

**SCHOOL OF SCIENCE AND TECHNOLOGY**

**MEDICAL SURGICAL NURSING**

**BSN 3411**



**BANGLADESH OPEN UNIVERSITY**

# SCHOOL OF SCIENCE AND TECHNOLOGY

## MEDICAL SURGICAL NURSING

### BSN 3411

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**BANGLADESH OPEN UNIVERSITY**

# MEDICAL SURGICAL NURSING

## BSN 3411

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**SCHOOL OF SCIENCE AND TECHNOLOGY  
BANGLADESH OPEN UNIVERSITY**

## **Introduction to the Module**

Bangladesh Open University (BOU) has taken the initiative to bring its educational programs into the hands of those eager to learn. Some of the lessons in one field may also be a lesson in another field, but for the convenience of the learner it has been put where it is in the module. The lessons have been so designed that they just give a basic idea of the topic under discussion.

Through this open schooling program the learner will be able to learn and develop new knowledge and skills, with the help of materials, without attending formal classes. This module is a bit different from those used in formal classroom situations. Before going through the module, carefully read the following points on how to use this book to get the maximum benefit.

### **Format of this Module**

This book includes four units. Each unit has one or more lessons. Each unit has a unit-title followed by a brief introduction to the unit. A few lesson objectives are given at the beginning of each lesson. The important part in the text has been highlighted in boxes in the left margins. Beside the text, figures, diagrams, pictures, and flow charts—as applicable for clearer understanding of the subject supplement each lesson. A hypothetical problem, the exercise, is included in most of the lessons so that the learner can solve them in the light of the relevant lesson. This exercise will invite participation on the part of the learner to feel that s/he is an active participant in an exciting lesson. There is scope for self-evaluation at the end of each lesson. Both short true/false and essay analytical type of questions do this. The answers to the short questions are given at the end of the module.

### **How to Use this Book**

- Read carefully the learning objectives of the lesson before going through the text.
- How much of the learning objectives have been achieved will be assessed by the learner at the end of the text.
- If the learner is not satisfied he/she will go through the text, as many times as necessary, until he/she is satisfied about the learning objectives.

- When the learning objectives are achieved, the learner will proceed with the exercise (questions). The answers to short questions may be checked with those at the end of the module.
- Unless one lesson is completed, the learner is advised not to proceed to the next lesson.
- It is advised that the learners preserve the solved exercises and answers to questions for quick reference before examination.

### **For Any Clarification**

The learner is advised to listen and/or view the scheduled television and radio program by Open University on Behavioral Science.

The lesson to be discussed in the next program is announced at the end of each program. The learner should read the relevant lessons before the program. At the scheduled time, s/he should be ready with pen, paper and book in front of the television/radio set. The learner should take notes, if any part of the program is not understood. He/she should discuss these with the tutor in the tutorial class.

The tutorial classes are different from traditional classes, as the tutor will help only where the learner has difficulty. So the learner should go through the lessons and find out the difficult parts before going to the tutorials. The tutor will also advise and guide the learner for successful completion of the course. If the learner so wishes he/she could go through the books recommended for further reading. Moreover, the learners are strongly advised to use a standard English dictionary to facilitate comprehension.

## **Preface**

The theme of Bangladesh Open University (BOU) is to make education available to the interested with minimum required traditional qualification, irrespective of other social differentiation, in an easy and economic way, without dislodgment from their daily routine. This education is mainly through, module based study which is self-contacted, self-directing, and self-pacing instructional material. In order to meet the national and international demand of graduate nurses, the Bangladesh Open University has introduced B.Sc.-in-nursing program. One of the course of this program is Medical Surgical Nursing. It is expected that on completion of the program, the degree holders will be able to use his/her knowledge in the practical and professional life to meet the rising demand in health field.

A number of people have given their effort and time from the germinal position to the completion of this reading material, the module. Bangladesh Open University is grateful them. The contribution and guidance by Gail Crawford, Ph.D., of Athabasca University, Canada, who gave impetus in the early days of module drafting, had strengthened the conviction that such a course could take off. Before finalization, the draft reading material was tried out on a sample of target group, and necessary modifications made to accommodate the learner. Bangladesh Open University hopes this module will be able to attract the learners in turn with theme of the University. The University will appreciate any constructive criticism and suggestion for improvement of this module.

# Medical Surgical Nursing

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# Unit 1: Introduction to Medical Surgical Nursing

Medical-Surgical Nursing is a fascinating term in medical field. It is a positive quality of nurses to nurse the patient in medical-surgical situation. For this purpose, the nurse has to strive for, to seek, to achieve and to develop.

As the nurse is constantly called upon to make an independent decision in the solution of the problem, she has to become more and more diagnostician, of nursing care problems and she is expected to devise creative nursing interventions in medical - surgical condition.

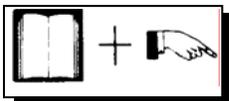
Considering these points, the first unit is divided into various lessons with its specific behavioral objectives. Attempt has been made to provide the learner with appropriate knowledge and skill for taking right decision in right time for caring medical-surgical cases. To equip the learner with the fundamental knowledge of nursing, the first unit is developed with the concepts of nursing care, nursing process, and expanded role of nurses and with some emergency nursing management.

For better understanding of the learners, the unit has been written in simple language-the terms and definitions. For the shake of begin it is made easy and interesting with utmost importance.

Behavioral objectives, sample, definitions, margin box, arrowhead materials, tables and numerous illustrations are used to make the various lessons easy to understand and remember.

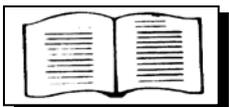
## Lesson 1: Concept of Nursing Care

### 1.1.1. Learning Objectives



At the end of this lesson you will be able to-

- define the term “nursing” and “nurse”,
- describe the brief history of nursing,
- write the philosophy of nursing in Bangladesh, and
- explain the theories and conceptual models of nursing care.



### 1.1.2. What is Nursing?

Since the time of Florence Nightingale, the real goal of nursing was to put the patient in the best condition for nature, to act upon him.

## Introduction to Medical Surgical Nursing

*Nursing is a conscious practice of human relationship.*

Nursing leaders defined nursing as both art and science. It is an art in the sense that the nurses have to do many procedures and techniques while caring patients. It is a science, because procedures and techniques are based on scientific principles. First the nursing leaders tried to emphasize nursing services for the sick and injured only. Later they stressed on the maintenance and promotion of health as well as the prevention of illness.

*A nurse is a qualified person who has completed basic nursing education and authorized in her country.*

A WHO expert committee defined nursing as "the conscious practice of human relationship".

International council of nurses defined nurse "as a person who has completed a program of basic nursing education and is qualified and authorized in her country to provide responsible and competent professional services for-

*Nursing is a conscious practice of human relationship*

- Promotion of health,
- Prevention of illness,
- Care of the sick, and
- Their rehabilitation.

### 1.1.3. Why Nursing?

Question of "why nursing" is very difficult to explain with limited amount of words.

*Nursing is needed from "womb to Tomb" for healthy life, recovery or peaceful death.*

Actually, Nursing is needed from "womb to comb";

Nursing is needed for life;

Nursing is needed for death;

Nursing is needed for recovery.

*Nursing comes from the Latin word Nurture means nourishing, fostering and protecting.*

- A woman needed nursing care from conception up to the delivery of her child in the hope of having a healthy child with minimum stress through safe delivery.
- The children are nursed that they might grow into good useful men and women.
- Old people are nursed that they might die peacefully with least pain.
- The sick people are nursed that they might if possible recover.

There are many more definitions of nursing given by nurse scientists and council of allied profession. The word nursing comes from the Latin word "Nurture", means nourishing, fostering and protecting. So the nurse is a person who nourishes, fosters and protects.

One of the classic definitions of nursing given by Virginia Henderson as follows-

*Nursing is to assist people to gain independence in the performance of activities contributing to health or its recovery or peaceful death.*

- Nursing is to assist the individual, sick or well, in the performance of those activities contributing to health or its recovery (or peaceful death) that who would perform unaided if he had the necessary strength, will or knowledge and to do this in such a way as to help him gain independence as rapidly as possible.

In earlier times, superstition was the basic for treatment of illness. For many centuries it was believed that sickness was a punishment for wrong doings and the sign of illness of evil spirits. The witch doctors and the priests prescribed treatment.

*First nursing training started at kaiserwerth institution in Germany.*

The period from the beginning of the eighteenth century to the middle of the nineteenth century has been termed as the "Dark Age" of Nursing. During this time the care of the sick and the status of the nurse reached the lowest level.

In 1836, a Lutheran Clergyman named Theodore Fliedner established an institution called Kaiserwerth institution situated in Germany. In this institution high standard of training was given for the quality care to the sick. This institution was the center for nursing training for the overseas countries also.

#### **1.1.4. Beginning of Modern Nursing**

*Florence Nightingale was the founder of modern nursing.*

Florence Nightingale is the founder of modern nursing. She was born in 1820 in Italian city of Florence after, which she was named. Her parents were very much wealthy and cultured. Florence received an extensive education. But she felt unhappy and dissatisfied. Because she was interested in Nursing, but her parents did not allow her until she was over 30 years of age.

*Florence nightingale was know as the "Lady with the Lamp" for her out standing performance during Crimean war.*

In 1850, she spent two weeks at Kaiserwerth and visited again in 1851 and appointed as the superintendent of the "Establishment of Gentle Women during Illness". Florence Nightingale first achieved fame in 1854 during the Crimean war. Her nursing efforts reduced the death rate among British soldiers. Nightingale devoted her energy to improve the filthy conditions, obtaining supplies, organizing a good food, supplying and establishing sanitary condition. To the soldiers, Miss Nightingale became an idol. She was known as the "Lady with the Lamp". Because she brought ease and comfort to the very sick by the light of the lamp she carried at night.

After the Crimean war the English people raised fifty thousand pounds as a mark of appreciation of Miss Nightingale's work. With this amount she

## Introduction to Medical Surgical Nursing

established a school of nursing at St Thomas Hospital in London. The first probationer Nurses were admitted to the Nightingale school in June 1860. They were given one-year experience in the hospital. Many of these nurses become matrons of the large hospitals in London and elsewhere.

She had made remarkable progress in nursing service and education. She died in 1910 at the age of 90 years.

### 1.1.5. Philosophy of Nursing Care in Bangladesh

*The word Philosophy means the "Love of wisdom. It is the beliefs of a person which guides a person's action in life.*

The word "philosophy" is derived from the Latin word, "phila" meaning Love and "Sofia" meaning wisdom. Thus, philosophy means love of wisdom. Every individual has a philosophy, which is unique. A person's philosophy as an attitude towards life guides a person's action in life.

A Philosophy for nursing care is a set of beliefs that will guide the nurses during their practice in the development and implementation of nursing care with desirable attitude and with highest potentialities.

For nursing service in Bangladesh, we believe that-

1. Health is a basic right of every human being and encompasses physical, psychosocial, spiritual and economic well-being. Nurses are concerned of these aspects throughout the human life cycle.
2. People are physical, psychosocial and spiritual beings and nurses learn to have self-respect and respect for all human life.
3. Nursing service is a direct service to people in, institutions, schools and industries, in the community as well as in the hospital and is adaptable to the needs of individuals, families, groups and communities in health and illness.
4. The goal of nursing practice is to help people, prevent illness and promote health and to assist in curative treatment and rehabilitation.

*Nursing is to change with the changing needs of the society.*

### 1.1.6. Theories and Conceptual Models of Nursing Care

Nursing is a profession, has to keep pace with gradual changes of the society. Social forces affect nursing.

*Theory is the relationship among concepts which is action oriented.*

The demand for quality care is reflected in philosophical beliefs in the dignity and value of the individual. In order to provide quality care, nursing must focus on the needs of both the individual and the community. Over recent decades, the growth of nursing as a scientific health care profession has led to the development of various philosophies of nursing and theoretical models, on which nursing practice can be based.

A theory is an abstract statement formulated to explain the relationships among concepts.

A model is a conceptual framework developed from a set of concepts. It is conceptual representation of reality. A model provides the outline for which theory provides the functions.

Numerous conceptual models of nursing practice have been devised, most of which are discussed below.

#### **1.1.6.1. Peplau's Theory**

*Peplau's theory developed on the basis of relationship between the nurse and patient. and the nurse should act as a resource person, counselor and teacher in the matter of health problems.*

Hildegard Peplau made an attempt to analyze nursing action using an interpersonal theoretical framework (1952). Her theory focuses on relationships formed by people. She thinks that the goal of nursing should be a relationship between the nurse and patient. And the nurse acts as resource person, counsellor and teacher.

#### **1.1.6.2. Abdellah's Theory**

*Abdellah's theory emphasizes on the delivery of Nursing care to the whole person.*

Fay Abdellah, with her colleagues, devised a theory, which emphasizes on the delivery of nursing care to the whole person (1969). The nurse is to formulate a plan to help the patient meet his physical, emotional, intellectual, social and spiritual needs.

#### **1.1.6.3. Henderson's Theory**

Virginia Henderson assumed the goal of nursing (1964) as helping patient to gain independence as rapidly as possible.

#### **1.1.6.4. Johnson's Theory**

*Johnson views man as a collection of behavioral sub-systems.*

Dorothy Johnson viewed the goal of nursing (1968) as reproducing stress, so that the patient can recover as quickly as possible. Johnson views man as a collection of behavioral subsystems, which are interrelated to form a whole person.

#### **1.1.6.5. King's Theory**

Imogene King viewed the goal of nursing (1971) as helping individual and groups to attain, maintain and restore health, or to die with dignity. King saw nursing as a process of interaction between nurse and patient through communication to set goals of nursing care.

### 1.1.6.6. Orem's Theory

Dorothea Orem viewed the goal of nursing (1973) as helping the patient to achieve health through self-care. In his opinion, the overall goal of nursing care is to assist the patient to achieve self-technique whenever possible.

*Orem's believes that the over all goal of nursing care is to assist patient to learn self care tectonic.*

### 1.1.6.7. Roy's Theory

Callister Roy viewed the goal of nursing (1981) as assisting man toward health by promoting and supporting his ability to meet the demand of basic physiological needs.

### 1.1.6.8. Roper, Logan and Tierney's Theory

Roper, Hogan and Tierney viewed the goal of nursing care (1985) as helping people to prevent, alleviate, solve or cope with problems related to activities of living.

*Roy believes nursing as to prevent alleviate, solve or to cope with problems.*

## 1.1.7. Conceptual Models in Nursing Care

Nursing Models are the outcomes of various nursing theories. On the basics of these theories the following nursing models are developed-

### 1.1.7. The Life Process Model

The life process model of nursing care focuses on the wholeness of human being. Roger develops this Model. He believes possessing his own characteristics. He also believes that man and environment are continuously exchanging matter and energy with one another. And the life process is to evolve irreversibly and unidirectional. With this view the goal of nursing becomes that of promoting the person's interaction with the environment. And the individual to be assisted for the utilization of his own energy and potentialities to meet his own health needs. The role of nursing is to promote the Person's interaction with his environment using man's own energy.

