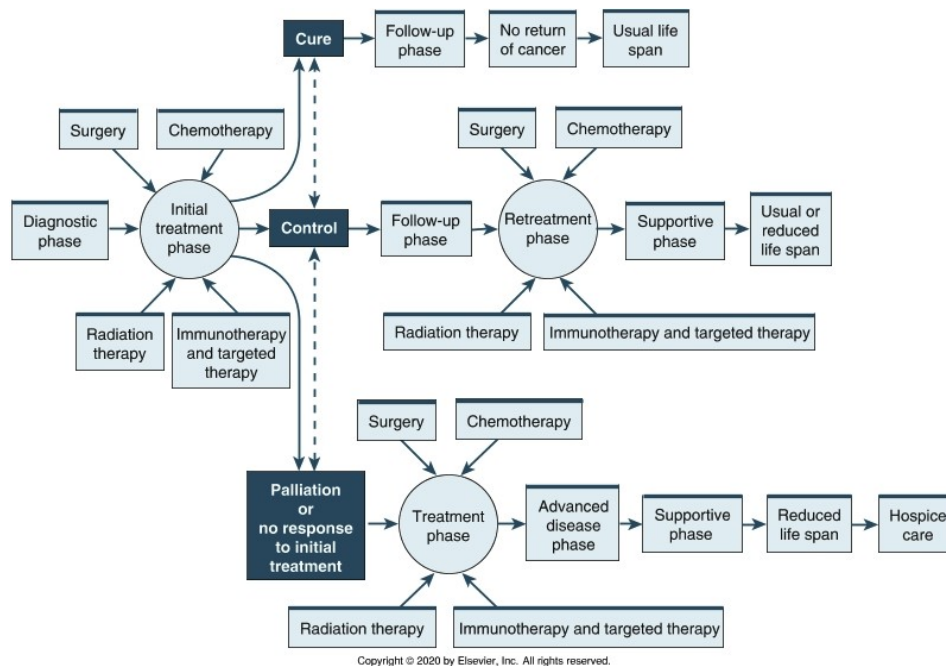
- US- sound waves converts onto a screen

- Tumor Antigens
 - Proteins founds on the surface of the tumor
 - o Used to **monitor treatment or reoccurrence**
 - o Immature functioning
 - EX: CEA, AFP, CA125, PSA

- Bone Marrow Examination:

Treatment of Cancer

- Goals of Treatment:
 - Cure: disease free and live a normal lifespan
 - Control: Can be controlled for long periods with use of therapy
 - Palliation: relief of symptoms; promote quality of life
- Slow growers → best for surgery and easiest to remove, use adjunct therapy
- * *communication & support*



Modalities of Treatment

- **Surgery**
 - Diagnostic Surgery
 1. Used to confirm or rule out dx of ca
 2. Can establish the type and classification of tumor
 1. BIOPSY – confirm the diagnosis and identify specific type
 3. Staging purposes
 1. Extent
 2. Select treatment
 3. MRI – reduced need for exploratory surgeries
 - Radical Surgery
 1. Most widely performed sx
 2. Goal: remove all of the tumor with minimal structural or functional impairment
 3. Local sx – tumor & lymph nodes
 4. Not curative for mets

5. Definitive sx - entire tumor, lymph nodes, & margin of surrounding tissue
6. EX: *mastectomy, prostatectomy, colectomy*

– Prophylactic Surgery

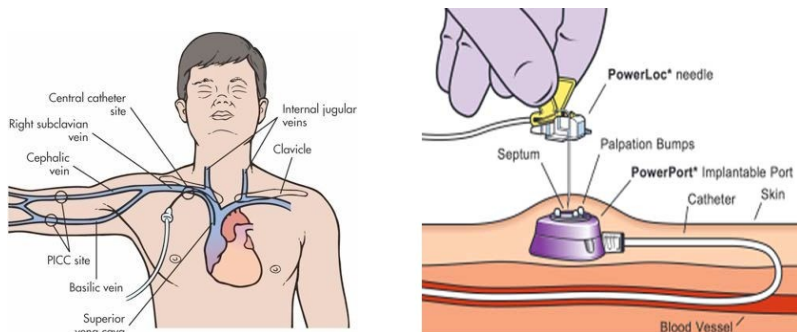
1. Remove lesions apt to develop into ca
2. Purpose: remove pre-cancerous lesions while still harmless and nonmalignant
3. EX: *moles, polyps, skin lesions; strong family history*

