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Oncology Nursing Care Plans

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Introductory Remarks

An exciting component of this book is the use of the Nursing Interventions Classification, a new research based taxonomy of nursing interventions or actions. It was developed by a group of nurse researchers at the University of Iowa. Nursing Interventions Classification (NIC) was created to assist nurses in documenting their care, facilitate the development of nursing knowledge through the evaluation of patient outcomes, help provide a standard language nurses can use to describe their behaviors when delivering nursing treatments, expand nursing knowledge about similarities and differences among diagnoses and treatments, assist in the development of information systems, provide methods to teach decision making to students, assist in costing nursing care and allocating nursing resources, help provide communication between nursing and non-nursing and help link nursing content.

Each Nursing Interventions Classification (NIC) has three parts: the label or name describing the concept, the definition of the concept and a set of defining activities or actions that a nurse may perform to implement the intervention concept. The interventions are very broad based and encompass a wide range of nursing activities. As such no one nurse could be expected to perform all interventions listed for each label. Many interventions require special training and many require special certification. Others are very basic and may be delegated to another health care team member but still need to be planned, supervised and evaluated by the professional nurse. For this reason specific interventions are selected from the set of defining activities for each NIC label that are most appropriate for the selected nursing diagnosis and type of cancer. The current classification represents the completion of phase 1 of the research project. In phase 2 an organizing structure that is easy to use and clinically meaningful will be devised. This process is ongoing. Our thanks to Mosby for granting us permission to use Nursing Interventions Classification (NIC) in this book.

We would also like to extend our thanks to our families especially our husbands for their unfailing support and patience while we were writing this book.

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Using Oncology Hematology Care Plans

These plans have been developed to reflect nursing care of persons with cancer including the treatment of cancer and the most common types of cancer. In the treatment chapters a general discussion of the treatment is followed by the essential nursing diagnoses and care plans using Nursing Interventions Classification (NIC) labels for the most common problems. More specific nursing diagnoses and care plans using NIC are included in the various chapters on specific types of cancer for the less common or more drug specific type of problems. In the disease specific chapters, an overview of the specific type of cancer is provided followed by essential nursing diagnoses and care plans using NIC. These essential nursing diagnoses and care plans may be cross-referenced with the nursing diagnoses on managing common side effects from the treatment chapters or other types of cancer where similar nursing care is required. Each essential nursing diagnosis and care plan includes:

- Nursing Diagnosis as stated in NANDA taxonomy
- Related factors or risk factors(etiologies) and the defining characteristics(signs and symptoms) specific to each related factor that have a relationship to the specific treatment or type of cancer
- Outcome Criteria defining the expected general goal to be achieved
- Nursing Interventions Classification (NIC) label(s) and its definition and selected specific interventions with rationales
- Information, Instruction, Demonstration including interventions and rationales that pertain to the teaching function of the nurse
- Discharge or Maintenance Evaluation including specific behaviors expected of a person as a result of the interventions planned to achieve the desired outcomes

Since it is not uncommon for persons with cancer to have more than one problem and/or require multiple treatments simultaneously, it may be necessary for the reader to combine plans or use only those portions of the plan applicable to their individual client.

Oncology/hematology care plans are designed as a reference for care planning for nursing students and experienced nurses caring for persons with cancer in all settings. The overviews of the treatments and types of cancer are brief summaries intended to familiarize the reader with the most important information, not as a primary information source.

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Chapter One

Diagnosis of Cancer

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Diagnosis of Cancer

The American Cancer Society estimates that about one in three Americans now living will develop cancer in their lifetime. An estimated 1,700,000 new cases of cancer are diagnosed each year in the United States. This estimate does not include carcinoma in situ and basal and squamous cell skin cancers. The five-year survival rate for all cancers is around 52%. In this year alone about 526,000 deaths will be attributable to cancer. In men the most common types of cancers are prostate, lung, colon, and rectum; in women they are breast, colon, rectum, and lung.

Although anyone can get cancer, it is more common in the very old and the very young. Incidence of cancer is associated with a variety of factors including chemicals, radiation, viruses, hormones, certain immune conditions, and inherited mutations.

Many types of cancer are thought to be preventable. For example, cigarette smoking is linked to 90% of lung cancer cases among men and 79% of lung cancer cases among women. Smoking is also related to many other types of cancer, including head and neck cancers, gastrointestinal cancers, and some urinary tract cancers. Smoking cessation should be a goal in all health care settings. More importantly, never starting to smoke must be stressed in the education of our youth.

Sunlight is an important factor in the development of skin cancers. It has been postulated that 90% of all skin cancers could be prevented by avoiding sun exposure or by using sunscreens and protective measures while in the sun. This is another area in which early education can lower the incidence of cancer, because it has been found 80% of sun-exposure which a person experiences in his or her lifetime, occurs before the age of eighteen.

Diet, too, appears to play a role in both incidence and prevention of cancers. Research has shown that a high-fat diet may increase the risk of breast, colon, prostate, and ovarian cancers. On the other hand, a high fiber diet may decrease the risk of colon and ovarian cancer.

The term cancer actually is used to describes a group of over 100 different diseases. While there are many different types of cancer, all have a common characteristic— cells gone astray. When a cell becomes cancerous it loses its ability to control its rate of division, and grows without regard to the body's needs. Normally, cell birth equals cell death. However, when a cell becomes malignant or cancerous, it continues to divide regardless of need.

As these cells accumulate, a tumor or "new growth" develops. Not all new growths are cancerous. When a biopsy is taken of a new growth, the pathologist who reviews the tissue determines whether or not the growth is cancerous based on the growth's ability to metastasize or spreading, into other tissues or organs. The pathologist also tries to identify the cell from which the tumor arose. This is called the primary, or the site of the cancer's origin. The importance of identifying the primary tumor cell is that cancer treatment is based on it's type.

Another characteristic of cancer cell growth is its lack of specificity. Normally, cell growth is well-ordered and the daughter cell is an exact replica of the mother cell. Cancer cells divide in a less controlled manner, dividing into three or four cells instead of the usual two cells. As a result, of this anomaly, the daughter cells often lack the materials they need to continue the normal work of the cell and never "mature".

Another term for maturity is differentiation. When a cell is less, or poorly, differentiated the cell is less similar to the tissue of origin. The pathologist grades tumors as grade 1 (well differentiated), grade 2 (moderately well differentiated), grade 3 (poorly differentiated) and grade 4 (undifferentiated). Grading plays a role in prognosis. The less differentiated a tumor is the less responsive it is to treatment. So, patients with poorly undifferentiated tumors often have poor prognoses.

Prognostic markers are tests performed on tissue samples which indicate aggressiveness, rate of growth, and degree of abnormality of a tumor. They are used in establishing a prognosis and a treatment plan. Prognostic markers include the S phase Index, ploidy, estrogen receptor assay (ERA), progesterone receptor assay (PRA) and cathepsin D. Use of these markers is discussed in later chapters.

Once the pathologic diagnosis of cancer is made, the patient's tumor must be staged. Staging refers to a classification system, which is based on the extent of the disease. The Tumor, Node, Metastases (TNM) system is the most commonly used staging system. In it the T refers to the primary tumor, the N refers to regional lymph node involvement, and M refers to metastasis, or spread to distant sites. Based on the TNM system all tumors are then divided into four stages. The stages differ somewhat across various types of cancers. However, in general, Stage 1 tumors have a good prognosis and Stage 4 cancers, ones that are usually metastatic, have a poorer prognosis.

For some types of cancer a blood test is available to assist in diagnosing the cancer and in monitoring disease status during treatment. These blood tests look for certain substances called "tumor markers" that are produced by tumors. Some tumor markers are very specific and are found in only one type of cancer. Others are less specific and may be present in a variety of cancers. The most common tumor markers include CEA (carcinoembryonic antigen), CA 15-3, CA19-1, CA 19-9, CA 125, PSA (prostate specific antigen) b-HCG (beta Human Chorionic

gonadotropin) and alpha fetoprotein (AFP). Tumor markers are discussed in later chapters under the specific type of cancer in which their identification is most useful.

Despite advances in the treatment of cancer, people many still believe that a diagnosis of cancer think means an immediate, painful and disfiguring death. Some people fear being ostracized, treated differently or misunderstood. As a result, the diagnosis of cancer is seen as a major life crisis. Common reactions include shock, fear, anxiety, grief, agitation, sadness, preoccupation, and withdrawal. However, people cope by drawing on the same defenses and emotional resources they have used at other stressful times in their lives. And, since cancer patients vary in personality, and experience, no single coping strategy will be effective for all patients.

The diagnosis of cancer often affects the entire family and may lead to increased stress and tension not only for the person with cancer, but for their family members, even those not living with the patient. Reactions of family members to a cancer diagnosis can have a significant impact on the patient's adaptation to the disease. Therefore nursing intervention must address the problems and needs of both patient and family.

Essential Nursing Diagnoses in Patients with Cancer

Knowledge Deficit

- ☐ Related to:

  Lack of knowledge about the cancer disease process and it's treatment.

- ☐ Defining Characteristics:

  Verbalization of the problem,inaccurate follow-through of instruction, request for information.

- ☐ Outcome Criteria:

  Appropriate knowledge of disease process and prescribed medical regime.

- ☐ NIC: Teaching— Disease Process

  Definition: Assists the patient to understand his or her specific cancer and possible treatment options.

Teaching— Disease Process	
Activities	*Rationales*
Appraise patient's current level of knowledge related to cancer.	Data will provide baseline for teaching, avoiding duplication.
Describe the cancer disease process as appropriate.	Assists patient in understanding the disease process.
Provide information about therapy and/or treatment options and potential risks and/or benefits.	Assists patient in making treatment decisions.

Teaching— Disease Process	
Activities	*Rationales*
Use booklets, pictures, video tapes charts in teaching patient/family.	Visual aides reinforce instructions.
Encourage patient to explore options or get a second opinion as appropriate.	Promotes patient advocacy in medical care.
Instruct patient on signs and symptoms to report to health care provider; give necessary phone numbers.	Enhances safety upon discharge.
Reinforce information provided by other health care providers.	Corrects misinformation.

☐ NIC: Values Clarification

Definition: Assists cancer patient to clarify her/his own values in order to facilitate effective decision-making.

Values Clarification	
Activities	*Rationales*
Determine if there are differences between the patient's view of his or her condition and the view of health care providers.	Allows for correction misconceptions or misunderstanding.
Inform patient of alternative options as appropriate.	Assist patient in understanding options.

Values Clarification	
Activities	*Rationales*
Help patient identify the advantages and disadvantages of each treatment option.	Encourages patient to look rationally at treatment option.
Obtain informed consent when appropriate.	Promotes informed consent.

☐ Discharge or Maintenance Evaluation

- Verbalizes knowledge of disease process.
- Identifies potential treatment plans along with risks and benefits associated with each.

Ineffective Individual Coping

☐ Related to: ·

Diagnosis of cancer and uncertain prognosis.

☐ Defining characteristics:

Inability to meet basic needs, dependency, chronic fatigue, worry, anxiety, poor self esteem, verbalization of inability to cope.

☐ Outcome Criteria:

Anxiety, worry, fatigue reduced to a manageable level: demonstrates increased independence in activities and decision-making process.

☐ NIC: Coping enhancement

Definition: Assists the patient to adapt to perceived stressors, changes or threats which interfere with meeting life demands and roles.

Coping Enhancement

Activities	*Rationales*
Use a calm reassuring approach and provide an atmosphere of acceptance.	Assists the patient in establishing trust in health care provider.
Evaluate the patient's decision-making abilities.	Aids in assessment of independence in decision making.
Encourage an attitude of realistic hope.	Promotes self worth.
Support use of appropriate defense mechanisms.	Increases ability to cope.
Appraise needs/desire for social support.	Provides for patient's needs.
Introduce patient to persons or groups who have undergone the same disease experience.	Provides information and support from others with similar experiences.
Provide spiritual resources if desired.	To meet patient's spiritual needs.
Encourage family involvement as appropriate.	Assists patient to meet needs.

Instructions, Information, Demonstration

Activities	*Rationales*
Clarify patient's perceptions about disease process, treatments and/or possible side effects.	Assists in understanding necessary information and dispels myths.

Instructions, Information, Demonstration

Activities	*Rationales*
Answer patient's questions or assist them in obtaining needed information.	Meeting patient education needs may assists in coping.
Encourage patient's assertiveness in information seeking.	To meet patient's need for information.
Inform patient of community resources for patient's and their families facing cancer.	Assists patient in obtaining appropriate support as needed.

☐ Discharge or Maintenance Evaluation

- Uses appropriate coping and problem-solving skills in adapting to functional losses.
- Maintains appropriate level of functioning and meets basic needs.
- Requests assistance when needed.

Altered Family Processes

☐ Related to:

Impact of cancer diagnosis and uncertain prognosis.

☐ Defining characteristics:

Family systems unable to meet physical, emotional needs. of patient, or verbalization by family members of inability to cope.

☐ Outcome Criteria:

Family demonstrates ability to meet physical and emotional needs of the patient and family members.

☐ NIC: Family Support

Promotes support of family interests and goals during the diagnosis period.

Family Support

Activities	*Rationales*
Appraise family's emotional reaction to patient's condition.	To assess for family's need for emotional support.
Facilitate communication of concerns/feelings between patient and family and/or between family members.	Promotes communication.
Support adaptive coping mechanisms used by family if appropriate.	To assist family in coping with patient's illness.
Assure family that best care possible is being given to patient.	To reassure family that patient's needs are being met.
Provide spiritual resources as appropriate.	To meet patient's spiritual needs.
Introduce family to other families undergoing similar experiences.	To provide information and emotional support from others with similar experiences.
Provide family with information regarding patients illness and progress, in accordance with patient's wishes.	Assists the family in obtaining needed information.
Answer family's questions or assist them in obtaining needed information.	To meet educational needs.

Family Support

Activities	*Rationales*
Encourage family assertiveness in information seeking.	To meet family's need for information.
Inform family of community resources for patients and their families facing cancer.	Assists family in obtaining appropriate support as needed.

☐ NIC: Family Involvement

Facilitates family participation in the emotional and physical care of the cancer patient.

Family Involvement

Activities	*Rationales*
Identify self-care deficits in patient.	To identify areas in which patient may need family's assistance.
Identify family members' preferences and capabilities for involvement in patient's care.	To obtain needed information in planning for patient's care after transition.
Identify other situational stressors for the family.	Assess areas in which family may need support.
Encourage an emphasis on positive aspects of patient's situation.	To provide realistic hope regarding patient's situation.
Encourage family members to maintain family relationships as appropriate.	To promote family integrity.

Instructions, Information, Demonstration	
Activities	*Rationales*
Facilitate family's acquisition of needed information, and promote family management of medical aspects of illness, if appropriate.	To provide family with necessary information to make decisions regarding patient's care, if needed.
Assist family to acquire necessary knowledge, skills, and equipment to provide care for patient at home as appropriate.	Assists the family to provide adequate care for patient at home.

- ☐ Discharge or Maintenance Evaluation
  - Family demonstrates cohesion and unity
  - Family participates in the emotional and physical care of the cancer patient
  - Uses appropriate support resources provided by community/private professionals.

Altered Role Performance

- ☐ Related to:

  Impact of cancer diagnosis on the patient's roles within her or his family and community.

- ☐ Defining Characteristics:

  Change in patient's self-perception of role; change in others' perception of role; change in physical capacities to resume role(s) and/or responsibilities.

- ☐ Outcome Criteria:

  Verbalizes the impact that the diagnosis of cancer may have on his or her role(s) and demonstrates ability to deal with role conflict or changing role(s).

- ☐ NIC: Role Enhancement

  Assists patient, significant other, and/or family in clarifying impact of cancer diagnosis on roles, and thereby improve relationships.

Role Enhancement	
Activities	*Rationales*
Assist patient to identify usual roles in her/his family, work, and community.	To asses baseline roles.
Assist patient to identify specific role changes required due to illness.	To establish role changes that may be necessary.
Assist patient to identify positive strategies for managing role changes.	Promotes resolution of potential role conflicts.
Facilitate discussion of role adaptations of family to compensate for ill member's role changes.	Open communication assists in preventing conflict over role changes.
Assist family to acquire necessary knowledge, and skills to support role changes as needed.	Promotes successful implementation of needed role changes.

Role Enhancement	
Activities	*Rationales*
Instruct on possible support services available to assist patient and/or family while coping with role changes.	Provides financial and psychological counseling.

- ☐ Discharge or Maintenance Evaluation
  - Discusses impact of diagnosis on role(s).
  - Identifies personal strengths and resources to deal with role changes.

Anxiety Reduction	
Activities	*Rationales*
Assess for signs and symptoms of anxiety.	Assists in identifying severity of anxiety.
Use a calm reassuring approach.	Promotes trusting environment.
Employ active listening techniques.	Encourages venting of feelings.
Support use of appropriate defense mechanisms.	Defense mechanisms assist in coping during stressful periods.
Administer medications to reduce anxiety as appropriate.	Promotes ability to cope.

Anxiety

- ☐ Related to:

  Perceived threats to self due to cancer.

- ☐ Defining Characteristics:

  Communication of feelings of uncertainty, apprehension, fear and/or presence of restlessness, sleeplessness, or other signs of anxiety.

- ☐ Outcome Criteria:

  Anxiety level reduced and maintained at acceptable level.

- ☐ NIC: Anxiety Reduction

  Definition: Minimizes apprehension or uneasiness over cancer as an anticipated danger.

Instructions, Information, Demonstration	
Activities	*Rationales*
Explain all procedures.	Alleviates anxiety.
Instruct in relaxation techniques such as relaxation exercises, guided imagery, music therapy.	Alleviates anxiety.
Refer to support groups and/or counseling as appropriate.	Provides support during periods of stress due to cancer diagnosis.
Facilitate collaborative decision-making.	Promotes self-control over treatments.
Help patient explain her or his decision to others.	Provides support for patient's decision.

- ☐ Discharge or Maintenance Evaluation
  - Statements that anxiety is reduced.
  - Participation in anxiety, reducing techniques.

Anticipatory Grieving

- ☐ Related to:

  Actual and/or perceived losses due to cancer, such as loss of health, loss of life, work, income, privacy, intimacy and relationships.

- ☐ Defining characteristics:

  Patient exhibits and /or expresses feeling of sadness or loss.

- ☐ Outcome Criteria:

  Patient identifies perceived and/or actual losses; demonstrates movement through stages of the grieving process; identifies resources to deal with losses.

- ☐ NIC: Grief Work Facilitation

  Assists cancer patient with resolution of loss associated with cancer.

Grief Work Facilitation

Activities	*Rationales*
Assist patient in identifying the loss and encourage expression of feelings about it.	Allows for venting of feelings.
Assist in identifying personal coping strategies.	Promotes patient's ability to cope with potential life-threatening illness.

- ☐ NIC: Hope Instillation

  Definition: Facilitates the development of a positive outlook on the cancer diagnosis and treatment options when appropriate.

Hope Instillation

Activities	*Rationales*
Assist patient/family to identify areas of hope in life.	Promotes feelings of self-worth.
Assist the patient to devise, and revise, goals related to hope object.	Promotes self-control over situation.
Avoid masking the truth.	Promotes trusting relationship.
Encourage therapeutic relationships.	Provides needed emotional support.
Support spiritual beliefs.	Providing spiritual support can help reduce anxiety.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct in phases of the grieving process as appropriate.	Promotes understanding of behaviors in grieving.
Inform of community resources available that help with loss.	Positive support systems assist patient in coping with illness.
Teach patient and family of positive aspects of hope.	Assists patient/family in understanding need for hope.

☐ Discharge or Maintenance Evaluation

- Patient discusses feelings regarding anticipated loss.
- Patient maintains significant relationships and support systems.
- Patient maintains self-care and basic needs.
- Patient identifies resources to deal with losses.

Altered Sexual Patterns

☐ Related to:

Cancer disease process, ineffective control of symptoms, and the effects of cancer treatments.

☐ Defining Characteristics:

Verbalization of inability to perform sexually, achieve sexual satisfaction, altered body structure from surgery or cancer treatment impaired sexual or reproductive functioning.

☐ Outcome Criteria:

Patient/significant other will return to a satisfying sexual relationship.

☐ NIC: Sexual Counseling

Definition: Use of an interactive helping process focusing on the need to make adjustments in sexual practice or to enhance coping with a sexual event/disorder.

Sexual Counseling	
Activities	*Rationales*
Establish a therapeutic relationship based on trust and respect and provide privacy and confidentiality.	Promotes open communication.
Assess the effects of the illness or treatment on sexuality as appropriate.	Provides information to assist patient in coping with effects.
Encourage patient to verbalize fears and ask questions.	Provides patient with needed knowledge.
Help patient to express grief and anger about alterations in body functioning/appearance as appropriate.	Promotes working through the grieving process a normal part of dealing with loss.
Discuss alterative forms of sexual expression that are acceptable to the patient as appropriate.	Promotes sexual expression.
Include spouse/sexual partner in discussion as much as possible.	Promotes open communication between patient and sexual partner.
Refer to sexual therapist as appropriate.	Promotes healthy sexual relationship.

Instructions, Information, Demonstration

Activities	*Rationales*
Instruct patient/family of rationale for avoiding pregnancy during chemotherapy.	Prevents possible birth defects due to mutagenicity of chemotherapy agents.
Inform patient/sexual partner of possible long term effect on reproduction due to chemotherapy, surgery or radiation therapy as appropriate.	Promotes informed consent to herapy as appropriate.
Inform patient/partner of sperm/egg banking as an option for expected long term reproductive effects as appropriate.	Provides method for preserving reproductive functioning.

☐ Discharge or Maintenance Evaluation

- Patient will describe personal risk factors for sexual dysfunction and alternate exceptable methods of sexual expression and intimacy.
- Patient will discuss options to preserve reproductive functioning if possible.

Impaired Home Maintenance Management

☐ Related to:

Diagnosis of cancer and its treatment depleting family resources financial or patient unable to maintain home due to inadequate support systems.

☐ Defining Characteristics:

Patient/family express difficulty in maintaining their home adequately, describe outstanding debts or financial crisis, or request assistance with home maintenance.

☐ Outcome Criteria:

Patient/family describe resources to maintain home management.

☐ NIC: Home Maintenance Assistance

Definition: Helping the patient/family to maintain the home as a clean, safe, and pleasant place to live.

Home Maintenance Assistance

Activities	*Rationales*
Determine patient's home maintenance requirements.	Provides knowledge to develop plan of care based on needs.
Assist family members to develop realistic expectations of themselves in performance of their rolse.	Promotes realistic planning.
Offer solutions to financial problems as appropriate.	Promotes resolving of financial concerns.
Refer to social services as appropriate.	Promotes use of appropriate resources.

☐ NIC: Discharge Planning

Definition: Preparation for moving a patient from one level of care to another within or outside the current health care agency.

Discharge Planning	
Activities	*Rationales*
Monitor readiness for discharge.	Provides information for planning discharge.
Identify patient teaching needed post-discharge.	Promotes development of realistic dishcarge plan.
Encourage self care as appropriate.	Promotes independence.
Collaborate with physician, patient/family,,and other health care team members in planning for continuity of care.	Provides continuity of care acress all levels of care.
Arrange for caregiver support (home health nurse, aid, sitter, PT/OT, hospice) as appropriate.	Provides needed care in the home setting.
Develop a plan that considers the health care, social and financial needs of the patient.	Promotes development of a realistic plan of care.

Instructions, Information, Demonstration	
Activities	*Rationales*
Inform community resources available for persons with cancer including the American Cancer Society, National Cancer Institute, Hospie etc.	Promotes use of appropriate resources.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct/demonstrate on any identified unmet educational needs prior to dischare.	Provides Patient/family with needed information.
Inform of respite care available as appropriate.	Provides relief for caregivers as appropriate.

☐ Discharge or Maintenance Evaluation

- Patient/family describes discharge plan and date.
- Patient/family demonstrate necessary skills to provide care in the home setting or provide care need by use of home health care providers.

Fear

☐ Related to:

Fear of death due to diagnosis of cancer.

☐ Defining Characteristics:

Expresses fear of death, feeling of dread, pessismism over diagnosis.

☐ Outcome Criteria:

Patient verbailzes methods to cope with fears over cancer diagnosis

☐ NIC: Active Listening

Definition: Attending closely to or attaching significance to a patient's verbal and nonverbal messages.

Active Listening	
Activities	*Rationales*
Display interest in the patient and what is being communicated.	Promotes sharing by patient.
Display an awareness of and sinsitivity to emotions.	Converys interest and empathy towards patient.
Listen for the unexpressed message.	Promotes full understanding of patient's message.
Time a response that reflects an understanding of the received message.	Promotes communication in an appropriate manner.
Be aware of the tone, tempo, volume, pitch, and inflection of the voice.	Promotes communication of intended message.

☐ NIC: Crisis Intervention

Definition: Use of short term counseling to help the patient cope with a crisis and resume a state of functioning comparable to or better than the pre-crisis state.

Crisis Intervention	
Activities	*Rationales*
Encourage expression of feelings in a nondestructive manner.	Promotes ventilation of feelings.
Assist in identification of personal strengths and abilities that can be utilized in resolving the crisis.,Promotes use of patient's strengths in coping with cancer diagnosis.	Promotes use of patient's strengths in coping with cancer diagnosis.

Chapter Two

Surgery

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Surgical Treatment

Surgery was the earliest intervention for the treatment of tumors, and it remains one of the integral parts in the management of cancer patients today. Almost every patient diagnosed with cancer will undergo a surgical procedure during the course of their treatment. The surgical approach is used to prevent cancers from occurring, treat existing disease, facilitate the various treatments, prevent recurrence, and to relieve symptoms.

Diagnosis

The successful treatment of cancer requires a treatment plan based upon a pathological diagnosis of the disease. The tissue upon which this diagnosis is made is obtained by a surgical intervention, a biopsy. The type of biopsy performed is a decision made based on the type of cancer, it's location, the extent of disease, and the patient's general state of health. All patients with a particular type of cancer will not undergo the same tests; evaluation of tests is individualized and based on many factors.

Four methods are used to obtain tissue for diagnosis - needle aspiration, needle biopsy, incisional biopsy, and excisional biopsy. Each has its advantages and disadvantages.

Needle Aspiration

Needle aspiration refers to a suctioning of tumor cells into a syringe. The patient is given a local anesthetic and a needle is inserted and passed through the tumor as suction is applied. This is a simple, inexpensive procedure; however, the cells obtained may be fragmented, affording only a cytologic diagnosis rather than histologic.

Needle Biopsy

The needle biopsy is performed with a specially designed needle and biopsy apparatus in which a core of tissue is removed as the needle moves into or out of the tumor.(e.g.,True Cut, Franklin etc.)

The patient generally is given a local anesthetic, then the location of the tumor may be confirmed with an imaging technique. This method of biopsy is relatively simple but often is not used if the disease is located near major blood vessels or fragile, normal tissues.

Incisional Biopsy

The incisional biopsy is performed through an opening in the skin created with a scalpel. The procedure is often performed in an outpatient setting. Following the local anesthetic, an incision is made and a piece of

tumor is carefully removed to avoid any spread of tumor cells. This method of biopsy is used to confirm tumors (e.g.,sarcomas) when more extensive surgery is anticipated.

Excisional Biopsy

Excisional biopsy also requires a surgical incision, but during this operation the entire tumor is removed. Depending on the size and type of tumor, this procedure may also be done in the outpatient setting.

Staging

Some cancers require surgery as part of the staging process. Staging of cancer refers to the process of establishing the extent of a person's disease, and is often completed with radiologic imaging and surgery. Staging of disease allows for a systematic approach to planning treatment.

An example of a surgical staging procedure is the diagnostic laparotomy, a major surgical procedure during which the surgeon can observe and biopsy internal organs and lymph nodes, remove organs (if possible), or remove suspicious lymph nodes. During the procedure markers may be placed to evaluate the course of treatment. The staging laparotomy was used routinely for many years in the treatment of Hodgkin's disease. It was used to determine if disease was present below the diaphragm, which indicated whether that patient should receive chemotherapy or radiation therapy. This procedure is not as routine as it once was because of the improvements in imaging and biopsy techniques. Staging laparotomy is the procedure of choice for many intra-abdominal malignancies.

Treatment

Surgery alone can be used in the treatment of cancer or used in combination with treatments of chemotherapy, radiation therapy, and/or biotherapy. These treatments may precede a surgical procedure to shrink the tumor, making it operable. They also are used to treat micrometastatic disease. Intraoperative radiation therapy and chemotherapy are used to treat both residual tumors and the area from which the tumor was removed. Sometimes, such treatments are used following surgery to treat residual disease or to prevent recurrence.

Many different types of surgical interventions are performed in the removal of tumors. One, local excision, refers to the removal of cancer with a small margin of normal tissue. The wide excision refers to the removal of the disease along with surrounding lymph nodes and often adjacent tissue. Cryosurgery is the use of liquid nitrogen to freeze tissues, and has been successful in the treatment of prostate and hepatic cancers. Electrosurgery employs an electrical current to kill cancer cells. Chemosurgery, a technique using topical chemotherapy and layer-by-layer removal of cancerous tissue, is a

common treatment for squamous cell cancer of the skin. Laser surgery ionizes water in a pin point fashion to destroy tumor cells. The type, or types, of surgical intervention that a patient receives depends on the type of cancer, the extent of disease, the goal of treatment, and the general health of the patient.

Surgery is sometimes used in the prevention of cancer. For example testicular cancer has been associated with undescended testicles; Orchiopexy, a procedure to bring the testicle down into the scrotum, is performed with the hope of preventing the occurrence of this cancer. Other examples of preventive surgery include: colectomy for ulcerative colitis, mastectomy for high risk breast cancer, thyroidectomy to prevent medullary cancer of the thyroid, and oophorectomy for familial ovarian cancer.

The surgical removal of existing disease often includes reconstruction at the time of the procedure. Many women who choose mastectomy for the treatment of breast cancer have a reconstructive procedure at the time of breast removal; others may choose to have reconstruction done at a later time. Bone cancers are often excised after which rods, grafts, or stabilizing devices are put in place during the procedure. A cystectomy, removal of the bladder, can be followed by the creation of an internal or external device to collect urine. These are only a few examples of reconstructive procedures.

Facilitation of treatment by implanting access devices, ports, pumps, or other hardware is another common reason for surgery. The hardware used for internal radiation therapy is generally placed in the operating room then loaded with the radioactive material after the patient has returned to their room. Chemotherapy, immunotherapy, blood products, TPN, and the administration of antimicrobials are reasons for implanting multi-lumen, vascular access devices. These devices allow for delivery of therapy at home without the risk of peripheral IV infiltration. For example, the ommaya reservoir is a device that allows administration of chemotherapy to the central nervous system, thereby eliminating the need for frequent, painful lumbar punctures. Implanted pumps have been used for direct arterial administration of chemotherapy to the tumor over a long period of time (e.g.,hepatic artery infusion). Many different types of pumps, access devices, and catheters are in use, and it is important to refer to agency protocol when using this equipment.

Surgery is also used as a palliative. When a cure is no longer possible, and comfort and/or improved quality of life is the goal, surgery may be ordered. Examples include, but are not limited to, stabilization of a bone to prevent fracture; removal of a solitary metastasis (e.g.,brain); relief of an obstruction in an airway, the bowel, or ureters; and treatment of an oncologic emergency. The removal of fluid from the pericardial sac which is causing cardiac tamponade would be such an oncologic emergency. Surgery is also a frequent intervention for symptom control in advanced cancer. Pain may be treated by a nerve blocking procedure or the

placement of a spinal catheter to deliver medication.

Surgical oncology has become a specialty within cancer care, challenging providers to provide devise unique care for their patients.

Essential Nursing Diagnoses for the Surgical Oncology Patient

Anxiety

(CH. 1)

- ☐ Related to:

  Perceived threat to self due to cancer and uncertain surgical outcome.

- ☐ Defining Characteristics:

  Communication of feelings of uncertainty, apprehension, fear, and/or presence of restlessness or other signs of anxiety.

- ☐ Outcome Criteria:

  Anxiety level reduced to an acceptable level.

Knowledge Deficit

- ☐ Related to:

  Lack of knowledge about an impending surgical intervention.

- ☐ Defining Characteristics:

  Verbalization of the problem, inaccurate follow-through of instruction, request of information.

- ☐ Outcome Criteria:

  Appropriate understanding of the surgical intervention, perioperative and post-operative recovery.

- ☐ NIC: Teaching— Preoperative

  Definition: Assisting a patient to understand and mentally prepare for surgery and the postoperative recovery period.

Teaching—Preoperative

Activities	*Rationales*
Determine the patient's previous surgical experiences and level of knowledge related to surgery.	Provides data for individualization of teaching.
Appraise the patient's anxiety about surgery.	Provides opportunity to express feelings, and to obtain information to help alleviate anxiety.
Inform the patient and significant other(s)of the scheduled date, time, and location of surgery.	Provides information to patient and family.
Inform the patient and significant other(s) regarding how long surgery is expected to last.	Information may alleviate anxiety.
Describe the preoperative routines of anesthesia, diet, bowel preparation tests/labs, voiding, skin preparation, IV therapy, clothing, transportation to operating room as appropriate.	Assists patient in understanding the need for these procedures.

Teaching—Preoperative

Activities	*Rationales*
Describe any preoperative medications, their effects on the patient, and the rationale for their use.	Assists patient in understanding the need for these medications and their potential side effects.
Provide time for the patient to ask questions and discuss concerns.	Allows for clarification of information.
Reinforce the patient's confidence in the staff involved.	Reduces anxiety.
Provide information about what will be heard, smelled, tasted, or felt during the experience.	Promotes increased knowledge and decreased anxiety.
Discuss possible pain control measures.	Provides information regarding options available.
Explain the purpose of frequent postoperative assessments.	Allows patient to understand routine, which reduces anxiety.
Describe the postoperative routines/equipment (medications, respiratory treatments, tubes, machines, support hose, surgical dressings, ambulation, diet, family visitation) and explain their purpose.	Increase's patient's understanding of surgical plan of care.
Instruct the patient on the technique of splinting incision, coughing, and deep breathing.	Provides opportunity to learn and practice behavior.

Teaching—Preoperative

Activities	*Rationales*
Evaluate the patient's ability to return demonstrate splinting incision, coughing, and deep breathing.	Prevents misunderstanding of instructions and allows for clarification if necessary.
Instruct the patient on how to use incentive spirometer.	Provides opportunity to learn and practice with equipment.
Evaluate the patient's ability to return demonstrate proper use of the incentive spirometer.	Prevents misunderstanding of instructions and allows for clarification if necessary.
Instruct the patient on leg exercises.	Provides opportunity to learn and practice exercises.
Evaluate the patient's ability to return demonstrate leg exercises.	Prevents misunderstanding of instructions and allows for clarification if necessary.
Stress the importance of early ambulation and pulmonary care.	Promotes cooperation of patient in postoperative routine.
Inform the patient about how he or she can aid in recuperation.	Allows patient to participate in care.
Determine the patient's expectations of the surgery.	Provides opportunity to reinforce potential surgical outcomes.
Correct unrealistic expectations of surgery.	Promotes understanding of surgery.
Instruct the patient to use coping techniques in controlling specific aspects of the experience (e.g. , relaxation, imagery).	Provides information the patient may use as necessary.

Teaching—Preoperative	
Activities	*Rationales*
Inform the significant other(s) on where to wait for results of surgical procedure.	Provides information about location.
Conduct a tour of the post-surgical unit.	Promotes increased knowledge and reduces anxiety.
Introduce the patient to surgical and post-operative staff.	Promotes familiarity with personnel.

Instructions, Information, Demonstration	
Activities	*Rationales*
Explain reason for surgical procedure and what to expect in the preoperative, perioperative, and postoperative periods.	Provides information about surgery and desired effects.
Inform patient and significant other(s) of types of tubes, dressings, and equipment to be used during hospitalization.	Reduces fear of unknown; may decrease anxiety.
Correct any misinformation and answer all questions honestly and in lay language.	Prevents unnecessary fear due to inaccurate information or beliefs.

☐ Discharge or Maintenance Evaluation

- Expresses reduction in anxiety about surgical procedure.
- Verbalizes understanding of surgical procedure and expected routines.
- Participates in self-care following surgery.

Ineffective Airway Clearance

☐ Related to:

Tracheobronchial secretions, obstruction, or infection associated with anesthesia administered during surgery.

☐ Defining characteristics:

Abnormal breath sounds (rales, crackles, rhonchi, wheezes), cough, change in rate or depth of respiration, dyspnea, tachypnea, cyanosis.

☐ Outcome Criteria:

Breath sounds remain as close to baseline as possible

Ability to cough and remove secretions.

Absence of respiratory infectious process.

☐ NIC: Respiratory Monitoring

Definition: Collection and analysis of patient data to ensure airway patency and adequate gas exchange.

Respiratory Monitoring

Activities	*Rationales*
Assess patient's cough, it's onset duration, and patterns.espiratory status.	Reveals characteristics that may indicate infection or inflammation.
Assess patient's respiratory secretions (amount, color, consistency, odor).	Reveals infection or inflammation.
Monitor rate, rhythm, depth and effort of respirations.	Provides baseline data regarding patient's r
Auscultate breath sounds, noting areas of decreased or absent ventilation and presence of adventitious sounds.	Assesses the character of each patient's breathing pattern and provides data which may indicate a developing problem.
Note location of trachea.	Provides baseline data.
Monitor for noisy respirations.	Provides information regarding possible airway obstruction.
Monitor chest x-ray reports.	Provides data that may require physician's intervention.
Monitor patient's ability to cough effectively.	Reinforcement of preoperative instructions may be necessary.
Document monitoring data in the patient's medical record.	Provides pertinent information regarding the patient's respiratory status.

Instructions, Information, Demonstration

Activities	*Rationales*
Instruct patient to report changes in respiratory pattern, effort, and secretions.	Provides subjective information on respiratory status.

☐ NIC: Cough Enhancement

Definition: Promotion of deep inhalation with subsequent generation of high intrathoracic pressures and compression of underlying lung parenchyma for the forceful expulsion of air.

Cough Enhancement

Activities	*Rationales*
Assess coughing ability and limitations.	Provides background data.
Assist patient to a sitting position with head slightly flexed, shoulders relaxed, and knees flexed.	Facilitates coughing.
Encourage patient to take several deep breaths.	Provides adequate reserve prior to coughing.
Encourage patient to take a deep breath, hold it for 2 seconds, cough 2 or 3 times in succession.	Promotes airway expansion and movement of secretions.
Instruct patient to follow coughing with several maximal inhalation breaths.	Facilitates airway re-expansion.

Cough Enhancement

Activities	*Rationales*
Teach patient how to splint abdominal incisions and to use pain medications before coughing.	Promotes deep breathing.
Encourage use of incentive spirometer.	Promotes deep breathing.

Instructions, Information, Demonstration

Activities	*Rationales*
Reinforce preoperative instructions regarding deep breathing and coughing.	Promotes raising and expectoration of secretions.

☐ NIC: Ventilation Assistance

Definition: Promotion of an optimal spontaneous breathing pattern that maximizes oxygen and carbon dioxide exchange in the lungs.

Ventilation Assistance

Activities	*Rationales*
Maintain a patent airway.	Promotes air exchange.
Position to alleviate dyspnea.	Facilitates chest expansion and respiratory efficiency.
Assist with frequent position changes.	Prevents accumulation of secretions.

Ventilation Assistance

Activities	*Rationales*
Administer pain medication.	Prevents hypoventilation.
Ambulate as ordered.	Promotes lung expansion.
Administer medications that are ordered (e.g. bronchodilators, inhalers).	Promotes airway patency and gas exchange.

Instructions, Information, Demonstration

Activities	*Rationales*
Inform patient about importance of changes in position and ambulation.	Promotes compliance with prescribed medical regimen.
Instructs patient in administration of medications via proper route, time of day, relationship to foods or drinks, management, and the reporting of side-effects.	Ensures understanding of correct drug dosage, route, and potential side-effects.

☐ Discharge or Maintenance Evaluation

- Patient verbalizes understanding of need for changes in position and ambulation postoperatively.
- Participates in self-care including, deep breathing, coughing, and use of the incentive spirometer.

- Changes in patient's respiratory status are documented.

Ineffective Breathing

☐ Related to:

Postoperative inability to maintain gas exchange sufficient for cellular requirements.

☐ Defining characteristics:

Shortness of breath, dyspnea, tachypnea, cough, respiratory depth changes, cyanosis, abnormal arterial blood gases.

☐ Outcome Criteria:

- Return of respiratory status to baseline parameters.
- Optimal breathing pattern and ventilation.
- Effective breathing effort.
- Absence of respiratory infectious process.

☐ NIC: Airway Management

Definition: Facilitation of patency of air passages.

Airway Management

Activities	*Rationales*
Perform chest physical therapy.	Promotes ventilation by dislodging and raising secretions.
Remove secretions by suctioning.	Removes secretions when patient is unable to expectorate on their own.

Airway Management

Activities	*Rationales*
Provide mouth care after suctioning.	Prevents drying of oral mucus membranes.
Administer humidified air.	Promotes liquefaction of secretions for easier elimination.
Regulate fluid intake to optimize fluid balance.	Maintains hydration which aids in liquefaction of secretions.

Instructions, Information, Demonstration

Activities	*Rationales*
Discuss reasons for chest physical therapy and suctioning.	Promotes cooperation through increased understanding.
Inform patient of need to maintain or increase fluid intake.	Liquefies secretions for easier elimination.

☐ Discharge or Maintenance Evaluation

- Patient maintains thin, clear secretions that can be coughed up or removed from airways by suctioning.
- Maintains hydration status with increases in intake when needed.

☐ NIC: Oxygen Therapy

Definition: Administration of oxygen and monitoring of its effectiveness.

Oxygen Therapy	
Activities	*Rationales*
Clear oral, nasal, and tracheal secretions.	Promotes the delivery of oxygen.
Instruct patient about importance of leaving oxygen device in place.	Promotes correct administration of oxygen.
Monitor position of oxygen delivery device.	Prevents incorrect placement of equipment.
Periodically check oxygen delivery device to ensure that the prescribed concentration is being administered.	Promotes delivery of oxygen as ordered.
Change oxygen delivery device from mask to nasal prongs during meals as tolerated.	Promotes adequate nutrition.
Monitor patient's anxiety related to the need for oxygen therapy.	Provides data regarding patient's emotional state.
Assess for skin breakdown from friction of oxygen therapy device.	Re-position oxygen therapy delivery equipment as necessary.
Provide for oxygen therapy when patient is transported.	Provides continuity of care.

Instructions, Information, Demonstration	
Activities	*Rationales*
Discuss with family reasons for administration of oxygen therapy.	Promotes cooperation through increased understanding.
Instruct patient to report changes in ability to breathe comfortably with oxygen therapy.	Provides data regarding patient's comfort with oxygen therapy.

☐ Discharge or Maintenance Evaluation

- Patient complies with ordered oxygen therapy.
- Maintains position of oxygen therapy equipment.
- Reports changes in breathing pattern.

Impaired Gas Exchange

☐ Related to:

Postoperative ventilation perfusion imbalance.

☐ Defining characteristics:

Confusion, restlessness, irritability, hypoxia, hypercapnia, inability to move secretions.

☐ Outcome Criteria:

Arterial blood gases within normal range; return of respiratory rate and depth to baseline parameters; absence of hypoxemia .

☐ NIC: Acid/Base Management—Respiratory Acidosis

Definition: Promotion of acid-base balance and prevention of complica-

tions resulting from serum pCO_2 levels higher than desired.

Acid/Base Management—Respiratory Acidosis

Activities	*Rationales*
Monitor patient symptoms.	Provides for ongoing assessment.
Obtain ordered specimens for base balance (e.g., ABG's, urine, serum).	Provides data related to laboratory analysis of acid-base balance.
Monitor arterial blood gases for decreasing pH.	Provides lab value that may indicate development of respiratory acidosis.
Facilitate adequate ventilation to prevent/treat respiratory acidosis (e.g., position patient upright, maintain airway).	Promotes chest expansion and ease of breathing, pulmonary circulation, and gas exchange.
Promote adequate rest periods.	Provides short periods of sleep.

Instruction, Information, Demonstration

Activities	*Rationales*
Monitor neurologic status (e.g., level of consciousness, confusion).	Ensures early recognition of changes in mental status.

☐ NIC: Acid-Base Management—Respiratory Alkalosis

Definition: Promotion of acid-base balance and prevention of complications resulting from serum pCO_2 levels lower than desired.

Acid/Base Management—Respiratory Alkalosis

Activities	*Rationales*
Monitor arterial blood gases for increasing pH.	Provides lab value that may indicate development of respiratory alkalosis.
Maintain patient intravenous.	Provides access to circulation lines.
Monitor for neurologic and/or neuromuscular manifestations of respiratory alkalosis (e.g.,paresthesia, tetany, seizures).	Ensures early recognition of signs that may indicate respiratory alkalosis.
Monitor for cardiopulmonary alkalosis (e.g.,arrhythmias, hyperventilation).	Provides data that may indicate development of respiratory alkalosis.
Promote orientation.	Decreases anxiety.

Instructions, Information, Demonstration

Activities	*Rationales*
Instruct patient and family on actions taken to treat respiratory acidosis/alkalosis.	Provides information about procedures.

Instructions, Information, Demonstration	
Activities	*Rationales*
Explains reasons for patient positioning.	Promotes cooperation.

☐ Discharge or Maintenance Evaluation

- Patient Maintains acid - base balance.
- Maintains position of optimal chest expansion and ventilation.

☐ NIC: Mechanical Ventilation

Definition: Use of an artificial device to assist a patient to breathe.

Mechanical Ventilation	
Activities	*Rationales*
Provide patient with a means of communication (e.g., paper and pencil, alphabet board) during mechanical ventilation.	Promotes communication of thoughts and feelings.
Check all ventilator connections regularly.	Prevents leaks.
Empty condensed water from water traps.	Removes a potential source of infection.
Use aseptic technique.	Prevents transfer of organisms.
Monitor ventilator pressure readings.	Ensures proper ventilator settings.

Mechanical Ventilation	
Activities	*Rationales*
Monitor patient's physiological and psychological status in response to mechanical ventilation.	Provides patient data.
Routinely monitor ventilator settings.	Promotes adherence to ordered ventilation assistance.
Monitor for decrease in exhale volume and increase in inspiratory pressure.	Provides information that may indicate change in patient's breathing pattern.
Ensure that ventilator alarms are on.	Ensures immediate awareness of problems.
Administer muscle paralyzing agents, sedatives, and narcotic analgesics.	Promotes patient comfort during mechanical ventilation.

Instructions, Information, Demonstration	
Activities	*Rationales*
Explain to patient all procedures and use of equipment.	Reduces patient anxiety about equipment.
Inform patient of reasons for medications (e.g., muscle paralyzing agents).	Promotes cooperation, reduces anxiety.

☐ Discharge or Maintenance Evaluation

- Maintains adequate gas exchange.

Decreased Cardiac Output

- ☐ Related to:

  Surgical intervention and administration of anesthesia.

- ☐ Defining characteristics:

  Variations in blood pressure readings, jugular vein distension, decreased peripheral pulses, arrythmia, color changes in skin and mucous membranes, cold, clammy skin, oliguria, dyspnea, rales, restlessness.

- ☐ Outcome criteria:

  Maintenance of stable blood pressure, pulse rate and rhythm, respiratory parameters within baseline readings, absence of arrhythmias.

- ☐ NIC: Vital Signs Monitoring

  Definition: Collection and analysis of cardiovascular, respiratory, and body temperature data to determine, and prevent, complications.

Vital Signs Monitoring

Activities	*Rationales*
Monitor blood pressure, pulse, temperature, and respiratory rate.	Provides baseline and continuing data for comparative judgements.
Monitor skin color, temperature, and moistness.	Provides information regarding patient's hemodynamic status.
Check periodically the accuracy of instruments used to acquire patient data.	Promotes collection of correct information.

Instructions, Information , Demonstration

Activities	*Rationales*
Communicates changes in TPR and BP to medical personnel.	Allows for prompt treatment to prevent complications.
Documents instrumentation evaluation.	Provides information to staff.

- ☐ NIC: Intravenous Therapy

  Definition: Administration and monitoring of intravenous fluids and medications.

Intravenous Therapy

Activities	*Rationales*
Verify order for IV therapy.	Prevents error.
Maintain strict aseptic technique.	Prevents infection.
Examine the solution for type, amount, expiration date, character of the solution, and lack of damage to container.	Promotes IV therapy.
Select and prepare IV infusion.	Ensures accurate rate of infusion.
Monitor IV flow rate and IV.	Promotes early recognition of site during infusion phlebitis and extravasation.
Monitor for IV patency prior to administration of IV medication.	Prevents extravasation of medication.

Intravenous Therapy	
Activities	*Rationales*
Performs IV site care according to agency protocol.	Prevents infection.
Replace IV cannula, apparatus, and infusate according to agency protocol.	Promotes asepsis.
Administer IV medications as prescribed and monitor for results.	Promotes patient well-being.
Record intake and output.	Provides data.
Flush IV lines between administration of incompatible solutions and clotting of IV line.	Prevents precipitation of medications.
Limit intravenous potassium to agency protocol.	Prevents hyperkalemia.
Maintain universal precautions.	Prevents infection.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient on procedure.	Promotes patient cooperation.
Inform patient and family of importance of infusion pumps and request that changes be made by staff only.	Prevents infusion rate errors.
Instruct patient to report pain, redness, or swelling at IV site.	Promotes early intervention to prevent complications.

Instructions, Information, Demonstration	
Activities	*Rationales*
Demonstrate to patient and family technique for moving with IV therapy equipment.	Promotes independence.

☐ NIC: Fluid Monitoring

Definition: Collection and analysis of patient data to regulate fluid balance.

Fluid Monitoring	
Activities	*Rationales*
Monitor weight.	Provides baseline and comparative data.
Monitor serum and urine electrolyte values.	Promotes awareness of condition.
Monitor mucus membranes, skin turgor, and thirst.	Provides information that may indicate dehydration.
Monitor color, quantity, and specific gravity of urine.	Provides additional data.
Monitor orthostatic blood pressure and cardiac rhythm.	Provides specific information regarding fluid balance.
Restrict and allocate fluid intake.	Promotes fluid balance.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient on fluid allocation/restriction.	Promotes cooperation.
Inform patient of reasons for testing.	Provides information, reduces anxiety.

☐ NIC: Fluid/Electrolyte Management

Definition: Regulation and prevention of complications from altered fluid and/or electrolyte levels.

Fluid/Electrolyte Management	
Activities	*Rationales*
Assess patient's buccal membranes, sclera, and skin for indications of altered fluid and electrolyte balance (e.g., dryness, cyanosis, jaundice).	Provides additional data.
Obtain laboratory specimens for fluid and electrolyte levels (e.g., Hct, BUN, protein, sodium, potassium).	Provides information regarding altered fluid or electrolyte balance.
Administer prescribed nasogastric replacement as output may require.	Promotes fluid/electrolyte balance.
Irrigate nasogastric tubes with normal saline.	Prevents obstruction.

Fluid/Electrolyte Management	
Activities	*Rationales*
Minimize oral intake of ice chips, etc., or oral intake consumed by patient with gastric suction tubes.	Promotes accurate nasogastric contents measurements.
Monitor for side effects of prescribed supplemental electrolytes (e.g., GI irritation).	Provides information regarding the patient's ability to tolerate medications.
Administer prescribed electrolyte binding/excreting medications.	Provides information on the electrolyte binding/excreting medication.
Monitor for fluid loss (e.g., bleeding, vomiting, diarrhea, perspiration).	Provides additional data.
Administer prescribed electrolyte binding/excreting medications.	Promotes electrolyte balance.

Instructions, Information, Demonstration	
Activities	*Rationales*
Inform patient of need to restrict oral intake while nasogastric tube is in place.	Promotes cooperation.
Inform patient of rationale for electrolyte binding/excreting medication.	Promotes cooperation.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient to report side effects, ability to tolerate electrolyte binding/excreting medication.	Provides information regarding patient's experience with medication.

☐ Discharge or Maintenance Evaluation

- Vital signs remain within baseline parameters for age and sex.
- Equipment used for monitoring vital signs provides accurate data.
- Intravenous fluids and medications are administered as prescribed.
- IV site is maintained without development of phlebitis or extravasation.
- Absence of fluid and electrolyte imbalance, adequate circulating fluid volume.
- Correct calculation and administration of fluids in proportion to losses.
- Progressive return to baseline fluid intake orally.
- Verbalizes side effects and tolerance of electrolyte binding/excreting medication.

Decreased Cardiac Output

☐ Related to:

Surgical intervention and administration of anesthesia.

☐ Defining characteristics:

Variations in blood pressure readings, jugular vein distension, decreased peripheral pulses, arrythmia, color changes in skin and mucous membranes, cold, clammy skin, oliguria, dyspnea, rales, restlessness.

☐ NIC: Acid-Base Management—Metabolic Acidosis

Definition: Promotion of acid-base balance and prevention of complications resulting from serum bicarbonate levels lower than desired.

Acid/Base Management—Metabolic Acidosis	
Activities	*Rationales*
Monitor for CNS manifestations of metabolic acidosis (e.g., headache, drowsiness, decreased mentation, seizures, coma).	Promotes early intervention.
Monitor ABG's for decreasing pH.	Provides data.
Monitor for electrolyte imbalances associated with metabolic acidosis (e.g., hyponatremia, hyper or hypokalemia, hypocalcemia, hypophosphatemia, hypomagnesemia).	Promotes early recognition of impending metabolic acidosis.
Monitor loss of bicarbonate through the GI tract (e.g., diarrhea, pancreatic fistula, small bowel fistula, ileal conduit).	Provides data for accurate replacement of GI losses.

Acid/Base Management—Metabolic Acidosis

Activities	*Rationales*
Administer prescribed alkaline medications (e.g., sodium bicarbonate).	Promotes return to acid-base balance.
Avoid administration of medications resulting in lowered HCO_3 (e.g., chloride-containing solutions).	Prevents errors.

☐ NIC: Acid-Base Management: Metabolic Alkalosis

Definition: Promotion of acid-base balance and prevention of complications resulting from serum bicarbonate levels higher than desired.

Acid/Base Management—Metabolic Alkalosis

Activities	*Rationales*
Monitor for electrolyte imbalances associated with metabolic alkalosis (e.g., hypokalemia, hypercalcemia, hypochloremia).	Promotes early recognition of impending metabolic alkalosis.
Monitor ABG's for increasing pH.	Provides data.
Monitor for renal loss of acid (e.g.,diuretic therapy).	Provides additional information.
Monitor for GI loss of acid (e.g., vomiting, NG suctioning, diarrhea with high chloride content.)	Provides data for accurate replacement of GI losses.

Acid/Base Management—Metabolic Alkalosis

Activities	*Rationales*
Administer H2 receptor antagonist (e.g., ranitidine, cimetidine) to block hydrochloride secretion from stomach.	Prevents further loss of acid.
Administer carbonic anhydrase-inhibiting diuretics (e.g., acetazolamide or metazolamide) to increase excretion of bicarbonate.	Promotes return to acid-base balance.
Administer antiemetics to reduce loss of HCL in emesis.	Prevents further loss of acid.
Avoid administration of alkaline substances(e.g.IV sodium bicarbonate, PO or NG antacids).	Promotes return to acid/base balance.

Instructions, Information, Demonstration

Activities	*Rationales*
Instruct patient and family on actions instituted to treat metabolic acidosis/alkalosis.	Provides information about procedures.
Inform patient of changes in prescribed medications.	Promotes understanding.

☐ NIC: Dysrhythmia Management

Definition: Preventing, recognizing, and facilitating treatment of abnormal cardiac rhythms.

Dysrhthmia Management	
Activities	*Rationales*
Ascertain patient and family history of heart disease and dysrhythmias.	Provides data.
Monitor and correct oxygen deficits, acid-base imbalances, and electrolyte imbalances which may precipitate dysrhythmias.	Promotes normal cardiac rhythms.
Apply EKG electrodes and connect to a cardiac monitor.	Provides EKG data.
Set alarm parameters on the EKG monitor.	Provides auditory notification of abnormalities.
Note activities associated with the onset of dysrhythmias.	Provides information.
Note frequency and duration of dysrhythmia.	Provides data.
Ensure ready access of emergency dysrhythmia medications.	Facilitates quick treatment.
Administer Advanced Cardiac Life Support.	Promotes respirations and cardiac rhythm.

Instructions, Information, Demonstration	
Activities	*Rationales*
Inform physician of conditions that precipitate dysrhythmias.	Provides current information that may lead to change in care.
Inform patient of reasons for EKG monitoring.	Promotes patient knowledge of medical intervention.
Instruct patient to report changes in chest sensations and breathing pattern.	Allows for prompt intervention.

☐ NIC: Resuscitation

Definition: Administering emergency measures to sustain life.

Resuscitation	
Activities	*Rationales*
Use either the head tilt or jaw thrust maneuver to maintain an airway.	Promotes ventilation.
Clear oral, nasal, and tracheal secretions.	Provides for a clear airway.
Administer manual ventilation.	Promotes respiratory function.
Performs cardiopulmonary resuscitation.	Promotes circulatory function.
Connect the person to an ECG monitor.	Provides ECG data.
Initiate an IV line and administer IV fluids as indicated.	Provides access to circulation, promotes adequate hydration.

☐ NIC: Code Management

Definition: Coordination of emergency measures to sustain life.

Code Management	
Activities	*Rationales*
Call a code according to agency standard.	Ensures notification of necessary personnel.
Bring a code cart to the bedside.	Provides equipment.
Attach the cardiac monitor and determine the rhythm.	Provides data.
Deliver cardioversion or defibrillation as ordered.	Promotes improved function of the heart.
Ensure that someone is oxygenating the patient and assisting with intubation.	Provides ventilation assistance.
Ensure that someone is attending to needs of the family if present.	Provides emotional support.
Ensure that someone is coordinating care of other patients on the floor/unit.	Provides coverage for other patients.
Review actions post code to identify areas of strength and those that need improvement.	Promotes competent delivery of emergency care.

Instructions, Information, Demonstration	
Activities	*Rationales*
Explain procedures to patient, as appropriate, during code.	Provides information and support.
Inform family of reasons for emergency interventions.	Promotes understanding.

☐ Discharge or Maintenance Evaluation

- Maintains acid-base balance.
- Verbalizes understanding of changes in medications.
- Absence of dysrhythmias noted on EKG.
- Participates effectively in a code.
- Performs cardiopulmonary resuscitation according to agency protocol.

Altered Skin Integrity

☐ Related to:

Surgical intervention.

☐ Defining characteristics:

Surgical Incision.

☐ NIC: Incision Site Care

Definition: Cleansing, monitoring, and promotion of healing in a wound that is closed with sutures, clips, or staples.

Incisional Site Care	
Activities	*Rationales*
Explain the procedure to the patient.	Promotes understanding.
Inspect the incision site for redness, swelling, or signs of dehiscence or evisceration.	Promotes early intervention if abnormality develops.
Note characteristics of any drainage.	Provides data.
Cleanse the area around the incision with an appropriate cleansing solution.	Prevents infection.
Swab from clean area toward the less clean area.	Promotes asepsis.
Cleanse the area around any drain site or drainage tube last.	Prevents contamination of clean drain site or area.
Apply antiseptic ointment as ordered.	Promotes healing and prevents infection.
Change the dressing as ordered.	Provides observation of the incision at regular intervals.
Apply the appropriate dressing.	Protects incision site.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient in dressing change, allow for return demonstration.	Promotes wound cleanliness and healing.

Instructions, Information, Demonstration	
Activities	*Rationales*
Inform patient to report any redness, swelling, pain, purulent drainage from incision.	Provides for early recognition of potential problem.
Instruct patient on how to care for the incision during bathing or showering.	Provides information that will protect the incision.
Instruct the patient in how to minimize stress on the incision site.	Prevents unnecessary strain.

☐ Discharge or Maintenance Evaluation

- Absence of redness, drainage, or swelling at incision site.
- Incision healing in progress

Altered Nutrition: Less than Body Requirements

☐ Related to:

Inability to ingest or digest food or absorb nutrients because of biological or psychological factors experienced postoperatively.

☐ Defining characteristics:

Weight loss, anorexia, report altered taste sensation, dysphagia, regurgitation, early satiety, vomiting, diarrhea, abdominal cramping, malabsorption syndromes, vitamin deficiency, increased metabolic demand, chronic illness, abdominal pain with or without pathology

- ☐ Outcome Criteria:

  Adequate intake of appropriate nutrients and sufficient calories.

- ☐ NIC: Nutrition Therapy

  Definition: Administration of food and fluids to support metabolic processes of a patient who is malnourished or at high risk for becoming malnourished

- ☐ NIC: Nutrition Management

  Definition: Assisting with or providing a balanced dietary intake of foods and fluids.

Nutrition Management

Activities	*Rationales*
Inquire if patient has any food allergies.	Provides data.
Determine, in collaboration with dietician, number of calories and type of nutrients needed to meet nutrition requirements.	Provides nutritional plan of care.
Encourage increased intake of protein, vitamin C, and iron.	Promotes healing.
Monitor recorded intake for nutritional content and calories.	Provides information for evaluation and recommendations.
Encourage patient to wear properly fitted dentures.	Promotes chewing and swallowing.
Monitor appropriateness of diet orders to meet daily nutritional needs.	Promotes balanced diet.

Nutrition Management

Activities	*Rationales*
Determine food preferences with consideration of cultural and religious preferences.	Provides data for nutritional plan.
Select malts, shakes, and ice cream to supplement nutrition, if not lactose intolerant.	Provides additional calories.
Ensure that diet includes foods high in fiber to prevent constipation.	Promotes regular gastrointestinal function.
Encourage bringing home-cooked food to the institution as appropriate.	Promotes return to regular diet.
Provide oral care before meals as needed.	Promotes appetite.

Instructions, Information, Demonstration

Activities	*Rationales*
Instruct patient and family in caloric needs for surgical recovery.	Promotes knowledge that will reinforce adequate nutrition.
Inform patient and family of need for food supplements.	Promotes adequate caloric intake.
Instruct patient and family regarding dietary restrictions.	Promotes adherence to restricted diet.

- ☐ NIC: Enteral Tube Feeding

  Definition: Delivering nutrients and water through an intestinal tube.

Enteral Tube Feeding

Activities	*Rationales*
Insert nasogastric, nasodoudenal or nasojejunal tube, as per type of fluid and nutrients to be delivered.	Provides access to gastrointestinal system.
Monitor for proper placement of the tube by checking pH of aspirate.	Prevents mis-placement of tube.
Request tube placement x-ray when placement is questionable.	Provides data.
Monitor for presence of bowel sounds.	Provides data.
Elevate the head of the bed during feedings.	Promotes delivery of feedings.
Discontinue feedings 30-60 minutes before placing the head of the bed in a flat position.	Prevents aspiration.
Slow tube feeding rate to control diarrhea.	Promotes absorption of nutrients.
Monitor for sensation of fullness, nausea, and vomiting.	Provides data.
Check residuals every 4-6 hours during continuous feedings, and before each intermittent feeding.	Provides information regarding patient's ability to digest the ordered volume of feeding.
Use clean technique in administering tube feedings.	Prevents infection.
Discard enteral feeding containers and administration sets according to agency policy.	Promotes asepsis.

Enteral Tube Feeding

Activities	*Rationales*
Check gravity drip rate or pump every hour.	Promotes accurate delivery rate of feeding.
Keep cuff of endotracheal or tracheostomy tube inflated during feedings.	Prevents aspiration.

Instructions, Information,, Demonstration

Activities	*Rationales*
Inform patient and family of need for tube feeding.	Provides information regarding alternative method of obtaining calories.
Explain equipment.	Promotes knowledge, reduces anxiety.
Instructs patient and family of sensations to report.	Promotes cooperation with nutritional plan of care.

☐ NIC: Total Parenteral Nutrition (TPN) Administration

Definition: Preparation and delivery of nutrients intravenously and monitoring of patient responsiveness.

Total Parenteral Nutrition (TPN) Administration

Activities	*Rationales*
Assist with insertion of central line.	Provides support to patient and physician.
Ascertain correct placement of intravenous central catheter by x-ray.	Provides data to provide safe care.
Maintain central line patency and dressing per agency protocol.	Prevents air embolus and infection.
Monitor for infiltration and infection.	Promotes early treatment of potential complications.
Check the TPN solution to ensure correct nutrients are included as ordered.	Prevents errors.
Maintain sterile technique when preparing and handling TPN solutions.	Prevents infection.
Use an infusion pump for delivery of TPN solutions.	Promotes accurate infusion of TPN solutions.
Avoid rapidly replacing lagging TPN solution.	Prevents bolus dextrose administration.
Monitor serum albumin, total protein, electrolytes, glucose, and chemistry profile.	Provides data.
Monitor urine glucose for glycosuria, acetone and protein.	Provides additional information.
Administer insulin as ordered to maintain serum glucose in the designated range.	Prevents hyperglycemia.

Instructions, Information, Demonstration

Activities	*Rationales*
Inform patient and family of reasons for TPN administration.	Promotes understanding.
Instruct patient and family not to alter settings of infusion pump.	Promotes accurate administration of TPN solution.
Instruct patient to report discomfort, pressure, pain, or other changes at central line insertion site.	Promotes early intervention.

☐ Discharge or Maintenance Evaluation

- Complies with and tolerates daily intake of nutrient requirements.
- Verbalizes caloric and special nutritional guidelines.
- Verbalizes sensations of fullness, nausea, and bloating.
- Maintains acceptable weight.
- Verbalizes changes at central line insertion site.
- Refrains from altering infusion pump settings.

Pain

☐ Related to:

Surgical intervention.

☐ Defining characteristics:

Diaphoresis, blood pressure and pulse rate changes, crying, moaning, guarding and protective behavior, refusal to move or change position, restlessness, irritability, complaint of pain.

- ☐ Outcome Criteria:

  Absence or control of pain

- ☐ NIC: Analgesic Administration

  Definition: Use of pharmacologic agents to reduce or eliminate pain.

Analgesic Administration

Activities	*Rationales*
Determine pain location, characteristics, quality, and severity, prior to medicating patient.	Provides data.
Check medical order for drug, dose, and frequency of analgesic prescribed.	Prevents errors.
Check history for drug allergies.	Provides information.
Choose appropriate analgesic when more than one is prescribed.	Provides patient with optimal pain medication.
Choose the IV, via PCA pump route, rather than IM, for frequent pain medication injections, when possible.	Promotes optimal absorption.
Monitor vital signs before and after administering narcotic analgesics for first time dose, or if unusual signs are noted.	Provides data regarding patient's response to medication.
Assist in relaxation to facilitate response to analgesia.	Promotes best response to medication.

Analgesic Administration

Activities	*Rationales*
Administer analgesics around-the-clock, especially for severe pain.	Prevents peaks and troughs of blood levels of medication.
Administer adjuvant analgesics and/or medications when needed to potentiate analgesia.	Promotes best response to analgesic.
Consider use of continuous infusion analgesia with bolus opioids to control pain.	Provides consistent blood level of medication.
Correct misconceptions/myths held by patient or family members regarding analgesics, particularly opioids (e.g.,addiction, risks of overdose).	Promotes cooperation with pain management care plan.
Evaluate the effectiveness of analgesic at regular frequent intervals.	Provides information.
Observe for any signs or symptoms of untoward effects of analgesics (e.g., respiratory depression, nausea and vomiting, dry mouth, constipation).	Promotes early intervention to alleviate problems.

Instructions, Information, Demonstration

Activities	*Rationales*
Inform patient and family of need for medication and potential side effects.	Promotes understanding.
Instruct to request PRN pain medication before the pain becomes severe.	Promotes effectiveness of PRN medication.
Inform patient and family of additional methods to help control pain.	Provides increased awareness of relaxation techniques, breathing rhythms, and meditation.
Instruct patient that pain medication is for patient's use exclusively.	Prevents potential problems.

☐ Discharge or Maintenance Evaluation

- Verbalizes that pain is reduced or absent.

Urinary Elimination, Altered

☐ Related to:

Disease process or surgical intervention contributing to incontinence or retention.

☐ Defining Characteristics:

Inadequate output, dysuria, frequency, urgency, inability to control urinary flow, decreased awareness or sensation of urination.

☐ Outcome Criteria:

Demonstrates appropriate understanding and management of regular urinary output.

☐ NIC: Urinary Elimination Management

Definition: Maintenance of an optimum urinary elimination pattern.

Urinary Elimination Management

Activities	*Rationales*
Monitor urinary elimination including frequency, consistency, odor, volume and color.	Provides baseline information.
Monitor for signs and symptoms of urinary retention, including absence of voiding and lower abdominal distention.	Prevents bladder distention.
Note time of last urinary elimination.	Provides data.
Obtain midstream voided specimen for urinalysis and culture if UTI suspected.	Provides data from urinalysis, and information from culture for appropriate antimicrobial therapy.
Teach patient to drink recommended amount of fluids.	Promotes adequate urine flow.
Record time of first voiding, and appearance of urine, following procedures.	Provides information for early detection of potential problems.
Assist with development of a toileting routine.	Promotes regular urinary elimination.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient/family on recording urinary output as appropriate.	Promotes an awareness of urinary pattern.
Inform patient/family of signs & symptoms of UTI, including fever, flank pain, dysuria, and hematuria.	Provides information.
Instruct patient to respond as quickly as possible to the urge to void.	Prevents distention and reduces risk of infection.

☐ Discharge or Maintenance Evaluation

- Verbalizes strategies for management of regular urination.

Altered Elimination: Bowel

☐ Related to:

Disease process or surgical intervention that contributes to constipation or diarrhea.

☐ Defining Characteristics:

Abdominal pain, cramping, increased or decreased bowel sounds, loose, liquid, watery stools, urgency, frequency, hard formed stools, decreased frequency of bowel movements, and flatus.

☐ Outcome Criteria:

Demonstrates appropriate understanding and management of regular bowel movements.

☐ NIC: Bowel Management

Definition: Establishment and maintenance of a regular pattern of bowel elimination.

Bowel Management	
Activities	*Rationales*
Monitor bowel movements including frequency, shape, volume, and color.	Provides baseline information.
Note date of last bowel movement.	Provides data.
Record preexistent bowel problems, bowel routine, and laxative use.	Prevents misinterpretation of data.
Monitor bowel sounds.	Provides information regarding bowel activity.
Report an increase in frequency, presence of high pitched or absent bowel sounds.	Promotes early recognition of potential problems.
Monitor for signs and symptoms of diarrhea, constipation, and impaction.	Promotes regular bowel pattern.
Insert rectal suppository as needed.	Provides for bowel evacuation.
Initiate bowel training program as appropriate.	Promotes self care in regular bowel habits.
Evaluate medication profile for gastrointestinal side effects.	Prevents bowel complications related to medications.
Obtain guaiac of stool.	Provides information regarding gastrointestinal blood loss.

Bowel Management	
Activities	*Rationales*
Refrain from performing rectal exam on granulocytopenic patients.	Prevents perforation of mucosa which can result in infection.

Instructions, Information, Demonstration	
Activities	*Rationales*
Inform patient/family about foods that promote bowel regularity.	Promotes dietary intake that supports bowel regularity.
Reinforce adequate fluid intake.	Prevents constipation.
Instruct patient in strategies to counter bowel-related side effects.	Provides information to encourage self care.

☐ Discharge or Maintenance Evaluation

- Patient verbalizes strategies to ensure regular bowel habits.

Chapter Three

Radiation Therapy

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Radiation Therapy

Radiotherapy is the use of high-energy particles to destroy cells in the treatment of disease. Cell death is the result of chemical reactions within the cell that cause DNA and RNA changes, diminishing the cells' ability to function. The amount of DNA and RNA damage a cell receives depends on the radiosensitivity of a cell. There are four factors that influence the radiosensitivity of cells:

- Rate of cell division
- Phase of the cell cycle
- Degree of cellular differentiation
- Cell's level of oxygenation

Rapidly dividing cells, whether they are normal or cancerous, are more susceptible to radiation therapy. Cells undergoing gap 2 phase (the period following DNA synthesis before mitosis) of the cell cycle are the most sensitive to radiotherapy. Poorly differentiated cells and well-oxygenated cells are also very radiosensitive. Cancers most sensitive to radiotherapy include lymphoma, seminoma, squamous cell of the oropharyngeal area, skin, and cervical epithelia. Normal cells most sensitive to radiotherapy include blood cells produced in the bone marrow, hair follicles, and cells of the gastrointestinal tract.

To treat cancer, radiation therapy is used alone or in combination with surgery, chemotherapy and/or immunotherapy. The goal of treatment may be curative, as in Hodgkin's Disease, seminoma of the testes, skin, cervical, and laryngeal cancers. Another goal is disease control, either long- or short-term, as with brain tumors, bladder, ovarian, and lung cancers. Palliative treatment to improve quality of life by relieving symptoms or preventing complications is another important goal of therapy. Patients with metastatic breast or prostate cancer may receive radiation to multiple lesions over a period of many years. A bony metastatic site also may be irradiated to prevent fracture, or in a vertebra to prevent spinal cord compression. Obstructions or impending obstructions (e.g., in trachea, bowel, esophagus, ureters, superior vena cava) also may be treated with radiotherapy. Other potential uses with a palliative intent are control of bleeding and brain metastases.

Radiation therapy can be further classified by its type and by the method of administration. The form of energy used in radiotherapy is ionizing radiation, the highest energy in the electro-magnetic spectrum. All electromagnetic radiation is in the form of waves, and particulate radiation is in the form of particles. It can be delivered from a source outside the body by external beam or teletherapy, or delivered from a source placed within the body by a method known as internal- or brachytherapy, whereby sealed sources of radioactive material are placed within or near a tumor. An external source is the Linear Accelerator, a machine that delivers electron energy in

precise beams with little scatter. Other machines use gamma rays from cesium or cobalt sources. Teletherapy and brachytherapy can be used either alone or in combination with each other, depending on the patient's needs.

It is important that each individual's tumor be defined specifically in terms of location and volume. When the decision has been made that a patient will receive radiation therapy, a consultation is planned with the radiation oncologist and radiation therapy nurse. Also present are the radiation technician, physicist, social worker, and nutritionist. This consultation generally is known as the "simulation visit", which can be lengthy. During the meeting a simulator machine is set up with several component parts, including x-ray, tomography, ultrasound and fluoroscopy. Once the tumor has been carefully defined by the team, the physician can determine the field of treatment. This field, also called the "treatment port" is duplicated on the patient's skin with marks or tatoos. It is important that these marks stay in place during the 4-6 weeks of therapy because they are used daily to position and focus equipment. At some treatment facilities these markings are placed on a plastic form or mask rather than the skin. Restraining or positioning devices may be constructed at the time of simulation to aid in the patient's ability to be in the exact same position each day. Another important part of simulation and treatment planning is shaping the field and determining which structures are to be blocked and protected from radiation therapy.

The physicist works with the radiation therapist to ensure accuracy of technical aspects. A body contour of the patient may be obtained during simulation, and is used to produce a computer generated treatment plan based on tumor volume and body contour.

Calculation of the total dose of treatment, fractionated dose, number of fields, and time schedule are also determined during the treatment planning period. These calculations are based on the relationship between radiosensitivity of tumor cells and that of normal cells and tissues; on the tumor size and location; on the total dose of radiation to be delivered versus the time of treatment; and the goal of therapy.

Radioactive isotopes for brachy-therapy are available in many different forms including wires, ribbons, needles and seeds. The source is selected by the radiation oncologist according to the location of the tumor, size of tumor, and whether the implant is to be temporary or permanent. The aim of treatment is to deliver a concentrated dose to a specific area and minimize the exposure to surrounding, normal tissues. The radiation source may be placed into a cavity, or placed intracavitary, (cesium implant in vagina), into tissue, interstitially (iridium implants into the breast), or on the surface of the skin. When hardware is to be placed surgically the patient is taken to the operating room. There, needles may be placed into breast tissue or gynecologic applicators in the vagina. These

are examples of "afterloading" devices because they are loaded with the source of radiation after the patient is returned to a private room.

Implanted sources of radiation may be either temporary (cesium implant for cancer of the cervix) or permanent (e.g. iodine seeds into a bronchial tumor). Nonsealed sources of radiation may be given orally, intravenously or intracavitary. Iodine 131, an example of an unsealed radiation source, is given orally for the treatment of hyperthyroidism.

The side effects of radiation therapy occur when normal cells within the field of treatment are temporarily or permanently affected. Side effects occurring within 6 months are referred to as acute side effects and those occurring after 6 months are called late or chronic side effects. The acute side effects— those that occur in rapidly dividing cells of the skin, mucous membranes, hair follicles, and bone marrow— are generally reversible. The late side effects, in cells that divide slowly such as muscle or vessel cells, are usually permanent.

Since all teletherapy is delivered through the skin, some type of skin reaction is to be expected, anything from mild erythema to moist desquamation. Every organ system of the body has a specific "maximal tolerance dose," defined as the dose to which a given population of clients is exposed under a standard set of treatment conditions, and will result in a 50% complication rate within 5 years.

Radiation therapy is not considered to be a systemic therapy but a therapy aimed to affect a specific site, or sites, of disease. Theoretically, side effects experienced by a patient should be limited to the treated area. However, the person receiving radiation therapy may experience systemic effects, including nausea, anorexia and fatigue. These symptoms may be related to the breakdown of cancer cells and the filtering of these by-products through the body. The complaint of fatigue may be partially related to the effort expended getting to and from the treatment center every day of the week for many weeks. Generally, most patients tolerate radiation therapy well.

Essential Nursing Diagnoses Related to Coping

Anxiety

(CH. 1)

- ☐ Related to:

  Fear of radiation therapy and possible side-effects.

- ☐ Defining Characteristics:

  Voices fears of radiation therapy and its side effects, appears apprehensive, nervous.

Ineffective Individual Coping

(CH. 1)

☐ Related to:

Anxiety and fears about radiation therapy and its potential side effects.

☐ Defining Characteristics:

Inability to meet basic needs, worry, anxiety, verbalization of fears, inability to cope.

Altered Family Processes

(CH. 1)

☐ Related to:

Anxiety and fears about radiation therapy and its impact on the family.

☐ Defining Characteristics:

Family system unable to meet physical or emotional needs of patient due to radiation therapy treatments.

Essential Nursing Diagnoses Related to Treatment

Knowledge Deficit

☐ Related to:

Radiation therapy as a treatment for cancer.

☐ Defining Characteristics:

Patient expresses lack of knowledge and/or asks questions regarding radiation therapy treatments.

☐ Outcome Criteria

Patient will be able to discuss potential side effects from radiation therapy and possible strategies for their management.

☐ NIC: Radiation Therapy Management for Treatment Delivered from an Internal Source

Definition: Assisting the patient to understand and minimize the side effects of radiation treatments from an internal source.

Radiation Therapy Management—Internal Source

Activities	*Rationales*
Initiate and maintain radiation protection as per agency protocol for patient receiving internal radiation (e.g., cervical implant radiopharmaceutical agents).	Promotes safety for patient, family and staff.
Explain radiation protection protocols to patient, family, and visitors.	Promotes increased understanding of guidelines and promotes compliance.
Offer diversional activities while patient is in radiation protection.	Prevents boredom.
Limit visitor time in the room as appropriate.	Prevents over-exposure to radiation therapy source.
Limit staff time in room if patient is isolated for radiation precautions.	Promotes safety of staff using the principles of time, distance, and shielding.

Radiation Therapy Management—Internal Source

Activities	*Rationales*
Distance oneself from the radiation source while giving care (e.g. stand at the head of the bed of patients with cervical or uterine implants; stand at the foot of bed for patients with interstitial breast implants).	Prevents exposure.
Shield oneself using a lead apron/shield while assisting with procedures involving radiation.	Prevents exposure to reproductive organs.

- NIC: Radiation Therapy Management for Treatment Delivered from an External Source

  Definition: Assisting the patient to understand and minimize the side effects of radiation treatments from an external source.

Radiation Therapy Management—External Source

Activities	*Rationales*
Provide special skin care to tissue folds which are prone to moistness (e.g., buttocks, perineum, groin).	Prevents maceration and infection.
Monitor for alterations in skin integrity and treat appropriately.	Promotes early intervention.

Radiation Therapy Management—External Source

Activities	*Rationales*
Avoid use of adhesive tapes and other skin irritating substances.	Prevents further injury to fragile areas.
Avoid application of deodorants and after-shave lotion to treated area.	Prevents further irritation.
Explain the importance of protecting skin "port" markings.	Promotes accurate delivery of radiation therapy.
Discuss the avoidance of soap and other ointments.	Prevents potential skin reactions.
Discuss the need for protection during sunbathing or heat application.	Prevents increasing th radiation effect on the skin.
Explain to patient that hair may not grow back after radiation therapy is terminated.	Provides reinforcemer
Assist patient in planning for hair loss by teaching about available alternatives (e.g.,wigs scarfs hats turbans,etc).	Promotes independence.
Monitor for indications of infection of oral mucous membranes.	Promotes early intervention.
Encourage good oral hygiene with use of soft toothbrush mouthwash without alcohol, Water Pik, and floss, if appropriate.	Prevents infection.

Radiation Therapy Management—External Source	
Activities	*Rationales*
Monitor patient for anorexia, nausea, vomiting, changes in taste, stomatitis, esophagitis and diarrhea.	Provides data for recognition of potential problems.
Encourage adequate fluid and caloric intake.	Promotes nutritional balance and hydration.
Administer anti-emetics as needed to control nausea and vomiting.	Prevents recurrence of nausea and vomiting if given on a regular schedule rather than PRN (e.g.,give anti-emetic one hour prior to scheduled radiation therapy).
Assist patient in managing fatigue by planning frequent rest periods, spacing activities, and limiting daily demands.	Promotes adequate rest.
Assist patient in receiving pain management techniques that are effective and acceptable to patient.	Promotes comfort.
Monitor for signs and symptoms of systemic infection, anemia, and bleeding.	Provides for early recognition and prompt intervention.
Facilitate patient's discussing feelings about radiation therapy equipment as appropriate.	Provides an awareness of feelings.
Facilitate expression of fears concerning prognosis or success of radiation therapy treatments.	Provides opportunity to vent fears.

Instructions, Information, Demonstration	
Activities	*Rationales*
Inform patient and family of reasons for radiation protection protocols.	Promotes understanding and cooperation.
Inform patient of potential for complications of implanted radiotherapy sources.	Promotes compliance and participation in care.

☐ Discharge or Maintenance Evaluation

- Patient/family report side effects promptly to radiation care team.
- Patient/family are able to manage side effects with assistance of health care providers.

Risk for Impaired Skin Integrity

☐ Related to:

Response of normal skin to radiation therapy.

☐ Defining Characteristics:

Acute side effects include erythema, pruritus, and dry or wet desquamation; late effects include shiny, smooth, taut skin, and telangiectasia.

☐ Outcome Criteria:

Patient identifies skin reactions as expected local radiation reactions and demonstrates appropriate skin care.

Skin will remain intact or moist desquamation will be identified early.

☐ NIC: Radiation Therapy Management

Definition: Assisting the patient to understand and minimize the side effects of radiation treatments.

Radiation Therapy Management—Skin Care

Activities	*Rationales*
Assess skin for color integrity and drainage.	Provides information for planning care.
Monitor for alterations in skin integrity.	Promotes early identification of altered skin integrity.
Cleansing treatment area during radiotherapy should include 1. Washing skin in treatment area with tepid water, Not using soap unless approved by radiation oncology team; 2. Showers but with avoidance of hot water directly on treated skin; 3. Not soaking treatment area in tub for more than 15-20 minutes per day; 4. Patting treatment area dry.	Prevents enhancement of skin reaction, decreases potential from thermal injury and/or friction.