*Nursing to promoting person's interaction with his/her environment.*

#### 1.1.7.2. The Self Care Model

Self care model developed by Orem on the basis of person's need for self-care for the purpose of maintaining life, health and well-being. The nurse's role here is to manage the person's self care actions to promote life and health. To assist him to recover from disease and injury.

*In adaptation model a man is treated as a bio-psycho-social being who is in constant interaction with his environment.*

### 1.1.7.2. The Adaptation Model

Roy develops the adaptation model. Within this model, man is viewed as a bio-psychosocial being. He is in constant interaction with his environment, and this interaction requires a man to make continual adaptations. The role of Nursing is to assist individual in promoting adaptation during health and illness.

*Behavioral system model developed on the basic of individual behavioral pattern.*

### 1.1.7.4. The Behavioral System Model

Behavioral system model is developed on the basic of behavioral pattern of an individual. Each person has a behavioral pattern of his own. The nursing responsibility is to develop a plan of care according to individual pattern of behavior to provide care during health and illness.



### 1.1.8. Exercise

#### 1.1.8.1. Objective type questions

##### a) Fill up the blanks

1. Founder of Modern Nursing was \_\_\_\_\_
2. The word philosophy is derived from the \_\_\_\_\_
3. Dark age of Nursing was from \_\_\_\_\_ to \_\_\_\_\_
4. The name of first Nursing school was \_\_\_\_\_.

#### 1.1.8.2. Multiple choice questions

1. Nursing leaders defined nursing as both-
  - a. Art and commerce
  - b. Science and commerce
  - c. Science and art
  - d. Art and humanity.
2. The founder of modern nursing is-
  - a. Lutheran clergyman
  - b. Theodore fliedner
  - c. Florence nigthingale
  - d. Flodena nurmita.

## Introduction to Medical Surgical Nursing

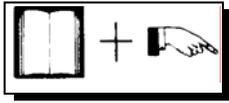
3. Philosophy means-
  - a. Love of man
  - b. Love of gird
  - c. Love of wisdom
  - d. Love of well-wisher.

### **1.1.8.3. Short and board questions**

1. What is nursing?
2. What do you mean by philosophy of nursing care?
3. Describe theories and conceptual models of nursing care.

## Lesson 2: Nursing Process

### 1.2.1. Learning Objectives



At the end of this lesson you will be able to-

- define nursing process,
- explain various components of nursing process, and
- draw a diagram to depict the sequential arrangement of nursing process.



### 1.2.2. What is Nursing Process?

Nursing process is a scientific, dynamic, interactive process between the nurse and the individual/family/community for the purpose of assisting them in solving their health problems.

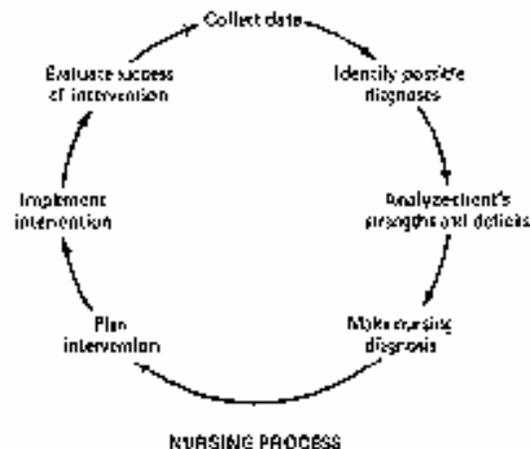
The nursing process is a systematic approach which scientifically attempts to solve patient's problem. It is a problem solving approach to meet nursing needs of the patients. This problem solving approaches are-

*Nursing process is a problem solving approach to meet the Nursing needs of the patients.*

- Systematic assessment of patients problem;
- Nursing diagnosis on the basis of data analysis related to problems;
- Planning on the basis of problems;
- Implementation of plan; and
- Evaluation.



THE PROCESS OF DIAGNOSE AND MANAGEMENT



Five-step's Nursing Process model

## Introduction to Medical Surgical Nursing

Division of the nursing process into five distinct components emphasize on critical nursing action for solving the patients problem. We must remember that the process as a whole is cyclic. And all its steps are inter related and inter dependent.

### Components or Steps of Nursing Process

#### 1.2.3. Assessment

*Assessment is the estimation of Patients needs according to problems.*

The assessment component of nursing process starts from the first visit of the patient. It involves a systematic collection of data about the patients actual health needs. These data then is analyzed to formulate nursing diagnoses. This nursing diagnosis is the basis for the nursing care plan.

The data about the patient can be collected through-

*Data is obtained through History taking. Physical Exam, family information + observed.*

- Taking history of the patient;
- Physical examination;
- Information's from the relatives or family members of the patients; and
- Observation

After collection of data, the nurse organizes analyses, synthesizes and summarizes the data collected, and determines the nursing diagnoses to prepare nursing care plan.

#### 1.2.4. Nursing Diagnosis

The second step of nursing process is nursing diagnosis. Nursing diagnosis and assessment of problems are two components of nursing process dependents on each other. Because nursing diagnosis cannot be accurate without assessing the needs or the problems of the patient. Before shifting to the planning step the nursing diagnoses are to be confirmed. After the diagnosis is confirmed on the basis of patient's problems, the planning process starts to meet those problems.

#### 1.2.5. Planning

*Planning involves priority of needs , goal setting, nursing intervention and recording of outcomes of nursing care plan.*

After the nursing diagnosis is identified, the third component of nursing process, the planning starts. This component involves-

- The assessment of priorities of needs of the patient.
- Setting of short term, intermediate and long term goal of nursing action.
- The identification of specific nursing intervention to achieve the goal.

- Recording of nursing diagnoses, goal of nursing intervention and expected out comes of the nursing care plan.

*Implementation is the carrying out the proposed plan. This step needs the formulation of nursing care plan.*

### 1.2.6. Implementation

Implementation is the fourth step of nursing process. This step follows the formulation of nursing care plan.

#### **This steps involves-**

- The nursing care plans which serves as the basis for implementation.
- The goals those are utilized as a focus for the implementation of designed nursing intervention.
- Continuous assessment of the patient's response to the nursing care plan.
- The alterations are made according to condition, problem and responses of the patient.

*Implementation is done on the basis of nursing care plan to meet the expected goal of the patients care.*

### 1.2.7. Evaluation

Evaluation is the final step of nursing process. This step is directed to evaluate the patient's response to the nursing intervention. If also determines the extent of goal has been achieved.

#### **1.2.8. Evaluation will answer the Following Questions**

- Were the nursing diagnoses accurate?
- Have the patient's nursing problems been solved?
- Have the patient's nursing needs been met?
- Should the nursing interventions be retained, altered or discontinued?
- What factors influenced the achievement or lack of achievement of the goals?
- Do priorities need to be reassigned?
- Should changes be made in the goals?
- Did the patient meet the out come criteria?
- Did the patient meet the criteria within critical time?

*Evaluation is done to see the extend of goal of nursing inter vention has been achieved.*

### 1.2.9. Key Concept of Nursing Process

- The nursing process is a systematic method of organizing and developing nursing care plan.

## Introduction to Medical Surgical Nursing

- The purpose of nursing process is to identify the patient's health care needs.
- Establish a nursing care plan for nursing intervention to meet the needs.
- The organization of nursing process is based on- assessment, nursing diagnosis, planning, implementation, and evaluation.
- Creativity in the nursing process is the continual evaluation and modification of nursing care plan.
- The nursing process can be used in all health care settings and with all age groups.
- Nursing assessment is gathering, verifying and communicating of data about a patient.
- Nursing diagnoses is the actual problems in the patient's health status.
- In planning, nursing strategies are developed to achieve the goal
- Implementation puts the plan of nursing care into action
- Evaluation determines the extent to which the patient's that's care goal have been achieved.
- The nursing process is an open system; continually changing as the patients nursing needs change.

### Summary of Nursing Process



Component	Purpose	Steps
Assessment	To gather, verify collected data about client.	Collecting history: <ul style="list-style-type: none"> <li>◆ Physical examination, laboratory data.</li> <li>◆ Observation.</li> <li>◆ Interpreting data.</li> </ul>
Nursing diagnosis	To identify health care needs of client.	Formulating Nursing process.
Planning	To identify client's goal. To determine priorities of care.	Identify client's goal selective. Nursing actions. Delegating actions. Writing Nursing care plan. Reassessing client's Problems. Modifying existing care plan, performing. Nursing actions.
Implementation	To design Nursing strategies	Establish evaluation criteria, comparing client response to criteria.
Evaluation	To determine outcome criteria. To complete Nursing	Analyzing reasons for results and conclusion, Modify care plan.

	actions necessary for accomplishing plan To determine extent to which goals of care have been achieved	
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### 1.2.10. Nursing Care Plan

A nursing care plan is a written document that states in specific terms, the nursing interventions, planned for a particular patient.

The nursing care plan is a written document developed by an individual care provider (nurse). It is organized in such a way that any nurse can readily identify-

*Nursing care plan is a written document of the plan developed by the nurse to give care to her patient.*

- The nursing diagnosis,
- The goal or expected outcomes,
- The specific nursing intervention, and
- Whether the goal are being achieved (evaluation).

The nursing care plan therefore is dependent on nursing process. Both the process and plan are not static in nature. According to the changing needs of the patients, the process and the plan must be changed to meet the exact needs of the patients. It provides a detailed guide live for patient care.

### 1.2.11. Example of Nursing Care Plan

Name of the patient : Mrs Amina Begum.

Age of the Patient : 35 years.

Nursing diagnoses : Pain related to gastric acidity and emotion stress.

#### Goals

Short term : Relief pain.

Intermediate : Begins making alteration in life style.

Long term : Alters life style to reduce stresses and continues therapy.

#### Nursing interventions (priority basis)

T.V program

- Relief pain and discomfort.
- Observe constipation and other new additional sign and symptoms.

- Encourage well- balanced diet that does not cause pain or distress.
- Encourage avoiding anxiety stresses.



**1.2.14. Example of Nursing Care Plan**

Assessment of problems.	Plan of care on the basis of problem.	Implementation on the basis of care plan.	Out come criteria.	Evaluation
Pain discomfort	Pain relieving drugs to be to relief pains and discomfort.	Inj. Buscopan/ Butapan as ordered given immediately.	Absence of pain and discomfort	Pain related discomfort released.
Constipation	Observe for constipation and administration of drugs if needed.	No drugs needed with moderate exercise and plenty of fluid intakes advised.	Absence of constipation	Normal bowel movement within 24 hrs after admission.
Patient lacks interest in well balanced diet.	Patient is to be encouraged to take well balanced diet making it tasty and attractive.	The diet was made tasty and attractive with extra ingredients.	Good appetite, avoid food and drinks that cause pain, eat meals at regular intervals.	Patient is interested in taking her meal and takes meal and drinks at regular intervals.
Anxious and distressed.	To Promote atmosphere conducive to physical and mental health.	Limited the member of visitors and inter actions that are stress producing.	Limits visitors. Avoids stress producing interactions.	Visitors limited. Limited interaction with family and friends.
Mal-adjustment with existing life style in working place.	To encourage patient to identify life style adjustment necessary to reduce stress.	Assisted patient to identify the ways to share the worker responsibility to others. Advised for involvement in community service organization.	Adjustment with existing life style.	Evaluation is not possible immediately For this type of evaluation patient needs follow-up care.



### 1.2.15. Exercise

#### 1.2.15.1. Objective type

Please put the Tick (✓) against the correct answer

1. The nursing process most accurately describes us-
  - a. An individual nursing care plan
  - b. An approach the nurse uses to plan, implement and evaluate the care of patient
  - c. The systematic evaluation of nursing care
  - d. A method of physical assessment.
  
2. The nursing care plan is a written document developed by a nurse for-
  - a. Nursing diagnosis
  - b. Specific nursing intervention
  - c. Evaluating out come
  - d. All of the above.
  
3. Patient's data can be collected by-
  - a. Taking history of the patient
  - b. Physical examination
  - c. Both "a" and "b"
  - d. None of the above.

#### 1.2.15.2. Broad questions

1. Explain in your own words what is nursing process and nursing care plan.
2. Why nursing care plan in importance.

## Lesson 3: Expanded Role of Nursing

### 1.3.1. Learning Objectives



At the end of this lesson you will be able to-

- explain the traditional concept of nursing,
- describe the extended role of nursing at hospital and community level, and
- enumerate the multidisciplinary, interdisciplinary health team and independent nursing team.



### 1.3.2. Concept of Nursing

In the past, the traditional system of nursing was mainly "Care" based. The nurses used to give care to the patients in acute condition after getting admitted in to hospital.

The primary function of the nurse was "care" and secondary was the "cure". On the other hand the doctor's function was primarily "cure" and secondarily "care" of the patient. But for the achievement of overall goal i.e. the cure of illness, the independent nursing focus and medical focus always overlap. Thus we can see the co-ordination of "care and cure" functions and associated responsibilities of the nurses and doctors while treating patient in hospital.

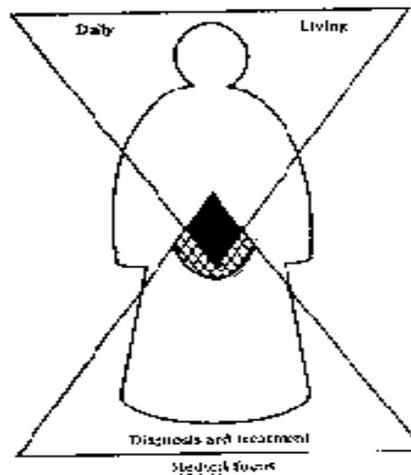
But traditionally, the role of the nurse was based only in meeting the fundamental needs of the sick people. The nurses were engaged in various non-nursing tasks such as ward cleaning, cooking, clerical and acting as messengers etc. Now the other members of staff are carrying out these tasks. The nurses were involved in patients care indirectly. They used to take care of the patient simply by carrying out orders of the physicians. The nurse was some one, used to give pills, fed the patient, clean and sponge the patient whenever needed and help the doctors in giving treatment to the patients. Now the modern nursing is responsible, for the unique function as-

Promotion of health,  
Prevention of illness,  
Scientific care of the sick and injured, and  
Rehabilitation.

- Promotion of health,
- Prevention of illness,
- Scientific care of the sick and injured, and
- Rehabilitation.

### 1.3.3. Independent and Overlapping Focus of Nursing and Medicine

The triangle represents the primary focus of the nurse and the physician in helping people with their health and illness problems. The shaded area is the area of overlap. In this area the nurses are involved in observation and care of the patient as related to diagnostic and therapeutic procedure. And physician is concerned with the effects of the therapy. The cross-hatched area represents expansion of the nursing focus on the responsibility for diagnoses and treatment.



