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
  - Used to **monitor treatment or reoccurrence**
  - Immature functioning
- EX: CEA, AFP, CA125, PSA

- Bone Marrow Examination:

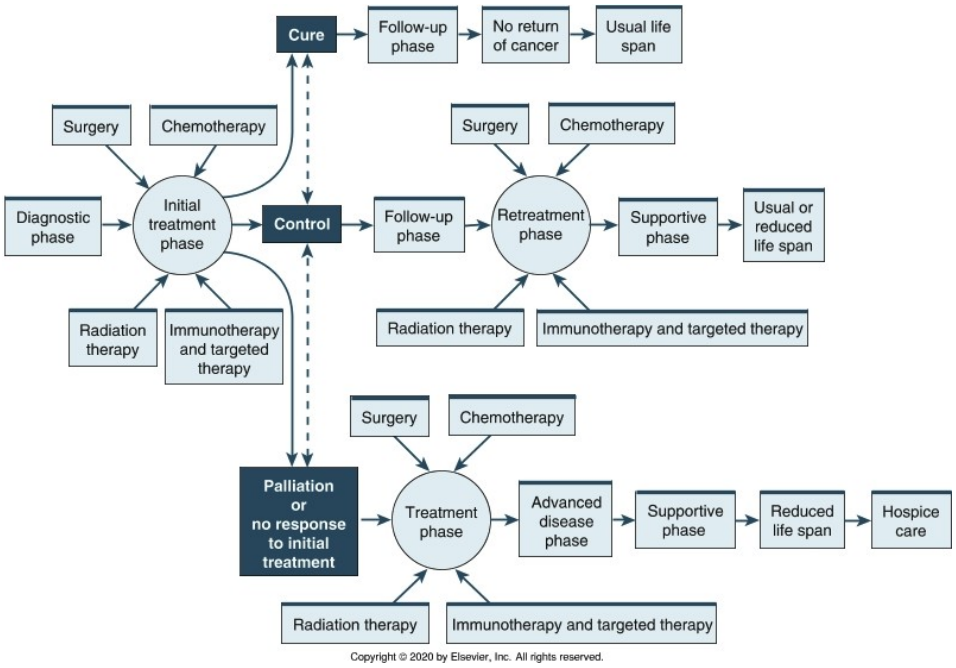
Treatment of Cancer

- 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**
  - <u>Diagnostic Surgery</u>
    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

  - <u>Radical Surgery</u>
    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*

– <u>Prophylactic Surgery</u>

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*

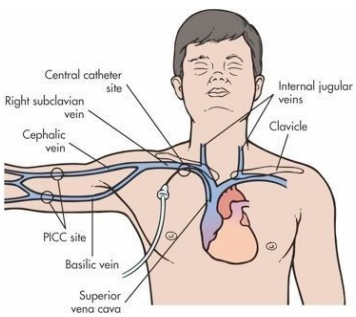
– <u>Palliative Surgery</u>

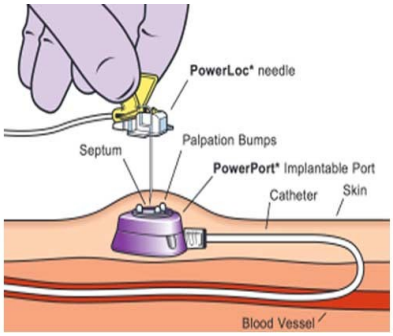
1. cure is unrealistic, then emphasis shifts to comfort
2. Goals:
    1. Slow tumor growth
    2. Decrease size of tumor
    3. Relieve distressing manifestations

– <u>Supportive Surgery</u>

- 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/external 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: intravacity 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
  - Umbilical cord blood typed & cryopreserved
- Harvesting bone marrow & stem cells
  - Procedure performed in OR
  - Multiple aspirations – iliac crest or sternum
  - 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:
  - 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