Radiation Therapy Management—Skin Care

Activities	*Rationales*
Discuss need for skin care maintenance including 1. Not washing off any lines or markings; 2. Avoiding powders, lotions, creams, alcohol, deodorants, perfumes, or after shave lotion; 3. Protecting skin from exposure to direct sunlight, chlorinated swimming pools, and temperature extremes (hot water bottle, heating pad) and/or avoiding shaving.	Protects irradiated skin from injury or enhancement of skin reaction.
Avoid use of adhesive tapes and other skin-irritating substances.	Prevents trauma to irradiated skin.
Avoid tight fitting clothing over treatment area.	Reduces friction over treatment area.
Avoid scratching skin in treatment area.	Prevents mechanical injury.
Patients receiving pelvic irradiation should wear cotton underwear, women should not wear pantyhose.	Enhances air exchange and absorbs moisture.
Provide special skin care to tissue folds (e.g. buttocks, perineum, groin,) including keeping dry, dusting lightly with baby powder.	Prevents infection and enhanced skin reaction in areas with poor tolerance to radiation.

Radiation Therapy Management—Skin Care

Activities	*Rationales*
Water-soluble aloe vera based gels may be used for dryness if recommended by the radiation oncology team.	Provides moisture and prevents pruritus.
Avoid use of any ointments or solutions not ordered by the radiation therapy health care team.	Many skin care products draw more radiation to the skin surface, worsening the skin effect.

Instructions, Information, Demonstration

Activities	*Rationales*
Instruct patient/family in skin care (see above).	Promotes skin care to prevent injury to irradiated skin.
Instruct to expect redness.	Normal response to radiation.
Instruct to wear loose fitting clothing.	Prevents trauma to irradiated skin.
Instruct to cover treatment area to protect from direct sunlight especially during treatments.	Prevents thermal injury.
Instruct to always protect irradiated skin from sunlight by using sunscreens (SPF 15 or greater) even after treatment is completed.	Prevents trauma to irradiated skin.

Instructions, Information, Demonstration

Activities	*Rationales*
Inform of possible permanent skin changes from radiation therapy including permanent tanning, smooth, shiny, taut skin, telangiectasia, slow healing.	Promotes understanding of possible permanent skin changes.
Inform of possible radiation recall that can occur to previously radiated skin when certain chemotherapy agents are given including DTIC, and adriamycin.	Promotes knowledge of late, possible side effects from radiation therapy.
Instruct on possible enhanced skin reactions that can occur to irradiated skin when chemotherapy agents are given including Bleomycin, Hydroxyurea, 5-Fluorouracil, Methotrexate, and Actinomycin-D.	Promotes knowledge of possible enhanced skin reactions from radiotherapy.

☐ Discharge or Maintenance Evaluation

- Skin will remain intact and skin reactions will be identified early and treated.
- Patient/family will demonstrate preventative skin care precautions.
- Patient describes methods to protect skin from injury.
- Describes possible acute side effects and long term skin changes from radiation therapy.

Impaired Skin Integrity

- ☐ Related to:

  Moist desquamation due to radiation therapy.

- ☐ Defining Characteristics:

  Red, raw skin with areas of moist desquamation causing disruption of skin surface.

- ☐ Outcome Criteria:

  Skin will heal without development of infection.

  Skin demonstrates signs of healing.

- ☐ NIC: Skin Care-- Topical Treatments

  Definition: Application of topical substances or manipulation of devices to promote skin integrity and minimize skin breakdown.

Skin Care—Topical Treatments

Activities	*Rationales*
Use Domboro solution for soaks as appropriate.	Minimizes loss of fluid, keeps area clean, improves comfort.
Avoid use of ointments or solutions not ordered by the radiation therapy health care team.	Many skin care products may aggravate irradiated skin reactions.
Initiate consultation services of a radiation oncology nurse as appropriate.	Promotes optimal skin care though use of experts.
Administer analgesics as appropriate.	Promotes comfort.
Administer antibiotics as appropriate.	Promotes wound healing and treats confirmed infection.

Skin Care—Topical Treatments

Activities	*Rationales*
Inspect irradiated skin port and exit sites daily for color, scaling, bleeding, drainage (color, amount, consistency), increased temperature.	Promotes early identification of skin breakdown.
Evaluate patient's routine skin care practices.	Provides information for care planning.
Cleanse open areas with saline and water, pat or air dry.	Prevents further trauma to irradiated skin.
Apply occlusive dressing or nonadherent dressing over open moist areas as appropriate.	Promotes healing, and comfort.

Instructions, Information, Demonstration

Activities	*Rationales*
Demonstrate skin care areas of moist desquamation.	Promotes compliance with skin care prescribed.
Instruct patient/family to use only skin care products unless prescribed by radiation health care team.	Prevents further trauma to skin from contraindicated products.
Teach signs and symptoms that should be reported to health care team immediately, such as pain, bleeding, green or foul smelling drainage, temperature elevation.	Promotes early identification of complications.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient to avoid shaving irritated skin, wearing tight clothing, use of deodorants, perfumes, exposure to sunlight, shaving lotions, strenuous activities.	Prevents further irritation of damaged skin.

☐ Discharge or Maintenance Evaluation

- Skin will heal without complications.
- Patient/family will demonstrate skin care for moist. desquamation.
- Patient/family will describe measures to avoid to prevent further trauma to damaged skin.
- Patient/family will state signs and symptoms that must be reported to the health care team immediately.

Potential for Infection

(CH. 4)

☐ Related to:

Radiation therapy to bone marrow resulting in immunosuppression.

☐ Defining characteristics:

Granulocytopenia, an absolute granulocyte count (AGC) below 1,000 cells/mm^3, neutropenia, an absolute neutrophil count (ANC) below 1,000/mm^3.

Activity Intolerance

(CH. 4)

☐ Related to:

Fatigue associated with five-day-a-week treatments for 4-6 weeks, and anemia associated with radiation therapy.

☐ Defining Characteristics:

Verbal report of fatigue or malaise, exertional dyspnea, appears tired.

Risk for Altered Mucous Membranes

(CH. 4)

☐ Related to:

Damage to the rapidly dividing cells of the mucosa from radiation therapy.

☐ Defining Characteristics:

Pain/discomfort, coated tongue, xerostomia, reddened gums, stomatitis, lesions, ulcers, vaginitis, vaginal discharge.

Body Image Disturbance

(CH. 4)

☐ Related to:

Alopecia, weight loss and/or skin changes associated with radiation therapy.

☐ Defining Characteristics:

Patient verbalizes fear of rejection or reaction of others to altered appearance, negative feelings about body, concern over hair loss and skin changes.

Altered Nutrition: Less than Body Requirements

(CH. 2)

☐ Related to:

Inability to ingest adequate food intake because of mucous membrane changes associated with radiation therapy; taste changes; xerostomia; nausea and vomiting.

☐ Defining Characteristics:

Reported decrease in food intake, early satiety, presence of mouth soreness and/or ulcerations, anorexia, weight loss.

Altered Sexuality Patterns

(CH. 10)

☐ Related to:

Radiation Therapy

☐ Defining Characteristics:

Voices difficulties, limitations, or changes in sexual behaviors related to changes due to radiation therapy such as dry mucous membranes, vaginal stenosis, diarrhea, fatigue, or changes in sexual-self image related to hair loss.

Diarrhea

☐ Related to:

Change in mucous membranes of colon and large intestine.

☐ Defining Characteristics:

Loose watery stools, frequency, urgency.

☐ Outcome Criteria:

Patient verbalizes an understanding of strategies for coping with this side effect.

☐ NIC: Diarrhea Management

Definition: Prevention and alleviation of diarrhea

Diarrhea Management

Activities	*Rationales*
Obtain stool for culture and sensitivity.	Provides information regarding infection.
Evaluate medication profile for gastrointestinal side effects.	Prevents use of medications that can cause diarrhea.
Monitor skin in perianal area for irritation and ulceration.	Promotes skin care and may prevent infection.
Weigh regularly.	Provides information regarding adequacy of diet.

Instructions, Information, Demonstration

Activities	*Rationales*
Teach patient appropriate use of anti-diarrheal medications.	Promotes slowing of bowel movements.
Teach patient to eliminate gas forming and spicy foods from diet.	Prevents further bowel irritations.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct in low-fiber, high-protein, high-calorie diet.	Promotes caloric intake.
Instruct to eliminate use of laxatives.	Prevents misunderstandings of use of medication.

☐ Discharge or Maintenance Evaluation

- Patient verbalizes an understanding of cause of diarrhea.
- Maintains stable weight during therapy.

Impaired Gas Exchange

(CH. 2)

☐ Related to:

Radiation pneumonitis.

☐ Defining Characteristics:

Shortness of breath, dyspnea.

Chapter Four

Chemotherapy

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Chemotherapy

The drugs used to treat cancer are called chemotherapy or antineoplastic agents. These medications are used primarily to kill cancer cells or inhibit their reproduction. Of the estimated one million people diagnosed with cancer this year, over half of them will have metastatic disease or be at risk for metastatic disease at the time of diagnosis. These people require a systemic approach to the treatment of their disease, for which chemotherapy is the primary option available today.

The goal of chemotherapy treatment depends on the type of cancer and its stage at the time of diagnosis. Some cancers have an anticipated cure and are curable with chemotherapy treatments. In other cases treatment may be given to prevent the cancer from recurring; this is called adjuvant treatment. In some cases, chemotherapy is given to control the disease for a prolonged period of time although a cure is not possible. If the cancer is widespread and in late stages, chemotherapy may be used as a palliation to provide a better quality of life.

Chemotherapy is a relatively new treatment for cancer. It was only in the late 1940s that drugs were found to affect tumor growth. Through clinical trials we have learned, and are still learning, how to effectively use the drugs to treat cancer.

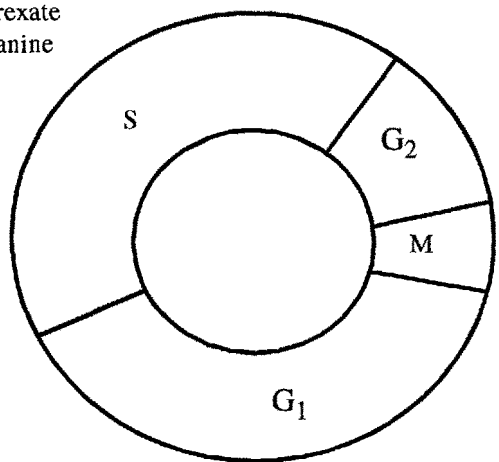
All cells, both normal and cancerous, go through a cell cycle. Chemotherapy agents work at different phases of the cell cycle (See Table 2.1). Agents that work during specific phases of the cell cycle are called cell cycle-specific. Agents that work in all phases of the cell cycle are called cell cycle-nonspecific. Most chemotherapeutic agents are most effective when cells are actively dividing. Unfortunately, because these agents cannot discriminate, they affect healthy cells that are actively dividing as well, such as hair follicles, cells lining the gastrointestinal tract, and bone marrow stem cells. This effect on actively dividing, healthy cells results in the most common side effects seen with chemotherapy— hair loss, gastrointestinal mucosal damage, and myelosuppression. Normal cells can recover from the injuries caused by chemotherapy, so these side effects are usually short in duration. However, cancer cells, once damaged, usually cannot recover.

Types of Chemotherapeutic Agents

Chemotherapy is a term used to describe the use of over thirty different drugs. However, each antineoplastic agent, or chemotherapeutic drug, has specific actions

Cell Cycle Specific Chemotherapy Drugs

S Phase
Cytarabine
5-Fluoroucil
Hydroxyurea
Methotrexate
Thioguanine



G_2 Phase
Bleomycin
Etoposide

M Phase
Paclitaxel
Vinblastine
Vincristine
Vindesine

G_1 Phase
L-Asparaginase
Prednisone

Cell Cycle Non-Specific Chemotherapy Drugs

Alkylating Agents
Busulfan
Carboplatin
Chlorambucil
Cisplatin
Cyclophosphamide
Dacarbazine
Ifosfamide
Meclorethamine
Melphalan
Thiotepa

Nitrosamines
Carmustine
Lomustine
Semustine
Streptozocin

Antibiotics
Bleomycin
Dactinomycin
Daunomycin
Doxorubicin
Idarubucin

Miscellaneous
L-asparginase
Mitoxantrone
Procarbazine
Navelbine

Hormonal Agents
Aminoglutethimide
Goserelin Acetate
Leuprolide
Novaldex
Megace
Halotestin

Table 2.1 — Cell Cycle Specific Chemotherapy Drugs.

and side effects. These drugs are classified in several ways which can assist us in learning their actions and major side effects. The six major classifications of chemotherapy drugs are:

- Alkylating agents
- Antimetabolites
- Antitumor antibiotics
- Plant alkaloids
- Miscellaneous agents
- Hormonal agents

For each classification, the primary method of action and specific tumors on which the agents are active will be discussed below. Common agents and major side effects will also be explored.

Alkylating Agents are cell cycle-nonspecific agents that work by interacting chemically with the cellular DNA to prevent cell replication. Common agents include:

- Busulfan (Myeleran)
- Chlorambucil (Leukeran)
- Cisplatin (CDDP)
- Cyclophosphamide (Cytoxan)
- Dacarbazine (DTIC)
- Ifosfamide (IFEX)
- Mechlorethamine (Nitrogen Mustard)
- Melphalan (Alkeran)
- Thiotepa (TSPA)

The alkylating agents have proved effective in the treatment of lymphomas, Hodgkin's disease, breast cancer, and multiple myeloma. The main side effects of akylating agents include bone marrow suppression, nausea, vomiting and gonadal dysfunctions. Bone marrow suppression including thrombocytopenia, neutropenia, and anemia may become more severe and last longer with repeated treatments. The changes in gonadal function that may occur include oligospermia, azoospermia, and amenorrhea. A late side effect of alkylating agents is the development of secondary malignancies such as bladder cancers or leukemia. Nitrosoureas are agents from the family of akylating agents that are thought to cross the blood-brain barrier. Their mechanisms of action are similar to those of other akylating agents as are their side effects. Common alkylating agents are carmustine (BCNU), lomustine (CCNU), streptozocin, and semustine (methyl-CCNU).

Antimetabolites kill cancer cells by blocking the synthesis of DNA and RNA. They do this by mimicking the chemical structure of essential metabolites, the nutrients essential for normal cell metabolism. These agents are most effective in the S-phase of the cell cycle, making them cell cycle specific drugs. Common agents include cytarabine (ARA-C), floxuridine (FUDR), 5-fluorouracil (5-FU), hydroxyurea (Hydrea), 6-mercaptopurine (6-MP), methotrexate (Mexate), and 6-thioguanine. Fast-growing tumors such as lymphomas, and leukemia are most affected by antimetabolites. Other tumors treated with antimetabolites include head and neck tumors, breast cancer, and colon cancers. The most common side effects include stomatitis, bone marrow suppression, and diarrhea.

Antitumor antibiotics are cell cycle non-specific drugs that work by several different mechanisms to produce their cytotoxic effects. Bleomycin's (Blenoxane) primary action is to produce single- and double-strand breaks in DNA. The anthracyclines like

daunorubicin (Daunomycin) and doxorubicin (adriamycin) intercalate DNA, cause oxidation reactions, and react directly with cell membranes at low concentrations to change membrane functions. Mitomycinc (Mutamycin) causes cross-linked alkylation in DNA. Actinomycin-D (dactinomycin) binds directly to the DNA, leading to the inhibition of DNA-dependent RNA synthesis. Cancers treated with antitumor antibiotics include breast cancer, bladder cancer, gastric cancer, lung cancer, lymphomas, and testicular cancer. Side effects include bone marrow suppression, nausea, and vomiting. In addition, bleomycin can cause pulmonary fibrosis. Cardiac toxicity and skin ulceration from extravasation are seen with doxorubicin.

Plant Alkaloids are cell cycle-specific agents that work by crystallizing the microtubular mitotic spindle proteins during metaphase, which arrests mitosis, causing cell death. Common agents include etoposide (VP-16), vinblastine (Velban), vincristine (Oncovin), taxol (Paclitaxel), and teniposide (VM-26). These agents are used in combination with other agents to treat lymphomas, lung cancer, testicular cancer, bladder cancer, and multiple myelomas. Myelosuppresion and neurotoxicity, including peripheral neuropathies and paralytic ileus, are the most common side effects from plant alkaloids. In addition, both vincristine and vinblastine can cause severe skin ulceration if extravasation occurs.

Miscellaneous agents are those whose mechanism of action differ from those in the major classes mentioned and whose actions and side effects vary. Miscellaneous agents include L-asparaginase (Elspar), mitoxantrone (Novantrone), procarbazine (Matulane), Navelvine, and mitotane (Lysodren).

Hormonal agents work on tumors that depend on a specific hormonal environment to grow. By changing that environment either by depriving the environment of the hormone or by adding a hormone that counteracts the effect of the hormone, tumor growth is impaired or stopped. Examples include Tamoxifen (nolvadex) for breast cancer, Lupron (leuprolide) and goserelin acetate (Zoladex) for prostate cancer, and aminoglutethimide (Cytadren) for uterine cancers. Effects on the sex hormones include secondary sexual characteristics, changes in libido, and fluid retention. Cortocosteroids work differently from other hormones by recruiting cells out of the Go phase of the cell cycle, making them vulnerable to chemotherapeutic agents. Corticosteroids include prednisone and prednisolone for the treatment of leukemia, lymphomas, and myelomas. Their side effects include hypertension, fluid retention, hyperglycemia, ulcers, osteoporosis, emotional instability, increased susceptibility to infections, masking of fevers, increased appetite, and Cushingoid features.

Principles of Chemotherapy

Several general principles are used in prescribing chemotherapy. First, since chemotherapy works best against cells in the process of dividing, tumors with a high growth fraction (i.e., a large percentage of dividing cells) are treated more effectively with chemotherapy than those with a low growth fraction. As tumors grow larger, usually fewer cells are undergoing active division; therefore, larger tumors have low growth fractions and so are less responsive to chemotherapy. Conversely, smaller tumors usually have higher growth fractions and are more sensitive to chemotherapy. In other words, chemotherapy is usually more effective when there is a small tumor burden and less effective in later disease when there is a high tumor burden.

Another principle is that most chemotherapeutic agents follow first-order kinetics, which means a fixed percentage of cells are killed with each chemotherapy treatment— not a fixed number of cells. Therefore, even tumors with small tumor burdens may require many sequential administrations of chemotherapy before the full benefit of treatment can be realized.

For most drugs the higher the dose, the greater the cell kill. However, as the dose is increased, toxicities begin limiting the usefulness of single agent therapy. Due in part to the limits of single agent therapy, the combination of various agents that affect different stages of the cell cycle, and have different side effects, have been tried. In most tumors, it has been well established that combining chemotherapeutic agents is more effective than single agent therapy. Combination therapy increases responsiveness of tumors to treatment while minimizing toxicities. In addition, combination chemotherapy seems to decrease the development of drug resistant clones. The larger the tumor, the greater the number of tumor-doubling prior to the initiation of chemotherapy treatments, and therefore the more likely for drug-resistant cells or clones to be present in the tumor. Single agent therapy seems to increase the number of drug resistant cells by exposing tumor cells to a drug without effective; however combination therapy seems to prevent the development of drug resistant cells.

As previously discussed, chemotherapy affects healthy cells as well as cancer cells, resulting in the side effects commonly seen with the treatment. These include hair loss, bone marrow suppression, and gastrointestinal disturbances. Nursing assessment and management of these side effects is critical to ensure safe administration of these agents. In addition, the side effects are not seen for many days after therapy, and often occur after discharge from the hospital or outpatient setting. As a result, patient education in managing side effects at home is necessary. The most common side effects and their associated nursing diagnoses and management are discussed in this chapter. The less common side effects are discussed throughout the book. Table 2.2 summarizes

these side effects and refers the reader to the appropriate nursing diagnoses in later chapters.

Table 2.2 Less Common Side Effects of Chemotherapy Drugs

Cardiac Toxicity	Doxorubcin Daunarubcin	Altered Cardiopulmonary Tissue Perfusion (CH. 13)
CNS Toxicity	Ifosfamide Cytosine Arabinoside Procarbazine Fludarabine	Sensory/ Perceptual Alteration: Kinesthetic (CH. 18)
Constipation	Vincristine Vinblastine	Potential for Constipation (CH. 8)
Diarrhea	5-Fluorouracil	Diarrhea (CH. 16)
Flare Reaction	Novaldex Leuprolide Goserelin acetate Aminogluthethimide	Potential for Pain (CH. 9)
Hearing Loss	Cisplatin	Potential for Sensory/ Perceptual Alteration (Auditory) (CH. 11)
Hemmorrhagic Cystitis	Ifosfamide Cyclophosphamide (high dose)	Potential Altered Urinary Elimination (CH. 18)
Hypotension	Etoposide Paclitaxel	Potential For Injury (CH. 8)

Table 2.2 Less Common Side Effects of Chemotherapy Drugs

Impotence, decreased libido	Leuprolide Goserelin acetate Aminogluthethimide	Sexual Dysfunction (CH. 10)
Liver Toxicity	Methotrexate Nitrosoureas Mithramycin Streptozocin	Risk For Injury (CH. 9)
Menstrual Irregularities & Hot Flashes	Nolvadex Megace Halotestin	Potential For Sexual Dysfunction (CH. 9)
Peripheral Neuropathy	Vincristine Vinblastine Cisplatin Procarbazine	Risk For Neurovascular Dysfunction (CH. 8) Potential for Pain (CH. 8)
Pulmonary Toxicity	Bleomycin Carmustine	Impaired Gas Exchange (CH. 10)
Renal Toxicity	Cisplatin Methotrexate Nitrosoureas Streptozocin	Potential Alteration in Urinary Elimination (CH. 11)
Weight Gain	Nolvadex Steroids Megace	Potential Alteration in Nutrition: More Than Body Requirements (CH. 9)

Essential Nursing Diagnoses Related to Coping with the Side Effects of Chemotherapy

Risk for Sexual Dysfunction

(CH. 1)

☐ Related to:

Chemotherapy treatments, and cancer disease process.

☐ Defining Characteristics:

Patient voices difficulties, limitations, or changes in sexual behaviors secondary to changes due to chemotherapy, such as vaginal dryness, or fatigue, or changes in sexual self image due to weight loss, hair loss, or impaired reproduction functioning.

Ineffective Individual Coping

(CH. 1)

☐ Related to:

fear of chemotherapy and it's possible side effects.

☐ Defining Characteristics:

Inability to meet basic needs, worry, anxiety, verbalization of fears, inability to cope.

Altered Family Processes

(CH. 1)

☐ Related to:

Anxiety and fears about chemotherapy and its impact on the family.

☐ Defining Characteristics:

Family system unable to meet physical or emotional needs. of patient due to chemotherapy treatments.

Anxiety

☐ Related to:

Fear of chemotherapy and possible side effects.

☐ Defining Characteristics:

Patient voices fears of chemotherapy and its side effects; appears apprehensive, nervous; increased pulse rate, rapid breathing.

☐ Outcome Criteria:

Patient will verbalize that anxiety is reduced to a manageable level.

☐ NIC: Anxiety Reduction

Definition: Minimizing apprehension, dread, foreboding, or uneasiness related to an unidentified source of anticipated danger.

Anxiety Reduction	
Activities	*Rationales*
Use a calm, reassuring approach.	Prevents anxiety.
Utilize comfort measures such as back rub, positioning.	Promotes relaxation.
Listen attentively to expressions of feelings and concerns.	Creates atmosphere of trust.
Provide diversional activities.	Diversions can reduce tension.
Administer medications to reduce anxiety as appropriate.	Medications reduce anxiety.

Instructions, Information,, Demonstration	
Activities	*Rationales*
Provide factual information about disease, treatment, and prognosis.	Knowledge of what to expect can decrease anxiety.
Instruct patient on measures they can use to lessen the severity of side effects from chemotherapy, such as relaxation, imagery, music therapy.	Self care measures promote control and lessen anxiety.
Instruct patient on anti-anxiety medications including when to take, possible side effects, and what to do about the side effects.	Promotes compliance with health care regime.

☐ Discharge or Maintenance Evaluation

- Anxiety is decreased to a manageable level.

Knowledge Deficit

☐ Related to:

Chemotherapy and it's side effects.

☐ Defining Characteristics:

Patient verbalizes lack of information about chemotherapy and its side effects and how to manage those side effects.

☐ Outcome Criteria::

Patient describes treatment plan, possible side effects, and what to do about them.

☐ NIC: Chemotherapy Management

Definition: Assisting the patient and family to understand the action and minimize side effects of antineoplastic agents.

Chemotherapy Management	
Activities	*Rationales*
Assess knowledge of chemotherapy treatment plan, possible side effects, and self-care measures.	Provides needed information to formulate teaching plan.

Chemotherapy Management	
Activities	*Rationales*
Provide patient with written materials such as "Chemotherapy and You" from the National Cancer Institute, and institutional fact sheets on drugs.	Written materials reinforce verbal instructions and provide a resource for patients when health care worker is not present.
Inform patient of the names of chemotherapy medications, purpose, route, method, schedule of administration.	Promotes patient knowledge.
Instruct on possible side effects and self-care measures for each medication.	Promotes self-care management and decreases incidence and severity of complications.
Provide written information about each drug including action, purpose, side effects.	Written materials reinforce verbal instructions.
Instruct patient not to take any other medications unless prescribed by the physician, including over the counter drugs.	Prevents harmful drug interactions.
Advise patient not to take aspirin or nonsteroidal anti-inflammatory drugs (NSAIDs), check labels of OTC drugs carefully for these drugs.	Aspirin and nonsteroidal anti-inflammatory drugs can inhibit platelet activity; Aspirin and NSAIDs are present in many OTC drugs.
Instruct patient on medications prescribed to assist patient with side effects of the antiemetics.	Prevents or lessens severity of side effects.

Chemotherapy Management	
Activities	*Rationales*
Inform patient of changes that must be reported to the health care team immediately: Signs of infections, persistent nausea and vomiting, unusual bleeding or bruising, diarrhea, or acute changes in mental or emotional status.	Prevention of serious complications by promoting early reporting to the health care team.

☐ Discharge or Maintenance Evaluation

- Patient states names, route, method, and schedule of administration of chemotherapy medications and any medications prescribed to treat the side effects of chemotherapy.
- Lists possible side effects of chemotherapy drugs and self-care measures to manage the side effects if they occur.
- Identifies changes that require immediate notification of the health care team.

Essential Nursing Diagnoses Related to Bone Marrow Suppression from Chemotherapy

Altered tissue Perfusion, Cardiopulmonary

(CH. 13)

☐ Related to:

Anemia from myelosuppresion caused by chemotherapy.

☐ Defining Characteristics:

Cold extremities, pale skin, pale mucous membranes, shortness of breath, tachycardia, tachypnea, anxiety, angina.

Risk for Infection

☐ Related to:

Chemotherapy treatments due to the destruction of rapidly dividing normal hematopoietic cells, resulting in immunosuppression.

☐ Defining Characteristics:

Granulocytopenia, an absolute granulocyte count (AGC) below 1000 cells/mm 3. Neutropenia, an absolute neutrophil count (ANC) below 1000 cells/mm 3.

☐ Outcome Criteria::

Reduced potential for infection.

☐ NIC: Infection Protection

Definition: Prevention and early detection of infection in a patient at risk.

Infection Protection	
Activities	*Rationales*
Monitor WBC, differential, calculating the AGC (AGC= Total WBC x [%segs+] %bands).	An AGC below 500 cells/mm 3 places the patient at severe risk of developing an infection.
Monitor for systemic or localized infection, keeping in mind that the normal signs of infection (redness, pus, inflammation, warmth) are due to the actions of WBCs, so "normal" signs of infection may be absent.	Lack of neutrophils during granulocytopenia inhibit ability to fight infection and can mask the signs of infection.
Monitor vital signs, including temperature, every 4 hours and more often if appropriate.	Fever or hypothermia may indicate presence of infection in the granulocytopenic patient.
Assess all sites of invasive procedures for evidence of infection.	Helps identify complications.
Assess skin and mucosal surfaces for breaks.	Skin and mucosa provide the first line of defense against microorganisms.
Report fevers of 100.5°F to physician immediately.	Temperature elevation due to low numbers of WBCs may be the only sign of infection in the granulocytopenic patient.

Infection Protection

Activities	*Rationales*
At first fever spike, quickly obtain cultures as appropriate, (urine, blood, open wounds, and/or sputum).	Cultures help identify the source of infection, although many times a source cannot be identified.
Start antibiotics immediately after obtaining necessary cultures. Do not wait for culture results before initiating antibiotic therapy.	Granulocytopenic patients can develop overwhelming sepsis within 12 hours of fever spikes if untreated with antibiotics.
Institute Granulocytopenic precautions per institutional policy including 1) A private room with door closed; 2) Rigorous handwashing by patient, family/friends and hospital staff; 3) Barring ill persons from entering unless absolutely necessary and donning a mask; 4) Patient should wear a mask when leaving the room; 5) Institute a low bacterial diet, no fresh fruits, vegetables, pepper, or spices; 6) No fresh cut flowers or plants; 7) Patient should avoid large crowds; 8) Patient should wear gardening gloves and use electric shaver.	Granulocytopenic precautions are initiated in some institutions when ANC and in others when ANC Measures decrease risk of exposure to endogenous and exogenous organism.
Assist patient with personal hygiene in bathing, oral, and perineal care.	Reduces presence of endogenous organisms.
Encourage rest as appropriate.	Fatigue can depress immune function.

Infection Protection

Activities	*Rationales*
Administer antibiotics, antifungal, and antimicrobial agents as appropriate.	Prevent and/or treat for infectious agents in the immune compromised patient.
Administer colony stimulating factors such as G-CSF or GM-CSF as appropriate.	Colony stimulating factors reduce duration of neutropenia.
Change all dressings daily, including those over central lines.	Prevents line sepsis and infections in other areas.

Instructions, Information,, Demonstration

Activities	*Rationales*
Teach patient, family/friends measures to decrease risk of infections (see above).	Reduces infection potential.
Teach patient, family/friends signs and symptoms of infection, stressing what to report to health care team.	Enhances compliance with nursing regime.
Instruct patient to take any medications prescribed, such as antibiotics or colony stimulating factors (CSFs) such as G-CSF.	Antibiotics treat infectious organisms. CSFs reduce duration of neutropenia; if not taken as directed, serious sepsis may occur.

Instructions, Information,, Demonstration	
Activities	*Rationales*
Explain to patient expected cost of drugs such as CSFs and assess insurance coverage. If not covered by insurance, assess ability to pay and discuss indigent policies of manufacturers, as appropriate.	Many of the newer agents are very expensive. If insurance does not cover cost, patient may be unable to follow prescribed regime without assistance.
Instruct patient to avoid people with respiratory infections (flu, cold), children exposed to infectious diseases (chicken pox), and avoid direct contact with cold sores and other herpetic lesions.	Contact with infectious persons could lead to serious infections.

☐ Discharge or Maintenance Evaluation

- Patient can verbalize measures to prevent infection.
- Absence of signs and symptoms of infection.
- Ability to pay for prescriptions for CSFs either through insurance or other methods.
- Follow-up visits to physician and laboratory scheduled and completed as directed.

Hyperthermia

☐ Related to:

Infection secondary to granulocytopenia from chemotherapy

☐ Defining characteristics:

Fevers greater than 100.5 ° F, tachycardia, and/or tachypnea; complaints of chills, rigors, flushed skin.

☐ Outcome criteria

Patient's temperature elevation will be identified immediately and correct treatment initiated promptly.

☐ NIC: Fever Treatment

Definition: Management of a patient with hyperemia caused by nonenvironmental factors.

Fever Treatment	
Activities	*Rationales*
Monitor temperature every 4 hours.	Temperature elevation may be the only sign of infection in the granulocytopenia patient due to the low numbers of WBCs.
Monitor pulse, blood pressure, and respiration every 4 hours.	Fevers can cause tachycardia, hypotension, or tachypnea.
Monitor intake and output.	Fevers cause increased insensible losses which lead to dehydration.
Notify physician of first fever spike in the neutropenic patient.	Fever may be only sign of infection in the neutropenic patient and requires immediate intervention.
Administer antipyretic, acetaminophen every 4 hrs PRN fever 100.5 (avoid aspirin), if appropriate.	Acetaminophen reduces fevers without the increasing the risk of bleeding.

Fever Treatment	
Activities	*Rationales*
Use thermic mattress as needed.	Provides warmth during chills and cooling during high fevers.
Administer IV fluids as ordered.	

Insrutctions, Information, Demonstration	
Activities	*Rationales*
If granulocytopenic patient is at home, instruct patient to check temperature in AM, PM, and if chilled or warm. If fever is above 100.5°F, notify MD immediately.	Temperature elevation may be the only sign of infection in the granulocytopenia patient due to the low numbers of WBCs.
Instruct patient to drink at least 2-3 liters fluids (8 to 12 glasses).	Extra fluids are needed during high fevers to replace insensible losses.
Instruct patient to take antibiotics as ordered (entire 7-10 days).	Granulocytopenic patients may need antibiotics to prevent infections. Inadequate coverage by antibiotics may occur if patient fails to complete entire prescription and could result in serious "super" infection.

High Risk for Injury

- ☐ Related to:

  Thrombocytopenia chemotherapy.

- ☐ Defining Characteristics:

  Platelet count below 50,000 cells/mm3, fatigue, bruising and/or bleeding.

- ☐ Outcome Criteria::

  Patient will remain free of bleeding and tissue hypoxia.

- ☐ NIC: Bleeding Precautions

  Definition: Reduction of the risk of blood loss for a patient with a reduced coagulability.

Bleeding Precautions	
Activities	*Rationales*
Monitor platelet count closely; if <50,000 institute bleeding precautions including; 1) Avoiding injury, injections, invasive procedures, flossing of teeth and use of a hard toothbrush; 2) Avoid rectal temperatures, enemas, suppositories, and constipation; 3) Avoid use of aspirin, or anticoagulants. 4) Apply 5-10 minutes of pressure to necessary injection sites; 5) Using an electric razor 6) NOT walking in bare feet.	Decreases risk of complications from thrombocytopenia.

Bleeding Precautions	
Activities	*Rationales*
Monitor hemoglobin and hematocrit closely.	Reductions in the hemoglobin and hematocrit counts could indicate bleeding.
Monitor for signs and symptoms of bleeding such as dizziness, petechiae, and presence of blood in excreta; monitor signs and symptoms of anemia such as pale mucous membranes, fatigue, dyspnea on exertion, and angina.	Clinically significant anemia may require blood transfusions.
Monitor vital signs as appropriate.	Presence of hypotension and tachycardia may indicate bleeding.
Use soft tooth brush for oral care.	Prevents injury to gums which could result in bleeding gums.
Transfuse with blood products as appropriate.	Platelets are usually given when platelet count falls below 10-20,000 cells/mm3 or if platelet count falls below 50,000 cells/mm3 and bleeding is present. Packed red blood cells are usually given if hemoglobin is below 8, sooner if bleeding present.

Instructions, Information,, Demonstration	
Activities	*Rationales*
Teach patient/family about bleeding precautions (see above).	Decreases risk of complications from thrombocytopenia by increasing compliance.
Instruct patient/family about the signs and symptoms of bleeding and point at which nurse and/or physician should be notified.	Side effects from chemotherapy may occur at home.
Teach patient/family symptoms of anemia (fatigue, dyspnea on exertion, angina) and to notify health care team if they occur.	Severe anemia requires transfusion.

☐ Discharge or Maintenance Evaluation

- Patient can verbalize precautions necessary to prevent bleeding and actions to take should bleeding or anemia occur.
- Bleeding episodes are prevented or brought under control.
- Follow-up visits and laboratory testing done as scheduled.

Activity Intolerance

☐ Related to:

Fatigue secondary to anemia from chemotherapy.

☐ Defining Characteristics:

Verbal report of fatigue or weakness, abnormal heart rate or blood

pressure in response to activity, exertional dyspnea.

- ☐ Outcome Criteria::

  Patient maintains optimal activity level.

  Patient will maximize energy by resting as needed to minimize effect of fatigue on activities of daily living.

- ☐ NIC: Energy Management

  Definition: Regulating use of energy to treat or prevent fatigue and optimize function.

Energy Management

Activities	*Rationales*
Assess patient's fatigue/rest patterns.	Determines baseline for assisting patient with fatigue.
Encourage patient to maintain normal sleep/rest/activity patterns as much as possible.	Promotes self control.
Encourage patient's verbalization of feelings regarding limitations.	Assist patient in coping with fatigue.
Assist patient to plan activities based on fatigue/rest patterns.	Promotes activity while preventing fatigue.
Encourage patient to plan rest periods as needed throughout the day.	Promotes adequate rest.
Encourage light exercise.	Light exercise will promote normal sleep/rest pattern.

Energy Management

Activities	*Rationales*
Assist patient in prioritizing tasks in life and seeking assistance from family/friends in those tasks patient is unable to perform.	Conserves energy.
Assist patient in adequate diet intake.	Maintains protein stores needed for energy production.
Offer soft, easy-to-chew foods.	Fatigue may impair ability to chew.

Instructions, Information,, Demonstration

Activities	*Rationales*
Teach patient/family/friends that fatigue is an expected side effect from chemotherapy and/or anemia.	Understanding causes of side effects will help patient feel more in control.
Instruct patients to 1) Prioritized activities; 2) Recognize signs of fatigue; 3) Plan activities and rest around rest periods; 4) Ask family/friends for help; 5) Sleep at night and maintain normal routine as possible during the day.	Measures promote energy conservation.
Instruct patient on benefits of light exercise and assist as if needed.	Promotes compliance.

Instructions, Information,, Demonstration	
Activities	*Rationales*
Stress importance of diet in maintaining energy.	Proteins are needed for basic energy requirements.
Instruct family members to restrict length of visits if fatigue is severe.	Promotes energy conservation.

☐ Discharge or Maintenance Evaluation

- Rests when fatigued.
- Schedules activities around fatigue patterns.

Essential Nursing Diagnosis Related to Gastrointestinal Side Effects

Altered Nutrition: Less than Body Requirements

☐ Related to:

Anorexia, nausea, vomiting, and diarrhea from chemotherapy.

☐ Defining Characteristics:

Patient reports inadequate food intake due to anorexia, and nausea, loss of weight, early satiety, diarrhea.

☐ Outcome Criteria:

Patient will maintain weight within 5% of pretreatment weight.

Patient will be without nausea and vomiting or, if present, will be controlled and minimal.

☐ NIC: Nutrition Management

Definition: Assisting with or providing a balanced dietary intake of foods and fluids.

Nutrition Management	
Activities	*Rationales*
Assess intake of foods and fluids and food preferences.	Provides dietary information for planning.
Inquire if patient has any food allergies.	Prevents allergic reactions by ingestion of foods.
Collaborate with dietician as appropriate.	Determines number of calories and types of nutrition needed to meet nutritional requirements based on patient's food preferences.
Weigh patient on admission and weekly using the same scale.	Provides gain loss information.
Encourage small, frequent meals if patient has no appetite or early satiety.	Prevents nausea.
Offer meals and snacks that are high-protein, high calorie, and easy to consume.	Protein provides energy and prevents muscle wasting.
Discourage fatty, greasy, spicy, and sweet foods during treatments.	Taste alterations during chemotherapy may include intolerance to these foods.

Nutrition Management

Activities	*Rationales*
Encourage bland diet during chemotherapy treatments.	Bland foods are easier to tolerate during treatments.
Offer high caloric liquid or custard supplements.	Provides calories and protein in small easy-to-consume volume.
Encourage patient to try different foods if taste changes are noted.	Chemotherapy can cause taste changes.
Encourage patient to suck on hard candy during treatments.	Minimizes unpleasant tastes from chemotherapy.
Administer antiemetic prior to chemotherapy, then regularly through expected duration of nausea and vomiting.	Prevention of nausea and vomiting will assist in continuation of chemotherapy treatments.
Administer chemotherapy at night or late afternoon, if possible.	Night administration of chemotherapy significantly decreases emetic episodes, and many antiemetics promote sleep.
Control noxious odors, excessive noise, if possible.	Noxious stimuli can increase anxiety and aggravate such side effects as nausea.

Instructions, Information,, Demonstration

Activities	*Rationales*
Provide patient with free, written materials on nutrition in cancer, such as "Eating Hints" from the National Cancer Institute or "Nutrition Tips" from the American Cancer Society.	Written materials reinforce verbal instructions and provide knowledge source when health care team members are not present.
Instruct patient/family that anorexia is an expected side effect, that weight loss may occur, and that both will subside once treatment is over.	Knowledge will decrease anxiety.
Instruct to eat small frequent meals of high-caloric, high-protein foods.	Measures prevent over-distention, and proteins will prevent muscle wasting.
Instruct to take antiemetic prior to eating if nausea or vomiting is present.	Prevents nausea and vomiting.
Instruct to avoid non-caloric food and beverages such as coffee, tea, diet soda, or diet foods.	Non-caloric foods and beverages promote satiety without nutrients or calories.
Instruct family on ways to assist patient with increasing caloric intake.	Promotes family structure and assists patient in maintaining caloric intake.
Encourage patient to try different foods if taste changes are noted.	Chemotherapy can cause taste changes.

☐ Discharge or Maintenance Evaluation

- Weight maintained within 5% of baseline.

- Daily intake of adequate calories and proteins.
- Nausea and vomiting episodes absent or decreased.

Risk for Fluid Volume Deficit

☐ Related to:

Side effects from chemotherapy.

☐ Defining Characteristics:

Tachycardia, low urine output, dry mucous membranes, decreased fluid intake, anorexia, nausea, vomiting, fluid losses due to diarrhea, electrolyte imbalances, or weight loss.

☐ Outcome Criteria:

Fluid and electrolyte balance will be maintained throughout chemotherapy.

☐ NIC: Fluid/Electrolyte Management

Definition: Regulation and prevention of complications from altered fluid and/or electrolyte levels.

Fluid/Electrolyte Management	
Activities	*Rationales*
Monitor vital signs, intake and output as appropriate.	Inadequate oral intake can cause hypovolemia whose symptoms include tachycardia, hypotension, and elevations in body temperature due to dehydration.

Fluid/Electrolyte Management	
Activities	*Rationales*
Assess blood pressure lying down, sitting, and standing.	Changes in blood pressure may indicate orthostatic hypotension.
Assess amount and frequency of stools and/or emesis.	Provides information for planning needed fluid replacements.
Assess for weakness, paresthesia, leg cramps, muscle fatigue, pulse irregularities.	Signs and symptoms of hypokalemia due to Potassium loss from vomiting and/or diarrhea.
Monitor electrolyte levels as appropriate.	Nausea, vomiting, diarrhea can lead to electrolyte depletions.
Weigh daily and monitor trends.	Weight assists in measurement of fluid balance.
Monitor BUN, and creatinine.	Some chemotherapy agents such as cisplatin and methotrexate can cause renal damage.
Monitor for signs and symptoms of over-hydration/fluid excess while treating for under-hydration.	Too rapid infusion of replacement IV fluids can lead to over-hydration.
Encourage patient to drink fluids with salts and to avoid fluids without salts such as water, if fluid intake is minimal.	Vomiting and diarrhea can lead to loss of Potassium, but can be replaced by oral fluids with salts.
Supplement Potassium intake with IV fluids and/or nasogastric feedings as appropriate.	Replaces fluid loss and ensures fluid intake.

Fluid/Electrolyte Management	
Activities	*Rationales*
Consult the physician if signs and symptoms of fluid or electrolyte imbalance persist or worsen.	Promotes maintenance of fluid/electrolyte balances.
Administer prescribed electrolyte supplements as ordered.	Corrects electrolytes.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient to drink 8-10 glasses of fluids with salts daily.	Maintain fluid and electrolyte levels.
Teach patient to notify the nurse and or doctor if any of the following occur: dizziness or lightheadedness, inability to take adequate fluids, vomiting persists for more than 12 hours.	Signs of hypovolemia that require immediate intervention.
Instruct patient to call for assistance before getting up if dizzy or light-headed.	Prevents falls and injury.

☐ Discharge or Maintenance Evaluation

- Patient will drink adequate fluids.
- Patient's serum electrolytes will be maintained within normal limits.

Risk for Fluid Volume Excess

☐ Related to:

Large amounts of IV fluids used for hydration during chemotherapy.

☐ **Defining Characteristics:**

Edema, weight gain, shortness of breath, intake greater than output, abnormal breath sounds, rales (crackles), change in respiratory or mental status, blood pressure changes, altered electrolytes, anxiety, restlessness.

Pain

☐ Related to:

Nausea and vomiting from chemotherapy, and anxiety related to treatments.

☐ Defining characteristics:

Patient expresses feeling of pain or discomfort, moans, cries, is diaphoresis, has blood pressure and/or pulse changes.

☐ Outcome Criteria::

Patient will express comfort or relief of pain through pain relief measures and/or medications.

Patient will verbalize decrease in anxiety and increased physical comfort.

☐ NIC: Pain Management

Definition: Alleviation of pain or a reduction in pain to a level of comfort that is acceptable to the patient.

Pain Management	
Activities	*Rationales*
Assess for pain or discomfort, location and duration of pain and any measures that make pain worse or better.	Provides information needed for planning care.
Provide emotional support.	Reduces anxiety.
Consider use of anti-anxiety drugs in antiemetic regime such as lorezepam.	Reduced anxiety will promote comfort.
Minimize waiting time for treatments or procedures.	Decreases anxiety.
Provide distractions during treatments such as TV/VCR, radio, reading materials.	Promotes comfort by diverting attention from pain.
Keep emesis basin within reach, provide mouth care post emesis.	Promotes comfort during emesis.

Instructions, Information,, Demonstration	
Activities	*Rationales*
Teach patient progressive relaxation techniques or guided imagery.	Promotes self-control over side effects by reducing stress and anxiety.
Teach patient when to take medications for pain and/or anxiety, possible side effects and how to manage them.	Promotes desired actions and results; prevents drug adverse reactions.

☐ Discharge or Maintenance Evaluation:

- Patient will be comfortable during chemotherapy treatments.

Risk for Altered Oral Mucous Membranes

☐ Related to:

Damage to rapidly dividing cells of the mucosa due to chemotherapy.

☐ Defining Characteristics:

Oral pain/discomfort, coated tongue, xerostomia, and/or hyperemia.

☐ Outcome Criteria:

Oral mucous membranes intact and free of irritation and pain.

☐ NIC: Oral Health Maintenance

Definition: Maintenance and promotion of oral hygiene and dental health for the patient at risk for developing oral or dental lesions.

Oral Health Maintenance

Activities	*Rationales*
Establish baseline assessment of oral mucosa including 1) History of alcohol use or smoking; 2) History of dental problems, oral hygiene practices; 3) Prior or current radiation to head and neck; 4) Oral exam: examine lips, gums, upper inner lip, gums, tongue, hard and soft palate, floor of mouth, teeth, and oral pharynx; 5) Assess amount and consistency or saliva; 6) Assess fit and condition of dentures.	Provides necessary information to establish plan of care.
Perform oral assessment every shift.	Identifies problems early.
Assess nutritional status.	Problems with oral health can effect intake of foods and fluids.
Initiate dental referral if appropriate.	Promotes clean
Establish a mouth care regime, including brushing and flossing teeth after each meal and before bedtime and rinsing mouth with gentle alcohol free mouthwash.	Promotes clean teeth and gums.
Assist with oral care or denture care as needed.	Provides care if patient is unable.
Apply lubricant to mouth, lips, and gums.	Keeps mouth moist.
Offer fluids frequently.	Promotes moist mucous membranes.

Oral Health Maintenance

Activities	*Rationales*
Discourage smoking and tobacco use.	Smoking and alcohol can dry and damage mucous membranes.

Instructions, Information,, Demonstration

Activities	*Rationales*
Demonstrate and instruct patient on teeth brushing, flossing, and denture care.	Promotes clean oral cavity and prevents dental problems.
Inform of importance of food and fluid intake of at least 2 liters (8-10 glasses) per day.	Provides adequate nutrition and fluid intake.
Inform of reasons to abstain from smoking or drinking irritating beverages such as alcohol, acidic juices, or very hot liquid.	Acidic juices, alcohol, hot liquids, and smoking can cause damage to oral mucosa.

☐ Discharge or Maintenance Evaluation

- Oral mucosa pink, moist and intact.
- Well-fitting dentures and/or teeth in good repair.
- Able to ingest foods and fluids without pain.

Altered Oral Mucous Membranes

- ☐ Related to:

  Damage to mucous membranes from chemotherapy.

- ☐ Defining Characteristics:

  Oral pain/discomfort, stomatitis, desquamation, oral vesicles, hemorrhagic gingivitis, xerostomia, dehydration, malnutrition.

- ☐ Outcome Criteria:

  Oral mucosa will heal and become pink and moist.

- ☐ NIC: Oral Health Restoration

  Definition: Promotion of healing in a patient with oral mucosal or dental lesion.

Oral Health Restoration

Activities	*Rationales*
Establish baseline assessment of oral mucosa including 1) History of alcohol use or smoking; 2) History of dental problems, oral hygiene practices, prior or current radiation to head and neck; 3) Oral exam: examine lips, upper inner lip, gums, tongue, hard and soft palate, floor of mouth, teeth, and oral pharynx; 4) Assess amount and consistency or saliva; 5) Assess fit and condition of dentures.	Provides necessary information to establish plan of care.

Oral Health Restoration

Activities	*Rationales*
Perform oral assessment every shift.	Assesses progress of healing process and for signs of infection.
Monitor vital signs and temperature every shift.	Assesses for signs of infection.
Assess nutritional status.	Problems with oral health can affect intake of foods and fluids.
Initiate dental referral if appropriate.	Promotes clean and healthy teeth and gums.
Assist with oral care or denture care as needed.	Provides care if patient is unable.
Use a soft toothbrush or toothette for removal of dental debris.	Prevents injury to gums.
Encourage flossing between teeth twice daily with unwaxed dental floss if platelet levels are above $50{,}000/mm^3$.	Removes bacteria which may cause dental caries or septicemia.
Encourage frequent rinsing of the mouth with sodium bicarbonate solution, normal saline, or medicated mouth wash.	Soothes injured oral mucosa and keeps mouth clean and moist.
Apply lubricant to mouth, lips, and gums.	Keeps mouth moist.
Remove dentures in case of severe stomatitis.	Prevents further injury to mucosa.
Provide artificial saliva as appropriate.	Provide relief from dry, oral mucous membranes.
Offer fluids frequently.	Promotes moist mucous membranes.

Oral Health Restoration	
Activities	*Rationales*
Discourage smoking and tobacco use.	Smoking and alcohol can dry and damage mucous membranes.
Administer topical anesthetics and/or systemic pain medications.	Numbs mucosa so patient can eat; relieves pain.
Administer topical and/or oral antibiotics.	Treats infection in oral cavity and/or any systemic infection.
Assist patient to select soft, bland diet, and non-acidic foods.	Prevents further discomfort and irritation to mucous membranes.
Plan small, frequent meals high in calories and protein.	Promotes nutritional status.
Offer liquid nutritional supplements if patient is having trouble swallowing solids.	Provides complete nutrition.
Offer popsicles, ice cream, as desired.	Cold foods soothe and provide liquid and calories.
Administer hyper alimentation if oral intake is not adequate.	Provides needed nutrients when patient is unable to take them orally.
Explain reasons for topical anesthetics and/or systemic pain medications.	Measures will relieve pain.

Instructions, Information,, Demonstration	
Activities	*Rationales*
Demonstrate and instruct patient on teeth brushing, flossing, denture, care and soothing mouth rinses every 1-2 hours.	Promotes healing of oral cavity and prevents further oral and dental problems.
Inform of importance of food and fluid intake of at least 2 liters (8-10 glasses) per day.	Provides adequate nutritional and fluid intake.
Inform of reasons not to smoke or drink.	Knowledge of irritants will promote compliance.
Discuss need for hyper alimentation.	Promotes maintenance of adequate nutrition.

☐ Discharge or Maintenance Evaluation

- Oral mucosa will heal and be pink and moist.
- Oral nutritional intake will be adequate to maintain body weight.

Pain

☐ Related to:

Stomatitis from chemotherapy.

☐ Defining Characteristics:

Patient reports of pain upon swallowing and/or eating, unable to eat or drink due to pain in oral cavity.

☐ Outcome Criteria::

States relief from oral pain.

☐ NIC: Pain Management

Definition: Alleviation of pain or a reduction in pain to a level of comfort that is acceptable to the patient.

Pain Management	
Activities	*Rationales*
Perform comprehensive assessment of pain.	Provides information needed to formulate plan of care.
Observe for nonverbal cues of discomfort especially if communication is impaired.	Patient may not be able or willing to communicate their pain.
Administer topical anesthetics and/or systemic pain medications.	Numbs mucosa so patient can eat and reliefs pain.
Administer parenteral analgesics including morphine infusions as appropriate.	Stomatitis can be severe. Narcotics may be needed to control pain.
Evaluate the effectiveness of analgesic administered at frequent intervals relief.	To observe for any signs and symptoms of untoward reactions and ensure against pain.
Attend to comfort needs and other activities that assist relaxation.	To facilitate response to analgesics.
Collaborate with the physician if drug, dose, route of administration, or interval changes are indicated.	To make specific recommendations to ensure patient's pain is relieved.

Instructions, Information,, Demonstration	
Activities	*Rationales*
Explain reasons for topical anesthetics and/or systemic pain medications.	Promotes understanding.
Demonstrate and instruct patient on teeth brushing, flossing, denture care, and soothing mouth rinses every 1-2 hrs.	Dry irritated mucosa is very painful; measures promote healing, decrease pain.
Teach patient nonpharmacologic measure to control pain: relaxation, guided imagery music therapy, distraction.	Measures promote pain relief.

☐ Discharge or Maintenance Evaluation

- Patient verbalizes relief and/or control of oral pain.

Common Nursing Diagnoses Related to Integumentary Changes

Body Image Disturbance

☐ Related to:

Alopecia, weight loss and/or skin changes secondary to chemotherapy.

☐ Defining Characteristics:

Patient verbalizes fear of rejection or reaction of others to altered appearance, negative feelings about body, concern over hair loss, and skin changes.

☐ Outcome Criteria:

Patient will verbalize an understanding of why chemotherapy causes alopecia, and/or skin changes.
Discusses measures to minimize impact of hair loss and skin changes on lifestyle.

☐ NIC: Body Image Enhancement

Definition: Improving a patient's conscious and unconscious perceptions and attitudes toward his/her body.

Body Image Enhancement

Activities	*Rationales*
Assess patient's chemotherapy treatment plan for drugs that may cause alopecia.	Alkylating agents, antimetabolites, especially adriamycin and tumor antibiotics, can cause alopecia.
Assess impact of alopecia on lifestyle.	Provides information to formulate plan.
Assist patient to discuss feelings about body image changes.	Provides outlet for emotions.
Encourage patient to cut long hair.	Minimizes shock over total hair loss.
Identify measures to reduce the impact of hair loss such as wigs, scarfs, turbans, hats.	Promotes self-control over loss.

Body Image Enhancement

Activities	*Rationales*
Encourage patient to get hair prosthesis while hair is still present.	Assists beautician in fitting patient for a wig similar to normal hair color and style.
Encourage patient to use protective methods for skin and eyes: sun screens (SPF 15), eyeglasses, hats with wide brim.	Skin and eyes are more at risk for injury due to changes induced by chemotherapy.

Instructions, Information,, Demonstration

Activities	*Rationales*
Instruct patient on the amount of hair loss to expect and when it will regrow.	Adriamycin causes total hair loss; other agents like cisplatin only thin hair.
Inform that hair loss is usually temporary, and that regrowth is sometimes a different color or texture.	Chemotherapy hair loss is almost always temporary; knowledge will assist patient in coping with loss.
Instruct on proper scalp and skin care.	Promotes scalp, skin integrity.
Provide information and/or referral to cosmetologist, skilled in skin care and make-up techniques to cover loss of eyebrows and eyelashes.	Chemotherapy can cause skin changes and/or loss of eyebrows and eyelashes. The American Cancer society provides training to cosmetologists to treat these problems.

☐ Discharge or Maintenance Evaluation:

- Patient implements measures to minimize impact of loss of hair on lifestyle.

Impaired Skin Integrity

☐ Related to:

Perianal skin irritation from diarrhea, secondary to chemotherapy or infection.

☐ Defining Characteristics:

Presence of risk factors such as physical immobilization, and decreased nutritional intake from chemotherapy.

☐ Outcome Criteria:

Skin will remain free of further injury and open areas will heal.

☐ NIC: Skin Care— Topical Treatments

Definition: Application of topical substances or manipulation of devices to promote skin integrity and minimize skin breakdown.

Skin Care— Topical Treatments

Activities	*Rationales*
Assess skin integrity.	Provides information for planning care.
Encourage and/or assist patient to cleanse and gently dry perianal area after each loose stool.	Feces left on skin can irritate skin, causing breakdown. Keeping skin clean and dry will help prevent this.
Apply protective agents to perianal area.	Protects skin from irritating stool.

Skin Care— Topical Treatments

Activities	*Rationales*
Avoid use of rough bed linens.	Prevents trauma to skin.
Keep bed linens clean and dry.	Prevents maturation of skin from moistness.
Use assistive devices on bed (eg, sheepskin, foam/air mattresses, heal protectors).	Promotes skin integrity and comfort.
Assist patient to bathe frequently.	Keeps skin clean and dry.

Instructions, Information,, Demonstration

Activities	*Rationales*
Consult with skin care specialists as needed.	Experts may be able to provide information to assist with hard-to-heal areas.
Encourage patient to ambulate, and to be as active as possible while hospitalized.	Immobility promotes skin breakdown.
Instruct patient in skin care techniques such as keeping skin clean and dry, etc.	Knowledge promotes compliance with nursing regime.
Instruct patient to avoid sun exposure or take appropriate precautions such as wearing protective clothing, hats, and/or sunscreens if sun cannot be avoided, or if receiving 5-FU, Methotrexate, or steroids.	These chemotherapy agents cause photosensitivity which can cause a severe sunburn to exposed unprotected skin.

- ☐ Discharge or Maintenance Evaluation
  - Patient skin will remain intake and free of breakdown.
  - Areas of skin breakdown will show granulation and evidence of healing.

Risk for Impaired Skin Integrity

- ☐ Related to:

  Extravasation of vesicant chemotherapy.

- ☐ Defining Characteristics:

  Patient complains of pain, burning; skin appears red, necrotic, progressing to tissue sloughing.

- ☐ Outcome Criteria:

  Extravasation if it occurs is detected early with immediate intervention.

- ☐ NIC: Intravenous Therapy

  Definition: Administration and monitoring of intravenous fluids and medications.

Intravenous Therapy

Activities	*Rationales*
Insert IV using asepsis and careful technique, including selecting site away from underlying tendons and nerves; secure IV so insertion site is visible.	Prevents injury to tendons and nerves if extravasation, and identifies site problems early.

Intravenous Therapy

Activities	*Rationales*
Administer vesicant through a new IV and a free flowing IV, monitoring site constantly.	Minimizes injury should extravasation occur.
For continuous infusion of a vesicant drug, a central line is usually required.	Prevents extravasation of vesicants when no health care member is present to initiate care immediately.
If extravasation is suspected 1) Stop the drug and follow any institutional policy and procedure; 2) Aspirate any residual I drug and/or blood from IV tubing or catheter if possible; 3) Instill antidote if applicable; 4) Remove needle; 5) If applicable inject antidote into area of infiltration; 6) Apply topical cream if recommended; 7) Cover lightly with sterile occlusive dressing; 8) Apply warm or cold compresses as applicable; 9) Elevate arm; 10) Assess site regularly for pain, progression of erythema, induration and/or evidence of necrosis.	Measures will minimize damage to tissues from extravasated chemotherapy, should it occur.

Instructions, Information, Demonstration	
Activities	*Rationales*
Inform patient if their chemotherapy drug is a vesicant, and instruct on potential complications should extravasation occur.	Patients have a right to know of serious potential complications.
Instruct patient to notify nurse if IV site becomes painful, red, or swollen during infusions of vesicants, especially if burning is noted.	Signs and symptoms of extravasation.
Discuss possible need for venous access devices to safely give vesicant agents.	Patients with poor venous access may benefit from a venous access device.

☐ Discharge or Maintenance Evaluation

- Intravenous site will remain free of signs and symptoms of extravasation during administration of vesicant chemotherapy agents.
- Should extravasation occur, it will be identified and treated early to minimize tissue damage.

Chapter Five

Biotherapy Treatment

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Biologic Therapy

Biologic therapy, or biotherapy, is rapidly emerging as a fourth treatment modality for cancer. Biotherapy is based on the theory that if the immune system will recognize the tumor cells as foreign invaders it will destroy them. Agents or approaches that stimulate the immune system are called biologic response modifiers or BRMs. The National Cancer Institute in 1981 formally defined biologic response modifiers as agents or treatments that alter the relationship between the tumor and the host's natural response to tumor cells, with resultant therapeutic effect. There are several characteristics common to BRMs: They are naturally produced in the body in small amounts; They function as important regulators and messengers of immune functions; They boost the body's response to foreign substances; and they act directly or indirectly to stimulate or enhance the activity of the immune system.

Historical Perspective

For over a century scientists have looked for a way to stimulate the body to destroy cancer cells. In 1891 Dr. William Coley, a surgeon at Memorial Hospital in New York, developed what came to be known as Coley's Toxins. He first induced infections in cancer patients using live bacteria and, later, filtered toxins. Dr. Coley did this because he noticed that some of his patients who developed post operative infections following surgical resections of their tumors remained tumor free. He theorized that the infection somehow stimulated the patient's immune system to fight the cancer. Coley's toxins were used as late as 1975.

In the late 1960s and 70s scientists used immunotherapy to induce a general immune response by injecting tumors with Bacillus calmetle guerin and corynebacterium parium. These efforts did not have the response rates hoped for, and encountered difficulties. Immunotherapy fell out of favor. Following some technologic advances in the 1980s, interest in immunotherapy, or biotherapy, was renewed. These advances include recombinant DNA and hybridoma technology. Recombinant refers to a recombined DNA molecule. A gene involved in the production of a desired protein is combined with a DNA strand from another organism (like a bacterium) which is easily reproducible. This results in a DNA factory that produces DNA exactly like the original molecule. Through this process a specific genetic code can be copied, sequenced, and produced in bulk. This mass production has produced a whole new classification of drugs called "biotechnologics".

The FDA defines biotechnology as a technique that uses living organisms or a part of a living organism to produce or modify a product; to improve a plant or animal; or to

develop a microorganism for a specific purpose. The FDA has approved twenty biotechnologic products including "humulin" insulin, a growth hormone; vaccines; cytokines, which include interferons; interleukins; colony stimulating factors (CSF); thrombolytic agents; and a monoclonal antibody called OKT3. More than 100 other products are in clinical trials. These drugs differ from previous new drugs in that their mass production is more difficult and therefore more expensive to develop and produce for clinical use. It is ironic that these products are emerging at a time when resources and monies for these therapies are becoming very limited.

Properties of BRMs

Several aspects of BRMs are unique. First, a simple dose/response relationship, as seen with chemotherapy, does not exist. The concept of maximum tolerated dose, so important for chemotherapy doses, may not apply to BRMs. Rather, the concept of optimum biologic dose (OBD) is used. The OBD is the minimum dose at which the maximum biologic effect is achieved. Key to determining OBD is to identify those effects which contribute to the desired antitumor response. A second unique aspect of BRMs is that their effects can take months to document. Lastly, side effects of BRMs mimic the body's normal immune response. The most common side effects are flu-like symptoms such as fever, chills, rigors, fatigue, nausea, vomiting, and diarrhea.

Types Of Biologic Response Modifiers

Types of biologic response modifiers including vaccines, monoclonal antibodies, colony stimulating factors(CSFs), interleukins(IL), and interferons(IFN). Each type will be discussed.

Monoclonal Antibodies

Monoclonal antibodies are artificially manufactured antibodies specifically designed to find targets on the cancer cells for diagnostic or treatment purposes. Some scientists call them biologic hunters or "target- specific magic bullets". It is hoped that in the future a radioactive isotope or chemotherapy drug can be attached to a monoclonal antibody and then injected into the human body. The antibody would then seek out the cancer cells. This should allow only cancer cells to be damaged by the chemotherapy.

Vaccines

Many scientists are trying to develop vaccines to fight cancer. These vaccines are

made from irradiated, inactivated cancer cells. The vaccines may sensitize the immune system to recognize cancer cells as foreign and increase the body's ability to destroy them.

Colony Stimulating Factors

Colony Stimulating Factors (CSFs) are naturally- produced, hormone-like proteins that stimulate the growth, maturation, and regulation of various types of blood cells. They are also called growth factors. Five growth factors are approved by the FDA and are in use today. These are Neupogen, Leucine, Prokine, Procrit, and Epogen.

G-CSF, or Granulocyte CSF, stimulates proliferation and differentiation of neutrophils, the body's first line of defense against infections. It is FDA-approved under the name of Neupogen with a broad indication for patients with myeloid malignancy who are recovering from myelosuppressive chemotherapy. It is given subcutaneously daily for 10-14 days following chemotherapy. Generally the drug is well tolerated, with bone pain as the most common side effect.

GM-CSF is another CSF that stimulates proliferation and differentiation of multi-lineage colonies, specifically neutrophils, eosinophils, and macrophages. It is FDA-approved with two products available, "Leucine" and Prokine, which accelerate myeloid recovery in bone marrow transplant patients. It is administered intravenously or subcutaneously. Side effects include diarrhea, rashes, and malaise.

Erythropoietin is a CSF that acts on erythroid progenitor cells to stimulate maturation of red blood cells. It was FDA-approved in 1989 as Epogen and Procrit, and it is used for chronic renal failure and HIV-infected patients receiving myeloid suppressive therapy. Recently added to the list of indications was anemia due to cancer treatment. Epogen and Procrit are well tolerated if hypertension is well controlled before therapy. Iron replacement may be required during treatment.

Interferon

Interferon (IFN) was discovered in 1957 by Isaccs and Lindenman. Its name comes from its ability to interfere with virus replication. It has both antiviral and antitumor responses. There are three types of interferon: Alpha, Beta, and Gamma. In cancer care, Interferons work in several ways by slowing down cell replication, protein synthesis, and DNA production. They thereby prolong the cell cycle; and by stimulating a host immune response, in turn, they enhance natural killer cell activity.

Only Alpha interferon is FDA-approved for the treatment of cancer. Sold under the names Intron-A and Roferon-A, Alpha-IFN is approved for treatment of hairy cell leukemia, Kaposi's sarcoma, and hepatitis C. It is also used against lymphoma, melanoma, and renal cell cancer. Gamma-IFN was

recently approved for treatment of chronic granulomatous disease. Clinical trials also are underway with a Beta-IFN for the treatment of multiple sclerosis.

Interferon can be given subcutaneously, by intravenous infusion, or injection. The major side effects of Interferon are flu-like symptoms including fever, chills, headaches, muscle aches, joint aches, and fatigue. These are usually treated with antipyretics and analgesics. Other side effects include bone marrow suppression, nausea, vomiting, diarrhea, and mental status changes including depression, anxiety, and insomnia.

Interleukin

Interleukins are important messengers and regulators of immune functions. Twelve interleukins have been identified to date. Interleukin-2 (IL-2) is the only one FDA-approved, under the name of Proleukin. The actions of IL-2, a lymphokine, include:

- Stimulating proliferation of T & B lymphocytes and Natural Killer (NK)cells
- Enhancing cytotoxicity of monos, T-lymphs and NK cells
- Inducing secretion of antibodies, Tumor Necrosis Factor (TNF), and gamma-IFN
- Initiating Lymph-Activated Killer (LAK) cell production.

Interleukin-2 Side Effects

The side effects of IL-2 are dose related. The higher the dose, the greater the side effects. The most frequent side effects are summarized in the table below:

Frequent IL-2 Side Effects	
Flu-like Symptoms	Fevers, chills, rigors, fatigue, muscle aches, headache.
Cardiovascular	Hypotension, capillary leak syndrome, vascular dehydration, angina, myocardial infarction, arrhythmias, pulmonary edema, peripheral edema.
Renal	Oliguria, anuria, azotemia, creatinine elevations.
Gastrointestinal	Anorexia, nausea, vomiting, diarrhea.
Mental Status Changes	Depression, anxiety, insomnia, psychosis, coma.
Skin Changes	Erythema, burning and itching.
Bone Marrow Depression	Lymphopenia, thrombocytopenia, anemia.

Common Side Effects of Biologic Therapy

Excellent nursing care is crucial to patients undergoing biotherapy. Because the side effects of biotherapy can be life-threatening and because many of these agents are given at home or are self-administered, education of patient and family is paramount.

The most common side effects seen with BRMs are the flu-like symptoms such as fever, chills, muscle aches, fatigue and rigors. Fever can be prevented with nonsteroidal anti-inflammatory drugs. Acetaminophen and a cooling blanket may provide the best combination of prophylaxis and treatment. Rigors are usually treated with Merperedine intravenously, or morphine if the use of Meperidine is contraindicated. As treatment continues, fatigue progresses and is sometimes a dose limiting toxicity. Extreme fatigue can lead to decreased food and fluid intake, and soon, dehydration; therefore energy conservation must be stressed along with planned rest periods.

In patients undergoing therapy with Interleukin-2, the most common side effect is cardiopulmonary toxicity. Dose limiting are IL-2's cardiovascular effects, one of which is hypotension due to a decrease in vascular resistance. The hypotension occurs within an hour after the first dose of IL-2 and worsens as treatment proceeds. Later, as cardiac contractility decreases, vascular or capillary leak syndrome (See below) occurs.

Vascular or capillary leak syndrome is a condition during which fluids escape the vascular space and enter the interstitial spaces. Expansion of fluid volume becomes difficult as even replacement fluids leak out. However if hydration is too vigorous, edema will result, as will ascites and pulmonary edema. Most clinicians will not treat hypotension to lower incidence of pulmonary edema, unless its symptomatic. In severe cases of hypotension, vasopressors are given.

Other, less common, cardiovascular side effects of IL-2 include arrhythmias, ischemia, angina, myocardial infarction, myocarditis and hypocontractility. Decreased renal perfusion can result from vascular dehydration, leading to oliguria, anuria, and azotemia. These latter conditions are characterized by sodium depletion and elevations in serum creatinine and blood urea nitrogen levels. Vigorous hydration—the usual treatment for these conditions— however, is contraindicated during IL-2 treatment. Close monitoring of serum creatinine is required; IL-2 is usually stopped if serum creatinine is elevated three times the patient's normal value. Use of nonsteroidal anti-inflammatory drugs are usually contraindicated because of their nephrotoxic effects. Renal recovery begins 24 hours after discontinuing IL-2.

Gastrointestinal problems such as nausea, vomiting, and diarrhea are not uncommon with BRMs. These symptoms usually are more chronic and can be treated with antiemetics, and antianxiety medications. Antidiarrheal medications have been less successful.

Additional side effects of BRMs include mental status changes, skin changes, and bone

marrow suppression. Common with BRMs are changes in mental status, depression, anxiety, insomnia, psychosis, and in rare, severe cases, coma. Skin problems range from mild erythema, causing a maculopapular rash, to diffuse erythema with burning and pruritus. Lymphopenia occurs within hours of starting BRMs, especially IL-2. Thrombocytopenia, anemia, and eosinophilia also may occur. The side effects from BRMs usually are self-reversing within 24 hours of discontinuing therapy, but conscientious management of patient receiving biologic therapy remains vital.

Essential Nursing Diagnoses Related to Flu-Like Symptoms

Pain

☐ Related to:

Biotherapy side effects

☐ Defining Characteristics:

Communication of discomfort such as myalgia, muscle aches, headaches, and other pain descriptors. Observation of chills, rigors, restlessness, and other pain behaviors.

☐ NIC: Analgesic Administration

Definition: Use of pharmacologic agents to reduce or eliminate pain.

Analgesic Administration

Activities	*Rationales*
Assess pain, including location, characteristics, quality, severity.	Provides needed information to formulate plan of care. For example, muscle aches may be caused by build up of lactic acid in muscles during rigors, while headaches may be caused by low blood sugars due to poor intake or dehydration.
Check for history of drug allergies. Check medical order for drug, dose, and frequency of analgesic prescribed.	Necessary to ensure safe administration of analgesics.
Select appropriate analgesics and administer Meperidine IV for chills/rigors; acetaminophen for myalgia and/or headaches.	Chills/rigors, usually acute, precede fever by about 1 hour and range from just feeling cold to severe rigors. Meperidine relaxes smooth muscles. Myalgia/headaches precede or coincide with fever; acetaminophen produces antipyresis through its action on the hypothalamic heat-regulating center.
Evaluate at frequent intervals the effectiveness of analgesics administered.	Identifies signs and symptoms of untoward reactions and ensures pain relief.
Attend to comfort needs and activities that relaxation.	Facilitates response to analgesics.

Analgesic Administration	
Activities	*Rationales*
Collaborate with the MD if drug, dose, route of administration, or interval are indicated.	Specifies recommendations to ensure patient's pain is relieved.

Instructions , Information, Demonstration	
Activities	*Rationales*
Inform patient of potential discomfort of side effects from BRMs, such as chills/rigors, muscle aches, headaches, and joint aches.	Flu-like symptoms usually occur 2-4 hours post-injection, last about 8 hours, and are manageable.
Instruct patient to take acetaminophen before BRM and every 4-6 hours as needed for discomfort.	Acetaminophen may be used to prevent or partially alleviate body aches.
Instruct patient to administer any self injections of BRMs at bedtime.	Bedtime administration will allow the patient to sleep through flu-like symptoms.
Instruct patient to continue BRMs as ordered.	Patient may develop tolerance to flu-like symptoms; but if therapy is halted, these symptoms may reappear or increase in severity when therapy is resumed.

☐ NIC: Environmental Management-Comfort

Definition: Manipulation of patient's surroundings to promote optimal comfort.

Environmental Management - Comfort	
Activities	*Rationales*
Select appropriate roomrnate, for or provicle private room.	Promotes comfort.
Provide clean, comfortable bed.	Promotes rest.
Avoid unnecessary interruptions of rest.	Provides rest periods.
Facilitate hygienic measures (wiping brow, applying skin creams, clean body, hair, and oral cavity).	Promotes comfort.
Position for comfort using proper body mechanics, use of pillows, splints over incisions or painful body parts.	Facilitates comfort by supporting joints, and normal body alignment.

Instructions , Information, Demonstration	
Activities	*Rationales*
Teach family members to provide restful home surroundings.	Promotes rest at home.

Instructions , Information, Demonstration	
Activities	*Rationales*
Demonstrate hygienic measures such as wiping brow with cool washcloths	applying skin creams, assisting patient with bathing and oral care, and changing linens as needed.
Instruct family members on proper positioning for comfort.	Use of good body mechanics in positioning promotes comfort.

☐ Discharge or Maintenance Evaluation

Statements indicating patient is comfortable.

Relaxed expressions, able to rest without complaints of discomfort.

High Risk for Altered Body Temperature

☐ Related to:

Stimulation of the preoptic anterior hypothalamus, the body's temperature control center, by BRMs.

☐ Defining Characteristics:

Presence of temperatures above normal.

☐ Outcome Criteria:

Patient's temperature will return to normal (baseline) by 12 hours post BRM. Patient will not develop complications from high fevers.

☐ NIC: Fever Treatment

Defined: Management of a patient with hyperemia caused by non-environmental factors.

Fever Treatment	
Activities	*Rationales*
Monitor temperature every 4 hours when patient is awake.	BRMs can cause stimulation of the body's temperature control center resulting in fever.
Monitor pulse, blood pressure, and respiration every 4 hours.	Fevers can cause tachycardia, hypotension or tachypnea.
Monitor intake and output.	Fevers cause increased insensible losses which lead to dehydration.
Administer antipyretic, acetaminophen PRN prior to BRMs (avoid aspirin and nonsteroidal anti-inflammatory drugs), NSAIDs.	Acetaminophen reduces fever without increasing the risk of bleeding as aspirin can, or damaging the kidneys as NSAIDs can.
Use thermic mattress as needed.	Provides warmth during chills, and cooling during high fevers.
Administer IV fluids as ordered, PRN.	IV fluids are used sparingly with IL-2 to avoid capillary leak syndrome.

Instructions , Information, Demonstration

Activities	*Rationales*
Instruct patient to check temperature at least 3 times a day when at home (prior to BRM, and 8 and 12 hours post). Notify MD if fevers above 101°F persist beyond 8 hours post BRM.	Fever from BRMs occurs 4-8 hours post. Causes of persistent fever, including infections, should be assessed.
Instruct patient to drink at least 2-3 liters fluids (8-12 glasses).	Extra fluids are needed during high fevers to replace insensible losses.
Instruct patient to apply blankets when to home when cold or chilled, and to use tepid baths or ice bags when fever is elevated.	To provide warmth during chills and cooling during high fevers.
Instruct patient to take acetaminophen prior to each BRM and every 4 hours as needed for fevers, chills and muscle aches.	Acetaminophen is an antipyretic and will help to lessen the severity of fevers, chills and muscle aches.

☐ Discharge or Maintenance Evaluation

- Patient will be able to treat elevated temperature and related side effects adequately at home.

Altered Nutrition: Less Than Body Requirements

☐ Related to:

Anorexia, nausea, vomiting, and diarrhea from biotherapy.

☐ Defining Characteristics:

Reported inadequate food intake due to anorexia, and nausea, loss of weight, early satiety, diarrhea.

☐ Outcome Criteria:

Patients will be able to ingest adequate food and fluids and weight will remain stable.

☐ NIC: Nutrition Management

Definition: Assisting with or providing a balanced dietary intake of foods and fluids.

Nutrition Management

Activities	*Rationales*
Assess intake of foods and fluids, inquiring about food allergies and food preferences.	Provides information for dietary planning and avoidance of certain foods.
Weigh patient on admission, and daily, using the same scale.	Provides gain or loss information.
Encourage small frequent meals if patient has little or no appetite.	Prevents nausea, overdistention, dyspepsia, and upward pressure on diaphragm.
Offer meals and snacks that are high-protein, high calorie, and easy to consume.	Protein provides needed energy to maintain nutrition while preventing further muscle wasting.
Offer high caloric liquid or custard supplements (Ensure, Carnation).	Provides additional protein and caloric intake.
Administer antiemetic 30 to 40 minutes prior to eating if nausea is a problem.	Antiemetics will prevent nausea and vomiting.

Nutrition Management	
Activities	*Rationales*
Collaborate with dietician as appropriate to determine caloric and nutrition needs, given patient's food preferences.	Provides complete nutritional requirements with consideration to preferences.
Encourage patient to try different foods if taste changes are reported (adding more sugar to recipes, serving red meats cold, or adding lemon juice to them).	Cancer treatments can cause taste changes which may alter patient's food preferences.

Instructions , Information, Demonstration	
Activities	*Rationales*
Instruct to avoid noncaloric foods and beverages such as coffee, tea, diet soda or diet foods, clear soups, or plain salads.	Noncaloric foods and beverages promote satiety without providing adequate nutrients or calories.
Instruct family on ways to assist patient with increasing caloric intake.	To provide family wit alternatives in patien intake.

☐ Discharge or Maintenance Evaluation

- Weight will remain within 5% at baseline.

Instructions , Information, Demonstration	
Activities	*Rationales*
Instruct patient/family that anorexia is an expected side effect, that weight loss may occur, and that both will subside once treatment is over.	Helps prevent anxiety over expected side effects.
Instruct to eat small frequent meals of high-calorie high-protein foods.	Small meals prevent overdistention; high protein, high-calorie foods prevent muscle wasting.
Instruct to take antiemetic prior to eating if nausea or vomiting occurs.	Prevents nausea and vomiting.

Fatigue

☐ Related to:

Altered body chemistry from biotherapy.

☐ Defining Characteristics:

Verbalizes lack of energy, sense of exhaustion, inability to maintain usual routines, lethargy, listlessness, inability to concentrate, and/or decreased performance.

☐ Outcome Criteria:

Patient will maximize energy by resting, as needed, to minimize effect of fatigue on activities of daily living.

☐ NIC: Energy Management

Definition: Regulating energy to treat or prevent fatigue and optimize function.

Energy Management	
Activities	*Rationales*
Assess patient's fatigue/rest patterns.	Determines baseline for activity limitations to prevent fatigue.
Encourage patient to maintain normal sleep/rest/activity patterns as possibe.	Promotes usual lifestyles.
Encourage patient to express feelings regarding limitations.	Assists patient in coping with fatigue.
Assist patient to plan activities based on fatigue/rest patterns.	Maintains activity while preventing fatigue.
Encourage patient to plan rest periods as needed throughout the day.	Promotes normal sleep/rest patterns.
Encourage light exercise during the day.	Promotes normal sleep/rest patterns.
Assist patient in prioritizing daily tasks and seeking help from family/friends in those tasks patient maybe unable to fulfill.	Conserves energy.
Assist patient in adequate diet intake by providing easy-to-chew foods and assisting during meals.	Fatigue impairs ability to chew and swallow foods.

Instructions, Information, Demonstration	
Activities	*Rationales*
Teach patient/family/friends that fatigue is an expected side effect of BRMs.	Understanding side effects will help patient and family feel more in control.
Instruct patients to: 1. Prioritize activities 2. Plan activities around time of BRMs dose 3.Recognize signs of fatigue 4. Plan activities and rest around fatigue/rest pattern 5.Ask family/friends for help 6. Sleep at night and maintain normal routine as much as possible during the day.	Basic needs while preventing fatigue.
Instruct patient on benefits of light exercise provide assistance as needed.	Encourages compliance.
Teach importance of diet in maintaining energy.	Proteins are needed for basic energy requirements to prevent fatigue.
Provide written materials about fatigue management.	Written materials reinforce verbal instructions.

☐ Discharge or Maintenance Evaluation

- Patient will rest as needed.
- Patient will perform activities around fatigue pattern.

Altered Thought Processes

- ☐ Related to:

  CNS or frontal lobe toxicity from biotherapy.

- ☐ Defining Characteristics:

  Verbalization of memory deficit problems, impaired concentration, depression, confusion, and/or anxiety.

- ☐ Outcome Criteria:

  Patient will remain orientated to person, place and time.

- ☐ NIC: Emotional Support

  Definition: Providing reassurance and encouragement during times of stress.

Emotional Support

Activities	*Rationales*
Assess patient for history of pyschiatric condition	Patients with a history of severe psychiatric disorder should not be treated with BRMs such as interferon
Assess use of concomitant CNS depressants (eg, tranquilizers, sedatives, narcotics, alcohol).	CNS depressants may exacerbate CNS side effects; reducing dosage or discontinuing therapy may be needed.
Assess level of consciousness and reorient to surroundings as needed.	BRMs may cause disorientation.
Assess patient's use of coping mechanisms in dealing with stress.	Provides information of patient's past responses to illness.

Emotional Support

Activities	*Rationales*
Support the use of appropriate defense mechanisms.	Promotes coping.
Encourage patient to express feelings related to biotherapy.	Talking can be a means to decrease and release emotional response to illness.
Refer to appropriate resources as needed (eg, social service, counselors, psychiatry).	To provide holistic care to meet patient's needs.

- ☐ NIC: Anxiety Reduction

  Definition: Minimizing apprehension, dread, foreboding, or uneasiness related to an unidentified source of anticipated danger.

Anxiety Reduction

Activities	*Rationales*
Use a calm, reassuring approach.	Prevents anxiety.
Utilize comfort measures such as back rub, positioning.	Promotes relaxation.
Listen attentively to expressions of feelings and concerns.	Creates an atmosphere of trust.
Provide quiet, calm environment.	Prevents anxiety caused by stimulation.
Provide diversional activities.	Reduces tension.
Administer anxiety medications like Buspar or Axvan as appropriate.	Reduces anxiety without causing CNS depression.