Medical focus

### 1.3.4. Why Expansion of Nursing Role?

Extended role of nursing means, extension of nurse's responsibility to help the client with extended care.

The nursing as a viable profession, it cannot be static. It has to remain useful. And to remain useful, nursing has been modified for its role and functions in response to the changes in the health needs of the society.

*Extended role of nursing is the extension of nursing role and to help the client with extended care.*

"Role" is the term of human behavior, based on the focus that human beings behave in certain predictable manner. In expanded role of nursing, the nursing role refers to all behaviors that are considered appropriate for a nurse.

*Role is the behavior of the people in certain predictable manner.*

Traditionally, nursing role was confined within the four walls of the hospital. But it is the predictable outcome of traditional nursing role that true health care services cannot be rendered within hospital settings only. And with this view, the expanded role of nursing has emerged. Extended role of nursing is the extension of nursing role and responsibility to help

the client with extended care. This care could be provided within and outside the hospital for the individual or family or community.

### **1.3.5. Objective of Expanded Nursing Role**

1. To make health surveillance for early detection of health problems at grass root level.
2. To provide primary health care at the doorstep of the people.
3. To make the people aware about health and illness.
4. To educate people about nutritional food, safe drinking water, personal and environmental hygiene and sanitation.
5. To help the people to have extended care and treatment in hospital through referral system.
6. To provide skilled and specialized care to the patients in Hospital settings.

### **1.3.6. The Expansion is of Both Hospital and Community Oriented**

#### **1.3.6.1. Expansion in Hospital Setting**

- Coronary care,
- Intensive care – critical care,
- New born intensive care,
- Pediatric care,
- Orthopedic care,
- Ophthalmic care,
- Care of the chest diseases,
- Nephrology and renal dialysis care,
- Oncology care, and
- Transplantation care neurology.

The nurses working in these special areas need special and advanced training and education.

#### **1.3.6.2. The Nursing Expanded at Community and Grassroots Level**

More than fifty percent of our population is women and children. And these women and the children are the most vulnerable group to health risks and socio-economic deprivation. Due to poverty, malnutrition, traditional non-scientific beliefs and practices, women of the reproductive age have

much higher risk to their health and lives. Most of the health problems suffered by women, particularly in pregnancy and childbirth. But increasing health awareness and providing proper care can prevent this.

Now the nursing services have been expanded through community health services to the doorstep of the people. More emphasis has been put on the prevention of diseases rather than "care and cure" of the diseases.

### **1.3.7. The Qualities of Community Health Nurse**

To work in the expanded areas, the community nurse should be expert in-

- Skilled assessment of client for medical and nursing diagnosis.
- More formalized method of history taking.
- Increased collaboration with physician and the community team member for implementation of medical intervention.
- Increased responsibility in the areas of health surveillance.
- Research methodology for detection of illness and in implementation of care plan for health care problems.

The expanded responsibility of the nurses at community level fall in to-

- Primary care stage.
- Acute care stage.
- Long-term care stage.

In primary care stage, mainly their functions are-

Detection of Illness

- Giving health education, guidance and counseling about the preventive measure of the disease and illness.
- Giving simple treatment for simple health problem like-cough and cold, influenza, digestive problems, worm manifestation etc.
- In acute stage, mainly their function is "referral" to the nearby hospital or clinic.

In long-term stage, they are to give rehabilitative care through-

- Providing care by health related advice.
- Referring the case to the social welfare department for financial help.

- Visiting patient at a regular interval, keeping record and refining to the appropriate department for further suggestions.

### **1.3.8. Functions of Nurses in Expanded Role at Community Level**

- Early diagnosis of diseases through home visit.
- Participation in expanded program of immunization as preventive measure.
- Guidance and counseling about health care, prevention of illness, nutritional food and development of socio-economic condition.
- Health education about personal hygiene, general cleanliness, nutrition, and safe drinking water.
- Conducting classes for man and women of reproductive age group on population control and family planning.
- Conducting child-rearing and parent hood classes.
- Giving ambulatory services to the chronically ill patients.
- Care of the aged group.
- Maintaining referral system.
- Notifying communicable diseases and report to the concerned department.
- Disaster management.

### **1.3.9. Various Teams for Extended Nursing Program at Community Level**

The community nurse has to work with multipurpose workers at the time the client needs services of various disciplines.

The teams may be-

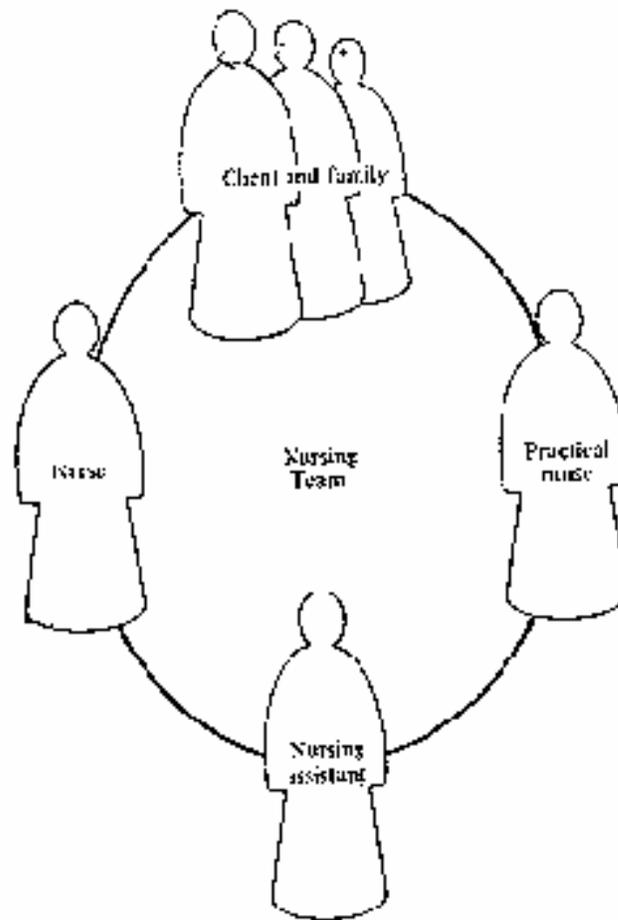
- Inter-disciplinary team,
- Multi-disciplinary team,
- Independent nursing team.

#### **1.3.9.1. Inter Disciplinary Team**

*Interdisciplinary team is needed when the patient needs services of many provisional groups.*

In inter disciplinary team; the multi disciplinary team may intersect with the single disciplinary team in the situations where the client requires services of many helping professions. For an example when a mother is hospitalized and needs help to maintain her family. During this time, the nursing team with physician will care for her illness needs and

professional nurse may work with a community nurse, social workers, Physician to arrange home care for the mother and her family.



### 1.3.9.2. Multidisciplinary Health Team

*Multidisciplinary team is mainly the community based team.*

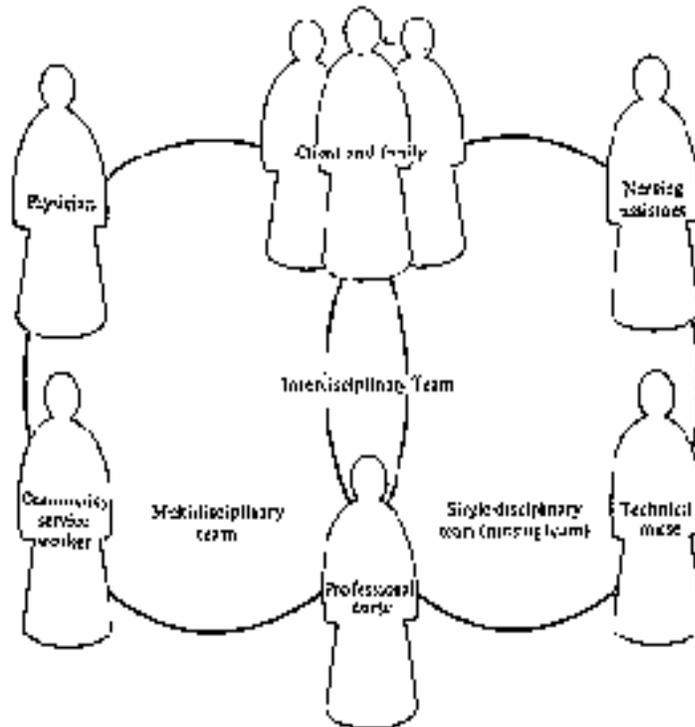
It is a community-based team, composed of client and family, nurse and physician as health specialists and representatives of community social workers and health services.

### 1.3.9.3. Nursing Team as Single Disciplinary Team

In hospital or community, several levels of nursing personnel may work with a client and her family to achieve health goals.

Health care services are rendered to the people at community level through-

**Public health center:** In this center nurses work with other health professionals. The main objectives of the nurses in this center are to work for the maintenance of health and promotion of health within the families.



*Various categories of nurses form the nursing team are on independent team.*

**Community center:** Development of community center is relatively a recent origin. Examples of such centers are community mental health center, Parenthood clinic etc. The nurses with other teams function here to provide specialized care to the families.

**Occupational health:** Since a major portion of adult population spent within work place, great attention is being given to the health of workers. Industrial nurses offer nursing care in this area.



### 1.3.10. Exercise

#### 1.3.10.1. Objective type

Please put the Tick (✓) against the correct answer

1. Coronary care to the patient is given to-
  - a. Hospital
  - b. Community centre
  - c. Thana Health Complex
  - d. None of the above.
  
2. Vulnerable group to health risks are-
  - a. Woman and children
  - b. Woman and man
  - c. Old people
  - d. Adolescent group.
  
3. The Expanded program of nursing is for the purpose of-
  - a. Health surveillance
  - b. Giving health services at the doorstep of the public
  - c. Covering mark population for health care facilities
  - d. All of the above.
  
4. Detection of illness falls into-
  - a. Primary care stage
  - b. Acute care stage
  - c. Long term care stage
  - d. None of the above.

#### 1.3.10.2. Broad question

1. Write a paragraph on traditional concept of Nursing.
2. What are steps of nursing process
3. Define expansion of nursing role. What are the objectives of expanded nursing role?

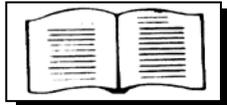
## Lesson 4: Emergency Nursing Management

### 1.4.1. Learning objectives



At the end of this lesson you will be able to-

- define what is an emergency and emergency nursing management,
- list the priorities and principles of emergency management,
- demonstrate emergency resuscitation measure,
- explain the psychological approach to the patient and family, and
- manage of some Emergency conditions.



### 1.4.2. What is an Emergency?

Basically, an emergency exists when a patient or patient's family members believe that his or her physical or emotional well being is in danger. An emergency situation, always appears without any prior notice or warning signal. It is incidental in nature.

### 1.4.3. What is Emergency Nursing?

*Emergency Nursing care is not a routine care . It is unscheduled and occurs in special settings.*

Emergency nursing has been defined as the nursing care of individuals with physical and emotional alteration in emergency conditions.

These conditions are undiagnosed and may require prompt intervention. Emergency nursing care is unscheduled and most commonly occurs in special settings i.e. an Emergency department or a mobile unit. Thus, the nursing care is episodic, primary and acute in nature.

*Emergency Nursing care is episodic primary and acute in nature.*

Large number of people seeks emergency help for serious life threatening conditions. The nurses need to be courageous, very much tactful and prompt to manage any emergency situation.

Quick detection and health promotion are the vital roles of the nurse in emergency care. Finally, the nurses must be skilled in public relation, stress management and creative problems solving.

Mostly emergency nursing management is required for-

*Sound judgment and understanding of condition are required for making. Crucial decision in emergency Management.*

- Respiratory distressed condition,
- Hemorrhage,
- Shock,
- Heat stroke,
- Anaphylactic shock, and
- Food poisoning.

#### **1.4.4. Priorities of Emergency Management**

When the care is given to a patient in an emergency situation, many urgent and important decisions must be made. Such decisions based on sound judgment and understanding of condition that produced emergency. The major objectives of emergency management are-

- To preserve life;
- To prevent deterioration; and
- To restore the patient to useful life.

#### **1.4.5 Principles of Emergency Management of a Patient**

The following principles to be kept in mind during emergency management-

- Maintain patient's airway by resuscitation.
- Assess for chest injuries with air obstruction.
- Control hemorrhage.
- Evaluate and restore cardiac output.
- Prevent and treat shock.
- Maintain effective circulation.
- Carry out a rapid physical examination.
- Protect wound with sterile dressings.
- Apply splint in suspected fracture and fracture of the cervical spine.
- Start a flow sheet of patient's vital signs.
- Assess the onward progress of the condition and keep record.
- Alter the care and treatment plan, as needed.

#### **Emergency Resuscitation Measures**

The first priority in the treatment of any emergency condition is the maintenance of an open airway. Because if the airway is blocked, the condition of hypoxia will produce permanent brain damage or death.

In complete airway obstruction the patient is-

- Not breathing;
- Unconscious; and
- Complete collapse.

In partial airway obstruction the patient looks-

- Apprehensive;
- Labored use of accessory muscle;
- Flaring nostrils;
- Restless;
- Confused; and
- Cyanosed.

#### 1.4.6. Emergency Management

- Turn the patient's head to one side to prevent back falling of the tongue.
- Place your finger behind the angle of the mandible and pull forward while extending patient's head.
- If the patient is still having respiratory distress:
- Grip the tongue and pull forward.
- If the jaws are locked, insert the index finger behind the last molar and make the jaws open.
- Clear any material from the mouth with a finger or suction if equipment is available.
- Mouth to mouth and mouth to nose breathing to be tried upon.
- If the airway obstruction is due to a bolus of food, then carry out a chest thrust (force) or abdominal thrust known as 'Heimlich Maneuver'.

*T.V program*

##### 1.4.6.1. Heimlich Maneuver

The technique begins with a fist, knob formed by the thumb index finger. This helps to push the diaphragm upward. Fist is placed thumb side against the abdomen slightly above the navel and below the rib case. Then fist is grasped with freehand and then to press into abdomen with a quick upward thrust (force).

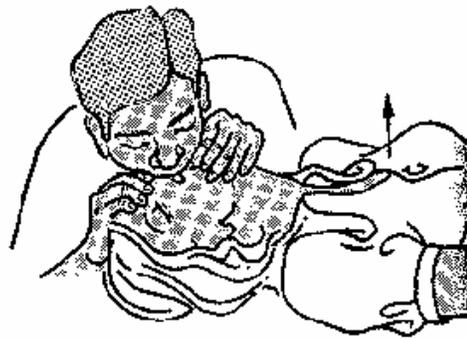


Technique of Hand Placement for abdominal thrusts

### 1.4.6.2. Technique for Mouth-to-Mouth Ventilation

T.V program

- Keep one hand behind the patient's neck.
- Pinch the patient's nostril together with the thumb and index finger of the other hand and at the same time; exert pressure on the fore head.
- Open your mouth wide. Take a deep breath. Make the tight seal with your mouth around the patient's mouth and blow into his mouth.
- Give the patient 4 quick full breaths without allowing lungs for full deflation between breaths.
- Remove your mouth from the patient's mouth and allow him to exhale passively.
- Repeat this cycle once every five seconds as long as respiration is adequate.
- Give 12 ventilation's per minute.



