General Concepts of Oncology Nursing

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Top Ten Reasons

10. No more bedpans, no more mitered corners.
9. The excuse “Chemo Brain” sounds better than “I’m Blonde.”
8. Trying to beat Dracula at blood drawing competition, good place to practice.
7. Will never need to buy school pens again.
6. Cross multiply and divide was my favorite math equation in school.
Top Ten Reasons

5. Wearing scrubs to work is like being in my PJ’s all day.
4. I consider hanging IV bags all day my daily stretching exercise.
3. Lunch is usually provided, provided you have time to eat.
2. I’m too young to be a greeter at Wal-Mart.
1. It’s the best job I’ve ever had.
Winning the Fight Against Cancer

- 1953 Cure Rate 30%
- 1991 Incidence, Mortality ↓
- 1997 Absolute Death Rate ↓
- 2001 Cure Rate > 60%
Estimated 2002 New Cases

- **Male:**
  - Prostate- 30%
  - Lung/Bronchus- 14%
  - Colon/Rectum- 11%
  - Urinary/Bladder- 7%
  - Melanoma- 5%
  - Non-Hodgkin’s- 4%
  - Kidney- 3%

- **Female:**
  - Breast- 31%
  - Lung/Bronchus- 12%
  - Colon/Rectum- 12%
  - Uterine- 6%
  - Non-Hodgkin’s- 4%
  - Melanoma- 4%
  - Ovary- 4%
Estimated 2002 Deaths

♦ Male:
♦ Lung/Bronchus- 31%
♦ Prostate- 11%
♦ Colon/Rectum- 10%
♦ Pancreas- 5%
♦ Non-Hodgekin’s- 5%
♦ Leukemia- 4%
♦ Esophagus- 3%

♦ Female:
♦ Lung/Bronchus- 25%
♦ Breast- 15%
♦ Colon/Rectum- 11%
♦ Pancreas- 6%
♦ Ovary- 5%
♦ Non-Hodgekin’s- 4%
♦ Leukemia- 4%
Cultural Considerations:

- African-Americans have Higher Incidence
- African-Americans have Higher Rate of Death
- Native Americans have Poorer Survival even though they have Lower Incidence
An Organized Society

♦ Tight Regulation of
  – Cell Division
  – Proliferation
  – Differentiation

• Goal is to maintain balance
Review of Definitions

♦ Neoplasm
♦ Tumor
♦ Oncos
♦ Oncology
♦ Cancer
Terminology

♦ Benign Tumors
  ♦ Add “oma” to the cell of origin
  ♦ Capable of Mitosis
  ♦ Adhere Tightly
  ♦ Not capable of Metastasis

♦ Malignant Tumors
  ♦ Add “carcinoma” to cellular origin
  ♦ Have no Purpose
  ♦ Complete Cell Cycle
  ♦ Anaplastic
  ♦ Adhere Loosely
  ♦ Can Spread
Terminology: Benign or Cancerous

- **Benign**
  - Gland/Duct:
    - Adenoma
  - Melanocyte:
    - Nevus
  - Fatty Tissue:
    - Lipoma
  - Muscle:
    - Leiomyoma

- **Cancerous**
  - Gland/Duct:
    - Adenocarcinoma
  - Melanocyte:
    - Malignant Melanoma
  - Fatty Tissue:
    - Liposarcoma
  - Muscle:
    - Leiomyosarcoma
Theories of Carcinogenesis

- Initiation-Promotion-Progression Model
- Oncogene and Tumor suppressor gene Model
- Disease of Differentiation
- Stem Cell Disease
- Disease of Intercellular Communication
Initiation → Normal Cell → Altered Cell → Tumor → Higher Grade Malignancy → Metastasis

Promotion → Tumor → Higher Grade Malignancy

Promotion → Metastasis

Promotion → Progression
Normal cell → Single tumor cell → 30 doublings → 1 gm - 10^9 cells (Smallest clinically detectable mass)

Microscopic metastases → 10 doublings → 1 kg - 10^{12} cells (Maximum mass compatible with life)

Normal cell → Carcinogen-induced change → Tumor cell

Carcinogen-induced change → Proliferation of genetically unstable cells → Tumor cell variants

Tumor cell variants → Clonal expansion of surviving cell variants → Human solid malignancy

Nonantigenic, Invasive, Metastatic, Requiring fewer growth factors
Initiation and Progression of Carcinogenesis

- NORMAL CELLS
- MUTATION
- CARCINOGENS
- REGRESSION
- SLOW GROWTH
- PRECANCEROUS TRANSFORMATION
- RAPID MALIGNANT TRANSFORMATION
- METASTASIS
- OTHER SITES
Body Defense: Immune Surveillance System

- Recognition of non-self

- Tumor Antigens found on certain Ca Cells
  - CEA
  - PSA
  - CA 27-29
  - CA 127
  - CA 19-9
Tumor Staging