Instructions, Information, Demonstration	
Activities	*Rationales*
Provide factual information about disease, treatment, prognosis and all expected side effects of BRMs.	Knowledge will reduce anxiety.
Instruct patient on measures to lessen the severity of side effects of BRMs such as relaxation techniques.	Self care measures promote patient self-control.
Explain all procedures, including any expected sensations.	Reduces anxiety.
Instruct patient on anti-anxiety medications including when to take, possible side effects, and instruct to side effects.	Promotes compliance with medical regime.

☐ Discharge or Maintenance Evaluation

- Patient will remain orientated to person, place and time and without depression and/or anxiety.

Risk for Impaired Skin Integrity

☐ Related to:

Side effects from biotherapy.

☐ Defining Characteristics:

Presence of risk factors such as hyperthermia, physical immobilization, and decreased nutritional intake from biotherapy.

☐ Outcome Criteria:

Skin will remain intact.

☐ NIC: Skin Care Topical Treatments

Definition: Application of topical substances or manipulation of devices to promote skin integrity and minimize skin breakdown.

Skin Care Topical Treatments	
Activities	*Rationales*
Assess skin integrity.	Provides information necessary for planning care.
Assess skin for rashes, itching, dryness, changes in color.	Therapy regimen may cause changes in sweat glands and destruction of epithelial cells.
Use only smooth bed linesn.	Prevents trauma to skin.
Keep bed linens clean and dry.	Prevents maturation of skin due to moistnes.
Use comforting devices on bed (e.g., sheepskin, foam/air mattresses, heel protectors).	Promotes skin integrity and comfort.
Apply skin emollients such as Eucerin cream or Aloe Vera lotion.	Decreases irritation and dryness.
Assist patient to bathe frequently, keeping skin clean and dry.	Maintains skin integrity.
Offer soothing baths with such emollients as baby oil or bath oils.	Provides comfort.
Use topical medicated lotions or oral antipruritic agents for severe pruritus as appropriate.	Prevents damage to skin from scratching.

Skin Care Topical Treatments	
Activities	*Rationales*
Consult with skin care specialists as needed.	Experts will provide information on caring for unusual conditions.
Encourage patient to ambulate, walk, and be as active as possible while hospitalized.	Immobility can lead to skin breakdown.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient in such skin care techniques as keeping skin clean and dry, and in the importance of ambulation while recovering from BRMs.	Promotes compliance with nursing regime.
Instruct patient in skin care (use of creams, bathing, etc.).	Self care measures promote sense of control.

☐ Discharge or Maintenance Evaluation

- Patient's skin will remain intact and free of breakdown.

Essential Nursing Diagnoses Related to Capillary Leak Syndrome

Risk for Fluid Volume Deficit

☐ Related to:

Capillary Leak Syndrome as a side effect of Interleukin-2, increased body temperature resulting in increased insensible fluid loss, decreased fluid intake from anorexia, and fluid losses due to diarrhea.

☐ Defining Characteristics:

Hypotension, orthostasis, tachycardia, tachypnea, low urine output, increased body temperature, dry mucous membranes, electrolyte imbalances, diarrhea, decreased fluid intake, and/or weight loss.

☐ Outcome Criteria:

Patient will maintain adequate oral hydration as evidenced by ability to mentate when dangling on edge of bed.

☐ NIC: Fluid/Electrolyte Management

Definition: Regulation and prevention of complications from altered fluid and/or electrolyte levels.

Fluid/Electrolyte Management	
Activities	*Rationales*
Monitor vital signs, intake/output, as appropriate.	Capillary leak syndrome can cause hypovolemia whose symptoms include tachycardia, hypotension, and further elevations in body temperature from dehydration.
Monitor for signs of fluid retention such as edema, increased specific gravity, and/or BUN.	Signs indicate presence of capillary leak syndrome.
Weigh daily and monitor trends.	During increased insensible fluid loss and capillary leak syndrome, the most accurate measurement of fluid balance.
Monitor electrolyte levels as appropriate.	As fluids leave the vascular compartment, electrolyte levels are altered.
Hold Interluekin-2 if oliguria persists, or serum creatine is 3 times the normal limit.	Indicates acute renal failure.
Encourage patient to drink fluids with salts and to avoid fluids without salts such as water if fluid intake is minimal.	To promote maintenance of electrolyte balance.
Supplement po intake with IV fluids sparingly if orthostatic hypotension is present.	During capillary leak syndrome, intravenous fluids administered will leak from the vascular compartment into the lungs and other interstitial spaces.

Fluid/Electrolyte Management	
Activities	*Rationales*
Consult the physician if signs and symptoms of fluid and/or electrolyte imbalance persist or worsen.	Promotes electrolyte balance.
Administer prescribed electrolyte supplements as ordered.	Corrects electrolyte imbalances.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient to drink 8-10 glasses of fluids per day that have salts in them.	Replaces lost fluids and electrolytes.
Teach patient to notify the nurse and/or doctor if any of the following occurs: dizziness or lightheadedness; inability to take adequate fluids; vomiting persisting for more than 12 hours.	Indicates hypovolemia and/or in adequate oral intake.
Instruct patient to call for assistance before getting up if feels dizzy or light headed.	Prevents injury from falls.

☐ NIC: Hypovolemia Management

Definition: Expansion of intravascular fluid volume in a patient who is volume depleted.

Hypovolemia Management	
Activities	*Rationales*
Maintain patient IV access.	For emergency administration of IV fluids and medications.
Assess blood pressure lying down, sitting, and standing.	Assesses for orthostatic hypotension.
Monitor intake and output especially insensible losses.	Assesses fluid status.
Monitor weight daily.	Weight good indication of fluid status.
Monitor for signs and symptoms of over-hydration/fluid excess while treating for under-hydration.	Intravenous fluids may leak into lungs and other interstitial spaces if capillary leak syndrome is present.
Monitor for increased BUN, creatinine, decreased urine output.	Indicates impending acute renal failure.
Monitor hemoglobin and hematocrit as appropriate.	Assess for blood loss.
Do not transfuse packed red blood cells PRBCs within 24 hours before, after, initiating or post IL-2.	Transfusion of PRBCs during IL-2 has been shown to induce hemolytic anemia in animal models, so should be avoided.
Do not use antihypertensive medications.	IL-2 causes decreased capillary resistance resulting in hypotension.
Administer isotonic solutions (NS,LR) sparingly as appropriate.	Isotonic fluids promote extra cellular rehydration however too much fluid can cause capillary leak syndrome and pulmonary edema.
Provide frequent oral hygiene.	Promotes comfort.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient to avoid rapid changes of position, especially from lying to standing, and to call for assistance before getting out of bed, especially if dizziness occurs.	Prevents syncopal episodes.
Instruct the patient/family in measures used to treat hypovolemia.	Promotes compliance with medical regime.

☐ Discharge or Maintenance Evaluation

- Patient's weight will remain stable.
- Patient will demonstrate adequate hydration by mentating while dangling on edge of bed.

Risk for Fluid Volume Excess

☐ Related to:

Treatment of fluid volume deficit from IL-2 secondary to capillary leak syndrome.

☐ Defining Characteristics:

Edema, weight gain, shortness of breath, intake greater than output, abnormal breath sounds, rales (crackles), change in respiratory or mental status, blood pressure changes, altered electrolytes, anxiety, and restlessness.

☐ Outcome criteria

Patient's lungs will remain clear without abnormal breath sounds. No weight gain will occur.

☐ NIC: Fluid Management

Definition: Promotion of fluid balance and prevention of complications resulting from abnormal or undesired fluid levels.

Fluid Management

Activities	*Rationales*
Assess lung and heart sounds for presence of crackles, S3 or S4; assess for presence of edema, neck vein distention and ascites.	Signs of fluid overload.
Monitor mucous membranes, adequacy of pulses and blood pressure as appropriate.	Indicates hydration status.
Weigh daily and monitor trends.	Weight is good indication of fluid balance.
Maintain accurate intake and output.	Provides fluid balance information.
Promote oral intake.	Maintains fluid balance.
Administer IV fluids if appropriate.	Restores fluid balance.
Administer prescribed diuretics as appropriate.	Treats overhydration.
Administer electrolyte replacement therapy as appropriate and monitor patient's response.	Maintain electrolyte balance.

Instructions, Information, Demonstration

Activities	*Rationales*
Instruct patient on signs and symptoms of fluid overload and when to notify nurse or physician of problems.	Side effects may occur rapidly and require immediate intervention.
Teach expected side effects of medications administered.	Decreases anxiety.

☐ Discharge or Maintenance Evaluations

- Patient's assessment will remain stable and heart and lung sounds will be normal.

Impaired Gas Exchange

☐ Related to:

Pulmonary edema from fluid replacement during capillary leak syndrome from IL-2.

☐ Defining Characteristics:

Confusion, restlessness, hypoxia, inability to move lung secretions.

☐ Outcome Criteria:

Pulmonary edema will be identified and treated promptly.

☐ NIC: Airway Management

Definition: Facilitation of patency of air passages.

Airway Management	
Activities	*Rationales*
Monitor lung, heart sounds and vital signs as appropriate.	Assesses cardiopulmonary status.
Identify patient requiring insertion of artificial airway and assist with insertion as appropriate.	Maintains airway.
Position patient in high Fowlers.	Maximizes ventilation potential.
Encourage deep breathing and coughing.	Promotes secretion removal.
Administer oxygen as appropriate.	Maintains oxygenation.
Administer prescribed medications (eg diuretics, bronchodilator, inhalers nebulizer treatments) as appropriate.	Promotes open airways.
Perform endotracheal of nasotracheal suctioning if appropriate.	Maintains open airway.

☐ Discharge or Maintenance Evaluations

- Patient will maintain airway and adequate oxygenation to tissues.

Risk for Infection

☐ Related to:

Granulocytopenia and thrombocytopenia from biotherapy.

☐ Defining Characteristics:

Immunosuppression secondary to treatments, malnutrition secondary to treatment and/ or disease process, presence of pathogens secondary to hospitalization.

☐ Outcome Criteria:

Patient will remain free from infection.

☐ NIC: Infection Protection

Definition: Prevention and early detection of infection in a patient at risk.

Infection Protection	
Activities	*Rationales*
Monitor WBC daily, calculating Absolute neutrophile count, ANC.	BRMs cause abnormal blood profiles are due to bone marrow suppressions.
Monitor vital signs especially temperature q4 hours and PRN.	BRMs cause bone marrow suppression, resulting in immunosuppression, predisposing patient to infection.
Monitor for systemic and localized signs and symptoms of infection, including complete physical assessment as appropriate.	Bone marrow suppressions inhibit ability to fight infections.

Infection Protection	
Activities	*Rationales*
Institute Granulocytopenic precautions if ANC is less than 1000 including private room; keeping patient's door closed; stringent handwashing; preventing ill persons from entering; if ill person must enter, should wear a mask	Prevents exposure and transmission of organisms that may cause infection during immunosuppressed state.
If patient develops temperature above 100.5° F notify physician stat. Be ready to obtain cultures and start antibiotics immediately.	Temperature elevation may be the only signs of infection in the immune suppressed patient.
Change any central line dressings daily when ANC<1000.	Prevents line sepsis.
Administer antibiotics or antifungal agents as appropriate.	Prevents or treats bacterial or fungal infections.
Assist with personal hygiene including bathing, brushing teeth after each meal, peri care after stools etc.	Promotes cleanliness, prevents breaks in skin and bacterial contamination of meatal orifice.
Encourage normal rest and activity pattern.	Fatigue depresses immune functioning.

Instructions, Information, Demonstration	
Activities	*Rationales*
Teach patient/family about signs and symptoms of infection and when to notify nurse and/or physician.	Side effects from BRMs may occur at home.
Instruct patient on need for granulocytopenic precautions when ANC including wearing a mask, avoiding ill persons; avoiding crowds; practicing good personal hygiene; avoiding breaks in skin (e.g., using gardening gloves and not using a straight razor).	Enhances compliance with medical regime designed to prevent infection.

☐ Discharge or Maintenance Evaluations

- Patient will demonstrations no signs of infection except fever.
- Fever patterns will be consistent with expected fever patterns from BRMs administration.

Risk for Injury

☐ Related to:

Thrombocytopenia from biotherapy

☐ Defining Characteristics:

Thrombocytopenia, poor oral intake, increased risk of falls due to presence of orthostatic hypotension secondary to BRMs.

☐ NIC: Bleeding Precautions

Definition: Reduction of the risk of blood loss for a patient with a reduced coagulability.

Bleeding Precautions

Activities	*Rationales*
Monitor platelet count closely if 2,000, institute bleeding precautions including avoiding skin injury (e.g., use electric razor), injections, invasive procedures; avoid taking rectal temperatures, enemas, suppositories and constipation; avoid use of aspirin, or anticoagulants.	Measures reduce potential for bleeding.
Apply 5-10 minutes of pressure to necessary injection sites.	Prevents excessive bleeding.
Monitor hemoglobin and hematocrit closely for signs an symptoms of bleeding.	Immunosuppression causing thrombocytopenia as a result of BRM; reduced Hct and Hdg leads to anemia if bleeding is persistent.
Monitor vital signs as appropriate.	Presence of hypotension and tachycardia may indicate bleeding.
Use soft tooth brush for oral care.	Prevents trauma to mucous membranes.
Transfuse with blood products as appropriate taking care not to give PRBCs within 24 hours of IL-2 if possible.	Giving PRBCs during IL-2 in animal models resulted in hemolytic anemia.

Bleeding Precautions

Activities	*Rationales*
Teach patient/family about bleeding precautions including avoiding injury (e.g., using an electric razor), injections, invasive procedures; avoid rectal temperatures, enemas, suppositories and constipation; avoid use of aspirin, or anticoagulants; apply 5-10 minutes of pressure to necessary injection sites; use soft tooth brush for oral care.	Promotes compliance with nursing regime.

Instructions, Information, Demonstration

Activities	*Rationales*
Instruct patient/family about the signs and symptoms of bleeding and when to notify nurse and/or physician.	Side effects from BRMs may occur when patient is at home.

☐ Discharge or Maintenance Evaluations

- Patient will remain free from injury.

Chapter Six

Structural Oncology Emergencies

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Structural Oncology Emergencies

Structural oncology emergencies are life-threatening conditions that require immediate attention. Spinal cord compression, cardiac tamponade, and superior vena cava syndrome are the most common structural oncologic emergencies. Each of these is discussed in this chapter. Nursing care and the most critical nursing diagnoses also are highlighted.

Spinal Cord Compression

Spinal cord compression (SCC) is usually caused by a tumor that is encroaching, compressing, or invading the structures on the anterior spinal column, or by the collapse of a spinal vertebrae into the bone fragments that invade the epidural space. Damage to the spinal cord can occur from direct tumor invasion into the cord or indirectly from ischemia. Very rarely (less than 3%) spinal cord compressions are due to primary spinal cord disease. Most spinal cord compressions are due to metastatic disease in the epidural space. Cancers of the breast and lung most frequently involve the cervical and thoracic vertebrae, while prostate cancer and melanoma are more likely to metastasize in the lumbosacral spine. Patients most at risk for the development of SCC include those with myeloma, sarcoma, prostate cancer, breast cancer, lymphoma, or lung cancer.

The most common symptoms associated with spinal cord compression are pain, weakness, autonomic dysfunction, and sensory loss. Pain may occur weeks before the onset of more progressive symptoms. The pain can be localized over the tumor. Nerve root compression can cause referred radicular pain. Weakness in muscles and hypotonicity are motor deficits that may progress to ataxia and hyporeflexia. Sensory deficits include numbness, paresthesia, loss of sensation, paraplegia, impotence, and urine or fecal incontinence or retention. Autonomic dysfunction is due to spinal shock and involves the loss of motor, sensory, autonomic, and reflex function below the level of involvement. Ventilation may be affected in patients with high cervical lesions. Diagnostic testing includes spinal x-rays, bone scans, myelography, CT scan and magnetic resonance imaging to detect tumor presence, bone erosion or compression.

Radiation therapy is the treatment of choice for spinal cord compression. Surgery may be used if the tumor is either not responsive to, or was previously treated with, radiotherapy. Surgical decompression of the area by laminectomy may be indicated. Steroids are used to reduce spinal cord edema and for pain relief. An added oncolytic effect may be

seen with some tumors when the patient is treated with steroids. Chemotherapy may be indicated adjuvantly to radiation therapy and/or surgery, or as treatment for recurrence at sites of previous surgery or radiation. Analgesics are usually required because about 95% of patients with spinal cord compression have pain.

Nursing plays a key role in the early detection of spinal cord compression through frequent assessment of patients at risk. Once SCC is suspected immediate notification of the physician can lead to prompt intervention before neurologic sequelae develop. Patient education regarding the early signs and symptoms is important since most patients receive their treatments as outpatients. An important goal of treatment of SCC is to stabilize, and return to optimum, the patient's neurologic functioning. Therefore rehabilitation may be needed early in the treatment plan. The following section highlights the most important nursing care for the patient with spinal cord compression.

Essential Nursing Diagnoses Related to Spinal Cord Compression

Pain

(CH. 2)

☐ Related to:

Spinal cord compression.

☐ Defining Characteristics:

Patient verbalizes pain in back, muscle weakness, numbness, and/or tingling in extremities.

Fear

(CH. 1)

☐ Related to:

Sensory and motor losses from spinal cord compression.

☐ Defining Characteristics:

Fear of never being able to walk again, or control bowel and bladder.

Bowel Incontinence

(CH. 2)

☐ Related to:

Sensory and motor function losses due to spinal cord compression.

☐ Defining Characteristics:

Abdominal pain, watery stools, decreased frequency of bowel movements, incontinence.

Altered Urinary Elimination

(CH. 2)

☐ Related to:

Sensory and motor function losses from spinal cord compression.

☐ Defining Characteristics:

Urinary incontinence, retention, frequency, or decreased awareness or sensation of urination.

Sexual Dysfunction

(CH. 10)

☐ Related to:

Sensory and motor deficits from spinal cord compression.

☐ Defining Characteristics:

Impotence.

Risk For Impaired Skin Integrity

(CH. 21)

☐ Related to:

Impaired mobility, incontinence of bladder and bowel from spinal cord compression.

☐ Defining Characteristics:

Bedrest, incontinence, immobility, previous or concurrent radiation therapy to dependent areas.

Risk for Sensory/Perceptual Alterations: Tactile

☐ Related to:

Sensory deficits from spinal cord compression.

☐ Defining Characteristics:

Numbness, tingling, pain in affected extremities.

☐ Outcome Criteria:

Early identification of spinal cord compression.
Minimize sequelae of spinal cord compression

☐ NIC: Peripheral Sensation Management

Definition: Prevent or minimize injury or discomfort in the patient with altered sensation

Peripheral Sensation Management	
Activities	*Rationales*
Assess neurologic status including: 1. Pain (sharp/dull) and temperature (hot/cold) sensation; 2. Paraethesias: numbness, tingling, hyperesthesia, hypesthesia; 3. Impaired motor status: gait, coordination, range of motion; 4. Ability to void and defecate; 5. Level of consciousness; 6. Muscle strength; 7. Respiratory rate and depth; 8. Level of neurologic involvement/deficits.	Provides information to formulate plan of care, and promotes early identification of spinal cord compression.
Protect patient from thermal and other types of injury by avoiding use of heating pads or ice packs; encourage use of gloves or protective clothing over affected body parts during cold weather.	Prevents injury to tissues in patient with altered sensation.
Establish a means of voiding and/or bowel evacuation as appropriate.	Promotes bladder and bowel functioning.

Positioning - Neurologic	
Activities	*Rationales*
Immobilize head of patient with cervical injury by use of cervical collar, sandbags, no pillow.	Prevents rotation of neck and head which could lead to trauma to spinal cord.
Maintain bedrest as appropriate.	Promotes stabilization of spine and prevents further trauma to spinal.
Use log roll technique when turning or transferring patient.	Maintains spinal alignment when positioning patient.
Maintain proper body alignment.	Promotes spine stabilization and prevents contracture.
Encourage use of brace when out of bed as appropriate.	Maintains and supports spinal alignment when out of bed.
Apply and maintain traction as appropriate.	Promotes alignment of vertebrae.
Perform care of traction pin site as appropriate.	Prevents infection at pin insertion site.
Brace traction weights when moving patient.	Prevents injury during moving of patient.

☐ NIC: Positioning-- Neurologic

- **Definition:** Achievement of optimal, appropriate body alignment for the patient with a cervical injury.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct high-risk patients about the signs and symptoms of SCC and the need to promptly notify health care team of symptoms including back pain, pain radiating from back to chest, abdomen, or groin, change in motor functioning; decrease in muscle strength or control, constipation, urinary retention or incontinence.	Promotes early identification of SCC and prompt intervention should it occur.
Demonstrate to patient/family how to visually monitor position of body parts and examine skin if sensation and/or proprioception is impaired.	Prevents injury and/or identifies skin breakdown early.
Inform patient/family of measures to protect affected body parts from injury due to loss of sensation.	Promotes maintenance of injury-free state.

☐ Discharge or Maintenance Evaluation

- Patient/family lists signs and symptoms that should be reported to the health care team immediately.
- Spinal cord compression is identified early and neurologic sequelae will be minimized.

Impaired Physical Mobility

☐ Related to:

Neuromuscular impairment from spinal cord compression.

☐ Defining Characteristics:

Inability to move, limited range of motion, decreased muscle strength or control.

☐ Outcome Criteria:

Patient identifies measures to promote mobility.

Patient verbalizes potential complications of immobility.

☐ NIC: Activity Therapy

Definition: Prescription of and assistance with specific physical, cognitive, social, and spiritual activities to increase the range, frequency, or duration of an individual's (or group's) activity.

Activity Therapy	
Activities	*Rationales*
Assess patient's ability to walk or bear weight on legs, and ability to transfer and/or move around bed.	Provides information for care planning.
Monitor for signs of thrombophlebitis, calf pain, tenderness, redness, Homan's sign, edema.	Promotes early identification of thrombophlebitis, a complication of immobility.

Activity Therapy	
Activities	*Rationales*
Consult with occupational, physical, and/or recreational therapists in planning and monitoring an activity program as appropriate.	Promotes early rehabilitation to prevent further deterioration in physical mobility.
Encourage patient to change position at least every 2 hours.	Prevents skin breakdown.
Assist with regular activities as appropriate.	Promotes activity.
Assist patient to perform prescribed exercises as appropriate.	Promotes participation in prescribed exercise program.
Perform range-of-motion exercises on affected extremities.	Prevents loss of muscle tone.
Consider the patient's spine to be unstable until diagnostic studies are completed and patient is allowed out of bed.	Prevents injury from unstable spine.
Have patient use brace when out of bed.	Provides stabilization of spine.
Provide positive reinforcement for participation in rehab activities.	Promotes participation in rehabilitation.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient/family how to perform desired exercise.	Promotes compliance with activities.
Demonstrate to patient/family how to apply brace as appropriate.	Promotes proper use of assistive devices.

☐ Discharge or Maintenance Evaluation

- Patient will not develop complications from immobility.
- Patient will achieve optimal mobility.

Superior Vena Cava Syndrome

Superior vena cava syndrome (SVCS) is a medical emergency that occurs most commonly in persons with cancer. Very rarely benign conditions can cause SVCS. Cancers in which SVCS commonly occur are lung, breast and lymphoma. Lung cancer is most often responsible for SVCS, especially small cell. Less commonly, SVCS is seen in esophageal cancer, leukemia, melanoma, and sarcoma. Superior vena cava syndrome is seen four times as often in men than women. It is the presenting sign of malignancy in some cases. Occlusion of the superior vena cava in oncology patients can also occur from thrombus formation around a central venous catheter. Fibrolytic therapy and/or

removal of the catheter may be required to treat SVCS from this benign problem.

Occlusion of the superior vena cava causes impaired venous return from the head and upper thorax. This occlusion from the tumor can cause a partial or total occlusion of the superior vena cava, resulting in SVCS. The severity of the signs and symptoms are dependent on the severity of the blockage. The most common signs and symptoms of SVCS are facial, neck, and periorbital edema, dyspnea and swelling of the trunk and upper extremities so that rings and/or watches are tight. Headache, chest pain, cough, hoarseness, dysphagia, and chest pain also may be present. Physical examination may include, thoracic and neck vein distention, a ruddy (purple hue) is noted, orthopnea, tachypnea, tachycardia, cyanosis, severe upper respiratory obstruction with stridor, and upper extremity edema. Other symptoms and signs include Horner's syndrome, characterized by eyelid droop, pupil constriction, and conjunctivitis in one eye with absence of sweat on only one side of face. The latter indicates cervical sympathetic nerve supply interference. Late signs and symptoms include visual disturbances and altered level of consciousness.

Tests used in the diagnosis of SVCS include chest x-ray, and CT scans. If SVCS is the presenting sign of malignancy, pathologic diagnosis needs to be established by an appropriate biopsy method prior to initiation of treatment. Radiation therapy is the primary treatment of SVCS. Patients with rapidly progressing severe SVCS may present with acute respiratory distress, necessitating immediate intervention to prevent respiratory arrest. This may mean treating first and establishing a pathologic diagnosis later when the patient is more stable. In slowly progressing SVCS, a treatment plan is developed after diagnosis is established. This plan is based on proper treatment for the underlying disease. Chemotherapy may be the treatment of choice for patients with small cell lung cancer and for patients having a past history of mediastinal radiation. Steroids are used to decrease inflammation, especially if respiratory distress is present. Diuretics such as Lasix may be used. Thrombolytic therapy is used if thrombus formation is present or to prevent its formation. Nursing care focuses on measures to provide symptomatic relief during the diagnosis period, such as administering steroids, diuretics, oxygen, positioning for comfort and ease of breathing, and providing information about the disease process and its treatment.

Treatment will vary depending on the underlying type of cancer and any previous therapies. Once therapy is initiated to treat SVCS, the focus of nursing care should be on assessment and treatment of possible side effects of therapy. The reader should refer to the appropriate chapters for information on the specific disease and specific treatment. The essential nursing care specific to the patient experiencing SVCS follows.

Essential Nursing Diagnoses Related to Superior Vena Cava Syndrome

Knowledge Deficit

(CH. 8)

☐ Related To:

Radiation therapy to the chest.

☐ Defining Characteristics:

Patient voices lack of knowledge and/or questions about radiation therapy treatments and possible side effects.

Decreased Cardiac Output

(CH. 2)

☐ Related to:

SVCS

☐ Defining Characteristics:

Variations in blood pressure readings, tachycardia, neck vein distention, impaired return of blood to heart.

Ineffective Airway Clearance

☐ Related to:

Obstructive mass in the thorax leading to SVCS and respiratory distress.

☐ Defining Characteristics:

Dyspnea, orthopnea, tachypnea, cyanosis, cough, stridor.

☐ Outcome Criteria:

Open airway will be maintained.

☐ NIC: Airway Management

Definition: Facilitation of patency of air passages.

Airway Management	
Activities	*Rationales*
Assess for changes in neurologic status, including decrease in orientation to person, place or time, confusion, lethargy, blurred vision, headaches, anxiety.	Neurologic symptoms are rare and usually indicate hypoxia.
Auscultate breath sounds, monitor respiratory rate and for distress, stridor, cyanosis, orthopnea, tachypnea, cough, dyspnea.	Promotes early identification of respiratory distress.
Identify patient requiring actual/potential airway insertion.	Maintains open airways.
Position patient in high or semi-fowler.	Maximizes ventilation potential.
Administer oxygen therapy as appropriate.	Promotes adequate oxygenation.
Instruct in rationale for elevating head of bed, oxygen, frequent monitoring.	Measures treat respiratory distress.

Airway Management	
Activities	*Rationales*
Inform patient/family of symptoms that need to be reported to health care team immediately, such as increased respiratory distress, confusion, increased edema.	Promotes early identification and treatment of worsening of SVCS.

☐ Discharge or Maintenance Evaluation

- Patient/family identify signs and symptoms that need to be immediately reported to the health care team.
- Patient's airway is maintained.

Altered Tissue Perfusion, Cardiopulmonary

☐ Related to:

Obstruction of the superior vena cava.

☐ Defining Characteristics:

Facial edema, edema of upper extremities, cyanosis, thorax and neck vein distention, chest pain, purple hue to face.

☐ Outcome Criteria:

Cardiopulmonary tissue perfusion will be improved as evidenced by decrease in facial and upper extremity edema, resolution of other signs of SVCS.

☐ NIC: Circulatory Care

Definition: Promotion of arterial and venous circulation.

Circulatory Care	
Activities	*Rationales*
Perform appraisal of peripheral circulation including peripheral pulse check, capillary refill, color, and temperature of extremities, edema.	Provides baseline assessment for later comparison.
Monitor for signs of progressive edema such as increased swelling in face or arms, or increased thoracic or neck distention.	Promotes early identification of worsening of SVCS.
Monitor for decreased or absent pulses, decrease in blood pressure, pale or cyanotic skin or nail beds.	Promotes early identification and treatment of changes in tissue perfusion.
Avoid venipuncture, IV fluid administration and blood pressure readings in upper extremities.	Prevents worsening of SVCS.
Remove rings and watches as appropriate.	Prevents injury from constriction of blood flow.
Maintain lower extremities in a dependent position.	Prevents further pressure on upper extremities.
Administer diuretics as appropriate.	Promotes decrease in edema.
Administer thrombolytic or anticoagulant therapy, if appropriate.	Decreases or prevents thrombus formation due to SVCS.

Circulatory Care	
Activities	*Rationales*
Perform appraisal of peripheral circulation including peripheral pulse check, capillary refill, color, and temperature of extremities, edema.	Provides baseline assessment for later comparison.
Monitor for signs of complications from thrombolytic/anticoagulant therapy such as bleeding, petechiae, ecchymosis, prolonged PTT, or PT.	Promotes early identification of complications of thrombolytic anticoagulant.

Instructions, Information, Demonstration	
Activities	*Rationales*
Inform of rationale for diuretics and anticoagulant/thrombolytic therapy.	Promotes compliance with medical regime.

☐ Discharge or Maintenance Evaluation

- Venous circulation will be improved as evidenced by decreased facial and upper extremity edema, adequate peripheral pulses, normal skin color, and vital signs within normal limits.

Cardiac Tamponade

Cardiac tamponade is a life-threatening medical emergency that occurs when in intrapericardiac pressure increases, inhibiting ventricular expansion and heart filling. Cardiac output then decreases and eventually causes total circulatory collapse and death. The increase in intrapericardiac pressure may result from fluid accumulation in the pericardial sac, direct or metastatic tumor invasion into the pericardial sac, and/or fibrosis of the pericardial sac from radiation therapy. The cancers most likely to cause cardiac tamponade include breast cancer, leukemia, lymphoma, melanoma, lung cancer, gastrointestinal cancers, and sarcoma. Very rarely primary tumors of the heart such as mesothelioma and sarcoma can involve the pericardium.

Patients with impending cardiac tamponade may complain of retrosternal chest pain, severe dyspnea, and cough, and may exhibit extreme anxiety and apprehension. Clinical findings include venous distention, faint heart sounds, pericardial friction rub, hypotension, tachycardia, and cyanosis. A paradoxical pulse may be present; that is, the pulse may be significantly weaker during inspiration than during expiration. Also, systolic blood pressure, which normally is only 8 to 10 mm Hg lower during inspiration, may be greater than 10 mm Hg lower with cardiac tamponade. This lower blood pressure is due to the decreased venous return and stroke volume. Late symptoms include elevated central venous pressures, arrhyth-

mias, pale ashen diaphoretic skin, tachypnea, peripheral edema, oliguria, hepatomegaly and altered level of consciousness.

Diagnostic testing may include chest x-rays, echocardiogram, ECG, pericardial fluid cytology, and CT scans. Treatment of cardiac tamponade centers on hemodynamic stabilization and removal of fluid from the pericardial sac. Pericardiocentesis - a procedure in which fluid from the pericardial sac is removed - involves inserting a needle into the pericardial space to drain the fluid. This is a temporary measure. The patient will need a more permanent resolution through systemic therapy, such as chemotherapy or local therapy, to treat the underlying cause. Patients with recurrent pericardial effusions or requiring prolonged palliation may need a pericardial window. Some oncologists prefer drainage followed by sclerosing with agents like tetracycline, quinacrine, thiotepa, nitrogen mustard, and fluorouracil. Steroids are sometimes used to treat inflammation of constrictive pericarditis. Radiation therapy has also been used but carries with it the potential risk of damage to the pericardium and myocardium. Very rarely a total pericardiectomy, removal of the pericardial sac, is performed for patients with constrictive or recurrent pericarditis. Nursing management of the patient with cardiac tamponade begins with early recognition of the signs and symptoms and prompt diagnosis and treatment. The following section highlights the essential nursing diagnoses for the patient with cardiac tamponade.

Essential Nursing Diagnoses Related to Cardiac Tamponade

Ineffective Breathing Pattern

(CH. 2)

- ☐ Related to:

  Inability to maintain sufficient supply of cellular components due to decreased cardiac output from fluid in the pericardial sac.

- ☐ Defining Characteristics:

  Shortness of breath, dyspnea, tachypnea, cyanosis orthopnea.

Pain

(CH. 2)

- ☐ Related to:

  Fluid in pericardial sac or constriction of pericardial sac.

- ☐ Defining Characteristics:

  Retrosternal chest pain, tachycardia, tachypnea, blood pressure changes.

Decreased Cardiac Output

- ☐ Related to:

  Increased intrapericardiac pressure decreasing left ventricular filling and ability of heart to pump.

- ☐ Defining Characteristics:

  Retrosternal chest pain, dyspnea, cough, faint heart sounds, pericardial friction rub, cyanosis, tachycar-

dia, tachypnea, paradoxical pulse, increased CVP, altered level of consciousness, oliguria, peripheral edema.

☐ Outcome Criteria:

Patient maintains adequate cardiac output as evidenced by relief of chest pain, blood pressure and pulse returns to prebaseline.

☐ NIC: Dysrhythmia Management (CH. 2)

☐ NIC: Cardiac Care: Acute

Definition: Limitation of complications for a patient recently experiencing an episode of an imbalance between myocardial oxygen supply and demand resulting in impaired cardiac function.

Cardiac Care - Acute

Activities	*Rationales*
Assess cardiopulmonary status including vital signs, heart sounds, lung sounds, ECG readings, presence/severity of chest pain and respiratory distress.	Promotes early identification of worsening in cardiopulmonary status and prompt treatment.
Monitor neurologic status including level of consciousness, changes in behavior, orientation and awareness.	Promotes early recognition neurologic changes.
Assess character and amount of drainage from pericardial catheter if present.	Provides information regarding fluid draining from pericardial sac.

Cardiac Care - Acute

Activities	*Rationales*
Assess cardiopulmonary status including vital signs, heart sounds, lung sounds, ECG readings, presence/severity of chest pain and respiratory distress.	Promotes early identification of worsening in cardiopulmonary status and prompt treatment.
Assess catheter site for signs and symptoms of infection, if present.	Promotes early identification of complication from pericardial catheter.
Evaluate extremities for edema.	Peripheral edema is a late sign and indicates worsening of cardiac condition.
Monitor intake/output.	Provides information regarding cardiac output, intake greater than output may indicate heart failure.
Monitor for trends in hemodynamic parameters like CVP readings, and pulmonary capillary/wedge pressures, if available.	Provides the most accurate reflection of cardiac output.
Administer oxygen therapy and monitor its effectiveness.	Promotes adequate oxygenation of tissues.
Position with head of bed elevated.	Promotes ventilation and comfort.
Administer steroids as appropriate.	Reduces inflammation in pericardial sac.
Administer medications to relieve/treat pain as appropriate.	Promotes relief of chest pain.

Cardiac Care - Acute	
Activities	*Rationales*
Assess cardiopulmonary status including vital signs, heart sounds, lung sounds, ECG readings, presence/severity of chest pain and respiratory distress.	Promotes early identification of worsening in cardiopulmonary status and prompt treatment.
Maintain an environment conducive to rest and healing.	Promotes energy conservation and healing.

Instructions, Information, Demonstration	
Activities	*Rationales*
Explain all procedures to patient/family before initiating.	Decreases anxiety through knowledge.
Inform of rationale for treatments such as pericardial window, sclerosing therapy, chemotherapy, radiation as appropriate.	Promotes compliance with health care team's regime.

- ☐ Discharge or Maintenance Evaluation
  - Patient explains rationale for treatments used to treat cardiac tamponade.
  - Cardiac output is maintained at an adequate level as indicated by cardiac rhythm without arrhythmias, CVP readings, and pulmonary capillary wedge pressures within normal limits, and stabilization of vital signs.

Chapter Seven

Metabolic and Physiologic Emergencies

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Metabolic and Physiologic Emergencies

Persons with cancer may experience a variety of medical emergencies both as a result of their disease and of its treatment. At times the presenting symptoms of the malignancy may be an oncologic emergency. Such emergencies may include anaphylaxis, acute tumor lysis syndrome, hypercalcemia, disseminated intravascular coagulation (DIC), and syndrome of inappropriate antidiuretic hormone secretion (SIADH). This chapter discusses briefly each of these conditions and outlines essential nursing diagnoses.

Anaphylaxis

Anaphylaxis is an immediate hypersensitivity reaction caused by an overstimulated immune system. The immune system becomes overstimulated when a foreign substance or antigen results in the heightened formation of antibodies. These reactions are mediated by immunoglobulin E (IgE), a product of the B lymphocytes. Systems affected by anaphylaxis include the integumentary, cardiovascular, respiratory, neurologic, and gastrointestinal tract. The signs and symptoms of anaphylaxis arise from the effects of the IgE mediators on target systems. Immediate signs and symptoms include agitation, anxiety, dizziness, nausea, urticaria, rhinitis, abdominal cramps, respiratory distress,and edema of the face or eyes. Late signs of anaphylaxis include hypotension, chest tightness, tachycardia, arrhythmias, laryngeal edema, bronchospasm, and stridor.

Hypersensitivity reactions have been reported with intravenous antineoplastic agents including L-asparaginase, cisplatin, bleomycin, cyclophosphamide (Cytoxan), mechlorethamine (nitrogen mustard), methotrexate, etoposide (VP-16), and mephalan. Also posing a risk for anaphylaxis are newer, less refined, preparations such as those used in phase 1 studies, or agents given IV at high doses in succession. At high risk for anaphylaxis are patients with a past history of allergic reactions to agents such as foods, radiographic contrast media, blood products, insulin, and opiates.

Treatment

In most health care settings, it is the nurse who has primary responsibility for administration of medications and chemotherapy. Therefore, nursing assess-

ment and interventions are extremely important in the management of allergic reactions.

Before any medications are administered, a nursing history should be taken. The history should include previous allergic responses to chemotherapy, and any other drugs or agents. A baseline assessment of pulse, blood pressure, respiration, and mental status should be recorded. When risk for anaphylaxis is anticipated because of a drug's potential for hypersensitivity reactions or because of the patient's past history, the nurse should make sure that emergency drugs and equipment are available. Patients should be informed of the symptoms of a possible allergic reaction and instructed to notify the health care team if they occur.

Some antineoplastic drugs such as bleomycin require a test dose of a small amount to determine if sensitivity is present prior to giving a full dose. If a reaction is suspected, the infusion should be stopped immediately, the intravenous line maintained, and the physician notified. Expeditious nursing care is required for the patient experiencing an anaphylactic reaction. If an anaphylactic reaction is suspected, medical and emergency services should be requested, and cardiopulmonary resuscitation instituted as necessary.

Essential Nursing Diagnoses Related to Anaphylaxis

Anxiety

(CH. 1)

☐ Related to:

Anaphylaxis

☐ Defining characteristics:

Patient communicates feelings of uncertainty, apprehension, fear, or agitation.

Risk for Injury

☐ Related to:

Hypersensitivity and anaphylactic reactions to chemotherapy and other agents.

☐ Defining Characteristics:

Patient complains of itching, hives, anxiety, feeling of doom, chest pain, respiratory distress, nausea, vomiting, abdominal discomfort, and/or past history of allergic responses.

☐ Outcome Criteria:

Allergic reaction will not occur or will be detected and treated immediately.

Patient will describe signs and symptoms of anaphylaxis to health care team.

☐ NIC: Allergy Management

Definition: Identification, prevention, and treatment of allergic

Allergy Management	
Activities	*Rationales*
Identify known medication/food allergies and usual reaction; document as appropriate.	Provides information for formulating plan of care by identifying patients at risk for allergic reaction.
If allergic reaction is anticipated, ensure that emergency equipment and medications are readily available.	Promotes safe administration of medications if allergic reaction occurs.
An anaphylaxis kit includes	
1. Epinephrin 1:100	1. Constricts peripheral blood vessels, dilates bronchi, elevates blood pressure, and decreases itching.
2. Hydrocortisone sodium succinate (SoluCortef)	2. Inhibits synthesis of mediators of delayed immune response.
3. Diphenhydramine HCL (Benadryl)	3. Blocks histamine actions and decreases itching.
4. Aminophylline	4. Dilates bronchi.
5. Cimetidine	5. Decreases laryngeal edema.
Prior to drug administration, obtain baseline vital signs and mental status.	Provides baseline for comparison should a reaction occur.

Allergy Management	
Activities	*Rationales*
Administer medication while observing patient closely for signs and symptoms of hypersensitivity reactions including agitation, anxiety, dizziness, nausea, urticaria, rhinitis, abdominal cramps, respiratory distress, and edema of the face or eyes. Late signs include hypotension, chest tightness, tachycardia, arrhythmias, laryngeal edema, bronchospasm, and stridor.	Promotes early identification of hypersensitivity reactions.
Should symptoms occur, stop infusion, consult physician, and provide medications from the anaphylaxis kit as prescribed.	Reduces or minimizes allergic response.
Provide lifesaving measures during anaphylactic shock or severe reactions.	Promotes basic life support during anaphylactic reactions.
Discuss with physician desensitization versus drug discontinuance.	Prevents future allergic reactions.
Administer premedications prescribed with future medications as appropriate.	Prevents future allergic responses.

Instructions, Information, Demonstration

Activities	*Rationales*
Inform patient/family of the potential for allergic reaction and to report any unusual symptoms such as uneasiness, agitation, itching, abdominal cramping, chest tightness, lightheadedness or dizziness, difficulty breathing.	Promotes early identification of allergic reaction by prompt patient reporting.
Instruct patient to avoid allergic substance; use medical alert tag as appropriate.	Prevents future allergic and wear responses.

☐ Discharge or Maintenance Evaluations

- Allergic reactions, if they occur, will be detected early and treated without injury to patient.
- Future allergic reactions will be prevented.

Acute Tumor Lysis Syndrome

Acute tumor lysis syndrome (TLS) occurs as a result of the rapid release of intracellular contents such as potassium, phosphorus, and nucleic acid into the blood stream. Sometimes the level of these components can rise to life-threatening concentrations. Potential effects of TLS are renal failure and cardiac arrhythmias. Chemotherapy is the most frequent initiator of this syndrome because it causes rapid cell lysis and necrosis of the tumor mass. These actions result in the release of large amounts of intracellular electrolytes and chemicals into the extracellular fluid. Less common is TLS associated with a biologic treatment such as Interleukin-2, given for the treatment of large bulky tumors.

Acute TLS is characterized by hyperkalemia, hyperuricemia, hyperphosphatemia, and hypocalcemia. It is seen most often in diseases with large tumor burdens and high growth fractions that are very sensitive to cytotoxic treatments. Such diseases include hematologic malignancies such as high-grade lymphomas, and leukemia with high leukocyte counts. Acute TLS is less common in solid tumors such as small cell lung cancers, metastatic breast cancer, and metastatic medulloblastoma. Patients usually have signs of TLS within the first 24-48 hours after the initiation of chemotherapy, and persist for 5-7 days after therapy has been completed. Recognition of patients at risk for TLS, and its prevention are essential to the management of this disorder.

Treatment

The primary goal of the treatment of TLS is the prevention of renal failure. Prior to the initiation of chemotherapy, patients at risk for TLS should receive aggressive intravenous hydration for at least 48 hours. Also, any acid-base problems or severe electrolyte imbalances should be corrected.

Following the administration of chemotherapy, aggressive hydration should be continued to maintain urine output at 3 or more liters per day. Diuretics such as furosemide or mannitol may be given to promote diuresis, especially in patients with a coexisting disease such as impaired cardiac function or decreased renal function; such conditions could increase the risk of fluid overload.

Fluid balance is closely monitored by daily weights, intake and output, and assessing for edema in lower extremities. Due to the use of potassium depleting diuretics and rapid replacement of electrolytes, including potassium and magnesium, may be needed.

Measures to decrease hyperuricemia should be initiated prophylactically. These measures include Allopurinol and alkalinization to maintain a urine pH at 7 or greater. This may be accomplished by adding 50-100 mEq of sodium bicarbonate to each IV liter of fluid. Many physicians recommend aggressive diuresis as the primary means to control uric acid because alkalinization is considered controversial.

Another important goal in the treatment of TLS is managing potentially life-threatening electrolyte imbalances. Serum electrolytes, uric acid, phosphorus, calcium and creatinine levels should be checked every 6-12 hours until stable for 3-5 days post chemotherapy. Nursing assessment includes cardiac monitoring and close monitoring of metabolic parameters including electrolytes, calcium, blood urea nitrogen, and creatinine levels. The patient should also be closely assessed for signs and symptoms of electrolyte imbalance.

Clinical indicators of hyperkalemia include nausea, vomiting, diarrhea, weakness, muscle cramps, paresthesia, bradycardia, and EKG changes. Patients experiencing hyperphosphatemia may develop oliguria, anuria, and azotemia due to renal insufficiency. Hypocalcemia is manifested by muscle cramping and twitching, carpopedal spasm, tetany, laryngospasm, paresthesia, convulsions, hypotension, and EKG changes. Early signs of hyperuricemia include nausea, vomiting, diarrhea, and anorexia. Because hyperuricemia affects the kidneys, the patient can exhibit lethargy, flank pain, anuria, oliguria, and cloudy urine with sediment. If hyperkalemia develops, 50% glucose should be given intravenously to raise plasma insulin levels. This will create an intracellular shift in potassium. Supplemental insulin may be needed. Kayexalate may be given orally or rectally as an enema. If cardiac or neuromuscular toxicity is seen, calcium gluconate may be given.

Hyperphosphatemia and hypocalcemia are treated by oral supplements such as Amphogel or Basaljel. Acute tumor lysis usually resolves in about seven days, the time it takes for cytolysis to subside after chemotherapy. If adequate renal function has been maintained and metabolic parameters treated, no long term effects from the TLS are expected. However, with relapse of hematologic malignancies, TLS may recur.

Essential Nursing Diagnoses Related to Tumor Lysis Syndrome

Risk For Injury

(CH. 17)

☐ Related to:

Seizures, disorientation

☐ Defining Characteristics:

Seizure activity with change in consciousness, muscle flaccidity or rigidity, muscle weakness.

High Risk for Altered Tissue Perfusion, Renal

☐ Related to:

Tumor lysis resulting in increased release of intracellular contents and the inability of kidneys to maintain normal serum composition.

☐ Defining Characteristics:

Elevations in serum potassium, phosphorus, and uric acid; decreased calcium; increased serum creatinine levels; nausea; vomiting diarrhea; paresthesia; tetany; oliguria; anuria; flank pain; convulsions from electrolyte imbalances.

☐ Outcome Criteria:

Electrolyte imbalances will be identified early and treated promptly.

☐ NIC: Electrolyte Management

Definition: Promotion of electrolyte balance and prevention of complications resulting from abnormal or undesired serum electrolyte levels.

Electrolyte Management	
Activities	*Rationales*
Monitor serum electrolytes every 6 hours and as needed.	TLS manifestations include hyperkalemia, hyperphosphatemia, hyperuricemia, hypocalcemia.
Monitor for signs and symptoms of electrolyte imbalance.	Promotes early recognition and treatment of electrolyte imbalances.
Maintain patient IV access.	Provides route for rapid administration of medications and fluids.
Administer supplemental electrolytes as prescribed, if appropriate.	Promotes electrolyte balance.

☐ NIC: Electrolyte Management—Hyperkalemia

Definition: Promotion of potassium balance and prevention of complications resulting from serum potassium levels higher than desired.

Electrolyte Management—Hyperkalemia	
Activities	*Rationales*
Monitor serum potassium levels as appropriate.	Promotes early recognition of hyperkalemia or hypokalemia.
Monitor causes of increasing serum potassium levels (TLS, renal failure).	Provides information for formulating plan of care.

Electrolyte Management—Hyperkalemia	
Activities	*Rationales*
Assess for potential signs and symptoms of hyperkalemia, including cardiovascular effects such as EKG changes, peaked and narrow T-waves, shortening of the QT interval, wide QRS complex, loss of p-wave, ventricular tachycardia, ventricular fibrillation, asystole, cardiac arrest, blood pressure and pulse changes.	Promotes early identification of cardiac arrhythmias due to rising serum potassium, causing depolarization of the myocardial cells, with decreased responsiveness to stimulation, progressing to cardiac arrest if untreated.
Assess for potential clinical signs and symptoms of hyperkalemia, including neuromuscular effects such as muscle weakness or cramping, paresthesia, and GI effects such as nausea, vomiting, diarrhea, intestinal colic.	Promotes identification of neuro-muscular dysfunctions by rise in serum potassium depolarizing cells.
Monitor phosphate levels as appropriate.	Hyperkalemia can lead to hyperphosphatemia.
Monitor for unintentional potassium intake present in such medications as penicillin and potassium supplements.	Prevents unintentional elevation of serum potassium.
Administer cation-exchange resins such as kayexalate as appropriate.	Binds and eliminates potassium via the bowel.

Electrolyte Management—Hyperkalemia	
Activities	*Rationales*
Administer calcium gluconate as prescribed if appropriate.	Alleviates the action of hyperkalemia on the heart.
Administer sodium bicarbonate as prescribed, if appropriate.	Alkalinizes the plasma, causing a temporary shift of potassium into the cells. Also sodium alleviates the cardiac effects of potassium.
Administer hypertonic dextrose and regular insulin as prescribed, if appropriate.	Shifts potassium into the cells, lowering serum levels.
Avoid potassium-sparing diuretics.	Prevents retention of potassium.
Administer potassium-depleting diuretics as prescribed, if appropriate.	Promotes excretion of potassium.
Monitor potassium levels following diuresis.	Prevents development of hypokalemia from over-treatment of hyperkalemia.
Encourage compliance with low potassium diet.	Promotes decrease in potassium intake.
Treat cardiac arrhythmias according to policy.	Promotes normal cardiac functioning through prompt intervention.
Respond to cardiac arrest.	Hyperkalemia can lead to asystole.

☐ NIC: Electrolyte Management—Hyperphosphatemia

Definition: Promotion of phosphate balance and prevention of complications resulting from serum phosphate levels higher than desired.

Electrolyte Management—Hyperphosphatemia

Activities	*Rationales*
Monitor serum phosphate levels.	Provides information for developing plan of care.
Monitor renal function and signs of insufficiency like anuria, oliguria, and azotemia.	Promotes identification of clinical manifestations of hyperphosphatemia.
Monitor serum calcium levels.	High levels of serum inorganic phosphate may lead to precipitation of calcium phosphate salts in nonosseous sites, which decreases serum calcium.
Avoid phosphate-rich foods such as dairy products, whole grain cereal, nuts, dried fruits and vegetables, organ meats.	Prevents increase in phosphate in take from dietary sources.
Administer prescribed phosphate-binding and diuretic medications such as Amphogel, Phos-Lo cookie, basaljel with food.	Promotes excretion of phosphate via the bowel as the aluminum in these medications bind with phosphate.
Encourage high-fiber foods such as bran, leafy vegetables; increase fluid intake; administer stool softener as appropriate.	Prevents constipation caused by phosphate binding which aluminum products may cause.
Administer prescribed calcium and vitamin D supplements as appropriate.	Promotes reduction in phosphate levels.

Electrolyte Management—Hyperphosphatemia

Activities	*Rationales*
Institute seizure precautions: Remain with the patient, loosen tight clothing, turn head to side, monitor for respiratory distress, alter environment to promote safety.	Hyperphosphatemia can lead to seizures.
Prepare patient/family for dialysis, if appropriate.	Renal dialysis may be needed to correct renal failure.

Instructions, Information, Demonstration

Activities	*Rationales*
Teach patient/family about the types, causes of, and treatments for electrolyte imbalance as appropriate.	Promotes compliance with health care regime.
Teach patient/family the rationale for diuretic therapy.	Frequent urination may be uncomfortable; knowledge promotes acceptance.
Instruct in,and give rationale for, dietary changes such as low potassium, high fiber foods.	Prevents increase in potassium and phosphate from dietary sources; prevents constipation.

Instructions, Information, Demonstration	
Activities	*Rationales*
Teach patient/family signs and symptoms of electrolyte imbalance and to report to health care team occurrence of nausea, diarrhea, muscle twitching or weakness, decreased urine output, irregular heart rhythm, chest pain.	Promotes early identification of electrolyte imbalance and increases likelihood of prompt intervention.

☐ Discharge or Maintenance Evaluation

- Patient/family will report signs and symptoms of electrolyte imbalance to the health care team.
- Patient will eat low potassium, low phosphate, high fiber diet.

Risk for Altered Urinary Elimination

☐ Related to:

Uric acid nephropathy and acute renal failure from tumor lysis syndrome.

☐ Defining Characteristics:

Decreased urine output, elevations in serum creatinine and blood urea nitrogen (BUN) levels.

☐ Outcome Criteria:

Patient will demonstrate adequate urinary eliminations as evidenced by urine output greater than 30 cc per hour; normal serum creatinine and BUN levels.

☐ NIC: Fluid Management

Definition: Promotion of fluid balance and prevention of complications resulting from abnormal or undesired levels.

Fluid Management	
Activities	*Rationales*
Monitor serum creatinine and BUN levels as appropriate.	Promotes early identification of renal dysfunction and prompt treatment.
Administer Allopurinol prophylactically.	Prevents uric acid nephropathy by inhibiting the enzyme xanthine oxidase, which in turn blocks the conversion of uric acid precursors into uric acid.
Begin IV 48 hours before and continue 48 hours after chemotherapy, with 5% Dextrose in 0.45% normal saline at a rate of $3L/m^2/24$ hours.	Reduces urate deposits in the kidneys and enhances clearance of phosphates and urate.
Encourage patient to drink 12-15 glasses of water per day while at home.	These measures promote adequate diuresis to prevent urate deposits in kidneys.
Maintain urinary output at 100cc/hour by oral and IV.	These measures promote adequate diuresis to prevent urate deposits in the kidneys.
Administer diuretics as ordered.	These measures promote adequate diuresis to prevent urate deposits in the kidneys.

Fluid Management	
Activities	*Rationales*
Monitor serum creatinine and BUN levels as appropriate.	Promotes early identification of renal dysfunction and prompt treatment.
Administer acetazolamide as prescribed.	Promotes bicarbonate excretion and alkalinization of urine by inhibiting the resorption of bicarbonate.
Maintain urine pH of 7 or greater by adding 50-100 mEq of sodium bicarbonate to each liter of IV fluid.	Promotes alkalinization which increases the solubility of uric acid in the urine aiding excretion.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient/family on rationale for, urine collection and measurement, and medications.	Promotes compliance with health care regime.
Instruct patient to drink 12-15 glasses of fluid per day.	Promotes adequate hydration at home; prevents urate deposits in the kidney.
Inform patient/family to report decreased urine output to health care team.	Prevents urate deposits due to low urine output and promotes early detection of renal dysfunction.

☐ Discharge or Maintenance Evaluation

- Patient prevents uric acid nephropathy by demonstrating such self-care measures as taking allopurinol and drinking 12-15 glasses of water per day.
- Patient reports decreased urine output to health care team immediately.

Risk for Fluid Volume Excess

☐ Related to:

Preventing renal failure from TLS through vigorous hydration before and after chemotherapy.

☐ Defining Characteristics:

Intake greater than output, shortness of breath, abnormal breath sounds (rales), s3 heart sound, blood pressure or pulse changes, jugular vein distention.

☐ Outcome Criteria:

Patient's fluid volume will be maintained at an adequate level.

☐ NIC: Fluid Management

Definition: Promotion of fluid balance and prevention of complications resulting from abnormal or undesired levels.

Fluid Management	
Activities	*Rationales*
Monitor the following every 4 hours and prn: 1. Blood pressure and pulse 2. Heart and lung sounds 3. Intake and output 4. Jugular vein distention 5. Presence of edema	Promotes early identification of symptoms of fluid volume excess.
Obtain daily weights.	Weight gain may indicate fluid overload.
Consult physician if signs and symptoms of fluid volume excess persist or worsen.	Promotes prompt treatment fluid volume excess.
Maintain prescribed IV hydration.	Prevents fluid imbalance.

Instructions, Information, Demonstration	
Activities	*Rationales*
Inform patient/family of rationale for measures to increase output and decrease intake, if appropriate.	Promotes compliance with health care regime.

☐ Discharge or Maintenance Evaluation

- Patient's fluid balance will be maintained as evidenced by blood pressure and pulse within patient's normal range; lungs clear to auscultation; absence of neck vein distention; absence of edema.

Hypercalcemia

Hypercalcemia is an elevation in the serum calcium level, and it is the most common metabolic emergency in cancer patients. The overall incidence of this symptom is about 10%-20% for all types of cancer. However, in patients with multiple myeloma and breast cancer, about 40%-50% develop an elevation in serum calcium levels at some point in their disease. Elevations in serum calcium are common when bone metastases are present. The symptom often indicates a lack of control of the disease process. Death can occur from a hypercalcemia crisis within 12 hours, yet only about 5% of patients with hypercalcemia require lifesaving treatment.

Patient's with cancer of the breast, lung, head, or neck, and those with kidney or hematologic malignancies such as multiple myeloma, leukemia, and lymphomas are most at risk for developing hypercalcemia, especially when bone metastases are present. Other risk factors include immobility, dehydration, renal dysfunction, skeletal fractures, primary hyperparathyroidism, history of thiazide diuretic, lithium and estrogen therapy, and advanced age. The main systems affected by hypercalcemia are gastrointestinal, neuromuscular, cardiac, and renal. Clinical presentations include dehydration, pruritus, polydipsia, anorexia, nausea, vomiting, constipation, weight loss, fatigue, lethargy, muscle weakness, hyporeflexia, confusion, psychosis, seizure, obtundation, coma, bradycardia, prolonged P-R interval, shortened Q-T interval, wide T-wave, atrial

or ventricular arrhythmias, polyuria and renal insufficiency.

The severity of presentation is not related exclusively to the degree of elevation in the serum calcium level, but is also related to the rapidity with which the elevation occurs. Patients with a slight-to-moderate increase which occurs rapidly may present in an obtunded state, while patients with long-standing elevations may tolerate higher elevations with few symptoms.

Treatment

The best treatment for cancer-related hypercalcemia is treatment of the underlying malignancy. However, hypercalcemia is most common in patients with advance disease who have failed prior therapy, which makes this approach difficult. Usual therapies for hypercalcemia start with vigorous hydration to restore normal volume of extracellular compartment fluid; increasing glomerular filtration; and promoting urinary calcium excretion. Infusion of 4-6 liters of normal saline (0.9%) per day for at least 48 hours is common. Intravenous furosemide is given to promote sodium and calcium diuresis and to prevent hypernatremia and heart failure from fluid overload. Fluid and electrolyte balance and renal function should be closely monitored. Etidronate Disodium, Mithramycin and/or Calcitonin may be given to inhibit bone resorption of calcium. Phosphate may be given if other measures fail to promote the precipitation of inorganic calcium phosphate. Gallium nitrate and diphosphate may also be administered to decrease the serum calcium salts in the bone. For chronic or mild hypercalcemia, oral phosphate may be given. Indomethacin and steroids may also be prescribed, although their effectiveness is considered controversial.

Patients can help decrease the incidence of hypercalcemia by frequent ambulation and drinking 2-3 liters of fluid per day. In persons at risk for hypercalcemia, thiazide diuretics are contraindicated because they inhibit calcium excretion. Digitalis doses may need to be lowered as the action of digitalis is enhanced in a hypercalcemic state. While emergent hypercalcemia can be reversed about 80% of the time, the duration of this reversal may be short-lived unless the underlying malignancy is controlled. For appropriate nursing diagnoses for the treatment of the underlying malignancy, refer to the specific chapter for that cancer and/or the appropriate treatment chapter. The following are nursing diagnoses specific to the patient with hypercalcemia.

Essential Nursing Diagnoses Related to Hypercalcemia

Altered Thought Processes

(CH. 17)

☐ Related to:

Physiological changes secondary to hypercalcemia.

☐ Defining Characteristics:

Disorientation to time, place, circumstances and events, change in consciousness.

Fluid Volume Deficit

(CH. 4)

☐ Related to:

Dehydration from hypercalcemia.

☐ Defining Characteristics:

Tachycardia, low urine output, dry mucous membranes, decreased fluid intake from anorexia, nausea, vomiting, and/or weight loss.

Risk for Fluid Volume Excess

(Tumor Lysis Syndrome, this Chapter)

☐ Related to:

Vigorous hydration to treat hypercalcemia

☐ Defining Characteristics:

Intake greater than output, shortness of breath, abnormal breath sounds (rales), s/3 heart sound, blood pressure or pulse changes, jugular vein distention.

Constipation

(CH. 21)

☐ Related to:

Hypercalcemia and it's treatment.

☐ Defining characteristics:

Decreased frequency of stools, hard formed stools, abdominal pain or cramping.

Risk For Injury

☐ Related to:

Hypercalcemia from advancing malignant disease process.

☐ Defining Characteristics:

Elevation in serum calcium levels, complaints of lethargy, weakness, nausea, vomiting, constipation, increased thirst and urination, and/or itching.

☐ Outcome Criteria:

Patient identifies symptoms of hypercalcemia to report to the health care team, and learns measures to take to prevent hypercalcemia.

Hypercalcemia will be prevented or identified early.

☐ NIC: Electrolyte Management—Hypercalcemia

Definition: Promotion of calcium balance and prevention of complications resulting from serum calcium levels higher than desired.

Electrolyte Management—Hypercalcemia

Activities	*Rationales*
Identify clients at risk for hypercalcemia.	Promotes early identification and/or prevention in population at risk.
Assess for signs and symptoms of hypercalcemia, including dehydration, pruritus, polydipsia, anorexia, nausea, vomiting, constipation, weight loss, fatigue, lethargy, muscle weakness, hyporeflexia, confusion, psychosis, seizure, obtundation, coma, and polyuria.	Promotes early identification of hypercalcemia effects due to a decrease in neuromuscular activity.
Monitor for EKG changes including bradycardia, prolonged P-R interval, shortened Q-T interval, wide T-wave, and atrial or ventricular arrhythmias.	Promotes early identification of effects of hypercalcemia on the heart due to increased contractility.
Monitor for digitalis toxicity, if appropriate.	Action of digitalis is potentiated in a hypercalcemic state.
Monitor the following: 1. Intake and output 2. Renal Function (BUN, CR) 3. Serum calcium 4. Serum electrolytes	Provides information regarding effectiveness of treatments and renal function.
Administer vigorous hydration as prescribed, usually 4-6 liters of normal saline in 24 hours.	Promotes urinary excretion of calcium and restores hydration.

Electrolyte Management—Hypercalcemia

Activities	*Rationales*
Administer prescribed medications as appropriate, such as	Promotes reduction in serum calcium levels accordingly:
1. Furosemide	1. block calcium resorption & inhibit sodium absorption
2. Prednisone	2. inhibits bone resorption
3. Calcitonin	3. inhibits bone resorption
4. Etidronate Disodium	4. inhibits bone resorption
5. Mithramycin	5. inhibits bone resorption
6. Indomethacin	6. inhibits prostaglandin synthesis
7. Phosphates	7. Inhibits bone resorption, limits calcium absorption from the gut, and promotes soft-tissue and skeletal calcification.
Avoid lithium carbonate and thiazide diuretics.	Prevents renal calcium excretion.
Discourage dietary intake of calcium by limiting dairy products, seafood, nuts, broccoli, spinach, as appropriate.	Prevents additional increase in serum calcium from dietary sources.
Encourage mobilization and ambulation.	Prevents bone resorption.
Prepare for dialysis.	Provides rapid, temporary relief of hypercalcemia.

Instructions, Information, Demonstration

Activities	*Rationales*
Instruct patient/family in rationale for measures to treat hypercalcemia.	Promotes compliance with health care regime.
Instruct patient to drink 8-12 glasses of fluid daily.	Promotes urinary excretion of calcium.
Inform patient/family of need to report symptoms of hypercalcemia to the health care team.	Promotes early identification and prompt intervention of hypercalcemia.
Instruct on calcium-rich foods to avoid such as dairy products, seafoods, nuts, broccoli, spinach.	Prevents increase in serum calcium from dietary sources.
Stress importance of activity.	Prevents bone resorption.
Instruct on use and side effects of medications used to treat chronic hypercalcemia, such as oral phosphate, indomethacin, and oral steroids.	Promotes safe use of these medications in the home.

☐ Discharge or Maintenance Evaluation

- Hypercalcemia will be prevented or identified early and treated promptly.
- Patient will demonstrate measures to prevent hypercalcemia and/or reduce its severity.

Syndrome of Inappropriate Antidiuretic Hormone Secretion (SIADH)

Syndrome of inappropriate antidiuretic hormone secretion (SIADH) was first postulated in 1938 when an association of hyponatremia and lung cancer was noted. It is a paraneoplastic disease usually associated with an excess of ADH. This excess results from ectopic production or abnormal stimulation of the hypothalamus-pituitary network. Small cell lung cancer is the most common malignancy associated with this disorder. It is occasionally associated with other malignancies such as gastrointestinal cancers, thymoma, lymphoma, Hodgkin's disease, bladder cancer, and sarcoma. Other proposed causes of SIADH include infections; CNS lesions or trauma; and treatment with cyclophosphamide, vincristine, cisplatin, thiazide diuretics, morphine, and/or antidepressants.

The manifestations of (SIADH) appear as a result of water intoxication. Excessive amounts of water are retained, plasma osmolarity drops, and dilutional hyponatremia occurs. Clinical symptoms include altered mental status, confusion, lethargy, psychotic behavior, seizures, coma, and occasionally death. Other symptoms include thirst, headache, anorexia, muscle cramps, nausea, vomiting, hyporeflexia, decreased urine output and weight gain without evidence of edema. Indications of SIADH are hyponatremia with sodium levels below 130

mEq/L with low serum osmolarity, high urine sodium level, and high urine osmolarity.

Treatment

Successful treatment of SIADH centers around management of the underlying malignancy. Since most cases of SIADH involve lung cancer, the reader is referred to Chapter 8 for treatment and nursing care of the patient with lung cancer.

For symptomatic hyponatremia and serum sodium levels less than 130mEq/L, fluid restriction to less than 500 ml/24 hours will allow patients to increase their plasma osmolarity slowly over 7-10 days. Since treatment of the underlying malignancy with chemotherapy often requires hydration, and close monitoring of both body weight and intake and output, serum sodium and other electrolytes will be needed. Symptomatic moderate hyponatremia, in which serum sodium levels are less than 125 mEq/L, requires infusion of normal saline and electrolytes with diuresis and furosemide before systemic chemotherapy. Patients with severe hyponatremia, with which less than 120 mEq/l and profound neurologic changes are associated, may require 3% hypertonic saline infusions and furosemide diuresis. Chronic SIADH which appears despite chemotherapy may require therapy with demeclocycline and/or lithium.

The overall prognosis for the patient with SIADH depends on the responsiveness of their tumors to treatment. Occasionally, SIADH persists despite tumor control. However, its presence, especially recurrence, suggests tumor progression. The nursing care of the patient experiencing SIADH is presented below. For information about patients receiving chemotherapy for treatment of their disease, refer to the appropriate disease chapter and Chapter 4, Chemotherapy.

Essential Nursing Diagnoses Related To SIADH

Altered Thought Processes

(CH. 17)

- ☐ Related to:

  Physiological changes due to electrolyte imbalances.

- ☐ Defining Characteristics:

  Disorientation to time, place, circumstances and events; change in consciousness.

Risk for Fluid Volume Excess

- ☐ Related to:

  Vigorous hydration before and after chemotherapy and/or water intoxication due to SIADH.

- ☐ Defining Characteristics:

  Intake greater than output; weight gain; weakness and fatigue; confusion; headache; lethargy; thirst; decreased serum sodium with

decreased serum osmolarity; and increased urine sodium and urine osmolarity.

☐ Outcome Criteria:

SIADH will be identified early and treatment will be initiated promptly.

☐ NIC: Fluid Management

Definition: Promotion of fluid balance and prevention of complications resulting from abnormal or undesired levels.

Fluid Management

Activities	*Rationales*
Monitor the following every 4 hours and prn: 1. Blood pressure and pulse 2. Heart and lung sounds 3. Intake and output 4. Jugular vein distention 5. Presence of edema.	Promotes early identification of symptoms of fluid volume excess
Obtain daily weights.	Weight gain would indicate fluid overload.
Consult physician if signs and symptoms of fluid volume excess persist or worsen.	Promotes prompt treatment fluid volume excess.
Administer diuretics as appropriate.	Promotes diuresis of excess fluids.
Maintain prescribed IV hydration.	Prevents fluid imbalance.

☐ NIC: Electrolyte Management—Hyponatremia

Definition: Promotion of sodium balance and prevention of complications resulting from serum sodium levels lower than desired.

Electrolyte Management—Hyponatremia

Activities	*Rationales*
Assess for symptoms of SIADH, including altered mental status, confusion, lethargy, psychotic behavior, seizures, coma, thirst, headache, anorexia, muscle cramps, nausea, vomiting, hyporeflexia, decreased urine output and weight gain without evidence of edema.	Promotes early identification of SIADH.
Identify cause of SIADH and treat if possible.	Promotes normal sodium and water levels.
Administer chemotherapy as prescribed.	Promotes treatment of underlying malignancy.
For symptomatic hyponatremia and serum sodium levels less than 130 mEq/L, restrict fluids to less than 500 ml/24 hours.	Allows patient to increase plasma osmolarity slowly.
To decrease thirst, provide such comfort measures such as dividing fluid amounts between day, evening, and night; offer sugarfree gum or candy; rinse mouth with water every 2 hours.	Moistens mucous membranes without increasing fluid intake.

Electrolyte Management—Hyponatremia

Activities	*Rationales*
For symptomatic moderate hyponatremia and serum sodium levels less than 125 mEq/L infuse normal saline and electrolytes and administer furosemide before systemic chemotherapy.	Promotes normal sodium levels.
For severe hyponatremia, serum sodium level less than 120 mEq/L and profound neurologic changes, administer 3% hypertonic saline infusions and furosemide.	Promotes normal sodium levels and excretion of excess fluids.
For chronic SIADH administer demecocycline and/or lithium.	Promotes normal sodium level by interfering with the ADH action on the tubules.
Institute seizure precautions including remaining with the patient, loosening tight clothing, turning head to side, monitoring for respiratory distress, altering environment to promote safety.	Hyponatremia can lead to seizures.
Encourage intake of foods high in sodium.	Promotes increase in sodium from dietary sources.

Instructions, Information, Demonstration

Activities	*Rationales*
Instruct patient/family on rationale for measures to treat hyponatremia.	Promotes compliance with health care regime through knowledge.
Instruct on reason for fluid restriction and measures to promote comfort when thirst occurs.	Promotes oral comfort and compliance with fluid restriction.
Instruct patient/family on signs and symptoms to report to health care team, including weight gain (5 lbs in 1 day), decrease in urine output, mental status changes, nausea, and seizure activity.	Promotes early identification of SIADH and prompt treatment.

☐ Discharge or Maintenance Evaluation

- Patient's fluid balance will be restored as evidenced by blood pressure and pulse within patient's normal range, lungs clear to auscultation, absence of neck vein distention, absence of edema, normal sodium and serum osmolarity levels.
- Patient will state signs and symptoms of SIADH that need to be reported to health care team.
- SIADH will be identified early and treated promptly.

Disseminated Intravascular Coagulation

Disseminated intravascular coagulation (DIC) may present as either an acute or chronic disorder. In acute coagulation disorder, widespread clotting occurs within the arterioles and capillaries. This clotting results in consumption of clotting factors and leads to hemorrhage. When more chronic in nature, coagulation abnormalities are seen without clinical manifestations. DIC in cancer patients can be related to the disease process or treatment.

About 15% of persons with cancer will experience DIC. The most common neoplasms associated with DIC are acute promyelocytic leukemia (about 85% of patients will have DIC), and adenocarcinomas such as gastric, lung, pancreas, and prostate tumors. Known to trigger DIC are such complications of cancer treatments as sepsis, bacterial infections, and intravascular hemolysis resulting from hemolytic transfusion reactions. Clinical presentations include bleeding, bruising, petechiae, tachycardia, restlessness, blood in urine, emesis, or stools. Bleeding into the brain manifests in the signs and symptoms of increased intercranial pressure which include confusion, headaches, changes in mental status, vision changes, and even coma.

Laboratory abnormalities associated with DIC include prolonged prothrombin time, prolonged activated partial thromboplastin time, prolonged thrombin time, low plasma, fibrinogen, and decreased platelet count. Usually DIC is diagnosed if two or more coagulation abnormalities are present.

Treatment

Treatment of DIC involves identification and treatment of all precipitating factors such as the primary cancer and sepsis, infection, or transfusion reaction. A response of the malignancy to treatment is often associated with response of the DIC. The use of heparin remains controversial. Heparin, if used, is given to inhibit factors 9 and 10, thereby halting the clotting cascade.
Epsilonaminocaproic acid (EACA) has been given in conjunction with heparin to maintain platelet and fibrinogen levels, but its use is controversial. Aggressive support through blood product replacement is usually required, including transfusions of packed red blood cells (PRBCs), platelets, and fresh frozen plasma (FFP) for replacement of clotting factors. Measures to protect the patient from injury are instituted if the platelet count falls below 50,000 mm^3. Chronic DIC can be effectively treated with subcutaneous injections of heparin or antiplatelet agents such as aspirin or dipyridamole.

For treatment of the specific cancers, refer to the appropriate chapters. The following nursing diagnoses are for the treatment of DIC only.

Essential Nursing Diagnoses Related to Disseminated Intravascular Coagulation

Risk For Injury

(CH. 4)

☐ Related to:

Thrombocytopenia from chemotherapy, the cancer disease process and/or DIC.

☐ Defining Characteristics:

Platelet count below 50,000 mm^3, bleeding or easy bruising noted.

Altered Tissue Perfusion, Cardiopulmonary

(CH. 13)

☐ Related to:

Anemia caused by blood loss due to DIC.

☐ Defining Characteristics:

Cold extremities, pale skin, pale mucous membranes, shortness of breath, tachycardia, tachypnea, anxiety, and or angina.

Risk For Injury

☐ Related to:

DIC

☐ Defining Characteristics:

Prolonged PT, PTT, TT, FSP, platelet count, and/or fibrinogen level, bleeding, petechiae, blood in urine, emesis, or stools.

☐ Outcome Criteria:

DIC will identified and treatment initiated promptly.

☐ NIC: Bleeding Reduction

Definition: Limitation of the loss of blood volume during an episode of bleeding.

Bleeding Reduction	
Activities	*Rationales*
Identify persons at risk for DIC.	Promotes early identification of persons at risk for DIC.
Assess for signs and symptoms of DIC including bleeding, bruising and petechiae, tachycardia, restlessness, confusion, blood in urine, emesis, or stools.	Promotes identification of persons with DIC.
Assess for laboratory abnormalities including prolonged PT, PTT, and/or TT levels, and decreased plasma fibrinogen levels and platelet count.	DIC is usually diagnosed if two or more coagulation abnormalities are present.

Bleeding Reduction	
Activities	*Rationales*
Monitor laboratory values including PT, PTT, TT, platelet count and fibrinogen levels.	Provides information for evaluating effectiveness of treatments.
Monitor amounts of bleeding by weighing dressings, counting peripads, measuring bloody drainage, hema testing urine, stool, or emesis.	Provides record of accurate blood loss to ensure accurate replacement.
Administer heparin prescribed, if appropriate.	Inhibit clotting factors 9 and 10, thereby halting the clotting cascade.
Administer epsilonaminocaproic acid (EACA) in conjunction with heparin as appropriate.	Maintain platelet and fibrinogen levels during heparin therapy.
Elevate and apply direct pressure, pressure dressings, or sandbags to sites of active bleeding.	Prevents further blood loss until clotting can take place.
For chronic DIC, administer subcutaneous injections of heparin or antiplatelet agents, such as aspirin or dipyridamole.	Prevents clotting abnormalities in patients with chronic DIC.

☐ NIC: Blood Products Administration

Definition: Administration of blood or blood products and monitoring of patient's response.

Blood Products Aministration	
Activities	*Rationales*
Monitor hemoglobin, hematocrit, and platelet count.	Provides information for evaluating response to transfusions.
Verify physician order for blood product.	Prevents errors in blood administration.
Verify that blood product matches patient's blood type and physician order.	Prevents hemolytic transfusion reaction from improperly matched blood.
Perform venipuncture using appropriate technique.	Provide intravenous line for blood administration.
Administer appropriate blood products, including PRBCs, FFP, and platelets.	Promotes replacement of blood lost and clotting factors.
Monitor vitals before, during, and after transfusion.	Promotes identification of transfusion reactions.
Monitor for fluid overload and blood transfusion reactions during transfusion.	Identifies complications of transfusions.
Stop transfusion if blood reaction occurs, and maintain open IV line with saline.	Prevents further infusion of mismatched blood and provides IV access for emergency medications.
Obtain first voided urine specimen after a transfusion reaction.	Provides evidence of renal damage.
Notify physician and laboratory if transfusion reactions occur.	Promotes identification of transfusion reaction type.
Maintain universal precautions.	Prevents spread of disease.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient/family about critical signs and symptoms to report to health care team, including bleeding, blood in stools or urine, changes in mental status.	Promotes early identification of DIC and prompt treatment.
Instruct patient/family in rationale for measures to treat DIC and prevent injury.	Promotes compliance with health care regime.

☐ Discharge or Maintenance Evaluation

- Patient exhibits resolution of signs and symptoms of DIC such as cessation of bleeding, return of hematologic values, coagulation and fibrinogen levels returning to normal.
- Patient's fluid balance will be restored as evidenced by blood pressure and pulse within patient's normal range; lungs clear to auscultation; absence of neck vein distention; absence of edema; normal sodium and serum osmolarity levels.

Chapter Eight

Lung Cancer

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Lung Cancer

Lung cancer is a major health problem in the United States. Annually 170,000 new cases are diagnosed. It is the second most common cancer in men, with a 17% incidence and the third most common cancer in women with a 12% incidence rate. Peak incidence in men is between the ages of 50 and 60. Lung cancer is the leading cause of cancer death for both men and women. The five year survival rate is only 13%.

Risk Factors

Risk factors for lung cancer include smoking (linked to 85% of all lung cancers), exposure to certain industrial substances such as arsenic, asbestos(especially smokers), coal distillates, iron oxide, tar, and chronic exposure to air pollution, radon, or radiation such as uranium. Additionally, some researchers have suggested a genetic predisposition, and the presence of chronic obstructive pulmonary disease, progressive, systemic sclerosis, and scars from tuberculosis or inflammation increase the individual's risk of developing lung cancer.

Types

There are two major types of lung cancer, small cell and non-small cell. Small cell lung cancers (SCLC) include oat cell, hexagonal cell, lymphocytic, and spindle cell cancers. These cancers are more likely to occur near the mediastinum or hilus, and are usually widespread (metastatic) when they occur, and can cause rapid deterioration. Non-small cell lung cancers (NSCLC) include epidermoid (squamous), adenocarcinoma, and large cell. Squamous cell carcinomas usually arise in the segmented bronchi and spread locally, causing bronchial obstruction. Adenocarcinoma of the lung is usually located in the lung periphery and spreads to the brain, bones, liver, and the other lung. Large cell lung cancers start out as bulky peripheral tumors, spreading locally before metastasizing. Lung cancer commonly metastasizes to the liver, spleen, brain, and bones.

Presenting Signs and Symptoms

There are no early signs and symptoms of lung cancer. Late presenting signs and symptoms include persistent cough, shoulder, arm, or chest pain, hemoptysis, dyspnea, wheezing, hoarseness, dysphagia, anorexia, weight loss, fatigue, and superior vena cava syndrome.

Diagnostic Tests

There is no accurate early screening test for lung cancer. Diagnostic tests to determine the presence of a mass include chest x-ray, chest computed tomographic (CT) scan, lung tomography, and magnetic resonance scanner (MRI). Tests to determine if the mass is cancer include sputum cytology, bronchoscopy with brushing or washings, needle biopsy, mediastinoscopy, and scalene node biopsy. At times a thoracotomy must be done if tissue cannot be obtained in any other way to determine the type of lung cancer. As part of the staging process, tests are done to determine if the cancer has spread. CAT scans or MRI's may be done of the adrenals, liver, spleen, bones, or brain. Carcinoembryonic antigen enzyme titer (CEA) is sometimes used as a tumor marker in lung cancer. High CEA levels indicate extensive tumor invasion. Fluctuations in CEA levels may indicate either a response to treatment (lowering of CEA) or failure of treatment (increasing CEA levels).

Treatment of Non-Small Cell Lung Cancer (NSCLC)

Treatment varies depending on the type of cancer and stage at presentation. Surgery remains the treatment of choice and best hope of cure in non-small cell lung cancer. Various surgical options are available, including laser phototherapy for small superficially accessible tumors by bronchoscopy. For larger tumors lobectomy (removal of a lobe of the lung), wedge resection (removal of a wedge of the lung), segmentectomy (removal of a segment of the lung), or pneumonectomy (removal of the whole lung), may be done if disease appears localized. Radiation therapy (external beam) can be done alone with a curative intent for early stage NSCLC, if lung function is impaired, or if surgery is contraindicated for other reasons. It may also be done adjuvantly preoperatively or postoperatively. Palliative radiation therapy for control of symptoms may be indicated for those patients with more widespread disease. Chemotherapy may be used to improve response rates in later stage disease, but does not appear to increase survival. Combination chemotherapy regimes are usually platinum-based. Additional chemotherapy agents used in NSCLU include cyclophosphamide (Cytoxan), carboplatin-doxorubicin (Adriamycin), Etoposide (VP- 16), mitomycin, vincristine or vinblastine.

Treatment of Small Cell Lung Cancer (SCLC)

Surgery is rarely an option for SCLC because it is usually metastatic at the time of diagnosis. However, if at the time of diagnosis the tumor is resectable and there is no evidence of disease in any other area, surgery may be done. This is usually fol-

lowed by an adjuvant course of chemotherapy.

Chemotherapy is the more common treatment of choice with SCLC as it appears to improve the survival rate. Those most common combinations include platinum and etoposide (VP-16). Other common combinations include CAV, cyclophosphamide (Cytoxan), doxorubin (Adriamycin), vincristine, and ICE, ifosfamide, cisplatin, and etoposide. Cranial radiation prophylacticly to prevent or retard incidence of brain metastases in SCLC is controversial. In late stage disease, radiation and/or chemotherapy may be used to palliate symptoms.

Investigational Treatments

Biologic agents like interleukin-2 and interferon are currently be investigated alone and in combination with chemotherapy as treatment for lung cancers. The data are not yet conclusive to indicate the role, if any, of these agents in the treatment of lung cancer. Nalvelbine is a new chemotherapeutic agent being investigated for lung cancer. Some researchers have found a vaccine made of proteins thought to be unique to lung cancer cells, and it seems to increase survival rates in some lung cancer patients. This vaccine will not be available for many years as clinical trials are still underway. Studies are underway that combine radiation therapy and chemotherapy in new ways to see if they will work better in the treatment of lung cancer.