– Palliative Surgery

1. cure is unrealistic, then emphasis shifts to comfort
2. Goals:
 1. Slow tumor growth
 2. Decrease size of tumor
 3. Relieve distressing manifestations

– Supportive Surgery

- Provides supportive care during the disease process; may provide supportive care that maximizes bodily function or facilitates ca tx
 - a. Vascular Access Devices (VADs)
 - i. Portacath: Usually placed in upper chest wall into a large vein; special needle for access, can feel under skin
 - ii. Groshong catheter: Usually placed in r chest wall into large central vein; no clamps; antimicrobial cuff
 - iii. Hickman- “partially outside of skin- ports”: Usually placed in r chest wall
 1. 6” exposed externally
 - iv. Hohn catheter- similar to hickman: Usually placed in subclavian or internal/jugular- into R atrium
 1. 6” exposed
 - v. PICC line- peripheral inserted central catheter: Catheter inserted into vein above a/c space- inserted 6-7”



b. Supportive Surgical Procedures

- i. Feeding: PEG tube, G tube, J tube,
- ii. Relief of obstruction: Colostomy, Ileal Conduit

– Reconstructive Surgery

1. Rehabilitation sx performed to assist the pt with changes in body image following sx
2. It consists of: Repair of the anatomical defect, improves function, improves cosmetic appearance
3. May be in multiple stages

Modalities of Treatment - Surgery

- Pre & post-op care same for those undergoing any type of surgery.
- Post-op nursing interventions:
 - a) Aseptic technique
 - b) Pain management
 - c) Passive exercise
 - d) Physical rehab
 - e) Psychological rehab
 - f) Supportive care – resources

Modalities of Treatment-Radiation Therapy (Gy or cGy)

- Uses high energy ionizing radiation to kill / destroy cancer cells.
- Local therapy
- Identification first through biopsy studies
 - Factors determining dosage of radiation:
 - Radiosensitivity of tumor- eradicated by a dose and surrounding tissue can tolerate
 - Normal tissue tolerance
 - Volume of tissue to be eradicated
 - Treatments are given on a daily basis- 5 days/week, ~ 25-30 treatments
 - Uses of radiation therapy:
 - Primary therapy: only tx used
- Combined therapy: with other tx modalities - chemo; pre-op, post-op
- Prophylaxis: treat tissues or organs before disease
- Palliative: palliate symptoms of mets – pain, compression, obstruction
- External Beam Radiation – Teletherapy- noninvasive; given as outpatient; uses machines that deliver high energy radiation via special megavoltage

- Prior to treatment: visualize & define specific area; customized shielding devices; markings done for reference points (temp. dye or tattoos)- do not wash off during tx
- During treatment: lay on special table; location is key; immobilizing devices
- After treatment: side effects of radiation
(occur due to normal tissue in the tx area being damaged)
 - Skin toxicity
 - Fatigue
 - Anorexia
 - Skin reactions – can occur during tx; generally resolve 4-6 weeks after

Skin Care:

- Mild soap, warm water
- Nonperfumed nonmedicated lotion
- Expose area to air
- Loose clothing, cotton, no wool
- Gentle detergents
- Avoid direct sun exposure (cover with clothing, ? sunscreen)
- Avoid heat sources (heating pad)
- Avoid swimming in chlorine pools, saltwater
- Avoid irritants, powders, perfumes
- Avoid rubbing, scrubbing, scratching, or use of adhesive tape to area

- Internal Radiation – Brachytherapy
 - Methods of delivery: intravacuity or interstitial, oral ingestion, systemic
 - Types of implants:
 - **sealed / encapsulated** (metal seed, wire, tube, or needle)
 - placed directly into tissues
 - implants provide rad to a limited area
 - EX: vaginal, cervical, rectal, bladder, prostate
 - **nonsealed** (suspension or solution)
 - taken by mouth or injected
 - EX: thyroid (drink radioactive iodine, isolated x 3 days, 8 ft away from people)
 - Nursing care:
 - time distance shielding**
 - limited visitation: <18, pregnant

-universal precautions – gloves
 -unsealed radioisotopes have potential to make items radioactive- need disposable items (eating utensils), non-disposables need special care – wash in hot water x2, extra precaution with secretions

- Radiation Safety: know the source of radiation, half-life of radiation, **time, distance, shielding**- radiation officer on staff determines time & distance, workers wear a badge known as a dosimeter- indicating rad exposure, if sealed- route of excretion