- T - Tumor
- N - Nodes
- M - Metastasis
  - T 0-3
  - N 0-2
  - M 0-2
Tumor Grading

- Well Differentiated
- Moderately Differentiated
- Poorly Differentiated
- Anaplastic
Risk Factors

♦ Environmental Risk Factors
♦ Personal Behaviors
♦ Occupation
♦ Hormones
Risk Factor Reduction

♦ Lifestyle Modification
  – Eliminate tobacco use
  – Moderate alcohol consumption
  – Diet
  – Exposure to Ultraviolet Light
Nursing Impact on Cancer: Primary Prevention

♦ Educate, Educate, Educate

♦ Warning Signs of Cancer:
  – Change in Bowel or Bladder
  – A sore that does not heal
  – Unusual bleeding or discharge
  – Thickening or a lump in the breast or elsewhere
  – Indigestion or difficulty swallowing
  – Obvious change in mole or wart
  – Nagging cough or hoarseness
Signs of Cancer

- Pain
- Fatigue
- Cachexia
- Anemia
- Infection
- Leukopenia and Thrombocytopenia
- Paraneoplastic Syndromes
Primary Prevention: Screenings

- Promote Lifestyle changes that reduce the risk of developing cancer
- Colon and Rectal: Guiac testing and DRE annually at age 40, sigmoidoscopy age 50.
- Prostate: PSA and DRE annually age 50.
- Cervical: Pap test and pelvic exam yearly.
- Breast: Monthly SBE, Yearly Breast exam, and mammography.
Secondary Prevention: After the diagnosis

- Surgery
- Radiation
- Chemotherapy or Biotherapy

- Nursing responsibility is to educate the patient to help prevent against further problems. Assess, Intervene, and Monitor
Surgical Goals

CURE

PALLIATION

Rehabillitation

Supportive Care
Radiation Therapy

♦ External Radiation

♦ Internal Radiation
  – Brachytherapy
Side Effects of Radiation

- Fatigue
- Anorexia
- Skin Reactions
- Bone Marrow Suppression
Patient Education

♦ What to expect
♦ How to care for the area
♦ What precautions are needed
Fatigue Management

♦ Diet
♦ Exercise
♦ Fluids
♦ Journals
♦ Balance of Rest and Activity
Skin Reaction Management

- **Dry desquamation**: Use lotion without irritating additives
- **Wet desquamation**: Keep clean and protect against infection.
Chemotherapy

♦ Systemic Treatment: Affects the cellular level.
  – Cell Cycle Specific
    • Antimetabolites: Methotrexate, 5-FU, Fludara
  – Cell Cycle Non-Specific
    • Antitumor Metabolites: Adriamycin, Bleomycin
    • Alkylating Agents: Cytoxan, Cisplat, Carboplatin
Method of Administration

- Intravenous:
  - Infusion Port, PICC line, Mid-line
- Intramuscular
- Subcutaneous
- Oral
- Intrathecal
- Intracavitary
- Topical
Nursing Assessment for Chemotherapy Administration

- Venous Status
- Oral Cavity Status
- GI Status
- Hematological Status
- Psychosocial Issues
- Educational Needs
Safe Handling Practice

- Prepare Chemotherapy in Biological Safety Cabinet
- Use Personal Protective Equipment: Gown, Gloves, Plastic backed Liner
- Dispose in Approved Containers
- Spill Kit Available
Patient Teaching Guidelines

♦ For 48 Hours following Chemo:
  – Flush Toilet Twice
  – Rinse Toilet with Bleach Once a Day
  – Caregiver should wear Gloves, if in contact with any body fluids
  – Use Condom for Sexual Interaction
Patient Teaching Guidelines

♦ Between Chemotherapy Sessions:
  – Weekly CBC
  – NADIR
  – Expectation of Side Effect Timing
  – What to Report
Managing Side Effects

♦ Fatigue
♦ Nausea and Vomiting
♦ Alopecia
♦ Diarrhea
♦ Stomatitis
♦ Bone Marrow Suppression
♦ Peripheral Neuropathy
Assessing Neutrophils

The White Blood Cell Count

- White blood cells 3,500–11,000/mm³
- Differential
  - neutrophil segs 56%
  - neutrophil bands 3%
  - lymphocytes 34%
  - monocytes 4%
  - eosinophils 2.5%
  - basophils 0.5%

Assessing Neutrophils
The Absolute Neutrophil Count (ANC)

ANC = Total WBC x % of neutrophils (bands plus segs)

Example:

- WBC = 2,000/mm$^3$
- Segmented neutrophils = 55%
- Band neutrophils = 1%

ANC = 2,000 x 0.56 = 1,120/mm$^3$

Absolute Neutrophil Count Calculation

- WBC = 3,000/mm$^3$
  - segmented neutrophils = 20%
  - band neutrophils = 5%
  - eosinophils = 3%
  - basophils = 1%
  - lymphocytes = 71%