Complications of the Disease

Pneumonia is a frequent complication of lung cancer before, as well as after, the diagnosis is made. Often, when recurrent respiratory infections are not cleared up with antibiotic therapy, a chest x-ray is done to assist in the diagnosis of lung cancer. As the tumor grows it often occludes airways, leading to the patient's inability to clear secretions from behind the occlusion. These secretions build up and can lead to pneumonia and even consolidation of these blocked areas.

Infections and blocked airways can lead to abnormal blood gas values as the body compensates for the decrease in lung tissue for the exchange of gases. This problem is further complicated in many patients who, due to their smoking history, already have chronic pulmonary disease which impairs their respirations.

Another complication seen frequently is shoulder and arm pain related to the compression on adjacent structures as the tumor grows. Severe compression of the superior vena cava disables blood flow on the side of blockage to return to the heart. This condition is called Superior Vena Cava Syndrome and is characterized by distention of the arm and neck veins, and facial, neck, and arm edema on the affected side. This is a medical emergency and is usually treated by radiation therapy or chemotherapy. If the laryngeal nerve is involved, hoarseness may

occur. This is an important symptom as its presence usually contraindicates surgery.

Metabolic complications are seen more often in small cell lung cancers which may have a rapid response to treatment. See Chapter 6, Structural Oncologic Emergencies, for more information. These may include acute tumor lysis syndrome (TLS) and/or syndrome of inappropriate antidiuretic hormone (SIADS). See Chapter 7, Metabolic Oncologic and Physiologic Emergencies, for more information.

Common Nursing Diagnoses Related to Caring for All Clients With Lung Cancer

Anxiety

(CH. 1)

☐ Related to:

Perceived threat to self due to diagnosis of lung cancer and its poor prognosis or its treatment.

☐ Defining Characteristics:

Patient verbalizes feelings of uncertainty, apprehension, fear, sleeplessness, restlessness, or other signs of anxiety.

Anticipatory Grieving

(CH. 1)

☐ Related to:

Losses due to lung cancer such as loss of health, income, work, intimacy, relationships, and possible life.

☐ Defining Characteristics:

Patient exhibits or voices expressions and/or feelings of sadness or loss or concerns over possible loss of work, income, life.

Ineffective Individual Coping

(CH. 1)

☐ Related to:

Diagnosis of lung cancer and its poor prognosis.

☐ Defining Characteristics:

Inability to meet basic care needs, fatigue,verbalization of inability to cope.

Altered Nutrition: Less than Body Requirements

☐ Related to:

Inability to ingest adequate food intake because of tumor location, and treatments of tumor such as chemotherapy and/or radiation therapy.

☐ Defining Characteristics:

Anorexia, nausea, vomiting, loss of weight, reported decrease in food intake, early satiety, inability to eat due to dyspnea or fatigue, presence of mouth soreness and/or ulcerations.

☐ Outcome Criteria:

Patient ingests enough food to maintain body weight within 5% of baseline weight.

Reports increase intake of food and fluids resulting in weight gain.

☐ NIC: Weight Gain Assistance

Definition: Facilitating gain of body weight.

Weight Gain Assistance

Activities	*Rationales*
Assess for anorexia, nausea, vomiting (number of episodes and amount) stomatitis, mucositis, dyspepsia, or dysphagia.	Signs and symptoms associated with chemotherapy/radiation affecting oral and gastrointestinal mucosa which make food ingestion difficult.
Assess food intake likes and dislikes.	Provides information for diet planning.
Assess for early satiety; if present, encourage patient to eat even when not hungry.	Promotes adequate food intake.
Assess weight loss, weakness, tissue/muscle wasting, cachexia.	Results from catabolic effect of tumor on body metabolism and trapping of nutrients by rapidly dividing tumor cells.
Administer antiemetic prior to meals.	Prevents nausea and vomiting and promotes adequate food intake.
Administer chemotherapy at night.	Decreases stimulus to the vomiting center and less nausea is seen due to promotion of sleep.

Weight Gain Assistance

Activities	*Rationales*
Provide oral care before meals and/or topical anesthetics if oral pain is a problem.	Stomatitis from chemo/radiation can cause dry, irritated, painful mucosa making it difficult to eat.
Offer artificial saliva (Salivant) if dry mouth is a problem.	Promotes moistness in oral cavity which is a side effect from radiation.
Offer frequent small meals.	Prevents overdistention of the stomach which can cause increased pressure on the diaphragm making breathing more difficult.
Offer high calorie, high protein snacks and/or liquid supplements that are easy to consume.	Provides high protein and calorie intake needed to maintain protein stores and prevent fatigue.
Offer wine, brandy or administer megace prior to meals.	Measures stimulate appetite.
Offer soft bland foods like ice cream, custards.	Foods are easy to ingest, nonirritating to gastrointestinal tract.
Offer meals in clean, pleasant odor-free environment.	Promotes improved intake as odors and noxious stimuli can increase anxiety and nausea.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient/family on ways to increase calorie intake by eating high calorie, high protein foods.	Promotes intake of foods that provide proteins for cell building calories for energy.
Teach to avoid hot, spicy, or acidic foods and fluids.	These foods can irritate gastric mucosa already inflamed by radiation/chemo.
Instruct on bland foods and fluids such as milk shakes, popsicles, ice cream, custards.	Provides high calorie, high protein snacks that are easy to consume without over-distending the stomach, making it difficult for patient to breathe.
Instruct to avoid beverages that have no calories or nutrients such as coffee, tea, diet pop, water if early satiety or anorexia are present.	Beverages may fill up stomach making patient unable to ingest foods and/or fluids with calories and proteins.

☐ Discharge or Maintenances Evaluation

- Daily intake of food and/or fluids that meet caloric and nutritional needs.
- Weight maintained within 5% of baseline.
- Weight gain, if appropriate, as indicated by nutritional assessment.
- Nausea and vomiting are controlled.
- Patient verbalizes improved appetite and intake of food and fluids.

Impaired Gas Exchange

☐ Related to:

Ventilation perfusion imbalance from lung of affected lung surface from cancer or pneumonia.

☐ Defining Characteristics:

Dyspnea, hypoxia, hypercapnia, restlessness, abnormal blood gases.

☐ Outcome Criteria

Maintenance of adequate oxygenation to tissues.

☐ NIC: Airway Management

Definition: Facilitation of patency of air passages.

Airway Management	
Activities	*Rationales*
Assess respiratory rate, depth, and ease, presence of dyspnea, use of accessory muscles and/or cyanosis.	Changes in respiratory rate or pattern, cyanosis, dyspnea, or use of accessory muscles may indicate respiratory distress and need for immediate intervention.
Auscultate breath sounds, assessing for decreased or absent ventilation and presence of adventitious sounds such as rales (crackles), wheezing, rhonchi.	Decreased or absent breath sounds may indicate lung collapse, presence of adventious sounds could indicate need for additional interventions.
Assess for changes in consciousness, mentation, restlessness, irritability.	Presence may indicate decreased oxygenation to brain tissue.

Airway Management

Activities	*Rationales*
Assess results of blood gases if performed.	O_2 and CO_2 diffusion and exchange are affected when less tissue surface is available and may result in life-threatening acid base imbalances that may require immediate intervention.
Encourage coughing and deep breathing.	Assists in secretion removal.
Encourage fluid intake of 2 liters/day.	Adequate fluid intake is needed to loosen secretions and make them easier to cough out.
Position in semi or high fowler or allow to sit in chair	Promotes maximum ventilation potential.
Administer oxygen as appropriate, usually by cannula at 2-3 liters/m.	Helps to maintain adequate oxygenation to tissues without depressing respiratory drive.
Administer aerosol or nebulizer treatments as appropriate.	Measures promote expansion of airways.
Administer postural drainage, percussion, and vibration as appropriate.	Measures promote mucous clearance.
Administer bronchodilators as appropriate.	Promotes open airways.
Administer antibiotics if ordered.	Infections are frequently present and decrease lung surface for exchange of oxygen.

Instructions, Information, Demonstration

Activities	*Rationales*
Teach patient safe use of prescribed medications such as bronchodilators, inhalers; explain side effects and their management, respiratory distress of side effects.	Improper use of medications could have serious consequences, such as increased respiratory distress.
Instruct to avoid activities that cause increased dyspnea.	Increase in oxygen demand may not be able to be met due to decrease in lung surface area secondary to tumor.
Teach safe use of oxygen at home as appropriate such as rate, cannula care, no smoking during use.	May need home oxygen to promote adequate oxygenation which poses educational needs for safe use.

☐ Discharge or Maintenance Evaluation

- Adequate oxygenation of tissues with correct administration of oxygen.
- Respiratory rate and depth within patient's baseline.
- Absence of dyspnea that interferes with normal activities.

Essential Nursing Diagnoses Related to Surgery

Pain

(CH. 2)

☐ Related to:

Tissue manipulation and/or injury from surgery.

☐ Defining Characteristics:

Voices complaints of pain at the surgical site and/or from site of chest tube placement, increased pulse, respiratory rate and/or blood pressure.

Decreased Cardiac Output

(CH. 2)

☐ Related to:

Blood loss during surgical procedure.

☐ Defining Characteristics:

Decrease in urine volume, low blood pressure, tachycardia dropping hemoglobin and/or hematocrit, bloody sputum, tachycardia or blood on dressing.

Risk for Ineffective Airway Clearance

☐ Related to:

Increase in secretions from surgical manipulations, presence of artificial airway inhibiting ability to clear secretions, decrease in level of consciousness from anesthesia, and/or pain relief medications which may impair ability to clear secretions.

☐ Defining Characteristics:

Abnormal breath sounds (races, crackles, rhonchi), decrease in rate and depth of respirations, tachycardia, ineffective cough, cyanosis, dyspnea, pain inhibiting ability to cough.

☐ Outcome Criteria

Return to baseline respiratory rate with patent airways.

☐ NIC: Airway Suctioning

Definition: Removing airway secretions by inserting a suction chateter into the patient's oral airway and/or trachea.

Airway Suctioning	
Activities	*Rationales*
Determine need for oral and/or tracheal suctioning.	May be necessary to maintain open airway.
Auscultate breath sounds before and after suctioning.	Determines if suctioning is effective.
For nasotracheal suctioning insert nasal airway.	
Instruct patient to take deep breaths before, during, and after use of supplemental O_2 as appropriate.	
Select catheter one-half diameter of airway.	Monitor O_2 before, during, and after.

Airway Suctioning	
Activities	*Rationales*
Use lowest amount of wall suction necessary to remove secretions.	Measures prevent desaturation and excessive trauma during nasopharyngeal suctioning.
Use sterile equipment for each nasotracheal suctioning procedure.	Prevents introduction of bacteria into lungs which could lead to infection.
Stop suctioning and provide supplemental oxygen if patient becomes bradycardic, shows increase in ventricular ectopy, and/or desaturation.	Signs that indicate respiratory and/or cardiac distress due to lack of oxygen.
Instruct the patient and/or family of need for suctioning.	Promotes compliance.
Instruct patient/and or family in oral and/or nasotracheal suctioning techniques as appropriate.	Assists patient/family in maintaining patent airway when health care providers are not present.

☐ Discharge or Maintenance Evaluation

- Patient maintains adequate oxygenation to tissues.

High Risk for Injury

☐ Related to:

Complications of surgery such as hemorrhage, pneumothorax and/or mediastinal shift and presence of chest tubes.

☐ Defining Characteristics:

Dropping hemoglobin and/or hematocrit, bloody sputum, tachycardia or blood on dressing, restlessness, dyspnea, tachypnea, cyanosis, atrial dysrhythmia, and/or tracheal deviation from the midline, change in arterial blood gas results indicating lower oxygen levels.

☐ Outcome Criteria

Maintenance of adequate oxygenation to tissues as evidenced by maintenance of normal respiratory rate.

Prevention and/or early detection of hemorrhage, pneumothorax, mediastinal shift.

☐ NIC: Bleeding Reduction

Definition: Limitation of the loss of blood volume during an episode of bleeding.

Bleeding Reduction	
Activities	*Rationales*
Assess for signs and symptoms of bleeding: Bloody sputum., tachycardia, blood on dressings, frank blood in large amounts in chest tube drainage.	Presence may indicate bleeding and/or hemorrhage and require immediate nursing intervention.
Monitor hemoglobin and hematocrit.	Drop in hemoglobin and/or hematocrit may indicate blood loss.
Monitor trends in vital signs.	Hypotension in presence of tachycardia may indicate blood loss.

Bleeding Reduction	
Activities	*Rationales*
Monitor fluid status, intake and output.	Blood loss during surgery could result in hypovolemia postoperatively.
Maintain patent IV access.	IV access may be needed to replace fluids and blood.
Administer IV fluids as appropriate.	Fluids may be needed to replace lost blood and fluids.
Arrange for transfusion of blood products as appropriate.	If hemorrhage occurs, administration of blood may be needed.
Avoid deep suctioning.	May cause trauma to suture line and bleeding.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient/family on signs of bleeding and appropriate actions.	Bleeding requires immediate nursing intervention.
Instruct patient to restrict activities that may increase bleeding.	Prevents further bleeding.
Instruct patient/family on need for appropriate action (blood products etc.).	Knowledge promotes compliance with health care regime.

☐ NIC: Tube Care-- Chest

Definition: Management of a patient with an external water-seal drainage device exiting the chest cavity.

Tube Care - Chest	
Activities	*Rationales*
Monitor for signs and symptoms of respiratory distress: Increased respiratory rate, increase in dyspnea, nasal flaring, and use of accessory muscles.	Signs of early respiratory distress indicate need for immediate intervention.
Monitor for signs and symptoms of pneumothorax: Absent breath sounds unilaterally, tracheal deviation, and increased shortness of breath.	Pneumothorax can occur if chest tube becomes occluded or system develops a break.
Assess the chest tube drainage system: 1) Water seal intact. 2) Water level of seal at proper amount, and fluctuations in water seal chamber should be present. 3) Drainage in tubings, color/amount.	1) Intact water seal prevents pneumothorax. 2) Maintains correct pressure. Lack of fluctuations may indicate occlusion of tube. 3) Bloody drainage may indicate hemorrhage; greenish foul-smelling drainage may indicate infection.
1) Assure that all tubing connections are securely attached and taped. 2) Provide sufficiently long tubing. 3) Anchor tubing securely.	1) Leaks in system could occur if tubing is not taped securely. 2) Allows freedom of movement. 3) Prevents accidental dislodement of chest tube.

Tube Care - Chest

Activities	*Rationales*
Assess the drainage system for breaks: Continuous large amount of bubbling, air leak noises in the system.	May indicate leak in system.
1) Assess for cause of air leak noises: 1) Check dressing at insertion site. 2) Determine chest tube placement. 3) Check fit of any connectors. 4) Check for defective equipment.	Poor-fitting connectors could be cause of air leak.
Monitor presence and amount of crepitus.	Increasing crepitus may indicate air leak around the tube.
Keep drainage container below chest level.	Promotes drainage and prevents backflow of drainage into lung.
Change dressing around chest tube every 2-3 days and prn using petroleum jelly.	Prevents infection and air leak at site.
Obtain chest x-ray and blood gas values as appropriate.	Ensures placement of tube and provides information on oxygenation.
Position client after lobectomy or segmentectomy, avoiding prolonged lying on operative side.	Promotes expansion of lung to fill lung space and protect remaining lung space.
Administer pain medications as appropriate.	Adequate pain control will promote lung expansion, and chest tubes can be very uncomfortable.

Instructions, Information, Demonstration

Activities	*Rationales*
Instruct patient/family in need for chest tube.	Promotes compliance with health care regime.
Instruct patient on splinting during coughing and deep breathing.	Promotes lung expansion by assisting patient to control pain.
Instruct patient to take pain medications as needed.	Pain can prevent lung expansion and inhibit patient from performing measures that promote optimal pulmonary functioning.

☐ NIC: Airway Management

Definition: Facilitation of patency of air passages.

Airway Management

Activities	*Rationales*
Monitor for signs and symptoms of respiratory distress: Increased respiratory rate, increase in dyspnea, nasal flaring, and use of accessory muscles.	Signs of early respiratory distress that indicate need for immediate intervention.
After pneumonectomy, assess for signs of mediastinal shift: restlessness, dyspnea, tachypnea cyanosis atrial, dysrhythmia, tracheal deviation from the midline.	Mediastinal shift requires immediate intervention and can occur after pneumonectomy if nonoperative lung moves into space created by removal of other lung.

Airway Management	
Activities	*Rationales*
Position patient after pneumonectomy avoiding lying on surgery-free side and trendelenburg.	Protects remaining lung tissue by avoiding positions that could interfere with expansion of remaining lung.
Assist with coughing and deep breathing position changes, ambulation.	Measures promote optimal pulmonary functioning.
If chest tube is present in post pneumonectomy patients, ensure that it is clamped.	Post pneumonectomy, most surgeons want remaining surgical space to fill with fluids and consolidate; once this occurs, risk of mediastinal shift is no longer a danger.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient/family on importance of coughing and deep breathing, position changes, and ambulation.	Measures promote optimal pulmonary functioning and knowledge will promote compliance.

☐ Discharge or Maintenance Evaluation

- Hemorrhage will be prevented or detected and treated early.
- Pneumothorax and/or mediastinal shift will not occur or, if it does, it will be detected and treated early.
- Chest tubes will remain patent, and air leaks will not occur.

Essential Nursing Diagnoses Related To Radiation Therapy

Fatigue

(CH. 5)

☐ Related to:

Lung cancer disease process, anemia related to radiation therapy and radiation itself.

☐ Defining Characteristics:

Voices feeling of weariness, tiredness and/or loss of energy, extertional dyspnea present and unable to carry on functions of daily living.

Altered Nutrition: Less than Body Requirements

(CH. 2)

☐ Related to:

Esophagitis and dysphagia usually occurring 3 weeks after initiation of radiation therapy to chest.

☐ Defining Characteristics:

Inability to swallow solids and liquids due to pain in throat and esophagus, presence of oral lacerations in pharynx and esophagus, inadequate food ingestion and/or weight loss.

Risk for Skin Impairment

(CH. 3)

☐ Related to:

Side effects from radiation therapy.

☐ Defining Characteristics:

Skin reactions such as dryness, erythema usually occur 7-10 days after treatment is begun, emaciation due to weight loss from disease and/or its treatment.

Knowledge Deficit

☐ Related to:

Radiation therapy to the chest for lung cancer.

☐ Defining Characteristics:

Patient voices lack of knowledge and/or questions about upcoming radiation therapy treatments.

☐ Outcome Criteria

Patient will be able to discuss the possible side effects of radiation treatments to the chest and how to manage them if they occur.

☐ NIC: Teaching-- Procedure/ Treatment

Definition: Preparing a patient to understand and mentally prepare for prescribed procedure or treatment.

Teaching - Procedure/Treatment

Activities	*Rationales*
Assess knowledge of radiation therapy treatment plan and possible side effects.	Provides information to develop treatment plan based on patient's needs.
Inform patient/family when the treatment will begin, time, length and duration of treatments, purpose of treatments.	Information the patient/family needs to plan daily activities around treatments.
Explain possible side effects from radiation therapy to the chest: Hair loss, skin reactions in field (7-10 days after treatment is begun), dysphagia and esophagitis (3 weeks after treatment is begun), tenacious bronchial secretions, pneumonitis (1-3 months later), pulmonary fibrosis, pericarditis, myelitis (long term).	Due to physiological effect of radiotherapy to pulmonary fields and surrounding tissue.

Instructions, Information, Demonstration

Activities	*Rationales*
Instruct patient/family on measures they can use to manage the possible side effects from radiation therapy to the chest.	Promotes self care management.

Instructions, Information, Demonstration	
Activities	*Rationales*
Teach client/family of half-life radioisotopes (if receiving implant) and safety precautions needed during time implant is present and after if required.	Knowledge will promote compliance with safety measures for needed length of time.
Instruct patient on advantages of smoking cessation.	Smoking cessation will decrease severity of symptoms of disease and its treatment.
Provide written information on radiation therapy treatments and self care measures.	Written materials reinforce verbal instructions.
Advise patient not to take any medications including OTC drugs unless ordered, or okayed by, physician - even aspirin.	Prevents possible drug interactions.
Inform patient verbally and in writing of changes that must be reported to the health care team immediately: Signs of infection, persistent nausea and vomiting, unusual bleeding or bruising, acute changes in mental or emotional status.	Promotes prevention of serious complications by promoting early reporting.

☐ Discharge or Maintenance Evaluation

- States possible side effects and self care management techniques to cope with side effects.
- Patient receives radiation treatments as prescribed by physician.
- Identifies changes that should be reported to the health care team immediately.

Knowledge Deficit

☐ Related to:

Cranial radiation therapy

☐ Defining Characteristics:

Voices lack of knowledge and/or questions about upcoming radiation therapy treatments

☐ Outcome Criteria:

Patient will be able to discuss the possible side effects of cranial radiation treatments and how to manage them if they occur.

☐ NIC: Teaching-- Procedure/ Treatment

Definition: Preparing a patient to understand and mentally prepare for prescribed procedure or treatment.

Teaching — Procedure/Treatment	
Activities	*Rationales*
Assess knowledge of radiation therapy treatment plan and possible side effects.	Provides information to develop treatment plan based on patient's needs.
Inform patient/family when the treatment will begin, time, length and duration of treatments, purpose of treatments.	Provides information the patient/family needs to plan daily activities around treatments.

Teaching — Procedure/Treatment

Activities	*Rationales*
Explain the possible side effects from cranial radiation therapy, and that they are usually temporary, including hair loss, desquamation of portion of ear, and CNS syndrome (memory loss, tremor, somnolence, slurred speech, learning disability).	Provides information about physiological effect of radiotherapy to brain and surrounding tissue.

Instructions, Information, Demonstration

Activities	*Rationales*
Instruct patient/family on measures they can use to manage the possible side effects from cranial radiation therapy.	Promotes self care management.
Provide written information on radiation therapy treatments and self care measures.	Written materials reinforce verbal instructions.

Instructions, Information, Demonstration

Activities	*Rationales*
Inform patient verbally and in writing of changes that must be reported to the health care team immediately: signs of infection, persistent nausea and vomiting, unusual bleeding or bruising, acute changes in mental or emotional status severe headaches, and vision changes.	Promotes prevention of serious complications by promoting early reporting.

☐ Discharge or Maintenance Evaluation

- Patient states possible side effects and self care management techniques to cope with side effects.
- Receives radiation treatments as prescribed by physician
- Identifies changes that should be reported to the health care team immediately.

Altered Thought Processes

☐ Related to:

CNS syndrome and/or increased intracranial pressure secondary to injury from cranial radiation therapy.

☐ Defining Characteristics:

Memory loss, tremors, somnolence, slurred speech, learning disability, headaches, vision changes, nausea, and vomiting.

☐ Outcome Criteria:

Patient and/or significant other identifies mental status changes that need to be reported to health care team.

☐ NIC: Neurologic Monitoring

Definition: Collection and analysis of patient data to prevent or minimize neurologic complications.

Neurologic Monitoring	
Activities	*Rationales*
Assess for signs of increased intracranial pressure (ICP): vision changes, nausea, vomiting, headaches.	Cranial radiation can cause swelling to injured tissues
Avoid activities that increase intracranial pressure.	Prevents further brain trauma.
Monitor neurologic status on an ongoing basis.	Cranial radiation can cause CNS syndrome which results in change in neurologic status.
Provide optimistic but realistic reassurance to patient/family.	Promotes adaptation to altered mental status.
Assess orientation and reorient as appropriate.	Promotes orientation.
Administer anti-inflammatory medications such as steroids.	Reduces brain swelling.

Instructions, Information, Demonstration	
Activities	*Rationales*
Explain that CNS syndrome is a possible side effect of radiation therapy.	Knowledge will assist in coping with side effect.
Instruct patient\family on signs of ICP and need to inform health care immediately if they occur.	Promotes immediate intervention of a serious complication.
Inform of reasons for taking steroids and not to stop unless instructed by physician.	Sudden discontinuance of steroids can cause rebounding of ICP.

☐ Discharge or Maintenance Evaluation

- Remains orientated and/or reorients to surroundings as appropriate.
- Signs of increased intracranial pressure (ICP) are recognized and treated early.

Essential Nursing Diagnoses Related to Chemotherapy

Knowledge Deficit

(CH. 4)

☐ Related to:

Chemotherapy, its side effects, and their management.

☐ Defining Characteristics:

Verbalizes lack of information and/or questions about

chemotherapy, its side effects, and/or how to manage them.

Potential for Infection

(CH. 4)

☐ Related to:

Chemotherapy's rapid destruction of dividing hematopoietic cells, resulting in immunosuppression.

☐ Defining Characteristics:

Presence of granulocytopenia, an absolute granulocyte count (AGC) below 1000 cells/mm^3

High Risk for Injury

(CH. 4)

☐ Related to:

Bone marrow suppression from chemotherapy

☐ Defining Characteristics:

Presence of thrombocytopenia with a platelet count below 50,000 cells/mm^3, presence of easy bruising, bleeding.

Pain

(CH. 4)

☐ Related to:

Nausea and vomiting from chemotherapy and/or anxiety related to treatments.

☐ Defining Characteristics:

Expresses feelings of pain or discomfort, moans, cries, is diaphoretic; elevation in blood pressure, pulse rate observed.

Body Image Disturbance

(CH. 4)

☐ Related to:

Alopecia, weight loss and/or skin changes secondary to etoposide, adriamycin, and vinca alkaloid (vinblastine, vincristine) chemotherapy drugs.

☐ Defining Characteristics:

Patient verbalizes fear of rejection or reaction of others to altered appearance, especially hair loss.

Risk for Altered Skin Integrity

(CH. 4)

☐ Related to:

Extravasation of vesicant chemotherapy agents such as adriamycin, vincristine, vinblastine.

☐ Defining Characteristics:

Complaints of pain, burning, redness in IV site; swelling, redness, necrosis progressing to tissue sloughing at IV site.

Altered Tissue Perfusion, Cardiopulmonary

(CH. 13)

☐ Related to:

Damage to cardiomyopathy from adriamycin and/or high-dose cyclophosphamide.

☐ Defining Characteristics:

Decrease in ejection fraction, weakness, fatigue, and resulting decrease in ability to perform activities of daily living.

Altered Sexuality Patterns

(CH. 1)

☐ Related to:

Chemotherapy treatments and its side effects.

☐ Defining Characteristics:

Patient verbalizes difficulties, limitations, or changes in sexual behaviors, secondary to changes due to chemotherapy and/or concerns over fertility due to testicular atrophy or amenorrhea.

Risk for Altered Urinary Elimination

(CH. 11)

☐ Related to:

Necrosis of proximal and distal renal tubules from cisplatin preventing reabsorption of Mg, Ca, and K.

☐ Defining Characteristics:

Increasing serum creatinine levels, decreasing creatinine clearance values, decreasing serum Mg, Ca, and K levels, and hyperuricemia.

Risk for Sensory/ Perceptual Alterations

(CH. 10)

☐ Related to:

Neurologic toxicity from cisplatin.

☐ Defining Characteristics:

Presence of high-frequency hearing loss, voices complaints of hearing loss.

Altered Urinary Elimination

(CH. 18)

☐ Related to:

Hemorrhagic cystitis from cytoxan and/or ifosfamide chemotherapy drugs.

☐ Defining Characteristics:

Hematuria, gross or microscopic; complaints of blood in urine while receiving cytoxan and/or ifosfamide;

High Risk for Peripheral Neurovascular Dysfunction.

☐ Related to:

Damage to nerves from chemotherapy, especially the vinca alkaloid agents such as vincristine and vinblastine, and other agents such as cisplatin, procarbazine, taxol.

☐ Defining Characteristics:

Patient verbalizes loss of fine motor movements, burning pain in extremities, numbness in extremities, gait disturbances, and loss of proprioception.

☐ Outcome Criteria

Sensory/perceptual changes will be identified early and discomfort and/or disfunction from them will be minimized.

☐ NIC: Neurologic Monitoring

Definition: Collection and analysis of patient data to prevent or minimize neurologic complications.

Neurologic Monitoring	
Activities	*Rationales*
Monitor for parasthesias: Numbness, tingling prior to each drug dose.	Parasthesias from vinca alkaloids may be due to demyelination and axonal degeneration of nerves.
Monitor response to tactile stimuli.	Nerve damage from vinca alkaloids may impair ability to perceive tactile stimulus.
Assess proprioceptive functions such as gait, deep tendon reflexes, muscle weakness or atrophy, balance, placement of body parts.	Nerve damage from vinca alkaloids may cause changes in proprioceptive functions.
Notify physician of any changes in neurologic status.	Promotes early identification of side effects from agents which may result in stopping or reducing dose of agents.
Discuss impact of neurologic changes on activities of daily living and possible need for occupational and/or physical therapy.	Promotes independence by maximizing functioning.
Refer as appropriate for occupational or physical therapy.	Sensory impairments may affect ability to perform activities of daily living, requiring professional assistance to maximize functioning.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient/family on potential neurotoxicity of vinca alkaloids.	Knowledge is part of informed consent.
Instruct patient/family of need to inform health care team if they note numbness or tingling in extremities, loss of fine motor movements such as difficulty writing, trouble buttoning buttons, or difficulty walking up stairs.	All are signs of nerve damage from vinca alkaloid agents, usually requiring dose reduction and/or discontinuing agent.
Inform patient of need to stop or decrease dose of vinca alkaloid drug if neuropathies occur.	Once damage occurs it may not be reversible.

☐ Discharge or Maintenance Evaluation

- Patient will be free from injury.
- Patient will report changes in tactile and proprioceptive function.
- Patient will develop safe measures to compensate for losses if they occur.

Pain

☐ Related to:

Painful paresthesias from chemotherapy agents.

☐ Defining Characteristics:

Patient verbalizes complaints of burning, tingling, or prickling pain in extremities.

☐ Outcome Criteria

Patient will have decreased pain.

☐ NIC: Pain Management

Definition: Alleviation of pain or reduction in pain to level of comfort that is acceptable to the patient.

Pain Management

Activities	*Rationales*
Assess comfort level and presence of severe tingling or prickling sensation, cramping, or burning, noting intensity, quality and frequency of sensations.	Provides necessary information to develop plan of care.
Identify precipitating factors such as exposure to heat or cold and ways to avoid.	Cold and/or heat can increase pain.
Administer adjunctive analgesics with neurologic actions such as amitriptyline HCL (Elavil), phenytoin sodium (Dilantin).	These agents are indicated in the treatment of dysesthetic pain.
Offer patient nonpharmacologic measures to relieve pain, such as guided imagery, progressive muscle relaxation, massage, etc.	Measures may be helpful in relieving neurologic pain that is resistant to more traditional pain management methods such as non-narcotic and narcotic pain medications.

Instructions, Information, Demonstration

Activities	*Rationales*
Instruct patient/family of measures to relieve pain including medications and other techniques that are helpful with neuropathic pain.	Neuropathic pain is more difficult to relieve and may require use of nontraditional pain relief measures.
Inform patient of dose, time, frequency of pain medications prescribed and that effect from medication may not be immediate.	Promotes correct use of medications for maximum benefit.

☐ Discharge or Maintenance Evaluation

- Patient's pain will be relieved or adequately controlled by medications and/or measures prescribed.

Risk for Constipation

☐ Related to:

Neurotoxicity from vinca alkaloid chemotherapy agents such as vinblastine or vincristine.

☐ Defining Characteristics:

More common with vincristine and/or high dose (20 mg) vinblastine, complaints of constipation, can lead to adynamic ileus with severe abdominal pain.

☐ Outcome Criteria

Patient will have regular bowel movements.

☐ NIC: Constipation/Impaction Management

Definition: Prevention and alleviation of constipation/impaction.

Constipation/Impaction Management	
Activities	*Rationales*
Assess bowel elimination pattern.	Provides baseline information.
Monitor bowel sounds and/or bowel movement.	Provide information to formulate plan.
Encourage intake of 2-3 liters of fluid daily.	Promotes greater fluid content of stool for easier passage.
Encourage foods high in fiber and bulk.	Fiber and bulk degradation in colon assist in formation and passage of stool.
Encourage regular exercise.	Promotes propulsive bowel action.
Administer laxatives if unable to move bowels at least once a day.	Prevents ileus through regular bowel movements.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct in measures to promote regular elimination such as 8-10 glasses of fluids per day, intake of high fiber foods, and regular exercise.	Measures promote regular bowel elimination.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient/family to notify health care if unable to move bowels at least once a day.	Prevents constipation which can lead to ileus.
Instruct on proper use of laxatives as needed.	Improper use of laxatives can result in dependence and/or other problems.
Instruct to report any abdominal pain immediately.	Abdominal pain could indicate presence of ileus.

☐ Discharge or Maintenance Evaluations

- Patient will have regular bowel movements.
- Patient will notify health care team of signs/symptoms of ileus early, such as lack of daily bowel movement and abdominal pain.

Risk for Injury

☐ Related to:

Hypotension due to rapid infusion of etoposide (VP-16).

☐ Defining Characteristics:

Low blood pressure noted during administration of etoposide.

☐ NIC: Vital Signs Monitoring

Definition: Collection and analysis of cardiovascular, respiratory, and body temperature data to determine and prevent complications.

Vital Signs Monitoring	
Activities	*Rationales*
Monitor blood pressure prior to, q5-10 min x 3, then q30 min until infusion of VP-16 complete.	Promotes early identification of hypotension.
Should hypotension occur stop drug, notify MD, restart infusion at a slower rate, once hypotension resolves, if ordered by MD.	Hypotension is usually rapidly resolved once drug is stopped, and indicates need for slower infusion.
Infuse VP-16 over at least 30-60 minutes.	Prevents hypotension commonly seen during rapid infusion.
Dilute drug at concentration of 0.2 mg/ml stable for 96 hrs in glass and 48 hrs in plastic.	Promotes stable drug at correct concentration.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct on possible side effects of VP-16, including hypotension.	Knowledge prepares patient for possible side effects.
Inform of need for frequent blood pressure readings.	Knowledge will decrease anxiety over frequency of procedure.

☐ Discharge or Maintenance Evaluation

- Patient's blood pressure will remain within normal range.
- Hypotension, if it occurs, will be identified early and treated without serious complications.

Chapter Nine

Breast Cancer

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Breast Cancer

Annually 183,000 new cases of breast cancer are diagnosed in the United States; only about 1,000 of these cases are men. Not only does breast cancer afflict far more women than men, it is also, among women, the number one cancer. By the age of 85 one of every nine women will develop breast cancer. Breast cancer is the second major cause of cancer death in women, with an estimated 46,000 deaths in 1994. However the 5-year survival rate for localized breast cancer is 93%. If the cancer has spread regionally at the time of diagnosis, the 5-year survival is 72% and for persons with distant metastases at the time of diagnosis, the 5-year survival is only 18%.

Risk Factors

Risk Factors for breast cancer include:

- Being over the age of forty
- A personal or family history of breast cancer
- Early age of menarche
- Late age of menopause
- Childless or having one's first child at a late age
- Higher education and/or socioeconomic status
- Long term use of exogenous estrogen and progestin Exposure to excessive ionizing radiation
- History of fibrocystic disease
- Endometrial, ovarian, or colon cancer

However, only 25% of women who develop breast cancer have any of these risk factors. Therefore,the single most important risk factor is simply being a woman. Some research has suggested a dietary link between high fat intake, obesity, and breast cancer development, but this link has not been firmly established.

Types of Breast Cancer

There are many types of breast cancer. The most common type is infiltrating ductal carcinoma, accounting for about 70-80% of all breast cancers. Other types of carcinoma include medullary, mucinous, colloid, invasive lobular. Also included are Paget's disease, inflammatory breast cancer, and lobular carcinoma in situ. The most common sites of breast cancer are the upper outer quadrant of the breast and under the nipple.

Signs and Symptoms

Early breast cancer is asymptomatic. A painless lump or thickening in the breast is the most common sign. Most— about ninety percent— are discovered by women themselves. However, most are discovered accidentally, not by breast self-exam (BSE), despite the nationwide emphasis on early detection through BSE. The majority of lumps dis-

covered are not breast cancer. Only 25% of all breast lumps are found to be malignant.

Late signs and symptoms of breast cancer include dimpling of the skin, nipple retraction or deviation, scaliness of skin or nipple, and pain, tenderness, or discharge, especially bloody, from the nipple. Peau d'orange skin, thickened skin with prominent pores similar to the peel of an orange, and/or ulceration of the breast, are both late signs of disease. If nodal involvement is present there may be firm, enlarged axillary lymph nodes and/or palpable supraclavicular nodes in the neck area. Signs and symptoms of distant metastasis include pain in the shoulder, hip, lower back, or pelvis; persistent cough; anorexia or weight loss; digestive disturbances; dizziness; blurred vision; and headache.

Diagnosis

Mammography is usually the first step in evaluating suspicious breast lumps. It is also effective in screening asymptomatic women for very early stage breast cancer. Mammography has found cancers in situ so small that they are not detectable by physical examination. Notably, in situ breast cancers are believed to be almost 100% curable. The American Cancer Society recommends that women undergo a screening mammography by the age of forty; women 40 to 49 are advised to get a mammogram every 1-2 years; and after the age of 50, asymptomatic women should have a mammogram yearly.

Suspicious breast lumps are evaluated in other ways including percutaneous needle biopsy, needle aspiration and excisional or incisional biopsies. Once the pathologic diagnosis of breast cancer has been made, it is recommended that the tumor be evaluated for the presence of a variety of hormone receptors. These assist in predicting the aggressiveness of the tumor and its response to treatment. They include estrogen-receptors(ER) and progesterone-receptors(PR). Women with ER- and PR-positive tumors have a lower risk of recurrence than women with ER- and PR-negative tumors. Additionally, ER-positive often means a woman will be more likely to respond to hormonal and chemotherapy treatments than are women with ER- and PR-negative tumors. Breast cancer tumors also are assayed for cellular deoxyribonucleic acid (DNA) content and S-phase fraction. An abnormal DNA amount in tumor cells, is called aneuploidy and indicates an aggressive tumor, as do a large percentage of cells in the S-phase.

An important predictor of recurrence is whether or not there is lymph node involvement at the time of diagnosis. If an axillary lymph node dissection is done and no lymph nodes are positive, the woman has a 35% chance of recurrence at 10 years. When one to three lymph nodes are positive she has a 55% recurrence rate at 10 years. Four to ten positive nodes predict 70% recurrence rate at 10 years. More than 11 positive nodes predict 82% recurrence rate at ten years. Various additional testing is done at the time of diagnosis but usually includes a complete

blood count, liver chemistry results, a chest x-ray, and tumor markers such as CEA, LASA-P and/or CA 15-3. Staging for breast cancer may include a bone scan and a liver scan if clinically indicated.

Treatment of Primary Breast Cancer

Treatment of breast cancer is based on the stage of disease and several other factors. Women have more options today in the treatment of breast cancer than ever before. The treatment of breast cancer usually involves a combination of surgery, chemotherapy, and radiation therapy. The role of each treatment modality in breast cancer will be discussed.

Surgery

Biopsy is usually the first type of surgery a woman with breast cancer will undergo. The purpose of performing a biopsy is to determine if a mass is malignant and the type of breast cancer it is. Often, the woman will be given the option of having a biopsy performed as a one-step or two-step procedure. A one-step procedure is done under general anesthesia with immediate frozen section. Should the frozen section reveal malignancy, the surgeon proceeds with a mastectomy if appropriate. The one step procedure allows the biopsy and surgery to be done under one general anesthesia saving time in recovering. In the two-step procedure, the biopsy is usually done under local anesthesia, and the women is sent home. Once the biopsy results are available the physician advises the patient and family on the recommended treatment. This approach allows the woman and her family time to consider options and adjust to the diagnosis and the possible loss of a breast prior to undergoing major surgery. Additionally, this approach allows the woman to explore second opinions if desired. The two-step is the more common approach at this time.

Early stage breast cancer is often curable with surgery alone. The current trend is to perform breast-conserving surgery in women with early stage disease when possible. The increase in this approach is due in part to recent studies demonstrating equal survival and recurrence rates for women with early stage disease who have breast-sparing procedures, versus modified radical mastectomies. One breast-sparing procedure is the segmental mastectomy (lumpectomy) followed by irradiation of the breast. Women with stage 0 (cancer in situ), and stage 1 disease when the tumor is small are usually treated with a segmental mastectomy with axillary node dissection, followed by breast irradiation. Segmental mastectomy involves removal of the tumor and a portion of tissue around it to ensure tumor free margins. Since the primary purpose of the segmental mastectomy is cosmetic, some women with small breasts— or depending on the location of the tumor— may achieve a more cosmetically acceptable result with a modified radical mastectomy with reconstruction than with segmental mastectomy.

Women with stage 1 (larger tumors), stage 2, and stage 3 disease will usually be treated with a modified radical mastectomy. This procedure involves en bloc removal of the

breast, pectoralis minor muscles, intervening lymphatics and a sampling of the axillary lymph nodes. In some cases reconstructive surgery is done at the same time. The Halston radical mastectomy, once the mainstay of breast cancer treatment has been abandoned in favor of more conservative measures. Patients with advanced local disease may be treated with simple mastectomy as a comfort measure even if control of the disease may not be possible.

Radiation Therapy

Radiation therapy may be used as primary treatment for stage 1 and 2 breast cancer. Survival rates are comparable to surgical treatment. This is not surprising as both are considered local forms of treatment. As local therapy they will not affect any distant micro-metastases present but not clinically detectable at the time of diagnosis. An advantage of primary radiation is the possibility of both local tumor control and breast preservation. Adjuvant irradiation of the breast, following segmental mastectomy (lumpectomy) for early stage disease, is the recommended standard of care. A combination of low dose external radiation and an implant of 192Ir helps minimize the occurrence of radiation-induced rib fractures and radiation pneumonitis. Radiation therapy may also be used to treat inflammatory breast cancer before chemotherapy is given. Additionally, radiation therapy may be used to treat local recurrences, to ablate ovarian function, and to palliate symptoms of metastatic disease. The immediate side effect seen with irradiation of the breast is skin reactions. Rib fractures and pneumonitis are later effects. Lymphedema may be seen if the axilla is included in the field.

Chemotherapy

Chemotherapy utilizing antineoplastic agents and hormonal drugs play a vital role in the treatment of breast cancer. The role of these agents is changing rapidly as more is understood about breast cancer and tumor biology. Of primary importance in the role of antineoplastic agents in primary breast cancer is an understanding that many patients at the time of diagnosis already have established micrometastatic disease not clinically detectable by current methods. The likelihood that micrometastatic disease will become clinically evident can be predicted by characteristics of the primary tumor which include size, hormone-receptor status, pathologic characteristics, histologic type, and axillary lymph node status.

In 1985 and again in 1990 the National Institutes of Health sponsored a Consensus Development Conference on Adjuvant Chemotherapy and Endocrine Therapy for Breast Cancer. The following table summarizes chemotherapy/endocrine treatment recommendations from those two conferences as well as more recent studies.

Table 1: General Adjuvant Treatment Recommendations For Breast Cancer

Stage Nodal Status	*Premenopausal Women*	*Post Menopausal Women*
0 (not usually evaluated)	Not recommended	Not recommended
1 -	Adjuvant chemotherapy, possibly with tamoxifen	Tamoxifen, possibly Adjuvant chemotherapy
2A +/-	Adjuvant chemotherapy	Tamoxifen for HR* receptor plus Adjuvant chemotherapy if HR* negative
2B +/-	Adjuvant chemotherapy	Tamoxifen for HR * receptor plus Adjuvant chemotherapy if HR* negative
3A +	Adjuvant chemotherapy	Adjuvant chemotherapy
3B -	Adjuvant chemotherapy	Adjuvant chemotherapy

Hormone-Receptor

All General recommendations may be modified by other risk factors (e.g. size of primary tumor, histologic grade, aneuploidy, proliferative index and hormone-receptor [E/PR] status).

Adjuvant chemotherapy for breast cancer involves multi-drug combinations which are more effective than single agent therapy. The most frequently recommended combination is called CMF and includes cyclophosphamide (Cytoxan), methotrexate, fluorouracil (5-FU), with or with out tamoxifen. A variation of this combination substitutes doxorubcin (Adriamycin) for methotrexate and is commonly called CAF. Which of these combinations is most effective for adjuvant therapy remains controversial. These regimens are usually administered for 3 to 6 months. Combinations of chemotherapy and hormones like tamoxifen may increase response rates but have not necessarily shown an increased survival rate. Concurrent administration of chemotherapy with irradiation to the breast may result in more pronounced side effects and toxicities. In larger tumors chemotherapy may be given preoperatively to shrink tumors, making them easier to surgically resect.

Treatment of Metastatic Disease

Approximately 50% of women with breast cancer will have metastatic disease, some at diagnosis. The most common sites of metastasis include bone, liver, soft tissue, lung and/or CNS. Although chemotherapy and hormonal therapy are effective in relieving the symptoms of metastatic breast cancer, the treatments have not been shown to affect survival. Combination chemotherapy is the standard for premenopausal patients and postmenopausal women with hormone receptor-negative tumors. Postmenopausal women with metastatic breast cancer, who have hormone receptor-positive tumors, may respond to hormonal therapy alone.

Combination chemotherapy, such as CMF or CAF with and/or without prednisone, often results in response rates of 50 to 70%, lasting 9 to 12 months. However, only 10 to 20 percent of these responses are complete responders.

Agents used as second therapy include mitoxantrone; low dose adriamycin, weekly or continuously; nalvelbine; Mitomycin-C; and Taxol. In general, premenopausal women respond to chemotherapy more often than do postmenopausal women. This may be because premenopausal women typically have more aggressive disease with faster tumor growth rate than postmenopausal women who have more indolent disease.

The role of bone marrow transplant in women with breast cancer is still not clearly defined. Clinical trials are still underway to determine its effectiveness and at what stage women should undergo transplant. Additionally, the use of peripheral stem cell harvesting has increased and may play an important role in treating breast cancer.

A major form of treatment for metastatic disease is endocrine therapy accomplished by surgery, radiation therapy, and/or chemotherapy. Endocrine therapy in the past has included ablative therapy through such surgical procedures as adrenalectomy and hypophysectomy. Surgical oophorectomy or ovarian radiation are equally effective treatments with response rates of about 32%. In metastatic disease, hormones are indicated if the tumor is ER-positive and not easily treated by surgery or radiation therapy.

Specific agents include estrogens(diethylstilbestrol), progestins (megestrol acetate), androgens (fluoxymesterone), corticosteroids (prednisone), and antiestrogens (Tamoxifen). Women starting on tamoxifen should be cautioned on the possibility of a flare reaction. During a flare reaction there may be an increase in pain in the bone and tumors and an increase in the size of the tumors. These effects usually last only about two weeks; but it is important that women continue with the tamoxifen because these are side effects and do not indicate a lack of response to therapy. Prescribing, and/or increasing, pain medications and allowing the patient to continue treatment is vital.

Radiation therapy may also be used to palliate symptoms of metastatic disease. It is especially useful in alleviating pain from bone metastasis. Radiation therapy also plays a role in the palliative treatment of brain metastasis.

Investigational Therapies

Investigational agents being studied for the treatment of breast cancer include alkeran, vindesine, platinum derivatives, amonafide, Trimexate, and the use of biologic agents such as interleukin-2 and interferon. Various new combinations are also being investigated. These include chemoimmunotherapy, chemohormonal therapy, and hypothalamic hormone analogs such as buserelin and leuprolide.

Complications of Disease

Complications of metastatic breast cancer include bone metastasis. If in the spine, spinal cord compression may occur. This is a medical emergency and must be treated immediately (see Chapter 6, Structural Oncologic emergencies). Brain metastasis occurs in about 30% of women with metastatic disease. This can be devastating both physically and emotionally for patient and family. Chronic lymphedema may become a problem if a tumor reoccurs in the axilla, or as a complication of axillary lymph dissection, and radiation therapy to the axilla.

Common Nursing Diagnoses Related to Caring for All Clients With Breast Cancer

Anxiety

(CH. 1)

☐ Related to:

Perceived threat to self due to diagnosis of breast cancer and its uncertain prognosis or treatment.

☐ Defining Characteristics:

Patient verbalizes feelings of uncertainty, apprehension, fear, sleeplessness, restlessness, or other signs of anxiety.

Anticipatory Grieving

(CH. 1)

☐ Related to:

Losses due to breast cancer such as loss of breast, health, income, work, intimacy, relationships, and possibly life.

☐ Defining Characteristics:

Patient exhibits or voices expressions and/or feelings of sadness or loss, or concerns over possible loss of work, income, or life.

Altered Sexuality Patterns

(CH. 1)

☐ Related to:

Impact of breast loss/disfigurement and/or disease process on sexual relationships

☐ Defining Characteristics:

Patient voices changes in sexual pattern or sexual relationship(s) due to impact of loss of breast or disfigurement of breast.

Fear

(CH. 1)

☐ Related to:

Diagnosis of breast cancer, breast disfigurement or loss due to treatments and uncertain prognosis.

☐ Defining Characteristics:

Inability to meet basic care needs, fatigue, verbalization of inability to cope, and/or fear.

Knowledge Deficit

☐ Related to:

Breast cancer and treatment options.

☐ Defining Characteristics:

Patient voices questions about breast cancer and/or its treatment.

☐ Outcome Criteria:

Patient is able to participate in ongoing decision-making about breast cancer treatment.

Discusses rationale for treatments and verbalizes actions to cope with possible side effects.

☐ NIC: Teaching— Disease Process

Definition: Assisting the patient to understand information related to a specific disease process.

Teaching - Disease Process	
Activities	*Rationales*
Assess the patient/family knowledge of breast cancer and treatment recommendations.	Provides information to formulate individualized teaching plan.
Explain pathophysiology of breast cancer as appropriate.	Promotes understanding of disease process.
Avoid empty assurances.	Empty assurances minimize importance of patients concerns.
Provide information about treatment options as appropriate .	Promotes informed decision-making.

Teaching - Disease Process	
Activities	*Rationales*
Discuss therapy/treatment options such as segmental mastectomy vs. modified radical mastectomy; one step vs two step biopsy.	Promotes open discussion, informed decision-making.
Promote discussion of questions with informed physician as appropriate.	Promotes informed decision-making.

Instructions, Information, Demonstration	
Activities	*Rationales*
Inform patient/family of community resources such as Y-ME, Reach to Recovery (ACS), Look Good Feel Better (ACS and National Cosmetology Association), and Encore (YWCA), for women with breast cancer.	Informs of community resources.
Provide written materials about community organizations, breast cancer, and treatments.	Written materials reinforce verbal instruction.
Teach importance of performing BSE in remaining breast(s).	Women diagnosed with breast cancer have an increased risk of developing breast cancer in remaining breast(s).

Instructions, Information, Demonstration	
Activities	*Rationales*
Teach importance of following prescribed schedule and procedures for routine follow-up.	Frequent follow-up is necessary to identify recurrence early.

☐ Discharge or Maintenance Evaluation

- Identifies type of breast cancer and rationales for treatment.
- Describes possible side effects of treatment and self care measures.
- Appropriately identifies time at which health care team should be notified and when follow-up should be scheduled.
- Demonstrates BSE correctly.

Body Image Disturbance

☐ Related to:

Loss of breast and/or disfigurement from segmental mastectomy (lumpectomy) and/or irradiation of the breast.

☐ Defining Characteristics:

Patient voices concerns over loss of breast or breast disfigurement from surgery and/or radiation therapy; expresses fear of rejection or reaction by others to changes/loss of breast.

☐ Outcome Criteria:

Patient copes with loss of breast.

☐ NIC: Body Image Enhancement

Definition: Improving a patient's conscious and unconscious perceptions and attitudes toward his/her body.

Body Image Enhancement	
Activities	*Rationales*
Encourage patient to express feelings over breast cancer diagnosis, its treatment, and expected impact on lifestyle.	Promotes acceptance of changes.
Evaluate patient's feelings regarding breast loss/disfigurement to her sexual identity, relationships, and body image.	Promotes insight of patient.
Assist patient to separate physical appearance from feelings of personal worth.	Promotes positive self image.
Give permission to grieve over breast loss/disfigurement and to resolve losses.	Allows patient needed time to cope with losses.
Allow to vent negative emotions such as anger and guilt.	Promotes coping, as these are normal reactions to loss.
Monitor patient's ability to look at affected breast.	Inability to look at affected breast may indicate coping difficulties.

Body Image Enhancement	
Activities	*Rationales*
Encourage open communication between patient and family over loss of breast and impact of illness.	Promotes family/patient coping.
Discuss breast prothesis, if appropriate.	Provides means of reducing impact of breast loss.
Discuss possible options for breast reconstruction, if appropriate.	Reduces impact of breast loss.
Encourage visit from Reach to Recovery volunteer.	Visits from women who have had similar changes in body image, and who are able to cope, promote coping.

Instructions, Information, Demonstration	
Activities	*Rationales*
Inform of community resources such as Y-ME, Reach to Recovery (ACS), Look Good Feel Better (ACS and National Cosmetology Association), and Encore (YWCA) for women with breast cancer.	Provides community resources to assist in seeking support.
Provide written materials about community organizations, breast cancer, and treatments.	Written materials reinforce verbal instructions.

Instructions, Information, Demonstration	
Activities	*Rationales*
Teach patient about possibility of phantom breast sensation after mastectomy (pain or sensation in a breast that no longer exists).	Phantom breast sensation, should it occur in a woman who is unaware, could be very upsetting.

☐ Discharge or Maintenance Evaluation

- Identify potential community resources to meet demands of breast cancer treatment and survivorship.
- Discuss options for temporary and permanent cosmetic restoration of breast.

Common Nursing Diagnoses Related to Surgery

Pain

(CH. 2)

☐ Related to:

Tissue manipulation and/or injury from surgery

☐ Defining Characteristics:

Patient voices complaints of pain at the surgical site and/or site of chest tube placement, increased pulse, respiratory rate and/or blood pressure.

Fluid Volume Deficit

(CH. 2)

☐ Related to:

Blood loss during surgical procedure

☐ Defining Characteristics:

Decrease in urine volume, low blood pressure, tachycardia dropping hemoglobin and/or hematocrit, bloody sputum, tachycardia or blood on dressing.

Altered Tissue Perfusion, Peripheral

☐ Related to:

Removal of axillary lymph nodes

☐ Defining Characteristics:

Patient voices complaints of arm swelling on the surgical side, presence of edema in arm and hand.

☐ Outcome Criteria:

Adequate lymphatic drainage will be maintained as evidenced by lack of swelling in affected arm or hand.

☐ NIC: Circulatory Care

Definition: Promotion of arterial and venous circulation.

Circulatory Care	
Activities	*Rationales*
Monitor affected extremity for edema.	Early detection of edema can facilitate quick intervention, lessen severity.

Circulatory Care	
Activities	*Rationales*
Elevate affected arm with hand higher than elbow and elbow higher than shoulder.	Facilitates venous drainage.
Avoid using affected arm for blood pressure readings, injections, or blood testing.	Prevents lymphedema.
Apply pressure sleeve to affected arm.	Promotes venous return.
Encourage exercise of affected arm as appropriate.	Exercise promotes venous return of blood.
Place sign over bed advising to avoid affected arm for IVs, BP readings, injections, and blood withdrawal.	Promotes compliance among health care providers with measures to prevent lymphedema.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct on importance of arm elevation.	Prevents lymphedema.
Teach measures to avoid lymphedema; avoid BP reading in affected arm; avoid allowing affected arm to be in a dependent position for long time.	Promotes compliance with healthcare regime to prevent lymphedema.
Teach how to use pressure sleeve.	Helps prevent lymphedema.

Instructions, Information, Demonstration	
Activities	*Rationales*
Teach patient to measure circumference of both arms and to notify health care team if affected arm is 5 cm larger than unaffected.	Promotes early recognition and treatment of lymphedema.

- ☐ Discharge or Maintenance Evaluation
  - Affected arm will remain free of lymphedema.

Impaired Physical Mobility

- ☐ Related to:

  Removal of axillary lymph nodes and pectoralis muscles.

- ☐ Defining Characteristics:

  Complains of pain in affected arm and or shoulder, limiting mobility of arm and shoulder motion.

- ☐ Outcome Criteria:

  Full range of motion restored in affected arm and shoulder.

- ☐ NIC: Exercise Therapy— Joint Mobility

  Definition: Use of active or passive body movement to maintain or restore joint flexibility.

Exercise Therapy - Joint Mobility	
Activities	*Rationales*
Assist patient in performance of limited exercise in the first 24 hours, such as squeezing a ball, and wrist and elbow flexion, extension.	Promotes maintenance of some joint movement without trauma to surgical site.
Adduct arm for first 24 hours.	Minimizes tension on suture line.
Initiate pain control measures before exercise.	Promotes compliance with planned exercise.
Begin active range of motion exercises as appropriate, usually on the second or third post-op day.	Promotes joint mobility.
Assist patient with maintenance of optimal body position during exercise.	Prevents injury during exercise.
Explain purpose and plan of exercises to patient/family.	Promotes compliance with health care regime.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct on active range of motion exercises such as arm swings, pulley motion, hand wall climbing, rope turning.	Exercises promote joint mobility.
Provide written instructions for exercise.	Written materials reinforce verbal instructions.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct to avoid lack of activity and/or over-use.	Lack of activity of affected arm can lead to lymphedema and over-use can cause a seroma in chest wall.

☐ Discharge or Maintenance Evaluation

- Patient demonstrates range of motion exercises of affected arm and shoulder.
- Restoration of full range of motion to affected arm and shoulder.
- Patient lists possible complications of under and/or over use of affected arm.

Risk for Infection

☐ Related to:

Impaired lymphatic drainage from axillary lymph node dissection and presence of surgical drains.

☐ Defining Characteristics:

Impaired lymphatic drainage places patient at risk for infection in affected extremity, presence of signs of infection in affected arm or surgical wound.

☐ Outcome Criteria:

Absence of infection in affected extremity and/or surgical wound.

☐ NIC: Circulatory Precautions

Definition: Protection of a localized area with limited perfusion.

Circulatory Precautions	
Activities	*Rationales*
Assess affected arm for signs of infection.	Promotes early identification of infection in affected arm.
Assess integrity of skin flaps over chest wall for signs of redness, swelling and yellow or green foul-smelling drainage.	Promotes early identification of infection in surgical site.
Avoid using affected extremity for IVs, BP readings, injections, or blood withdrawal.	Measures prevent breaks in skin.
Place sign over bed advising to avoid affected arm for IVs, BP readings, injections, and blood withdrawal.	Promotes compliance among health care providers with measures to prevent infection.
Assess drain(s) left in chest wall for patency, strip tubing; empty and record output.	Drain(s) are left in 7-10 days (or until output is 30 ml/24 hours) to prevent accumulation of fluid under chest wall.
Assess insertion site of drains for redness, pain, swelling, or purulent drainage.	Drains are a potential source of infection.
Assist in skin and nail care in affected arm.	Prevents infection in affected arm.

Instructions, Information, Demonstration

Activities	*Rationales*
Teach to avoid using affected extremity for IVs, BP readings, injections, blood withdrawal.	Measures prevent breaks in skin.
Avoid injury to affected arm by using electric shaver to shave underarm hair; wear gardening gloves; use thimble when sewing.	Measures promote skin integrity and prevent injury to affected arm.
Instruct that if break in skin occurs to wash with antimicrobial soap and apply antimicrobial ointment with occlusive dressing, changing daily and when soiled.	Helps prevent infection if breaks in skin occur.
Teach patient to empty drain, and strip tubing; measure and record output as appropriate.	Patients are usually discharged with drains in place, left in 7-10 days.
Teach to report to health care team any signs and symptoms of infection of surgical site and affected arm.	Maximizes patient safety.

☐ Discharge or Maintenance Evaluation

- Affected arm and surgical site will remain free from injury and infection.
- Should injury occur to affected arm, infection will be prevented.
- Demonstrates appropriate care of incision(s), and surgical drain(s) at the time of discharge.

Essential Nursing Diagnoses Related to Radiation Therapy

Fatigue

(CH. 5)

☐ Related to:

Breast cancer disease process, anemia related to radiation therapy and radiation therapy itself.

☐ Defining Characteristics:

Patient voices feeling of weariness, tiredness and/or loss of energy; exertional dyspnea; inability to perform functions of daily living.

Risk for Impaired Skin Integrity

(CH. 3)

☐ Related to:

Side effects from radiation therapy

☐ Defining Characteristics:

Skin reactions such as dryness, erythema usually occur 7 to 10 days after treatment has begun; emaciation due to weight loss from disease and/or its treatment.

Knowledge Deficit

☐ Related to:

Radiation therapy to the breast for cancer

- ☐ Defining Characteristics:

  Patient voices lack of knowledge and/or asks questions about upcoming radiation therapy treatments.

- ☐ Outcome Criteria:

  Patient will be able to discuss the possible side effects of radiation treatments to the chest and how to manage them if they occur.

- ☐ NIC: Teaching— Procedure/ Treatment

  Definition: Preparing a patient to understand and mentally prepare for prescribed procedure or treatment.

Teaching-- Procedure/Treatment

Activities	*Rationales*
Assess knowledge of radiation therapy treatment plan and possible side effects.	Provides information to develop treatment plan based on patient's needs.
Inform patient and family of when the treatment will begin, time, length and duration of treatments; purpose of treatments.	Allows patient and family to plan daily activities around treatments.

Teaching-- Procedure/Treatment

Activities	*Rationales*
Explain possible side effects from radiation therapy: 1) Hair loss in field 2) Skin reactions in field (7-10 days after treatment has begun) vary from dry desquamation; hyperpigmentation to moist desquamation; 3) Lymphedema with high doses and/or damage to brachial plexus **Late reactions include:** 1) Spontaneous rib fractures 2) Chest wall discomfort 3) Unproductive cough; 4) Mild shortness of	Due to physiological effect of radiotherapy to breast and surrounding tissue, skin changes are transient and clear 1 to 3 weeks after therapy completed.
Instruct patient family on measures they can use to manage the possible side effects from radiation therapy to the breast.	Promotes self care management.
Provide written information on radiation therapy treatments and self-care measures.	Written materials reinforce verbal instructions.
Advise patient not to take any medications, including OTC drugs, unless ordered by or okayed by physician—even aspirin.	Prevents possible drug interactions.

Teaching-- Procedure/Treatment	
Activities	*Rationales*
Inform patient verbally, and in writing, of changes that must be reported to the health care team immediately. These include signs of infection, persistent nausea and vomiting, unusual bleeding or bruising, acute changes in mental or emotional status.	Promotes prevention of serious complications by promoting early reporting.

☐ Discharge or Maintenance Evaluation

- Patient states possible side effects and self-care management techniques to cope with side effects.
- Receives radiation treatments as prescribed by physician.
- Identifies changes that should be reported to the health care team immediately.

Essential Nursing Diagnosis Related to Chemotherapy

Knowledge Deficit

(CH. 4)

☐ Related to:

Chemotherapy, its side effects and management of side effects.

☐ Defining Characteristics:

Patient verbalizes lack of information, or asks questions about chemotherapy, its side effects, how to manage these side effects.

Risk for Infection

(CH. 4)

☐ Related to:

Chemotherapy's rapid destruction of dividing hematopoietic cells resulting in immunosuppression.

☐ Defining Characteristics:

Presence of granulocytopenia, an absolute granulocyte count (AGC) below 1000 cells/mm^3.

Risk for Injury

(CH. 4)

☐ Related to:

Thrombocytopenia from chemotherapy

☐ Defining Characteristics:

Presence of thrombocytopenia with a platelet count below 50,000 cells/mm^3, presence of easy bruising, and/or bleeding.

Risk for Pain

(CH. 4)

☐ Related to:

Nausea and vomiting from chemotherapy and/or anxiety related to treatments.

☐ Defining Characteristics:

Patient expresses feelings of pain or discomfort, moans, cries, is diaphoretic; exhibits elevation in blood pressure and/or pulse rate.

Body Image Disturbance

(CH. 4)

☐ Related to:

Alopecia, weight loss, and/or skin changes secondary to adriamycin, and vinca alkaloid(vinblastine, vincristine) chemotherapy drugs.

☐ Defining Characteristics:

Patient verbalizes fear of rejection or reaction of others to altered appearance, especially hair loss.

Risk for Impaired Skin Integrity

(CH. 4)

☐ Related to:

Extravasation of vesicant chemotherapy agents such as adriamycin, vincristine, and/or vinblastine.

☐ Defining Characteristics:

Complaints of pain, burning, redness in IV site and/or swelling, redness, necrosis progressing to tissue sloughing at IV site.

Altered Tissue Perfusion, Cardiopulmonary

(CH. 13)

☐ Related to:

Damage to cardiomyopathy from adriamycin and/or high-dose cyclophosphamide.

☐ Defining Characteristics:

Decrease in ejection fraction, weakness, fatigue, and resulting decrease in ability to perform activities of daily living.

Altered Urinary Elimination

(CH. 18)

☐ Related to:

Hemorrhagic cystitis from cyclophosphamide (Cytoxan) and/or ifosfamide chemotherapy drugs.

☐ Defining Characteristics:

Hematuria, gross or microscopic, complaints of blood in urine while receiving cyclophosphamide (Cytoxan) and/or ifosfamide.

Altered Nutrition: Less Than Body Requirements

(CH. 4)

☐ Related to:

Nausea, vomiting, stomatitis, and diarrhea from 5-fluorouracil, cyclosphosfamide, adriamycin, tamoxifen.

☐ Defining Characteristics:

Weight loss, anorexia,nausea, vomiting, diarrhea.

Risk for Altered Oral Mucous Membranes

(CH. 4)

☐ Related to:

Damage to rapidly dividing cells of the mucosa from 5-fluorouracil, cyclophosphamide, adriamycin.

☐ Defining Characteristics:

Oral pain/discomfort, coated tongue, stomatitis, oral lesions, or mouth ulcers.

Risk for Injury

☐ Related to:

Damage to liver from methotrexate especially high dose therapy.

☐ Defining Characteristics:

Transient elevations of liver function tests (LFTs) may occur 1 to 10 days post RX, with high dose therapy (500mg/m2) and above requiring Leucovorin rescue); presence of jaundice; increased risk for hepatotoxicity when given other hepatotoxic agents such as alcohol; persistent elevations of LFTs post treatment.

☐ Outcome Criteria:

Hepatotoxicity will be identified early.

☐ NIC: Medication Management

Definition: Facilitation of safe and effective use of prescription and over the counter drugs.

Medication Management	
Activities	*Rationales*
Obtain baseline LFTs prior to drug dose.	Establishes baseline liver function.
Notify physician if baseline LFTs are elevated.	Promotes prevention of hepatotoxicity.
Administer methotrexate dose correctly, double checking dose.	Prevents overdosage of methotrexate.
Monitor for signs of hepatotoxicity during therapy with methotrexate.	Promotes early identification of toxicity.
Monitor LFTs during therapy.	Promotes early identification of hepatoxicity.
Administer Leucovorin as appropriate.	Leucovorin is used as a rescue to replenish the folate pool, which is reduced by high doses of methotrexate.

Instructions, Information, Demonstration	
Activities	*Rationales*
Teach importance of taking Leucovorin rescue on time with high dose therapy.	Prevents excessive toxicity from methotrexate.
Instruct on need for LFTs.	Promotes compliance with health care regime.

☐ Discharge or Maintenance Evaluation

- Hepatotoxicity will be prevented though Leucovorin rescue or identified early and treatment initiated.

Essential Nursing Diagnoses Related to Hormonal Therapy

Risk for Injury

☐ Related to:

Transient thrombocytopenia from tamoxifen.

☐ Defining Characteristics:

Platelet counts below normal, unusual bruising or bleeding.

Risk for Infection

☐ Related to:

Transient granulocytopenia from tamoxifen

☐ Defining Characteristics:

Absolute granulocyte count less than 1000.

Risk for Sexual Dysfunction

☐ Related to:

Side effects of tamoxifen.

☐ Defining Characteristics:

Presence of menstrual irregularity, hot flashes, vaginal discharge and bleeding, or voiced concerns over reproductive dysfunction or changes in sexual pattern.

☐ Outcome Criteria:

Identifies strategies for coping with sexual dysfunction.

☐ NIC: Sexual Counseling

Definition: Use of an interactive helping process focusing on the need to make adjustments in sexual practice or to enhance coping with a sexual event/disorder.

Sexual Counseling

Activities	*Rationales*
Establish a therapeutic relationship ensuring privacy and confidentiality.	Promotes an atmosphere that allows expression of feelings.
Explore with patient/partner issues of reproductive and sexuality patterns, and impact that tamoxifen may have on them.	Provides necessary information to assist patient in planning methods to cope with possible alterations.
Discuss strategies to preserve sexual and reproductive health.	Promotes sexual and reproductive health.
Allow/help patient to express feelings of grief and/or anger about alterations.	Promotes venting of feelings.

Sexual Counseling	
Activities	*Rationales*
Use humor as appropriate to relieve anxiety and/or embarrassment.	Promotes coping with a sometimes uncomfortable topic.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient /partner of possible side effects of medication on sexuality, such as menstrual irregularity, hot flashes, vaginal discharge, and bleeding.	Provides patient with information to safely take necessary medication.
Teach alternate forms of sexual expression acceptable to patient/partner.	Provides outlet for sexual expression.

☐ Discharge or Maintenance Evaluation

- Demonstrates ability to cope with sexual and reproductive dysfunction.

Risk for Pain

☐ Related to:

Initial "flare" reaction to tamoxifen.

☐ Defining Characteristics:

Patient voices increase in bone and/or tumor pain or concern over increase in tumor size.

☐ Outcome Criteria:

Patient discusses signs and symptoms of flare reaction and strategies to cope with it.

☐ NIC: Teaching Self-Administration of Prescribed Medication

Definition: Preparing patient to safely take prescribed medication and monitor its effects.

Teaching Self-Administration of Prescribed Medication	
Activities	*Rationales*
Instruct on possibility of flare reaction, increase in pain and tumor.	Flare reaction may occur with initial tamoxifen therapy.
Inform that flare reaction is transient and usually will last only 2 weeks.	Promotes compliance with medication regime.
Teach patient strategies to cope with flare reaction, such as taking or increasing pain medications.	Provides methods to cope with Flare reaction without stopping therapy.

☐ Discharge or Maintenance Evaluation

- Should flare reaction occur, patient will institute measures to cope with reaction and continue taking tamoxifen.

Altered Nutrition: Risk for More Than Body Requirements

☐ Related to:

Hormonal therapy for breast cancer.

☐ Defining Characteristics:

Weight gain while taking hormonal agents for breast cancer.

☐ Outcome Criteria:

Weight gain will not occur.

☐ NIC: Weight Management

Definition: Facilitating maintenance of optimal body weight and percent body fat.

Weight Management	
Activities	*Rationales*
Assess past weight history as well as typical food intake.	Provides information for planning.
Determine ideal weight and body fat percent.	Provides information for planning.
Monitor weight regularly.	Identifies trends in weight.
Discuss possible side effect of weight gain from hormonal therapy.	Promotes understanding of possible side effects.
Discuss relationship between food intake, exercise, weight gain or loss.	Increased food intake without increase in exercise will result in weight gain.
If weight gain occurs institute measures to assist in weight loss if so desired.	Promotes maintenance of ideal body weight.

Instructions, Information, Demonstration	
Activities	*Rationales*
Teach patient well-balanced diet planning.	Promotes weight maintenance.
Instruct patient to maintain log of weekly weights.	Identifies trends in weight.

☐ Discharge or Maintenance Evaluation

- Weight will be maintained within 5% of baseline.
- If weight gain occurs, patient will institute measures to reduce weight to baseline.

Chapter Ten

Genitourinary Cancers

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Genitourinary Cancers

Introduction: This chapter deals with the genitourinary cancers; including kidney, bladder, testicular and prostate. Although penile cancer does occur in the United States, it is more of a health concern inunder-developed nations, so it will be reviewed in this text.

Kidney cancer

Kidney cancer is an uncommon disease, accounting for only 3% of all cancer cases, with an estimated occurrence of 27,200 cases annually. Peak incidence is between the ages of forty and fifty. At diagnosis 30-50% of kidney cancer patients have metastatic disease. The over all five year survival rate is 55%; this increases to 85% for those patients with localized kidney cancer, but for patients whose cancer.

Risk Factors

Risk factors are thought to be exposure to cadmium, lead pigment in printing ink, asbestos and coal tars. Cigarette smoking correlates strongly with the development of this disease. Frequent use of phenacetin containing analgesics is associated with an increased incidence of cancer of the renal pelvis.

Types

There are two types of kidney cancer— renal cell carcinoma and cancer of the renal pelvis. Renal cell carcinoma is the most common, occurring in 75-85% of kidney cancer patients. It can be of clear cell or granular cell origin, and arises from the epithelial cells of the kidney tubules. Renal cell cancer occurs in the parenchyma of the kidney and tends to grow towards the medullary or inner portion of the organ. It can spread by direct extension to the renal vein and the vena cava. This extension of tumor can sometimes be visualized by radiological imaging. Cancer of the renal pelvis is rare and occurs in 5-9% of kidney cancers. It arises from the epithelial tissue in the renal pelvis where urine is emptied from the kidney into the ureter.

Signs and Symptoms

Hematuria is present in approximately 50% of patients with kidney cancer, and this may be associated with anemia. Flank pain and abdominal mass are other signs of clinical presentation indicating advanced disease. The classic triad of symptoms includes pain, abdominal mass and hematuria. Fever, weight loss, hypercalcemia and erythrocytosis also may be present.

Diagnostic Tests

There is no early accurate diagnostic screening test for kidney cancer. Diagnostic tests to determine the presence of a mass include kidney, ureter, and bladder (KUB) x-ray; nephrotomography; excretory urography (e.g., intravenous pyelogram, or IVP); renal ultra- sound; renal angiography; renal computerized tomographic (CT) scan; and magnetic resonance imaging(MRI).

Treatment

Treatment strategies depend on the extent of disease at the time of diagnosis. Localized disease, confined within the kidney, can often be cured surgically with a radical nephrectomy. In renal cell cancer, the affected kidney and the surrounding lymph nodes are removed. When the diagnosis is cancer of the renal pelvis, a more extensive operation is recommended, including the removal of the kidney, lymph nodes, ureter and sometimes the upper portion of the bladder.

Surgical intervention for patients with metastatic kidney cancer is controversial. Some physicians believe that palliative surgical nephrectomy may improve quality of life by relieving pain and correcting anemia in patients with hematuria. Neurosurgery for an isolated brain metastasis is often suggested to improve neurologic status.

Radiation therapy is not often used because renal cell carcinoma is radioresistant. Pain from a metastatic bone lesion may be alleviated with radiotherapy, however and cranial radiation therapy may be suggested following the removal of a brain lesion.

Chemotherapy has not had a significant impact on metastatic kidney cancer. Vinblastine (velban), given as a single agent has shown a small response rate of about 15%. Hormonal therapy with progesterone, depo-provera and megestrol acetate, has also shown only a 15% response rate. Physicians prefer to use the hormonal therapies because they are associated with few toxicities.

Immunotherapy has demonstrated the best response rates, to date, in the treatment of advanced renal cell carcinoma. Proleukin, interleukin-2(IL-2), was FDA approved for this purpose and has shown a 30% response rate. The treatment with this biologic agent is associated with the toxicities often seen with immunotherapy including fever, chills, flu-like syndrome, myalgias, headaches, anorexia, fatigue, and capillary leak syndrome. The side effects are dose related with larger doses associated with an increase in the incidence and severity of symptoms.

Investigational Treatments

Clinical trials are ongoing for the treatment of kidney cancer. These studies are evaluating the combination of chemotherapeutic agents with immunotherapy. Another area of research for this disease is gene therapy.

Complications

Complications of the disease are associated with the treatment or the development of metastases. Surgical complications associated with nephrectomy include the development of atelectasis, pneumonia, hemorrhage, infection and paralytic ileus. The most common sites of metastases of kidney cancer include the lungs, brain, and bones.

Common Nursing Diagnoses Related to Caring for All Clients with Genitourinary Cancers

These more general nursing diagnoses are to be used with all of the genitourinary cancers. Specific nursing diagnoses will be listed individually following the bladder and prostate introductions.

Altered Family Processes

(CH. 1)

☐ Related to:

Anxiety and fears about the diagnosis of a genitourinary cancer

☐ Defining Characteristics:

Family system unable to meet physical or emotional needs of patient, related to diagnosis.

Anxiety

(CH. 1)

☐ Related to:

Perceived threat to self due to diagnosis of kidney, bladder, or prostate cancers.

☐ Defining Characteristics:

Patient verbalizes feelings of uncertainty, apprehension, fear, sleeplessness, or restlessness.

Knowledge Deficit

(CH. 2, 4)

☐ Related to:

Surgery, chemotherapy and/or immunotherapy.

☐ Defining Characteristics:

Patient verbalizes lack of information and/or questions about surgery, chemotherapy, or immunotherapy, the side effects of these modes of treatment, and/or the management of these side effects.

Impaired Skin Integrity

(CH. 2)

☐ Related to:

Nephrectomy, cystectomy, prostatectomy.

☐ Defining Characteristics:

Surgical incision.

Alteration in Comfort: Pain

(CH. 2)

☐ Related to:

Nephrectomy, cystectomy, prostatectomy.

☐ Defining Characteristics:

Diaphoresis, blood pressure and pulse rate changes, crying, moaning, guarding and protective behavior, refusal to move or change position, restlessness, irritability.

Potential for Infection

(CH. 4)

☐ Related to:

Systemic chemotherapy or systemic immunotherapy.

☐ Defining Characteristics:

Granulocytopenia or neutropenia.

Alteration in Nutrition Less Than Body Requirements

(CH. 2)

☐ Related to:

Surgery, systemic chemotherapy, or systemic immunotherapy that may cause anorexia, nausea, vomiting or diarrhea.

☐ Defining Characteristics:

Reported or observed inadequate intake of calories.

Decreased Cardiac Output

(CH. 2)

☐ Related to:

Surgical intervention and administration of anesthesia.

☐ Defining Characteristics:

Variations in blood pressure readings, jugular vein distension, decreased peripheral pulses, arrhythmias, color changes in skin and mucous membranes, cold clammy skin, oliguria, dyspnea, rales, restlessness.

Skin Integrity: High Risk for Impairment

(CH. 2)

☐ Related to:

Surgery and postoperative recovery.

☐ Defining Characteristics:

Reddened skin area (especially over bony prominences), verbalized discomfort in a local area, physical immobilization, excretions/secretions on skin, altered sensation, altered consciousness, altered metabolic and nutritional state, altered circulation, alterations in skin turgor, and immunologic factors.

Common Nursing Diagnoses for the Client with Kidney Cancer

Pain

☐ Related to:

Length of incision for nephrectomy.

☐ Defining Characteristics:

Diaphoresis, blood pressure and pulse rate changes, crying, moaning, guarding and protective behavior, refusal to move or change position, restlessness, irritability

☐ Outcome Criteria:

Absence or control of pain.

☐ NIC: Patient Controlled Analgesia (PCA) Assistance

Definition: Facilitating patient control of analgesic administration and regulation.

Patient Controlled Analgesia (PCA) Assistance	
Activities	*Rationales*
Assess pain levels and pain relief. Ensure patient is not allergic to proposed analgesic.	Prevents allergic reactions.

Patient Controlled Analgesia (PCA) Assistance	
Activities	*Rationales*
Validate that patient can use a PCA device (ability to communicate, comprehend explanations, and follow directions).	Promotes comfort by expediting administration of required analgesic.
Document the patient's pain, amount and frequency of drug dosing, and response to pain treatment.	Provides data for other health care professionals to monitor effectiveness of pain management.
Recommend a bowel regimen, if appropriate.	Prevents constipation related to narcotics.
Consult with clinical experts about patients who have difficulty achieving pain control.	Provides the most expert care for the patient.

Instructions, Information, Demonstration	
Activities	*Rationales*
Inform patient of the action and side effects of pain-relieving agents.	Promotes understanding.
Teach patient how to use PCA device.	Provides the patient the ability to treat pain as needed.
Instruct patient and family not to alter settings of PCA device.	Promotes consistent delivery of medication.

☐ Discharge or Maintenance Evaluation

- Patient verbalizes that pain is reduced or absent.

Alteration in Fluid Balance: Deficit

☐ Related to:

Capillary leak syndrome from Interleukin-2, increased body temperature resulting in increased insensible fluid loss, decreased fluid intake from anorexia, and fluid losses due to diarrhea.

☐ Defining Characteristics:

Hypotension, orthostasis, tachycardia, tachypnea, low urine output, increased body temperature, dry mucous membranes, electrolyte imbalances, diarrhea, decreased fluid intake, and/or weight loss.

Potential for Ineffective Airway Clearance

(CH. 2)

☐ Related to:

Surgical procedure requiring anesthesia.

☐ Defining Characteristics:

Abnormal breath sounds (rales, crackles, bronchi, wheezes), cough, change in rate and depth of respirations, dyspnea, tachypnea, cyanosis.

Impaired Gas Exchange

(CH. 2)

☐ Related to:

Proximity of surgical incision to the diaphragm.

☐ Defining Characteristics:

Confusion, restlessness, irritability, inability to move secretions, hypoxia, hypercapnia.

Fatigue

(CH. 3)

☐ Related to:

Anemia due to preoperative hematuria, immunotherapy with Interleukin-2.

☐ Defining Characteristics:

Lethargy, malaise, exhaustion, decreased capacity for physical and mental activities.

High Risk for Peripheral Neurovascular Dysfunction

(CH. 8)

☐ Related to:

Chemotherapy with vinblastine (velban).

☐ Defining Characteristics:

Patient verbalizes loss of fine motor movements, numbness in fingers and toes, gait disturbances and loss of proprioception.

Bladder Cancer

Bladder cancer is the most common malignancy of the urinary tract. The incidence has been increasing over the past two decades with an estimated 52,300 cases in 1993. The five-year survival rate for early stage disease is 90%; with regional disease this rate drops

to 46%; and is only 9% for patients with metastatic lesions.

Risk Factors

Age, sex, and race are risk factors for developing bladder cancer. The incidence of this disease increases with age, generally occurring in people over fifty, with the peak incidence in the seventh decade. Men are four times more likely to develop bladder cancer than women, and it is most common in caucasians. Smoking is the greatest risk factor, with smokers having twice the risk of nonsmokers. Increasing the risk of developing the disease include such occupational factors as exposure to arylamines, used in paint, dye, rubber, leather and tar. Living in an urban area also increases the risk.

Types

The most common type of bladder cancer in the United States is transitional cell carcinoma, representing over 90% of cases. These tumors arise from the epithelial layer of the bladder. Squamous cell cancer represents 6-8% of bladder cancers. Adenocarcinomas of the bladder occur but are rare.

Presenting Signs and Symptoms

Hematuria is the most common first indication of bladder cancer, although it may not be an early sign. Bleeding is often intermittent, which may delay follow up of this symptom because the person and physician may think that the problem has resolved. Almost all patients do have microscopic hematuria. Urinary frequency and dysuria may also indicate the presence of this disease.

Diagnostic Tests

There is no accurate early screening test for bladder cancer. Urine cytology from a late morning or early afternoon specimen may reveal cancer cells. Bladder lavage with normal saline (bladder washings) can be more reliable than urine cytology in detecting the presence of cancer cells. Flow cytometry of urine to examine DNA ploidy may be useful diagnostically and in follow-up of treated patients. The intravenous pyelogram(IVP) is an excretory urogram used to evaluate the upper urinary tracts and bladder filling. Cystoscopy, the visualization of the interior of the organ is performed by inserting a slender tube, fitted with a lens and a light, into the bladder through the urethra.