- **Principles of time, distance, & shielding:**

- Time – minimize exposure time
- Distance – maximize distance from source
- Shielding – decrease exposure (i.e.- lead shield)

- Side Effects of Radiation:

- Fatigue: encourage rest
- Skin changes (dry or moist desquamation), pigment changes, skin precautions
- Anorexia: need increased calories/protein for tissue regrowth, nutritional supplements
- Site specific (EX- diarrhea, dysphagia)

Nursing Diagnoses Associated with Radiation Therapy

- Activity Intolerance
- Acute Pain
- Imbalanced Nutrition: Less than body requirements
- Impaired Skin Integrity
- Deficient Fluid Volume
- Risk for Infection
- Disturbed Body Image
- Deficient Knowledge

Modalities of Treatment - Chemotherapy

- Treatment of cancer with chemicals
- Uses of Chemotherapy:
 - Primary therapy: goal = curative
 - Control of disease: control s/sx of disease, decrease spread
 - Palliative: enhance local/regional control
- Affects all cells (cancer & normal cells)!
- Works to interrupt the cell cycle – division process
- Cell cycle specific or nonspecific

Chemotherapy Agents

- Classified by: molecular structure and mechanism of action
- Unique side effects in each class
- Alkylating agents (cyclophosphamide),
Antimetabolites (5-FU, methotrexate),
Antitumor antibiotics (doxorubicin),
Plant alkaloids (docetaxel),
Nitrosoureas (lomustine),
Topoisomerase Inhibitors (etoposide),
Targeted Agents (rituximab),
Miscellaneous (procarbazine)

Routes of Administration - Chemotherapy

- Oral, IM, IV, Intracavitary, Intrathecal, Intraarterial, Continuous infusion, Subcutaneous, Topical

Modes of Chemotherapy

- Single Agent: one type
- Combined Agents: combined types; least side effects; sequential manner; synergistic effect; minimizes toxicity
- Adjuvant: in conjunction with sx or rad

Chemotherapy Administration

- Vesicant – a chemotherapeutic agent capable of causing or forming a blister & / or tissue destruction
- Irritant – a chemotherapeutic agent capable of producing venous pain at the IV site & along the vein with or without an inflammatory reaction

Common Side Effects of Chemotherapy

**depends on agent used; rapidly proliferating cells*

- Extravasation – infiltration (leakage) of drug into surrounding tissue; vesicants cause pain & tissue necrosis
- Alopecia: temporary; occurs 2-3 weeks after initial dose; allow expression of feelings; encourage wigs, wraps, scarves – prior to hair loss
- Gastrointestinal Effects:

- Nausea, vomiting, diarrhea> decrease odors, provide light bland meals-irritation
- Stomatitis: painful ulcers in mouth and upper GI; interferes with nutrition and speech; increase po fluids for hydration; decrease pain with xylocaine viscous, maalox mouth rinse, ice or baking soda
- Dysgeusia- loss of taste / metallic taste
- Bone Marrow Depression (myelosuppression)
 - *most serious side effect
 - Thrombocytopenia: platelets; bleeding – check
 - Leukopenia: WBC's; infection – assess s/sx: respiratory, GU; avoid crowds, avoid people with colds/viruses, wash hands...
 - Anemia: RBC's (weakness, fatigue, SOB, chills)
 - life span:
 - WBC=
 - Plts =
 - RBC=

Nursing Measures with Chemotherapy

- Talk to the patients, assist with coping: transportation, nutrition, and emotional support
- Must differentiate between tolerable side effects and toxic side effects; some reactions are not reversible
- Safe preparation and administration: medications
- Increase fluids - I & O
- Oral care - no mouthwashes with etoh, use saline, baking soda
- Decrease odors in room
- Food preferences: lukewarm – not too hot
- Aseptic technique
- Assess lab values
 - (1) CBC - RBC, H & H, WBC, plts
 - (2) Alert MD to changes
 - (3) WBC low – reverse isolation

Chemoprevention Therapy

**drugs taken to prevent developing cancer in future*

- Theory - believe cancer caused by evolving multistep molecular & cellular process
- Carcinogenesis characterized by period of many years between initiation of carcinogenesis & onset of invasive & metastatic phases
- Carcinogenesis evolves from chemical, biological and/or genetic insults to cells.