Technique of artificial respiration by mouth-to-mouth method-

- Keep hand behind the patient's neck.
- Open the mouth of the patient.
- Pinch the patient's nose together with your thumb and index finger.
- Open your mouth wide and make tight seal of your mouth around the patient's mouth and blow into his mouth.
- Remove mouth from the patient's mouth to allow him exhale passively.

### 1.4.6.3. Technique for Mouth to Nose Ventilation

- Tilt the patient's head with one hand on the fore head.
- Lift the lower jaw with other hand.
- Take a deep breath; seal your Lips around the patient's nose.
- Blow in until you feel his Lungs expand.

- Remove your mouth from the patient's nose and allow him to exhale passively.
- Repeat the cycle every five seconds (12 ventilations per minute).

### 1.4.7. Psychological Management of Patient and Family

#### a. Approach to the Patient

One of the important objectives in emergency nursing management is to prevent psychological problems of the patient.

*The close and continuous contact with the patient reduces worries and anxiety about his critical condition.*

If the patient is in conscious he should be treated as if he was conscious. For this purpose, the patient should be touched, he should be called by his name and he should be explained every procedure that is being done. As soon the patient becomes conscious, the primary purpose is to orient him. For that he should be called by his name, he should be told the date and the place where he is being at the moment. This information is to be repeated again and again until he is brought back into reality. This is the method of presentation of the situation to the patient. This will help him to gain a sense of security. This close contact of the nurse reduces the panic state of the patient.

#### b. Approach to the Family

On admission the patient's relatives to be told that their patient is receiving expert care.

*Anger is common in crisis situation and that should not be rejected.*

In case of severe condition or sudden death of the patient, they are to bear "unbearable anxiety", so they are encouraged to recognize and talk about their feelings of anxiety. The nurse's approach here should be as to sharing feelings of the family and dealing with reality as gently and as quickly as possible.

Grief is a complex emotional response to actual loss. In this stage the nurses are to help family members work through their grief. The nurse should let them know that, it is normal and acceptable for them to cry and feel this way.

Expression of anger is common in crisis situation. The anger is frequently directed toward nurses, doctors and others. But without rejection this situation the nurse should allow the family members to ventilate their anger.

### 1.4.8. Emergency Management of Some Acute Conditions

#### 1.4.8.1. Hemorrhage

*Hemorrhage is the discharge of blood (bleeding) from the blood vessels.*

Hemorrhage is the discharge of blood (bleeding) from the blood vessels.

### Sign and Symptoms of Hemorrhage

- Rapid and weak pulse;
- Decreasing arterial pressure;
- Cold and clammy skin;
- Pallor;
- Patient is thirsty;
- Patient looks anxious;
- Restlessness; and
- Respiration difficulties.

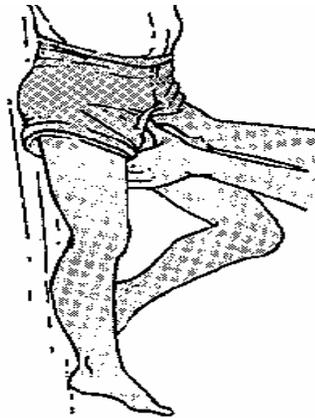


Fig: Pressure to be exerted on arterial pressure point to stop hemorrhage

### Management of Hemorrhage

- Cut the patient's clothing away quickly.
- Identify the area of hemorrhage.
- Apply direct firm pressure over the bleeding area.
- Apply a firm pressure dressing.
- Elevate the injured part to stop venous and capillary bleeding.
- Do not allow moving the injured part to avoid blood loss.
- Insert intravenous canula for blood and fluid replacement.
- With draw blood sample for grouping and cross matching.
- Start infusion.
- Apply tourniquet to control arterial blood flow when hemorrhage can not be controlled.

- Check vital signs i.e., pulse, respiration and blood pressure.
- Record temperature.
- Watch the patient constantly to assess the gradual change of patient's condition.

#### **1.4.8.2. Shock**

Shock is a condition in which there is a loss of effective circulation of blood volume, which causes disorder of cellular function.

#### **Signs and Symptoms**

- Decreasing arterial pressure,
- Increasing pulse rate,
- Cold moist skin,
- Pallor,
- Thirst,
- Alteration of Mental status, and
- Suppression of kidney function.

*Shock is a condition due to loss of effective circulation of blood volume resulting disorder of cellular function.*

#### **Emergency Management of Shock**

- Maintain air way.
- Start resuscitation procedure.
- Give oxygen inhalation.
- Start Intravenous fluid and blood transfusion.
- Insert a urinary catheter.
- Carry out a rapid physical assessment to determine the cause of shock.
- Maintain record of vital sign i.e.-blood pressure, pulse, respiration and skin temperature.
- Elevate the feet end slightly to improve cerebral circulation and to promote return of venous blood to the heart (this position is not applicable in case of head injury).
- Give medicine according to the physician's advice.
- Re-assure the patient to prevent apprehension.
- Relief pain by analgesic.
- Maintain body temperature.

### **1.4.8.3. Heat Stroke**

Heat stroke caused by failure of heat regulating mechanism of the body when the atmospheric temperature is high.

#### **Signs and Symptoms**

- Headache and visual disturbances,
- Dizziness and nausea,
- Hot, dry skin,
- Weak, rapid and irregular pulse,
- High fever (41-43<sup>0</sup> F) or (105-109<sup>0</sup>F),
- Cessation of sweating,
- Muscle cramping, and
- Convulsion.

#### **Management of Heat Stroke**

Reduce temperature immediately to 39<sup>0</sup>c or 102<sup>0</sup> F by-

- Placing the patient in a tub of cold water.
- Sponging patient with cool water.
- Giving chilled saline enema if the temperature does not come down.
- Monitor patient carefully to see the change with rapid change in body temperature.
- Give oxygen inhalation to supply tissue needs if necessary.
- Give medication and intravenous infusion if directed.
- Measure urinary out put, because acute tubular necrosis is a complication of heat stroke.
- Advise patient to avoid immediate re-exposure to high temperature.

### **1.4.8.4. Anaphylactic Shock**

An Anaphylactic shock is a generalized systematic and fatal reaction due to causative agent's like- foreign sera, drugs or insect venoms.

#### **Signs and Symptom**

- Respiratory distress.

## Introduction to Medical Surgical Nursing

- Itching over the entire body.
- Feeling of warmth.
- Tachy cardia (Rapid pulse).
- Falling of blood pressure.
- Uncountable pulse rate.
- Nausia, vomiting, abdominal pain and diarrrohea may cause general malaise.
- Circulatory failure leading to come and death.

### **Management of Anaphylactic Shock**

- Establish airway by emergency resuscitation.
- Administer epinephrine if advised.
- Turn the face of the patient to one side.
- Support the angles of mandible.
- Apply oropharyngeal suction.
- Give oxygen therapy.
- Start intravenous infusion.
- In case of insect bite, apply tourniquet above the injection site.
- Give antihistamine drugs as ordered.
- Watch for arrhythmia and cardiac arrest.
- If patient is convulsive, short acting barbiturate may be administered.

#### **1.4.8.5. Food Poisoning**

Food poisoning is a sudden illness, which may occur after ingestion of contaminated food or drink.

Botulinum is a serious type of food poisoning. It is caused by food in which clostridium botulinum produces poisoning.

#### **Management**

- Determine the source and type of food poisoning.
- Take the history of the patient to detect the nature of food poisoning.
- Monitor vital sign continuously.
- Give oxygen inhalation if necessary.

- Maintain fluid and electrolyte balance, because severe vomiting produces alkalosis and severe diarrhea produces acidosis due to food poisoning.
- Control hypoglycemia.
- Control the nausea.
- When acute symptoms and signs subside, give sips of weak tea, normal drinking water and other liquids 12 to 24 hours after the nausea and vomiting subside.



### 1.4.9. Exercise

#### 1.4.9.1. Objective type

##### Multiple choices

Please put the tick (✓) mark against the correct answers

1. An emergency condition is-
  - a. Incidental in nature
  - b. Chronic in nature
  - c. Both 'a' and 'b'
  - d. None of the above.
  
2. The first step in heat stroke management is to-
  - a. Reduce temperature
  - b. Give medication
  - c. Give plenty of drinks
  - d. Advise to avoid heat exposure.
  
3. Signs and symptoms of shock are-
  - a. Decreased arterial pressure
  - b. Increased pulse rate
  - c. Cold and moist skin
  - d. All of the above.
  
4. The first step of Management of Hemorrhage is to-
  - a. Insert intravenous cannula
  - b. Check vital signs
  - c. Watch the patient
  - d. Apply direct firm pressure over the bleeding area.

#### 1.4.9.2. Essay type question

1. List ten principles of emergency management of a patient.

## Unit 2: Nursing Management of Surgical Patients

### Lesson 1: Pre-Operative Nursing Management

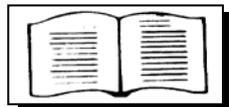
#### 2.1.1. Learning Objectives



At the end of this lesson you will be able to-

- define the term surgery,
- describe the aims of surgery,
- identify the risk factors of surgery, and
- explain the preoperative management of patient.

"Surgery is defined as the treatment of disease injury or deformity by manual or instrumental procedure" Miller and keane (1996:p 1078) cited by watson and Royle (1987:186).



#### 2.1.2. Objectives of Surgery

1. To save organs.
2. To preserve and promote health.
3. To restore defective or missing part of the body (plastic surgery).
4. To remove diseased or affected area, e.g. cancer, ulcer, gangrene, infected wound etc.
5. To diagnose certain diseases: send some tissue from the suspected part for biopsy.
6. To save and prolong life.

Surgical operations can be categorized as elective, emergency or essential. An elective surgery is not concerned with the patient's survival but is expected to reduce sufferings and promote health, e.g., tonsillectomy. Emergency surgery is considered essential to remove diseased part or to prevent a threat to the patient's life, hysterectomy due to cancer uterus.

#### 2.1.3. Pre-Operative Nursing Management

The pre operative nursing care is provided before an operation, which begins with the decision that surgery is to be performed. The operative period differs according to the nature of surgery that may extend over an hour to several days or weeks. Pre operative care also varies according to the types of surgery, location of the surgery and the condition of individual patient.

Nevertheless, many necessary considerations and nursing measures are common to the management of all surgical patients apart from the particular type of operative procedures.

Effective and appropriate pre operative care contributes to the restoration and maintenance of optimum physiological and mental status of the surgical patient both before and after operation. Thus, it is crucial to assess the individual's need and carry out pre operative measures accordingly.

### **2.1.4. Components of Pre-Operative Preparation**

- Pre operative education and psychological preparation.
- Immediate pre operative preparation.

#### **2.1.4.1. Psychological Preparation and Pre-Operative Education**

There are some common problems to the patient before operations including: anxiety, fear and lack of knowledge etc. Nurses should identify possible causes of anxiety, stress and concerns of patients. It is necessary to explain the surgical procedures (including pre and postoperative complication) briefly, and provide mental support to the patient and family. Most patients and their families fear may be unrealistic, based on misinformation and misconceptions about the surgery. The level of patient's anxiety may be assessed by observation of behaviours such as hyperactivity and restless movement, increased talking and repetition of questions, crying, insomnia and decreased social interaction.

Nurses should encourage the patient to reveal patient's fear and concerns. Understanding the religious and spiritual needs of the patient may help in the selection of appropriate support for the patient and family.

#### **2.1.4.2. Physical Preparation**

**Physical assessment:** Common concerns with all surgical patients are cardiac, pulmonary and renal function, blood volume and composition, electrolyte balance and nutritional status. There are some basic investigations for all surgical patients:

**Laboratory tests:** Stool and urine analysis, test for blood grouping and Rh factor, hemoglobin, white cell count, bleeding and clotting time (BTCT), fasting sugar etc.

**Radiological examinations:** This include X-ray chest, other special investigative procedures may be carried out for particular patients.

**Physical examinations:** Auscultation, palpation and observation including temperature, pulse, respiration, BP etc are done according to the patients need.

**Patient's history:** Along with various investigative procedures and physical examinations, appropriate history may be significant in the patient's responses to surgery and recovery. Obesity and nutritional deficiencies interfere with wound healing and predispose to cardio vascular and pulmonary disorders. Smoking irritates the respiratory tract and increases secretions; platelet functions and coagulation may be hampered.

History of any allergic reactions should also be recorded in the history sheet.

**Nutrition and fluids:** A well-balanced diet is very important to maintain and promote patient's health. A under nourished patient tolerates surgery less well. Protein deficiency hampers healing process and reduces the resistance to infection because of a slower response in antibody formation. Vitamin C enriched food also helps in wound healing. Vitamin B complex plays an important role in normal glucose metabolism and for the maintenance of cellular enzymes. A low intake of carbohydrate lessens the liver glycogen and the storage of glucose emptied during the period when food intake is reduced, which leads to catabolism of the body tissues. Intake of sufficient water and fluid is crucial to maintain a normal electrolyte balance for a surgical patient. Intake and output record to be maintained and patient is observed closely for signs of dehydration. Dehydration (if any) is corrected by either oral or parental preparations.

#### **2.1.5. Rest and Exercise**

The patient waiting for a surgery may experience insomnia and restlessness due to anxiety and fear. A mild sedative may be given to promote relaxation and necessary rest.

#### **2.1.6. Specific Therapy**

Certain therapeutic treatment is recommended to correct secondary physiological problems. A course of effective antibiotic may be given to clear up infections (if any). A patient with anemia may require blood transfusions according to the individual need. A person with diabetes may receive dietary or insulin therapy to lower and control the blood sugar level (until the urine is free of sugar and ketones). Any other specific treatment may require getting fit for an operation.

### **2.1.7. Informed Operative Consent**

In seeking consent from the patient and family doctors and nurses are required to provide necessary information about the surgical procedures. After briefing the operative procedures consent form (written permission for surgery) to be signed by the patient or guardians. The purpose of informed consent is to protect hospital authority concerns (surgeon, anesthetist) against claims related to adverse consequences and to protect the patient against unauthorized procedures.

### **2.1.8. Local Site Preparation/ Personal Care**

Patient is advised to have a shower day before surgery to ensure cleanliness. Preoperative skin care is necessary according to the site of operation. The skin of the site of operation should be as hair free from as possible of dirt particles, organisms, etc. Care is also being given to prevent trauma to the skin at operation area. Hair is kept clean and combed and neatly arranged. All jewelers and other valuables to be removed for safekeeping.