Biopsies of suspicious areas are usually performed during cystoscopy. The transurethral ultrasound may help identify the extent of disease. Pelvic computerized tomograph (CT Scan) assists in identifying regional lymph

nodes to assess for metastasis. Magnetic resonance imaging (MRI) may assist in determining the extent of tumor within the bladder wall and in determining pelvic lymph node involvement. The chest x-ray or chest CT scan also may be used to evaluate the lungs for pulmonary metastases.

Treatment

The type of tumor, depth of invasion within the bladder, extent of disease, and general medical condition of the patient are factors that influence treatment plans. These factors can be significant in the care of bladder cancer patients since many of these clients are older, with pre-existing medical problems. Surgery, radiotherapy, chemotherapy, and immunotherapy are used alone, or more frequently in combination in the treatment of bladder cancer.

Transurethral resection (TUR) and fulguration are used for carcinoma in situ or for small superficial lesions. Since the rate of recurrence is high, intravesical chemotherapy or immunotherapy may be recommended. Thiotepa, mitomycin (mutamycin), and doxorubicin (adriamycin) have been agents used for intravesical treatment. Interferon or BCG are the immunologic agents used for this form of treatment. Systemic side effects from chemotherapy or immunotherapy are less likely to occur with intravesical administration of these medications. Laser therapy is also a therapeutic possibility for patients with small lesions.

Segmental bladder resection is used for large, single tumors at the bladder dome or lateral wall or for adenocarcinomas. It is also the procedure used when a patient is at too high a risk for cystectomy.

When the tumor is invasive or cannot be controlled with more conservative approaches, a cystectomy is the treatment of choice. Simple cystectomy in a man includes the removal of the bladder, prostate, and seminal vesicles; in a woman it involves the excision of the bladder and the urethra. Radical cystectomy in a male patient involves the removal of the bladder, surrounding fat, attached peritoneum, prostate gland, and seminal vesicles. Radical cystectomy in a female patient would include the removal of the bladder, urethra, ovaries, uterus, fallopian tubes, and anterior wall of the vagina. In men, radical cystectomy can be associated with impotence related to nerve damage. A pelvic lymph node dissection may also be performed at the time of cystectomy to locate possible metastatic disease.

Urinary diversion following cystectomy may be achieved by using a segment of ileum to form a conduit between the ureters and the external abdomen. This procedure requires the patient to wear a urinary collection device. Another option for patients may be the creation of a continent ileal reservoir which does not require an external collection apparatus.

Radiation therapy for bladder cancer as a single mode of treatment, for invasive disease has only a 16-30% cure rate. This is a much lower cure rate than is achieved by cystectomy, but radiation may be used in patients who are not surgical candidates. Radiotherapy may be used pre-operatively to reduce the size of the tumor and to decrease the risk of pelvic node recurrence.

No definitive chemotherapeutic regimen has been devised for the treatment of advanced bladder cancer. Single agents that have been used include: doxorubicin (adriamycin), etoposide (VP-16, Vepesid, epipodophyllotoxin), methotrexate (Mexate), vinblastine (velban), and cisplatin (CDDP, Platinol). Combination chemotherapy has included numerous agents; one of the combinations seen most frequently is MVAC or, methotrexate, vinblastine, adriamycin, and cisplatin. This rigorous program is repeated every twenty eight days for six cycles. The use of growth factors to promote bone marrow recovery has allowed patients to receive the suggested doses of chemotherapy. Patients with a history of cardiac disease may not receive doxorubicin (adriamycin), related to the potential of cardiac toxicity. Some centers are replacing cisplatin with carboplatin or etoposide to decrease toxicity. The major side effects of MVAC are alopecia, bone marrow suppression, nausea, vomiting, neurotoxicity, nephrotoxicity, ototoxicity, and the risk of cardiac hypertrophy.

Investigational Treatments

There is an ongoing national study to evaluate MVAC and/or cystectomy. Some centers are using high dose cyclophosphamide (cytoxan) as a single agent. Many new chemical and biologic agents are being tested as intravesical treatments. There are also studies using radiation implants in the bladder. Modifications of surgical cystectomy to preserve potency are being investigated.

Complications

Surgical complications may include bleeding or infection. Side effects of chemotherapy are mentioned earlier. Radiation therapy can produce strictures of the ureters, urethra or colon. Other complications are related to sites of metastatic disease.

Common Nursing Diagnoses Related to Caring for the Client with any Genitourinary Cancer

(Refer to section following Kidney Cancer)

Common Nursing Diagnoses for the Client with Bladder Cancer

Knowledge Deficit

☐ Related to:

Chemotherapy or immunotherapy given directly into the bladder.

☐ Defining Characteristics:

Patient verbalizes lack of information about treatment and potential side effects of intravesicular chemotherapy or immunotherapy.

☐ Outcome Criteria:

Patient is able to verbalize treatment schedule and goals of treatment.

☐ NIC: Urinary Catheterization—Intermittent

Definition: Periodic use of a catheter to instill immunotherapy or chemotherapy into the bladder.

Urinary Catheterization — Intermittent

Activities	*Rationales*
Teach patient and family the purpose, method, and goals of therapy.	Promotes understanding, decreases anxiety.
Use sterile technique catheterization.	Prevents infection.

Instructions, Information, Demonstration

Activities	*Rationales*
Instruct patient to void prior to instilling medication.	Promotes retention of chemotherapeutic or immunologic agent.
Inform patient and family of importance of regular visits.	Provides information.
Instruct patient to roll from side to side.	Promotes coating of the bladder interior with medication.
Instruct patient to wait to void for several hours.	Provides increased contact of the medication with interior surface of bladder.
Instruct patient in careful toileting following treatment.	Prevents exposure to voided chemotherapy or immunotherapy.

☐ Discharge or Maintenance Evaluation

- Patient verbalizes an understanding of treatment.
- Patient comes regularly for treatment

Body Image Disturbance

☐ Related to:

Creation of urinary diversion.

☐ Defining Characteristics:

Patient voices fears regarding change in physical appearance, nonverbal responses to change in body appearance (ostomy), fears of anticipated change in activities of daily living and social relationships.

☐ Outcome Criteria:

Body image improved, preserved, and maintained; accommodations made for, and adaptation to, ostomy begun.

☐ NIC: Body Image Enhancement

Definition: Improving a patient's conscious and unconscious perceptions and attitudes toward his or her body.

Body Image Enhancement

Activities	*Rationales*
Encourage patient to express feelings regarding ostomy and diagnosis of bladder cancer, and expected impact on lifestyle.	Promotes integration of changes into lifestyle.
Evaluate patient's feelings regarding urinary diversion and its effect on sexual identity, relationships, and body image.	Provides background data on which to formulate care plan.

Body Image Enhancement

Activities	*Rationales*
Assist patient to separate physical appearance and feelings of personal worth.	Promotes positive self image.
Give permission to grieve over loss of normal bladder function.	Allows patient time needed to cope with losses.
Allow to vent negative emotions such as anger and guilt.	Promotes coping because these are normal reactions to loss.
Monitor whether patient can look at ostomy.	Inability to view ostomy may indicate coping difficulties.
Encourage open communication between patient and family over creation of ostomy and impact of illness.	Promotes family/patient coping.

Instructions, Information, Demonstration

Activities	*Rationales*
Inform patient of community resources such as ostomy groups.	Provides potential resources for continued support.
Give patient written materials regarding ostomy groups.	Provides reinforcement of verbal information.

☐ Discharge or Maintenance Evaluation

- Patient is able to care for ostomy.

- Patient verbalizes an awareness of possible modes of support other than family post hospital discharge.

Altered Urinary Elimination & Impairment of Skin Integrity

☐ Related to:

Creation of an abdominal exit for urine, permanent diversion of urine.

☐ Defining Characteristics:

Presence of a stoma or opening on the abdominal wall.

☐ Outcome Criteria:

Participates in activities related to care of ileostomy

☐ NIC: Ostomy Care

Definition: Maintenance of elimination through a stoma and care of surrounding tissue.

Ostomy Care	
Activities	*Rationales*
Apply properly fitting ostomy appliance.	Prevents irritation to skin in surrounding area.
Assist patient in providing ileostomy self-care.	Promotes correct technique.
Monitor incision/stoma for healing.	Promotes early intervention of complication.

Ostomy Care	
Activities	*Rationales*
Encourage patient/significant other to express feelings and concerns about changes in body image.	Provides opportunity to vent feelings.
Encourage visitation to client by person from ileostomy support group.	Reduces anxiety and fears of adaptive ability through visit with a person in similar circumstances.
Assist patient in obtaining ostomy supplies.	Provides information and promotes compliance.
Change or empty ostomy bag as appropriate.	Provides opportunity to reinforce technique of changing equipment and to evaluate stoma.
Encourage participation in ostomy support group post hospital discharge, if appropriate.	Provides opportunity for patient to talk with a variety of other people having ostomies.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient/significant other in the use of ileostomy equipment.	Promotes understanding of correct techniques of using appliance.
Have patient demonstrate use of equipment.	Provides opportunity to assess patient's understanding.
Instruct patient on mechanisms to reduce odor.	Provides opportunity to assess patient's understanding.

☐ Discharge or Maintenance Evaluation

- Participates in care of ileostomy.
- Patient verbalizes signs and symptoms to report to physician.

Potential for Infection (Pyelonephritis)

☐ Related to:

Surgical opening in the abdominal wall for the elimination of urine.

☐ Defining Characteristics:

Fever, flank pain, malodorous urine, hematuria, positive urine culture.

☐ Outcome Criteria

Absence of urinary tract infection

☐ NIC: Infection Control

Definition: Minimizing the acquisition and transmission of infectious agents.

Infection Control

Activities	*Rationales*
Use antimicrobial soap for hand washing.	Prevents transmission of organisms.
Ensure adequate fluid intake.	Promotes urinary flow.

Instructions, Information, Demonstration

Activities	*Rationales*
Instruct patient on hand washing techniques.	Provides information.
Teach patient about signs and symptoms of infection and when to report them to health care provider.	Provides information and promotes compliance.
Teach patient and family members how to avoid infections.	Prevents infections.
Teach patient and family to drain bag frequently to prevent reflux into stoma.	Prevents infections.
Instruct patient to take antibiotics as prescribed.	Promotes compliance.

☐ Discharge or Maintenance Evaluation

- Absence of urinary tract infection.

Prostate Cancer

Prostate cancer is the second most common cancer in men, following skin cancer, with an estimated 165,000 new cases in the United States every year. There has been a significant rise in the incidence of prostate cancer in the United States, probably related to improved detection. The incidence increases with each decade after fifty, and is the second leading cause of cancer deaths in men. The five year survival rate for localized prostate cancer is 91%. Of all patients diag-

nosed, 58% have localized disease. The five year survival rate for all stages of disease is 76%.

Risk Factors

Incidence increases with age, so that approximately one in ten men will develop prostate cancer by age 85. Of all men diagnosed, more than 80% are over 65. The incidence rates are 40% higher for African American men than white men, and African American men have the highest rate of incidence in the world. The disease is more common in North America and Northwestern Europe. Workers exposed to cadmium, men in tire and rubber manufacturing, mechanics, farmers, and sheet metal workers have an increased risk of developing prostate cancer. There has also been some familial clustering of the disease.

Types

The major prostate cancer is adenocarcinoma.

Presenting Signs and Symptoms

Changes in the urinary pattern may be indicative of prostate cancer. These changes may include weak or interrupted urine flow, difficulty starting or stopping the urine flow, frequent urination especially at night, pain or burning on urination, blood in the urine, and inability to urinate. These symptoms are nonspecific and may be related to benign conditions such as infection or enlargement of the prostate. Advanced disease may present with bladder outlet obstructive symptoms with urinary retention. Bone pain is the most frequent complaint of patients who present with metastatic disease.

Diagnostic Tests

Digital rectal examination to feel for the presence of a nodule or irregularity in the prostate remains the most reliable means of early detection. Fifty percent of palpable prostate nodules are found to be cancerous. The American Cancer Society (ACS) recommends that digital examination be done as part of a routine physical examination in men over forty.

Core needle biopsy is used in the United States, often using a biopsy gun. This method of biopsy provides tissue for pathology, and may not require an anesthetic.

The use of transrectal ultrasonography (TRUS) is being re-evaluated. There has been concern expressed regarding over-treatment of clinically insignificant disease, expense of equipment and the amount of training required of personnel who administer the examination. Patients also complain about the discomfort of the procedure.

The use of blood studies, the prostatic acid phosphatase (PAP), and the prostatic specific

antigen (PSA) remain controversial. The PSA, which is more sensitive than the PAP, will be elevated in 36% of men with non-malignant disease. The ACS recommends the test annually for men fifty and older. The PSA can often be used to evaluate the response to treatment in men who have high antigen levels, and is used to detect recurrent disease in men who previously had an increased level that fell with treatment.

Imaging techniques used to evaluate the patient with prostate cancer include bone scan to detect bone metastases, chest x-ray to examine for lesions, and MRI and CT scans to detect metastases anywhere in the body.

Treatment

Controversy surrounds the treatment of men seventy years or older who are diagnosed with low grade cancer which is nonaggressive pathologically. The controversy that without treatment men may live ten years after diagnosis, and that all present modes of therapy compromise quality of life; incontinence, impotence, and diarrhea adversely effect activities of daily living. A "watch and wait" approach with frequent follow-up is often recommended. This conflicts with the widespread belief that cancer is to be treated immediately and aggressively for cure. The best approach remains for the patient to have the options for treatment explained, including potential side effects and to allow him to make his own decision.

The surgical approach of prostatectomy is often preceded by a pelvic lymph node exploration. The reason for this is that if the disease has already spread away from the prostate, and confirmed by the presence of positive lymph nodes, then a radical surgical procedure may no longer be recommended. Prostatectomy can be accomplished with surgical approaches to the organ from different angles— perineal, suprapubic, and retropubic. The retropubic approach has been associated with a lower incidence of urethral stricture formation, and a reduced possibility of damage to pelvic nerves needed for erection. The potential complications related to these surgical interventions are impotence, incontinence and urethral strictures.

Another potential surgical approach is the use of cryosurgery to freeze the tumor. This method is now being evaluated in clinical trials. Depending on the location of the tumor within the prostate, urethral damage may potentially occur. The prostatectomy and cryosurgery in localized tumors are surgical approaches used for cure, especially when there has been a negative lymph node dissection. Surgical procedures are also used for the treatment of metastatic disease. Bilateral orchiectomy, the removal of the testicles, is used instead of hormonal therapy to decrease the production of androgens. This is an option for men with metastatic disease who dislike taking regular medications.

Radiation therapy is another option for the treatment of prostate cancer. Two types of radiation therapy may be used— external

beam and interstitial implants. A temporary or permanent radioactive source (e.g., iodine 125 seeds) can be implanted within the prostate for eradication of disease. This treatment is associated with a lower incidence of impotence. External beam radiotherapy is administered in divided doses for five treatments each week over a six to seven week period. A total dose of 60-70Gy is administered. External beam radiotherapy to the prostate may be localized or may include the surrounding lymph nodes. Some centers combine radiation therapy with a surgical procedure. Bone pain from metastatic prostate lesions is very successfully treated with external beam radiation therapy. Another use of radiation therapy is in the treatment of a potential spinal cord compression caused by a metastatic lesion in a vertebrae.

Hormonal manipulation is the common approach for the treatment of metastatic disease. This can be achieved, as mentioned above, with surgery or the administration of medication. Diethylstilbestrol, DES was used previously, but the side effects including increased incidence of venous thrombosis, pulmonary embolism, stroke, myocardial infarction, hypertension, impotence, and gynecomastia were worrisome. The use of DES has often been replaced with the gonadotropin-releasing hormonal therapy. This class of medications is often referred to as the LHRH or Gn-RH analogues. There are two drugs in this class, Lupron (Leuprolide) and Zoladex (Goserlin acetate). They are administered once every 28 days, either by intramuscular injection (Lupron) or by subcutaneous tracking (Zoladex). These medications decrease the production of testosterone and are associated with fewer side effects than the previous estrogen therapy. However, they do cause impotence as a side effect of the decrease of testosterone. Flutamide (Eulexin) may be used in conjunction with an LHRH analogue. This testosterone inhibitor is given orally daily in divided doses. Megace (megestrol acetate) is an antiandrogen that can be used as a single agent for the treatment of metastatic prostate cancer. It is often also used in the treatment of breast cancer or as an appetite stimulant in AIDS or cancer patients. It is given orally, twice daily. Aminoglutethimide (Cytadren) is a medication which blocks adrenal function. It is given orally four times a day and should be accompanied by the administration of divided daily doses of hydrocortisone for glucocorticoid replacement.

These hormonal manipulations may be effective against metastatic prostate cancer for a period of months to years. Although they are associated with impotence they can relieve symptoms, related to metastatic disease (e.g., bone pain), benefiting overall quality of life. Generally the hormonal medications are well tolerated.

Chemotherapy

Although not widely accepted, both adriamycin and cyclophosphamide have been used in the treatment of metastatic prostate cancer. Cyclophosphamide (Cytoxan)

has been administered in high doses intravenously (grams per metered squared) and has demonstrated some responses; but it is associated with severe bone marrow suppression, especially in men with many bone metastases. The use of growth factors (Immunotherapy Chapter) in conjunction with this therapy is being explored. Adriamycin (doxorubicin) is often given in weekly intravenous boluses (20mg/m^2) as it is in metastatic breast cancer.

Investigational Treatments

Suramin, a chemotherapeutic agent derived from an organic dye, is being investigated in clinical trials. This agent has demonstrated promise in the treatment of metastatic prostate cancer.

Common Nursing Diagnoses related to Genitourinary Cancer

(Please refer to section following Kidney Cancer.)

Common Nursing Diagnoses Related to Prostate Cancer

Altered Urinary Elimination

(CH. 2)

- ☐ Related to:

  Increased size of the prostate gland causing urethral stricture.

- ☐ Defining Characteristics:

  Dysuria, frequency, urgency, urinary retention, inadequate output.

Altered Bowel Elimination

(CH. 2)

- ☐ Related to:

  Prostatectomy and external beam radiation therapy.

- ☐ Defining Characteristics:

  Increased frequency of bowel movements, urgency, loose liquid watery stools.

Sexual Dysfunction

- ☐ Related to:

  Prostatectomy, hormonal blockade for the treatment of metastatic prostate cancer.

- ☐ Defining Characteristics:

  Impotence, decreased libido

- ☐ Outcome Criteria:

Patient verbalizes understanding of changes in sexuality, and alternative methods of sexual expression.

☐ NIC: Sexual Counseling

Definition: Use of an interactive helping process focusing on the need to make adjustments in sexual practice or to enhance coping with a sexual disorder.

Sexual Counseling	
Activities	*Rationales*
Use humor as appropriate to relieve anxiety and/or embarrassment.	Promotes coping with an uncomfortable topic.

Sexual Counseling	
Activities	*Rationales*
Establish a therapeutic relationship based on trust and respect.	Promotes an atmosphere that allows expression of feelings.
Ensure privacy and confidentiality.	Provides a therapeutic milieu.
Assure patient/significant other that you are prepared to answer any questions about sexual functioning.	Promotes inquiry.
Discuss patient's general knowledge of sexuality.	Provides information on which a plan may be based.
Discuss the effects of surgery and hormonal therapy on sexual function.	Promotes understanding of reasons for dysfunction.
Encourage verbalization of fears.	Promotes venting of feelings.
Discuss necessary modifications in sexual activity.	Provides alternatives to present sexual behavior.
Encourage expression of grief/ anger about alterations.	Promotes venting of feelings.
Discuss alternative forms of sexual expression.	Prevents perception that sexual expression has terminated.

Instructions, Information, Demonstration	
Activities	*Rationales*
Inform patient that sexuality is an important part of life.	Prevents patient from feeling that concerns related to sexuality are unimportant.
Instruct patient on penile prosthesis.	Provides information.

☐ Discharge or Maintenance Evaluation

- Demonstrates ability to adapt to sexual dysfunction.

Testicular Cancer

Cancer of the testes is one of the most frequently occurring malignancies in young adult males in the 15-35 age group. It represents about 1% of cancers in men and has an annual occurrence of 6,600 cases. The survival rates are related to the type and stage of disease. Early stage cancer of the testes of all cell types is associated with a 96-100% five-year survival. In advanced (metastatic) testicular cancer the five-year survival rate is 70-85%. These significant improvements in

the past twenty years are related to the development of effective combination chemotherapy regimens. The disease is responsible for 350 deaths each year in the United States.

Risk Factors

Geographic location is an influential factor in the development of this cancer. The Scandinavian countries have the highest incidence of testicular cancer worldwide, Asia and Africa have the lowest occurrence. Sex is obviously a factor; it occurs only in males. In the United States, cancer of the testes is found more often in caucasians than in any other racial group. The peak incidence is between the ages of 15-40 years. Males with a history of cryptorchidism (undescended testicle) have a much greater risk of being diagnosed with testicular cancer. The mother's exposure to estrogen may also influence the development of testicular cancer. Pediatricians should routinely encourage parents of boys with undescended testicles to have them surgically brought down from the inguinal tract into the scrotum.

Types

A majority (97%) of testicular cancers arise from a germ cell which originates in the yolk sac of the embryo. Seminoma is the most common germ cell tumor, comprising almost half of all cases. Embryonal carcinoma accounts for another 25% of diagnoses with the remainder being teratomas or choriocarcinomas. The non-germ cell tumors are rare and represent only 3% of cases. Since half of these tumors are seminomas, the general classification is either seminoma or non-seminoma, although, as discussed above, the non-seminomas may not all be of germ cell origin.

Signs and Symptoms

There are no early indications of testicular cancer, most patients have a painless swelling of the affected testicle. Many athletic young men associate the development of the disease with trauma. However, the sports related injury is coincidental, drawing attention to the testicle, and not a cause of the malignancy. Many patients are referred to the oncologist when the swelling, thought to be epididymitis, has not responded to treatment with antibiotics. When pain is present it may be related to bleeding into the tumor. Flank pain or low back pain may indicate retroperitoneal node metastases.

Diagnostic Testing

The American Cancer Society recommends regular testicular self exam to promote early detection of testicular carcinoma. Palpation of the testicles, complete physical examination and medical history are essential in the early phase of diagnosis. Once the presence of a mass has been confirmed, scrotal ultrasound assists in specific location and

delineation of the mass. Intravenous pyelography (IVP) is completed to evaluate for ureteral deviation from nodal involvement. Computerized tomographic scanning (CT) assists in the assessment of retroperitoneal and paraaortic lymph nodes. X-ray, tomogram or CT Scan of the chest evaluates for the presence of pulmonary metastases.

Two blood tests are used to evaluate tumor markers in testicular cancer patients. These are alpha-fetoprotein (AFP) and beta-human chorionic gonadotropin (beta-HCG, beta subunit). They are very reliable and one factor or the other will be elevated in 85% of patients with active disease. Often, there is confusion in the lab when a beta-HCG is sent with a male name, but this can be avoided by marking the lab slip "rule-out testicular cancer". These markers, if elevated at diagnosis can be helpful in evaluating the effectiveness of treatment or be an early indication of recurrent cancer.

Biopsy for a testicular mass involves high radical inguinal orchiectomy, a procedure in which the testis, the epididymis, a portion of the vas deferens, and the gonadal lymphatics are removed. Surgeons may offer the patient the option of having a testicular prosthesis implanted at the time of surgery.

Treatment

Radiotherapy is used for localized seminoma and in the setting of a few positive lymph nodes. This is because seminoma is very sensitive to radiation therapy. The size of the field to be irradiated depends on the extent of tumor. The area treated will be larger, including the entire pelvis, if positive lymph nodes exist. Nonseminoma testicular cancer is not as responsive to radiotherapy and has been replaced by surgery and chemotherapy. However, radiotherapy may be helpful in cases where a metastatic lesion has not responded to chemotherapy and cannot be surgically removed. Surgical intervention involves retroperitoneal lymph node dissection or the removal of metastatic areas which have not responded to chemotherapy. Combination chemotherapy is used in advanced seminomas and in nonseminoma testes cancer. The initial chemotherapeutic regimen that demonstrated improved outcomes in advanced testicular malignancies was PVB, or cisplatin (Platinol), vinblastine (Velban) and bleomycin (Blenoxane), given over a period of 3-6 months. Although curative in a large percentage of cases this therapy was associated with severe toxicities including bone marrow suppression, ototoxicity, and neurotoxicity. In an effort to reduce toxicities, investigators replaced the vinblastine with etoposide (VP-16, VePesid) resulting in the BEP regimen (bleomycin, etoposide, cisplatin). When patients do not respond to the standard chemotherapeutic protocol, they often receive what is called "salvage" treatment. This treatment for testes cancer is VIP including either vinblastine or etoposide, or ifosfamide and cisplatin. Ifosfamide is always administered with mesna, a uroprotector. This treatment is associated with a good response rate in patients who have previously received other treatments.

Investigational Therapies

There is an ongoing national study to evaluate the benefits and toxicities of BEP versus VIP chemotherapy. In cases where patients have not responded to other treatment modalities bone marrow transplant is being investigated. Trials of existing combinations (above) are being conducted to evaluate their required length of treatment and their associated toxicities.

Complications

Complications associated with testicular cancer are related to the type of treatment necessary. The psychological impact of the loss of a testicle cannot be overlooked. Many men may associate this with castration even though the remaining testicle provides testosterone. The issue of fertility should be raised prior to treatment and sperm banking may be considered. Some men who are diagnosed with testes cancer already have a low production of sperm. Chemotherapy may result in long term infertility. Some degree of sexual dysfunction may be associated with retroperitoneal lymph node exploration, depending on the extent of the procedure and the involvement of the nerves located in this area. Dry ejaculate may result from surgical intervention, and its possibility should be fully discussed with the patient prior to the operation. Radiation side effects are related to field size, alterations in bowel or ureteral function may occur.

Essential Nursing Diagnoses Related to Genitourinary Cancer

(Refer to section following Kidney Cancer.)

Essential Nursing Diagnoses Related to Testicular Cancer

Ineffective Individual Coping

(CH. 1)

- ☐ Related to:

  Diagnosis of testicular cancer, loss of testicle, potential loss of fertility, losses due to treatments.

- ☐ Defining Characteristics:

  Inability to meet basic care needs, fatigue, verbalization of inability to cope.

Altered Sexuality

- ☐ Related to:

  Treatments of testicular cancer including surgery, chemotherapy and radiation therapy.

- ☐ Defining Characteristics:

  Patient voices fears of potential sexual inadequacy related to loss of testicle; dry ejaculate related to surgery; verbalizes changes in sexual feelings related to loss of fertility.

- ☐ NIC: Sexual Counseling, Prostate

Body Image Disturbance

(CH. 9, 13)

☐ Related to:

Loss of testicle.

☐ Defining Characteristics:

Verbalizes fears of loss of manhood related to surgery.

High Risk for Altered Urinary

(CH. 7, 18)

☐ Related to:

Chemotherapy with cisplatin or ifosfamide.

☐ Defining Characteristics:

Decreased serum levels of potassium, magnesium, and calcium, decreased urine production, increased serum BUN and creatinine, hematuria.

High Risk for Fluid Volume Excess

(CH. 7)

☐ Related to:

Vigorous hydration before and after chemotherapy to promote excretion of cisplatin.

☐ Defining Characteristics:

Intake greater than output, shortness of breath, abnormal breath sounds (rales), blood pressure or pulse changes, jugular vein distension.

Potential for Injury

(Anaphylaxis)

☐ Related to:

Chemotherapy with bleomycin.

☐ Defining Characteristics:

Patient verbalizes complaints of itching, hives, anxiety, restlessness, feelings of impending doom, respiratory distress, wheezing, hypotension, facial edema.

High Risk For Peripheral Neurovascular Dysfunction

(CH. 8)

☐ Related to:

Chemotherapy with vinblastine or cisplatin.

☐ Defining Characteristics:

Patient verbalizes loss of fine motor movements, burning pain in extremities, gait disturbances, and loss of proprioception.

Risk for Sensory/ Perceptual Alteration, Auditory

☐ Related to:

Chemotherapy with cisplatin.

☐ Defining Characteristics:

Reduced auditory acuity, partial or complete inability to hear.

☐ Outcome Criteria:

Facilitation and maximization of auditory function.

☐ NIC: Communication Enhancement— Hearing Deficit

Definition: Assistance in accepting and learning alternate methods for living with diminished hearing.

Communication Enhancement— Hearing Deficit

Activities	*Rationales*
Assess hearing ability prior to start of chemotherapy.	Provides baseline data.
Facilitate appointment for hearing examination.	Promotes identification of loss.
Encourage use of hearing aid.	Promotes maximization of remaining function.
Speak slowly and clearly.	Prevents misunderstanding.
Face patient when speaking.	
Give one simple direction at a time.	
Increase voice volume as needed.	
Refrain from shouting.	Prevents embarrassment of patient and family.
Obtain patient's attention through touch.	Promotes communication.
Use alternate method of communication when necessary.	
Assess ability to afford hearing aid or telephone for hearing-impaired.	

Communication Enhancement— Hearing Deficit

Activities	*Rationales*
Discuss community resources.	Provides information.

Instructions, Information, Demonstration

Activities	*Rationales*
Teach patient that sounds will be experienced differently with the use of a hearing aid.	Promotes understanding.
Instruct patient/family to keep hearing aid clean and to have extra batteries.	Promotes optimal function of hearing aid.
Provide written information on community resources for hearing impaired.	Reinforces verbal suggestions

☐ Discharge or Maintenance Evaluation

- Optimizes hearing ability.

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Chapter Eleven

Gynecologic Cancers

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Gynecologic Cancers

The gynecologic cancers represent one of the most common forms of cancer in women. This chapter discusses cervical, endometrial, and ovarian cancers, then covers nursing diagnoses and nursing interventions of these three disease processes.

Cervical Cancer

The concept of screening for early stage cancer has certainly proved beneficial in cervical cancer. The incidence of invasive disease has dropped almost 50% since 1945 in the United States. During the same period of time, the incidence of early stage disease, carcinoma in situ (CIS), has risen dramatically with approximately 45,000 new cases annually. The incidence of invasive disease is 13,500 cases a year, with 4,400 estimated deaths. The five-year survival rates are dependent on the extent of disease and the presence of metastases. Localized disease is associated with an 89% five-year survival rate, dropping to 14% in advanced disease. Cervical cancer continues to be a serious health problem of women in underdeveloped nations.

Risk Factors

Age, race, socioeconomic status, sexuality patterns, smoking, and exposure to viruses especially HIV are all risk factors for developing cervical cancer. The peak incidence of invasive cervical cancer is between the ages of 45-55 years old, while the peak for CIS occurs ten years earlier. African American women and Hispanic American women have a higher incidence of cervical cancer than do Caucasians in the United States. Women who become sexually active at an early age, have multiple sexual partners, and are multiparous have increased risk. Prostitutes have four times the risk of developing cervical cancer, while religious nuns are almost completely free of the disease. Papillomavirvirus and herpes simplex virus type 2 have been identified as potential etiologic sources. Exposure to diethylstilbestrol (DES) in utero has been linked to a higher incidence of clear cell adenocarcinoma of the vagina and cervix.

Male risk factors are also beginning to be identified as a potential cause for cervical cancer's occurrence in women. These factors include sperm contents, hygienic conditions, numbers of sexual partners, smoking, penile cancer and incidence of cervical cancer in a previous wife.

Types

Cervical intraepithelial neoplasia (CIN) refers to the presence of preinvasive disease at the squamocolumnar junction of the cer-

vix. This is the area where the columnar epithelium of the endocervix joins the squamous epithelium of the exocervix. The degree of dysplasia present in these cells defines the category CIN I (mild) through CIN III (severe). Carcinoma in situ describes a lesion that has changed from dysplasia to neoplasia but remains localized.

There are two main histological types of cervical cancer, squamous carcinoma and adenocarcinoma. Squamous carcinoma comprises 80-95% of cancers and occurs more often in older women. The remainder of the cases are adenocarcinoma which occurs more frequently in younger women and tends to be an aggressive cancer.

Signs and Symptoms

There is no specific symptom for cervical cancer. Bleeding is caused by an ulceration on the epithelial surface of the cervix but is not always present as tumors may spread without ulceration. Any abnormal bleeding should prompt a women to seek medical attention. Lower abdominal or back pain might be a symptom of extensive disease.

Diagnostic Tests

Screening with the Papanicoloau smear (Pap smear) should begin in women at age 18 or when sexual activity begins. Following three consecutive negative annual exams, women should have on Pap smear every three years until age 65.

When dysplasia or carcinoma in situ are present a colposcopy is performed. This instrument allows a magnified view of the cervix, and abnormal areas may be biopsied. endocervical curettage is performed when the areas of abnormal tissue can not be visualized. A cone biopsy obtains a larger wedge of cervical tissue to investigate whether or not invasive cancer is present. Tests recommended to evaluate for bladder or rectum involvement include cystoscopy, intravenous pyelogram (IVP), barium enema and sigmoidoscopy. Either magnetic resonance imaging (MRI) or abdominal/pelvic computerized tomographic scanning (CT) are used to evaluate local extension of the tumor and/or t he involvement of regional lymph nodes.

Treatment

Preinvasive disease is treated with a local therapy which sometimes needs to be repeated. Local therapies include biopsy, cryosurgery, cautery, laser therapy and conization. Hysterectomy may also be used depending on the woman's age, childbearing status, and/or desire for sterilization.

Invasive cervical cancer is generally treated with surgery or radiation therapy and in some cases a combination of both. Radical hysterectomy involves the removal of the uterus, pelvic and paraaortic lymph nodes. bilateral salpingo-oopherectomy may also be

performed in postmenopausal women. external beam radiotherapy would be added if lymph nodes are positive or if surgical margins include tumor.

In early or more advanced disease primary radiation therapy offers an alternative curative approach. This may include both external beam and intracavitary implants depending on the extent and location of the tumor. The type of treatment recommended is tailored to that particular women's needs. If a large tumor is present external beam therapy may precede intracavitary placement of a radiation source, the intent would be to shrink the tumor to allow for placement of the apparatus. The apparatus is generally placed into the uterus in the operating room under general anesthesia. It is then loaded with a radiation source in the patient's room once correct placement has been confirmed. In some cases, depending on tumor location and size a tampon like applicator is used which does not require placement in the operating room. Women having this therapy have a urinary catheter in place, remain in bed, eat a restricted diet, and take medications to prevent bowel movements. The length of treatment is 2-4 days depending on the dose to be delivered. The rationale for intracavitary treatment is that a larger dose of radiation can be delivered directly to the tumor, sparing surrounding organs.

Locally recurrent cancer is treated with pelvic exenteration. This aggressive surgical approach should only be undertaken when there is no metastatic disease present. Exenteration can be anterior, posterior, or total, depending on organs removed in addition to the uterus and surrounding lymph nodes. Removal of the bladder rectosigmoid colon requires the creation of a colostomy and or ileal conduit.

Combination chemotherapy has been used for metastatic disease because therapy with single agents has not proved to be beneficial. The highest response rates have been associated with a regimen containing cisplatin (Platinol). Other agents in use include; bleomycin (Bleoxane), methotrexate (Mexate), doxorubicin (Adriamycin), Vincristine (Oncovin) and mitomycin (Mutamycin). In some regimens response rates have been high but the duration of response has not been associated with long-term, disease-free survival.

Investigational Therapies

The Gynecologic Oncology Group (GOG) is pursuing clinical trials to improve outcomes in women with advanced disease. The future role of adjuvant chemotherapy and combinations of surgery, radiation, and chemotherapy are being explored.

Complications

The complications related to surgical intervention are becoming less frequent due to improved surgical techniques. They included ureteral fistulas, bladder dysfunction, pul-

monary embolus, lymphocyte, lymphocyts, pelvic infection, bowel obstruction, and rectovaginal fistulas.

Complications experienced immediately following radiation therapy are skin reactions, radiation cystitis, proctosigmoiditis and enteritis. Long-term or delayed effects are related to the dose of radiation administered. These include rectovaginal fistulas, rectrouterine fistulas, ureteral stricture, bladder and ureteral vaginal fistulas, sigmoid stricture, procititis, bladder and ureteral vaginal fistulas, and proctitis.

The complications related to chemotherapy depend on the combination of drugs used. Bone marrow suppression, nausea, and vomiting are common side effects of cisplatin-based chemotherapy.

Endometrial Cancer

Cancer of the corpus or body of the uterus is often referred to as endometrial cancer, since most cases arise from the endometrial lining of the uterus. The term uterine cancer would become confusing because the cervix is part of the organ. Endometrial cancer is the fourth most common cancer in women and the most common malignancy of the female reproductive organs. It comprises 13% of all cancers diagnosed in women. Its estimated annual incidence is 31,00 cases, with 5,700 predicted yearly deaths. The five-year survival rate for endometrial cancer is 94%, and for metastatic disease it is 26%.

Risk Factors

Many risk factors have been associated with the development of endometrial malignancy. The highest incidence is between the ages of 50-59. This tends to be a postmenopausal disease, as 80% of patients are postmenopausal when diagnosed. Obesity and large body frame are risk factors, as is a high fat diet. The existence of other conditions including hypertension, diabetes, failure of ovulation, irregular menses, Stein-Leventhal syndrome and infertility increase a womans risk of endometrial cancer. Having a past history of breast, colorectal, or ovarian cancer also raises risk. Exposure to endogenous or exogenous estrogens increases incidence because it is thought to influence endometrial hyperplasia, a potential precursor of the malignancy. A genetic influence may exist, although no marker has yet been discovered. In 12-28% of cases, the tumor occurs in families.

Types

Adenocarcinoma of the endometrium represents 90% of all endometrial malignancies. The remaining 10% include sarcomas, mesodermal tumors, clear cell carcinomas, lymphomas and epidermoid tumors.

Signs and Symptoms

Bleeding in a postmenopausal woman is found in about 33% of endometrial cancers, so this symptom should alert women to seek gynecologic attention. Other early symptoms include irregular or heavy menstrual flow in a premenopausal woman and vaginal discharge in a woman of any age. Lumbosacral pain and hemorrhage are associated with advanced disease.

Diagnostic Tests

Physical exam with palpation of the uterus is not reliable because the uterus often does not change shape until advanced disease is present. Endometrial biopsy is the preferred method of obtaining tissue for histology, this is generally an outpatient procedure. If bleeding persists with a negative biopsy, dilation and curettage (D & C) is performed, during this procedure a separate endocervical curettage is completed. The reason for this is to distinguish the area from which the tumor arises. If bladder or rectal involvement is suspected, a cystoscopy, intravenous pyelogram (IVP), barium enema, and proctoscopy are done. Other examinations used to evaluate extent of disease include hysterography, hysteroscopy, ultrasound, lymphangiogram, computerized tomographic scan (CT) and magnetic resonance imaging (MRI). There is no diagnostic tumor marker for endometrial cancer.

Treatment

The treatment of endometrial cancer depends on the stage, grade, depth of myometrial invasion, cell type, and the characteristics of the woman. Hysterectomy with or without radiation therapy is the treatment of choice for early stage disease. Vaginal hysterectomy is not recommended because of the limited view gained during surgery of the retroperitoneal lymph nodes. Bilateral salpingo-oophorectomy, lymph node sampling, and peritoneal cytology are generally performed in addition to abdominal hysterectomy. Further treatment is based on pathology results. When disease has invaded the muscles of the uterus or spread outside of the uterus, postoperative external beam radiation is used. The entire pelvis is irradiated.

Hormonal therapy with megestrol acetate (megace) or medroxyprogestrone (Depo-Provera) is administered orally each day for recurrent disease. It is generally well tolerated with weight gain as a potential side effect. Adjuvant therapy, that is following initial treatment before signs of recurrence, has not proved to be beneficial in preventing relapse of endometrial cancer. Tamoxifen (Nolvadex) is given orally each day if the above cited therapies are not effective.

Single agent chemotherapy, both with doxorubicin (Adriamycin), and cisplatin (Platinol), has demonstrated responses. Combination chemotherapy with cisplatin, doxorubicin and cyclophosphamide (Cytoxan), which is associated with in-

creased adverse effects, has demonstrated no further benefit.

Complications

Complications from treatment of endometrial cancer depend on the type of treatment a patient receives. Patients with endometrial cancer are often older than those with other gynecologic malignancies, therefore the incidence of other co-morbid diseases tends to be greater (i.e., pulmonary, cardiac). Pre-existing diabetes and hypertension may increase the incidence of post-operative problems. Curative doses of radiation therapy may be associated with ureteral strictures, proctitis, and skin reactions. Chemotherapy's adverse effects include bone marrow suppression, nausea, vomiting, and hair loss.

Ovarian Cancer

Ovarian carcinoma is the second most common malignancy of female reproductive organs, with an estimated incidence of 22,00 new cases yearly. It is the fourth most common cause of cancer-related death in women, responsible for 13,300 deaths annually. Deaths related to ovarian cancer are greater than those from endometrial and cervical cancer combined. In the United States this disease makes up 4% of all malignancies in females. Also, it is predicted that one of every 65 women will develop ovarian cancer by age 85. The overall five-year survival rate is 39%— higher if the tumor is found early. However, 60-70% of these cancers have progressed by the time of diagnosis.

Risk Factors

The peak incidence of ovarian carcinoma is 55-59 years of age. Only 7-8% of these tumors occur in women under 35 years old. If a woman has had breast cancer her risk for developing ovarian cancer doubles. A history of a colon malignancy also increases risk. The greatest risk is prolonged uninterrupted ovulation. The use of birth control pills, multiple pregnancies and breastfeeding which decrease the frequency oof ovulation seem to be protective. Many other factors including nulliparity, infertility, (especially the use of infertility drugs to stimulate ovulation) and estrogen therapy have been hypothesized as risk factors but none have been proven. A genetic link may exist, as there are many cases of familial clustering of ovarian tumors. The use of prophylactic oophorectomy in women with family history of ovarian cancer remains controversial.

Types

Tumors arising from epithelial tissue comprise 90% of all malignant ovarian cancers. These are further identified as serous, endometroid, clear cell, mucinous, Brenner, and undifferentiated carcinomas. Germ cell tumors account for 4% of ovarian cancers and they are the most common type of this malignancy seen in younger women. The remaining 6% of these tumors are stromal or sex cord in origin.

Signs and Symptoms

Unfortunately, there are no specific early signs or symptoms of ovarian cancer. This is the prime reason that so many of these tumors are discovered only when they have become advanced. Vague complaints including abdominal discomfort, dyspepsia, flatulence, and gastrointestinal distress may be present. These symptoms can easily be attributed to multiple other causes. Ascites, weight loss, intestinal obstruction and pain often indicate the presence of advanced cancer.

Diagnostic Tests

No widespread screening test for ovarian cancer is available. Suspicious enlarged, or irregular, ovaries may be detected during routine gynecologic examination. This finding should be further investigated with ultrasound, especially in postmenopausal women. The serum tumor marker for ovarian cancer, CA-125, will be elevated in 80% of women with epithelial tumors. The alpha-fetoprotein (AFP) and human chorionic gonadotropin (HCG) levels are elevated in the small percentage of ovarian tumors of germ cell origin.

Routine diagnostic tests are most often used to rule out the presence of another tumor or to evaluate for metastatic disease. Barium enema, upper gastrointestinal series, and sigmoidoscopy are used to detect bowel involvement, or rule out colon cancer. Bladder invasion can be evaluated by cystoscopy and intravenous pyelogram (IVP). Pelvic computerized tomographic scan (CT) and magnetic resonance imaging (MRI) may indicate the presence of involved lymph nodes. If ascites is present, paracentesis is performed to evaluate fluid for cytology. Chest x-ray is used to detect pulmonary metastases. A laparotomy is necessary for complete staging.

Treatment

Surgical treatment involves total abdominal hysterectomy, bilateral salpingo-oophorectomy, omentectomy, lymph node biopsies, peritoneal cytology, and multiple biopsies of any suspicious areas on surrounding organ surfaces. In addition to staging, the surgical goal is to debulk as much tumor as possible, leaving no masses larger than 2 cm or no visible masses at all. Surgery may also be used following chemotherapy and /or radiation for a "second-look" to visually assess the abdomen for residual disease that cannot be detected by any other method.

Postoperative treatment may include radiation in early staged disease. External beam radiotherapy may be delivered to the pelvic area or the entire abdomen depending on the extent of the tumor. Radioactive isotopes can be administered intraperitoneally.

Chemotherapy may be used adjuvantly for advanced disease or recurrent ovarian cancers. A combination regimen containing cisplatin (Platinol) has been the standard treatment. CAP (Cyclophosphamide,

doxorubicin, cisplatin) has been replaced with CP (cisplatin and cyclophosphamide) because of the similar response rates and decreased side effects with the latter combination. Complete clinical remissions are seen in 40-50% of patients.

One of the controversies in the initial chemotherapeutic management of patients is the use of a multi-drug combination versus single agent. Some researchers think that using higher doses of cisplatin or carboplatin (Paraplatin) alone will prove to be as effective as combination therapy. Taxol (Paclitaxel), ifosofamide (Ifex), etoposide (VP-16), and teniposide (VM-26) have been successfully used for patients who haven't responded to another chemotherapeutic regimen. Oral chemotherapeutic agents have been used for treatment of ovarian cancer especially in older women. Melphlan (Alkeran), chorambucil (Leukeran), and hexamethyl-melamine (Altretamine) have been associated with responses. Melphalan may also be used in the adjuvant setting following radiotherapy. Hexamethylmelamine has been used alone or in combination with intravenous chemotherapy protocols. Tamoxifen (Nolvades), megestrol acetate (Megace), leuprolide (Lupron), and gosereilin acetate (Zoladex) are hormonal agents that have been used with some success in the palliation of patients with ovarian cancer.

Ovarian cancers of germ cell origin are treated with a chemotherapy treatment similar to that of testicular cancers. However these cases represent a small number of ovarian tumors. The response rate is not has high as it is in testicular tumors.

Treatment has also been given by the intraperitoneal (IP) method of administration for ovarian malignancies. A catheter is placed into the abdomen and the agent is infused, then drained. Both biologic agents and chemotherapeutic agents have been delivered by this route. Benefits cited for intraperitoneal administration include a higher concentration of the agent coming in direct contact with the tumor; decreased systemic side effects of the drug; and higher doses of treatment can be given. Cisplatin, adriamycin, taxol, methotrexate, cytosine arabinoside, etoposide, and 5-fluorouracil have been used intraperitoneally with varying degrees of response. Biologic agents that have been tried by this method are tumor necrosis factor (TNF), interleukin-2 (IL-2), and gamma and alpha interferon. The role of IP therapy remains to be defined.

Biologic agents have been used systematically alone or in combination with chemotherapy for the treatment of ovarian malignancies. IP administration of the biologic agents has been associated with greater response rates than systemic administration. The role of biologic therapy in ovarian malignancies has yet to be defined.

Investigational Studies

The gynecologic oncology group and many regional oncology study groups are actively pursuing treatment protocols for ovarian can-

cer patients. The goal is to combine agents to develop a successful treatment for advanced disease.

Complications

In ovarian carcinoma patients it is often difficult to distinguish complications which are disease related from those that are caused by treatment. Infertility is the result of surgery in premenopausal women. Cisplatn based chemotherapy is associated with nausea, vomiting, and bone marrow suppression. The potential for ototoxicity, nephrotoxicity and neurotoxicity exist also. Uncontrolled recurrent disease is associated with bowel obstruction, ascites, fistulas, and lower extremity edema.

Essential Nursing Diagnoses for the Client with a Gynecologic Malignancy

Ineffective Individual Coping

(CH. 1)

☐ Related to:

Diagnosis of a gynecologic malignancy and uncertain prognosis.

☐ Defining Characteristics:

Inability to meet basic needs, dependency, chronic fatigue, worry, anxiety, poor self-esteem, verbalization of inability to cope.

Anticipatory Grieving

(CH. 1)

☐ Related to:

Actual and/or perceived losses due to cancer such as loss of health, life, work, income, privacy, intimacy, relationships.

☐ Defining Characteristics:

Patient exhibits and/or expresses feelings of sadness or loss.

Altered Role Performance

(CH. 1)

☐ Related to:

Impact of the diagnosis of cancer on the patient's roles within her family and community.

☐ Defining Characteristics:

Change in self-perception of role, change in others perception of role, change in physical capacities to resume role(s) and/or responsibilities.

Altered Family Processes

(CH. 1)

☐ Related to:

Impact of cancer diagnosis and uncertain prognosis.

☐ Defining Characteristics:

Family systems unable to meet physical, emotional needs of patient; or verbalization by family members of inability to cope.

Knowledge Deficit

(CH. 1)

☐ Related to:

Lack of knowledge about the cancer disease process and its treatment.

☐ Defining Characteristics:

Verbalization of the problem, inaccurate follow-through of instruction, request for information.

Risk for Infection

(CH. 13)

☐ Related to:

Chemotherapy/radiotherapy which impairs rapidly dividing normal hematopoietic cells resulting in immunosuppression.

☐ Defining Characteristics:

Granulocytopenia, an absolute granulocyte count (AGC) below 1000 cells/mm^3, neutropenia, an absolute neutrophil count (ANC) below 1000 cells/mm^3.

High Risk for Injury

(CH. 4)

☐ Related to:

Bone marrow suppression resulting in thrombocytopenia from chemotherapy.

☐ Defining Characteristics:

Thrombocytopenia with platelet count below 50,000 cells/mm^3.

Altered Tissue Perfusion, Cardiopulmonary

(CH. 13)

☐ Related to:

Anemia and thrombocytopenia caused by chemotherapy, especially in patients with previous pelvic irradiation.

☐ Defining Characteristics:

Cold extremities, pale skin, pale mucous membranes, shortness of breath tachycardia, tachypnea, anxiety, angina, bleeding, bruising.

Risk for Pain

☐ Related to:

Nausea and vomiting as a result of chemotherapy, anxiety about treatment.

☐ Defining Characteristics:

Patient expresses feelings of pain or discomfort, moans, cries, diaphoresis, has blood pressure or pulse changes.

Activity Intolerance

(CH. 4)

☐ Related to:

Fatigue secondary to anemia caused by chemotherapy and/or radiation therapy.

☐ Defining Characteristics:

Verbal report of fatigue or weakness, abnormal heart rate or blood pressure in response to activity.

Altered Nutrition: Less Than Body Requirements

(CH. 2, 8)

☐ Related to:

Anorexia, nausea, vomiting as a result of chemotherapy, gastrointestinal involvement of gynecologic malignancy.

☐ Defining Characteristics:

Reported inadequate food intake, loss of weight, early satiety.

Body Image Disturbance

(CH. 4)

☐ Related to:

Alopecia, weight loss, ascites.

☐ Defining Characteristics:

Verbalizes fear of rejection or reaction of others to altered physical appearance.

High Risk for Fluid Volume Excess

☐ Related to:

Large amounts of IV fluids used for hydration during chemotherapy.

☐ Defining Characteristics:

Edema, weight gain, shortness of breath, intake greater than output, abnormal breath sounds, rales, crackles, change in respiratory or mental status, blood pressure changes, altered electrolytes, anxiety and restlessness.

Knowledge Deficit

☐ Related to:

Chemotherapy, radioisotopes, or biologic therapy given directly into the abdomen.

☐ Defining Characteristics:

Patient verbalizes lack of information about treatment and potential side effects of intraperitoneal therapy.

☐ Outcome Criteria:

Patient is able to verbalize treatment plan and goals of therapy.

☐ NIC: Medication Administration—Intraperitoneal **

Definition: Administration of medication through an intraperitoneal catheter for the treatment of a malignancy.

***not yet an accepted NIC*

Medication Administration—Intraperitoneal

Activities	*Rationales*
Position patient in bed.	Promotes comfort.
Assess patency of abdominal catheter.	Promotes delivery of therapy.
Administer premedications if ordered.	Prevents reactions.
Monitor patient for reactions during infusion.	Promotes early recognition of potential problems.
Note any leakage that may occur from catheter site.	Promotes accurate readings of output.

Medication Administration—Intraperitoneal	
Activities	*Rationales*
Assist patient in moving from side to side.	Promotes distribution of medication.
Record amount infused and drained from abdomen.	Provides information.

Instructions, Information, Demonstrations	
Activities	*Rationales*
Teach patient/family purpose, benefits, and rationale for intraperitoneal therapy.	Increased knowledge promotes understanding.
Inform patient of both immediate, potential, and delayed effects.	Provides self-care information.

☐ Discharge or Maintenance Evaluation

- Patient is able to verbalize understanding of procedure.

Sexual Dysfunction

(CH. 10)

☐ Related to:

Hysterectomy, bilateral salpingo-oophorectomy, pelvic exenteration.

☐ Defining Characteristics:

Decreased libido, hormonal changes, physical changes due to surgery.

Altered Urinary Elimination

(CH. 2)

☐ Related to:

Surgical procedure for gynecological malignancy.

☐ Defining Characteristics:

Dysuria, frequency, urgency, urinary retention, inadequate output.

Constipation

(CH. 2)

☐ Related to:

Surgical procedure for gynecological malignancy, pelvic and/or abdominal radiation therapy, postoperative pain medication.

☐ Defining Characteristics:

Constipation, absence of regular bowel movements, hard stool, loose watery stools, frequency of bowel movements, urgency.

Chapter Twelve

Gastrointestinal Colorectal Cancers

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Gastrointestinal Cancers

This section includes discussions of cancers of the esophagus, stomach, liver, pancreas, and large intestines. Following the specific disease discussions is a listing of the related nursing diagnoses and the nursing interventions for gastrointestinal malignancies.

Esophageal Cancer

Cancer of the esophagus, in the United States, is a relatively uncommon disease. The estimated incidence is 11,300 cases yearly. In Lin Xian county of the chinese Henan Province the disease is reported to be endemic occurring in approximately 130 of every 100,000 persons. In the U.S., the prognosis of patients with esophageal cancer is poor, with five-year survival rate of 9%. This unfavorable outlook is related to the nature of the disease: It grows rapidly, metastasizes quickly and is advanced when diagnosed.

Risk Factors

Many factors have been associated with the development of this disease, especially smoking and alcohol consumption Dietary habits, particularly frequent ingestion of nitrosamines, is felt to contribute to the development of esophageal cancer. These substances are contained in high amounts in foods that are smoked or salt cured. Sex, race, and age also are risk factors, the disease occurs more commonly in males, African Americans, and in people between 50 and 70 years old. People who have the inherited condition tylosis, which is recognized by an excessive growth of skin on the palms and soles, are at greater risk for developing esophageal cancer. Medical conditions that contribute to repeated irritation of the esophageal mucosa including hiatal hernia (which causes reflux), achalasia, and esophageal stasis, are associated with an increased incidence of this disease. Barrett's mucosa, in which metaplasia is present and the past history of an exposure to a caustic substance are also risk factors.

Types

The majority of esophageal lesions are squamous cell in origin, comprising the largest type of this cancer. These tumors arise from the epithelial lining of the esophagus. Adeno carcinoma is the second most common type and sometimes is combined with squamous cell resulting in the classification of adenosquamous carcinoma. This classification of tumor is thought to arise from the esophagogastric junction or to extend upward from the stomach. Rare types of this

disease include sarcomas, melanomas, and verrucous squamous cell lesions.

Signs and Symptoms

Esophageal cancer in the United States is often not diagnosed until advanced or metastatic disease is present. This is related to the fact that the initial complaints of a patient including dysphagia, indigestion and a feeling of gastrointestinal fullness are vague and can be attributed to many other conditions. These symptoms may be experienced for a long period of time before the patient seeks medical attention. There are many over-the-counter medications available and advertised for such ailments, which leads patients to self-medicate. These symptoms can be easily attributed to the consumption of a particular type of food(e.g., spicy, fried,ethnic). Also, the normal process of aging can be used as an rationale for their existence. Dysphagia and weight loss are the two most common symptoms of esophageal cancer. Other symptoms may include anorexia, anemia, cervical adenopathy, choking after eating, and pain on swallowing.

Diagnostic Tests

Early diagnosis in the United States is rare related to the lack of screening tests. In the areas of China where the disease is endemic, early diagnosis is possible through routine testing with a nasogastric tube that has an attached device to scrape cells of the esophagus for cytologic examination. The use of a similar type of screening in this country has not been tried possibly because that it would not be cost effective. Endoscopic examination of the esophagus with brushing to obtain cells or biopsy is often diagnostic. Barium swallow is used but can miss smaller lesions. Bronchoscopy is used when tumors are located in the upper section of the esophagus to determine whether or not there has been extension into trachea or lungs. The role of radiologic imaging (CT Scan or MRI) is not in diagnosis, but in the evaluation of the extent of disease.

Treatment

Surgical treatment with radiation therapy is the standard treatment for esophageal cancer. The type of surgical procedure depends on the tumor's location along the esophagus and the extent of disease. Esophagogastrectomy involves the removal of the esophageal segment containing tumor, then an anastomosis between the remaining esophagus and the stomach is made. A section of colon or jejunum may need to be used if there is not enough of the esophagus remaining following tumor resection. Lesions in the upper portion of the esophagus may require extensive procedures if the disease has spread to surrounding areas. The thyroid, trachea, larynx, pharynx, and surrounding lymph nodes may be involved.

Radiation therapy has been used both pre- and post-operatively. Squamous celi cancer

is radiosensitive, however this therapy alone has not resulted in long term survival. External beam radiotherapy may be given over 4-6 weeks in divided doses, then the patient recovers for 1-2 months prior to surgery. It may also be used palliatively to relieve obstruction. The location of the tumor along the esophagus influences the effectiveness of radiotherapy. Lesions above the aortic arch are easier to radiate because there is less obstruction from surrounding organs.

Chemotherapy has been used both before and after surgery in combined modality treatment, with or without radiation therapy. These more aggressive approaches have not yet demonstrated increased survival and are associated with greater toxicity. Clinical trials are underway to evaluate the benefits of combined modality therapy. Cisplatin, alone or in combination with other drugs, has shown the most promise against squamous cell lesions. Other forms of palliative treatment include laser therapy to shrink tumors and the placement of stents to open the esophagus.

Complications

Nutritional concerns are often of prime importance with the esophageal cancer patient. At the time of diagnosis the person has usually experienced significant weight loss in a short period of time. Experts report that severe weight loss of 20-30 pounds is seen in esophageal and pancreatic cancer patients. Anorexia related to the symptoms of nausea, vomiting, and difficulty swallowing may be severe. A complete disinterest in any kind of food may be present. Nutritional support with total parenteral nutrition and/or feedings via a gastrostomy tube, is usually required. Aspiration of vomitus into the lungs remains a concern for these patients.

The risk of surgical mortality has decreased, leaks at the sites of anastomoses now occur less frequently. Cardiovascular complications, including myocardial infarction and pulmonary embolus, occur rarely but can be fatal. Gastric function will be altered when the stomach has been moved up to join the esophagus.

Perforation of the esophagus and/or hemorrhage may occur once the tumor has been treated with radiotherapy or chemotherapy. This is the result of response to treatment of a tumor which extends through the esophagus. The tumor cells are destroyed faster than normal cell replacement occurs, leaving a disruption in the integrity of the esophagus. Strictures of the esophagus may occur following radiation, requiring dilatation of the area to allow for swallowing.

Chemotherapy side-effects are related to the agent or combination of medications used. The most common side-effects related to therapy with cisplatin include ototoxicity, neurotoxicity, bone marrow suppression, nephrotoxicity, and nausea with vomiting. The use of growth factors (See Chapter 5) has decreased episodes of neutropenic infection. The development of new antiemetics, especially the serotonin blockers granisitron (Kytril) and ondansetron (Zofran) has

decreased the severity of nausea and vomiting.

Gastric Cancer

Cancer of the stomach is one of the few cancers that has declined in incidence in the United States over the past fifty years. The estimated occurrence annually is 24,000 cases. This pattern of decreasing incidence in the United States is not evident in other countries. Statisticians report other changes regarding the occurrence of this tumor, including increasing age at diagnosis, change in location within the stomach, and a shifting pattern of pathological diagnosis. The five year overall survival rate has improved to approximately 16%.

Risk Factors

The most significant risk factor for developing gastric cancer is the country where a person lives. This disease is a major health problem in Japan, Chile, Finland, Poland, Austria, Iceland and Yugoslavia. Japan has the highest incidence worldwide. Immigrants to the United States retain the risks of their country of origin but their children do not. Nutritional and environmental issues may influence the development of stomach cancer. The ingestion of foods high in nitrates and nitrites, that have been salt-cured, an absence of dairy products and decreased amounts of Vitamins C, A, and E, in the diet, seems to increase the incidence of gastric tumors. Smoking and alcohol consumption correlate with the development of the disease. Workers in certain industries also have a higher incidence of gastric cancer. These occupations include coal mining, nickel refining, timber processing, and the handling of rubber or asbestos. Lower socioeconomic status is a definite contributing factor, which may explain the nutritional and occupational influences. Race and age also are risk factors. The diagnosis is made twice as often in African Americans, and increases in people over forty. The presence of such health problems as pernicious anemia, gastric ulcers or polyps, chronic gastritis, intestinal metaplasia, and another primary tumor, increases incidence.

Types

The most common type of gastric carcinoma is adenocarcinoma, an epithelial tumor. Malignant lymphoma is the second most common form of the disease, accounting for 8% of cases. When lymphoma occurs in the stomach it may be part of a systemic process; however, it is frequently a solitary presentation of the disease. Many of the soft tissue sarcomas arise in the stomach, leiomyosarcoma being the most common, representing 1-3% of overall pathologic diagnoses. Carcinoid and plasmacytoma occur but the incidence is quite low.

Signs and Symptoms

Unfortunately, there are no specific early signs and symptoms of gastric cancer. The most frequent complaints are epigastric discomfort, indigestion, and a feeling of fullness after eating. These are vague symptoms easily associated with an upset stomach, stress, or the consumption of fried or spicy food. There are many remedies for these symptoms available over the counter which most people try prior to seeking medical attention. Often symptoms have been present many months, and physicians will prescribe a trial of antacids or ulcer prevention medications because the patient fails to accurately report the length of time symptoms have persisted. In many cases the symptoms of gastric cancer are similar to peptic ulcers. Late symptoms of the disease may include weight loss, anemia, vomiting, and weakness. A small percentage of patients present with acute symptoms such as gastrointestinal bleeding or perforation. In these cases emergency surgery may be required.

Diagnosis

There is no routine screening test for gastric cancer used in the United States. The Japanese have undertaken routine endoscopic screening, because the disease is so prevalent there. This testing has increased the numbers of patients diagnosed with early stage disease and in those patients, testing has increased five-year survival to 90%. A positive stool occult blood test may be an indicator of a gastric tumor if the lesion causes bleeding. The carcinoembryonic antigen (CEA) and cancer antigen 19-9 (CA 19-9) may be elevated in the serum. Unfortunately, false positive tests can occur in patients with other gastrointestinal conditions such as inflammatory bowel disease. Radiologic procedures, including an upper GI series or barium swallow, may indicate the presence of a lesion within the stomach. Computerized tomography (CT) and magnetic resonance imaging (MRI) may be helpful in delineating a mass and determining the extent of the disease. Endoscopy with biopsy or brush cytology remains the definitive method of diagnosing this tumor.

Treatment

Surgical resection is the prime mode of therapy for gastric carcinoma and will result in cure for early staged localized lesions. The type of surgery depends on the size of the lesion, location of the tumor within the stomach, and the extent of disease. The goal of surgery is to excise the tumor with a margin of adjacent tissue free of disease. When the cancer is located in the fundus of the stomach, a proximal subtotal gastrectomy is performed; a lower portion of the esophagus may need to be removed as well. Tumors located in the body or central part of the stomach usually require a total gastrectomy. A distal subtotal gastrectomy is the procedure of choice when disease is in the antrum, or lower part of the stomach. In addition to the options mentioned above, the surgeon

may elect to undertake a more extensive operation removing regional lymph nodes, a portion of the duodenum, pancreas or liver, and spleen. The use of more extensive surgical procedures remains controversial because the overall five-year survival rate has not been improved in cases of advanced disease. Surgery may also be performed with a palliative intent, to reduce bleeding, or to alleviate an obstruction to improve the patient's quality of life. Laser surgery has been used to treat bleeding and obstruction when an operative approach is not indicated.

Radiation therapy delivered by external beam may be administered following surgery to attempt to prevent recurrence. Since there are many organs in close proximity to the stomach, toxicities experienced by the patient may be dose-limiting. Intraoperative radiotherapy, that is treatment administered in the operating room to the area prior to surgical closure, has demonstrated some benefit in five-year survival rates. Research using this treatment modality continues.

Single agent chemotherapy using 5-FU, FUDR, Mitomycin, Thiotepa, or Doxorubicin has is some cases transiently improved symptoms, but has not resulted in improved survival. Combinations of drugs including FAM (5-FU, Adriamycin [doxorubicin], Mitomycin) and 5-FU with methyl CCNU have demonstrated responses. Clinical trials with a variety of chemotherapeutic agents to further improve response rates are continuing.

Complications

Following surgery, complications may include steatorrhea, dumping syndrome, nausea, vomiting, weight loss, vitamin deficiency, diarrhea, and leaks at the sites of anastomoses. Medications may be required to slow gastric motility and control diarrhea. The development of bezoars is a unique complication related to gastric surgery. A bezoar is an entangled mass of food residue, which may cause intestinal obstruction. It can develop when food is not digested in the usual fashion. Of course, this is related to the surgical procedure, which decreases the size of the stomach. Sometimes they can be dissolved using papain, an enzyme, or fresh pineapple. However, if these treatments fail, surgical or endoscopic removal is necessary to relieve obstruction. Metatases may occur quickly in gastric cancer because the stomach is an organ with many lymphatic and blood vessels.

Pancreatic Cancer

Pancreatic cancer is the ninth most commonly occurring malignancy in the United States. The estimated occurrence annually is 27,000 cases. It represents the fourth most common cause of cancer-related death in men and the fifth in women. The Korean population of Los Angeles has the highest incidence of the disease worldwide, occurring in 16.4 per 100,000 people. The five year survival rate is only 3%.

Risk Factors

Smoking is a risk factor for developing pancreatic cancer. The incidence is more than twice as high for smokers. Pancreatic cancer is more common in black men than in white men. Risk increases over age fifty with peak incidence in the seventh and eighth decades of life. Pancreatic cancer incidence is not higher in patients with chronic pancreatitis or diabetes. There are no proven occupational risks. Reports in the past implicated coffee consumption and alcohol use; however, these findings could not be replicated. Although unusual, a genetic predisposition to the development of the disease exists. Acquired chromosomal abnormalities and gene mutations have been recognized in pancreatic cancer patients. The oncogeny KRAS and abnormalities in the tumor suppression gene p53 have occurred singularly in over fifty percent of patients.

Types

Adenocarcinoma of ductal origin accounts for 90% of pancreatic tumors. Islet cell tumors make up another 5% of diagnoses and the remaining cases are rare types including, cystadenocarcinomas, adenosquamous carcinomas, and microadenocarcinomas.

Signs and Symptoms

Unfortunately there are no early clinical signs of pancreatic cancer. It is often referred to as a silent tumor for this reason. Weight loss, jaundice and pain in the back or epigastric region are the most common triad of symptoms. Unexpected weight loss may be significant, between twenty and thirty pounds, lost over a short period of time. Pain is a presenting symptom in 70-80% of patients. The characteristics of the pain may depend on location of the tumor within the pancreas. Approximately 80% of pancreatic cancers are located in the head of the pancreas. Pain related to these lesions tends to be midepigastric, dull, boring, steady, and usually worse at night. Left upper quadrant pain is more common in lesions occurring in the body or tail of the pancreas. Pain may also radiate to the back. Lying flat may exacerbate the feeling whereas sitting up and bending forward relieves it. Jaundice is another common symptom, and is thought to be related to bile duct obstruction. It is often accompanied by annoying pruritus, which can be resistant to medications. The itching may be caused by retained bile salts. A patient who has a palpable gallbladder without symptoms of cholangitis may have a malignant obstruction of the common bile duct. Other nonspecific gastrointestinal symptoms include, anorexia, diarrhea, bloating, flatulence and melena. Thrombophlebitis, without other known cause, is often related to pancreatic cancer.

Diagnosis

Abdominal x-rays and upper gastrointestinal contrast studies have not proved helpful in the diagnosis of cancer of the pancreas. Although ultrasound can detect blockages as well as some small tumor, experts recommend computerized tomographic scanning (CT) as the radiologic procedure of choice for these tumors. Magnetic resonance imaging has not been found to be superior to CT scanning. The newest method of ultrasound, via endoscope, may be able to detect smaller lesions than CT scans. Cells for cytologic examination may be obtained by endoscopic retrograde cholangiopancreaticography (ERCP). The practice of angiography preoperatively to assess vessel invasion by the tumor remains controversial. Fine-needle aspiration biopsy (FNAB), is another area of controversy, because the procedure can be associated with complications, including the potential spread of cancer cells and bleeding.

Diagnostic blood screening has recently emerged as an indicator for the presence of pancreatic cancer. New tests such as CA 19-9, CA 242, CA 494, CA 50, Span 1, and DU-PAN-2 are available to test the amount of mucin-like antigens in the blood. At this time, no one test alone has emerged as an absolute indicator of the disease. However, in combination, the CA 19-9 and CA 242 can predict this tumor with some reliability. The present prognosis for advanced pancreatic cancer is poor. Earlier detection with blood tests and endoscopic ultrasound may improve outcomes.

Treatment

Surgery is the only curative option for pancreatic cancer. At this time, many patients are not candidates for a surgical procedure related to the presence of metastatic disease. The standard surgical approach has been the pancreatoduodenectomy or Whipple procedure. This operation involves the removal of the lower portion of the stomach, the head of the pancreas, duodenum, upper jejunum and gallbladder with the common bile duct. The gastrointestinal system is then reconstructed anastomosing the remaining stomach, pancreas and liver to the jejunum. Another surgical option is the pylorus-preserving pancreaticoduodenectomy (PPPD). This procedure differs from the Whipple in that the stomach and a small portion of the duodenum remain intact. The rationale for this operation is to maintain normal function of the stomach, reducing the occurrence of postoperative gastric problems. Total pancreatectomy involves the removal of the entire pancreas, spleen, duodenum, lower portion of the stomach, gallbladder and distal common bile duct. The theory behind this procedure is that the risk of recurrence from residual tumor within the pancreas has been eliminated. However, postoperative glycemic control presents a formidable challenge. Patients must take pancreatic enzyme replacements. In the small number of cases where the tumor occurs in the body or tail of the pancreas, and remains resectable, a radical distal pancreatectomy with splenectomy is performed. Surgery may also be used with a

palliative intent, to facilitate gastrointestinal function, when metastatic disease is present. There are numerous procedures that may be undertaken depending on the location and extent of tumor.

Chemotherapy has been used adjuvantly (following surgical resection), neoadjuvantly (prior to surgery to shrink unresectable tumors), and for the treatment of metastatic disease. The most active single agent is 5-fluorouracil (5-FU). The combinations with the greatest response rates have been FAM, [5-FU, Doxorubicin (Adriamycin), Mitomycin C] and SMF [Streptozotocin, Mitomycin C, 5-FU]. Although responses have been seen with chemotherapy, the overall five-year survival rate has not improved. The Gastrointestinal Tumor Study Group (GITSG) conducts clinical trials with chemotherapy and radiotherapy to evaluate treatments for pancreatic and other gastrointestinal malignancies.

External beam radiotherapy and implanted radiation sources have been used in the treatment of pancreatic cancer. The delivery of doses of radiotherapy necessary to control tumor growth may be influenced by the extent and location of disease. There have been cases of long term survival when tumoricidal doses of radiation therapy were administered. The role of intraoperative radiotherapy alone, or in combination with external beam therapy or chemotherapy is being explored. Radiation therapy is often used for symptom control, relieving pain and obstruction.

Complications

Potential complications following surgery for pancreatic cancer include anastomotic leaks, gastric dumping, and alteration in pancreatic function. Pancreatic enzymes may need to be replaced orally. The control of pain and nutritional support to improve quality of life remain prime concerns in the care of these patients.

Liver Cancer

Primary hepatic carcinoma, or liver cancer, is uncommon in the United States with an estimated 14,000 cases annually. The incidence of the disease is highest in China, Southeast Asia, Taiwan, Hong Kong and parts of Africa. The five-year survival rate is low, approximately 2%.

Risk Factors

Age and sex can contribute to the development of this malignancy, it occurs more commonly in men and average age at diagnosis is 60 to 70 years. In the United States hepatic cancer occurs more frequently in urban industrialized areas. Cirrhosis of the liver which has been alcohol-induced is associated with the occurrence of hepatocellular carcinoma. Experts suggest that hepatitis B virus may cause hepatic cancer. Aflatoxins from the fungus Aspergillus flavus are carcinogenic in animal models. It is thought that the repeated consumption of aflatoxin-

contaminated food may cause malignant liver tumors in humans. This has been a problem with food storage in tropical countries. Parasitic infections are also thought to influence the development of this disease. These infections occur frequently in poverty-stricken areas where malnourishment is a problem. Occupational exposure to vinyl chloride or arsenic may increase risk.

Types

Adenocarcinoma is the predominant cell type of primary malignant hepatic cancers. Hepatocellular carcinoma which arises from liver cells occurs most frequently and accounts for 90% of tumors. Cholangiocarcinomas which arise from the bile duct cells make up 10% of diagnoses. The remainder of these cancers are of a mixed cellular origin.

Metastatic spread of other cancers to the liver is a common occurrence. This occurs either through growth of an adjacent cancer into the liver or spread through blood vessels. The treatment of metastatic disease in the liver may be similar to the treatment of primary liver cancer. However, a metastatic lesion usually retains the characteristics of the primary site. The method of treatment for metastatic cancer may be very different from therapies recommended for hepatic cancer. Metastatic breast and prostate cancer in the liver may respond to hormonal treatments.

Symptoms

The most commonly occurring symptom of primary liver cancer is abdominal pain which is aching, dull, and located in the right upper quadrant. This pain is often continuous, interferes with sleep, is worse lying on the right side, and may radiate to the right scapula. Gastrointestinal symptoms include, weight loss, epigastric fullness, and anorexia. Elevated liver function tests, jaundice, ascites and the presence of a palpable mass upon examination of the liver are often signs of advanced disease. It has been reported that approximately 30% of patients are asymptomatic at the time of diagnosis.

Diagnostic Tests

Radiologic tests, including abdominal or chest x-rays and liver ultrasound, may incidentally reveal the presence of a mass. Computerized tomographic imaging (CT Scan) with contrast may assist the physician in determining whether or not the lesion/lesions are benign or malignant. Magnetic resonance imaging(MRI) has not proved to be superior to CT Scan with contrast in detecting liver tumors. Angiography defines blood vessel involvement prior to surgery. Needle biopsy is not recommended if surgical resection is a possibility, because it is thought that the tumor may tract into the abdominal cavity. In cases where needle biopsy is performed, hemorrhage is a potential complication related to the increased risk

of bleeding with compromised liver function.

Diagnostic blood tests include alpha-fetoprotein (AFP) and carcinoembyronic antigen (CEA). The AFP is elevated in approximately 80% of patients with hepatocellular carcinoma, and is not usually increased in those people with cholangiocarcinoma or metastatic liver cancer. The CEA may be elevated in patients with gastrointestinal or other adenocarcinomas that are metastatic to the liver, especially colorectal cancer. It is also elevated in 40-70% of people with hepatocellular carcinoma. Liver function tests including transaminases are not diagnostic of cancer but elevations may alert the physician to a potential hepatic problem.

Treatment

Surgery is the only curative approach to hepatocellular carcinoma but many long term survivals have been reported with hepatic artery infusion of chemotherapy. Criteria for surgical resection includes the size of the tumor, location of the cancer and the function of the noninvolved liver. Hepatocellular carcinoma may occur in a local or diffuse pattern, one or two lesions in the same lobe are easier to remove than many tumors throughout the liver. Normal hepatic tissue has the ability to regenerate. The patient with cirrhosis may not have enough normal liver tissue in reserve to successfully undergo resection. Cryosurgery, freezing of liver tumors, is an alternative to resection but is not performed when curative resection is a possibility. This procedure is particularly useful when lesions are in different lobes of the liver; standard resection would not leave sufficient functioning liver tissue. A probe is inserted into the tumor with ultrasound guidance, then the lesion is frozen. This treatment may be repeated at several sites. Cryosurgery is also useful in the treatment of metastatic liver cancers depending on the size, location and number of tumors. Liver transplantation is not usually a surgical option for patients with hepatic cancer related to the immunosuppressive medications necessary to prevent organ rejection following the procedure. This surgical option is used in children with rare, isolated, hepatic tumors especially when a living, related donor is available. An ongoing clinical trial is evaluating liver transplantation followed by chemotherapy for several months.

Chemotherapy may be a treatment option when surgical resection is not initially possible or in the adjuvant setting following surgical resection. This approach may be used either systemically or via hepatic artery infusion. If the tumor is located in an area that receives blood supply from the hepatic artery, this vessel may be catheterized, and chemotherapy can be directly administered to that specific area. Angiography must indicate that the blood flows to the location of the cancer. Implanting an infusion pump facilitates outpatient treatment of chemotherapy by continuous slow infusion. Direct administration of 5-FU, FUDR or other agents into the hepatic artery allows a

higher dose of medication to be administered than would be possible systemically. The reason for this is that the liver detoxifies many chemotherapeutic agents. The drug is less potent by the time it reaches the circulation, so there are usually less systemic adverse effects. Response rates have been reported to be high; however, in the small number of patients treated with a variety of medications, it is difficult to generalize. The technical improvements in catheter placement and ambulatory infusion pumps have decreased the reported number of complications.

Radiation therapy delivered by external beam, alone or in combination with chemotherapy has a role in palliative care of patients with hepatocellular carcinoma. The dose of radiotherapy is the limiting factor, related to the organ tolerance of the treatment. High doses of radiation to the liver may cause hepatitis and liver failure. Lower doses delivered over a few weeks may decrease pain and alleviate other symptoms contributing to an improved quality of life.

Ligation or embolization of blood vessels that supply the tumor is another option for treatment of inoperable hepatic cancer. The rationale for this approach is to starve cancer cells by eliminating oxygen and nutrition supplied by the circulation. A chemotherapeutic agent may be given simultaneously with either of these procedures.

Complications

Complications are related to the form of treatment provided and to the disease's ability to compromise normal hepatic function. Postoperative concerns include hemorrhage due to alterations in the clotting factors, biliary fistula, infection, and pulmonary problems. Adverse effects from chemotherapy are specific to agents used: 5-FU and FUDR may exacerbate anorexia, and diarrhea. Jaundice and ascites are generally associated with advanced disease. The insertion of a biliary drainage tube may decrease jaundice. Lotions and medications (antihistamines, cholestyramine) can relieve annoying pruritus. Paracentesis temporarily helps ascites; however, reaccumulation of fluid usually occurs.

Colorectal Cancer

Colorectal cancer is a common disease in the United States, with a predicted incidence of 152,000 new cases yearly. This estimate includes 109,000 tumors arising in the colon and 43,000 lesions originating in the rectum. The incidence of the disease in this country is higher than in many other nations. Excluding skin cancer, it is the second most frequently occurring malignancy in women and third in men. Colorectal cancer is the third most common cause of cancer-related death in the United States. The five-year survival rates are related to stage of the disease at diagnosis. Early, noninvasive tumors are associated with a 85-91% survival, but this fig-

ure drops to 51-60% survival with local spread, and to 7% survival when distant metastases are present. The five-year overall survival rate for anal cancer is 48-66%.

Risk Factors

Colorectal cancer occurs equally in both sexes, the incidence increases over the age of 50 years. Predisposing diseases have been identified with increased risk of developing these tumors. Familial polyposis, chronic ulcerative colitis and Crohn's disease are associated with tumor occurrence at an earlier age than the general population. Genetic predisposition for the disease has been recognized and published in recent reports. Increased risk is associated with family cancer syndrome, in which members have greater incidence of colon, breast, and uterine tumors. Dietary influences such as a low fiber and high fat content in foods are thought to increase risk. Countries with diets high in fiber and low in fat content have less incidence of colorectal cancer. The reason for this may be that diets higher in fiber are associated with increased bowel movements preventing prolonged contact of a potential carcinogen with the mucosa of the large intestine. Irritation of the anal canal may contribute to the development of cancers in this segment of the bowel. Hemorrhoids, fistulas, fissures and abscesses in the anus may be associated with lifestyle and/or sexual practices.

Types

Adenocarcinoma is the most common type of colorectal cancer, with 95% of tumors in the large intestine of this cell type. Other, less frequently-occurring types, are squamous cell carcinoma, malignant melanoma, basal cell carcinoma, lymphoma, sarcoma, and carcinoid tumors.

Signs and Symptoms

Change in bowel habits, blood in the stool, constipation, change in appearance of the stool, tenesmus, anemia and rectal bleeding are common complaints that may indicate the presence of a colorectal cancer. Unfortunately, many people with rectal bleeding will attribute this to hemorrhoids and delay seeking medical attention for many months. Symptoms of more advanced disease include palpable mass, obstruction, nausea, weight loss, pain, and pressure in rectum.

Diagnostic Tests

The American Cancer Society recommends annual digital rectal exam over age 40, stool sample for occult blood annually after 50, and proctosigmoidoscopy every 3-5 years after 50, following two negative annual exams. These recommendations are for asymptomatic people, more frequent evaluation is necessary in individuals with known risk factors.

The stool sample for occult blood, although not specifically diagnostic for colorectal cancer, is an inexpensive, relatively easy test that indicates the presence of blood in the digestive tract. It is important that the dietary and medication restrictions are clearly understood by patients having this test to ensure accurate results. False positive tests may occur, but repeated positive results should be followed by a radiologic exam of the gastrointestinal tract.

Barium enema can identify interior lesions of the colon. Direct visualization of the mucosa and biopsy, or removal of polyps, is possible with the colonoscopy or proctosigmoidoscopy. Computerized tomographic scanning (CT) is valuable in the staging of the disease. The examination of the entire pelvis may identify lymph node involvement or liver metastases.

There is no definitive diagnostic blood test for colorectal cancer. The carcinoembryonic antigen (CEA), a tumor marker, may be elevated in any adenocarcinoma. However, this test may be used to evaluate the response to treatment in specific patients.

Treatment

Surgery is the recommended treatment approach in approximately 75% of patients with colorectal cancer. The type of operation performed depends on the size, location, and extent of the tumor. When the goal of surgery is curative the procedure involves the removal of the tumor, a surrounding margin of normal tissue, and regional lymph nodes. Palliative operations are often less extensive. When a cancer develops in the rectum, an anterior resection or abdominal perineal resection is performed. The low anterior resection is used when the tumor is located 10 cm or more away from the anal verge. Relatively normal bowel function can be expected following this procedure. Preservation of anal continence requires that anal sphincter control be maintained, this can be achieved if sufficient tissue remains following removal of the cancer. The abdominoperineal resection is a more complicated procedure involving incisions in the lower abdomen and perineal areas. This procedure is associated with sexual dysfunction in men. The creation of a permanent colostomy is necessary when the rectum is removed.

If the tumor is located in the colon, a primary renastamosis, or a colostomy, or double barreled colostomy is performed. The size of the tumor and its location influence the need for a permanent colostomy with surgery. A temporary colostomy may be created during emergent procedures to relieve obstruction; however, in many cases a permanent colostomy is necessary.

Surgical intervention for anal cancer involves the removal of the entire anal canal, and if local metastases has occurred adjacent structures may also be removed. Colostomy and urinary diversion may be necessary depending on the extent of disease.