Chemoprevention Therapy - Clinical Trials

- Phase 1: small group of people tested to evaluate safety, determine dosage, identify side effects
- Phase 2: larger group to test efficacy, further evaluate safety
- Phase 3: larger group tested to confirm efficacy, monitor side effects, collect information allowing drug or treatment to be used safely

Chemoprevention Agents (diverse)

- Vitamins (folic acid, vitamins A, C, E)
- Minerals (calcium, selenium) – prostate (finasteride/proscar)
- Natural products (betacarotene) – lung
- Synthetic products (tamoxifen & raloxifene – breast) (finasteride/proscar – prostate)

Prevention Clinical Trials for High Risk People

- Breast, Prostate, & Lung Cancers

Modalities of Treatment – Immunotherapy

- Biologic therapy
- Attempt to stimulate a person's own immune system
- Immune system functions:
 - Ingests invaders by identifying new antigens.
 - T & B cells (WBC) make antibodies (IG).
 - T cells attack invading cells & cause cell damage & destroy tumor cells.
- Some attack cancer cells directly or some create an environment not suitable for growth
- Cytokines, vaccines, and monoclonal antibodies (end in -mab – targeted therapy)

Targeted Therapy

- Interferes with cancer growth by targeting specific cell receptors and pathways that are important in tumor growth
- Less damage to normal cells
- Targeted therapies are **more selective** for specific molecular targets than chemotherapy drugs.
- Personalized therapy
- Targeted therapies include:

Tyrosine kinase inhibitors
 Monoclonal antibodies
 Angiogenesis inhibitors
 Proteasome inhibitors

- Cancer cells can become resistant (mutation, new growth pathway)

Side effects of immunotherapy and targeted therapy:

- Flulike symptoms
- Anorexia/weight loss
- Fatigue, malaise, weakness
- Nausea/vomiting
- Photosensitivity
- Tachycardia and orthostatic hypotension are common
- CNS system effects
- Hepatotoxicity

Immunotherapy – Interferon (cytokine) IM,IV,SQ

- Interferes with viral replication
- Increases natural killer cell activity
- Antitumor effect
- Leukemia, lymphoma, solid tumors
- Side Effects – fever, pain at injection site, mild nausea, vomiting
- Observe for neurological problems (confusion, memory loss, difficulty making decisions, insomnia)

Immunotherapy – IL 2 (cytokine)

- Interleukin 2 (IL 2)
- Stimulates killer T cells
- Activates antitumor cells
- Used in combination with other chemo agents
- Side Effects – confusion, pulmonary edema, renal disorders, hypotension, dysrhythmias

Hematopoietic Growth Factors- CSF

- Colony Stimulating Factors (CSF)
- Regulate the production, maturation, & function of blood cells (hematopoiesis)
- Epogen / Aranesp – stimulates production of erythrocytes, only for Hemoglobin less than 10, chemo induced anemia
- Neupogen / Neulasta – stimulates proliferation & maturation of neutrophils – prevents chemo induced neutropenia; given 24-72 hours after last chemo dose
- Neumega – stimulates production of platelets

Others

- Hormone Therapy- stop the growth of cancer cells (estrogen, testosterone)
- Corticosteroids- used in combination with other medications
- Gene Therapy- alters genetic material, investigational
- Vaccines- prevent against (ie: Gardasil); treatment vaccines – work against cancer (immunotherapy)

- **Bone Marrow Transplants (Hematopoietic Stem Cell Transplantation)**

- Risk for rejection
- Side Effects – infection, bleeding, anemia
- Sources of cells: bone marrow, peripheral blood, and umbilical cord blood
 - o Umbilical cord blood typed & cryopreserved
- Harvesting bone marrow & stem cells
 - o Procedure performed in OR
 - o Multiple aspirations – iliac crest or sternum
 - o Cryopreserved
- Complications
 - Bacterial/ Viral / fungal infections
 - Graft versus Host disease
 - T lymphocytes from donated marrow recognize recipient as foreign
 - Attack organs such as skin, liver, intestines

Late Effects of Radiation & Chemotherapy

- Leukemia's & other 2nd malignancies
- 2nd malignancies other than leukemia have been reported:
 - o Breast, ovarian, uterine, thyroid, lung cancers.
- Fibrosarcomas and angiosarcoma's
- 2nd malignancies usually resistant to therapy.

Nursing Responsibilities

- Surgery: Pre-op, operative, & post-op care
- Radiation: Skin care, manage side effects, radiation principles
- Chemotherapy: Manage side effects
- Immunotherapy: Prevent infection