### **2.1.9. Special Procedures**

Some special measures may be considered for certain operations. A nasogastric or duodenal tube may have to be inserted. Sometimes an intravenous infusion or blood transfusion is necessary for particular patients.

### **2.1.10. Immediate Preoperative Preparations**

**Nutrition and fluid:** A well balance diet specially protein, mineral and vitamin enriched food is given according to the patients conditions. A normal fluid balance is extremely important for this patient, because dehydration predisposes to electrolyte imbalance and shock. Patient should be kept nil (nothing) by mouth at he night before surgery.

#### **2.1.10.1. Rest and Sleep**

Patient's physical and mental comfort (as much as possible) should be considered. Using any means should ensure adequate rest and sleep of the patient.

#### **2.1.10.2. Elimination**

If the patient has had a normal bowel movement the day before surgery it may not necessary to consider for an evacuation enema, except for

operation in gastro intestinal tract or in the pelvic. A course of laxative may be given to promote bowel evacuation.

The bladder should be emptied before entering to the operation theatre to prevent the hazards of incontinence of urine. Catheterization may consider for a particular patient who is unable to void normally.

#### **2.1.11. Emergency Preoperative Management/ Preparation**

Preoperative management in emergency operation is restricted to basic needs of patients when the patient is in shock or unconscious the blood grouping and blood hemoglobin is checked immediately. An intravenous infusion is started as soon as possible to combat electrolyte imbalance. Urine analysis also performed immediately. Written permission for operation is obtained from the patient as quickly as possible. All other necessary procedures are carried out immediately according to the patient's requirement.

#### **2.1.12. Medication**

Preoperative drug therapy is carried out according to the surgeons order. A sedative (diazepam) is usually given in the night before sleep to ensure a full night's sleep.

All preparatory measures should be completed before preoperative medication is given. Preanesthetic medications commonly referred to as premeditation that is given approximately 45 to 90 minutes before operation. The premedication normally includes inj. Pathedrine to produce relaxation and reduce anxiety and stress.

The patient may also receive an anticholinergic preparation such as atrophine to decrease salivary and respiratory secretions and block vagal impulses that produce bradycardia. The patient is then left undisturbed in a calm and quiet place. A family member should be accompanied the patient to provide comfort and security.

A final check and recording of vital signs including pulse, respiration and blood pressure to be done about every ½ hour after the premeditation has been administered.

#### **2.1.13. Expected Outcomes from the Pre-Operative Patient**

- The patient identifies concerns related to surgery.
- The patient's level of anxiety related to surgery is reduced as evidenced by: blood pressure, pulse and respiratory rates remain

## Nursing Management of Surgical Patients

within the normal range, behaved and talked to others normally and ability to sleep well day before surgery.

- Physical preparation of the patient is performed timely and safely.
- The patient demonstrates the ability to carryout deep breathing; coughing and leg exercises and can explain purpose of these activities (Watson and Royal 1987).

### **2.1.14. Patient's Chart/ File**

A complete chart including the diagnostic reports, progress notes, patient's history, the operation consent and nursing notes are put together and sent to the operation theatre (OT) with the patient.

### **2.1.15. Glossary**

Catabolism, Digestion, Ingestion, Absorption, Elimination, Diaphragm, Digestive juices, Bactericidal, Peristalsis, Dysphasia, Anorexia, Leucocytosis, and Mc Burney's Point (refers to the area about 2 inches from the anterior superior iliac spine on a line with the uonbilicus. It corresponds with the normal position of the appendix), Flatulence, Bradycardia.



### **2.1.16. Exercise**

#### **2.1.16.1. Multiple choices**

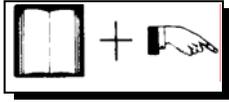
1. An Elective surgery is concerned to-
  - a. Increase patient's survival
  - b. Increase patient's life style
  - c. To reduce patient's sufferings and promote health
  - d. To remove the diseased parts of the patient.
  
2. For promoting bowel evaluation, a course of-
  - a. Purgative may be given
  - b. Laxative may be given
  - c. Cathartic may be given
  - d. None of the above.
  
3. A consent form (written permission for surgery) to be signed by-
  - a. The patient or guardian
  - b. The doctor or nurse
  - c. The director of the hospital
  - d. The technician.

#### **2.1.16.2. Short and broad questions**

- a. Define surgery.
- b. What are the objectives of surgery?
- c. What is the specific therapy of a preoperative patient?
- d. Describe the component of preoperative preparation.

## Lesson 2: Post Operative Surgical Nursing

### 2.2.1. Learning Objectives



At the end of this lesson you will be able to-

- identify nursing interventions to meet patient needs during the post anesthetic period,
- describe possible post operative complications and its management procedures, and
- explain measures to preserve and promote patients physical and psychological well-being in the post operative period.



### 2.2.2. Postoperative Care

The nurse who is caring for a post operative patient, must know and realize the nursing implications of the particular operation for the patient, its possible effects on the patients physiological functions and the care and support required to help the patient to get recover to normal with a minimum sufferings.

Every operation has certain effects that vary into some extent and depend on each particular patient and each specific surgery. The discussion made in this lesson concerns with general post operative interventions applicable to most surgical patients in most situations.

Nursing care in the post anesthetic period or immediate postoperative interventions

The aims of nursing care in the immediate postoperative period are to:

- Assess cardiovascular and pulmonary functions, level of consciousness, psychological responses, and physical activity.
- Ensure adequate ventilation.
- Maintain adequate circulation.
- Assess and evaluate potential post operative complications and include emergency management if required.
- Protect the patient injury.

### 2.2.3. Assessment

The immediate post operative or post anesthetic period is critical to almost all surgical patients, therefore constant and careful observation is required. When the patient is received in the recovery room, an urgent check is

made of the pulse, respiration, temperature, blood pressure, colour and condition of the skin along with the level of consciousness. These vital signs are checked and recorded every 15 minutes for 2 hours and then at frequent intervals according to the patient's condition. The fluid intake and output chart is maintained accurately.

#### **2.2.4. Ensure Adequate Ventilation**

- Airway passage must be kept clear to maintain adequate ventilation. Pulmonary and salivary secretions rise during anesthesia which may retained and obstruct the respiratory lobe, resetting in the collapse of a segment of the lung. Postoperative pneumonia also may develop because of the retained secretions in the respiratory passages.
- Postoperative airway blockage also results from the depression of central nervous system due to general anesthesia (g.a).
- Decreased respiratory muscle activity may occur due to the administration of muscle relaxant during the preanesthetic medications.
- Partial airway obstruction caused by the tongue or lower jaw blocking the pharyngeal area.

#### **2.2.5. Maintenance of Adequate Circulation**

The vital signs are checked and recorded every 5-15 minutes. The operated area is checked for signs of bleeding.

#### **2.2.6. Protection of the Patient from Injury**

Patient returning from immediate after an operation under general anesthesia may be very restless. Thus, cot-sides are used on the bed to protect the patient from any injury and trauma.

#### **2.2.7. Possible Complications Immediate After Surgery**

##### **2.2.7.1. Hypoventilation**

Hypoventilation is a common but serious problem for a patient immediate after operation. It may result from the obstruction of airway passage. Excessive secretions or the depression of respiratory muscle activity may cause airway obstruction.

##### **2.2.7.1. Signs and Symptoms of Hypoventilation**

- Slow and shallow respirations.

## Nursing Management of Surgical Patients

- Audible and moist gurgling respiration indicating excessive salivary or pulmonary secretions.
- Wheezing respirations.
- Rates detected by auscultation.
- Restlessness, cyanosis, rapid pulse rate etc.

### **2.2.7.2. Management**

- If the patient is unconscious the patient is placed in lateral or semi prone position (unless contraindicated by the nature of operation).
- Excessive secretions may be removed by pharyngeal suction.
- Oxygen therapy may be administered.

### **2.2.8. Shock**

Shock is a circulatory failure that results from inadequate oxygen supply to the tissues and organs.

Possible causes of postoperative shock are-

- Reaction to drugs and anesthesia.
- Loss of blood or other body fluids.
- Inadequate ventilation.
- Jarring patient (bed) during transport.
- Cardiac failure.
- Severe pain.
- Cardiac dysrhythmias.

Shock is after life threatening if not recognized and treated promptly. Shock may be recognized by:

Low blood pressure, restlessness, marked paleness of the skin, bluish discoloration of the lips, tips of the fingers and nails, cold and moist skin, rapid and thready pulse.

#### **2.2.8.1. Management of Shock**

- Maintenance of airway.
- By any means is crucial to manage a patient with shock.
- Patient should keep in a comfortable and safe position.

- Administration of oxygen therapy may be required.
- Start intravenous fluid immediately.
- Physical examinations and some specific investigations should be performed, to identify the possible cause of shock.
- Manage the patient according to the physical arrangement and laboratory investigations.
- Vital signs should be checked and recorded frequently.
- Symptomatic treatment is carried out to relieve sufferings e.g. analgesics for pain.

### **2.2.8.2. Hemorrhage**

**2.2.8.1. Causes:** Hemorrhage may be external or internal.

- It may result from any injury,
- A slipped ligature,
- Dislodgement of a clot that plugged several blood vessels.

### **2.2.8.2. Signs and Symptoms**

- Bleeding from the affected part,
- Fall in blood pressure (low BP),
- Rapid and weak pulse deep and rapid respirations,
- marked pallor,
- Patient may feel thirsty and any other signs and symptoms of dehydration due to severe bleeding, and
- Cold and moist skin and other signs and symptoms may develop if the patient is managed promptly and accurately.

### **2.2.8.3. Management of Hemorrhage**

- Determine the area of bleeding,
- The dressing should be checked frequently to discover the signs of severe bleeding,
- If there is severe bleeding surgeon should be called immediately, and
- The dressing should be reinforced and the patient returned to operating theatre to ensure necessary treatment.

### **2.2.9. Return of Patient to Surgical Unit/ Ward**

When the patient returns to the surgical ward/unit from the recovery room, the patient is immediately assessed for level of consciousness, pain and discomfort and the status of vital signs. The dressing is also checked for signs of bleeding. Necessary equipment is connected such as, the cot-sides raised and the call-button placed within reach of the patient.

If the patient is conscious and the cited signs are stable, an assessment is carried out half hourly and extended to hourly and then 2 to 4 hours intervals according to the patient's general condition over the next 12 to 24 hours.

The patient is kept in a comfortable position to maintain body alignment. If a spinal anesthetic has been given, the patient should be kept flat and no pillow is required. This position is maintained until sensation and motor ability have resumed to the lower limbs and the systolic pressure is over 90 mm Hg.

Other nursing interventions are carried out according to the patient's condition and surgeon's advice. For example, oxygen therapy, dressings, intravenous infusion, suction, appropriate drainage system, special positioning and drug therapy.

Any drainage tubes that are to be connected to appropriate bottles or a suction system must receive careful attention, because they are often clamped during transportation from the operating theater (OT). If drainage is not promptly established, the tube may become blocked that cause serious effects on the affected part of the body. For instance, when a gastro intestinal tube remains clamped or blocked following gastric or duodenal operations, abdominal distension may occur which may cause a blockage of secretions into the peritoneal cavity and may develop peritonitis.

### **2.2.10. Evaluation**

Evaluation is usually based on expected outcomes-

- The patient is alert, opens eye spontaneously and in response to speech and call for assistance when necessary.
- Vital signs including blood pressure, pulse, respirations are stable that indicate adequate respiratory and circulatory function.
- There are no post operative complications. If there was any complications that have been managed and controlled satisfactorily.
- Acutely ill patients who require further close observation should be transferred to an intensive care unit (ICU).



### 2.2.11. Exercise

#### 2.2.11.1. Multiple choice questions

1. The possible common complications immediate after surgery is-
  - a. Hyperventilation
  - b. Excessive bleeding
  - c. Hypoventilation
  - d. Bradycardia.
  
2. In postoperative or post anesthetic period the vital signs of all surgical patients are checked and recorded-
  - a. In every 15 minutes for 2 hours
  - b. In every 10 minutes for 3 hours
  - c. In every 20 minutes for 2 hours
  - d. In every 25 minutes for 3 hours.
  
3. Shock of a postoperative patient is due to-
  - a. Hyperventilation
  - b. Pharyngeal suction
  - c. Circulatory failure
  - d. None of the above.

#### 2.2.11.2. Analytical questions

- a. What are the aims of nursing care in postoperative patient?
- b. What are the signs and symptoms of hypoventilation?
- c. Find out the causes of postoperative shock.
- d. How can you manage of postoperative shock?

## Lesson 3: Continuing Post Operative Nursing

### 2.3.1. Learning Objectives



At the end of this lesson you will be able to-

- promotion of comfort and control of pain and discomfort,
- maintain fluid and electrolyte balance and appropriate nutrition,
- promote a return to normal patterns of elimination,
- promote early ambulation,
- promote wound healing,
- ensure adequate ventilation,
- reduce stress and anxiety of the patient and promote psychological comfort, and
- prepare patient for discharge and self management.



### 2.3.2. Promotion of Comfort and Control of Pain and Discomfort

Postoperative patients often experience discomforts including pain, nausea, vomiting, gasping and restlessness.

### 2.3.3. Pain

Pain at the operation site is very common after nearly all types of surgical procedures. Postoperative pain usually persists 24 to 48 hours but may continue longer depending on the nature and site of the operation. Severe pain may cause restlessness and contribute shock and injury to the site of operation. Assessment should be made to determine the causes of pain including subjective data on the nature, duration and origin of the pain and the patient's perception of the cause.

Pain may not only due to the incision but it may result from abdominal distention a full bladder, reduced circulation because of immobility, pressure of spasm, wound infection.

Objective data include observation of the patient's posture and position, facial expression and vital signs are to be accomplished.

### 2.3.4. Interventions

It is usually impossible to prevent postoperative pain but it can be lessened so that the patient is comparatively comfortable. Possible measures to minimize pain are the followings-

- Patients pain should be satisfactorily controlled by administering analgesics such as pethidine, paracetamol etc.

- The patient is encouraged to practice deep breathing and coughing and the patient's position is changed to keep the patient relatively free of pain.
- Measures to reduce anxiety and apprehension may minimize pain. The patient may encourage saying special prayer according to religious individual beliefs and practices. The patient who recognizes type and course of pain may participate in planning and carrying out pain control measures which is generally less stressful and more tolerant of the discomfort.
- If the cause of pain is other than incisional measures are taken to alleviate the cause for example, emptying a full bladder, loosening of a light bandage if permissible.