Chemotherapy with five-day 5-FU has been useful in the adjuvant setting for colorectal

carcinomas. Recent treatments use 5-FU with levamisole or leucovorin. Other agents used have been methotrexate, 5-fluorouracil doexyribonucleoside (FUDR), and cisplatin. Palliative treatment has been used to control symptoms of metastatic disease.

Radiotherapy can be used preoperatively to shrink inoperable tumors, postoperatively when margins have not been as wide as the surgeon would have preferred, or in more invasive tumors and intraoperatively. This mode of therapy may also be used adjuvantly with or without chemotherapy.

Radiation therapy is the treatment of choice for small, well-differentiated rectal and anal cancers. A recent approach for anal cancer is the combination of radiotherapy and chemotherapy with 5-FU and Mitomycin. This approach is an alternative to colostomy, with radiation, when treatment is successful. Radiation therapy has also had a role in palliative symptom control in metastatic disease.

Complications

Surgical complications are specific to the procedure performed. Hemorrhage, anastomotic leaks, stricture, abscess, wound infection and bowel irregularity are potential problems. Sexual dysfunction may be an expected outcome, depending on the operation, and colostomy should be discussed with the client prior to surgery. Adverse effects associated with chemotherapy are related to the medication given. 5-FU may cause diarrhea, nausea, and bone marrow suppression. Radiotherapy can contribute to the development of strictures and irregular bowel function.

Essential Nursing Diagnoses Related to Coping with the Diagnosis of Gastrointestinal Malignancy

Fear

(CH. 1)

☐ Related to:

Diagnosis of a gastrointestinal malignancy, possibility of poor prognosis, colostomy, loss of normal gastrointestinal function.

Ineffective Individual Coping

(CH. 1)

☐ Related to:

Diagnosis of esophageal, gastric, pancreatic, hepatic or colorectal cancer, and uncertain prognosis.

☐ Defining Characteristics:

Inability to meet basic needs, dependency, chronic fatigue, worry, anxiety, poor self esteem, verbalization of inability to cope.

Altered Family Processes

(CH. 1)

☐ Related to:

Impact of cancer diagnosis and uncertain prognosis.

☐ Defining Characteristics:

Family systems unable to meet physical, emotional needs of patient, or verbalization by family members of inability to cope.

Knowledge Deficit

(CH. 2,4,3)

☐ Related to:

Lack of knowledge about gastrointestinal cancer disease process and it's treatment.

☐ Defining Characteristics:

Verbalization of the problem, inaccurate follow-through of instruction, request of information.

Anticipatory Grieving

(CH. 1)

☐ Related to:

Actual and/or perceived losses due to cancer such as loss of health, loss of life, work, privacy, intimacy and relationships.

☐ Defining Characteristics:

Patient exhibits and/or expresses feelings of sadness or loss.

Anxiety

(CH. 1)

☐ Related to:

Perceived self threat due to diagnosis of a gastrointestinal malignancy (poor prognosis in esophageal, pancreatic, gastric and hepatic cancers) or treatment.

☐ Defining Characteristics:

Verbalizes feelings of uncertainty, apprehension, fear, sleeplessness, or other signs of anxiety.

Essential Nursing Diagnoses Related to Disease or Treatment

Altered Nutrition: Less than Body Requirements

(CH. 2)

☐ Related to:

Gastrointestinal dysfunction and/or obstruction, surgical interventions, and/or side effects from chemotherapy or radiotherapy interfering with patient's ability to ingest/digest food.

☐ Defining Characteristics:

Weight loss, dysphagia, inability to swallow, anorexia, vomiting, diarrhea, dumping syndrome.

Pain

(CH. 2, 10)

☐ Related to:

Organ manipulation during surgical procedure and incision sites postoperatively.

☐ Defining Characteristics:

Patient voices complaints of pain at the incision site/sites and/or from gastrointestinal tube.

Ineffective Airway Clearance

(CH. 8)

☐ Related to:

Increase in secretions from surgical manipulations, presence of an artificial airway inhibiting ability to clear secretions; decrease in level of consciousness from anesthesia and/or pain relief medications which may impair ability to clear secretions.

☐ Defining Characteristics:

Abnormal breath sounds (rales, crackles, rhonchi), decrease in rate and depth of respirations, tachycardia, ineffective cough, pain inhibiting ability to cough.

Impaired Gas Exchange

(CH. 2)

☐ Related to:

Postoperative ventilation perfusion imbalance.

☐ Defining Characteristics:

Confusion, cyanosis, dyspnea, hypoxia, restlessness, hypercapnia, inability to move secretions.

High Risk for Aspiration

(CH. 16)

☐ Related to:

Swallowing dysfunction related to esophageal cancer, surgical intervention for lesions in the cervical area, gastrointestinal malignancies causing vomiting.

☐ Defining Characteristics:

Impaired swallowing, choking, frequent vomiting.

Decreased Cardiac Output

(CH. 2)

☐ Related to:

Surgical procedure and administration of anesthesia.

☐ Defining Characteristics:

Variations in blood pressure readings, jugular vein distension, decreased peripheral pulses, arrythmia, color changes in skin and mucous membranes, cold, clammy skin, oliguria, dyspnea, rales, restlessness.

Risk for Injury

☐ Related to:

Complications of surgery such as anastomotic leaks, fistula formation.

☐ Defining Characteristics:

Excessive drainage from chest tubes, pneumothorax, hydropneumothorax, change in type of chest tube drainage, change in type of gastrointestinal tube drainage.

☐ Outcome Criteria:

Prompt recognition of anastomotic leaks

☐ NIC: Tube Care— Gastrointestinal

Definition: Management of a patient with a gastrointestinal tube.

Tube Care— Gastrointestinal	
Activities	*Rationales*
Maintain suction as ordered.	Prevents increased pressure on suture lines.
Irrigate tube regularly as ordered.	Promotes patency of tube.
Secure tube with consideration for patient comfort and skin integrity.	Prevents accidental pulling of operative area.
Monitor fluid and electrolyte status.	Provides data on which changes may be made.
Replace the amount of gastrointestinal output with the ordered IV solution imbalance.	Prevents fluid and electrolyte.
Provide nose and mouth care as scheduled.	Promotes integrity of mucous membranes.
Allow physician to reposition tube.	Prevents trauma to anastomotic areas.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient and family not alter settings of equipment.	Promotes consistent suction.
Instruct patient to report feelings of fullness and nausea.	Provides data that may indicate partial or complete blockage of tube.

☐ Discharge or Maintenance Evaluation

Patency of gastrointestinal tube is maintained.

Impaired Skin Integrity

(CH. 2)

☐ Related to:

Surgical incisions.

☐ Defining Characteristics:

Redness around incision site, purulent drainage from incision site; patient verbalizes increased discomfort at incision site.

Body Image Disturbance

☐ Related to:

Creation of an ostomy due to location of colorectal cancer.

☐ Defining Characteristics:

Patient voices fears regarding change in physical appearance, nonverbal responses to change in body appearance (ostomy), fears of anticipated change in activities of

daily living, and of changes in social or sexual relationships.

☐ Outcome Criteria:

Body image improved, preserved and maintained.

Accommodations made for and adaptation to ostomy begun.

☐ NIC: Body Image Enhancement

Definition: Improving a patient's conscious and unconscious perceptions and attitudes toward his/her body.

Body Image Enhancement

Activities	*Rationales*
Encourage open communication between patient and family over creation of ostomy and impact of illness.	Promotes family/patient coping.
Encourage visitor from an ostomy group to see patient before discharge.	Promotes feelings of acceptance.

Body Image Enhancement

Activities	*Rationales*
Encourage patient to express feelings regarding ostomy and diagnosis of colorectal cancer, and expected impact on lifestyle.	Promotes integration of changes into lifestyle.
Evaluate patient's feelings regarding ostomy and its effect on sexual identity, relationships, and body image.	Provides background data on which to formulate care plan.
Assist patient to separate physical appearance and feelings of personal worth.	Promotes positive self-image.
Give permission to grieve over loss of normal bowel function.	Allows patient needed time to cope with losses.
Allow to vent negative emotions such as anger and guilt.	Promotes coping as these are normal reactions to loss.
Monitor whether patient can look at ostomy.	Inability to view ostomy may indicate coping difficulties.

Instructions, Information, Demonstration

Activities	*Rationales*
Inform patient of community resources such as ostomy groups.	Provides potential resources for continued support.
Give patient written materials regarding ostomy groups.	Provides reinforcement of verbal information.

☐ Discharge or Maintenance Evaluation

- Patient is able to care for ostomy.
- Patient verbalizes an awareness of possible modes of support other than family following hospital discharge.

Sexual Dysfunction

(CH. 10)

☐ Related to:

Some surgical interventions for colorectal cancer.

☐ Defining Characteristics:

Inability to perform sexually as was possible preoperatively; decreased libido.

Chapter Thirteen

Leukemia

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Leukemia

Leukemia is a malignancy originating in the stem cells of the hematopoietic system which results in uncontrolled proliferation of white and, rarely, red blood cells. It is a disease of the blood and the organs in which blood cells are formed, and characterized by the proliferation of abnormal immature cells. The presence of these cells affects the production of other normal blood cells.

The estimated annual incidence of leukemia is 29,300 new cases in the United States. The occurrence is evenly split between chronic and acute leukemia. Occurring more often in adults than children, the total yearly childhood incidence is 2,600 cases yearly. However, it remains the most common malignancy of childhood, representing 30% of pediatric cancers. The five year survival rate has steadily improved over the past thirty years and is presently 37% overall, with an annual death rate of 18,600. The Leukemia Society of America has poignantly illustrated the improved survival rates with the television commercial of a sports stadium with filling seats for those long term survivors.

Risk Factors

The cause of leukemia remains unknown, but genetic influences have been implicated. A specific example of this is the presence of the philadelphia chromosome abnormality in chronic myelogenous leukemia (CML). There have been reported cases of clustering of CML and chronic lymphocytic leukemia (CLL) within families. The presence of certain congenital disorders influence the occurrence of leukemia. Down's syndrome, Fanconi's anemia, Kleinfelter's syndrome, Bloom's syndrome, Turner's syndrome and Wiskott-Aldrich syndrome are all associated with an increased incidence of the disease. Many acquired disorders also seem to increase the risk of leukemia. These include: myeloproliferative conditions such as, polycythemia vera, primary thrombocytosis, agnogenic myeloid metaplasia, myelodysplastic syndromes, and paroxysmal nocturnal hemoglobinuria (PNH).

Exposure to ionizing radiation has been associated with the development of leukemia. Epidemiologic studies have revealed the increased incidence in radiologists and in Japanese people following the atomic bomb exposure which ended World War II.

Chemical exposure to benzene and derivatives of this chemical is known to increase risk. Other drugs, especially the alkylating agents used to treat certain cancers, may cause leukemia. Patient's who have been treated for Hodgkin's disease, especially those who have received both radiation therapy and chemotherapy with nitrogen mustard, have a higher incidence of

leukemia. In this instance many questions have been raised, whether the treatment of Hodgkin's disease is responsible, or is the presence of this type of lymphoma the reason for a greater number of leukemic cases. Another quandary is the correlation observed between long-term treatment of multiple myeloma and melphalan (Alkeran). This medication is another alkylating agent associated with the development of secondary malignancies. Chloramphenicol, an antibiotic has also been implicated in the development of leukemia.

Although it remains unproven in childhood cases, viruses are thought to be a potential trigger of oncogenies that may lead to leukemia. Adult T-cell lymphotrophic virus (HTLV)-I is associated with adult T-cell leukemia, and hairy cell leukemia, a variant of chronic lymphoblastic leukemia (CLL) has been linked to the HTLV-II virus.

Age is a risk factor for certain types of leukemia. Acute lymphoblastic leukemia, comprising 80% of all cases, occurs most frequently in childhood. Chronic lymphocytic leukemia (CLL) occurs most frequently in persons over 50 years old. The peak incidence of chronic myelogenous leukemia (CML) is between 50 and 60 years old; however, this disease does occur in children.

Race may also be a risk factor. In the United States caucasians develop acute lymphoblastic leukemia (ALL) more commonly than African Americans. CLL is slightly higher in men than women.

Types

Leukemias are classified as either acute or chronic, then further subdivided by the malignant cell line involved. The two major types of acute leukemia are acute lymphoblastic leukemia (ALL) and acute nonlymphoblastic leukemia (ANLL).

The most frequently occurring childhood leukemia is ALL, representing 80% of pediatric cases. The disease is further divided by the immunologic cell involved such as T-cell, B-cell, or undifferentiated. The disease develops rapidly, usually without warning. The immature white blood cells retain some of the properties of normal lymphoblasts which allows them to migrate to any organ or area of the body.

Acute myelogenous leukemia (AML), often used as a subdivision instead of ANLL, is the most common subdivision of the acute nonlymphoblastic leukemias. AML occurs in the late adolescent years and in young adults, and there is another peak of the disease after age fifty. The leukemic transformation can occur at any stage along the myeloid maturation pathway. The specific name for a particular type of ANLL indicates the malignant cell involved. An example of this is acute promyelocytic leukemia (APL) which involves the promyelocyte, a precursor of the myelocyte. Like ALL, ANLL develops rapidly without warning.

The chronic forms of this disease are chronic myelogenous leukemia (CML) and chronic lymphocytic leukemia (CLL). Chronic myelogenous leukemia is a disease of

myeloid white cells, and it is associated with the presence of the Philadelphia chromosome abnormality in 90% of cases. Chronic lymphocytic leukemia is a malignancy of lymphocytes. The chronic leukemias tend to occur slowly over a period of time with the exception of a blast crisis, or accelerated phase, of CML. An unusual type of chronic leukemia is hairy cell leukemia. Under a microscope the malignant cell has projections from its surface. It is these fine cytoplasmic strands that give the mononuclear cell the appearance of being hairy.

Signs and Symptoms

Symptoms of leukemia can be very mild or nonexistent as commonly seen in the chronic leukemias, or they can be severe, as sometimes observed in the acute leukemias.

The presentation of ALL includes symptoms of anemia, bleeding, fever, malaise, infection, and bone pain. The bone pain is sometimes attributed to the growing pains of childhood; however, it is caused by the proliferation of leukemic cells, especially in the long bones. Neurological symptoms including headache, nausea, vomiting, and visual disturbances present may be related to leukemic infiltration of the central nervous system. Fatigue from anemia and petechiae related to thrombocytopenia also are common symptoms. Bruises appearing on parts of the body not normally associated with trauma are sometimes detected. Lymphadenopathy and hepatosplenomegaly are often present. The complete blood count is abnormal with a low hemoglobin and hematocrit, a decreased platelet count and an elevated white count; however, infection-fighting granulocytes are usually very low on the differential. Usually noted are blasts which are lymphoblasts or immature lymphocytes.

ANLL's presentation may be similar to that of ALL. Fever, fatigue, easy bruisability, infection, shortness of breath, weight loss, and bleeding may be among reasons that the patient seeks medical attention. Particular presenting symptoms are peculiar to certain subtypes of ANLL. Patients with AML may show the presence of gingival hyperplasia from leukemic infiltrates on oral exam. Skin showing appearance of a rash may reveal cutaneous invasion of these leukemic cells. Bleeding or hemorrhage related to Disseminated Intravascular Coagulation (DIC) is a serious condition associated with APL. When the white blood count is very high (100,000 immature cells) leukostasis, or clumping of these cells, may occur and has the potential of causing serious neurological, cardiac, or pulmonary complications. The total white blood count is usually elevated, with blasts on the differential.

The patient with CLL may present with only a mildly elevated white blood cell count. This is generally an indolent disease which may be present for a long period of time without the person's knowledge. Symptoms such as fatigue, weight loss, night sweats, shortness of breath, and bleeding may be noted in more advanced cases. Anemia and

thrombocytopenia are present at diagnosis in 25-35% of patients.

The presenting signs and symptoms of CML depend on which stage of the disease at the time of diagnosis. The three stages of CML are stable or chronic, accelerated and blast crisis, or acute. Abnormal blood counts, fever, night sweats, weight loss, fatigue, malaise, bruising, bleeding, and decreased exercise tolerance may be initial symptoms. Splenomegaly is present in about 50% of patients often causing abdominal discomfort. The accelerated period is marked by worsening symptoms related to increased production of malignant cells. Often present are bone pain or tenderness, and hepatomegaly. When persons are in the blastic phase of CML, the above symptoms are severe.

Diagnosis

The complete blood count with differential is the first indication that leukemia may be present. All of the leukemias are diagnosed by bone marrow aspiration and biopsy. These samples are usually obtained from the iliac crests following a local anesthetic and can also be taken from the sternum. Physical examination and a detailed recent medical history are important elements of diagnosis.

Treatment

The goal of treatment of acute leukemias is complete remission, which is defined by less than 5% blasts in the bone marrow. Treatment of choice is combination chemotherapy. Therapy for ALL is divided into stages, and the initial treatment is called remission induction. Usually three or more drugs are given in a prescribed sequence, depending on the regimen or protocol. Many induction plans include prednisone, vincristine (Oncovin), daunorubicin (Daunomycin), and L-asparaginase (Elspar). Other medications that may be included in initial treatment are 6-mercaptopurine (Purinethol) and methotrexate (Mexate). Allopurinol is administered orally in conjunction with chemotherapy to prevent hyperuricemia and potential kidney damage. Following four weeks of therapy, 85-90% of children and over 50% of adults with ALL are in complete remission. Teniposide (VM-26) and cytosine arabinoside (Ara-C) may be used to induce remission if the initial regimen fails. A short consolidation phase of treatment may follow remission induction; this phase is controversial and the patient may begin maintenance chemotherapy. Methotrexate and 6-mercaptopurine are the two drugs given most often in the maintenance phase, which lasts 2-3 years and is outpatient therapy. Many ALL patients will relapse within months if maintenance chemotherapy is not given.

Central nervous system (CNS) prophylaxis is given to patients with ALL, because many relapses occur in the CNS. Intrathecal chemotherapy and/or craniospinal radiation therapy have been used for this treatment. An ommay reservoir may be placed for intrathecal chemotherapy to avoid repeat lumbar punctures. If relapse occurs, a second complete remission may be achieved with

chemotherapy; however the time between each subsequent relapse will be shorter. Bone marrow transplant has been used to treat relapsed patients. Testicular relapse is common in males with ALL. Treatment of adults with ALL is basically the same as that of children; however long term remission is less common.

Remission induction is the initial treatment in ANLL. Other phases of treatment are consolidation, maintenance, and reintensification. Combination chemotherapy used initially usually includes cytosine arabinoside (Ara-C) and daunarubicin (Daunomycin). Other medications that have been used for this phase of treatment are 6-Thioguanine (Thioguanine), Idarubicin (Idamycin), Mitoxantrone (Novantrone) and Etoposide (VP-16, VePesid). About 60% of patients with ANLL experience complete remission.

Severe neutropenia associated with induction therapy may cause extended hospitalizations. Consolidation therapy may include cycles of the previous drug regimen or other medications such as 5-azacytidine or amsacrine (M-AMSA). Maintenance therapy generally continues for at least a year; however, the need for, and duration of, maintenance and reintensification phases of treatment remain controversial. The following agents have been tried in combination of two or more: Vincristine, cytosine arabinoside, 6-mercaptopurine and prednisone.

The reintensification phase may involve a return to the medications used during remission induction. CNS prophylaxis is not routine in ANLL as it is in ALL. If CNS disease is present in ANLL, cranial irradiation and intrathecal cytosine arabinoside and/or methotrexate are used. Unfortunately many patients relapse and re-induction therapy for ANLL is not as successful as it is for ALL.

Bone marrow transplant, either autologous (from a person's own marrow) or allogenic (from a donor), may be performed. Generally the best results are seen in patients in remission. Allogenic bone marrow transplant may be associated with graft versus host disease (GVHD), a condition where the donor T lymphocytes react against the immunosuppressed recipient tissues. GVHD may be exhibited by mild or severe symptoms involving the skin, liver, and gastrointestinal tract. Successful bone marrow transplant can result in long-term survival.

The decision to begin treatment for the patient with CLL usually is dependent on the patient's symptoms and the degree to which those symptoms interfere with the patient's quality of life. Patients who are asymptomatic generally do not benefit from early treatment. When anemia and thrombocytopenia develop, chlorambucil (Leukeran) and prednisone may be started. These oral drugs are given in low doses. If the blood counts return to normal, medication may be discontinued for a period of time. Cyclophosphamide (Cytoxan), vincristine (oncovin) and prednisone, or CVP, is another mode of therapy if the former treatment is ineffective. CVP may be given with doxorubicin (Adriamycin). Fludarabine

(Fludara) and 2-CdA (Cladribine) are other chemotherapeutic agents that have proved helpful in treating patients with advanced disease or when other agents are no longer successful in controlling symptoms. Radiation therapy has also been used in the treatment of CLL, primarily for enlarged lymph nodes or splenomegaly.

Hairy cell leukemia, a CLL variant, was treated in the past primarily with splenectomy and supportive care. The use of alpha interferon and/or deoxycoformycin (Pentostatin) have shown such promising results in clearing these abnormal cells from the circulation that this treatment may replace splenectomy. Another agent that has demonstrated success in the treatment of hairy cell leukemia is 2-CdA.

The treatment of CML is dependent on the phase of disease a person is in when they are diagnosed. Patients in the chronic phase of treatment generally receive a oral chemotherapeutic agent either melphalan (Alkeran), busulfan (Myleran) or hydroxyurea (Hydrea). Alpha interferon, given subcutaneously, has also proved effective. Once the disease has progressed to blast crisis, aggressive chemotherapy has been used but with only small remission rates. Allogenic bone marrow transplantation offers the only potentially curative option, if a suitable donor is available. The results of bone marrow transplantation are improved if it is performed prior to blast crisis.

Complications

Complications related to leukemia and its treatment include infection related to bone marrow suppression, bleeding due to thrombocytopenia, and neurological incidents, related either to hemorrhage, leukemic infiltrates in the CNS, or to leukostasis. Tumor lysis syndrome, which may occur during treatment, and disseminated intravascular coagulation, related to acute promyelocytic, are discussed in the metabolic emergency chapter. The care of the bone marrow transplant patient has become an oncologic nursing specialty, and a specific nursing reference should be consulted for this information.

Infection related to the patient's inherent microorganisms may occur whenever aggressive chemotherapy is given or bone marrow transplantation is performed. Non-inherent organisms including viruses, protozoa, parasites, fungi and environmental bacteria also pose a great risk for the immunocompromised patient. Septic shock may occur, and is most commonly seen, with gram-negative bacteria. The febrile neutropenic patient requires close monitoring because as an unexplained drop in blood pressure, or increase in heart rate and respirations, may herald the late phase of shock. It is essential that the causative organism be treated with antimicrobial medications. This presents a formidable challenge because it is often difficult to identify the organism. This is why prophylactic antimicrobial medications are given to leukemic patients.

Essential Nursing Diagnoses Related to the Diagnosis of Leukemia

Ineffective Individual Coping

(CH. 1)

☐ Related to:

Diagnosis of leukemia and uncertain prognosis.

☐ Defining Characteristics:

Inability to meet basic needs, chronic fatigue, dependency, worry, anxiety, poor self esteem, verbalization of inability to cope.

Altered Family Processes

(CH. 1)

☐ Related to:

Impact of leukemia diagnosis and uncertain prognosis.

☐ Defining Characteristics:

Family systems unable to meet physical, emotional needs of patient, or verbalization by family members of inability to cope.

Anticipatory Grieving

(CH. 1)

☐ Related to:

Actual and/or perceived losses due to leukemia such as loss of health, life, work, income, privacy, intimacy and relationships.

☐ Defining Characteristics:

Patient exhibits and/or expresses feelings of sadness or loss.

Knowledge Deficit

(CH. 1)

☐ Related to:

Lack of knowledge about leukemia and its treatment.

☐ Defining Characteristics:

Verbalization of the problem, inaccurate follow-through of instruction, request for information.

Essential Nursing Diagnoses Related to Bone Marrow Suppression

Risk for Infection

☐ Related to:

Leukemic infiltration of bone marrow and chemotherapeutic medication used for treatment.

☐ Defining Characteristics:

Granulocytopenia, an absolute granulocyte count (AGC) below 1000 cells/mm^3. Neutropenia, an absolute neutrophil count (ANC) below 1000/M^3.

☐ Outcome Criteria:

Reduced potential for infection.

☐ NIC: Infection Protection

Definition: Prevention and early detection in a patient at risk.

Infection Protection	
Activities	*Rationales*
Monitor WBC, differential, AGC = Total WBC x (%segs+%bands).	An AGC 500 cells/mm^3 places the patient at severe risk of developing an infection.
Monitor vital signs, including temperature every 4 hours or more often, if appropriate.	Fever or hypothermia may indicate presence of infection in the granulocytopenic patient.
Report fevers of 100.5° F to physician.	Temperature elevation may be the only sign of infection in the granulocytopenic patient due to the low numbers of WBC's.
At first fever spike, obtain cultures as appropriate, usually of the urine, blood throat, sputum and open wounds.	Cultures will help identify the source of infection. Often a source is not identified.
Start antibiotics IMMEDIATELY after obtaining cultures. Do not wait for culture results before initiating antibiotic therapy.	Granulocytopenic patients can develop overwhelming sepsis within 12 hours of fever spikes if untreated with antimicrobials.

Infection Protection	
Activities	*Rationales*
Institute Granulocytopenic precautions per institutional policy including 1) Private room with door closed; 2) Rigorous hand washing by patient, staff, and family/visitors; 3) Persons with respiratory or other infections should not enter the room; 4) Patient should wear a mask when leaving the room; 5) Institute a low bacteria diet, excluding fresh fruits, pepper, vegetables and spices; (This practice remains controversial, and often not practiced until ANC> 50) 6) No fresh cut flowers or plants; 7) Patient should avoid crowds; 8) Wear gardening gloves when gardening; 9) Use an electric shaver when shaving.	In some institutions granulocytopenic precautions are initiated when ANC> 1000 and in others not until the ANC> 500.

Infection Protection

Activities	*Rationales*
Monitor for systemic and/or localized infection, keeping in mind that the normal signs of patient's ability to fight infection (redness, pus, warmth, infection, Inflammation) are related to presence of WBC's thus topical signs of infection may be absent.	Lack of neutrophils during granulocytopenia inhibits patient's ability to fight infection.
Administer antibiotics, antifungal, and other antimicrobials as appropriate.	Prevents and/or treats infectious agents in the immune compromised patients.
Administer colony stimulating factors such as G-CSF or GM-CSG as ordered.	Colony stimulating factors reduce duration of neutropenia.
Assist patient with personal hygiene such as bathing, oral and perineal care.	Reduces presence of endogenous organisms.
Encourage rest as appropriate.	Fatigue can depress immune function.
Assess all sites of invasive procedures for evidence of infection.	Promotes early detection of complications.
Assess skin and mucosal surfaces for breaks.	Skin and mucosa provide the first line of defense against microbes.
Change all dressings daily, including those over central lines daily according to institutional standard.	Prevents microorganisms from multiplying under dressings.

Instructions, Information, Demonstration

Activities	*Rationales*
Teach patient, family/visitors measures to decrease risk of infection (see above).	Reduces potential for infection.
Teach patient, family/visitors signs and symptoms of infection, stressing facts to report to health care team.	Knowledge enhances compliance with plan of care.
Instruct patient to take any prescribed medication until no longer necessary such as antimicrobials or colony stimulating factors.	Antimicrobials treat infectious organisms; if not taken as directed, serious sepsis may occur. CSF's reduce duration of neutropenia.
Explain to patient the expected cost of drugs, and assess insurance coverage, or ability to pay. Discuss manufacturers' indigent programs.	Many of the newer agents are very expensive, and without coverage, patient may be unable to adhere to prescribed regimen.
Instruct patient to avoid people with respiratory infections (flu, cold), and children exposed to infectious diseases (chicken pox); and to avoid contact with cold sores or other herpetic lesions.	Contact with infectious persons could lead to serious infections in the immunocompromised patient.

☐ NIC: Fever Treatment

Definition: Management of the patient with hyperpyrexia caused by nonenvironmental factors.

Fever Treatment	
Activities	*Rationales*
Monitor temperature every 4 hours.	Temperature elevation may be the only sign of infection in the granulocytopenic patient due to low white blood count.
Monitor pulse, blood pressure and respirations every 4 hours.	Infection may cause tachycardia, hypotension or tachypnea.
Monitor intake and output.	Dehydration may be caused by insensible losses.
Notify physician of first fever spike in the neutropenic patient.	This may be the only sign of infection and requires immediate intervention.
Administer antipyretic as ordered Acetaminophen every 4 hours PRN fever >100.5 °F (avoid aspirin).	Acetaminophen reduces fevers without the increased risk of bleeding.
Use thermic mattress as needed.	Provides warmth during chills and cooling during high fevers.
Administer IV fluids as ordered.	Replaces fluid loss.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct granulocytopenic outpatient to check temperature in AM and PM or if feeling chilled or warm.	Temperature elevation may be the only sign of infection in the granulocytopenic patient; related to low WBCs.
Notify M.D. immediately if temp >100.5 °F.	Temperature elevation may be the only sign of infection in the granulocytopenic patient; related to low WBCs.
Instruct patient to drink at least 2-3 liters of fluid/day (8-12 glasses).	During febrile episodes, extra fluids are needed to replace insensible losses.
Instruct patient to take antimicrobials as ordered (7-14 days).	Prevents development of resistant organisms.

☐ Discharge or Maintenance Evaluation

- Patient verbalizes measures to prevent infection.
- Patient/family promptly reports signs and symptoms of infection.
- Demonstrates ability to obtain and take prescribed medications.
- Keeps scheduled laboratory and physician appointments.

Altered Tissue Perfusion, Cardiopulmonary

☐ Related to:

Anemia and thrombocytopenia caused by leukemia and/or chemotherapy.

- ☐ Defining Characteristics:

  Cold extremities, pale skin, pale mucous membranes, shortness of breath, tachycardia, tachypnea, anxiety, angina, bleeding.

- ☐ Outcome Criteria:

  Recognition and management of anemia.
  Prevention of complications of bleeding episodes.

- ☐ NIC: Blood Products Administration

  Definition: Administration of blood or blood products and monitoring of patient's response.

Blood Products Administration

Activities	*Rationales*
Monitor hemoglobin, hematocrit, and platelet count.	Provides information for evaluating response to transfusions.
Verify physician order for blood product and its rate of infusion.	Prevents errors in blood product administration.
Insert appropriate gauge needle for blood product administration into implanted venous access device (VAD).	Provides access to implanted VAD for blood product administration.
Access appropriate lumen of multi-lumen central catheter.	Multi-lumen catheters generally have a port designated for blood product administration.
Assemble appropriate administration system.	Provides filter if necessary for the particular product being given.
Prime the administration system with isotonic saline.	Isotonic saline is compatible with blood products.

Blood Products Administration

Activities	*Rationales*
Administer WBC-poor or irradiated products as ordered.	Prevents transfusion reactions in immunocompromised leukemic patients.
Monitor vital signs before, during, and after transfusion.	Helps to identify transfusion reactions.
Refrain from administering any medications into blood or infusion lines.	Blood products are not compatible with medications.
Observe for and question about patient's itching, hives and shortness of breath.	These symptoms may indicate a transfusion reaction or fluid overload.
Monitor and regulate flow rate during transfusion.	Promotes delivery of product according to institutional policy.
Monitor IV site (peripheral or central) for pain, redness, or swelling.	Prevents infiltration of blood products.
Refrain from rapid administration of lagging red blood cells.	Prevents fluid overload.
Administer medications to treat fluid overload.	Promotes diuresis.
Stop transfusion if reaction occurs and maintain IV access with normal saline.	Prevents further infusion of causative product and provides IV access for emergency medications.
Notify physician and blood bank if transfusion reaction occurs.	Promotes identification of type of transfusion reaction and immediate treatment.

Blood Products Administration	
Activities	*Rationales*
Obtain blood specimens and 1st voided urine specimen according to institutional policy.	Provides samples for testing.
Complete transfusion reaction and return to blood bank with blood container & tubing.	Provides information to prevent further reactions.
Document reaction, amount infused, vital signs, and patient's response, in medical record.	Promotes awareness of patient's experience.
Maintain universal precautions.	Prevents contamination and spread of infections.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient/family about signs and symptoms to report during transfusion (i,e., hives, chills, itching, shortness of breath).	Promotes early recognition of transfusion reaction.
Inform patient and family of need for repeat transfusions.	Promotes understanding.

☐ Discharge or Maintenance Evaluation

Control of symptoms related to anemia and thrombocytopenia.

Essential Nursing Diagnoses Related to Chemotherapy

Knowledge Deficit

☐ Related to:

Chemotherapy and its side effects.

☐ Defining Characteristics:

Patient verbalizes lack of information about chemotherapy, and its side effects, and their management.

High Risk for Injury

☐ Related to:

Bone marrow suppression from chemotherapy.

☐ Defining Characteristics:

Thrombocytopenia with platelet count below 50,000 cells/mm^3, anemia, fatigue, bruising, petechiae.

Pain

☐ Related to:

Nausea and vomiting from chemotherapy and anxiety about treatment.

☐ Defining Characteristics:

Patient expresses feelings of pain or discomfort; moans, cries; diaphoresis; has blood pressure and/or pulse changes.

Risk for Altered Mucous Membranes

☐ Related to:

Damage to rapidly dividing cells of the mucosa from chemotherapy.

☐ Defining Characteristics:

Oral, vaginal, rectal pain/discomfort, coated tongue or vagina, xerostomia, stomatitis, vaginitis, presence of lesions or ulcers.

High Risk for Fluid Volume Excess

☐ Related to:

Large amounts of IV fluids used for hydration during chemotherapy.

☐ Defining Characteristics:

Edema, weight gain, shortness of breath, intake greater than output, abnormal breath sounds, rales, crackles, change in respiratory or mental status, blood pressure changes, altered electrolytes, anxiety and/or restlessness.

Activity Intolerance

☐ Related to:

Fatigue secondary to anemia.

☐ Related to:

Leukemia and chemotherapy

☐ Defining Characteristics:

Verbal report of fatigue or weakness, abnormal heart rate or blood pressure in response to activity, exertional dyspnea.

Altered Nutrition: Less Than Body Requirements

(CH. 2, 8)

☐ Related to:

Anorexia, nausea, vomiting, and diarrhea from chemotherapy.

☐ Defining Characteristics:

Reported inadequate food intake due to anorexia, nausea and vomiting, loss of weight, early satiety, diarrhea.

Body Image Disturbance

(CH. 4)

☐ Related to:

Alopecia, weight loss, skin or gum infiltrates with leukemic cells (AML).

☐ Defining Characteristics:

Patient verbalizes fear of rejection or reaction of others to altered appearance especially hair loss.

Risk for AlteredSkin Integrity

(CH. 2)

☐ Related to:

Extravasation of vesicant chemotherapy agents such as daunarubicin, adriamycin, or vincristine.

☐ Defining Characteristics:

Complaints of pain, burning, redness at IV site and/or swelling, redness, necrosis progressing to tissue sloughing at IV site.

High Risk For Altered Tissue Perfusion, Renal

(CH. 7)

☐ Related to:

Leukemic cell lysis resulting in increased release of intracellular contents and the inability of the kidneys to maintain normal serum composition.

☐ Defining Characteristics:

Elevations in serum potassium, phosphorus and uric acid, decreased calcium, increase in serum creatinine levels, presence of nausea, vomiting, and diarrhea, paresthesia, tetany, oliguria, anuria, flank pain, and/or convulsions from electrolyte imbalances.

High Risk For Injury: Anaphylaxis

(CH. 7)

☐ Related to:

Hypersensitivity or anaphylactic reactions due to chemotherapy with L-asparaginase (Elspar).

☐ Defining Characteristics:

Patient verbalizes complaints of itching, hives, wheezing, anxiety, feeling of doom, chest pain, respiratory distress, nausea, vomiting, flank pain.

High Risk For Injury: Disseminated Intravascular Coagulation

(CH. 7)

☐ Related to:

Acute Promyelocytic Leukemia.

☐ Defining Characteristics:

Prolonged PT, PTT, TT, FSP; decreased platelet count; bleeding; petechiae; blood in urine, emesis, or stools.

Risk For Decreased Cardiac Output

(CH. 2)

☐ Related to:

Septic shock due to overwhelming sepsis in the immunocompromised patient.

☐ Defining Characteristics:

Variations in blood pressure, jugular vein distension, decreased peripheral pulses, arrythmia, color changes in skin and mucous membranes, cold, clammy skin, oliguria, dyspnea, rales, restlessness.

Risk for Decreased Cardiac Output

☐ Related to:

Cardiomyopathy due to adriamycin (Doxorubicin), daunorubicin (Daunomycin), or high dose cyclophosphamide (Cytoxan).

☐ Defining Characteristics:

Decreased left ventricular ejection fraction (LVEF), nonspecific EKG changes (flat T waves).

☐ Outcome Criteria:

Early signs and symptoms of cardiomyopathy will be identified.

☐ NIC: Cardiac Precautions for Chemotherapy

Definition: Recognition of impaired cardiac function.

Cardiac Precautions for Chemotherapy	
Activities	*Rationales*
Identify patients at risk: a)Adriamycin>550 mg/m^2 or < 450 mg/m^2 with cyclophosphamide;	Provides information to formulate plan of care.
Assess patient's baseline prior to beginning chemotherapy.	Provides baseline data.
Assess quality and regularity of heartbeat.	
Periodic EKG's of patients at risk.	Promotes early recognition of problems.
Facilitate regular gated pool scans (MUGA) for cardiac evaluation.	

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patients to report dyspnea.	Provides information regarding patient's perceptions.
Inform patient/family of cardiac risks, prior to treatment.	Knowledge promotes understanding.

☐ Discharge or Maintenance Evaluation

- Cardiac toxicity will be recognized early.

Chapter Fourteen

Lymphoma

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Lymphoma

Lymphoma is a malignancy that arises from the lymphatic system. It is the sixth most common type of cancer, with an estimated annual incidence of 50,900 cases. It is subdivided into Hodgkin's disease (HD) and non-Hodgkin's lymphoma (NHL). The yearly incidence of HD is 7,900 cases; the remaining 43,000 occurrences are NHL. For reasons that remain unclear, the incidence of NHL has been increasing in the United States. Total annual deaths related to lymphoma are 22,000. The five-year survival rate varies depending on stage and cell type of the disease. Hodgkin's disease has a 77% five-year survival rate; 51% for Non-Hogkin's lymphoma.

Risk Factors

The incidence of both Hodgkin's Disease and non-Hodgkin's lymphoma is slightly greater in males than in females. HD is associated with a double peak incidence of occurrence. The early peak is between the ages of 15-35 years old and the second peak is after age 55. The median age at diagnosis of NHL is 42 years old. The incidence seems to increase steadily with age. Although Hodgkin's disease is most often associated with adolescents, non-Hodgkin's lymphoma is the third most common cancer in children in the United States. Throughout the world the types and peak ages of incidence of lymphoma vary greatly. In Africa a type of NHL called Burkitt's lymphoma is very common in young children. The Middle Eastern nations have a high incidence of NHL involving the intestinal tract of children. Neither of these examples occur frequently in the United States.

Chronic immunosuppression contributes to the development of NHL. Patients on long-term steroids, related either to organ transplantation or collagen vascular diseases, have a higher incidence of NHL. Also, persons with inherited immune disorders and people with AIDS have a greater risk of developing NHL. Other diseases associated with an increased risk of NHL are Wiskott-Aldrich syndrome and ataxia telangiectasia.

Viruses, too, have been associated with the development of certain lymphomas. A herpes virus, now referred to as the Epstein-Barr virus or EBV, is thought to be an etiologic agent in Burkitt's lymphoma, and some researchers suspect a link to Hodgkin's disease. The human T-cell lymphotropic virus 1 (HTLV-1) has been linked to T-cell lymphomas (NHL) in Japan, the Caribbean, and the United States.

Epidemiologic studies in the United States indicate a relationship between increased affluence and education and the incidence of HD. Also, siblings of HD patients have a higher risk of developing the disease. No such relationships have been seen in NHL.

Signs and Symptoms

Lymphomas classically present with one or several enlarged, painless lymph nodes, most often in the neck. Lymphadenopathy generally causes the patient or parent to seek medical attention. The axillary or inguinal lymph nodes may also be areas of presentation. Many patients may be asymptomatic, with their only complaints being malaise or lack of energy.

Fevers, night sweats, and weight loss are referred to as "B" symptoms. These are present in about one-third of patients and usually indicate a more widespread rather than localized disease. Patients with HD also have generalized puritis and may experience lymph node pain following alcohol consumption. There has been no physiologic explanation for the itching or pain.

Symptoms may reflect areas of involvement of the disease. Lowered blood counts may be related to bone marrow involvement or autoimmune hemolytic anemia, which are more common in NHL. Gastrointestinal disturbances may indicate NHL in the GI tract. Mediastinal involvement is more common in HD, although it is specifically associated with T-cell lymphoblastic lymphoma. Both pulmonary and cardiac symptoms may be experienced with mediastinal disease. Neurological changes may signify central nervous system (CNS) involvement. The incidence of CNS disease is increasing in NHL especially in association with AIDS- related lymphoma and Post Transplant Lymproliferative Disorder (PTLD).

Diagnostic Tests

Tissue obtained during lymph node biopsy or needle biopsy confirms the diagnosis of lymphoma. Staging of the disease to determine its extent follows a positive biopsy. Radiologic examinations may include computerized tomographic scan (CT), magnetic resonance imaging (MRI), chest x-ray, lymphangiogram, intravenous pyelogram (IVP) and bone scan if bone pain is present. Bone marrow aspirate and biopsy is generally performed to determine if the bone marrow is involved. A laparotomy may be done for HD patients when disease is suspected below the diaphragm. This procedure includes splenectomy, lymph node biopsies, and liver biopsy. If advanced disease is confirmed early in the diagnostic processes, either by positive bone marrow or liver biopsy results, further evaluation is not necessary, and treatment is started. There is no specific tumor marker blood test for the lymphomas.

Types

Hodgkin's Disease—

The presence of Reed-Sternberg cells in a biopsy confirms the diagnosis of Hodgkin's disease. These are large cells with two or

more mirror-image nuclei. Reed-Sternberg cells may also be present in nonmalignant conditions such as mononucleosis, some viral infections, inflammatory lymph nodes, and phenytoin therapy. Thus it is important that diagnosis be based upon both histopathological findings and presence of these cells.

The Rye classification system is based on the histologic subtype of the tumor. There are four categories in this system. Nodular sclerosis is the most common and accounts for between 30-60% of cases and seen frequently in young female patients. Lymphocyte-predominant occurs in 5-15% of patients and is associated with the best prognosis, as disease is often localized. Mixed cellularity, second in overall frequency, makes up about 30% of diagnoses. The least common subtype of HD is Lymphocyte-depleted, seen frequently in older patients. Widespread disease and B symptoms are frequently seen with this classification.

Non-Hodgkin's Lymphoma—

One of the most confusing aspects of NHL, for the nurse and the general public, is the many classification systems that exist. Histopathological classification divides NHL into low, intermediate, high, and miscellaneous grades. The following chart lists the cell types and grades from the Rappaport system and Working Formulation.

Rappaport	Working Formulation
(Low-Grade)	
Diffuse, well-differentiated, lymphocytic	a. Small, lymphocytic
Nodular, poorly-differentiated, lymphocytic	b. Predominantly small-cleaved
Nodular, mixed-lymphocytic-histiocytic	c. Mixed, small-cleaved, and large cell
(Intermediate-Grade)	
Nodular, histiocytic	d. Predominantly large cell
Diffuse, poorly-differentiated , lymphocytic	e. Small cleaved cell
Diffuse, mixed-lymphocytic-histiocytic	f. Mixed, small and large cell
Diffuse, histiocytic	g. Large cell
(High-Grade)	
Diffuse, histiocytic	h. Large cell, immunoblastic
Diffuse, lymphoblastic	i. Lymphoblastic
Diffuse, undifferentiated	j. Small noncleaved cell

Treatment

Hodgkin's Disease—

The role of surgery as mentioned above is diagnostic. The treatment plan is based on extent or stage of disease. Radiation therapy is curative in patients with localized HD. External beam radiotherapy is delivered in

divided doses over several weeks to the involved and adjacent nodal areas. The "Mantle Field" refers to the irradiation of all lymph nodes above the diaphragm. When the disease is also detected in lymph nodes below the diaphragm, subtotal or total nodal irradiation is recommended depending on the node location. Organ or bone marrow involvement indicates more advanced disease which requires chemotherapy.

Combination chemotherapy is associated with complete remission in 80% of patients treated for HD. The combination regimen, MOPP (nitrogen mustard [Mechlorethamine], vincristine [Oncovin], prednisone, procarbazine [Matulane]), was the first successful combination chemotherapy regimen. This led to the development of many other multidrug therapy protocols now associated with many cases of long-term, disease-free survival. Either MOPP or ABVD (doxorubicin [Adriamycin], bleomycin [Bleoxane], vinblastine [Velban], darcarbazine [DTIC]) are administered for multiple cycles as initial therapy. ABVD produces complete remissions in approximately half of the patients who have not responded to MOPP. Relapses usually occur within the first two years after initial therapy, and are now being treated with salvage chemotherapy regimens or bone marrow transplantation.

Non-Hodgkin's Lymphoma—

The treatment of NHL is not as definitive as the treatment of HD because there are so many different types of NHL. Surgery is essential in establishing a diagnosis. In NHL the patient may undergo surgery also to resect areas at risk of bleeding or perforation following treatment with radiotherapy or chemotherapy. NHL in the stomach or the gastrointestinal tract is often resected prior to other therapy. Patients with enlarged spleens may undergo a splenectomy before beginning treatment.

Radiation therapy is a curative approach only when NHL is localized to a particular area. This occurs less frequently in NHL than in HD, since less than 10% of patients have localized lymphoma at diagnosis. Whole brain radiotherapy is used in the management of CNS disease, but has not enjoyed the same success rates as with other localized sites. Electron beam radiotherapy may be used to treat skin involvement with NHL. An example of this is in the palliative treatment of mycosis fungoides (a NHL that involves the skin).

When to begin chemotherapy in the patient with low grade lymphomas remains controversial. The natural history of these NHLs has shown that with minimal treatment, survivals of 7-10 years may be expected. Minimal treatment may be defined as low-dose, oral chemotherapy (i.e., chlorambucil [Leukeran]) with or without prednisone. Once the disease becomes progressive then a more aggressive approach is recommended, using combination chemotherapy. Many agents including cyclophosphamide, vincristine, vinblastine, bleomycin, and doxorubicin have been used. COP (cyclophosphamide, oncovin [vincristine], prednisone) is often give once a month or

every six weeks. Patients generally tolerate these therapies well, especially older people with other co-morbid diseases. At a few cancer centers, younger patients with low-grade lymphomas are undergoing bone marrow transplantation. The optimal regimen for this group of NHLs remains to be identified.

The intermediate and high-grade NHLs are a more aggressive disease entity than the low-grade NHLs. It is in this group of patients that significant progress has been made in long-term, disease-free survivals with aggressive combination chemotherapy. Numerous chemotherapeutic regimens are being used, the most common are: CHOP, CHOPE, m-BACOD, ProMACE-CytaBOM, COMLA and MACOP-B. The response rates vary with these protocols and it remains to be determined which is superior. All of these therapies are associated with neutropenia increasing the patient's risk of infection. Bone marrow transplantation has been used in patients who have not responded to initial therapy and those with recurrent NHL. Pediatric and adolescent patients with NHL are treated differently than adults. Aggressive multi-drug combinations are used over at least a two-year period. Children also receive CNS prophylaxis with either intrathecal chemotherapy (methotrexate and/or cytosine arabinoside) and/or radiation therapy.

Investigational Studies

In HD, use of biologic agents and immunoconjugates are being explored. Researchers are also attempting to define the appropriate agents and role of bone marrow transplantation in recurrent disease.

There are many ongoing studies, as there are many questions to be answered in the management of patients with NHL. The biologic agents including lymphokines, monoclonal antibodies, and interferon may prove to be useful in the future. Research continues to identify the best treatment approach for the low-grade lymphomas. In the treatment of the intermediate- and high-grade NHLs, the optimal chemotherapeutic regimen remains to be identified and successful salvage therapies need to be developed. The best use of bone marrow transplantation also needs to be determined.

Complications

Complications experienced by patients with lymphoma are related to treatment or recurrent disease. Common adverse effects related to chemotherapy include alopecia, nausea, vomiting, bone marrow suppression, stomatitis, and gastrointestinal disturbances. Infection is a very serious potential complication that may cause septic shock. The risk of sepsis is higher with aggressive chemotherapy regimens and bone marrow transplantation. Delayed effects from chemotherapy include sterility, car-

diotoxicity, and pulmonary fibrosis. The development of leukemia following therapy with alkylating agents may be a fatal complication.

Side effects of radiation therapy are related to the area treated. When treatment is to the cervical lymph nodes or throat, dry mouth, dysphagia, nausea, vomiting, loss of hair at the nape of the neck, and decreased production of saliva occur. There also may be an increase in dental caries. When lymph nodes in the abdomen are treated, the effects are nausea, vomiting, diarrhea, fatigue, anorexia, and bone marrow suppression. Radiation pneumonitis may be a delayed effect of treatment to the mediastinal area.

Superior vena cava syndrome and spinal cord compression are structural oncologic emergencies that often occur with lymphomas. Tumor lysis syndrome may develop with the treatment of advanced lymphomas. Hypercalcemia may be seen during therapy when bone involvement is present.

Essential Nursing Diagnoses Related To Diagnosis and Coping

Anxiety

(CH. 1)

☐ Related to:

Perceived threat of self due to diagnosis of lymphoma.

☐ Defining Characteristics:

Patient verbalizes feelings of uncertainty, apprehension, sleeplessness, restlessness, or other signs of anxiety.

Fear

(CH. 1)

☐ Related to:

Fear of the unknown due to the diagnosis of lymphoma.

☐ Defining Characteristics:

Patient verbalizes fears of shortened life span, feeling of dread, pessimism over diagnosis.

Ineffective Individual Coping

(CH. 1)

☐ Related to:

Diagnosis of lymphoma and uncertain prognosis.

☐ Defining Characteristics:

Inability to meet basic needs, chronic fatigue, dependency, worry, anxiety, poor self- esteem, verbalization of inability to cope.

Anticipatory Grieving

(CH. 1)

☐ Related to:

Actual and/or perceived losses due to diagnosis of lymphoma such as loss of health, life, work, income, privacy, intimacy, and relationships.

☐ Defining Characteristics:

Patient exhibits and/or expresses feelings of sadness or loss.

Knowledge Deficit

(CH. 1)

☐ Related to:

Lack of knowledge about lymphoma and its treatment.

☐ Defining Characteristics:

Verbalization of the problem, inaccurate follow-through of instruction, request for information.

Esential Nursing Diagnoses Related to Bone Marrow Suppression

Potential for Infection

(CH. 4, 13)

Related Chemotherapy for treatment of lymphoma, bone marrow involvement of lymphoma.

☐ Defining Characteristics:

Granulocytopenia, an absolute granulocyte count (AGC) below 1000 cells/mm^3, Neutropenia, an absolute neutrophil count (ANC) below 1000 cells/mm^3.

Altered Tissue Perfusion, Cardiopulmonary

(CH. 13)

☐ Related to:

Anemia and thrombocytopenia caused by lymphoma and/or chemotherapy.

☐ Defining Characteristics:

Cold extremities, pale skin, pale mucous membranes, shortness of breath, tachycardia, tachypnea, anxiety, angina, bleeding.

High Risk for Injury

(CH. 4)

☐ Related to:

Bone marrow suppression from chemotherapy.

☐ Defining Characteristics:

Thrombocytopenia with platelet count below 50,000 cells/mm^3, bruising, bleeding, petechiae.

Risk for Decreased Cardiac Output

(CH. 1)

☐ Related to:

Septic shock due to overwhelming sepsis in the immunocompromised patient.

☐ Defining Characteristics:

Variations in blood pressure, jugular vein distension, decreased peripheral pulses, arrythmia, color changes in skin and mucous membranes, cold clammy skin, oliguria, dyspnea, rales, restlessness.

Essential Nursing Diagnoses Related to Treatment

Knowledge Deficit

(CH. 4, 13)

☐ Related to:

Chemotherapy and radiation therapy for the treatment of lymphoma.

☐ Defining Characteristics:

Verbalizes lack of information about chemotherapy and/or radiation therapy, potential side effects and their management.

Knowledge Deficit

(CH. 8)

☐ Related to:

Cranial radiation therapy.

☐ Defining Characteristics:

Patient voices lack of knowledge and/or questions about radiation therapy treatments.

Activity Intolerance

(CH. 4)

☐ Related to:

Fatigue secondary to anemia from bone marrow involvement of lymphoma or chemotherapy.

☐ Defining Characteristics:

Verbal report of fatigue or weakness, abnormal heart rate or blood pressure in response to activity, exertional dyspnea.

Altered Nutrition: Less than Body Requirements

(CH. 4)

☐ Related to:

Anorexia, nausea, vomiting, and diarrhea from chemotherapy or gastrointestinal lymphoma.

☐ Defining Characteristics:

Reported inadequate food intake due to anorexia, nausea, loss of weight, early satiety, diarrhea.

Fluid Balance Deficit

(CH. 4)

☐ Related to:

Side effects from chemotherapy.

☐ Defining Characteristics:

Tachycardia, low urine output, dry mucous membranes, decreased fluid intake, anorexia, nausea, vomiting, fluid losses due to diarrhea or fever, electrolyte imbalances, weight loss.

High Risk for Fluid Volume Excess

☐ Related to:

Large amounts of IV fluids used for hydration during chemotherapy.

☐ Defining Characteristics:

Edema, weight gain, shortness of breath, intake greater than output, abnormal breath sounds, rales, change in respiratory or mental status, blood pressure changes, altered electrolytes, anxiety, restlessness.

Pain

(CH. 4)

☐ Related to:

Nausea and vomiting from chemotherapy, and anxiety related to treatments.

☐ Defining Characteristics:

Patient feels pain or discomfort, moans, cries, is diaphoretic, has blood pressure/pulse changes.

Risk for Alterred Mucous Membranes

(CH. 4)

☐ Related to:

Damage to rapidly dividing cells of the mucosa from chemotherapy.

☐ Defining Characteristics:

Oral/vaginal pain/discomfort, coated tongue, stomatitis, vaginitis, oral/vaginal lesions ulcers.

Body Image Disturbance

☐ Related to:

Alopecia, weight loss, and/or skin changes secondary to chemotherapy.

☐ Defining Characteristics:

Patient verbalizes fear of rejection or reaction of others to altered appearance, negative feelings about body, concern over hair loss and skin changes.

Risk for Altered Skin Integrity

(CH. 4)

☐ Related to:

Extravasation of vesicant chemotherapy.

☐ Defining Characteristics:

Patient complains of pain, burning during administration of agent, skin looks red, necrosis with tissue sloughing.

High Risk for Altered Urinary Elimination,

(CH. 7)

☐ Related to:

Uric acid nephropathy and acute renal failure from tumor lysis syndrome.

☐ Defining Characteristics:

Decreased urine output, elevations in serum creatinine and blood urea nitrogen (BUN) levels.

Altered Urinary Elimination

☐ Related to:

Side effects from high-dose cyclophosphamide (Cytoxan) chemotherapy resulting in hematuria.

☐ Defining Characteristics:

Hematuria, dysuria, urinary frequency.

Potential for Injury

(CH. 7)

☐ Related to:

Hypersensitivity and anaphylactic reactions to a chemotherapeutic agent (Bleomycin).

☐ Defining Characteristics:

Patient verbalizes complaints of itching, hives, anxiety, feeling of doom, chest pain, respiratory distress, nausea, vomiting, history of allergic reactions.

Risk for Constipation

(CH. 8)

☐ Related to:

Neurotoxicity from vinca alkaloid chemotherapy agents such as vinblastine (Velban) or vincristine (Oncovin).

☐ Defining Characteristics:

Absence of regular bowel movements, abdominal pain or cramping, and dynamic ileus.

High Risk for Peripheral Neurovascular Dysfunction

(CH. 8)

☐ Related to:

Damage to nerves from chemotherapy, especially the vinca alkaloids such as vincristine and vinblastine.

☐ Defining Characteristics:

Patient verbalizes loss of fine motor movements, burning pain in extremities, numbness in fingers and toes, gait disturbances, and loss of proprioception.

High Risk for Altered Renal Tissue Perfusion

(CH. 7)

☐ Related to:

Lymphoma cell lysis resulting in increased release of intracellular contents and the inability of the kidneys to maintain normal serum composition; high dose methotrexate chemotherapy.

☐ Defining Characteristics:

Elevations in serum potassium, phosphorus and uric acid, decreased calcium, increase in serum creatinine levels, presence of nausea, vomiting and diarrhea, oliguria, anuria, flank pain, convulsions from electrolyte imbalances.

Sexual Dysfunction

☐ Related to:

Possible infertility related to chemotherapy with nitrogen mustard, retroperitoneal lymph node radiation therapy for Hodgkin's disease.

☐ Defining Characteristics:

Patient voices feelings of sadness about inability to be a biologic parent, expresses feelings of loss.

☐ Outcome Criteria:

Patient and significant other will be aware of alternate means of parenting.

☐ NIC: Family Planning— Infertility

Definition: Management, education, and support of the patient and significant other in dealing with infertility.

Family Planning— Infertility	
Activities	*Rationales*
Assist with problem-solving to help couple evaluate alternatives to biologic parenthood.	Provides information.
Determine effect of infertility on couple's relationship.	Promotes early recognition of potential long-term problems.
Inform patient about sperm banking or ova removal prior to treatment.	Provides information.
Refer patient to cancer couples group and/or social worker.	Provides support.

☐ Discharge or Maintenance Evaluation

- Patient is able to express feelings regarding loss of fertility.

Family Planning— Infertility	
Activities	*Rationales*
Assist with expressions of grief, disappointment, and feelings of failure.	Provides opportunity to vent feelings.
Encourage expressions of feelings about sexuality, self-image, self-esteem.	Provides opportunity to vent feelings.
Refer patient/significant other to support group for infertile couples as appropriate.	Provides support.

Knowledge Deficit

☐ Related to:

Chemotherapy given directly into the cerebral spinal fluid via lumbar puncture or ommaya reservoir.

☐ Defining Characteristics:

Patient verbalizes lack of information about intrathecal chemotherapy treatment and its side effects.

☐ Outcome Criteria:

Patient is able to verbalize treatment plan and goals of therapy.

☐ NIC: Medication Administration—Intrathecal**

Definition: Administration of medication into the central nervous system
**Not yet an accepted NIC

Medication Administration—Intrathecal	
Activities	*Rationales*
Follow the five rights of medication administration.	Prevents errors.
Position patient in bed (for LP) or recliner (ommaya tap).	Promotes comfort.
Assist physician with samples of spinal fluid for cytology.	Provides information.
Monitor patient for reactions during medication administration.	Promotes early recognition of potential problems.
Teach patient/family purpose, benefits, and rationale for therapy.	Increased knowledge promotes understanding.
Inform patient of both immediate and potential delayed effects.	Provides selfcare information.

☐ Discharge or Maintenance Evaluation

- Patient is able to verbalize understanding of procedure.

Chapter Fifteen

Skin Cancers

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Skin Cancers

Skin cancer is the most common form of cancer. Annually between 900,000 and 1.2 million new cases of non-melanoma skin cancer will be diagnosed in the United States. This has increased a half a million more per year than previously estimated. Based on these new statistics 1 in 5 Americans will get non-melanoma skin cancer in his or her lifetime. Malignant melanoma, the most deadly form of skin cancer, is increasing at a faster rate than any other cancer. An estimated 32,000 cases will be diagnosed per year, or 1 in 105 Americans will develop melanoma in their lives. In 1935, only one in 1,500 Americans developed melanoma. Experts universally agree the main reason for this rapid increase in skin cancer is American's love for the sun. Despite this alarming increase, skin cancer remains one of the most curable forms of cancer, with only 2,500 deaths annually from non-melanoma skin cancers and 6,900 deaths annually from melanoma.

Risk Factors

Ultraviolet radiation from the sun is the major risk factor for non-melanoma skin cancers. The most common types of skin cancer, basal cell and squamous cell carcinoma, are believed to be caused by cumulative sun exposure. Recent studies also show that the sun is the central factor behind most cases of melanoma. Another risk factor is skin type. The less melanin in the skin the higher the risk of developing skin cancer; hence, the highest rate of skin cancer is seen among Caucasians. Melanoma occurs less often among Hispanics, Asians and African Americans, the later having the lowest rate due to the high concentration of melanin in their skin. Persons working outside are more at risk due to their increased exposure to ultraviolet rays. Also, people with actinic or solar keratosis, a precancerous skin condition due primarily to sun exposure, are at increased risk. Less important risk factors include repeated medical and industrial X-ray exposure; scarring from disease or burns; occupational exposure to such compounds as coal and arsenic; and a family history of rare hereditary disorders, such as xeroderma pigmentosum, albinism, and nevoid basal cell carcinoma syndrome.

Types

There are three basic types of skin cancer: basal cell carcinoma, squamous cell carcinoma, and malignant melanoma. Together, basal cell and squamous cell carcinomas are often referred to as non-melanoma skin cancers to distinguish them from melanoma of the skin. The most common type of skin cancer is basal cell carcinoma. Basal cell carcinoma arises from the basal cells in the epidermis and is a slow-growing cancer that

rarely spreads to other parts of the body. Squamous cell carcinoma is the second most common type and begins in the squamous cells of the epidermis. This type of cancer is faster growing than basal cell and metastasizes about 2% of the time. However, squamous cell carcinoma that arises on the lips, or in burns or x-ray scars metastasizes about 20% of the time.

Malignant melanoma is the third type of skin cancer and is considered more serious than the non-melanoma skin cancers. It develops in the melanocytes of the epidermis. Melanoma is usually black-brown in color, although lesions may be nonpigmented (amelanotic). It usually affects the skin but can occur in other sites as well, such as the eye, anus, esophagus, and/or the vulva. Although melanoma is less common than other skin cancers, it is more serious because of its propensity to metastasize to other body organs such as the lungs, liver, or brain. Once this occurs it is more difficult to treat. People at risk for melanoma include fair-skinned people tending to burn easily, persons with red or blond hair, persons with a history of several blistering sunburns as child, and persons having 20 or more moles or unusual moles. There are four types of melanoma: superficial spreading melanoma, nodular melanoma, lentigo maligna melanoma and acral lentiginous melanoma. Superficial spreading melanoma accounts for 70% of all melanomas. Nodular melanoma is the second most common type. It accounts for 15-30% of all cases of melanoma. Lentigo maligna melanomas occur in a small percentage of melanomas, only 4-10%. Acral lentiginous melanoma usually occurs in the soles of the feet or the palms of the hand and occurs in only 2 to 8 percent of Caucasian persons with melanoma. However, it accounts for 35 to 60 percent of melanomas in darker-skinned individuals.

Melanoma has two growth phases - radial and horizontal. During the radial growth phase the lesion spreads across the skin surface. Removal of the melanoma during this phase is almost always curable through surgery alone. The horizontal or vertical growth phase begins as the melanoma extends downward through the layers of the dermis, epidermis, and into the subcutaneous tissue. As it grows downward it invades the lymphatic and vascular systems resulting in local, regional, and distant lymph node and/or visceral organ involvement. Prognosis is dependent on the depth of invasion of the primary lesion at the time of diagnosis. When the melanoma is thin (less than 1 mm), and has not spread beyond the initial area of growth, it is curable through surgery more than 90% of the time. Lesions less than 3 mm thick are curable in 70-80% of cases. Lesions greater than 3 mm - deep melanomas - have a relapse probability of 40-50%. Once metastatic disease is diagnosed the median survival is only 6-9 months.

Signs and Symptoms

The most common warning sign of non-melanoma skin cancers is a change on the skin. Basal cell and squamous cell carcinomas have many different appearances. Either can start as a small, smooth, shiny, pale, waxy, or fleshy bump or nodule on the head, neck, or hands. These sometimes bleed or develop a crust. Other times they appear as a flat red spot either scaly and crusty or smooth and shiny. Occasionally, they appear as a firm red lump.

Malignant melanoma may appear suddenly without warning, but it usually appears in or near a mole or other dark spot on the skin. Any change in an existing mole should be evaluated by a physician. A mole is more likely to be abnormal if it is *Asymmetric* (one half of the mole does not match the other), the *Border* of the mole is jagged or irregular, it is more than one *Color* or its *Diameter* is larger than 5 mm. These characteristics asymmetry, border, color, and diameter are known as the ABCDs of melanoma. Late signs in melanoma include a horizonal increase in the mole or lesion, and bleeding and crusting of the lesion. Early detection of skin cancer is vital because most types are curable in their early stages.

Diagnosis

The diagnosis of skin cancer is made by biopsy of the suspicious lesion. Types of biopsies include shave, where a thin top layer of the lesion is "shaved off", incisional, and excisional biopsies. If melanoma is suspected an excisional biopsy is the preferred method so that the depth of the lesion can be measured. This direct measurement of the depth is called the Breslow's Level and has important prognostic indications. For thin melanomas and most basal cell and squamous cell carcinomas, surgical removal is all that is indicated and no further diagnostic testing is required. For deeper melanomas, tests may be indicated to rule out metastatic disease. These include blood tests, chest x-ray, and/or CT scanning.

Treatment

Non-Melanoma Skin Cancers--

Surgery is the primary treatment for non-melanoma skin cancers in which a wide variety of procedures are used successfully. These include excision of the lesion, Moh's micrographic surgery or chemosurgery, curettage and electrodesiccation, and cryotherapy. Radiotherapy and chemotherapy are sometimes used to treat basal cell and squamous cell carcinomas.

Factors considered in the treatment of non-melanoma skin cancers are tumor type, location, size, growth pattern, and whether the tumor is primary or secondary.

Surgical excision may be simple or complex. In simple excisions the surgeon removes the lesion and a margin of unaffected tissue to prevent recurrence. More complex excisions involve the use of a skin graft or flap if, say,

the lesion is large or if it is located in an area where there is insufficient tissue for closure. Advantages of this method include rapid healing, the availability of the entire specimen for pathologic evaluation, and good cosmetic results.

Chemosurgery, or Moh's micrographic surgery, is a procedure that involves horizontal shaving and staining of tissue in thin layers, with careful histologic mapping of all specimen margins. The advantages of this procedure are that it allows the preservation of tissue for reconstruction, the ability to map tumor margins, and for the procedure to be performed in an outpatient setting. However, not all surgeons are trained in this special, time-consuming procedure.

Curettage and electrodesiccation is used only for small superficial basal cell carcinomas. Using curettage, the surgeon scrapes out the tumor, then treats the tumor base with electrodesiccation or a low voltage electrode. Advantages of this procedure are good cosmetic results, preservation of normal tissue, rapidity of the procedure, and the ability to obtain specimens for histologic evaluation. Disadvantages include no margin control, prolonged healing, and the need for a skilled physician.

Cryotherapy involves using liquid nitrogen to freeze and thaw tumor tissue. It is used for small-to-large primary tumors, recurrent lesions in previously radiated tissue, multiple superficial basal cell carcinomas, and lesions needing palliation. The speed of the procedure, that it can be done as an outpatient procedure, that it provides good cosmetic results and minimal discomfort are all advantages. Disadvantages include prolonged healing time, possible bleeding and nerve damage, and the need for wound care.

Radiotherapy is recommended only for inoperable non-melanoma lesions, lesions located in sites such as the nose, eyelid, lip, and canthus, or for patients who are poor surgical risks. Major advantages of radiotherapy are the ability to preserve anatomic structures, extend treatment to surrounding areas if needed, and the lack of pain. However, the lack of tumor for histologic evaluation, long treatment periods, and need for clinical facilities with specially trained personnel are disadvantages of radiotherapy. Also, the treatment may cause skin cancer to develop years later.

Chemotherapy for non-melanoma skin cancers may be either topical or systemic. Topical chemotherapy applied directly to the lesion(s) is effective in premalignant keratosis and Bowen's disease. The agent most frequently used is 5-fluorouracil. To treat recurrent skin cancers, especially squamous cell, systemic chemotherapy is used. It is used also for non-melanoma skin cancers that are advanced and no longer manageable by surgery or radiation.

Malignant Melanoma--

Treatment of melanoma is based on many factors including the patient's age, general health, type of melanoma and the stage of the disease. There are four basic forms of treatment for melanoma: surgery, radiation

therapy, chemotherapy, and biotherapy. A brief summary of each type of treatment is listed below. One, or possibly several, of these therapies may be used in combination to best manage the disease.

Surgery

Surgery is used to treat approximately 95% of patients with melanoma. When the lesion is thin (less than 1 mm) and has not spread beyond the initial area of growth, it is curable more than 90% of the time with surgery alone. The surgeon will usually remove the lesion, plus a border area of normal tissue around it, to prevent the tumor from recurring. A margin of 1-2 cm around the melanoma is considered adequate for melanomas with a thickness less than 3 mm. Lesions greater than 1 mm deep but less than 3 mm deep are cured with surgery approximately 70-80% of the time. Deep lesions (greater than 3 mm) have a relapse probability of 40-50%. The margin of resection around these deeper melanomas is usually recommended to be at least 2-3 cm. A skin graft may be needed for these wider excisions or if the location of the lesion prevents adequate closure of the skin. For deeper melanomas, prophylactic lymph node dissections may be recommended to help reduce recurrence of melanoma. However, this procedure remains controversial.

Patients developing regional or local disease recurrence usually are treated with surgical removal by radical dissection of lymph nodes from involved basins. A single site of metastatic disease may be ressected. However, the majority of patients suffer from disease recurrence within 6-9 months following surgery. For this reason combinations including surgery, chemotherapy, biotherapy, or radiation therapy are used, usually, to help relieve symptoms and to treat metastatic disease.

Radiation therapy is another form of local treatment. It is the use of high energy x-rays, cobalt, electrons, or other radiation sources to damage or kill the melanoma cells. In general, melanoma is not considered to be very sensitive to radiation therapy. However, radiotherapy may be used palliatively to treat local recurrences or to treat melanomas that have spread to distant organs, such as the lung, liver, or brain, to provide relief from symptoms.

Chemotherapy

Chemotherapy can be administered in a variety of ways to treat melanoma. One is topically, in which the agent is applied directly to the lesion. Agents used for this purpose include 5-fluorouracil or psoralen. Other methods use isolated limb perfusion and arterial perfusion of chemotherapy into the affected arm or leg. These two methods enable high doses to be delivered directly into the affected arm or leg. Since the chemotherapy does not go into the main blood stream, the patient does not experience the side effects common to systemic

chemotherapy. The drugs most commonly used for this include melphalan, dacarbazine (DTIC), and/or cisplatin.

The usual way to give chemotherapy for melanoma is systemically. At this time, systemic chemotherapy has not proved effective in preventing recurrences in patients with early stage melanoma. It usually is used in people with widespread disease. The single most effective agent for metastatic melanoma is dacarbazine (DTIC) with response rates of 15-20%. Investigators have reported response rates of 30-40% with combinations of chemotherapy drugs. However, the duration of response is short and retreatment usually is ineffective. The drugs most commonly used in combinations include dacarbazine(DTIC), carmustine(BCNU), cisplatinum, and tamoxifen. The short duration of response with chemotherapy has led researchers to consider other options in the treatment of melanoma. One of these options is biologic therapy (below).

Biologic Therapy

Biologic therapy, also called biotherapy or immunotherapy, works either directly against the cancer or indirectly by changing the way the body reacts to the cancer. Several forms of biotherapy under investigation for melanoma include vaccines, injections of a bacterium known as BCG (bacillus Calmette-Guerin), and the use of interferon, interleukins, and monoclonal antibodies.

Vaccines are being studied as an adjuvant treatment for early stage melanoma, in which there is a higher risk of recurrence, to see if recurrence can be prevented. These vaccines are made from irradiated, inactivated melanoma cells. It is hoped that the vaccines will sensitize the immune system to recognize the melanoma, and thereby increase the system's ability to destroy the melanoma.

BCG injections affect a nonspecific stimulation of the immune system and are being studied as adjuvant therapy for patients with early disease. It is hoped that injection of BCG directly into metastatic subcutaneous nodules can cause regression of the lesions.

Interferons are proteins normally produced in the body that appear to both boost the body's immune reaction to the cancer cells and to act directly against the cancer. In early stage melanoma some evidence suggests that interferon may prevent disease recurrence. This is still under investigation, and it is not universally accepted that interferons produce any better results than those obtained by close follow-up alone. Interferon is being used alone, and in combination with chemotherapy, to treat melanoma that has metastasized.

Interleukins are hormone-like substances normally produced by the body in small amounts. To date, 12 interleukins have been identified. In general, interleukins stimulate the immune system to fight cancer cells. Only interleukin-2 is FDA approved and being manufactured under the name Proleukin.

Combination or sequential therapy is the use of chemotherapy and biologic therapy together to treat melanoma. It has proved more effective than either treatment alone. Combinations featuring combination chemotherapy with interleukin-2 and interferon seem to have the best response rates (55-67%). Additionally, these combinations have a small subset of patients with long term survival benefit. Investigations in this area are still ongoing.

The following table is a summary of treatment options by the stage of the melanoma:

Treatment Options—

STAGE of Melanoma	*Treatment*
STAGE 1	Surgery of the primary melanoma with a safe margin of normal tissue around it.
STAGE 2	Surgery of the primary melanoma, with a safe margin of normal tissue around it, and regional lymph node dissection.
STAGE 3	Surgery of the primary melanoma, with a safe margin of normal tissue around it, and regional lymph node dissection. Studies are ongoing using vaccines or interferon to learn if they prevent recurrence of the melanoma. In some cases radiation therapy and/or isolated limb perfusion may be recommended.
STAGE 4	Once the melanoma has spread to distant lymph nodes and/or body organs, systemic therapies such as chemotherapy, biologic therapies, or both are used. If the melanoma has spread to a single organ, surgery or radiation may be recommended as part of the treatment plan. Further investigations in this area are ongoing.

Complications

Disfigurement from surgery may occur, especially when recurrent skin cancers on the face require repeated resections, or if a wide excision is required, as in melanoma. The emotional impact of this can be devastating. Metastatic disease to the brain is usually fatal unless surgical resection is possible. Bone metastasis can cause severe pain and lead to fractures and spinal cord compression if in the spine. Nursing care for the person with the various skin cancers is discussed below.

Essential Nursing Diagnoses Related to All Skin Cancers

Knowledge Deficit

(CH. 2)

☐ Related to:

Lack of knowledge about surgical interventions for skin cancer.

☐ Defining Characteristics:

Patient voices lack of knowledge and/or questions about upcoming surgical procedure.

Impaired Skin Integrity

(CH. 2)

☐ Related to:

Disruption of skin surface due to surgical incision.

☐ Defining Characteristics:

Presence of surgical incision.

Pain

(CH. 2)

☐ Related to:

Surgical intervention.

☐ Defining Characteristics:

Diaphoresis, blood pressure and pulse rate changes, complaints of pain, moaning, and guarding.

Knowledge Deficit

(CH. 3)

☐ Related to:

Radiation therapy treatments for skin cancer.

☐ Defining Characteristics:

Voices lack of knowledge and/or questions about radiation therapy treatments.

Knowledge Deficit

☐ Related to:

Prevention and early detection of skin cancer.

☐ Defining characteristics:

High risk of developing skin cancer due to history of skin cancer, fair skin, red or blonde hair, frequent sun exposure, history of severe sunburns as a child or teenager.

☐ Outcome Criteria:

States measures to prevent or identify skin cancer early.

☐ NIC: Teaching - Individual

Definition: Planning, implementation, and evaluation of a teaching program designed to address a patient's particular needs.

Teaching - Individual	
Activities	*Rationales*
Establish rapport and determine patient's learning needs, educational level.	Provides information for formulating teaching plan.
Set mutual learning goals.	Promotes patient compliance with teaching plan.
Provide quiet learning environment.	Provides environment conductive to learning.
Instruct on measures to prevent skin cancer including 1. Minimizing sun exposure, especially during hours of 10 am to 3 pm; 2. Using protective clothing, hats, long sleeved shirts, and long pants when in the sun; 3. Wearing sun glasses; 4. Using sunscreens with a minimum SPF of 15, reapplying often and using a sunblock; 5. Avoiding tanning booths; 6. Keeping infants out of the sun.	Measures prevent skin cancer by reducing sun exposure and sunburns, the factors thought to be the main cause of both the melanoma and non-melanoma skin cancers.

Teaching - Individual	
Activities	*Rationales*
Instruct on measures to detect skin cancers including 1. Questioning if any changes in skin occur; 2. Obtaining family history of skin cancers and other risk factors; 3. Teaching systemic self assessment of skin for suspicious lesions; 4. Giving written materials to reinforce verbal instructions; 5. Notifying physician of suspicious lesions; 6. Frequency of follow-up visits.	Promotes early detection of skin cancers.
Stress importance of recommended follow-up schedule.	Promotes early identification of recurrence and/or new lesions.
Adjust learning as appropriate.	Facilitates learning through individualization.
Provide time to answer questions.	Promotes patient understanding.
Include family in instructions.	Skin cancer, especially melanoma, increases risk for family members.
Document instruction and patient's response to it.	Provides written documentation of instructions.

☐ Discharge or Maintenance Evaluation

- Patient demonstrates measures to prevent skin cancer.
- Describes changes in skin lesions which should be reported to health care team.

- States time sequence for follow-up appointments.

Body Image Disturbance

☐ Related to:

Disfigurement from disease or treatment of skin cancer such as surgical resection, topical chemotherapy agents, and/or radiation therapy.

☐ Defining Characteristics:

Patient voices concerns over reaction or rejection by others due to surgical changes or skin changes from topical chemotherapy agents or radiation therapy.

☐ Outcome Criteria:

Discuss strategies to cope with impact of surgery and/or skin changes on body image.

☐ NIC: Body Image Disturbance

Definition: Disruption in the way one perceives one's body image.

Body Image Disturbance	
Activities	*Rationales*
Assess patient's knowledge of potential disfigurement due to surgery and/or skin changes.	Provides information to formulate plan.
Monitor patient's ability to look at disfigured body part.	Inability to look at affected part may indicate difficulty coping.

Body Image Disturbance	
Activities	*Rationales*
Encourage patient to discuss feelings regarding disfigurement from surgery.	Provides outlet for emotions.
Discuss options for reconstruction and ways to make disfigurement less apparent, such as make-up, scarves, etc.	Promotes self control over loss.

Instructions, Information, Demonstration	
Activities	*Rationales*
Inform of appropriate support groups of people with similar body changes.	Provides emotional support from persons who have had similar experiences.

☐ Discharge or Maintenance Evaluation

- Patient identifies potential community resources to cope with body changes.
- Describe options to minimize disfigurement.
- Demonstrates ability to cope with disfigurement.

Knowledge Deficit

☐ Related to:

Treatments of skin cancers such as surgery, radiotherapy and topical chemotherapy.

☐ Defining Characteristics:

Voices questions or concerns about surgery, radiation therapy or chemotherapy treatments for skin cancer.

☐ Outcome Criteria

States self care measures to decrease incidence and severity of symptoms associated with treatment.

☐ NIC: Teaching— Procedure/ Treatment

Definition: Preparing a patient to understand and mentally prepare for a prescribed procedure or treatment.

☐ NIC: Incision Site Care

Definition: Cleansing, monitoring, and promotion of healing in a wound that is closed with sutures, clips, or staples.

Incision Site Care	
Activities	*Rationales*
Monitor incision for signs of infection and dehiscence.	Promotes early identification of complications.

Teaching - Procedure/Treatment	
Activities	*Rationales*
Inform when surgery/ radiation therapy will be done.	Provides needed information.
Explain purpose of treatments.	Promotes understanding of treatments.
Teach patient how to apply chemotherapy topically.	Promotes self care.
Inform of possible side effects from topical administration, such as skin irritation, and that improper use may cause tissue sloughing.	Promotes safe topical administration without complications.
Inform of possible side effects of radiation therapy and self care measures to manage side effects.	Promotes self care.

Instructions, Information, Demonstration	
Activities	*Rationales*
Teach patient to 1) Inspect site for redness, swelling, or opening between sutures, etc.; 2) Keep incision or area of laser dry; 3) Change dressing as appropriate; 4) Minimize stress on incision; 5) Take care during bathing/showering.	Measures promote self care and early identification of complications.

☐ Discharge or Maintenance Evaluation

- Patient demonstrates correct incision care.
- Demonstrates correct application of topical chemotherapy as appropriate.
- Identifies potential complications from treatments and self care measures to decrease their severity.

Essential Nursing Diagnoses Related to Malignant Melanoma

Ineffective Individual Coping

(CH. 1)

☐ Related to:

Diagnosis of melanoma and poor prognosis.

☐ Defining Characteristics:

Patient voices inability to cope, displays anxiety, fatigue, worry, and/or inability to meet basic needs.

Anticipatory Grieving

(CH. 1)

☐ Related to:

Actual or perceived losses due to melanoma.

☐ Defining Characteristics:

Exhibits and/or expresses feelings of sadness or loss.

Altered Family Processes

(CH. 1)

☐ Related to:

Impact of diagnosis of melanoma and poor prognosis on family.

☐ Defining Characteristics:

Family members voice inability to cope, display anxiety, fatigue, worry and/or inability to meet physical, or emotional needs of patient, or inability to meet own basic needs.

Spiritual Distress

☐ Related to:

High probability for melanoma recurrence or short life expectancy due to diagnosis of metastatic melanoma.

☐ Defining Characteristics:

Patient expresses concern with meaning of life/death and/or belief systems, anger towards God, mood swings, and difficulty handling emotions.

☐ Outcome Criteria:

Identifies strategies to cope with feelings.

☐ NIC: Spiritual Support

Definition: Assisting the patient to feel balance and connection with a greater power.

Spiritual Support	
Activities	*Rationales*
Allow patient to voice expressions of loneliness, powerlessness, fears about illness or death.	Provides outlet for expression of feelings.
Encourage use of spiritual resources, chaplin, pastor, and/or priest.	Promotes spiritual support.
Express empathy with patient's feelings.	Promotes atmosphere of acceptance.

☐ NIC: Hope Instillation

Definition: Facilitation of the development of a positive outlook in a given situation.

Hope Instillation	
Activities	*Rationales*
Assist patient to identify areas of hope in life.	Promotes hopeful outlook.
Avoid masking the truth.	Promotes trust.
Demonstrate hope by viewing the patient's illness as only one facet of the individual.	Promotes patient's intrinsic worth.
Facilitate the patient in incorporating personal losses into his/her body image.	Promotes coping with loss.

☐ Discharge or Maintenance Evaluation

- Patient identifies areas of hope in life.
- Discusses methods to cope with losses and spiritual distress.

Knowledge Deficit

(CH. 8)

☐ Related to:

Cranial radiation therapy for metastatic melanoma to the brain.

☐ Defining Characteristics:

Patient voices lack of knowledge and/or questions about radiation therapy treatments.

Common Nursing Diagnoses Related to Surgery for Melanoma

Altered Tissue Perfusion, Peripheral

(CH. 9)

☐ Related to:

Lymph node dissections for melanoma

☐ Defining Characteristics:

Affected extremity may be edematous, voices complaints of swelling and/or pain in affected extremity.

Impaired Mobility

(CH. 9)

☐ Related to:

Lymph node dissection for melanoma.

☐ Defining Characteristics:

Complaints of pain, limited motion in affected extremity.

Impaired Skin Integrity

☐ Related to:

Skin grafts for closure of wide excision.

☐ Defining Characteristics:

Disruption of the skin surface by removal of skin from donor sites for skin grafting.