What is the ANC?
The ANC Predicts the Risk for Infection

Slight (<2,000)  Minimal (<1,500)  Moderate (<1,000)  Severe (<500)

Grade 1  Grade 2  Grade 3  Grade 4

National Cancer Institute Grading System

Detecting Signs of Infection in Patients With Neutropenia

- Neutropenia: the often silent disorder.
- Only sign of an infection may be **FEVER**:
  - take temperature every 4 hours (inpatient)
  - instruct patient to take temperature QD or BID (home)
  - report temperature $\geq 100.4^\circ F (38.0^\circ C)$ (or institution standard)
The Nurse/Patient Team
Tips on Preventing Infection

• *Inpatients and outpatients:*
  – frequent hand washing
  – daily bathing
  – frequent mouth care
  – visitor hygiene
  – frequent ambulating

• *Inpatients:* low-microbial diet, private rooms

• *Outpatients:* restrict contact with cut flowers, plants, pet excreta

Intimacy

♦ Body Image Changes
♦ Role Changes
♦ Pregnancy Concerns
♦ When to Abstain From Sexual Intercourse
♦ Managing Patient Concerns: P-LI-SS-IT
♦ Use Open Ended Questions in Discussion with Patient
Biological Therapy

♦ Interferons

♦ Interleukins

♦ Monoclonal Antibodies
Hematopoietic Growth Factors

♦ G-CSF (Granulocyte Colony Stimulating Factor)
♦ GM-CSF (Granulocyte-Macrophage CSF)
♦ M-CSF (Macrophage CSF)
♦ Multic colony Stimulating Factor
♦ Erythrophoietin
♦ Neumega
Bone Marrow Transplantation

- Allogeneic
- Autologous
- Syngeneic
- Peripheral Stem Cell Transplantation
Alternative/Complimentary Therapy

♦ Herbal Supplements
♦ Special Diets: Macrobiotics
♦ Vitamin Therapy
♦ Relaxation Therapy
♦ Guided Imagery
♦ Massage Therapy
Oncologic Emergencies

♦ Superior Vena Cava Syndrome
♦ Hypercalcemia
♦ Tumor Lysis Syndrome
♦ Spinal Cord Compression
♦ SIADH
Superior Vena Cava Syndrome

- SVC
  - Thin-walled
  - Low-pressure vessel
  - Collapses easily with external pressure
  - Clinical picture is due to venous hypertension
Hypercalcemia

- Normal serum calcium 9-11 mg/dl
- If ionized calcium level not done, check albumin
- If not properly treated: 50% mortality rate
Tumor Lysis Syndrome

- Metabolic Complication of Treatment
- High Risk Individuals are those with bulky disease that is responsive to therapy.
- Caused by the breakdown of tumor cells.
- Can be Prevented
Spinal Cord Compression

- Occurs in Approximately 10-15% of oncology patients.
- Results from direct extension of nodes to spinal cord or metastatic involvement.
  - 70% Thoracic area
  - 20% Lumbosacral area
  - 10% Cervical area
SIADH

♦ Syndrome of Inappropriate Antidiuretic Hormone
  – Results in a Low Sodium Level
  – Frequent Disorder seen in Lung Cancer
  – Treated by restricting fluid or administering 3% NaCl intravenously
  – Slowly raise sodium level to reduce risk of cerebral edema
Nursing Management: Tertiary Care/ Palliation

♦ When to Refer to Hospice or Palliative Care?

- Symptom Management
- Psychological Support
Tertiary Care: Pain Management

- **Assessment:** Location, Duration, Radiation, Measures used.

- **WHO pain relief ladder**
  - Step 1: Non-opioid, Adjuvant
  - Step 2: Addition of Opioid
  - Step 3: Opioid, Non-opioid, Adjuvant, Assess need for additional pain control measures such as nerve block, epidural catheter
Maintaining Your Enthusiasm

♦ Remember there is Hope and Optimism
♦ Empower your Patient
♦ Help your patient to live with, through, and beyond the diagnosis of cancer!
♦ Take the time to listen, you have just given that patient something priceless.
♦ You may be only a temporary part of the journey, make it a pleasant one.
Great Web Sites

♦ www.ons.org
♦ www.asco.org
♦ www.plwc.org
♦ www.cansearch.org
♦ www.patientadvocate.org
♦ www.phrma.org
♦ www.cancer.org
Developing Your Potential

♦ Join your Professional Nursing Organization: Sigma Theta Tau
♦ Become an Active Participant in a Local Organization
♦ Take Advantage of Learning Opportunities
♦ Find a Mentor: www.ons.org Student’s Virtual Community
♦ Be Involved!