### **2.3.5. Flatulence and Abdominal Distention**

Post operative patients particularly who have had an abdominal surgery may complain of severe pain and distention that are frequently due to an accumulation of gas in the gastrointestinal tract. Most of gas is air that is swallowed during nausea or when the patient is anxious and fearful. Depressing effects of preoperative drugs and anesthetics, handling of intestine during abdominal surgery may responsible for a reduction in peristalsis.

Distention may persist until bowel tone regains and peristalsis resumes. If the distention persists, it may indicate serious complications such as peritonitis, paralytic illus, mechanical intestinal obstruction etc.

#### **2.3.5.1. Management of Flatulence and Abdominal Distention**

- Early ambulation (if permissible) is often helpful to prevent accumulation of gas and flatulence.
- The patient should be kept in a comfortable position.
- The patient should be kept nil (nothing) by mouth until further advice.
- The pain and discomfort may be reduced by the insertion of a rectal (flatus) tube for a while.
- Enema fluid is recommended if necessary.
- Maintain may be electrolyte balance.
- If the distention persists and there is a marked indication of peritonitis or intestinal obstruction call and consult with surgeon immediately.

### **2.3.6. Maintaining Fluid and Electrolyte Balance and Adequate Nutrition**

#### **▪ Fluid and Electrolyte Balance**

Maintenance of fluid and electrolyte balance is crucial to post operative patients. Fluid and electrolyte balance can be maintained in several routes such as blood transfusions, intravenous infusions, fluid drinking by mouth, rectal infusion etc. Maintaining intake output chart is also very important during postoperative period.

A blood transfusion may be recommended during a major surgery or immediately after operation to restore the blood loss or to prevent shock. During blood transfusion the patient should be observed closely for signs and symptoms of adverse reactions e.g. chill, fever, convulsion, pain in the lumber region or chest, dyspnea or fall in a blood pressure.

If reaction is developed, the blood transfusion is stopped and the doctor should be called immediately.

Oral fluid and food are not permissible during the period of nausea and vomiting and also following abdominal operations. Thus intravenous infusions of electrolyte and glucose solutions are administered to maintain electrolyte balance. For at least 24 to 48 hours following a major operation, fluids may retain by the body because of the stimulation of antidiuretic hormone (ADH) due to the stress response to trauma and effect of anesthesia. An increased sodium and water retention may occur due to renal vasoconstriction and increased aldosterone actively during operation. Over hydration can result from excessive fluid administration, which may cause renal impairment. When oral fluids are allowed sips of water are given and increased in amount progressively to combat vomiting. Frequent mouthwash is required when the patient is not eating orally.

### **2.3.7. Maintaining Adequate Nutrition**

Oral intake is the best way to supply proper nutrition. Postoperative patients often lose weight due to catabolism, nutrients used for wound healing and inadequate intake of food during nausea and vomiting and while receiving intravenous fluids. The meals should contain all the nutrients in adequate compositions. The intake of protein and vitamin C should be increased and is particularly important to restore blood loss and damage to other body tissues during surgery.

The post operative patient may be unresponsive to oral intake therefore, the patient may be encouraged to eat more by offering small amounts of those foods which are preferable to the patient. The necessary assistance is

required until the patients regain adequate strength. The intake output chart is maintained correctly until a normal diet is resumed. Peristalsis decreases temporarily after abdominal and pelvic surgeries as a result of handling of the gastrointestinal organs during operation. Peristalsis then returns progressively in 24 to 48 hours (72 hours after colon surgery). However, peristalsis is not affected in other types of operations. Patient with abdominal or pelvic operations bowel sound should be monitored regularly.

### **2.3.8. Promotion of Normal Elimination**

#### **▪ Patho physiology of Urine Elimination**

A patient, who is well hydrated, usually voids within 6 to 8 hours after surgery. The total urinary output on the day of surgery may be less than the administration of intravenous fluid. The small amount of urinary output often results from fluid loss during surgery, increased insensible fluid loss, and vomiting and fluid retention. Fluid retention is due to the increased secretion of antidiuretic hormone (ADH), which occurs with major trauma and stress during surgery. As body functions stabilize, the fluid and electrolyte balance usually returns to normal by 48 hours after surgery.

In early postoperative period the patient may have a temporary inability to void due to a depression of the bladder sensitivity to distention and the impulse that initiates the desire to void and the reflex emptying are not introduced. When the bladder becomes distended, a small amount of urine may be passed frequently, but the bladder is not emptied retention with overflow.

### **2.3.9. Causes of Postoperative Urinary Retention**

- Recumbent position,
- Nervous tension and fear of pain,
- Anesthetic causes decreased bladder sensation and ability to pass urine,
- Narcotic drug also decreased bladder sensation, and
- Trauma due to pelvic surgery which may cause local edema.

#### **2.3.9.1. Clinical Features of Urinary Retention**

- Restlessness,
- Pain or of a feeling of pressure in the pelvic area, and
- A palpable fullness over the symphysis pubis.

### **2.3.9.2. Intervention**

Distention and stagnation of urine may predispose to inflammation and urinary infection. Therefore, if the patient cannot void for 12 hours, patient should be monitored closely and should be assisted to void by-

- Opening taps to produce of running water,
- Pouring warm water over the vulva of the female patient,
- Monitor urinary output equals fluid intake, and
- Catheterization is recommended if bladder is distended and urinary retention is prolonged (more than 24 hours).

### **2.3.10. Maintaining Bowel Elimination**

Bowel elimination is not an immediate postoperative concern. The bowel is usually empty until 2 to 3 days when food intake is restricted. If a normal diet is quickly reinitiated, bowel elimination may be resumed gradually.

Early ambulation and allow the patient to use toilet or commode, help in re-establishing normal bowel elimination.

If the patient is constipated a laxative or enema may be given after 2 or 3 days after operation.

#### **2.3.10.1. Maintenance of Early Ambulation**

Early ambulation (if not contraindicated) is a significant factor in promoting postoperative recovery and combating postoperative complications. If the vital signs are stable and the general condition is satisfactory the patient is encouraged and assisted to walk very carefully to prevent is gradually increased according to the patients condition and when the patient feel stronger and more secure.

#### **2.3.10.2. Benefits of Early Ambulation**

- Reduces the incidence of respiratory and circulatory complications.
- Promotes gastro intestinal peristalsis and prevention of constipation, abdominal distention and paralytic ileums.
- Increases kidney function and prevention of urinary retention.
- Decreases pain.
- Increases metabolism.

### **2.3.11. Promotion of Wound Healing**

Wound care is crucial to prevent infection. A mild inflammatory reaction with fluid and cellular exudates develops during the first 24 hours.

On completion of the surgery, the incision is covered with a sterile dressing and the area is checked carefully and frequently during the immediate postoperative period for signs of hemorrhage or drainage. The gap between the incised edges is normally bridged within 2 to 3 days as epithelial cells migrate across the wound and help to seal the wound. During the next 10 days a collagen net work forms and regeneration initiates. If the process of wound healing is adequate the area will be highly vascular and red in appearance and the edges slightly elevated. The collagen that is deposited will provide a good support for the wound within 5-10 days. Thus, sutures are often removed in this time, depending on the site and nature of surgery. If there is no complication, the wound scar appears a thin and white line within six months.

#### **2.3.11.1. Wound Infection**

Wound infection may associate with high fever, increased pulse rate, deterioration of the general condition of the patient, swelling and tenderness of the wound area, purulent discharge from the wound etc.

#### **2.3.11.2. Interventions**

- A swab of the first discharge is sent for culture to identify the causative organisms.
- An antimicrobial drug (antibiotic) is given.
- Moist aseptic and dressings are recommended to increase the blood supply to the area which promote wound healing.
- In take of foods high in protein and vitamin C. Protein and C are needed for collagen formation and help maintain the integrity of the capillary walls.

### **2.3.12. Preparation for Discharge from Hospital**

With modern surgical techniques the wound usually heals within one week. Therefore the convalescent period is relatively short. The course of hospitalization may varied according to the type of surgery performed and the prognosis of the individual patient. Early ambulation, self care and early re-establishment of a normal diet quicken recovery and help to resume patient's strength, making a shorter period of hospitalization.

During hospitalization the patient and family should be prepared for any care that must be and any essential arrangements for convalescent care should be accomplished before discharge. Patients are instructed and helped to become as self-sufficient as possible before being discharged. If dressing are needed it should arranged according to the local facilities. In most developed countries dressing and other treatment (if required after discharge) are usually carried out by the respective community nurse. Where there is no such a system the patient and family members are instructed how the necessary treatments are carried out at home.

On discharge the patient is given an appointment for a follow up visit in the respective unit.

### **2.3.13. Helping Meet Psychological Needs**

All postoperative patients require compassionate care but nursing measures to reduce the patient's anxiety should be specific to the individual patient. An opportunity should be provided to discuss the patients concerns and perception of the surgical experience. These concerns may be categorized under three headings.

- Concerns specific to the surgery performed,
- Concerns over loss of a body part, and
- Concerns about the future.

Future concerns include those related changes in life style particularly sexuality, economic status, prognosis or permanent effects.

**Assessment:** Immediate and long term problems are identified by close observation. It must be remembered that expressions including anger, restlessness, crying excessive joking and laughing, withdrawal are the possible signs of anxiety.

**Intervention:** When the patient is dealt with new and unfamiliar activities the nurse should stay with the patient and provide both physical and emotional support according to specific requirement of the individual patient.



### 2.3.14. Exercise

#### 2.3.14.1. Multiple Choices

1. In abdominal surgery patient, flatulence and abdominal distention is due to-
  - a. Accumulation of gas in GIT
  - b. Accumulation of water in GIT
  - c. Bleeding in GIT
  - d. Accumulation of food in GIT.
  
2. Postoperative pain usually persists for-
  - a. 12-18 hours
  - b. 20-22 hours
  - c. 24-36 hours
  - d. 24-48 hours.
  
3. After operation fluid may retain in the body by the action of-
  - a. SGOT
  - b. ADH
  - c. ACTA
  - d. None of above.

#### 2.3.14.2. Short and broad questions

1. What do you mean by flatulence and abdominal distention?
2. How can you manage flatulence and abdominal distention?
3. What are the causes and management of postoperative urinary retention?



## Unit 3: Disorders of Digestive Functions

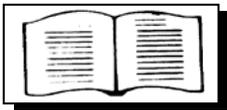
### Lesson 1: Disorders of Digestive Tracts

#### 3.1.1. Learning Objectives



At the end of this lesson you will be able to-

- describe the structure of digestive tracts.
- list the function of stomach, small intestine and large intestine.
- write the management and clinical features of peptic ulcer.
- describe the sign and symptoms of appendicitis, and
- write the management of a patient with Appendicitis.



#### 3.1.2. Review of Digestive Structures and Functions

The digestive canal is a long hollow empty, concave muscular tube extending from the mouth to the anus. The digestive tube includes, mouth, pharynx, esophagus, stomach, small intestine and large intestine along with appendix, rectum and anus canal.

The main function of the digestive system are: ingestion, digestion, absorption and elimination.

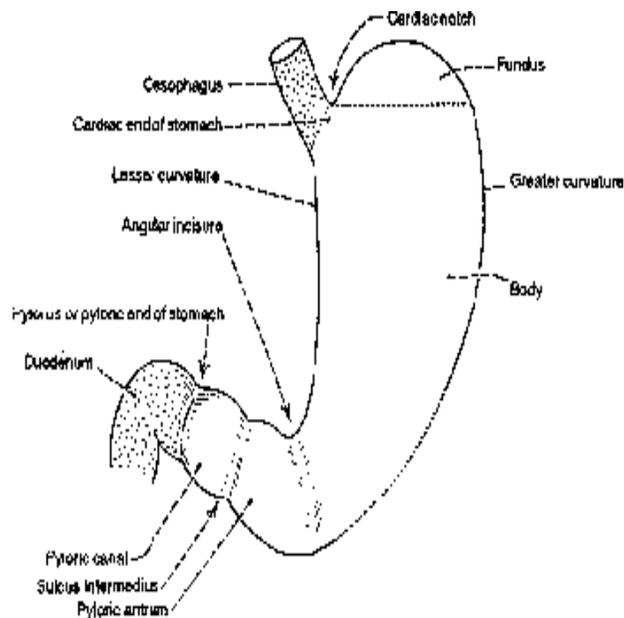


Fig.: Various parts of the stomach

*The functions of the digestive system are; ingestion, digestion absorption of food and fluid including elimination of residue and waste products. (Chilean and Thomas eds 1986)*

## Disorders of Digestive Functions

**Stomach:** It is situated just below the diaphragm and is the widest portion of the digestive tube. The size of stomach varies with amounts that have been eaten. Stomach consists of 3 main parts: the fundus, body and pylorus.

### 3.1.3. Function of the Stomach

The main functions of stomach are-

- The stomach acts as a temporary reservoir of food thus allowing the digestive juices time to work on the various food substances.
- It produces gastric juice, which initiates the chemical digestion of proteins.
- Muscular action mixes food with gastric juices then moves it on to the duodenum (Chilean and Thomas eds 1986 Tindall 1987).

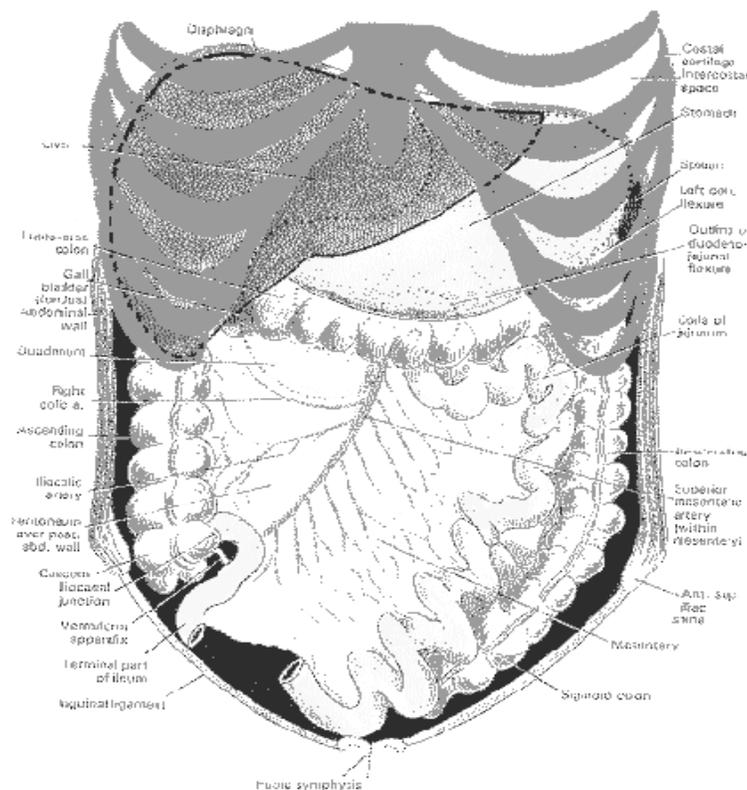


Figure 3: Small intestine

Most digestion takes place in the small intestine.