☐ Outcome Criteria:

Donor sites will heal without such complications as infection, bleeding, and/or excessive scarring.

Skin grafts will engraft without complications.

☐ NIC: Wound Care

Definition: Prevention of wound complications and promotion of wound healing.

Wound Care

Activities	*Rationales*
Assess viability of skin grafts including color, presence of air or fluid pockets beneath site, signs of infection.	Early recognition of graft rejection or infection will promote prompt intervention.
Assess donor sites for bleeding and/or infection.	Bleeding and infection are possible complications of skin donor sites.
Perform graft care including 1) Leaving surgical dressing intact until removed by surgeon; 2) Inspecting dressing for odor or drainage and other signs of infection; 3) Keeping dressing clean and dry; 4) Keeping bed linens from shearing over graft site.	Promotes healing of graft and prevention of infection.

Wound Care	
Activities	*Rationales*
Perform donor site care including 1) Leaving dressing in place until removed or ordered by surgeon; 2) Observing site for bleeding; may need to split transparent dressing to ease pressure; 3) Using sterile technique for wound care; 4) 1 to 2 days post-op leaving site open to air (use bed cradle to keep sheets from sticking to donor sites); 5) Using heating lamp to dry donor site if excess drainage present; 6) Never removing dressing from donor site with force; soak off with sterile saline.	Promotes healing of donor site (usually upper thighs) and prevents infection.

Instructions, Information, Demonstration	
Activities	*Rationales*
Teach patient/family wound care.	Promotes self care.
Instruct patient/family to notify health care team if signs of infection are noted at donor site or graft.	Identifies complications early to prevent worsening of condition.

☐ Discharge or Maintenance Evaluation

- Skin graft healed without infection.
- Donor site healed without bleeding or infection.

Essential Nursing Diagnoses Related to Chemo-immunotherapy for Melanoma

High Risk for Infection

(CH. 4)

☐ Related to:

Granulocytopenia, secondary to chemotherapy agents such as Dacarbazine (DTIC), Carmustine (BCNU), and Cisplatin.

☐ Defining Characteristics:

Presence of granulocytopenia, an absolute granulocyte count (ANC) below 1000 cells/mm^3.

High Risk for Injury

(CH. 4)

☐ Related to:

Thrombocytopenia, secondary to chemotherapy agents such as Dacarbazine (DTIC) and Carmustine (BCNU).

☐ Defining Characteristics:

Thrombocytopenia with a platelet count below 50,000 cells/mm^3, complaints of easy bruising or bleeding.

Pain

(CH. 5)

☐ Related to:

Flu-like symptoms, a possible side effect with Dacarbazine (DTIC), and an expected side effect with biologic agents such as IL-2 and IFN.

☐ Defining Characteristics:

Voices discomfort such as myalgia, muscle aches, headaches, fever, chills, or rigors.

Altered Nutrition: Less than Body Requirements

(CH. 5)

☐ Related to:

Nausea, vomiting, anorexia, diarrhea secondary to Dacarbazine (DTIC), Cisplatin, and biologic agents such as IL-2 and IFN.

☐ Defining Characteristics:

Presence of nausea, vomiting, anorexia, diarrhea, weight loss.

Knowledge Deficit

(CH. 5)

☐ Related to:

Biologic therapy treatments for melanoma.

☐ Defining Characteristics:

Voices lack of knowledge and/or questions about biotherapy (IL-2 and/or interferon) therapy treatments.

Body Image Disturbance

(CH. 4)

☐ Related to:

Alopecia, weight loss, and/or skin changes secondary to chemotherapy and biotherapy treatments.

☐ Defining Characteristics:

Voices fear of rejection or negative reactions of others to hair loss, weight loss, and/or skin changes, or negative feelings about altered appearance.

High Risk for Altered Body Temperature

(CH. 5)

☐ Related to:

Stimulation of the preoptic anterior hypothalamus by biologic agents, causing fevers.

☐ Defining Characteristics:

Presence of fevers above normal.

Risk for Injury

(CH. 7)

☐ Related to:

Hypersensitivity and anaphylactic reactions to chemotherapy and other agents.

☐ Defining Characteristics:

Presence of fevers, confusion, urticaria, wheezing, or hypotension following administration of chemotherapy agents.

Fluid Volume Deficit

(CH. 5)

☐ Related to:

Capillary leak syndrome from interleukin-2.

☐ Defining characteristics:

Hypotension, orthostasis, tachycardia, tachypnea, low urine output, diarrhea, decreased fluid intake, weight loss.

High Risk for Fluid Volume Excess

(CH. 5)

☐ Related to:

Treatment of fluid volume deficit from IL-2 due to capillary leak syndrome.

☐ Defining Characteristics:

Edema, weight gain, shortness of breath, intake greater than output, abnormal breath sounds, rales (crackles), changes in blood pressure, respiration, mental status.

Chapter Sixteen

Head and Neck Cancers

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Head and Neck Cancers

Head and neck cancers account for about 6% of newly diagnosed cancers in the United States annually. They comprise 4% of all male cancers, and 2% of all female cancers. Although easily detected, the tumors are usually diagnosed late in the disease. At the time of diagnosis 60% of the 54,200 persons diagnosed each year in the United States with head and neck cancers have advanced disease. Thirty to fifty percent will die of their disease from recurrent tumors within 5 years and up to 60% will have distant metastases. The incidence of head and neck cancers is high among lower socioeconomic groups, with the greatest incidence during the fifth and seventh decades of life. There is a high incidence of a second primary (about five percent) at the time of diagnosis. Therefore, close evaluation for a second primary during the initial staging work-up is vital. Also, approximately 25-30% of patients with head and neck cancer will develop a second primary after treatment of the initial primary. The most common sites of distant metastases include lung liver, and bone.

Risk Factors

Personal and social habits seem to contribute to the high incidence of head and neck cancers in the lower socioeconomic groups. The use of tobacco, both smoking and chewing, combined with heavy alcohol consumption is highly correlated with the development of head and neck cancer; together these two factors create a higher risk than either factor alone. Also, if a person continues to smoke and drink, the chance of cure is significantly decreased and their risk for developing of a second primary of the aerodigestive tract is increased. Poor oral hygiene and poor dentition, including constant irritation from a jagged carious tooth or ill fitting dentures are also risk factors. The inhalation of wood dusts, nickel compounds, nitrosamines, hydrocarbons, and asbestos have been linked to the development of tumors of the oral cavity, nasal cavity, and paranasal sinuses.

The Epstein-Barr virus shows a close relationship, especially in younger persons, to the development of nasopharyngeal cancers. A possible link between herpes simplex and human papilloma virus and the development of head and neck cancer has been identified. A genetic predisposition has also been suggested for nasopharyngeal cancer due to the high incidence among Cantonese populations and the presence of a specific HLA antigen profile in those persons.

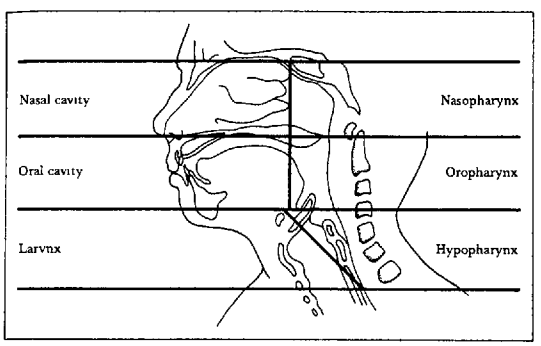
Cancers of the oral cavity and pharynx are commonly seen in persons with Plummer-Vinson syndrome. Also, a diet deficient in vitamin A and retinoids may increase the risk of developing head and neck cancers. The opportunity for preventive teaching of populations at risk for developing head and neck cancer is apparent from the risk factors.

Diagnosis

A multidisciplinary approach and a careful work-up is required for patients with carcinoma of the head and neck. Diagnostic procedures include computerized tomography (CT) scan, magnetic resonance imaging (MRI), which is superior to CT scan in staging, panorex-panoramic views, and cine-esophagography/barium swallow. Chest x-ray, bone, and liver scans may be done to evaluate for a secondary primary and/or distant metastases. Histologic diagnosis is mandatory and can be obtained by a variety of procedures including fine needle aspiration, and excisional or incisional biopsies. Panendoscopy, the passing of an endoscope along the entire mucosa of the upper aerodigestive tract to examine and perform biopsy, may also be done to rule out the presence of a second primary. Serum elevations of liver enzymes may indicate liver metastases, indicating the need for CAT scan of the liver.

Types, Signs, Symptoms and Treatment

Although there are many types of head and neck cancers, 95% are of squamous cell origin and arise from epithelium that lines the upper airways and the digestive tract. The types of head and neck cancers include carcinoma of the nasal cavity and paranasal sinuses, nasopharyngeal cancer, lip and oral cavity cancer, oropharyngeal cancer, hypopharyngeal cancer, and laryngeal cancer (see table 1). Forty-eight percent of head and neck tumors occur in the oral cavity; twenty-five percent of the time they occur in the larynx; and only 10% of the cancers are of the oropharynx. For each type of cancer, clinical signs and symptoms, etiology, and treatment are discussed below.



Major anatomic subdivisions of the upper aerodigestive tract.

Nasal Cavity and Paranasal Sinuses

Cancers of the nasal cavity and paranasal sinuses are most common in men 60-70 years of age. Early clinical manifestations are often similar to chronic sinusitis, nasal stuffiness, swelling, and pain of the frontal sinus, mimicking a sinus headache. Later symptoms include bloody nasal discharge, pain in teeth, asymmetrical pain, and numbness over involved sinus. If the tumor invades or arises in the ethmoid sinuses, double vision, decreased vision, orbital puffiness, excessive tearing, and olfactory complaints may be present. In more advanced tumors, common signs are displacement of the eye, extraocular muscle palsy, hyperesthesia of the cheek, and inability to open the

mouth. Due to the complex anatomy of this area, its closeness to vital structures, and the usually advanced stage of the disease at the time of diagnosis, a cure is rarely achieved. Surgical intervention involves radical procedures requiring advanced prosthodontic techniques to restore continuity of the oral cavity and cosmetic restoration of the facial contour, with orbital and facial reconstruction. In general, it is very difficult to obtain satisfactory repair of defects created in this area. For this reason radiotherapy is the treatment of choice, especially for stage 1 and stage 2 disease. Interstitial implants of radioactive material directly into the tumor can deliver high doses of radiation to small tissue volumes. However, radiation also is associated with morbidity, deformity, and dysfunction, which limit the dose. Radiation is also used as a salvage therapy when primary radiation has failed.

Nasopharyngeal

Nasopharyngeal cancer is often silent in the early stage. Patients often present with later stage disease complaining of painless, enlarged lymph nodes in the neck, unilateral nasal obstruction, epistaxis, bloody nasal discharge, diminished hearing in only one ear, tinnitus, recurrent unilateral otitis media, cranial nerve dysfunction, which may result in double vision, sore throat and/or poorly localized headache. Small cancers of the nasopharynx, although not often seen, are highly curable by radiotherapy with 5-year survival rates of 80-90%. Moderately advanced lesions without clinical evidence of spread to cervical lymph nodes are often curable with 5-year survival rates of 50-70%. Patients with advanced disease are poorly controlled locally by radiotherapy, with or without surgery, and often develop distant metastases despite local control. High-dose radiotherapy by external beam is the treatment of choice for the primary tumor and the neck. Surgery is usually reserved for nodes that fail to regress after radiation therapy, or for palliation when nodes reappear following clinical complete response. Some tumors may benefit from radioactive intracavitary or interstitial implants.

Lip and Oral Cavity

Lip and oral cavity cancer is highly curable by surgery or radiation therapy in the early stages. Patients often present with painless leukoplakia, erythroplakia, pain or ulcer that fails to heal, difficulty with dentures, and/or a painless persistent mass. Other signs and symptoms include swelling of the gums, dysphagia, and/or blood in the sputum. Choice of treatment is dictated by the functional and cosmetic results of the treatment. Early stage disease (1 & 2) is treated with surgery or radiation therapy alone. More advanced stage disease (3 & 4) represents a challenge for the surgeon and radiotherapist. Also, because local recurrence and/or distant metastases are common, patients should be considered for clinical trials of radiation modifiers, or for combination chemotherapy with surgery and/or radiation therapy.

Oropharyngeal

Oropharyngeal cancer prognosis is related to tumor thickness, which correlates with lymph node metastases; increasing tumor thickness is associated with decreased survival. Also, as one proceeds anatomically from the lips posteriorly to the hypopharynx, the prognosis decreases as well. Advanced cancers carry a very poor prognosis with cure rates as low as 10-15%. Signs and symptoms of disease include ulcerations, sore throat, speech difficulties, painless growth, trismus, dysphagia, aspiration, cervical adenopathy, and otalgia.

Treatment is controversial and depends on many factors. Recent reports have shown combined preoperative radiation therapy with surgery has higher survival rates and better control than either treatment alone. Extensive surgical procedures are usually used in this disease regardless of age because severe pain and great difficulty in swallowing and breathing often accompany tumor expansion.

Hypopharynx

The overall survival of individuals with tumors of the hypopharynx has been poor, with a 5-year survival rate of 23-29%. These tumors have an insidious onset and can be quite large and still be asymptomatic. A lump in the neck may be the first sign of disease as well as the chief complaint. Other signs and symptoms include a sore throat, odynophagia, sometimes unilateral, progressive dysphagia, aspiration, rapid weight loss, and cervical adenopathy. Otalgia may be present on the same side of the tumor and indicates tumor invasion of the superior laryngeal nerve. Hoarseness and foul breath, which indicate that the tumor may be infected and/or necrotic, also may be present. Early tumors are curable with either surgery or radiotherapy alone. More commonly present is extensive disease requiring combined treatment with surgery, radiotherapy, and chemotherapy.

Larynx

Cancer of the larynx is more common in males than females with about 12,300 new cases diagnosed annually in the United States. Common signs and symptoms at diagnosis are sore throat, painful swallowing, referred ear pain, change in voice quality, or enlarged lymph nodes. Prognosis for small cancers of the larynx without spread to the lymph nodes is very good, with cure rates of 75-95%. Locally advanced lesions, especially those with large clinically involved lymph nodes, are poorly controlled with surgery, radiation therapy, or combined modality treatment. Distant metastases are not uncommon even with local control of disease. The overall 5-year survival is 50-80%. The incidence of multiple primary tumors is 5-10%. Small superficial cancers are successfully treated by radiation therapy or surgery alone, including laser excision surgery. Advanced laryngeal cancers, those with laryn-

geal fixation or lymph node involvement, are often treated with combinations of surgery and radiation therapy. Due to the low cure rate for advanced lesions, clinical trials exploring chemotherapy, hyperfractionated radiation therapy, radiation sensitizers, or particle beam radiotherapy should be considered. A recent literature review revealed that lengthening the course of radiotherapy resulted in poor local control and should be avoided. Also patients who smoke during radiation therapy appear to have lower response rates and shorter survival durations than those who do not. Therefore, patients should be counseled to stop smoking before beginning radiotherapy.

Investigational Therapies

Due to the high rate of secondary primaries, studies are underway to lower the incidence of secondary tumors. A recent study found that daily treatment with isotretinoin (13-cis-retinoic acid) for a year can significantly reduce the incidence of second tumors. There are also many studies underway in the area of radiation therapy. These include studies utilizing hyperfractionated radiation therapy, radiation sensitizers and/or particle beam radiotherapy. Chemotherapy is being studied in a variety of ways. In some studies it is being administered neoadjuvantly or, prior to surgery and/or radiation therapy, given to increase the chance of complete resection in locally advanced tumors or prevent distant spread in smaller tumors. Combinations of chemotherapy with radiation therapy and/or surgery are also being studied. Antitumor activity in squamous cell cancer of the head and neck has been demonstrated for a number of antineoplastic agents including Methotrexate (MTX), Cisplatin, carboplatin (platinal), 5-fluorouracil(5-FU), and Bleomycin (Blenoxans). Combinations of these agents have been tried, resulting in higher response rates, but no improvement in survival has been demonstrated. Studies are now underway with newer agents such as Taxol to improve survival.

Complications

There are many potential complications of head and neck surgery, despite the low (1-3%) mortality rate. The most common post-operative complications include hemorrhage from rupture of the carotid artery, hematoma, pain, airway obstruction, infection, failure of reconstructive flap, fistula formation (occurring 3-5 days post-op), thoracic duct leakage, body image disturbances and nerve injury. Common complications from radiotherapy include skin fibrosis over treated area, radiation caries, osteoradionecrosis in structures underlying treatment, and an increase in surgical complications, such as wound infections, fistula formation, and flap failure, when radiotherapy precedes surgery. Chemotherapy complications include nausea, vomiting, stomatitis, diarrhea, renal

damage, and bone marrow suppression. It is important to remember that cancer of the head and neck is very invasive and many of the complications may occur from the tumor itself even, if no treatment is done. With or without treatment, patients often require tracheostomy, feeding tubes to prevent aspiration and wound management for fistula formation or for tumors invading the skin surface.

Nursing care of the patient with cancer of the head and neck is very complex. The essential nursing diagnoses are presented below, beginning with those for all patients with head and neck cancer, followed by a description of care for the patient receiving radiotherapy, and care for the patient undergoing chemotherapy.

Essential Nursing Diagnoses Related to Diagnosis of Head And Neck Cancers

Ineffective Individual Coping

(CH. 1)

☐ Related to:

Diagnosis of cancer and uncertain prognosis.

☐ Defining characteristics:

Inability to meet basic needs, dependency, chronic fatigue, worry, anxiety, poor self esteem, verbalization of inability to cope.

Altered Family Processes

(CH. 1)

☐ Related to:

Impact of cancer diagnosis and uncertain prognosis.

☐ Defining characteristics:

Family systems unable to meet physical, emotional needs of patient, or verbalization by family members of inability to cope.

Knowledge Deficit

(CH. 1)

☐ Related to:

Lack of knowledge about the head and neck cancer disease process and it's treatment.

☐ Defining characteristics:

Verbalization of the problem, inaccurate follow-through of instruction, request of information.

Anticipatory Grieving

(CH. 1)

☐ Related to:

Actual or perceived losses due to cancer, such as loss of health, loss of life, work, income, privacy, intimacy and relationships.

☐ Defining characteristics:

Patient exhibits and/or expresses feeling of sadness or loss over disfiguring surgery.

Altered Nutrition: Less than Body Requirements

(CH. 2)

- ☐ Related to:

  Swallowing dysfunction, head and neck disease process and surgical interventions and/or side effects from chemotherapy or radiotherapy, interfering with patient's ability to ingest food.

- ☐ Defining characteristics:

  Weight loss, dysphagia, inability to swallow, severe stomatitis or esophagitis, presence of feeding tube and/or patient receiving total parental nutrition.

Body Image Disturbance

- ☐ Related to:

  Disfigurement from surgical procedure or radiation response from treatment of head and neck cancer.

- ☐ Defining characteristics:

  Patient verbalizes fear of rejection or reaction of others to changes in appearance due to surgery and/or radiotherapy, voices negative feelings about body changes, refuses to verify changes in body or look at or refer to changed body part.

- ☐ Outcome Criteria:

  Discusses coping strategies to deal with effects of surgery and/or radiotherapy.

- ☐ NIC: Body Image Enhancement

  Definition: Improving a patient's conscious and unconscious perceptions and attitudes toward his or her body.

Body Image Enhancement

Activities	*Rationales*
Assess patient's reaction to planned or completed surgery.	Provides information to formulate nursing care plan.
Assist patient to express feelings about changes in appearance.	Promotes coping with changes in appearance.
Assist patient in separating physical appearance from feelings of personal worth.	Promotes positive self image.
Accept need for initial concealment or refusal to view changed part.	Supports use of appropriate coping mechanisms.
Use gentle persuasion to assist patient in viewing changed body part at appropriate time.	Promotes acceptance of changed appearance.
Avoid negative personal reactions to disfigurement, either verbal or nonverbal.	Negative reactions could convey confirmation of fears of rejection or of others' reaction, and result in emotional distress to patient.
Encourage self-care activities and activities of daily living such as hair combing, shaving, applying make-up.	Promotes positive feelings about self through improved physical appearance.
Allow to ventilate negative feelings such as anger, guilt, regarding changes in appearance.	Promotes coping as these are normal reactions and part of the grieving process.
Identify means to reduce impact of changes in appearance such as use of make-up of scarves, high necked clothing etc.	Provides methods to reduce impact of changes on appearance.

Body Image Enhancement	
Activities	*Rationales*
Refer patient to ACS Look Good Feel Better program.	Promotes coping with changes in appearance.
Arrange pre-operative and post-operative visits by support group members such as Lost Chord Club, Laryngectomy Association.	Provides for interaction and emotional support from persons with similar experiences.
Refer to social worker for counseling, financial, vocational, and adjustment issues.	Promotes coping by providing support services to assist with changes.
Encourage support group participation.	Promotes resocialization through interaction with others.

Instructions, Information, Demonstration	
Activities	*Rationales*
Teach wound, oral, and tracheostomy care.	Promotes control of secretions and odors which could negatively affect body image.
Inform of community resources such as Voice Masters, Lost Chord Club, I Can Cope, Can Surmount.	Provides potential community resources to assist if patient needs additional support.
Instruct patient on disease process and need for surgery or radiotherapy.	Knowledge promotes coping.

Instructions, Information, Demonstration	
Activities	*Rationales*
Provide written materials on disease process, treatment, and support services.	Written instructions reinforce verbal instructions.

☐ Discharge or Maintenance Evaluation

- Patient demonstrates independence in activities of daily living and new skills such as tracheostomy care, or esophageal speech.
- Resumes previous work or activities, or participates in occupational training for alterative work or leisure activities as appropriate.
- Demonstrates resocialization by communication with family and friends or participation in support groups.

Risk For Aspiration

☐ Related to:

Swallowing dysfunction from head and neck cancer disease process, surgical intervention, or changes due to radiotherapy, especially patients who have had a supraglottic laryngectomy, resection of structures in the oropharynx or cranial nerve (9,10,or 12) deficits.

☐ Defining characteristics:

Presence of risk for such factors as tracheostomy, nasogastric or gastrointestinal tubes for feeding, impaired swallowing, facial/oral/neck surgery.

- ☐ Outcome Criteria:

  Aspiration of gastrointestinal contents, oropharyngeal secretions, food, or fluids into the tracheobronchial passages will not occur.

- ☐ NIC: Aspiration Precautions

  Definition: Prevention or minimization risk factors in the patient at risk for aspiration.

Aspiration Precautions

Activities	*Rationales*
Assess for level of consciousness, absence of cough reflex, gag reflex, and swallowing ability; suggest a barium cookie swallow or video fluoroscopy as appropriate.	Provides information to determine if swallowing is safe.
Monitor pulmonary status.	Pulmonary congestion can increase risk of aspiration.
Check NG or gastrostomy placement prior to feeding, being careful not to dislodge surgically placed tubes.	Ensures placement of feeding tube in the stomach.
Maintain position of feeding tube, especially those placed surgically.	Promotes integrity of tube by preventing dislodgement which, due to surgery in head and neck area, may not be easily reinserted.
Notify physician if surgically placed tubes are dislodged, DO NOT REINSERT without physician order.	Promotes safe insertion of dislodged tubes without trauma to surgical site.

Aspiration Precautions

Activities	*Rationales*
Position upright 90 degrees during feeding and for 30 to 45 minutes after.	Prevents aspiration of feeding.
Check for residual prior to feeding, and hold feeding if residual is high.	Over-distention of the stomach could lead to emesis and increase the risk of aspiration.
Keep suction set-up available.	Promotes safety.
Suggest speech pathology, consult as appropriate.	Speech pathologists are experts in assisting with reinstructing patients on swallowing following head and neck surgery.

Instructions, Information, Demonstration

Activities	*Rationales*
Instruct patient/family not to attempt to eat unless there is a physician order.	Promotes safety; after surgery, swallowing can be difficult if not impossible.
Instruct patient/family on how to administer tube feedings as appropriate.	Promotes independence.
Instruct techniques as specified by speech pathology.	Promotes reinforcement of instructions and safe swallowing.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct to avoid liquids, use a thickening agent, cut foods into small pieces, use liquid form of medications if available.	Measures promote easier swallowing.
Teach emergency techniques in case aspiration should occur or swallowing.	Promotes safe swallowing in high risk patients.

☐ Discharge or Maintenance Evaluation

- Patient will be able to swallow without aspiration.
- If unable to swallow, patient will demonstrate safe administration of tube feedings.

Knowledge Deficit

☐ Related to:

High risk for development of recurrence and second primary

☐ Defining characteristics:

Patient voices lack of knowledge of measures to prevent recurrence, unable to state signs and symptoms of recurrence and/or a second primary.

☐ Outcome Criteria:

Patient states self care measures to decrease chance of disease recurrence and the development of a second primary.

Describes signs and symptoms of recurrence.

☐ NIC: Teaching Individual

Definition: Planning, implementation, and evaluation of a teaching program designed to address a patient's particular needs.

Teaching Individual	
Activities	*Rationales*
Establish rapport, teacher credibility; provide quiet area.	Promotes relationship and environment conducive to learning.
Teach self-examination of lips, mouth, and oral cavity and to note signs and symptoms of recurrence (or a second primary) including pain, dysphagia, neck nodes, ulceration, bleeding, hemoptysis, airway obstruction, bone pain.	Provides self-monitoring of progression/recurrence or second primary.
Instruct patient/family to report any signs of recurrence or second primary.	Promotes early identification of recurrence, second primary.
Explain rationale for self-examination.	Patient at high risk for development recurrence, second primary.
Explain benefits of smoking cessation especially during the treatment period.	Smoking decreases treatment effectiveness.
Explain benefits of terminating tobacco and alcohol use.	Decreases risk of secondary primary development.
Refer to appropriate smoking and alcohol cessation programs.	Helps patient to quit smoking and drinking.

Teaching Individual	
Activities	*Rationales*
Provide written materials about programs and disease.	Written materials reinforce verbal instructions.
Inform of follow-up evaluations and rationale for frequency.	Recurrence is most common in the first year.

☐ Discharge or Maintenance Evaluations

- Patient states self-care measures to decrease incidence and severity of symptoms associated with disease; and its treatment, including smoking and alcohol cessation.
- Visits physician for follow-up as prescribed.
- States signs and symptoms of recurrence and/or development of a new primary.

Essential Nursing Diagnoses Related to Surgical Treatment Of Head And Neck Cancers

Knowledge Deficit

(CH. 2)

☐ Related to:

Lack of knowledge about the surgical intervention.

☐ Defining characteristics:

Patient verbalizes lack of knowledge about proposed surgery, or concerns and/or questions about procedure.

Risk for Ineffective Airway Clearance

☐ Related to:

New tracheostomy.

☐ Defining characteristics:

Ineffective cough; increase of tracheobronchial secretions due to use of high humidity collar and/or infection; rales (crackles); rhonchi (wheezes), changes in rate depth of respirations.

☐ Outcome Criteria:

Airway will remain clear with easy and full respirations.

☐ NIC: Airway Suctioning

Definition: Removing airway secretions by inserting a suction catheter into the patient's oral airway and/or tracheas.

Airway Suctioning	
Activities	*Rationales*
Assess need for suctioning by auscultating breath sounds, observing respiratory effort, presence of secretions.	Provides information to plan care.

Airway Suctioning	
Activities	*Rationales*
Immediately post-op, maintain sterile technique with suctioning.	Prevents tracheobronchial infection.
Suction only as needed.	Unnecessary suctioning irritates tracheal mucosa.
Auscultate breath sounds before and after suctioning.	Reveals effectiveness of suctioning.
Hyperoxygenate before and after suctioning.	Prevents hypoxemia and arrhythmias.
When suctioning limit each pass to 10 seconds, at pressure less than 120 mm HG pressure.	Prevents hypoxemia and tracheal trauma.
Instill 2 to 5 ml of saline prior to suctioning as appropriate.	Lavages and stimulates trachea to precipitate coughing and mobilize secretions.
Chart color, amount, and odor of sputum produced and frequency of suctioning required.	Provides record of care needed for planning care.
Encourage patient to turn, cough, and take deep breath regularly.	Promotes removal of secretions and patency of airway.
Place patient in a room close to nursing station when tract is new.	Provides easy and frequent monitoring of patients most at risk for airway obstruction.
Keep extra tract tube, scissors, Kelley clamp available and attach dilator at bedside of all new tracheostomy patients.	Provides equipment for insertion of tracheostomy dislodged accidentally.

☐ NIC: Artificial Airway Management

Definition: Maintenance of endotracheal and tracheostomy tubes, and preventing complications of their use.

Artificial Airway Management	
Activities	*Rationales*
Provide humidified air or oxygen via tracheostomy collar as appropriate.	Prevents drying of mucosa and crusting of secretions.
Apply moistened 4 x 4 sterile gauze pads over stoma.	Provides humidity yet allows client mobility.
Advise to use a stoma bib over stoma when humidified air is no longer required.	Lessens dryness.
Use cuffed tracheostomy while patient requires mechanical ventilation.	Prevents air leaks around tract from positive pressure of ventilator.
Assist physician in changing tract tube to non-cuffed tube, usually 5th post-op day unless patient is still aspirating.	Promotes trachea integrity as prolonged use of inflated cuff can damage trachea.
Advise patient that tract tube will be down-sized to a 4-5 fenestrated tract, then plugged for 24 hours and, if tolerated removed.	Promotes patient breathing without tract, if possible.

Artificial Airway Management

Activities	*Rationales*
Provide tract care including 1) Removing inner cannula, cleansing off all mucus and crust with peroxide/saline solution (half & half) every 4-8 hours initially, then twice a day, and as needed; 2) Replacing soiled tract ties; 3) Cleansing around tract with peroxide/saline solution.	Promotes clear airway and helps prevent infections.

Instructions, Information, Demonstration

Activities	*Rationales*
Teach patient tract care if permanent.	Promotes independence in self-care.
Teach symptoms of inadequate humidity, including thick tenacious secretions that are difficult to expectorate.	Promotes adequate humidity to maintain open airway.
Teach tract patients to use stoma bib and bedside humidifier at noc.	Stoma bib warms and filters air; both measures promote humidity to lung passages.

Instructions, Information, Demonstration

Activities	*Rationales*
Teach stoma care: Patient inspects stoma for erythema and drainage; cleans stoma with saline/peroxide solution or soap and water as needed.	Erythremia and drainage could indicate infection of stoma; keeping stoma clean prevents infection.
Instruct to wear medic alert bracelet identifying patient as a neck breather and to carry cards and/or windshield stickers.	Promotes safety.
Teach patient/family/friends first aid for patients with laryngectomy/tracheostomy.	Provides adequate emergency care.
Inform patient of other functional losses due to radical neck surgery, including loss of ability to blow nose (may need suction for nasal congestion); loss of ability to perform Valsalva maneuver; loss of ability to blow air from their mouth (unable blow out matches or candles).	Promotes coping with functional losses from surgery.

☐ Discharge or Maintenance Evaluations

- Demonstrates independence in tract and/or stoma care if permanent tract is required
- Maintains open airway
- Discusses methods in coping with impact of functional losses.

Impaired Verbal Communication

- ☐ Related to:

  Tracheostomy (temporary) or laryngectomy (permanent)

- ☐ Defining characteristics:

  Inability of patient to speak due to presence of tracheostomy.

- ☐ Outcome Criteria:

  Patient able to communicate needs to health care team.

- ☐ NIC: Communication Enhancement

  Definition: Facilitating interaction with a patient who has difficulty delivering or receiving verbal or nonverbal messages.

Communication Enhancement

Activities	*Rationales*
Assess patient's reading ability preoperatively.	Provides information to formulate plan for most appropriate means of communicating post surgery.
Provide patient with an appropriate means of communicating including paper and pencil, magic slate, picture board, electronic communication board or device.	Promotes communication post surgery.
Place call bell within reach at all times.	Provide method for patient to call for assistance if needed.

Communication Enhancement

Activities	*Rationales*
Suggest speech pathology, consult as appropriate.	Promotes verbal speech retraining.
Assist with exercises to increase strength, range of motion, coordination,,and accuracy of tongue muscles.	Promotes articulation which is usually affected with cancers of the oral cavity.
Encourage use of oral prosthesis to compensate for tissue loss.	Promotes contact of the tongue with the palate, creating more intelligible speech.
Assist patient with exercise to improve voice quality, pitch, and volume.	Promotes phonation which is affected in cancer of the larynx.
Encourage patient use of artificial larynx by actively listening.	Promotes mechanized speech.
Assist patient with use of esophageal speech as appropriate.	Promotes communication by trapping air in the esophagus, then releasing it, allowing air to vibrate against walls of the esophagus, producing sounds.

Instructions, Information, Demonstration

Activities	*Rationales*
Reinforce instructions of speech pathologist regarding type of speech patient is able to use for communication.	Speech pathology leads and directs adaption and rehabilitation of speech and swallowing.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct on rationale for tracheoesophageal puncture with prosthesis in the surgically created tracheoesophageal fistula.	Promotes better quality esophageal speech by allowing sound to be formed in the lungs.
Instruct patient on other methods to communicate postoperatively.	Promotes communication.

☐ Discharge or Maintenance Evaluation

- Patient demonstrates appropriate use of alternate speech methods (artificial larynx, esophageal speech) as appropriate.
- Develops methods to communicate needs in the immediate postoperative period.

Impaired Skin Integrity

☐ Related to:

Surgical incision for head and neck cancer.

☐ Defining characteristics:

Disruption of skin surface due to surgery and/or presence of skin flap.

☐ Outcome Criteria:

Surgical incision will heal without infection and/or fistula formation.

☐ NIC: Incision Site Care

Definition: Cleansing, monitoring, and promotion of healing in a wound that is closed with sutures, clips, or staples.

Incision Care Site	
Activities	*Rationales*
Inspect incision site for redness, swelling,or signs of dehiscence or infection.	Promotes early identification of complications.
Monitor healing process in the incision site.	Promotes early identification of delayed healing.
Assess integrity of suture lines, both external and intraoral (if applicable) for signs and symptoms of fistula formation including erythema, drainage, tenderness at the suture line, low-grade fevers (100° to 101 F°), fluctuance below the skin, local edema, especially in patients who have had preoperative radiotherapy.	Promotes early identification of fistula and wound infection; breakdown of suture lines is the first sign and prompt treatment is crucial in those patients most at risk.

☐ NIC: Wound Care

Definition: Prevention of wound complications and promotion of wound healing.

Wound Care	
Activities	*Rationales*
Assess wound drains for color, amounts, and odor of drainage.	Promotes early identification of complications, such as bleeding and/or infection which can occur with clotting, air leaks in wound drains.
Assess for seromas or hematomas, especially beneath skin flaps.	Prevents flap adherence to underlying tissue which can result in necrosis.
Assess for possible thoracic lymph duct leakage (CHYLE a white drainage) in inferior neck area, and notify physician immediately if it occurs.	Promotes early identification of thoracic lymph duct leakage, which requires immediate surgical intervention.
Clean suture lines with peroxide/saline solution and apply bacitracin every 4-8 hours.	Prevents infection of incision.
Avoid excessive pressure from tight tracheostomy ties, oxygen collars, sheets, hyperextension of the neck, patient's lying directly on skin flap.	Prevents interference with flap perfusion and ensures flap viability.
Inspect flaps and suture lines every 3-4 hours, especially myocutaneous flaps sutured intraorally.	Promotes flap viability and early identification of wound dehiscence, crust formation, state of hygiene, and pooling of secretions.

Wound Care	
Activities	*Rationales*
For patients who have had nasal surgery,,a maxillectomy, and/or an orbital exoneration, gently cleanse the cavities to remove crusts with saline/sodium bicarbonate solution (half and half) or saline.	Promotes healing by keeping cavities clean and dry.
Empty closed wound drainage system according to procedure and record amount.	Prevents contamination and infection of closed wound system.
Position to prevent torsion or tension on skin flaps or suture lines.	Prevents wound separation or breakdown.
Cleanse and pack fistulas every 4 to 8 hours and prn.	Promotes granulation and wound healing.
Administer antibiotics as appropriate.	Prevents and/or treats infection.
Refer to home health agency for assistance with wound care at home.	Promotes continuity of care upon discharge.

Instructions, Information, Demonstration	
Activities	*Rationales*
Teach patient/family wound care procedures.	Promotes self-care and independence.
Instruct patient/family in signs and symptoms of infection and when to notify health care team.	Promotes early identification of complications.

☐ Discharge or Maintenance Evaluation

- Surgical incision will heal without complications.
- Complications of surgical incision, such as wound infection or fistula formation, will be identified early and treated promptly.

Risk for Injury

☐ Related to:

Risk of carotid artery rupture or innominate artery, rupture especially if patient has tracheostomy.

☐ Defining characteristics:

Radical surgery of head and neck, history of radiotherapy, and/or fistula formation.

☐ Outcome Criteria:

Carotid Artery Rupture will be identified early and promptly treated.

☐ NIC: Surveillance

Definition: Purposeful and ongoing acquisition, interpretation, and synthesis of patient data for clinical decision-making.

Surveillance	
Activities	*Rationales*
Assess for bleeding near carotid artery; a small trickle of blood from the area is first sign of impending rupture, especially in high risk patients.	Identifies impending rupture early.
Determine patient's risk for carotid artery rupture; those at high risk include radical neck surgery, history of radiotherapy, patient's with fistulas, patient's with an exposed carotid artery or persistent tumor.	Promotes identification of patients at high risk who should be assessed frequently.
Institute "Carotid Precautions" in high risk patients including keeping 3 bath towels, 6 packs of 4 x 4 sponges, 6 (5x9) combine dressing pads, one cuffed tracheostomy tube, 10mm syringe, alcohol swabs, 4 packs of 4-inch rolled gauze (kling), Intravenous solutions, suction apparatus, blood-drawing equipment, latex gloves, disposable gowns, and goggles at the bedside.	Promotes safe environment for patient at high risk for carotid artery rupture.
Keep patient type and cross matched for 2 units of packed red blood cells at all times.	Provides replacement blood quickly should need arise.
Maintain an intact heparin lock.	Provides an intravenous line in case of emergency.

Surveillance	
Activities	*Rationales*
Administer stool softeners as appropriate.	Prevent straining with stools which could cause pressure on carotid artery.
Apply wet dressing changes over area for patients at risk.	Avoids debriding of the carotid artery.

☐ NIC: Hemorrhage Control

Definition: Reduction or elimination of rapid and excessive blood loss.

Hemorrhage Control	
Activities	*Rationales*
If a carotid rupture occurs, institute the following measures:1) Apply external pressure if bleeding is external, pack mouth if bleeding is internal, CALL FOR HELP; 2) Establish airway; 3) Inflate tract cuff; 4) Suction oral/tracheal secretions; 5) Infuse IV fluids via heparin lock; 6) Obtain blood and administer as appropriate; 7) Prepare client and transfer to the operating room; 8) Explain all procedures to patient who is usually alert.	Prevents extensive blood loss from carotid artery rupture until it can be surgically repaired.

Instructions, Information, Demonstration	
Activities	*Rationales*
Teach patients who are at high risk for carotid artery rupture when health care team should be notified.	Promotes early identification of complication.
Instruct measures to be instituted should rupture occur.	Knowledge will decrease anxiety.

☐ Discharge or Maintenance Evaluation

- If carotid artery rupture occurs, it will be identified promptly, and treatment will be initiated immediately.

Impaired Physical Mobility

☐ Related to:

Resection of spinal accessory nerve (11) and sternocleidomastoid muscle during neck dissection.

☐ Defining characteristics:

Limits to range of motion of shoulder, presence of shoulder droop, atrophy of the trapezius muscle due to neck dissection.

☐ Outcome Criteria:

Range of motion of 150 degrees in shoulder postoperatively will be reached.

☐ NIC: Exercise Therapy

Definition: Use of specific activity or exercise protocols to enhance or restore controlled body movement.

Exercise Therapy	
Activities	*Rationales*
Assess for possible nerve injury as indicated by paresthesia, shoulder droop.	Provides information for formulating plan of care.
Assess range of motion in affected shoulder, and presence of shoulder droop.	Painful shoulder droop with atrophy of trapezius muscles occurs 50% of the time.
Assess readiness for exercise program.	Healing must be complete (usually 10-12 days post-op) before beginning an exercise program.
Assist with passive range of motion of the shoulder only to the point of pain in the immediate postop period.	Promotes maintenance of baseline range of motion.
Consult with physical, and/or occupational therapy in developing and executing exercise program to improve function.	Provides optimum patient care by incorporating experts in care planning.
Assist patient/family in formulating realistic measurable goals.	Promotes patient inclusion in the care planning process.
Encourage early ambulation.	Prevent thrombus formation.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient/family on exercises.	Promotes self-care.
Explain rationale for exercise protocol to patient/family.	Knowledge will promotes compliance with exercise protocol.

☐ Discharge or Maintenance Evaluation

- Patient will restore shoulder range of motion to about 150 degrees.

Essential Nursing Diagnoses Related to Radiation Treatment of Head and Neck Cancers

Risk for Impaired Skin Integrity

(CH. 3)

☐ Related to:

Tissue injury from radiation therapy.

☐ Defining characteristics:

Presence of red raw skin, voices pain in radiated areas.

Fatigue

(CH. 5)

☐ Related to:

Side effects from radiation therapy.

☐ Defining characteristics:

Patient voices complaints of weakness, tiredness, lack of energy, and/or inability to maintain normal activities.

Impaired Tissue Integrity

☐ Related to:

Radiation therapy to the head and neck area affecting the oral mucosa.

☐ Defining characteristics:

Damaged mucous membranes, dryness of mucous membranes, xerostomia.

☐ Outcome Criteria:

Damaged mucous membranes of the oral cavity will heal.

☐ NIC: Oral Health Restoration

Definition: Promotion of healing in a patient who has an oral mucosa or dental lesion.

Oral Health Restoration	
Activities	*Rationales*
Assess oral cavity and for alterations in taste, difficulty swallowing.	Provides information to develop plan of care.
Remove dentures for severe stomatitis.	Promotes comfort.
Use a tonsil suction catheter in oral cavity.	Removes excess secretions.
Use a tonsil suction catheter in oral cavity.	Removes excess secretions.

Oral Health Restoration	
Activities	*Rationales*
Perform oral care with peroxide/saline solution every 4 hours.	Promotes clean, moist, mucous membranes.
Increase oral care to every 2 hours if stomatitis worsens.	Promotes healing of mucous membranes.
Use a gravity lavage or a jet-spray dental system.	Provides gentle cleansing of the oral cavity.
Use toothettes or kelly clamp to remove debris.	Cleans oral cavity without trauma.
Encourage fluid intake of more than 3000 ml/day.	Promotes hydration of mucous membranes.
Administer topical protective agents and topical analgesics.	Promotes comfort in the oral cavity.
Administer antibiotics as appropriate.	Prevents, treats infection.
Provide saliva substitute as appropriate.	Provides moisture to oral cavity.
Administer oral Pilocarpine as appropriate.	Pilocarpine improves saliva production and relieves symptoms of xerostomia after irradiation.

Instructions, Information, Demonstration	
Activities	*Rationales*
Teach to avoid alcohol, mouth washes containing alcohol, lemon and glycerine swabs, and smoking.	Measures prevent further drying and irritation of the mucous membranes.
Instruct in dietary changes such as soft bland food, avoidance of spicy hot foods, and acidic foods.	Promotes adequate oral intake.

☐ Discharge or Maintenance Evaluation

- Describes measures to minimize risk of occurrence, severity and complications of stomatitis.
- Oral mucosa will heal without complications.

Essential Nursing Diagnoses Related to Chemotherapy Treatment of Head and Neck Cancers

Knowledge Deficit

(CH. 4)

☐ Related to:

Chemotherapy and it's side effects.

☐ Defining characteristics:

Patient verbalizes lack of information about chemotherapy, its side effects and how to manage those side effects.

Altered Nutrition: Less than Body Requirements

(CH. 4)

☐ Related to:

Anorexia, nausea, vomiting, and diarrhea from chemotherapy especially cisplatin, and 5-fluorouracil.

☐ Defining characteristics:

Reports inadequate intake of food, weight loss from nausea, vomiting, and diarrhea.

Altered Oral Mucous Membranes

(CH. 4)

☐ Related to:

Damage to rapidly dividing cells of the mucosa from chemotherapy, especially high dose 5-fluorouracil.

☐ Defining characteristics:

Oral pain/discomfort, coated tongue, xerostomia, hyperemia oral lesions or ulcers.

Pain

(CH. 4)

☐ Related to:

Stomatitis

☐ Defining characteristics:

Reports pain upon swallowing, eating. Patient is unable to eat or drink due to pain in the oral cavity.

Diarrhea

☐ Related to:

Side effect from chemotherapy, especially 5-fluorouracil.

☐ Defining characteristics:

Abdominal cramping, pain, increased frequency of stools, loose stools, urgency.

☐ Outcome Criteria:

Stools will become less frequent and firmer in consistency.

☐ NIC: Diarrhea Management

Definition: Prevention and alleviation of diarrhea.

Diarrhea Management	
Activities	*Rationales*
Assess frequency, consistency, and amount of stools.	Provides information to formulate plan.
Obtain stool for culture and sensitivity as appropriate.	Identifies a source of infection if present.
Identify other factors that could be contributing to diarrhea such as tube feeding, medications etc.	Promotes complete evaluation of problem.
Administer antidiarrheal medications as appropriate.	Restores normal bowel functioning.

Instructions, Information, Demonstration	
Activities	*Rationales*
Teach patient appropriate use of antidiarrheal medications.	Promotes safe use of medications.
Instruct in low-fiber, high protein, high calorie diet as appropriate.	Provides adequate diet that will not cause increase in diarrhea.
Instruct to avoid laxatives.	Prevents further diarrhea.

☐ Discharge or Maintenance Evaluation

- Identifies self-care practices which restore normal bowel function.
- Diarrhea will resolve, as evidenced by firm stools of no more than twice a day.

Chapter Seventeen

Brain Cancer

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Brain Cancer

There is an estimated annual incidence of 17,500 new cases of primary central nervous system tumors in the United States. Over the past five years there has been a slight increase in the number of primary brain tumors, especially in adults over seventy years old. The increase may be attributed to improvements in diagnostic neurologic techniques such as magnetic resonance imaging (MRI). More than half of the brain tumors diagnosed are malignant, but the benign lesions may be fatal too, depending on their size and location. These tumors are a neurosurgical challenge, not an oncologic problem. The prognosis of patients with malignant brain tumors depends on the patient's age, the degree of neurologic deficit prior to treatment, the amount of post-surgical residual disease, and the histopathology of the tumor.

The incidence of metastatic brain tumors is increasing; approximately 25% of all patients who die of cancer will have experienced a brain metastasis. This may be attributable to the improved treatment of individuals with another primary cancer diagnosis. Treatment of these lesions remains controversial and is dependent on the control of the primary tumor from which the metastasis originated. Aggressive intervention may be undertaken in a patient with a solitary brain lesion and no other active, or well controlled, disease. Palliative treatment of these lesions with radiotherapy or surgery often improves quality of life. Cancer of the lung, breast, melanoma, kidney, and colon cancer are the most common primary types of disease that are associated with brain metastases. However, any cancer may spread to the brain. Intracranial lymphomas may be seen in patients with AIDS, or in individuals who have had long term immunosuppression. Athletes who use steroids and individuals who have had organ transplants are susceptible to intracranial lymphomas. This chapter will focus on the treatment of primary malignant brain tumors in adults.

Risk Factors

Brain tumors occur equally in all racial groups. The incidence increases with age, and is slightly higher in males. In adults, there is a higher occurrence of this malignancy beginning in the fifth decade of life. Exposure to certain chemicals including acrylonitrile, ink, solvents, and lubricating oils may increase risk, but this has not been proven. There may be a genetic influence; families with Von Hippel-Lindau disease, Tuberous sclerosis, and Neurofibromatosis have an increased incidence of developing brain tumors.

Types of Brain Tumors

Glioma is the broad classification of brain tumors, indicating that they arise from glial cells. Astrocytomas are the most commonly occurring brain tumor in adults. This type of tumor is graded by the differentiation of its histology; the higher grades are known as glioblastoma multiform (GBM). These lesions tend not to be encapsulated, and they are infiltrative, which makes complete surgical removal difficult. Often the reason for incomplete removal of these lesions is that severe neurological deficits would result. Recurrence of the tumor is highly likely especially when complete removal cannot be achieved. They generally occur in the cerebral hemispheres. Oligodendroglioma is a slower-growing type of tumor that most often arises in the frontal lobes. Medulloblastoma occurs in the cerebellum and is most commonly seen in children. However, some cases do occur in adults. This type of tumor is more likely to metastasize outside of the brain and spinal cord. There are other, rare, types of brain tumors that occur infrequently.

Symptoms

The most common symptoms of a brain tumor are headache and seizures. Because these tumors arise within the fixed space of the cranium any of the symptoms associated with increased intracranial pressure(ICP) may indicate the presence of a tumor. The symptoms that a patient experiences are dependent on the location of the tumor within the brain. A frontal lobe tumor may initially manifest itself with subtle changes in personality, memory, judgement, or mood. Patients may believe these symptoms are part of the normal process of aging. Papilledema is considered a classic symptom of ICP. Patients may experience blurred vision and visual field deficits. Vomiting, loss of balance, hearing deficits, and aphasia can also be symptoms of a brain tumor.

Diagnosis

Computerized tomography (CT) and magnetic resonance imaging (MRI) are the two most commonly used radiologic methods of detecting and defining a brain tumor. Cerebral angiography will often be used to determine vascular compromise or invasion by the tumor. The diagnosis as to type of tumor can only definitely be made following biopsy. The stereotactic biopsy is sometimes performed prior to craniotomy or if the patient is not a candidate for neurosurgery. This procedure involves fixing the patient's head within a frame using screw pins, scanning the head, then making a burr hole in the skull for the biopsy.

Treatment

Surgery is often the first type of therapy for a patient with a brain tumor. The goals of this approach are definitive diagnosis and debulking of the tumor. In rare cases malig-

nant brain tumors may be surgically cured. The removal of most of the tumor may relieve neurologic symptoms; however, tumor size and location may prohibit a surgical procedure. If the removal of the lesion would cause severe neurological deficits, another form of therapy may be indicated.

Radiation therapy is generally given unless the tumor has been found to be of a cell type that is not radiosensitive. It is given by external beam using the linear accelerator. The patient receives treatment five days each week for 4-6 weeks. The area treated includes the residual tumor, the site of excision, and a surrounding margin. The reason for treating the surrounding margin is that these tumors tend to recur in adjacent areas. Medications called radiosensitizers (e.g., IUdR, BUdR, and misonidazoles) have been disappointing in efforts to increase the effectiveness of radiation therapy; however, this remains an area of clinical research. Patients may receive chemotherapy with radiation therapy. Radiotherapy is used to treat the excision site where a metastatic lesion has been removed. Chemotherapy also is used to treat malignant brain tumors (see Contemporary Approaches to Chemotherapy, this chapter). A class of medications known as the nitrosoureas, BCNU (carmustine), and CCNU (lomustine) have been used because they cross the blood/brain barrier. BCNU and procarbazine (Matulane) are the most effective agents given alone, and PCV the combination of procarbazine, vincristine (oncovin), and CCNU is the standard multi-drug combination. BCNU is administered intravenously in one dose or on two consecutive days every six weeks as blood counts permit. The diluent for the drug may cause local pain at the peripheral IV site, requiring central venous administration. Nausea with vomiting has been controlled with antiemetic coverage before and following the drug for 24 hours. Delayed bone marrow suppression is a unique effect of the nitrosoureas, occurring 3-5 weeks following drug administration. Pulmonary and hepatic effects may also be observed. Approximately 20% of patients experience mild elevations in liver function tests. Pulmonary fibrosis may be seen after a total dose of 900mg/m^2. Procarbazine is an oral medication, given as a single agent for 14 to 28 days. While taking this agent patients should observe certain food and alcohol restrictions because procarbazine exhibits weak monamine oxidase (MAO) inhibitor activity. Therefore, foods containing high amounts of tyramine should be avoided while taking the drug. These foods include; beer, yogurt, brewer's yeast, wine, cheese, pickled herring, chicken livers and bananas. Procarbazine is associated with moderate nausea and vomiting that may subside with daily use. An antiemetic may be helpful prior to administration for the first few days or for the entire course of treatment.

The PCV regimen is triple drug therapy. CCNU, an oral drug, is given on day one of the six week cycle, generally administered 30-60 minutes following an antiemetic before bedtime. The patient may sleep through the otherwise unpleasant effects of nausea and

vomiting. Procarbazine is given for fourteen days from day 8 through day 29. Vincristine is an intravenous mitotic inhibitor given by careful intravenous push on days 8 and 29. The reason for cautious technique is that this medication has the potential adverse effect of extravasation. Local tissue damage may occur if the drug infiltrates into surrounding areas. This combination is given for a year or until the tumor progresses. The present goal of chemotherapy is palliation of the disease rather than cure.

Immunotherapy

There are clinical trials in progress using a monoclonal antibody specifically created to attack brain tumor cells. Interleukin-2 has been used to treat metastatic lesions from primary kidney cancer and melanoma, but its efficacy remains to be proven.

Investigational Treatment

There are many new approaches being studied in the treatment of malignant brain tumors. BCNU has been incorporated into a biodegradable wafer for placement at the tumor site during craniotomy. The drug is slowly delivered to the tumor bed for three weeks. Early clinical trials using this approach for recurrent disease have been encouraging. Another method of treatment involves placing an arterial catheter near the tumor, then infusing mannitol to create a disruption of the blood/brain barrier. Following this procedure, chemotherapy is given in high doses through the catheter. Bone marrow transplant is also being used in clinical trials for the treatment of astrocytomas.

Complications

Increased intracranial pressure from the presence of a tumor within the fixed space of the cranium usually results in neurological symptoms. The use of daily oral steroids will decrease the cerebral edema and may control symptoms. Many patients are placed on medications to control or prevent seizures. Neurosurgical risks include bleeding and infection. The symptoms a patient experiences are directly related to the location of the tumor within the brain. The presence of a lesion disrupts the normal function controlled by that portion of the brain. Treatment with chemotherapy or radiation therapy may contribute to transient cerebral edema which may require an increase in steroids or anticonvulsant therapy.

Essential Nursing Diagnoses Related to Coping

Anxiety

(CH. 4)

☐ Related to:

Fear of diagnosis and poor prognosis.

☐ Defining Characteristics:

Patient voices fears regarding diagnosis, appears apprehensive, nervous, increased pulse rate, rapid breathing.

Ineffective Individual Coping

(CH. 1)

☐ Related to:

Diagnosis and potential side effects and/or death.

☐ Defining Characteristics:

Inability to meet basic needs, worry, anxiety, verbalization of fears, inability to cope.

Altered Family Processes

(CH. 1)

☐ Related to:

Anxiety and fears about diagnosis and prognosis and its impact on the family.

☐ Defining Characteristics:

Family system unable to meet physical or emotional needs of patient.

Anticipatory Grieving

(CH. 1)

☐ Related to:

Losses due to brain tumor such as loss of health, income, work, intimacy, relationships, and possibly life.

☐ Defining Characteristics:

Exhibits or voices expressions and/or feelings of sadness or loss or concerns over possible loss of work, income, life.

Essential Nursing Diagnoses Related to Disease Process or Treatment

Knowledge Deficit

(CH. 2,4)

☐ Related to:

Treatment including surgery and chemotherapy.

☐ Defining Characteristics:

Patient verbalizes lack of information about forms of treatment, potential side effects and management of potential adverse effects.

Knowledge Deficit

(CH. 8)

☐ Related to:

Cranial Radiation Therapy

☐ Defining Characteristics:

Patient voices lack of knowledge and/or questions about planned radiation therapy treatments.

Knowledge Deficit

(CH. 14)

☐ Related to:

Food restrictions while taking procarbazine.

☐ Defining characteristics:

Patient voices lack of understanding regarding reasons for restrictions and specific foods to avoid.

Impaired Gas Exchange

(CH. 2, 8)

☐ Related to:

Neuromuscular dysfunction, cognitive impairment, or possible pulmonary fibrosis from BCNU.

☐ Defining Characteristics:

Changes in respiratory depth, cyanosis, dyspnea, cessation of breathing in status epilepticus, obstruction of airway during a seizure, aspiration of secretions.

High Risk for Injury

☐ Related to:

Seizures, disorientation.

☐ Defining Characteristics:

Seizure activity with change in consciousness, muscle flaccidity or rigidity, muscle weakness, falls, cyanosis, change in sensation of a body part.

☐ Outcome Criteria:

Resolution of a seizure without physical injury or complication.

☐ NIC: Neurologic Monitoring

Definition: Collection and analysis of patient data to prevent or minimize neurologic complications.

Neurologic Monitoring

Activities	*Rationales*
Monitor level of consciousness and orientation.	Promotes early recognition of symptoms.
Monitor vital signs as ordered.	Provides data which may indicate increasing ICP (decreased respirations, increased pulse and BP).
Note complaint of headache.	Promotes early recognition of symptoms.
Monitor for tremor.	Provides information.
Monitor pupillary size, shape, symmetry, and reactivity.	

Neurologic Monitoring	
Activities	*Rationales*
Consult with co-workers to confirm data.	Promotes support of findings.
Increase frequency of neurological monitoring as appropriate.	Promotes emergency care.
Monitor response to medications.	Promotes early recognition of adverse effects.
Inform patient and family of reasons for frequent neurological examinations.	Promotes understanding and cooperation.
Clarify any misinformation and answer all questions honestly and in simple, lay language.	Prevents unnecessary fear resulting from inaccurate information or beliefs.

☐ NIC: Seizure Management

Definition: Care of a patient during a seizure and postictal state.

Seizure Management	
Activities	*Rationales*
Guide movements of limbs and head.	Prevents injury.
Monitor direction of head and eyes.	Provides information about seizure.
Loosen clothing.	Prevents bruising and abrasions.
Remain with patient during seizure.	Provides comfort and feeling of safety.
Maintain airway.	Prevents obstruction.

Seizure Management	
Activities	*Rationales*
Establish IV access as needed.	Provides route for administration of anticonvulsant.
Apply oxygen as appropriate.	Promotes gas exchange.
Document information including characteristics of seizure, motor activity, length of event, incontinence.	Provides data.
Administer anticonvulsant.	Promotes control of seizures.
Monitor antiepileptic drug levels.	Provides information regarding metabolism for dose adjustment.
Reorient following seizure.	Provides comfort.
Teach patient and family about anticonvulsant and need for compliance.	Promotes understanding and cooperation.
Explain reasons for blood level monitoring.	Provides information.
Explain reasons for not driving or operating heavy equipment.	Prevents injury.

☐ Discharge or Maintenance Evaluation

- Patient verbalizes understanding of condition; complies with medication regimen.
- Patient verbalizes an understanding of safety precautions.
- Informs family of reasons for loss.
- Relieves doubts and anxiety of thought.

Altered Thought Processes

☐ Related to:

Physiological changes.

☐ Defining characteristics:

Disorientation to time, place, circumstances and events; changes in consciousness, inappropriate affect, altered attention span, memory deficit.

☐ Outcome Criteria:

Restoration or maintenance of mental functions.

Management of signs and symptoms of increased intracranial pressure.

☐ NIC: Confusion Management

Definition: Provision of a modified environment for the patient who is experiencing a chronic confusional state

Confusion Management

Activities	*Rationales*
Determine physical, social, and psychological history of patient prior to confusion.	Provides baseline information.
Determine appropriate behavioral expectations for patient, given current level of orientation.	Promotes achievable goals.
Identify potential dangers in patient's environment.	Prevents injury.
Schedule consistent caregivers for patient.	Promotes familiarity.

Confusion Management

Activities	*Rationales*
Limit choices patient is asked to make.	Prevents increased confusion.
Avoid assessment questions that cannot be answered.	Prevents frustration.
Address patient by name when initiating interaction.	Provides orientation.
Give one simple direction at a time.	Promotes understanding.
Orient patient to person, place, and time as necessary.	
Explain reasons for restrictions to family and friends.	Promotes understanding of limitations.
Inform family of need to limit visitors to one or two at a time.	Prevents confusion.
Instruct visitors in orienting behaviors.	Prevents unrealistic expectations of patient.

☐ NIC: Edema Management

Definition: Limitation of secondary cerebral injury resulting from swelling of brain tissue.

Edema Management

Activities	*Rationales*
Assess for confusion, changes in mentation, complaints of dizziness, syncope.	Promotes early recognition of adverse effects.
Monitor neurologic status closely and compare to baseline.	Provides consistent data.

Edema Management	
Activities	*Rationales*
Decrease stimuli to patients.	Prevents confusion.
Give sedation as needed.	Promotes sleep.
Screen conversation within patient's hearing.	Prevents increased stimulation.
Administer anticonvulsant.	Promotes seizure control.
Administer stool softeners.	Prevents constipation.
Restrict fluids.	Prevents increased edema.
Monitor intake and output.	Provides data.
Implement seizure precautions.	Prevents injury.
Instruct family to comply with fluid restrictions and explain reasons.	Prevents increased intracranial pressure.
Inform family of reasons for loss.	Relieves doubts and anxiety of thought processes.

☐ Discharge or Maintenance Evaluation

- Maintains mental and psychological function at optimal level.
- Control of increased intracranial pressure.

Impaired Verbal Communication

☐ Related to:

Brain tumor, cerebral edema, increased intracranial pressure.

☐ Defining Characteristics:

Impaired speech, slurred speech, aphasia.

☐ Outcome Criteria:

Establishment of an alternative form of communication.

☐ NIC: Communication Enhancement

Definition: Facilitating interaction with a patient who has difficulty delivering or receiving verbal or nonverbal messages.

Communication Enhancement	
Activities	*Rationales*
Determine type of aphasia (e.g. expressive, receptive, or both).	Promotes understanding of deficit.
Control environmental factors that may hinder communication such as noise and pain.	Prevents distraction.
Solicit family's assistance in understanding patient's speech.	Provides recognition of familiar phrases.
Listen attentively.	Promotes trust and rapport with patient.

Communication Enhancement	
Activities	*Rationales*
Establish a method of communication appropriate to patient's abilities and needs.	Provides an alternative form of communication.
Allow patient to hear / spoken language as appropriate.	Promotes speech recognition.
State verbal prompts and reminders.	Provides cues.
Use simple words and short sentences.	Promotes understanding.
Enunciate clearly, speak slowly.	Prevents multiple stimuli.
Use a calm reassuring approach.	Promotes trust, builds relationship.
Speak in normal tone of voice, refrain from shouting.	Prevents distraction from loud noises.
Stand in front of patient while speaking.	Promotes understanding.
Encourage patient to repeat words.	Provides opportunity to hear own voice.
Use picture board if appropriate.	Promotes communication.
Inform family of reasons for communication deficit.	Promotes understanding and cooperation.
Teach family to use alternate methods of communication.	Provides opportunity for them to communicate independently with patient.
Encourage family to use positive reinforcement.	Prevents patient from becoming discouraged.

☐ Discharge or Maintenance Evaluation

- Establishment of a successful method of alternate communication.

Sensory/ Perceptual Alteration: Visual

☐ Related to:

Neurological deficits caused by brain tumor or treatment.

☐ Defining Characteristics:

Inability to see (partial or complete loss of sight), myopia, visual field cuts, reduced visual acuity.

☐ Outcome Criteria:

Evaluation and maximization of visual function.

☐ NIC: Communication Enhancement—Visual Deficit

Definition: Assistance in accepting and learning alternate methods for living with diminished vision.

Communication Enhancement—Visual Deficit	
Activities	*Rationales*
Identify yourself when you enter the patient's space.	Promotes awareness.
Note patient's reaction to diminished vision.	Provides data.
Accept patient's reaction to diminished vision.	Provides understanding.

Communication Enhancement—Visual Deficit

Activities	*Rationales*
Maximize patient's remaining capabilities.	Prevents discouragement.
Do not move items in patient's room without informing patient.	Prevents injury.
Read mail, newspaper, and other pertinent information to patient.	Prevents isolation.
Identify items on a tray in relation to numbers on a clock.	Promotes independence.
Initiate occupational therapy referral.	Provides expert advice.
Inform patient and family of potential abilities and impairment.	Provides a realistic appraisal of visual ability.
Instruct in eye care and administration of medications.	Promotes health of eyes.
Inform of national and community agencies that provide materials or services for visually impaired.	Provides information and support for family and patient.

☐ Discharge or Maintenance Evaluation

- Patient optimizes visual acuity.
- Uses aids to maximize vision and independence.
- Adapts to visual loss and maintains activities.

Sensory/Perceptual Alteration, Auditory

☐ Related to:

Brain tumor, result of presence o tumor or treatment.

☐ Defining Characteristics:

Inability to hear (partial or complete deafness), change in usual response to auditory stimuli, altered communication pattern.

Risk for Infection

☐ Related to:

Chemotherapy with nitrosourea BCNU and CCNU.

☐ Defining Characteristics:

Granulocytopenia occurring 3-5 weeks following treatment.

Risk for Constipation

☐ Related to:

Neurotoxicity from vinca alkalo chemotherapy agents as vincrist (oncovin).

☐ Defining Characteristics:

Decrease in regular bowel move ments, hard stools, complaints c dominal discomfort.

Body Image Disturbance

☐ Related to:

Loss of hair from craniotomy, alopecia from radiation therapy which lasts longer than

chemotherapy, (may be permanent), alopecia from chemotherapy.

☐ Defining Characteristics:

Patient verbalizes fear of rejection or reaction of others to altered appearance, negative feelings about body, concern over hair loss.

Chapter Eighteen

Sarcomas of Bone and Soft Tissues

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Sarcomas, Bone, and Soft Tissue

Sarcomas are tumors that originate in connective tissue. They are generally divided into two groups, bone and soft tissue. Bone sarcomas are very uncommon, compromising only 0.2% of all malignant tumors in the United States. About 2,100 cases are diagnosed annually. The incidence is higher among Caucasians and among men. Soft tissue sarcomas refers to a group of more than 50 types of cancers which account for only 1% of all malignancies in men and 0.6% in women. Annually in the United States about 5,000 new cases are diagnosed and approximately 3,000 persons die from sarcomas each year. These tumors are more common in children than in adults, accounting for 6% of all malignancies before the age of 25. Since these two groups are so different, each will be discussed separately.

Bone Sarcomas

Risk Factors

High-dose irradiation has been linked to the development of bone cancer, although there has not been an increased incidence seen among survivors of the atomic bomb in Japan. There is some evidence of a familial tendency in bone cancers. Also, some preexisting bone conditions such as Paget's disease seem to predispose individuals to bone cancer.

Types

There are four major types of bone sarcomas: chondrosarcoma, Ewing's sarcoma, fibrosarcoma, and osteosarcoma. Chondrosarcoma arises from the cartilage and accounts for 13% of malignant bone tumors. It is more common in males and persons between 30-70 years of age. The two major forms of chondrosarcoma are peripheral, arising in the extremities, and central, arising in the trunk. The survival of individuals treated with wide resection is 67% for 5 years and 50% for 10 years.

Ewing's Sarcoma is seen in about 5% of those diagnosed with malignant bone tumors. It arises from the marrow spaces in the shafts of the long bone. Ewing's is more common in males, with 90% of all cases occurring between the ages of 5 and 25. The 5-year survival rate is about 50%, which has improved in recent years from only 5%, due to chemotherapy.

Fibrosarcoma accounts for only 4% of malignant bone tumors. It occurs most often in the

long bones and is characterized by interlacing bundles of collagen. There is no age or sex predominance, although fibrosarcoma is a very rare tumor in children. Survival rates are 28% for 5 years and about 21% for 10 years.

Osteosarcoma is the most common type of malignant bone tumor, accounting for about 20% of all cases. It is a high-grade, malignant spindle-cell tumor arising within a bone. Osteosarcoma is more common in males and persons between the ages of 11 and 20. The overall 5-year survival rate is about 60%. However, the 2-year survival rate for those with localized disease is 40-90% whereas those with metastatic disease have a 2-year survival rate of 30-60%.

Signs and Symptoms

Pain from bone tumors usually has a gradual onset. It may be present for months, and is described as dull, deep, and feeling as if it were boring into the bone. However, an abrupt onset of sharp pain may be seen if pathologic bone fracture is the presenting sign and symptom. Other symptoms may include a lump or swelling on or over a bone or joint.

Symptoms of metastatic disease include hemoptysis, chest pain, cough, fever, weight loss, and malaise.

Diagnosis

A variety of radiographic methods may be used to evaluate malignant bone tumors including radiographs, bone scans, arteriography, computerized tomography(CT), fluoroscopy, and magnetic resonance imaging (MRI). Biopsy is of course vital in determining the type of malignant bone tumor so that treatment can be planned. This may include an incisional, excisional, and/or needle biopsy of the suspicious lesion. In general, laboratory studies are not useful in diagnosing bone tumors.

Treatment

Treatment is dependent on the type and stage of the tumor at diagnosis. The overall goals of treatment include eradication of the tumor, avoidance of amputation if possible, and preservation of maximum functioning in the affected limb. Treatment may include surgery, chemotherapy, radiotherapy, biotherapy or a combination of therapies. A brief summary of the treatment for each type will be discussed.

Chondrosarcoma is refractory to chemotherapy, and surgery remains the mainstay of treatment. Palliative radiotherapy may be used for those with advanced or inoperable tumors.

Radical surgery is the mainstay for the treatment of fibrosarcoma. This tumor is radioresistant so, consequently, radiotherapy is used only for inoperable tumors. The role

of adjuvant chemotherapy after resection is being studied at this time.

Ewing's sarcoma is treated with radiation and/or surgery combined with chemotherapy. Radiotherapy can cure locally with 5,000cGy by means of shrinking fields. The chemotherapy agents used include Dactinomycin (actinomycin D), Adriamycin (doxorubicin), Oncovin (vincristine), Cytoxan (cyclophosphamide) and Ifosfamide (IFEX).

Osteosarcoma is usually treated with surgery and/or irradiation and adjuvant chemotherapy. The chemotherapy protocols used include Adriamycin (doxorubcin), high-dose Cytoxan (cyclophosphamide), or high-dose Methotrexate (MTX) with leucovorin rescue. These agents may be used alone or in combination.

When chemotherapy is used preoperatively or neoadjuvantly it as even more effective with 2-year disease-free survival rates of 85% to 90% being reported by some investigators. When preoperative chemotherapy is used it allows the effectiveness of the chemotherapy to be assessed at the time of surgery. The higher the percentage of tumor necrosis the greater the survival rate. Also, for those tumors with low necrosis rates, the chemotherapy agents can be changed postoperatively.

When amputation is required there are two major approaches. One approach includes immediate fitting of a temporary prothesis using a cast with a pylon prosthesis unit attached. Advantages to this approach include immediate ambulation and resumption of normal activities, which helps minimize the negative psychosocial impact of the amputation. In the second approach a conventional delayed prothesis fitting is done about 12 weeks post-op. Immediately after surgery the stump is covered with a dressing and an elastic bandage. The individual is fitted with a temporary prothesis at about three weeks when the acute swelling has subsided.

Soft Tissue Sarcomas

Soft tissue sarcomas are rare tumors that arise in the tissues derived from the embryonic mesoderm. They may occur anywhere but the most common site is the legs. In 1994, an estimated 6,000 new cases were diagnosed in the United States and about 3,300 deaths will occur from this disease. Prognosis and survival are based on many factors including the grade of the sarcoma, size, location, lymph node status, and DNA ploidy. However, the most important indicator is histologic grade. The 5-year survival rate for Grade 1 is 72-83%, Grade 2 is 53-59%, and Grade 3 is 26-42%. Patients with tumors less than 5 cm in diameter have a better prognosis as do those diagnosed with extremity sarcomas. Patients with no lymph node involvement and diploid tumors also have a better prognosis.

Types

There are several histologic subtypes of soft tissue sarcomas. The most common types are liposarcoma and malignant fibrous histiocytoma. Other types include leiomyosarcoma, fibrosarcoma, rhabdomyosarcoma, synovial sarcoma, angiosarcoma, hemangiopericytoma, alveolar soft-part sarcoma, and epithelioid sarcoma.

Signs and Symptoms

The most common signs and symptoms of soft tissue sarcomas are swelling and pain. Patients sometimes attribute these symptoms to an injury, which often delays their seeking medical attention. Another delay may be in the physician's presumption of a benign growth without biopsy confirmation. These factors combined contribute to an average delay of about 6 months between onset of symptoms and the time of diagnosis.

Diagnosis

The most common methods of evaluating a soft tissue sarcoma include computed tomography (CT) and magnetic resonance imaging (MRI). An open biopsy is required for a definitive diagnosis, which may include excisional, incisional, or needle biopsies. Preoperatively, arteriograms or venograms may be needed to delineate the boundaries of major adjacent vessels near the tumor mass. Also, a chest x-ray and/or CT of the chest is done to rule out pulmonary metastasis, the most common site of hematogenous spread.

Treatment

Resection remains the primary treatment modality for soft tissue sarcomas. Limb-sparing procedures are most often used, and the current rate of amputation is about 6 percent. Radiation therapy has been used preoperatively, postoperatively, or in a split course before and after surgery. The role of adjuvant and neoadjuvant chemotherapy remains unclear, with some studies reporting beneficial results and others not.

Treatment of recurrence includes aggressive surgical intervention for local recurrence and pulmonary metastatic disease.
Chemotherapy has had limited success. There is no standard chemotherapy regime, but commonly used agents include Ifosfamide (IFEX), Adriamycin (doxorubicin), Methotrexate (MTX), Dactinomycin (Actinomycin-D) and Dacarbazine (DTIC).

Investigational Therapies

Current trials for sarcomas include the combination of a chemotherapy regime called MAID with biologic therapy such as interferon and/or interleukin-6. MAID stands for Mesna, Adriamycin (doxorubcin), Ifosfamide (IFEX), and Dacarbazine (DTIC). It is has

been shown to have a higher response rate in some studies than any single agent. This regime frequently causes thrombocytopenia; interleukin-6 is thought to stimulate thrombocyte production. Administering interleukin-6 after MAID is hoped to decrease the severity and length of thrombocytopenia.

Complications

The complications of sarcoma from the disease process include metastasis to the lung and lymph nodes and need for amputation. Surgical complications include allograft nonunion, arthritic-type conditions, iatrogenic fractures, joint dislocation, and infection. When radiation is employed there may be delayed wound healing and skin necrosis afterwards. Complications from chemotherapy include nausea, vomiting, stomatitis, cardiac myopathy, hemorrhagic cystitis, peripheral neuropathies, and liver damage.

Essential Nursing Diagnoses Related to the Diagnosis of Sarcoma

Ineffective Individual Coping

(CH. 1)

☐ Related to:

Diagnosis of cancer and uncertain prognosis.

☐ Defining characteristics:

Inability to meet basic needs, dependency, chronic fatigue, worry, anxiety, poor self esteem, verbalization of inability to cope.

Altered Role Performance

(CH. 1)

☐ Related to:

Impact of cancer diagnosis on the patient's roles within her/his family and community.

☐ Defining Characteristics:

Change in self-perception of role; change in others' perception of role; change in physical capacities to resume role(s) and/or responsibilities.

Anticipatory Grieving

(CH. 1)

☐ Related to:

Actual and/or perceived losses due to cancer such as loss of health, life,

work, income, privacy, intimacy, and relationships.

☐ Defining characteristics:

Patient exhibits and/or expresses feelings of sadness or loss.

Knowledge Deficit

(CH.1)

☐ Related to:

Lack of knowledge about the cancer disease process and its treatment.

☐ Defining Characteristics:

Verbalization of the problem, inaccurate follow-through of instruction, request of information.

Altered Family Processes

(CH. 1)

☐ Related to:

Impact of cancer diagnosis and uncertain prognosis.

☐ Defining Characteristics:

Family systems unable to meet physical, emotional needs of patient, or verbalization by family members of inability to cope.

Essential Nursing Diagnoses Related to Chemotherapy

Risk for Infection

(CH. 4)

☐ Related to:

Chemotherapy treatments due to the destruction of rapidly dividing normal hematopoietic cells, resulting in immunosuppression.

☐ Defining Characteristics:

Granulocytopenia, an absolute granulocyte count (AGC) below 1000 cells/mm^3. Neutropenia, an absolute neutrophil count (ANC) below 1000 cells/mm^3.

Risk for Injury

(CH. 4)

☐ Related to:

Bone marrow suppression resulting in thrombocytopenia from chemotherapy.

☐ Defining Characteristics:

Thrombocytopenia with platelet count below 50,000 cells/mm^3, anemia, fatigue, and decreased oral intake due to chemotherapy.

Altered Nutrition: Less Than Body Requirements

(CH. 4)

☐ Related to:

Anorexia, nausea, vomiting, and diarrhea from chemotherapy.

☐ Defining Characteristics:

Reported inadequate food intake due to anorexia and nausea, loss of weight, early satiety, diarrhea.

Body Image Disturbance

(CH. 4)

☐ Related to:

Alopecia, weight loss and/or skin changes secondary to chemotherapy.

☐ Defining Characteristics:

Patient verbalizes fear of rejection or reaction of others to altered appearance, negative feelings about body, concern over hair loss and skin changes.

Risk for Impaired Skin Integrity

(CH. 4)

☐ Related to:

Extravasation of vesicant chemotherapy such as adriamycin, and/or vincristine.

☐ Defining Characteristics:

Patient complains of pain, burning; skin looks red; necrotic progressing to tissue sloughing.

Altered Urinary Elimination

☐ Related to:

Side effects from ifosfamide (IFEX), or high dose cytoxan chemotherapy resulting in hematuria and/or renal toxicity.

☐ Defining Characteristics:

Hematuria, dysuria, urinary frequency, increased BUN and serum creatinine, or decreased urine creatinine clearance.

☐ Outcome Criteria:

Optimum urinary elimination will be maintained.

☐ NIC: Urinary Elimination Management

Definition: Maintenance

Urinary Elimination Management

Activities	*Rationales*
Monitor urinary elimination including color, volume, presence of RBC's, BUN, and creatinine.	Promotes early identification of urinary problems.
Administer chemo in early AM.	Minimizes acrolein accumulation in bladder during sleep.
Administer uroprotector agent, mesna, usually 60% of chemo dose, 20% pre, 20% 4 hrs & 8 hrs post chemo.	Mesna binds with acrolein, the metabolite of chemo that can cause hemorrhagic cystitis.

Urinary Elimination Management	
Activities	*Rationales*
Encourage adequate hydration, prehydration 2-3 liters/day, post-chemo 2-3 liters/day for 2 days post-chemo.	Promotes adequate flow through the kidneys to prevent renal toxicity.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient to drink at least 8-12 glasses of fluids before and for two days after chemo.	Promotes adequate blood flow through the kidneys to prevent renal toxicity.
Instruct patient to void every 2-3 hrs before bedtime, and when awake at night.	Prevents accumulation of acrolein in the bladder which irritates bladder lining causing hemorrhagic cystitis.
Inform about the rationale for adequate fluid intake and frequent voiding.	Knowledge promotes compliance with health care regime.

☐ Discharge or Maintenance Evaluation

- Patient will not develop hemorrhagic cystitis, or it will be detected early.
- Renal toxicity will be prevented or detected early.

Sensory/Perceptual Alterations, Kinesthetic

☐ Related to:

CNS toxicity from Ifosfamide (IFEX).

☐ Defining Characteristics:

Confusion, somnolence, hallucinations, weakness, incontinence, seizures and/or coma.

☐ Outcome Criteria:

Neurologic alterations will be identified early.

☐ NIC: Neurologic Monitoring

Definitions: Collection and analysis of patient data to prevent or minimize neurologic complications.

Neurologic Monitoring	
Activities	*Rationales*
Monitor neurologic and mental status including level of consciousness, orientation, response to stimuli, muscle strength, prior to, during, and post IFEX.	CNS side effects are seen in about 12% of patients.
Assess possible role other medications may have in CNS toxicity.	Medications with CNS side effects such as antiemetics, tranquilizers, narcotics, and antihistamines could increase severity of CNS toxicity.

Neurologic Monitoring	
Activities	*Rationales*
Identify patients at risk for neurotoxicity and observe closely.	Incidence of CNS toxicity is higher in patients with compromised renal function and those receiving high dose therapy.
Monitor for seizure activity.	Seizures, although less common, may be seen with rapid IFEX administration.
Provide protective environment if seizures occur (padded side rails, etc.).	Prevents injury during seizure.

Instructions, Information, Demonstration	
Activities	*Rationales*
Inform reasons for CNS side effects.	CNS side effects due to overload of toxic metabolite (chloracetaldehyde).
Instruct patient/family to report any alterations in behavior, sensation, perception.	Promotes early detection of CNS side effects and early treatment.
Inform patient/family that CNS side effects are usually completely reversible.	Knowledge will promote coping with side effects.
Instruct patient not to take any other medications, without physician's knowledge while taking IFEX.	Medications with CNS side effects may increase the severity of CNS toxicity from IFEX.

☐ Discharge or Maintenance Evaluation

- Neurologic changes, if they occur, will be identified early and treatment begun, mainly possible cessation of IFEX.

Essential Nursing Diagnoses Related to Surgery

Knowledge Deficit

(CH. 2)

☐ Related to:

Lack of knowledge about the surgical procedure.

☐ Defining Characteristics:

Verbalization of concerns/questions regarding impending surgical procedure.

Pain

(CH. 2)

☐ Related to:

Surgical intervention.

☐ Defining Characteristics:

Diaphoresis, changes in blood pressure and pulse rate, crying, moaning, protective behavior, refusal to move or change position due to pain; voices complaints of pain, discomfort.

Impaired Physical Mobility

☐ Related to:

Decreased strength, pain from surgery, and/or amputation of affected limb, surgical interruption or removal of muscles, cartilage, and ligaments.

☐ Defining Characteristics:

Inability to move, transfer, or ambulate; decreased muscle strength and/or control.

☐ Outcome Criteria:

Patient moves and transfers independently.

☐ NIC: Amputation Care

Definition: Promotion of physical and psychological healing after amputation of a body part.

Amputation Care

Activities	*Rationales*
Assess stump for swelling, signs of infection.	Promotes early detection of complications and healing.
Assess dressing for bleeding.	Hemorrhage may be indicated by excessive bleeding through dressing.
Elevate head of bed for the first 24 hours post amputation.	Prevents swelling in stump and promotes venous return.
Position affected limb in proper body alignment.	Promotes healing of stump.

Amputation Care

Activities	*Rationales*
Position patient with leg amputation on stomach three times a day.	Promotes hip flexion and prevents hip contracture.
Position below-the-knee stump in an extended position.	Prevents stump contracture.
Wrap stump several times a day.	Promotes a smooth conical-shaped stump for proper prothesis fit.
Provide an over the bed trapeze.	Assists with movement in bed.
Assist with exercises as appropriate.	Promotes mobility.
Dangle and transfer to a chair starting first day post-op.	Prevents complications of bed rest.
Start crutch walking as soon as strength allows.	Promotes independence.

☐ NIC: Cast Care— Wet

Definition: Care of a new cast during the drying period.

Cast Care—Wet

Activities	*Rationales*
Assess skin near edges of cast for friction rubs, swelling, or discoloration.	Promotes early identification of complications.
Inspect cast for signs of drainage from wound under cast.	With immediate fitting, prothesis hemorrhage is less likely due to compression, but can occur.

Cast Care—Wet	
Activities	*Rationales*
Monitor for signs of infection such as fever, increased white blood count, and/or significant stump pain.	Due to cast covering stump, wound cannot be visualized.
Expose cast to air and place on pillows.	Promotes drying of cast.
Maintain neutral alignment and encourage frequent position changes of affected extremity.	Prevents hip and joint contracture.
Refer to physical therapy as appropriate.	Promotes maximizing of patient's abilities.