**The small intestine:** is the longest part of the alimentary canal that is approximately 18 to 20 feet in length. The small intestine contains duodenum, jejunum and ileum. The duodenum is about 25 cm in length and curves in a C shape around the head of pancreas which originates with

the gastric pylorus (Figure -3). The duodenum receives the bile and the pancreatic enzymes through a sphincter at the junction of the common bile duct and the duodenum.

### 3.1.4. Functions of Small Intestine

Most chemical digestion takes place in the small intestine. It has other functions as well-

The contents of the large bowel are unsettle. But the presence of bacteria is essential for a healthy living.

- Onward movement of the contents of small intestine, which is produced by peristaltic, segmental, and pendulum movements.
- Secretion of intestinal juices.
- Accomplishment of digestion of carbohydrates, proteins and fats.

**Large intestine:** The large intestine is 1.5 meters (5 feet) long, originating at the caecum in the right iliac fossa and terminating at the rectum and anal canal deep in the pelvis. The large intestine consists of the caecum, colon (ascending, transverse, descending and sigmoid colon) rectum and anus.

Functions of the large bowel are significantly different from the small bowel. The contents of the large bowel are unsterile. But the presence of bacteria is essential for a healthy living.

The contents, which are found in the first part of the large bowel gradually, become thicker or solid forms as they pass along due to the absorption of watery substances (fluid).

Absorption of water is the principal function of the large bowel.

Finally the solid substances are passed through the rectum and anus during defecation (Chilean and Thomas eds 1986).

### 3.1.5. Common Disorders of the Digestive System

Absorption of water is the main function of the gut.

Disorders of the digestive system are many and varied, Digestive disorders may interfere with the normal ingestion, digestion, absorption, and elimination of residue or with the immune system of the body. Any abnormal function hampers the well-being and also threatens the life.

**Disorders of the digestive system, which are commonly occur includes**

- **Stomatitis:** inflammation of the oral mucosa. It also may involve the gums and lips.

## Disorders of Digestive Functions

- **Oral thrush (moniliasis):** Thrush is caused by the fungus *candida albicans*.
- **Gingivitis:** The inflammation of the gums followed by ulceration and necrosis is called gingivitis.

### Gastritis

Anorexia nausea, vomiting, abdominal discomfort and epigastric fullness are common in gastritis.

Disorders of the stomach and intestines include, gastritis, peptic ulcer, gastric ulcer, duodenal ulcer, pyloric stenosis, stomach carcinoma, carcinomas colon, appendicitis.

#### 3.1.6. Gastritis

Gastritis can be termed as the inflammation of the mucous membrane lining of the stomach. It is a common gastric disorder characterised by anorexia, nausea, vomiting, discomfort, epigastric fullness.

#### Causes

The exact cause of gastritis is often undetermined, but usually results from stress, drug reaction (especially antibiotics, steroids, indomethacin, salicylates etc).

- Gastritis may also result from bacterial or viral infections.
- From irritation by backflow of bile or pancreatic secretions.
- With radiation or from corrosive substances.

#### Treatment and Management

- The patient is advised to take rest either at home or in hospital (if severe non manageable at home).
- Mild gastritis can be treated with antacids, ranitidine.
- Attention is directed forward improving patient's general condition and nutritional status by encouraging a well balanced diet, non-irritating foods such as, milk and milk products, spice free foods.
- In case of severe gastritis, intravenous fluid is administered to maintain fluid and electrolyte balance.
- Rest and a calm environment are needed to reduce the effects of stress and anxiety and to ensure better sleep (Long et al 1993).

#### 3.1.7. Peptic Ulcer

Peptic ulcer is an acute or chronic ulcer that occurs in the area accessible to gastric secretions (lower esophagus, stomach, duodenum, jejunum) (Long et al 1993).

The term peptic ulcer refers to an ulcer formed on any mucosal surface exposed to the irritating effects of gastric hydrochloric acid and the enzyme pepsin (Chilean and Thomas eds 1986).

The ulcer may result from the digestive action of hydrochloric acid and pepsin. The ulcer penetrates the mucous membrane and may invade the underlying submucosal and mucosal tissues (Watts and Royal 1987).

### **Etiology**

There is no conclusion as to the actual cause of peptic ulcer. It is now well established that multiple factors contribute to the formation of peptic ulcers.

1. Normally, hydrochloric acid and pepsin are secreted but ulceration does not develop. A peptic ulcer may occur when the secretory output of hydrochloric acid and pepsin is increased than normal or when the protective mechanisms are defective and insufficient in relation to the volume of acid and pepsin produced. More secretion of hydrochloric acid and pepsin and more chance of occurring peptic ulcer (Particularly duodenal ulcer).
2. Emotional factors: Tension, anxiety, stress and frustration may cause an imbalance in the autonomic nervous system leading to increase vagal stimulation of gastric secretion.
3. Inflammation: Gastritis and the mucosal injury reduce the resistance of the membrane to digestion.
4. Heredity: Heredity is a well recognised factor as in the correlation between duodenal ulcer and the blood group O while gastric ulcer patients are more likely to be blood group A.
5. Smoking: Cigarette smokers have an incidence of peptic ulcers and delayed healing of gastric ulcers.
6. Drugs: Drugs like acetylsalicylic acid (aspirin) adrenal steroids (corticosteroids) indomethin, salicylate is ulcerogenic to certain people.
7. Sex: The incidence of ulcer disease is higher in men than in women.
8. Other factors: Faulty eating habits particularly irregular meals and prolonged gap between meals may cause peptic ulcer. Excessive alcohol drinking or caffeine-containing beverages (coffee, tea, soft drinks)

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also may increase gastric secretion which may accounts for peptic ulceration.

### Clinical Features

*Important investigations to diagnose peptic ulcer are gastroscopy, endoscopy barium meal X-ray, gastric analysis stool for occult blood etc.*

1. Pain and discomfort, usually described as burning in character, are often felt in the mid epigastria region or radiating to the back. The development and relief of pain may have the association with ingestion of food. The onset of pain may be immediately or up to 4 hours after a meal depending upon the detection of ulceration. Pain may relieve by having food or taking an antacid. The patient's rest is disturbed by normal pain particularly with duodenal ulcer.
2. Vomiting is not common in peptic ulcer but may occur if the pain is very severe or if the ulcer is in the pyloric region.

### Diagnosis

Appropriate history and clinical features are very important to diagnose the patient with peptic ulcer.

Diagnosis is also made with carrying out certain investigations that includes: gastrostomy, endoscopy, X-rays with a barium meal, gastric analysis to determine the level of hydrochloric acid secretion, stool examination for occult blood.

### Complications

1. Pyloric stenosis,
2. Perforation of acute or chronic ulcer,
3. Hemorrhage, and
4. Malignancy

### Treatment and Management

The treatment and management can be categorized under two headings, Medical and Surgical.

**General Medical Treatment:** The aims of medical treatment are relief of symptoms. Promote healing of the ulcer and the prevention of complications. The treatment of peptic ulcer is considered according to the general condition of the patient.

**Bed Rest:** Hospitalization is not always necessary for a person with peptic ulceration. If it is severe whether at home or hospital bed rest is the most

effective part in managing a patient with peptic ulcer. Optimum level of comfort is considered.

**Diet:** A regular well-balanced diet, free of fat that are upsetting to the patient is highly recommended.

### **Drug Management**

Most patients with peptic ulcer can be managed successfully by appropriate medications. A drug therapy program from 4 to 6 weeks responds at best 90% of patients with duodenal ulcers.

Antacids such as aluminum hydroxide and magnesium triplicate can be used. In the treatment of gastric ulcers antacids are less effective than renitidine.

Anticholinergic (atropine like) drugs are given adjunctively only when ulcer symptoms are not satisfactorily treated by antacids and/or histamine (H-2) blocking drugs.

Tranquillizers and sedatives may be recommended only to relieve excessive anxiety and nervous tension that could possibly contribute to hyperacidity. Sedatives and tranquillizers should not be used routinely.

### **Advice**

Anxiety, stress and frustration are liable to aggravate the symptoms of peptic ulcer by increasing the gastric secretions. These conditions are not easy to avoid but can be reduced to some extent.

*Gastric perforation and hemorrhage may require emergency surgery.*

Smoking should be discouraged because cigarette smoking doubles the chance of developing peptic ulcer. Smoking also delays the healing process of ulcer significantly caffeine containing beverages should be reduced which can stimulate excessive amounts of stomach acid and pepsin production and aggravate an existing ulcer.

Excessive alcohol drinking can aggravate gastric ulcer and raise the risk of hemorrhage. So alcohol drinking should be discouraged.

### **Surgical Management of Peptic Ulcer**

Evidence shows that most patients with peptic ulcer are successfully recovered from a medical treatment and management. Those who do not respond to medical interventions gastric surgery are done. Emergency

## Disorders of Digestive Functions

surgery may be performed when a peptic ulcer perforates and causes peritonitis or damaged a blood vessel causing severe haemorrhage.

### Indications for Gastric Surgery

- If the symptoms persist,
- If the pain is severe and continues, and
- If there complications including, perforation, haemorrhage, multiple ulcer, pyloric obstruction malignant tumour.

### 3.1.8. Appendicitis

The appendix is a narrow tube about 7-10 cm long (as long as the little finger) extending from inferior part of the cecum. Appendix is a common site of inflammation that accounts for large number of acute abdominal operations. An inflammation of the vermiform appendix is called appendicitis. Appendicitis may be acute or chronic.

The commonest cause of appendicitis is obstruction of the lumen by feces (a small, dry and hard mass of accumulated faeces), a solid foreign body scar tissue in 5th walls of their appendix.

The mucous also ulcerates and quickly become infected; the walls may become gangrenous due to the interference with the blood supply. Perforation is likely to occur when the wall become gangrenous and develops generalised peritonitis.

**Age Factor:** Appendicitis may occur at any age but is more common in children over 4years, adolescents and young adults.

#### 3.1.8.1. Signs and Symptoms of Appendicitis

The common sings and symptoms of acute appendicitis are anorexia, nausea, vomiting associated with abdominal pain. A rebound tenderness (with sudden violence of the pressure, the patient experiences severe pain and discomfort in the appendix region) is present.

At the onset the pain may be diffuse or refereed to the central past of the abdomen, or the lower epigastria region. The nature of the pain can be described as crampy. As the inflammation involves the walls of appendix, the pain becomes localised to the lower right quadrant or McBurneys point. The area is tender on palpation, muscular rigidly may develop gradually.

Anorexia, nausea, vomiting, severe abdominal pain and rebound tenderness are the most typical symptoms of an acute appendicitis.

Along with the earlier mentioned symptoms, a low grade to moderate fever and leucocytosis may be present because of the inflammation.

### 3.1.8.2. Management of Appendicitis

Early diagnosis, treatment and management are crucial to combat serious complications of an acute appendicitis.

Thus, the person with acute abdominal pain is urged to seek medical help as early as possible. Self-treatment is strongly discouraged in case of any acute abdominal pain.

**Assessment:** Subjective data to be collected from the patient with acute abdominal pain through observation, careful history taking and physical examination. It is important to remember that abdominal pain is usually diffused (not localised) apart from a case of acute appendicitis.

A rebound tenderness can be found most often over the McBurney's point if pressure is applied lightly and then release suddenly.

#### Events to be Noted Carefully

- Emesis (vomiting): frequently, volume or amount of blood containing or not.
- Stools: frequency, volume, consistency, presence of blood or mucous.
- Flatulence.
- Signs of electrolyte imbalance or dehydration.

#### Data Analysis: Nursing Diagnosis

Nursing diagnosis is determined from analysis of patient data. Possible nursing diagnosis for the person with an acute gastro intestinal disorder may include but are not limited to the following-

<u>Diagnostic title</u>	<u>Possible cause</u>
Dehydration, abdominal pain-	Diarrhoea and vomiting, intestinal inflammation
Infection: high risk of spread-	Lack of knowledge

**Planning:** expected patient outcomes

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**Diagnosis:** Patient to be diagnosed by taking careful history, observation and carryout some specific investigations

### **Investigations**

Laboratory test:

- Blood for Tc Dc, Hb%, blood grouping, Rh factor, blood for serum electrolytes.
- Urine analysis (R/ME).
- Radiology: Plain abdominal X-ray.

### **3.1.8.3. Complications**

As the Appendicitis progresses, abscess formation may occur around the appendix. Total obstruction of the appendix may become gangrenous and then ruptures. Perforated or ruptured appendix most likely can cause generalised peritonitis.

### **3.1.8.4. Peritonitis**

Inflammation of peritoneum is termed as peritonitis.

### **3.1.8.5. Clinical Features**

Intestinal motility is depressed that may cause abdominal distension with gas and fluid. The abdomen becomes rigid and the patient experiences generalized abdominal pain, raise vomiting, malaise and restlessness-

- Rapid pulse, low blood Pressure (BP) and rapid and shallow respiration can be found.
- Unless the patient is quickly and properly treated the patient shows sign of shock. The signs and symptoms of shock are: the person with shock is pale, exhausted, thirsty, cold and moist skin.
- Bowel sounds are absent as peristalsis is arrested.
- The treatment is always derided toward the general condition of the patient.
- As the patient is very ill and requires bed rest comfort and constant supportive nursing care.
- Gastric and intestinal intubations and continuous suctioning are to be established.
- Patient is kept nil (nothing) by mouth.

- An intravenous infusion is administered and changed according to the electrolyte levels (determined by the blood serum electrolyte test).
- An antibiotic and other symptomatic treatment is required.

### **3.1.8.6. Surgical Management of Appendicitis**

The management of appendicitis depends on the stage to which the disease has advanced. If the symptoms still localized to the appendix, an appendectomy is performed as soon as the diagnosis is determined.

- Appendectomy: The appendix is removed through a small incision in the right side of the lower abdomen.
- Following surgery, the symptoms disappeared normal bowel function returns. Fluid and well-balanced diet to be given according to the patient's condition and desire.
- Symptomatic treatment can be given if necessary such as, pain killer, antibiotics etc.
- Dressing is changed according to condition of wound.
- Wound drain can be done if required.
- Removal of slough (dead tissue) is done after the wound is dried.

The common surgical procedures for the treatment of peptic ulcers are-

- Subtotal gastrectomy,
- Vagotomy, and
- Pyloroplasty.

At present, subtotal gastrectomy is rarely done alone but is usually combined with a form at vagotomy pyloroplasty is also performed combined with a vagotomy (Figure).



### **3.1.9. Exercise**

#### **3.1.9.1. Multiple choice questions**

## Disorders of Digestive Functions

1. The main function of stomach is
  - a. Digestion of food
  - b. Absorption of food
  - c. Temporary reservoir of food
  - d. Acidification of food.
  