☐ NIC: Pain Management

Definition: Alleviation of pain or a reduction in pain to a level of comfort that is acceptable to the patient.

Pain Management	
Activities	*Rationales*
Perform comprehensive pain assessment.	Provides information to formulate plan.
Assess for phantom limb pain, the presence of burning, cramping, or timgling where the limb was.	Promotes identification of phantom limb pain and provides information to formulate plan.
Administer analgesics as needed for pain.	Promotes comfort and increased mobility.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient in stump extension exercises.	Prevents contracture of stump.
Instruct patient on range of motion exercise.	Promotes maintenance of muscle strength.
Instruct in transfer procedures.	Promotes independence.
Instruct that phantom limb pain may start several weeks post surgery and may be triggered by pressure on other areas.	Knowledge promotes coping.
Instruct patient to ask for analgesics.	Promotes comfort.
Instruct to avoid getting cast wet.	Promotes cast integrity.

☐ Discharge or Maintenance Evaluation

- Stump heals without complications.
- Patient demonstrates range of motion and stump extension exercises.
- Pain is maintained at level acceptable to the patient.

Body Image Disturbance

☐ Related to:

Amputation, extensive resection of soft-tissue, or limb shortening for sarcoma.

☐ Defining Characteristics:

Amputation of a limb, voices concerns over others' reactions to am-

putation, affect of amputation of lifestyle and/or relationships.

☐ Outcome Criteria:

Identifies ways to cope with loss of body part.

☐ NIC: Amputation Care

Definition: Promotion of physical and psychological healing after amputation of a body part.

Amputation Care

Activities	*Rationales*
Appraise patient's adjustment to loss of limb.	Provides information to formulate nursing care plan.
Accept need for initial concealment of change as appropriate.	Supports patient's coping mechanism.
Use gentle persuasion to assist patient in viewing affected body part.	Promotes acceptance of loss.
Use proper name for affected body part.	Shows respect for loss.
Assist patient through grieving process.	Grieving for loss is a normal reaction to amputation.
Facilitate identification of needed changes in lifestyle due to amputation.	Promotes coping with loss.
Assist patient in setting of mutual goals for progressive self-care.	Promotes self-care.

Instructions, Information, Demonstration

Activities	*Rationales*
Instruct on information about technical aides or prothesis.	Promotes coping and independence.
Instruct on care of prothesis as appropriate.	Promotes independence.
Inform of amputation support groups.	Provides opportunities for interactions with persons with similar experiences.
Inform that permanent prothesis is usually fitted 12 weeks post-op.	Promotes realistic goals for resumption of normal activities.

☐ Discharge or Maintenance Evaluation

- Patient demonstrates resumption of normal activities as appropriate.
- Sensory/Perceptual Alterations: Tactile, Potential For

Risk for Sensory/Perceptual Alterations: Tactile

☐ Related to:

Possible nerve damage from limb-sparing surgery.

☐ Defining Characteristics:

Presence of paresthesia, or complaints of numbness, tingling in affected extremity.

☐ Outcome Criteria:

Affected limb will not develop numbness or tingling.

If paresthesias develop, they will be identified early.

☐ NIC: Surveillance

Definition: Purposeful and ongoing acquisition, interpretation, and synthesis of patient data for clinical decision making.

Surveillance	
Activities	*Rationales*
Conduct baseline assessment of neuromuscular function distal to surgical site.	Nerve injury could occur during surgery.
Monitor neuromuscular function as appropriate.	Promotes early identification of nerve injury.
Collaborate with physician if changes in neuromuscular function occur.	Prevents further nerve injury.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient to inform health care team if numbness or tingling occurs.	Promotes early identification of complications.
If numbness is present, instruct in safety measures such as avoiding temperature extremes, testing water with unaffected extremity; examine skin daily for injury.	Prevents injury to affected limb.

☐ Discharge or Maintenance Evaluation

- Nerve damage will be avoided or identified early.
- Affected extremity will not be injured due to lack of sensation.

Risk for Ineffective Individual Coping

☐ Related to:

Use of cadaver donor for bone graft.

☐ Defining Characteristics:

Patient voices concerns and/or rejection of cadaver source of bone graft.

☐ Outcome Criteria:

Patient verbalizes acceptance of cadaver donor for bone graft.

☐ NIC: Coping Enhancement

Coping Enhancement	
Activities	*Rationales*
Assess patient's acceptance of cadaver donor by encouraging verbalizations of fears, questions, concerns regarding cadaver donor.	Provides information for care planning.
Provide factual written and verbal explanations of the cadaver donor process.	Dispels any myths or misconceptions that patient may hold.

Coping Enhancement	
Activities	*Rationales*
Support patient in decisions regarding donor source.	Promotes patient control.

☐ Discharge or Maintenance Evaluation

- Patient will verbalize acceptance of cadaver bone graft donor.

Essential Nursing Diagnoses Related to Radiation Therapy for Sarcoma

Risk for Impaired Skin

(CH. 3)

☐ Related to:

Tissue injury from radiation therapy.

☐ Defining characteristics:

Presence of red, raw skin, or complaints of pain in radiated areas.

Fatigue

(CH. 5)

☐ Related to:

Side effects from radiation therapy.

☐ Defining Characteristics:

Patient voices complaints of weakness, tiredness, lack of energy inability to maintain normal activities.

Knowledge Deficit

☐ Related to:

Radiation therapy to affected extremity.

☐ Defining Characteristics:

Patient voices lack of knowledge and/or questions about upcoming radiation therapy.

☐ Outcome Criteria:

Patient verbalizes possible side effects and self-care management strategies should side effects occur.

☐ NIC: Radiation Therapy Management

Definition: Assisting the patient to understand and minimize the side effects of radiation treatments.

Radiation Therapy Management	
Activities	*Rationales*
Assess knowledge of radiation therapy treatment plan and possible side effects.	Provides information for individualized plan of care.
Monitor and treat skin alterations.	As radiation passes through the skin, changes may occur including redness, irritation, dryness, itching, moistness, weeping (moist desquamation), and darkening of skin.
Inform patient/family when treatment will begin, purpose, length, and duration of treatment.	Assists patient/family in planning daily activities around treatment.

Radiation Therapy Management	
Activities	*Rationales*
Explain possible side effects from radiation therapy to extremities including fibrosis, contractures sometimes leading to amputation, edema of extremity distal to site of irradiation, cessation of growth in irradiated limb, and nonhealing fractures.	Knowledge promotes informed consent.
Instruct on skin care measures during radiation therapy: 1) Keep skin clean and dry; 2) Wash affected skin with mild soap (Ivory, or Dove), rinsing well and patting skin dry; 3) Wear loose-fitting clothes to protect skin from sun; 4) NEVER apply lotion to skin (unless prescribed by the health care team) nor wash off marking during treatments.	Measures promote skin integrity during radiation therapy.
Provide written materials on radiation therapy.	Written materials reinforce verbal instructions.
Encourage rest periods as appropriate.	Fatigue is a common side effect of radiation therapy.

☐ Discharge or Maintenance Evaluations

- Skin will remain intact during radiation therapy.
- Side effects from radiation will be identified early, reported to the health care team and treated appropriately.
- Patient completes prescribed radiation treatment.

Chapter Nineteen

HIV-Related Malignancies

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AIDS Related Malignancies

Acquired Immunodeficiency Syndrome (AIDS) was recognized as a major health problem in the United States in the early 1980's. The disease is caused by a retrovirus of the lentivirus group called human immunodeficiency virus type I, now referred to as HIV. This syndrome is the result of T4 lymphocyte dysfunction resulting in deterioration of humoral and cell-mediated immunity. The host becomes susceptible to opportunistic infections and may also develop unusual malignancies, specifically aggressive lymphomas and Kaposi's sarcoma. A normally functioning immune system is thought to help the body resist malignancy. This is not the case in HIV-positive persons who have developed AIDS. As the incidence of AIDS increases the number of related cancers will also rise.

Risk Factors

Prior to widespread testing of the blood supply for this virus, many groups of people were unknowingly infected with HIV: these were patients requiring transfusion, hemophiliacs, and children of infected mothers. The transmission of HIV is now generally associated with specific lifestyles and behaviors. The homosexual and bisexual male population in the United States has modified risky sexual practices (sexually intimate acts without condom protection) through a public education effort. This behavior change has not significantly influenced needle sharing behaviors of intravenous drug abusers; however, it is predicted that this group will comprise the majority of AIDS patients in future years. Many cities in the United States have considered instituting clean needle exchange programs for this reason. Male and female prostitution, with or without intravenous drug abuse, remains a high risk lifestyle. Sexual intimacy without condom protection, especially with a partner who has had multiple sexual experiences, places an individual at risk for exposure to HIV.

Types of AIDS Related Malignancies

Kaposi's sarcoma and lymphomas are the two most commonly sited AIDS related malignancies. Increased incidence of Hodgkin's disease, and cervical cancer has also been reported on HIV positive patients. Many other case reports exist of certain cancers in AIDS patients.

Prior to the AIDS epidemic, Kaposi's sarcoma (KS) was seen in the United States in the classic pattern initially reported by Dr. Kaposi during the 1870's in Hungary. This dermatologist reported the occurrence of cutaneous purplish lesions in older men of

Italian or Eastern European Jewish descent, beginning on the arches of the feet or lower extremities. These lesions would slowly spread over the skin and ultimately involve the visceral organs. The disease was slow-growing over a period of many years. Since that time, other forms of the disease have been documented, including the African form of the disease which is seen in children and young adults. Organ transplant recipients who have received long-term immunosuppression to prevent organ allograft rejection also have been known to develop Kaposi's sarcoma.

In the United States AIDS related KS has been associated with homosexual men in about 95% of cases. The median age at presentation is 34 years old. Since the beginning of the AIDS epidemic, more than 25,000 cases of AIDS related KS have been reported to the Centers for Disease Control (CDC). However, the number of cases continues to drop. This disease is very different from the classic presentation of KS, especially in cases where organ systems are involved.

The occurrence of AIDS related lymphoma in the United States has not been associated with any particular risk group, in contrast to AIDS related KS. Females with AIDS seem to have less risk for developing a related lymphoma. The median age at diagnosis is 38 years old; in the non-AIDS population, median age at diagnosis is 56 years old. AIDS related lymphoma differs from the usual presentation in that it is generally an aggressive B-cell disease that presents in unusual sites. Central nervous system, liver, lung, gastrointestinal, and bone marrow involvement occurs more frequently in AIDS patients than the general population. Epstein Barr Virus (EBV) is thought to be a causative agent in this type of Lymphoma.

Signs and Symptoms

AIDS related KS usually presents with purplish or brownish lesions, which may appear anywhere on the skin. They often appear suddenly in a widespread pattern over the body rather than isolated to the feet or lower extremities, as in classic KS. Without treatment, these lesions tend to multiply quickly and may be painful. The lesions may be associated with a greater degree of dermal invasion. They also may be detected in the oral mucosa, gastrointestinal tract, anal mucosa, lymph nodes, heart, spleen, testes, and lungs. Pulmonary involvement is an ominous sign, associated with only a few months' survival.

The presenting signs and symptoms of AIDS related lymphoma may be similar to those experienced by non-infected persons. Fever, night sweats and/or weight loss are known as classic B symptoms of lymphoma, and these are present in 60-70% of AIDS infected patients. Lymphadenopathy is another common symptom of lymphoma. In the AIDS population it may be difficult to determine, without biopsy, whether this is related to AIDS or lymphoma. When lymphoma is present in a site outside of the lymphatic system, it is referred to as an *extranodal* site of

disease. In AIDS related lymphoma, extranodal sites of disease include bone marrow, gastrointestinal tract, anus, liver, and central nervous system (CNS). Unlike typical lymphoma, 30% of patients with AIDS related lymphoma have CNS involvement. Neurological symptoms of mental status changes, headache, cranial nerve palsies, seizures or somnolence may indicate either a CNS infection or CNS lymphoma. Surgical biopsy of the involved area, if possible, is the only method available to confirm the diagnosis.

Diagnostic Tests

The initial blood test to determine the presence of HIV infection is the enzyme-linked immunosorbent assay (ELISA) which tests for the presence of antibody. This is the screening test most commonly performed. If this test is positive it is generally repeated, then confirmed by Western blot. The length of time between infection with the AIDS virus and the development of antibodies remains unknown. For this reason persons who have been exposed to the virus should have periodic testing to confirm their status. Surgical biopsy confirms KS or lymphoma. Bronchoscopy, endoscopy or colonoscopy may be necessary to obtain biopsies of pulmonary and/or gastrointestinal lesions.

Computerized tomographic scanning (CT) may be helpful in determining the extent of KS or lymphoma. Radiographic neurologic imaging is generally completed for patients with CNS symptoms. However, brain biopsy remains the only method of determining whether the CNS lesions are due to toxoplasmosis or lymphoma.

Treatment

Treatment of HIV related malignancies has been based on the principles used in treating cancer in the non-immunocompromised patient. Radiation and chemotherapy present an even greater risk for infection in persons who are already immunocompromised by AIDS.

Kaposi's Sarcoma

Surgery has been used to remove KS lesions that have not responded to other therapies, especially when a specific lesion interferes with function or appearance. Lesions in the oral cavity that cause edema and those of the head and neck have been surgically excised. However this is not the principle mode of therapy.

KS lesions are generally radiosensitive. Dermal involvement may be treated with electron beam radiotherapy, which is superficial therapy and does not penetrate to underlying tissues. This is particularly good therapy for isolated facial lesions, having an acceptable cosmetic result. Standard radiation therapy in low doses may be used to treat internal involvement. This mode of therapy is very helpful in relieving lym-

phedema caused by a KS lesion. The goal of treatment with radiotherapy is palliative because there is no cure for the underlying disease process.

Systemic chemotherapy has demonstrated promise in the treatment of AIDS related KS. Agents may be given alone or in combination. The vinca alkaloids, vincristine (Oncovin), and vinblastine (Velban) administered once a week, alternating the drugs, have shown lengthy durations of response. The side effects of the vinca alkaloids are minimal. Etoposide (VP-16) has been a very effective single agent without significant adverse effects. It may be used initially or when other regimens have failed. Regimens containing Adriamycin (doxorubicin) are associated with a high rate of response but with greater toxicities. Other chemotherapeutic medications have included: bleomycin (Blenoxane), methotrexate (Mexate), and dacarbazine (DTIC). Intralesional chemotherapy, that is giving the agent directly into the affected area (KS lesion), with vinblastine has been used. Alpha-interferon (Intron A) is a biologic agent used in the treatment of AIDS related KS, and is sometimes used concomitantly with zidivudine (AZT).

Lymphoma

The present mode of treatment of AIDS related lymphoma is chemotherapy. The recent approach is a multi-drug combination, yet no specific regimen has yet been defined. COMET-A (cyclophosphamide, vincristine, methotrexate, etoposide, and cytosine arabinoside) has been associated with a good response rate but no survival benefit. MACOP-B (methotrexate, doxorubicin, cyclophosphamide, vincristine, prednisone, and bleomycin) and m-BACOD (methotrexate, bleomycin, adriamycin, cyclophosphamide, vincristine, and dexamethasone) have both been tested and have demonstrated response. Unfortunately, long term survival rates are disappointing and do not approach those seen in the non-AIDS population.

CNS AIDS related lymphoma is generally treated with whole brain radiotherapy and corticosteroids. Unfortunately, only 50% of patients respond to this mode of therapy. In addition to radiation therapy, CNS lymphomas may be treated with intrathecal chemotherapy. Agents used are methotrexate and cytosine arabinoside.

The biologic colony stimulating factor, GM-CSF (Leukine, Prokine) has been studied in combination with CHOP (cyclophosphamide, doxorubicin, vincristine, prednisone) chemotherapy, versus CHOP alone, for AIDS related lymphoma. The combination including GM-CSF was associated with a similar response rate but fewer occurrences of infection and neutropenia.

HIV related lymphoma is not treated with a surgical approach except for biopsy.

Investigational Studies

The AIDS Clinical Trials Group (ACTG) is conducting multicenter studies in the United States involving treatment of AIDS patients. Some of these trials are intended to evaluate different methods of treating AIDS related KS and lymphoma, and to develop new treatment regimens. The experimental work with immunotoxins and immunoconjugates may contribute to successful therapies for the future.

Complications

The complications encountered in treating AIDS related malignancies are formidable. Since AIDS causes immunosuppression, the patient is already at risk or already has experienced life-threatening infections. Further immunocompromising these patients with radiotherapy and chemotherapy may result in fatal septic episodes. Anemia in AIDS patients is often a disease related or treatment-associated problems. Epoetin alpha (Procrit) is given three times a week by subcutaneous injection until the hematocrit has returned to an acceptable level.

Essential Nursing Diagnoses Related to Diagnosis and Coping

Anxiety

☐ Related to:

Perceived threat to self due to diagnosis of AIDS and a malignancy.

☐ Defining Characteristics:

Patient verbalizes feelings of uncertainty, apprehension, fear, sleeplessness, restlessness, or other signs of anxiety.

Fear

(CH. 1)

☐ Related to:

Fear of death due to diagnosis of a malignancy in addition to the diagnosis of AIDS.

☐ Defining Characteristics:

Patient verbalizes fears of shortened life span, feeling of dread, pessimism over diagnosis.

Anticipatory Grieving

(CH. 1)

☐ Related to:

Losses related to AIDS diagnosis and an AIDS related cancer such as loss of health, income, work, intimacy, relationships, and possibly life.

☐ Defining Characteristics:

Patient exhibits or voices expressions, feelings of sadness or loss, or concerns over possible loss of work, income, life.

Ineffective Individual Coping

(CH. 1)

☐ Related to:

Diagnosis of AIDS related cancer, uncertain prognosis.

☐ Defining Characteristics:

Inability to meet basic care needs, fatigue, verbalization of inability to cope.

Knowledge Deficit

(CH. 3, 4,)

☐ Related to:

AIDS related cancer and its treatment.

☐ Defining Characteristics:

Voices questions about treatment for AIDS related KS or lymphoma.

Hopelessness

☐ Related to:

Diagnosis of AIDS and an AIDS related malignancy.

☐ Defining Characteristics:

Expresses feelings of despair, voices concerns of having a disease for which no cure is available.

☐ Outcome Criteria

Identifies strategies to cope with dismal diagnosis.

☐ NIC: Hope Instillation

Definition: Facilitation of the development of a positive outlook in a given situation.

Hope Instillation	
Activities	*Rationales*
Assist patient/family to identify areas of hope in life.	Provides concrete references.
Expand the patient's repertoire of coping mechanisms.	Promotes self-esteem through sense of control.
Assist the patient to devise and revise goals.	
Help the patient to expand spiritual self.	
Facilitate the patient/family reliving and savoring past achievements and experiences.	Promotes a sense of self worth.
Employ guided life review and/or reminiscence.	
Involve the patient actively in his or her own care.	Promotes sense of control.

Instructions, Information, Demonstration	
Activities	*Rationales*
Teach reality recognition by surveying the situation and making contingency plans.	Prevents the development of unrealistic expectations.
Demonstrate hope by recognizing the patient's intrinsic worth and viewing the patient's illness as only one facet of the individual.	Promotes sense of self worth.
Inform patient/family of support groups and community resources.	Provides opportunity to be involved with support groups.

☐ Discharge or Maintenance Evaluation

- Identifies areas of hope in life.

Altered Family Processes

(CH. 1)

☐ Related to:

Impact of AIDS and AIDS associated malignancy diagnosis.

☐ Defining Characteristics:

Family systems unable to meet physical, emotional needs of patient, or verbalization by family members of inability to cope.

Spiritual Distress

(CH. 15)

☐ Related to:

Having a disease without a known cure, shortened life expectancy.

☐ Defining Characteristics:

Patient expresses concern with meaning of life/death and/or belief systems, anger towards God, mood swings, and difficulty handling emotions.

Essential Nursing Diagnoses Related to Treatment

Body Image Disturbance

☐ Related to:

Loss of weight, KS lesions especially on face, alopecia due to chemotherapy or whole brain radiation therapy.

☐ Defining Characteristics:

Patient voices concerns about changes in physical appearance, expresses fear of rejection or reaction by others to physical changes.

☐ Outcome Criteria

Body image improved, preserved and maintained.

☐ NIC: Body Image Enhancement

Definition: Improving a patient's conscious and unconscious perceptions and attitudes toward his or her body.

Body Image Enhancement	
Activities	*Rationales*
Encourage patient to express feelings regarding differences in appearance and expected impact on lifestyle.	Promotes integration of changes into lifestyle.
Evaluate patient's feelings regarding changes in appearance and its effect on sexual identity, relationships, and body image.	Provides background date on which to formulate care plan.
Assist patient to separate physical appearance and feelings of personal worth.	Promotes positive self image.
Give permission to grieve over loss of previous appearance.	Allows patient needed time to cope with losses.
Allow patient to ventilate negative emotions such as anger and guilt.	Promotes coping as these are normal reactions to loss.
Refer to social worker for support in emotional, financial, vocational and adjustment issues.	Promotes coping by providing support services to assist with changes.
Inform patient that hair will grow back following chemotherapy.	Provides information.
Inform patient of community AIDS resources.	Promotes community support.

☐ Discharge or Maintenance Evaluation

- Identifies community resources to support AIDS patient with a malignancy.

Altered Nutrition: Less Than Body Requirements

(CH. 8)

☐ Related to:

AIDS, diarrhea from infection, malignancy, or treatment, anorexia, early satiety.

☐ Defining Characteristics:

Anorexia, vomiting, loss of weight, reported decrease in food intake, early satiety, presence of mouth soreness and/or ulcerations, oral infection.

High Risk for Infection

(CH. 4, 13)

☐ Related to:

Immunosuppression from the AIDS virus, further immunocompromised due to chemotherapy or radiation therapy.

☐ Defining Characteristics:

Granulocytopenia, an absolute granulocyte count (AGC) below 1,000 cells/mm^3, neutropenia, an absolute neutrophil count (ANC) below 1,000 cells/mm^3

Activity Intolerance

(CH. 4)

☐ Related to:

Fatigue secondary to treatments for an AIDS associated cancer.

☐ Defining Characteristics:

Verbal report of fatigue or weakness, abnormal heart rate or blood pressure in response to activity, exertional dyspnea.

Pain

☐ Related to:

Fevers associated with AIDS virus or infection.

☐ Defining Characteristics:

Patient voices discomfort such as myalgias, muscle aches, fever, chills, or rigors.

Knowledge Deficit

☐ Related to:

Chemotherapy administration into a KS lesion.

☐ Defining Characteristics:

Verbalizes lack of information about treatment and potential side effects of intralesional chemotherapy.

☐ Outcome Criteria:

Patient is able to verbalize treatment plan and goals of therapy.

☐ NIC: Medication Administration - Intralesional**

Definition: Administration of chemotherapy directly into the lesion.

Not yet an accepted NIC

Medication Administration - Intralesional	
Activities	*Rationales*
Position patient so that area to be injected is well supported.	Promotes comfort.
Cleanse area to be injected.	Prevents infection.
Monitor patient for reactions during injection.	Promotes early recognition of potential problems.
Document patient response to treatment.	Provides information.

Instructions, Information, Demonstration	
Activities	*Rationales*
Teach patient purpose, benefits, and rationale for this therapy.	Increased knowledge promotes understanding.
Inform patient of both immediate and potential delayed effects.	Provides selfcare information.

☐ Discharge and Maintenance Evaluation

- Patient is able to verbalize understanding of procedure.

Impaired Skin Integrity

(CH. 2)

☐ Related to:

Presence of KS lesions, herpes infection.

☐ Defining Characteristics:

Disruption of skin surface by presence of KS lesion or herpetic infection, perirectal lesions due to infection or diarrhea.

High Risk for Injury

(CH. 17)

☐ Related to:

Seizures, disorientation due to AIDS associated CNS lymphoma or toxoplasmosis infection.

☐ Defining Characteristics:

Seizure activity with a change in consciousness, change in sensation of a body part, muscle weakness, falls.

Altered Thought Processes

(CH. 17)

☐ Related to:

AIDS associated CNS lymphoma, toxoplasmosis infection, physiological changes.

☐ Defining Characteristics:

Disorientation to time, place, circumstances and events, changes in consciousness, inappropriate affect, altered attention span, memory deficit.

Risk for Decreased Cardiac Output

☐ Related to:

Septic shock due to overwhelming sepsis in the immunocompromised patient.

☐ Defining Characteristics:

Variations in blood pressure, jugular vein distension, decreased peripheral pulses, arrythmia, color changes in skin and mucous membranes, cold clammy skin, oliguria, dyspnea, rales, restlessness.

Chapter Twenty

Rehabilitation

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Rehabilitation Needs of the Oncology Patient

The goal of care of the oncology patient has been to cure the disease to preserve life. However, in the process of saving a life, the quality of that life has sometimes been forgotten. Now patients are becoming partners in their care, insisting on knowing the potential side effects of treatment that may affect their quality of life. Armed with this information, they can make choices for themselves based on their values and beliefs. Rarely will a patient allow the physician to do what the physician thinks is best without question. This participation in one's own care often transfers well into the realm of rehabilitation. The national Cancer Act in 1971 and the Rehabilitation Act of 1973 began the trend that has made rehabilitation an integral part of the cancer patient's care. Prior to the early 1970's (and unfortunately in some cases today) the oncology patients were not thought of as people who were going to live long enough to benefit from rehabilitative efforts. Now, in the United States, more than half of patients treated for malignancies have long-term disease-free survivals. Their ability to return to an enjoyable lifestyle often is dependent on early rehabilitative intervention.

Greater numbers of oncology patients are being treated as outpatients, spending less time on inpatient units. Therefore the nurse must develop a quick assessment strategy to identify rehabilitative needs. These needs are not limited to the obvious physical ones and include psychological, vocational, spiritual, social, and sexual needs. Each individual's identity is unique and multifaceted and is based on cultural, emotional and spiritual back- grounds. Often a relationship needs to be established before an individual will share this information with health care providers. When a patient's priorities have been identified, a realistic plan may be developed. The plan should reflect attainable goals based on the patient's condition. For example, the goal for a testicular cancer patient successfully treated with chemotherapy may be his returning to work, whereas a brain tumor patient's goal may be to walk independently.

Rehabilitation has been defined as the development of the disabled individual to the fullest physical, psychological, social, vocational, and educational potential. Rehabilitative care can include almost every health care specialty. Some persons will require more services than others. No oncology patient should be treated without consideration of his or her short- or long-term rehabilitative needs.

The following nursing diagnoses relate to the most basic of a person's needs.

Essential Nursing Diagnoses Related to Role Changes

Ineffective Individual Coping

(CH. 1)

☐ Related to:

Diagnosis and treatment of cancer.

☐ Defining Characteristics:

Inability to meet basic needs, dependency, chronic fatigue, worry, anxiety, poor self-esteem, verbalization of inability to cope.

Altered Family Processes

(CH. 1)

☐ Related to:

Impact of cancer diagnosis and uncertain prognosis.

☐ Defining Characteristics:

Family systems unable to meet physical, emotional needs of patient, or verbalization by family members of inability to cope.

High Risk For Caregiver Role Strain

(CH. 21)

☐ Related to:

Patient's illness, constant care needs of patient, lack of respite care.

☐ Defining Characteristics:

Caregiver verbalizes concern over lack of sleep, fear of inability to meet patient's needs, and/or need for respite care.

Impaired Home Maintenance

☐ Related to:

Altered role of adult member of household, caring for person with cancer in the home, financial changes.

☐ Defining Characteristics:

Verbalization of inability to care for patient at home, lack of knowledge regarding home services.

☐ Outcome Criteria:

Caregiver verbalizes an understanding of discharge plan.

Caregiver knows who to contact for problems.

☐ NIC: Discharge Planning

Definition: Preparation for moving a patient from one level of care to another within or outside the current health care agency.

Discharge Planning	
Activities	*Rationales*
Assist patient/family/significant others to prepare for discharge.	Promotes awareness of change.

Discharge Planning	
Activities	*Rationales*
Collaborate with patient/family and health team members in planning for continuity of care.	Prevents misunderstanding of discharge plan.
Identify patient/family teaching needed for post-discharge care.	Promotes self care.
Communicate patient's discharge plan to appropriate agencies.	Provides for continuity of care.
Document patient's discharge plans in medical record.	Promotes an awareness by staff.
Develop a plan that considers the social and financial needs of the patient and family.	Prevents unrealistic expectations.
Arrange for post-discharge evaluation as appropriate.	Promotes continuity of care.

Instructions, Information, Demonstrations	
Activities	*Rationales*
Teach patient/family aspects of care necessary, postdischarge.	Promotes understanding of care plan.
Give written instructions.	Provides reinforcement.
Instruct patient/family about medication administration.	Promotes administration of ordered medications.

Instructions, Information, Demonstrations	
Activities	*Rationales*
Demonstrate procedures to be done at home.	Provides information.

☐ NIC: Home Maintenance Assistance

Definition: Helping the patient/family to maintain the home as a clean, safe, and pleasant place to live.

Home Maintenance Assistance	
Activities	*Rationales*
Involve patient/family in deciding home maintenance requirements.	Promotes realistic plan.
Suggest necessary structural changes in home, if appropriate.	Promotes safety.
Assist family members to develop realistic expectations of themselves in performance of their roles.	Prevents caregiver role strain.
Order homemaker services as appropriate.	Provides assistance in the home.
Help family to utilize social support network.	Provides support.
Identify patient/family teaching needed for post-discharge care.	Promotes self care.
Communicate patient's discharge plan to appropriate agencies.	Provides for continuity of care.

Home Maintenance Assistance	
Activities	*Rationales*
Document patient's discharge plans in medical record.	Promotes an awareness by staff.
Develop a plan that considers the social and financial needs of the patient and family.	Prevents unrealistic expectations.
Arrange for post discharge evaluation as appropriate.	Promotes continuity of care.

Instructions, Information, Demonstration	
Activities	*Rationales*
Teach patient/family aspects of care necessary, post discharge.	Promotes understanding of care plan.
Give written instructions.	Provides reinforcement.
Instruct patient/family about medication administration.	Promotes administration of ordered medications.
Provide information on respiet care as needed.	Prevents caregiver role strain.

☐ NIC: Support System Enhancement

Definition: Facilitation of support to patient by family, friends and community.

Support System Enhancement	
Activities	*Rationales*
Assess psychological response to situation.	Provides information.
Assess availability of support system.	
Determine adequacy of existing social networks.	Prevents unrealistic expectations.
Identify degree of family support.	
Identify degree of family financial support.	
Determine support systems currently used.	Promotes understanding of needs.
Determine barriers to using support systems.	
Refer to a community-based treatment/rehabilitation program.	Provides services close to home.

Instructions, Information, Demonstration	
Activities	*Rationales*
Inform patient/caregiver of community resource agencies.	Provides information.
Explain to concerned others how they can help.	

- ☐ Discharge or Maintenance Evaluation
  - Caregiver is able to care for patient at home.
  - Caregiver utilizes support services as needed.

- ☐ Outcome Criteria:

  Patient's body will be washed.

- ☐ NIC: Bathing

  Definition: Cleaning of the body for purposes of relaxation, cleanliness, and healing.

Essential Nursing Diagnoses Related to Altered Ability to Care for Self

Altered Thought Processes

(CH. 17)

- ☐ Related to:

  Neurological complications of cancer or its treatment.

- ☐ Defining Characteristics:

  Disorientation to time, place, circumstances and events, changes in consciousness, inappropriate affect, altered attention span, memory deficit.

Self Care Deficit, Bathing/Hygiene

- ☐ Related to:

  Psychological or physical impairment of function due to cancer diagnosis or its treatment.

- ☐ Defining Characteristics:

  Inability to bathe or perform routine hygienic activities.

Bathing	
Activities	*Rationales*
Assist with chair shower, tub bath, bedside bath, standing shower, or sitz bath as needed.	Promotes cleanliness.
Wash hair as needed.	
Administer foot soaks as needed.	
Assist with perineal care.	Prevents infection.
Monitor skin condition while bathing.	Promotes early recognition of potential problems.
Apply lubricating ointment and cream to dry skin areas.	Prevents breaks in skin.
Offer hand washing after toileting and before meals.	Promotes cleanliness.

Instructions, Information, Demonstration	
Activities	*Rationales*
Demonstrate bedside bath, use of shower chair, or sitz bath to patient/caregiver.	Provides information.

☐ Discharge or Maintenance Evaluation

- Patient will have regular baths.

Self Care Deficit, Dressing/Grooming

☐ Related to:

Psychological or physical impairment of function due to cancer diagnosis or its treatment.

☐ Defining Characteristics:

Inability to dress or groom self.

☐ Outcome Criteria:

Patient will be dressed and groomed.

☐ NIC: Dressing

Definition: Choosing, putting on, and removing clothes for a person who cannot do this for self.

Dressing	
Activities	*Rationales*
Assess patient's ability to dress self.	Provides information.

Dressing	
Activities	*Rationales*
Dress patient after personal hygiene completed.	Provides covering for body.
Encourage participation in selection of clothing.	Promotes independence.
Dress affected extremity first.	Promotes ease of dressing.
Dress in personal clothing as appropriate.	Promotes self-esteem.
Change patient's clothing at bedtime.	Provides normal routine.
Select shoes/slippers conducive to walking and safe ambulation.	Provides support to feet.

Instructions, Information, Demonstration	
Activities	*Rationales*
Demonstrate dressing of patient to family/caregiver.	Provides information.

☐ Discharge or Maintenance Evaluation

- Patient will be dressed

Self Care Deficit, Feeding

☐ Related to:

Psychological or physical impairment of function due to cancer and/or its treatment.

- ☐ Defining Characteristics:

  Inability to feed self.

- ☐ Outcome Criteria:

  Patient will have adequate nutritional intake.

- ☐ NIC: Feeding

  Definition: Providing nutritional intake for patient who is unable to feed self.

Feeding

Activities	*Rationales*
Identify prescribed diet.	Prevents feeding of inappropriate food.
Create a pleasant environment during mealtime (e.g., put bedpan, urinal out of sight).	Promotes appetite.
Provide for adequate pain relief prior to meals as appropriate.	
Provide for oral hygiene prior to meals.	
Ask patient preference for order of eating.	Promotes nutritional intake.
Maintain in an upright position with head and neck flexed slightly forward during feeding.	Promotes chewing and swallowing.
Place food in the unaffected side of mouth as appropriate.	
Use bib as appropriate.	Protects clothing.
Provide a drinking straw as needed or desired.	Promotes fluid intake.

Feeding

Activities	*Rationales*
Feed unhurriedly.	Promotes food intake.
Encourage family to feed patient.	

- ☐ NIC: Self Care Assistance — Feeding

  Definition: Assisting a person to eat.

Self Care Assistance—Feeding

Activities	*Rationales*
Set food tray and table attractively.	Promotes appetite.
Fix food tray as necessary, such as cutting meat or peeling an egg.	Assists in eating.
Avoid placing food on person's blind side.	Lets patient see food.
Describe location of food on tray for person with vision impairment.	Promotes independence in eating.
Provide foods at most appetizing temperature.	Promotes nutritional intake.
Provide adaptive devices to facilitate patient's feeding self (e.g., long handles, handle with large circumference, or small strap on utensils).	Promotes independence.
Use unbreakable and weighted dishes as necessary.	Prevents spillage.

Self Care Assistance—Feeding	
Activities	*Rationales*
Provide frequent cueing and close supervision as appropriate.	Promotes eating.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient/family in any dietary restrictions.	Provides information on recommended diet.
Teach patient/family about high protein, high calorie supplements.	Promotes caloric intake.

☐ Discharge or Maintenance Evaluation

- Patient will have adequate nutritional intake.
- Patient will maintain weight.

Self Care Deficit, Toileting

☐ Related to:

Psychological or physical impairment of function due to cancer and/or its treatment.

☐ Defining Characteristics:

Patient is unable to independently participate in toileting.

☐ Outcome Criteria:

Patient will regularly eliminate urine and stool.

☐ NIC: Self Care Assistance—Toileting

Definition: Assisting another with elimination.

Self Care Assistance—Toileting	
Activities	*Rationales*
Remove essential clothing to allow for elimination.	Prevents elimination on clothing.
Assist patient to use toilet/bedpan/fracture pan/urinal at specified intervals.	Promotes elimination.
Provide privacy during elimination as appropriate.	
Facilitate toilet hygiene after completion of elimination.	Promotes cleanliness.
Replace clothing on patient after elimination.	Provides assistance with dressing.
Flush toilet, cleanse elimination utensil.	Promotes cleanliness.

Instructions, Information, Demonstration

Activities	*Rationales*
Institute a toileting schedule.	Promotes regular elimination.
Instruct patient/family in toileting routine.	Promotes regular elimination.
Demonstrate use of urinal, bed pan, fracture pan, or external catheter.	Provides information.

☐ Discharge or Maintenance Evaluation

- Patient has a regular elimination schedule.

Risk for Injury

☐ Related to:

Psychological or physical limitations due to cancer and/or its treatment.

☐ Defining Characteristics:

Gait disturbances, seizures, syncope, loss of balance, dizziness, visual deficit.

☐ Outcome Criteria:

Patient will not sustain injury.

☐ NIC: Environmental Management Safety

Definition: Monitoring and manipulation of the physical environment to promote safety.

Environmental Management—Safety

Activities	*Rationales*
Identify the safety needs of patient, based on level of physical and cognitive function, past history, and behavior.	Provides information.
Identify safety hazards in the environment.	Promotes appropriate interventions.
Remove hazards from environment when possible.	Prevents injury.
Modify the environment to minimize hazards and risks.	
Provide adaptive devices (e.g., shower rails, handrails).	Increases the safety of the environment.
Use protective devices (e.g., siderails, locked doors) to physically limit mobility or access to harmful situations.	

Instructions, Information, Demonstration

Activities	*Rationales*
Demonstrate use of side rails to family/caregiver.	Promotes safety.
Inform family/caregiver of potential hazards in the environment.	

☐ NIC: Fall Prevention

Definition: Instituting special precautions with patient at risk for injury from falling.

Fall Prevention	
Activities	*Rationales*
Identify cognitive or physical deficits of the patient that may increase the potential of falling in a particular environment.	Promotes awareness of potential problems.
Identify characteristics of environment that may increase the potential for falls (e.g., slippery floors, scatter rugs).	
Monitor gait, balance, and fatigue level with ambulation.	Provides information.
Assist unsteady individual with ambulation.	Provides physical support if necessary.
Provide assistive devices to steady gait (e.g., cane, walker).	
Lock wheels of wheelchair or bed during transfer of patient.	Prevents falls.
Place articles within easy reach of patient.	
Provide elevated toilet seat for easy transfer.	Promotes safe transfers.
Provide chairs of proper height, with backrests and armrests.	

Fall Prevention	
Activities	*Rationales*
Provide bed mattress with firm edges for easy transfer.	
Use siderails of appropriate height and length.	Prevents falls from bed.
Provide the dependent patient with a means of summoning help when caregiver is not present (e.g., call bell, intercom).	Prevents feeling of isolation.
Avoid clutter on floor surface.	Prevents tripping.
Provide adequate lighting for increased visibility.	

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient to call for assistance with movement as appropriate.	Prevents falls.
Teach patient how to fall so as to minimize injury.	Prevents serious injury.

☐ Discharge or Maintenance Evaluation

- Patient will not fall.

Chapter Twenty-One

Care of the Terminally Ill

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Care of the Terminally Ill Cancer Patient

Cancer as previously discussed is incurable about 50% of the time. For many patients with cancer there comes a time when all conventional treatments have been tried and have failed. The focus of the patient's care shifts from active treatment to supportive care. Some patients are unable or unwilling to accept that there is nothing more that can be done to actively treat the tumor with the goal of control or cure. They choose to continue with every possible aggressive/curative treatment measure until the last few days of life. If no conventional treatment is available, they may seek out experimental or unconventional treatments.

These patients may take a chance on experimental treatments such as phase-1 drug-testing programs. The goal of phase-1 trials is to find the maximum tolerated dose of a new drug or the amount of medication a patient can receive without life-threatening side effects. These trials focus on the newest drugs that often have never before been given to humans, although these agents have demonstrated activities against tumors in animal models. Therefore, it is not known what type of cancer, if any, the drug will act upon and the amount of medication needed. For many patients such trials are their only hope and they are willing to try it.

Some ethical dilemmas are inherent in these types of trials. One dilemma is how to weigh the benefits versus the risks of treatment when the risk of potentially life-threatening complications and side effects are unknown. Also, is it ethical to experiment on terminally ill patients who are so vulnerable and often willing to try anything? Another question involves the concept of informed consent: do patients truly understand the purpose of phase-1 trials? "No," said a recent survey of patients undergoing phase-1 clinical trials at the University of Chicago Hospitals, one of America's six Comprehensive Cancer Care Centers that offer phase-1 trials. When asked the purpose of the clinical trial they were participating in, most patients stated they were there to get a drug to help themselves. The reality is that these trials are more likely to benefit future patients than the patients undergoing the trial. Some patients do take the medication for altruistic reasons. As one patient stated in the survey, "I look at (drug trials) on the basis that I'm fortunate enough that I can assist other people, regardless of the outcome for me." Many ethicists feel that despite such questions, it is ethical to treat terminally ill patients in these trials because patients are capable, regardless of their vulnerability, of participating in these decisions and making informed choice.

Nurses play a major role in ensuring that patients truly are making informed choices. Nurses, as patient advocates, can make sure the patient receives a written consent and can voice an understanding of what is in the consent. We can ensure that all the patient's questions are answered and, whenever possible, that treatments are adjusted to meet the patient's individual needs. A hard reality we all must accept is that without phase-1 trials, no new medications would ever be developed and medical science would not progress beyond the status quo. As one wise and wonderful patient once stated as he was about to become the first patient ever to receive a new drug, "For every drug on the market today, someone had to be willing to be the first person to try it. Why not me? Who knows, maybe it just might help. I know what will happen if I do nothing. At least I'm going down fighting." We, as nurses, must support our patients' choices even if they are not the same choices we think we would make.

Unconventional treatments are additional options patients may seek out in the last days of living. This can prove very costly with little benefit to the patient. Some of these treatments may not harm the patient and may provide therapeutic value. Nurses need to be patient advocates. We need to assist the patient in evaluating alternative options in a logical manner by providing factual information about the treatments and encouraging patients to discuss options with their doctor.

For patients able to accept that there is no more that can be done to actively treat the cancer, hospice may be an excellent option for living their last days to the fullest. The hospice philosophy, as summed up by Dr. Cicely Saunders, a major founder of the hospice movement, is that the patient matters to the last moment of his or her life. Hospice will do all it can, not only to help the patient die peacefully, but to live until they die. Hospice is not a building or a place but rather a concept of care. A key concept in hospice care is the multidisciplinary approach to treatment, including doctors, nurses, home health aides, social workers, clergy, nutritionists, physical therapists, occupational therapists, speech therapists, volunteers, and pharmacists. As the focus of care shifts from active treatment to supportive care, the hospice team works with patients and families to make each patient's final months and days as happy, comfortable, and meaningful as possible. After death, hospice continues to provide support to the grieving family as well.

Symptom control, especially pain management, are essential to ensuring the last days of living are meaningful. By helping to alleviate pain and discomfort and offering psycho-social support, hospice reduces the patient's fear of abandonment and makes them feel more secure. The National Hospice Organization reports that each year more Americans are turning to hospice. Of 246,000 patients and their families served by hospice, 78% had cancer.

Most hospices specify that a person is eligible for hospice if his or her life expectancy is less than six months and has a person

willing to assume the role of primary caregiver. Some hospices require approval of the patient's primary physician. Others have medical directors managing the patient's care. The home model of hospice care is the primary model in the U.S. Most hospices have an inpatient care unit available if the patient needs short-term pain management, symptom control and/or respite care. Most experts agree that hospice provides the best form of care available for the dying.

Pain management and symptom control are the foundation of high quality hospice care. It is impossible to address a patient's psychosocial needs if the patient is in constant, uncontrolled discomfort. Discomfort may be due to pain, nausea, vomiting, diarrhea, mouth sores, or various other problems. The most common problems experienced by the hospice patient in order of frequency include weight loss, pain, anorexia, dyspnea, cough, constipation, weakness, nausea, vomiting, edema, ascites, pleural effusion, insomnia, incontinence, dysphagia, skin breakdown, hemorrhage, drowsiness, paralysis, jaundice, and diarrhea. The approach to treating these problems is very different from conventional cancer treatment whose aim is to find the cause and treat it. Many of these problems can be directly attributed to the cancer. If the cancer is resistant to treatment, the approach must be to find a way to manage the symptom since the cause can't be treated. It is difficult at times to do this and may take several attempts before adequate control is obtained.

The best way to address these problems is with a multidisciplinary approach. However, it is the nurse who usually is on the scene leading the team. The nurse identifies the time at which other team members are needed and coordinates the care to best meet the patient's needs. The most common problems of the person in the last days of living will be addressed and nursing care highlighted.

Gastrointestinal Problems

Gastrointestinal problems are common in the last days of living. These include anorexia, nausea, vomiting, oral infections such as candida and herpes zoster, constipation, bowel obstruction, compression of the stomach, and weight loss. Anorexia is a problem for most patients for a variety of reasons. The patient's appetite may be depressed by breakdown of the tumor's by-products as the cancer grows. These tumor peptides seem to depress the appetite, cause early satiety, and taste changes.

Tumors in the abdominal cavity or in the liver, as they grow larger, can actually compress the stomach and intestines, or cause bowel obstructions leading to nausea and vomiting. Liver and kidney failure both contribute to anorexia and cause nausea. In their immunosuppressed state, due to the disease or its treatment, cancer patients frequently contract mouth infections like candida or herpes, making it difficult to eat. Medications

used to treat pain and other symptoms can cause nausea, vomiting, and constipation. All these problems contribute to a decreased intake and, usually, to weight loss.

Anorexia, nausea, and vomiting are very difficult to treat and may affect the entire family. Many families correlate food with love and may perceive a patient's rejection of food they have lovingly prepared as a rejection of their love. This can lead to anger and frustration for the caregivers. The patient may also become frustrated and angry over the many efforts to make him or her eat and the constant arguing or worry over food. The weight-loss is a constant reminder for the patient and his or her family of the downhill course of the patient's disease. The patient's inability to eat and family's inability to help also leads to more frustration for both. Therefore, addressing these problems requires education of the causes, the setting of realistic goals, and emotional support for the family, as appropriate.

Respiratory Problems

About half of all cancer patients in their last days of living experience respiratory problems, such as dyspnea and coughing, for a variety of reasons. Patients with either primary lung cancer or metastatic disease to the lung may experience difficulty in breathing because the tumor causes blockage of a bronchus or involvement of a great deal of lung tissue with the disease process. Metastases can also invade into the pleura leading to pleural effusion. Immobility can lead to pneumonia or pulmonary emboli resulting in respiratory distress. Other causes of dyspnea in the end stage person with cancer include anemia, cardiac failure, pericardial effusion, superior vena cava obstruction, pneumothorax, and ascites in the abdominal cavity pushing up on the diaphragm, impeding respirations. Whenever possible the cause of the problem should be treated to ease respiration. However, this is not always possible when the cause is related to an untreatable tumor. Palliative measures such as oxygen, should be used to promote comfort. These symptoms can be very distressing for both patient and family, requiring frequent assurances from the hospice nurse.

Sleep and Rest Problems

Weakness, fatigue, and insomnia are frequent problems for cancer patients for a variety of reasons including poor control of other symptoms such as pain, incontinence, restlessness, night sweats, coughing, and/or shortness of breath. Fear of death and loneliness are often worse at night, and nightmares are not uncommon. Boredom and lack of activity during the day also can contribute to difficulty sleeping at night. Sleep disturbances create difficulties for family as well as the patient, sometimes leading to a breakdown in the home care arrangements as caregivers become exhausted from lack of sleep. Treatment needs to be centered

around identifying the cause for sleeplessness and working closely with the patient and family to find a plan that addresses the patient's particular concerns.

Skin Problems

Due to immobility, poor nutritional status, edema and diminished circulation decubiti are sometimes a problem. Prevention by instruction of the patient and caregivers is the key to this problem. The nurse needs to show the caregivers how to position patients who are unable to turn themselves. The importance of keeping incontinent patients clean and dry must be stressed with the caregivers as well. Fungating wounds occur with some patients with cancer but are most common in those with breast cancer. These lesions cause distress to the patient and their families due to their noxious odor and drainage. Special care of these lesions can reduce the odors and make them more tolerable to the patient and their family.

Cancer Pain

It is estimated that between 50-70% of the terminally ill patients with cancer will have pain, with about 20% experiencing "agony". Pain can be so debilitating that simple acts like eating, walking, and living become intolerable. Depression and anxiety may make it difficult to sleep and some patients have even become suicidal. The successful treatment of severe pain requires interdisciplinary expertise. The multidisciplinary hospice team is for managing pain. Effective pain management requires careful assessment, meticulous planning, and provision of emotional, social, and spiritual support.

A key to understanding pain is accepting that pain is personal and unique to the person experiencing it. McCaffrey expresses this best in her definition of pain as "whatever a person says it is, existing whenever he or she says it does." The patient is the authority about his or her pain - not the nurse or the doctor. There are two types of pain, acute and chronic. The person with cancer can experience acute or chronic pain or both at the same time. Acute pain is intense, sharp, localized, and may last from one second to several weeks. Chronic pain can be a continuum from ache to agony. It is frequently described as dull or aching and is not usually localized. Chronic pain can be as severe as acute pain and lasts months to years. The pain may become the focal point of living and can cause great frustration for the patient. Health care workers often find chronic pain more difficult to treat and may become frustrated as well.

The effects of the disease can cause pain in the cancer patient. There are several reasons for this including compression of nerve roots, invasion of the tumor causing compression and obstruction of blood vessels or gastrointestinal or genitourinary viscus, necrotic tissue caused by the tumor or infection, and inflammation of pain sensitive structures. Side effects from cancer treatments may cause pain as well. Surgical proce-

dures, radiation treatment, and even chemotherapy can cause pain in some patients. Whenever possible, the source of the patient's pain should be identified and treated if possible.

Careful assessment of pain is essential. Pain assessment includes questions regarding when the pain occurs, its severity, duration, and location. What makes it worse, what helps, accompanying symptoms, its effect on activities of daily living should be assessed. If the patient has been taking any medications, their effectiveness should be discussed. A variety of excellent tools are available in the literature and should be employed. Once a complete assessment has been performed, a plan can be developed to meet the patient's needs.

An important concept in chronic pain management is round-the-clock dosing for round-the-clock pain. Administering pain medications on a regular schedule may be necessary and often decreases the total medication requirement. The three main groups of analgesics are nonnarcotics or nonsteroidal anti-inflammatory drugs, narcotics or opioids, and adjuvant analgesics. Nonnarcotics or nonsteroidal anti-inflammatory drugs work primarily at the peripheral nervous system level. Narcotics or opioids work at the central nervous system level. Adjuvant analgesics represent a diverse group of drug classes that have other indications but are analgesic under certain circumstances. These include tricyclic antidepressants, anticonvulsants, oral local anesthetics, and neuroleptics. Patients may benefit from a combination of the two or all three of the groups, as the cause of pain may have many factors.

Most pain experts recommend a 3-Step Analgesic ladder for managing cancer pain. The first step for patients with mild to moderate pain is to treat the patient with a nonopioid analgesic combined with an adjuvant analgesic as appropriate. Patients who fail the first step regimen, or who present with moderate to severe pain, should use the second step and be treated with an oral opioid combined with a nonopioid analgesic, as well as an adjuvant analgesic as appropriate. Step 3 is for patients who fail step 2 or present with very severe pain and should be treated with an opioid, with or without a non-opioid analgesic, or with an adjuvant analgesic as appropriate. The preferred route of administration is oral. However, rectal, sublingual, dermal, and parental routes may be employed as needed.

While medications are the mainstay of pain management, many behavioral approaches may prove beneficial. Behavioral approaches include biofeedback, hypnosis, guided imagery, relaxation techniques, and music, play, or art therapy. At times, radiation therapy or surgery may be beneficial. Successful pain management in the cancer patient requires an interdisciplinary approach that uses a variety of pain relief techniques. The patient in pain must be involved with all aspects of the treatment plan. The treatment plan needs to be constantly reevaluated and revised to best meet the patient's needs as the disease progresses and pain increases.

Emotional Support

An important component of the hospice program is the provision of emotional support for the patient and his or her family and friends as they deal with many losses. Death is the ultimate loss and while it is difficult for the family to lose a loved one, we must remember the patient is losing everything - loved ones, family, friends, life, work, and their future.

A large part of the hospice worker's time may be spent listening to the patient and family. Helping the patient and family identify support systems is a vital part of the role. Hospice workers also need to reaffirm to the caregivers that they are doing a good job. Counseling should include instruction about the grieving process and facilitation of anticipatory mourning, a normal process associated with the dying process. The dying person may feel more comfortable talking to the nurse than to a family member. However, the nurse needs to foster open communication with the patient and family as much as possible without losing the patient's trust. The nurse can help the dying person and his or her family formulate realistic goals to make the most of the time remaining. Dying persons have a need for love and affection. The hospice nurse needs to encourage the patient and partner to find a way of expressing their love and affection.

Once it becomes apparent that death is near, the hospice nurse can assist in many ways. These include assisting the family in discussing funeral arrangements, offering appropriate spiritual assistance, such as contacting clergy, or simply praying with the patient or family. Explaining the probable signs and symptoms of impending death to the family will help them cope. The nurse can help the family maintain a sense of control and decrease anxiety by sharing pertinent knowledge. Most families will realize that no one can know exactly when someone will die and appreciate any information that assists them in planning. Physical care remains important and assistance from the hospice nurse at this time may be appreciated. When death finally occurs it is usually a time of relief and grieving. Often the hospice nurse is called upon to provide emotional support to the family. The hospice nurse can also assist the family with the legalities of death and in some states even sign the death certificate. Nursing support of the family continues after death. This may include attending the funeral or memorial service, written notes or visits several weeks after death, and contact on special dates in the year after death such as birthdays and anniversaries. Some hospices have formal bereavement programs that include monthly gatherings and support groups.

The care of the patient in the last days of living can be very challenging. If the patient chooses to pursue active curative treatment right up to the last days, their care will be as outlined in previous chapters specific to the type of cancer with which the patient has been diagnosed. For those patients choosing hospice as an alternative, the care focus shifts from curative to supportive. The fol-

lowing are the essential nursing diagnoses for patients and their caregivers during this time.

Essential Nursing Diagnoses Related to Emotional Support

Anticipatory Grieving

(CH. 1)

- ☐ Related to:

  Losses due to terminal cancer such as loss of health, life, work, income, privacy, intimacy, and relationships.

- ☐ Defining Characteristics:

  Patient voices or expresses feelings of sadness or loss.

Altered Family Processes

(CH. 1)

- ☐ Related to:

  Impact of cancer diagnosis and poor prognosis.

- ☐ Defining Characteristics:

  Family unable to meet physical and/or emotional needs of patient, verbalizes inability to cope.

Sleep Pattern Disturbances

- ☐ Related to:

  Fear of dying, uncertainty about future, uncontrolled symptoms such as pain, shortness of breath, restlessness, night sweats.

- ☐ Defining Characteristics:

  Verbal complaints of difficulty falling asleep, awakening earlier than desired, interrupted sleep, irritability, frequent yawning, dark circles under eyes.

- ☐ Outcome Criteria:

  Patient will reestablish regular sleep/rest patterns.

- ☐ NIC: Sleep Enhancement

  Definition: Facilitation of regular sleep/wake cycles.

Sleep Enhancement

Activities	*Rationales*
Assess patient's sleep/activity pattern.	Provides information for formulating plan of care.
Monitor/record sleep/rest pattern and number of hours patient sleeps.	Provides factual information about sleep/rest pattern.
Assess factors that could contribute to sleep/rest problems such as pain, shortness of breath, fear, anxiety.	Promotes identification of cause of sleep/rest problems.

Sleep Enhancement	
Activities	*Rationales*
Provide emotional support and/or counseling for patient/family to help eliminate anxiety and/or depression.	Anxiety and depression can contribute to sleep disturbances.
Adjust environment to promote sleep such as decreasing light, noise, temperature.	Promotes sleep by adjusting environment.
Offer back rubs, warm milk, proper positioning at bedtime.	Promotes relaxation to aide in restful sleep.
Administer antidepressants as appropriate.	Treats depression which may be contributing to sleep disturbance.
Administer antianxiety agents as appropriate.	Relief of anxiety will promote rest.
Provide activities that promote daytime wakefulness.	Assists patient in limiting daytime sleep.
Encourage use of sleep medications that don't suppress REM sleep.	Lack of REM sleep can lead to hallucinations.
Instruct patient/family about factors that contribute to sleep/rest disturbance.	Promotes identification of factors contributing to sleep disturbance.
Inform of measures to promote sleep.	

☐ Discharge or Maintenance Evaluation

- Patient will sleep at night and awake feeling rested.
- Patient/family will state measures to use to promote sleep.

Risk For Caregiver Role Strain

☐ Related to:

Patient's sleep disturbance, constant care needs of patient, lack of respite care.

☐ Defining Characteristics:

Caregiver verbalizes concern over lack of sleep, fear of inability to meet patient's needs and/or need for respite care.

☐ Outcome Criteria:

Caregiver will voice ability to provide for patient without strain or burnout.

☐ NIC: Caregiver Support

Definition: Provision of the necessary information, advocacy, and support to facilitate primary patient care by someone other than a health care professional.

Caregiver Support	
Activities	*Rationales*
Assess caregiver's level of knowledge.	Provides information to assist in planning care.
Encourage caregiver to assume role as appropriate and request assistance from other family members as appropriate.	Promotes care for patient without overstressing caregiver.
Provide information about patient's condition as appropriate.	Provides caregiver with information needed to care for patient.

Caregiver Support	
Activities	*Rationales*
Ensure caregiver has phone numbers of health care team members such as hospice nurse, physician.	Provides follow-up assistance by the health care team for the caregiver.
Identify sources of respite care.	Prevents caregiver respite.
Encourage caregiver participation in support groups.	Promotes emotional support for the caregiver.
Encourage caregiver to care for self as well as patient.	Prevents burnout and role strain on caregiver.
Support caregiver through the grieving process.	Provides assistance in coping with loss of loved one.
Educate caregiver about the grieving process.	Promotes acceptance of impending loss.

Instructions, Information, Demonstration	
Activities	*Rationales*
Inform caregiver of health care and community resources.	Provides caregiver with resources to cope with role.
Teach caregiver strategies to access health care and community resources.	Promotes use of resources by caregiver.
Teach caregiver stress management techniques.	Promotes stress management by caregiver.

☐ Discharge or Maintenance Evaluation

- Caregiver will demonstrate ability to care for patient without strain or burnout.

Knowledge Deficit

☐ Related to:

The dying process.

☐ Defining Characteristics:

Patient/family voices questions and/or concerns over the dying process.

☐ Outcome Criteria:

Patient/family discuss impending death and verbal needs as appropriate.

☐ NIC: Dying Care

Definition: Promotion of physical comfort and psychological peace in the final phase of life.

Dying Care	
Activities	*Rationales*
Monitor for anxiety, pain, mood changes, deterioration of physical and mental abilities.	Provides information for planning care.
Encourage patient/family to discuss feelings about death, or concerns.	Provides outlet for feelings and concerns.
Support family through stages of grief.	Grieving is a normal response to loss.

Dying Care	
Activities	*Rationales*
Minimize discomfort when possible.	Promotes comfort.
Assist with basic care as needed.	Promotes comfort and energy conservation.
Stay physically close to frightened patient.	Reassures them that they are not alone.
Respect need for privacy as appropriate.	Provides for patient's needs.
Modify environment as appropriate.	Promotes comfort.
Support family's efforts to remain at bedside.	Promotes fulfillment of family and patient's needs.
Include the family in care decisions and activities as desired.	Promotes family cohesion.

Instructions, Information, Demonstration	
Activities	*Rationales*
Inform family of possible signs of impending death as appropriate.	Offers opportunity to call other family members to bedside as appropriate.
Facilitate discussion of funeral arrangements with patient/family as appropriate.	Provides opportunity to involve patient in decision making.

☐ NIC: Postmortem Care

Definition: Providing physical care of the body of an expired patient and support for the family viewing the body.

Postmortem Care	
Activities	*Rationales*
Remove all tubes and cleanse body, close eyes, place dentures in mouth as appropriate.	Promotes comfort for family viewing.
Raise head of bed slightly.	Prevents pooling of fluids in head and face.
Notify clergy as requested by family.	Promotes spiritual support for family.
Facilitate and support family viewing the body.	Provide emotional support for family.
If in hospital transport to the morgue and notify mortician.	Promotes disposition of body.
If at home notify appropriate persons and mortician.	Promotes disposition of body.
Facilitate legal aspects of death for family such as signing the death certificate as appropriate.	Eases the burden on the family at the time of death.

☐ Discharge or Maintenance Evaluation

- Family is involved in the death of patient as is appropriate for them.
- Family provides needed care for the patient during the dying process.

Essential Nursing Diagnoses Related to Gastrointestinal Problems

Altered Nutrition: Less than Body Requirements

☐ Related to:

Progressive cancer causing anxiety, gastric irritation, bowel obstruction, constipation, and/or compression of the stomach.

☐ Defining Characteristics:

Weight loss, anorexia, nausea, vomiting, fatigue, altered taste sensation, early satiety, inadequate food intake, abdominal pain, stomatitis, oral candida, or herpes zoster.

☐ Outcome Criteria:

Patient will ingest foods they enjoy in amounts and at times as they are able.

Family will accept patient's inability to maintain adequate intake.

☐ NIC: Nutritional Counseling

Definition: Use of an interactive helping process focusing on the need for diet modifications.

Nutritional Counseling	
Activities	*Rationales*
Assess patient's ability, or lack of, to ingest food, food preferences, presence of nausea, vomiting, constipation, oral infections altered taste, abdominal pain, early satiety.	Provides information as to cause of decreased food intake to assist in the development of a plan of care.
Discuss meaning of food to patient and family.	Provides information to assist in planning care.
Establish realistic goals for nutrition.	Prevents frustration of patient/family when unable to meet unrealistic goals.
Treat cause of food ingestion problem if able.	Promotes increase in food intake.
Refer to dietician as appropriate.	Promotes use of experts in care to best meet patient's needs.
Provide support to family if patient unable to ingest food in adequate amounts.	Promotes family's acceptance and prevents anger and frustration.

☐ NIC: Nutrition Management

Definition: Assisting with providing a balanced dietary intake of foods and fluids.

Nutrition Management	
Activities	*Rationales*
Discourage patient from weighing self.	Prevents frustration over weight loss.

Nutrition Management

Activities	*Rationales*
Offer small frequent meals if early satiety or anorexia are a problem.	Promotes intake in amounts patient is able to ingest.
Offer meals and snacks high in protein and calories that are easy to consume.	Provides energy and proteins to prevent further muscle wasting.
Offer high caloric/protein liquid or custard supplements.	Provides calories and proteins in a small volume that is easy to consume.
Suggest use of lemon juice on red meats if patient complains of metallic taste.	Lemon juice seems to make red meats more palatable.
Replace distasteful foods such as red meats with other protein sources such as eggs, cheese, fish or chicken.	Promotes adequate amounts of protein in the diet.
Offer food when it is cool.	Promotes intake of food that some patients may prefer.
Encourage patient to try different foods.	Due to taste changes patient may prefer different foods.
Encourage intake of fluids with calories such as juices, soda pop, milk shakes and discourage intake of noncaloric beverages such as water, tea, and coffee.	Promotes intake of fluids with calories to provide energy.
Encourage patient to join family at dinner table if possible.	Provides socialization during meal times.
Administer antiemetics 30 minutes prior to eating if nausea is a problem.	Prevents nausea and vomiting.

Nutrition Management

Activities	*Rationales*
Administer appetite stimulants such as a small amount of alcohol, megace, or a short course of steroids.	Promotes food intake by stimulating appetite.
Administer medications to treat mouth infections.	Promotes comfort in mouth to encourage food intake.
Administer viscous Xylocaine as appropriate.	Treats pain in mouth to assist in food intake.
Control constipation.	Constipation can cause nausea and vomiting.
Control noxious stimuli like odors, excessive noise.	Noxious stimuli can increase anxiety and cause nausea.
Encourage family not to force patient to eat if patient doesn't want to eat.	Prevents anger, frustration and nausea, vomiting.

Instructions, Information, Demonstration

Activities	*Rationales*
Instruct patient/family in measures to control problems such as nausea, vomiting, and constipation.	Promotes self management of problems.
Instruct patient/family that weight loss is expected and may not be preventable.	Knowledge may help decrease anxiety.
Instruct to avoid noncaloric foods and fluids.	Noncaloric food and fluids promote satiety without providing calories for energy.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct family on ways to assist patient in increasing calorie and protein intake.	Provides family with methods to assist patient with food intake.
Inform family of reasons patient may not be able to ingest adequate amounts of foods.	Promotes family acceptance of patient's limitations.

☐ Discharge or Maintenance Evaluations

- Patient will ingest adequate amounts of food to provide energy for activities.
- Family will accept patient's inability to ingest adequate amounts of food as appropriate.

Altered Oral Mucous Membranes

☐ Related to:

Dehydration, mouth breathing, oral infections like candida or herpes, stomatitis.

☐ Defining Characteristics:

Oral pain/discomfort, xerostomia, oral lesions or ulcers.

☐ Outcome criteria:

Oral mucous membrane ulcers or lesions will heal.

Oral infections will be treated successfully.

☐ NIC: Oral Health Restoration

Definition: Promotion of healing for a patient who has an oral mucosa or dental lesion.

Oral Health Restoration	
Activities	*Rationales*
Perform oral assessment and examine lips, gums, teeth, and mucosa for dryness, ulcerations, and signs of infection.	Provides information to formulate plan of care.
Assist with oral care after each meal and prn.	Promotes clean, moist, oral mucosa.
Increase oral care if stomatitis is present.	Prevents further injury to mucosa.
Offer ice chips, hard candy, and frequent sips of liquids if dryness is a problem.	Promotes moistness of the oral mucosa.
Offer popsicles, ice cream, milkshakes.	Provides calories in a soothing easy-to-eat form.
Encourage mouth rinsing frequently with saline/baking soda mixture.	Promotes comfort in oral mucosa.
Discourage smoking and drinking alcohol.	Prevents dryness and irritation to mucous membranes.
Avoid commercial mouthwashes, lemon, and glycerin swabs.	Prevents drying of mucous membranes as commercial mouthwashes may contain up to 25% alcohol and glycerin is acidic and can irritate mucous membranes.

Oral Health Restoration	
Activities	*Rationales*
Apply lubricants such as petroleum jelly to lips.	Promotes comfort.
Administer medications to treat mouth infections.	Promotes comfort in mouth by promoting healing of oral infections.
Administer viscous Xylocaine as appropriate.	Treats pain in mouth by numbing tissues.

Instructions, Information, Demonstration	
Activities	*Rationales*
Demonstrate correct ways to perform oral care.	Promotes performance of measures that promote oral health.
Inform of reasons not to smoke and drink alcohol.	Promotes compliance with abstinence from smoking and alcohol.
Instruct on measures to promote comfort for dry mouth such as ice chips, sucking on hard candy, frequent sips of fluids.	Prevents further drying of mucous membranes.
Inform patient about prescribed medications for oral infections and/or stomatitis, any side effects to expect and what to do if they occur.	Promotes compliance with prescribed medications.

☐ Discharge or Maintenance Evaluation

- Oral mucosa will heal and become pink and moist.
- Patient/family will describe measures to promote oral health.

Essential Nursing Diagnoses Related to Respiratory Problems

Activity Intolerance

(CH. 4)

☐ Related to:

Fatigue secondary to the cancer disease process and its treatment.

☐ Defining Characteristics:

Verbal reports of fatigue or weakness, exertional dyspnea, breathlessness, abnormal heart rate.

Risk for Ineffective Airway Clearance

(CH. 8)

☐ Related to:

Increase secretions, decrease in level of consciousness from disease progression and/or pain relief medications which may impair ability to clear secretions.

☐ Defining Characteristics:

Presence of abnormal breath sounds (rales, crackles, rhonchi), decrease in rate and depth of respirations, tachycardia, ineffective

cough, cyanosis, dyspnea, inability to cough and clear secretions.

Impaired Gas Exchange

- ☐ Related to:

  Decreased lung tissue for oxygen exchange due to cancer disease process.

- ☐ Defining Characteristics:

  Dyspnea, shortness of breath, cyanosis of mucous membranes and nail beds.

- ☐ Outcome Criteria:

  Patient's respirations will become easy and regular.

- ☐ NIC: Respiratory Monitoring

  Definition: Collection and analysis of patient data to ensure airway patency and adequate gas exchange.

Respiratory Monitoring

Activities	*Rationales*
Assess respiratory rate, rhythm, depth, and effort.	Provides information to formulate plan of care.
Monitor for increased restlessness, anxiety, air hunger, cyanosis of nail beds and mucous membranes.	Signs of hypoxia indicating failing respiratory effort.

Respiratory Monitoring

Activities	*Rationales*
Identify etiology of respiratory distress and treat if able and appropriate.	Respiratory failure is very distressing for patient and family even if comfort is the goal. Measures should be employed to treat respiratory distress if possible.
Administer oxygen therapy as appropriate.	Oxygen promotes oxygenation.
Administer bronchodilator as appropriate.	Bronchodilator opens air passages if constricted.
Administer antibiotics as appropriate.	Antibiotics treat pneumonia.
Administer steroids as appropriate.	Steroids reduce inflammation and swelling of the bronchial tree.
Administer antianxiety medications as appropriate.	Anti-anxiety medications decreases anxiety and restlessness often resulting in decrease in oxygen demand.
Administer narcotic analgesics as appropriate.	Narcotics reduce respiratory drive, reduce inappropriate tachycardia, and lessen overventilation, thus decreasing oxygen need.
Administer expectorant with codeine on a regular schedule.	Codeine will suppress a chronic dry, hacking cough.
Administer atropine sulfate IM or SC for "death rattles".	Atropine will dry mucous membranes and decrease moist, noisy respirations.

Respiratory Monitoring	
Activities	*Rationales*
Administer respiratory treatments as appropriate.	Respiratory treatments promote bronchodilation of airways.
Provide comfort measures as appropriate such as a fan or humidifier, relaxation tapes, music therapy, elevate head of bed.	Promotes comfort by easing respiratory effort.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient/family in use of medications to treat respiratory problems such as bronchodilator, antibiotics, steroids, valium, morphine, respiratory treatments.	Promotes safety and independence in medication administration.
Instruct patient/family in etiology of respiratory distress and what is possible to correct, and in comfort measures to treat other problems.	Promotes acceptance of limitations in medical care.
Instruct patient/family in relaxation techniques.	Relaxation can decrease oxygen demand and ease respiratory effort.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct in safety measures for home oxygen use such as no smoking while oxygen is on and never turning oxygen above prescribed levels without consulting with health care team.	Promotes safe use of oxygen therapy.
Instruct family if patient is experiencing noisy, moist respirations sometimes called "death rattles" that death may be imminent.	Knowledge will decrease anxiety over distressing symptom.

☐ Discharge or Maintenance Evaluation

- Patient/family will state safety measures for oxygen therapy in the home.
- Patient/family will describes measures to ease respiratory effort.

Essential Nursing Diagnoses Related to Skin Care

Risk for Impaired Skin Integrity

☐ Related to:

Immobility and/or disease progression such as poor nutritional status, urinary incontinence.

☐ Defining Characteristics:

Reddened skin, altered skin turgor, cachexia.

☐ Outcome Criteria:

Skin remains intact and free from trauma.

☐ NIC: Pressure Management

From Surgery and NIC: Pressure Ulcer Prevention

☐ NIC: Pressure Management

Definition: Minimizing pressure to body parts.

Pressure Management	
Activities	*Rationales*
Place on an appropriate mattress according to agency policy..	Promotes skin integrity.
Refrain from applying pressure to the affected body part.	Prevents vulnerable part from pressure.
Administer back/neck rub.	Promotes circulation and relaxation.
Turn the immobilized patient at least every 2 hours according to a specific schedule.	Prevents pressure areas from developing
Monitor skin for areas of redness and breakdown.	Provides data about areas that require treatment.
Use appropriate devices to keep heels and bony prominences off the bed.	Prevents soreness and breakdown.
Massage around the affected area.	Promotes circulation.

Pressure Management	
Activities	*Rationales*
Monitor for sources of pressure and friction.	Prevents irritation from an unexpected source.

☐ NIC: Pressure Ulcer Prevention

Definition: Prevention of decubitus ulcers for a patient at high risk for developing them.

Pressure Ulcer Prevention	
Activities	*Rationales*
Remove excess moisture on the skin due to perspiration, wound drainage, and fecal or urinary incontinence.	Prevents irritation and maceration.
Apply protective barriers such as creams or moisture-absorbing pads to remove excess moisture.	Promotes intact epidermis.
Post turning schedule at bedside.	Provides a reminder for staff, patient and family.
Position with pillows to elevate pressure points off the bed.	Prevents irritation.
Keep bed linens clean, dry, and wrinkle-free.	Prevents excoriation and irritation.
Provide trapeze to assist patient in shifting weight.	Promotes independence in frequent position changes.

Instructions, Information, Demonstration	
Activities	*Rationales*
Inform patient to report soreness, redness, discomfort, pain from any area.	Provides early assessment and intervention.
Instruct patient to change position frequently.	Prevents pressure points.
Demonstrate turning techniques to family if appropriate.	Promotes frequent position changes.

- ☐ Discharge or Maintenance Evaluation
  - Absence of skin impairment with intactness maintained.
  - Skin free of inflammation and irritation.

Impaired Skin Integrity

- ☐ Related to:

  Fungating cancer lesions.

- ☐ Defining Characteristics:

  Open cancer lesions on skin, foul smelling drainage.

- ☐ Outcome Criteria:

  Odor and drainage from fungating lesion will be controlled.

- ☐ NIC: Skin Care Topical Treatments

  Definition: Application of topical substances or manipulation of devices to promote skin integrity and minimize breakdown.

Skin Care—Topical Treatments	
Activities	*Rationales*
Assess open lesions for foul smelling drainage, and/or infection.	Provides information to formulate plan of care.
Cleanse wound with antibacterial soap as appropriate.	Promotes clean wound.
Spread plain yogurt over fungating, foul-smelling lesions.	Promotes change in bacterial flora to decrease odors.
Administer systemic antibiotics as appropriate.	Treats infection and decreases odors.
Consider chemotherapy, radiotherapy, and/or hormones to treat fungating lesions.	Palliative treatment of lesions may shrink lesions and decrease odors.
Obtain room air freshener, or odor eliminator as appropriate.	Reduces odor.
Place charcoal in appropriate container in room with patient.	Charcoal is a natural odor absorber.
Open windows and air out room as appropriate.	Reduces odors in room.
Refer to skin care/enterostomal nurse specialist as appropriate.	Promotes optimal care by use of specialists.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient/family in measures to decrease odors from fungating lesions.	Promotes comfort by decreasing odors.
Demonstrate skin care procedures to patient/family for fungating lesions and observe return demonstration.	Promotes correct wound care by patient/family.

☐ Discharge or Maintenance Evaluation

- Fungating lesion will become clean and odor free.
- Patient/family will demonstrate recommended wound care.

Essential Nursing Diagnoses Related to Urinary Problems

Knowledge Deficit

☐ Related to:

Foley catheter care.

☐ Defining Characteristics:

Family verbalizes questions and concerns over care of foley catheter, or fears over ability to care for patient with foley catheter.

☐ Outcome Criteria:

Family will demonstrate safe care of urinary drainage system.

☐ NIC: Tube Care— Urinary

Definition: Management of a patient with urinary drainage equipment.

Tube Care— Urinary	
Activities	*Rationales*
Assess patient/family ability to care for urinary drainage system.	Provides information for planning care.

Instructions, Information, Demonstration	
Activities	*Rationales*
Demonstrate correct foley care to patient/family including 1) Handwashing prior to all care; 2) Emptying of urinary drainage bag at appropriate intervals; 3) Noting urine characteristics; 4) Regular cleansing of urinary catheter and meatus; 5) Irrigation of foley if appropriate; 6) Maintenance of closed drainage system.	Promotes correct care of urinary drainage systems which prevents urinary tract infections.
Provide written instructions on foley care.	Written materials reinforce verbal instruction.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient/family on importance of drinking 8-10 glasses of fluid per day.	Maintains adequate urine output.
Instruct patient/family to notify the health care team if signs and symptoms of a urinary tract infection include cloudy, foul smelling urine, and an elevated temperature occur.	Promotes early identification and treatment of urinary tract infections.

☐ Discharge or Maintenance Evaluation

- Patient/family will care for urinary drainage system.
- Urinary tract infections will be prevented or identified early.

Infection

☐ Related to:

Urinary tract infection.

☐ Defining Characteristics:

Patient verbalizes pain on urination, presence of cloudy, foul- smelling urine, elevated temperature, and white blood cells and/or mucous in urinalysis.

☐ Outcome Criteria:

Urinary tract infection will resolve as evidenced by clear yellow urine and temperature within normal limits.

☐ NIC: Fever Treatment

Definition: Management of a patient with hyperemia caused by nonenvironmental factors.

Fever Treatment	
Activities	*Rationales*
Assess temperature as appropriate.	Temperature within normal limits is expected within 72 hours after starting antibiotics.
Monitor WBC urinalysis and urine culture as appropriate.	Elevated white cell blood count and presence of WBCs and mucous in the urine indicate urinary tract infection.
Administer pyridium as appropriate.	Treats burning during urination.
Administer antibiotics as appropriate.	Treats urinary tract infection.
Administer antipyretics as appropriate.	Antipyretics reduce fevers.
Institute measures to decrease temperature such as tepid sponge baths, ice packs to groin and axilla for comfort as appropriate.	Promotes temperature reduction.

Instructions, Information, Demonstration	
Activities	*Rationales*
Inform patient/family on correct use of medications, possible side effects and what to do if they occur.	Promotes safe administration of medications.
Instruct patient/family in measures to decrease fevers.	Promotes temperature regulation and comfort.

☐ Discharge or Maintenance Evaluation

- Urinary tract infection will resolve.

Essential Nursing Diagnoses Related to Pain

Pain

☐ Related to:

Surgical intervention.

☐ Defining Characteristics:

Diaphoresis, blood pressure and pulse changes, crying, moaning, guarding and protective behavior, restlessness, irritability, voices complaints of sharp, severe, sporadic pain.

Pain

(CH. 10)

☐ Related to:

Length of surgical incision and need for PCA pump.

☐ Defining Characteristics:

Diaphoresis, blood pressure and pulse changes, crying, moaning, guarding and protective behavior, restlessness, irritability, voices complaints of sharp, severe, sporadic pain.

Pain, Chronic

☐ Related to:

Cancer disease progression.

☐ Defining Characteristics:

Patient verbalizes aching, dull or sharp, poorly localized pain, pain interfering with activities of daily living such as eating, moving, sleeping.

☐ Outcome Criteria:

Pain will be controlled to a level tolerable to the patient.

☐ NIC: Pain Management

Definition: Alleviation of pain or reduction in pain to a level of comfort that is acceptable to the patient.

Pain Management	
Activities	*Rationales*
Perform a comprehensive pain assessment to include location, characteristics, onset/duration, frequency, quality, intensity or severity of and precipitating factors.	Provides information to formulate a plan of care.
Evaluate current and past pain control measures.	Provides information as to what works and what doesn't.
Evaluate source of pain and treat if able.	Promotes comfort by eliminating source of pain.
Communicate belief in pain and commitment to work with patient until pain is relieved.	Promotes psychological comfort.
Implement measures for physical comfort such as maintaining proper body alignment, use of special beds, applying cold or heat, minimizing noxious environmental stimuli such as noise, heat, light.	Promotes physical comfort.
Implement relaxation measures such as massage, guided imagery, hypnosis, deep breathing exercises.	Promotes relaxation by decreasing painful stimuli.
Encourage use of distraction as appropriate such as humor, reading, watching TV, occupational therapy, music therapy.	Provides distraction from painful stimuli.

Pain Management	
Activities	*Rationales*
Administer analgesics early and around the clock.	Prevents the development of severe pain.
Evaluate pain relief measures and revise plan as appropriate.	Promotes relief of pain.
Administer analgesics by mouth.	Effective route of pain control for most patients.
Consider rectal, subcutaneous, dermal, intramuscular, or intravenous routes as appropriate.	Promotes pain management in patient unable to take medications by mouth.
Schedule any pain-inducing activities or procedures during peak analgesics effect.	Provides pain relief during painful activities or procedures.
Suggest the administration of nonnarcotic and narcotic pain medications as indicated.	Promotes pain relief by working at both the central and peripheral nervous system.
Monitor for and treat side effects of narcotic pain relievers such as changes in respiratory status, changes in central nervous system, gastrointestinal, genitourinary and dermatologic status.	Promotes safe use of narcotic pain relievers.
Refer to professionals practicing nonpharmologic methods of pain control as appropriate.	Promotes pain relief by utilizing all appropriate measures.

Instructions, Information, Demonstration	
Activities	*Rationales*
Inform patient/family about correct use of medications, possible side effects and what to do if they occur.	Promotes safe administration of medications.
Teach the use of nonpharmacologic techniques such as massage, guided imagery, hypnosis, deep breathing exercises, distraction, music therapy, hot/cold application, and/or massage.	Provide patient with methods to control, prevent pain.

☐ Discharge or Maintenance Evaluation

- Patient/family will identify measures to control pain.
- Patient/family will employ measures to control pain.
- Patient's pain will be relieved or controlled to an acceptable level as determined by the patient.

Constipation

☐ Related to:

Cancer disease process, side effect of narcotics for pain management.

☐ Defining Characteristics:

Decreased frequency of stools, hard formed stools, abdominal pain, straining at stools, nausea, vomiting due to obstructions.

☐ Outcome Criteria:

Patient will have a soft formed stool, without straining, at least every three days.

☐ NIC: Constipation/Impaction Management

Definition: Prevention and alleviation of constipation/impaction.

Constipation/Impaction Management	
Activities	*Rationales*
Identify factors that may cause or contribute to constipation such as medications, bed rest, low fiber diet, poor fluid intake.	Provides information for formulating individualized plan of care.
Assess for signs of constipation.	Provides information for formulating plan of care.
Monitor bowel movements and bowel sounds.	Promotes early recognition of constipation.
Encourage patient to drink at least 8-10 glasses of fluid per day if able.	Adequate fluid intake will help to promote soft stools.
Encourage foods high in fiber if able to eat.	High fiber diet promotes adequate bulk to prevent constipation.
Encourage daily exercise if able.	Exercise stimulates peristalsis and prevents constipation.

Constipation/Impaction Management	
Activities	*Rationales*
Administer laxatives, stool softeners and/or enemas as appropriate.	Promotes restoration of bowel function in patients who are unable to drink fluids, eat high fiber diet, or exercise.
Remove fecal impaction manually if necessary.	Removes stool from impacted bowel.

Instructions, Information, Demonstration	
Activities	*Rationales*
Instruct patient/family on measures to prevent constipation like fluids, high fiber diet, exercise.	Promotes natural methods to prevent constipation.
Inform patient/family on appropriate use of laxatives, stool softeners, enemas.	Prevents constipation in patients unable to eat and drink adequate amounts.
Explain etiology of problem and rationale for actions such as enemas, manual extraction of impaction.	Knowledge will reduce anxiety and promote acceptance of procedures.

☐ Discharge or Maintenance Evaluation

- Patient/family will describe measures to prevent constipation or treat it should it occur.
- Patient will have a soft formed stool at least every three days.

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