2. The part of the stomach is
  - a. Duodenum
  - b. Jejunum
  - c. Ileum
  - d. None of above.
  
3. Appendix is present in
  - a. Stomach
  - b. Small intestine
  - c. Large intestine
  - d. None of above.

### **3.1.9.2.Short and broad questions**

1. Draw and level of digestive system.
2. Describe the different parts of digestive systems.
3. What are common disorders of digestive system?
4. What are causes of peptic ulcer?
5. What are the clinical features of peptic ulcer?

## Lesson 2: Common Problems Encountered in Medical Surgical Nursing

### 3.2.1. Learning Objectives



At the end of this lesson you will be able to-

- define the term menorrhagia,
- describe the different types of cervicitis,
- identify the complications of chronic cervicitis, and
- describe the management of chronic cervicitis.



### 3.2.2. Fluid and Electrolyte Balance

Normal body functioning requires a relatively constant volume of water and a specific concentration of certain chemical compounds known as electrolytes.

**Body Water-** Water is vital for all body processes. It transports substances to and from the cells, promotes necessary chemical activities that is essential for normal cellular functions. A newborn infants weight is approximately 75% water, a young adult male's weight is about 60% and female's is 50% (Lehman and Soltis 1993).

**Fluid balance-** Body fluid is constantly being lost that must be replaced to continue normal function. The body receives water from different types of ingested food and fluids and through Metabolism of both foodstuffs and body tissues.

**Electrolyte balance-** Intake of food and intravenous infusions are the way by which a person receives electrolyte supply to replace daily losses and to maintain electrolyte balance of the body. Daily electrolyte loss is mainly through the kidneys, through the skin, lungs and bowel.

### 3.4.3. Fluid and Electrolyte Imbalance

#### Fluid Imbalance

**Dehydration-** Dehydration is a negative fluid balance may be due to an excessive loss of fluid from the body, an insufficient fluid intake or a deficiency of electrolytes. Excessive fluid loss may be caused by diarrhea, vomiting, fistula or ileostomy drainage, and hemorrhage from the kidneys because of deficiency of the antidiuretic hormone and from the wound, which are draining.

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Effects of Dehydration-The effects of dehydration depend on the volume of the loss of fluid and the rate at which it develops. Effects of dehydration can be acute when it develops rapidly. The effects are particularly serious in case of infants, young children and elderly.

If the dehydration is not corrected properly, the intravascular volume is depleted, the blood pressure falls, the pulse rate becomes weaker and finally radial pulse can not be felt and the patient shows a picture of shock. Oliguria and anuria may develop and causes the retention of metabolic wastes. The patient become lethargic, eventually lapses into coma and even death.

### 3.4.3.1. Management

Assessment of the level of dehydration through careful history taking and skillful physical examination. Mild and moderate dehydration with no vomiting can be correct by the intake of necessary amount of fluid orally. Severe dehydration along with the clinical features of shock must be corrected through establishing intravenous fluid rapidly.

- Continuous monitoring of vital signs and the level dehydration should be done effectively.
- Intake output chart should correctly be maintained to avoid the risk of over hydration edema and other associated problems.
- Emotional support and health education should be provided to the patient and family.

Electrolyte Imbalances- Blood for serum electrolyte are measured in milli-equivalents per litre, indicating the chemical combining activity of an electrolyte. No single electrolyte can be out of balance without causing other electrolytes to be out of balance.

Sodium, potassium and calcium are essential for the passage of nerve impulses. A decrease of calcium concentration in body fluids causes the stimulus to be raised and leads to muscle spasm.

Gastro intestinal (GI) and cardiac symptoms are developed due to electrolyte imbalances.

Hyponatremia (Deficiency of Sodium)- The normal concentration of blood sodium is 138 to 145 Meq / litre. Sodium deficit in the blood can be due to either low blood sodium or an excess of water. Due to reduction of sodium concentration in the extra cellular fluid, potassium moves out of the intracellular fluid. Therefore, the patient with sodium imbalance is also likely to have a potassium imbalance.

Etiology- Underlying causes of hyponatremia are excessive loss from the GI tract, profuse perspiration due to exposure of hot environment, exercise, high temperature.

Investigations- Blood for serum electrolytes to send urgently.

Management- Treatment should be prioritized according to the patient's requirement.

- Treatment of shock to be given when present.
- Fluid and serum electrolyte should be replaced according to the need.

#### **3.4.4. Hypernatremia (excess of sodium)**

If fluids are greatly reduced or excessive salt is taken into the body and retained as a result of poor renal function, sodium may concentrate in body fluids. Hypernatremia causes withdrawal of fluid from interstitial spaces. Extra cellular fluids become hyperosmolar and draws water from the cells, causing cellular dehydration. If fluids are not replaced to dilute the sodium and if excessive sodium is not excreted rapidly, severe fluid and electrolyte imbalance occur that resulting in manic excitement, tachycardia and eventual death.

Water alone is given to treat hypernatremia. If cardiac and renal function is normal a profuse amount of water is given orally or 5% dextrose in water can be administered intravenously. When the normal cardiac and renal function is absent hydration procedure must be done very cautiously to prevent over hydration and edema.

Diuretics are also important to remove excess sodium. When sodium excess is severe, with or without excess water retention, and does not respond to other treatment, renal dialysis may be needed.

Hypokalemia (Deficiency of Potassium)- A serum potassium level is less than 3.5 on Eq/L is termed as hypokalemia. The patient who has not having balance diet for several days are dehydrated is received a large volume of intravenous fluid without replacing the potassium, potassium depletion may develop.

Effects of Hypokalemia- Potassium have a direct effect on cardiac and skeletal muscle function. With severe hypocalcaemia, the patient may die if potassium is not administered promptly.

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Management- The safest way to provide potassium, fresh fruits especially Dub water (Green coconut), bananas, oranges and high protein diet are potential sources of potassium salt that may given orally.

When potassium is administered intravenously it must be diluted and the rate of flow must be monitored cautiously to prevent hyperkalemia and martial arrest. Potassium should not be pushed intravenously.

Hyperkalemia- A serum potassium is more than 5.0meq/l is known as hyperkalemia.

The patient with hyperkalemia causes spasticity of muscles because of their over stimulation by nerve impulses. There may be nausea, vomiting, colic, diarrhea and skeletal muscle spasms. If the condition is not treated effectively over stimulation of cardiac muscle leads the heart beat to become irregular and finally stop.

### **3.4.4.1. Management**

- Nothing by mouth,
- Intravenous infusion, and
- Blood transfusion, fresh blood must be administered.

### **3.4.5. Management of Emergency and Critical Conditions**

#### **3.4.5.1. Patient with Burns**

Burn - Tissue injury resulting from excessive exposure to thermal, chemical, electrical from or radioactive agents. Burn injuries are the worst of all calamities an individual can experience. Due to the systemic effects of the burn injury. Prolonged hospitalization, comprehensive management psychological support is needed during the acute and long-term recovery phases of patients with burn injuries.

Causes of burn injuries-

- Dry heat, moist heat, hot liquids,
- Wood burners, stoves, heaters, and gas burners,
- Fire works.
- Candles.
- Burning leaves.
- Barbecuing,

- Fire works,
- Gasoline,
- Electrical wires, and
- Sun exposure.

### **3.4.5.2. Classification of Burns**

Burns can traditionally been classified into three groups according to the visual characteristics as-

1. First degree,
2. Second degree, and
3. Third degree.

In fact, a burn injury extends beyond what can be visualized. A more accurate description is partial thickness and full thickness, which clearly describes the burn and indicates the depth and severity of the wound.

The depth of tissue injury due to burn can also be described as superficial partial thickness which involves only epidemics and deep partial thickness which affects the entire epidermis and some part of the skin.

Partial thickness burns are very painful because of the involvement of nerve endings. Partial thickness burns have the capability to heat without any intervention because a segment of the epithelial cells has not been damaged.

During the heating process of the partial thickness burn, dryness and itching are common complain which are resulted from increased vascularization of sebaceous glands, reduction of secretion and diminished perspiration.

The presence of blisters often indicates a deep partial thickness burn injury. The blisters may enlarge in size due to the continuous exudation and collection of tissue fluid.

Complete thickness burns include destruction of the epidermis and the entire dermis and destroy part of the subcutaneous layer, muscle and bone as well. Nerve endings are damaged, resulting in a painless wound. Complete thickness burns require skin grafting, as the damaged tissue is unable to epithelialize. Some times a deep partial thickness burn may convert to a complete thickness burn due to infection, trauma or diminished blood supply.

### **3.4.5.3. Pathophysiology of Severe Burns**

Normal skin function is decreased due to burn injury; as a result physiologic changes occur. These alterations include-

1. Loss of immunity (Protective barriers),
2. Escape of body fluids,
3. Lack of temperature control,
4. Destroyed sweat and sebaceous glands,
5. Decrease in the number of sensory receptors.

The severity of these physiological alterations will depend on the severity of the burn and the depth which destruction has occurred.

Stages that occur following severe burns-

- a. Immediate Hypovolemic Stage.
- b. The Diuretic Stage.

#### **a. Hypovolemic Stage**

The Hypovolemic stage initiates immediately after severe burn injury and continues for the first 48 to 72 hours. Hypovolemic stage is characterized by a speedy shift of fluid from the vascular compartment into the intestinal spaces. When tissues are damaged due to burn, vasodilatation increased capillary permeability and changes in the permeability of tissue cells in and around the affected area occur.

As a result, there is abnormally large volume of extra-cellular fluid (ECF), sodium chloride protein pass through the burned area either to cause blister formation and local edema or to slip away through the open wound.

Fluid loss mostly occurs deep in the wound. Where the fluid escape from a vessel into the deeper tissues (Extra vasates). When highly vascular areas such as muscle tissue or face are burned is presumed to cause a greater fluid shift than burns taking place on other parts of the body.

Moreover, where the injury is greater, more fluid loss is present. Therefore in case of severe burn hypovolemic shock occurs and there is a dreadful drop in blood pressure and causes in sufficient blood flow through the kidneys, which in turn leads to further shock and anuria. As a result, death appears with in a short period of time if not managed promptly.

In addition fluid shifts and dehydration of non-damaged tissue may appear. At first more fluids and sodium are lost from the capillaries than protein. Due to excessive loss of fluids and sodium capillary osmotic pressure raises which causes dehydration. Renal damage and hematuria may present because of the decreased blood volume and passage of the end products of the hemolysed cells through the glomeruli. The diminished renal flow causes oliguria.

Electrolyte imbalances also occur due to severe burn. Hyperkalemia (increased serum potassium) results due to the release of potassium from destroyed tissues and RBCs and from diminished urinary output. Heart block and ventricular failure may occur as a result of hyperkalemia.

Respiratory distress may occur due to the obstruction of upper respiratory tract (Upper air way). Respiratory distress also may results from the effects of hypovolemic shock.

#### **b. Diuretic Stage**

The diuretic stage begins approximately 48 to 72 hours after the burn injury because capillary membrane integrity returns and edema fluid shifts back from the interstitial spaces into the intravascular space. As a result, blood volume increases, which in turn lead to elevate renal blood flow diuresis if there is no renal damage. After the period of fluid shift, the patient remains acutely ill. This period is characterized by anemia, malnutrition and weight loss. Anemia results from the excessive loss of red blood cells, protein and the response to the stress.

Negative nitrogen balance starts during outset of the burn and as result of damaged tissue, protein loss. Special attention to be given during the diuretic stage because of the continuous protein loss.

#### **3.4.5.4. Management of burn**

1. First aid.
2. Careful assessment determines the severity size and depth of the burn injury.
3. Emotional support to the patient (If alert) and family.
4. Rest and comfort to be provided.
5. Air way to be kept clear when there is airway obstruction.
6. Maintain proper nutrition and fluid intake.
7. Intravenous infusion to be provided to correct dehydration and electrolyte imbalance if required.

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8. Symptomatic treatment to be carried out.
9. Wound management and skin grafting if needed.
10. Rehabilitation.
11. Emotional assistance, health education and counseling during discharge.



### **3.4.6. Exercise**

#### **3.4.6.1. Multiple choice questions**

1. Etiology of menorrhagia is-
  - a. Due to a psychologic upsets
  - b. Due to cardio vascular problem
  - c. Due to disturbance in both ovary and uterus
  - d. All of the above.
2. Cervicitis may be treated with use of
  - a. Appropriate antibiotic
  - b. Hormone therapy
  - c. Antifungal drug
  - d. Maintaining proper nutrition.

#### **3.4.6.2. Short and broad questions**

1. Describe the types of cervicitis.
2. Explain the predisposing factors of menorrhagia.
3. Write down a short description of chronic cervicitis.

## Lesson 3: Common Medical Surgical Emergencies

### 3.3.1. Learning Objectives



At the end of this lesson you will be able to-

- identify the causes of trauma,
- describe the management of patient with trauma,
- assess the patient with fluid electrolyte imbalance,
- define the term coma,
- define the term stupor, and
- assess the level of consciousness.



### 3.3.2. Trauma

Trauma is a physical injury or wound caused by external force or violence (Tabours cyclopedia Medical Dictionary, 1977).

Trauma is the most common cause of death everywhere in the world including Bangladesh. More hospital beds (particularly in orthopedic hospital) are used for patients with trauma than for other causes. Road traffic injuries (Accident) are the first leading cause of trauma and death in individuals between the ages of eighteen to forty years.

Trauma can be-head and facial, neck, eye nervous system, thorax, abdomen, musculo skeletal system and vascular system.

#### 3.3.2.1. Common Causes of Trauma

- Road traffic accidents.
- Violence.
- Falls-roof, trees, stairs.

Clinical features-clinical features may vary according to causes and severity of tramuma. Most common clinical features are-

- Obvious sign of external injury in different parts of the body (extremities) may present. Injury may be single or multiple.
- Anxious.
- Hemorrhage (severe bleeding).
- Airway obstruction due to nasal bleeding and secretions.
- Difficulty in breathing.

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- Absence of pulse.
- Shock.

Diagnostic tests-according to extremities affected. Common investigations are-

- X-ray of the affected parts.
- ECG, echocardiogram.
- Blood for grouping and cross matching.
- Blood for serum electrolyte.
- CT scan, MRI in case of head injury.
- Any other investigations are carried out as a pre operative procedure if required.

### **3.3.2.2. Management of Patient with Trauma**

#### **Nursing Management**

- Prompt, careful and skillful assessment to be done to determine the sign and symptoms of life threatening conditions.
- First and rest, comfort and proper positioning.
- Clear the obstructed airway for respiratory exchange if required. If breathing is not restored open the airway.
- Oxygen therapy if needed.
- Apply cardiac monitor. If the pulse is.
- Assessment of pulse. The quickest way to assess the circulation is to listen the apical pulse.
- Absent, begin cardiopulmonary resuscitation (CPR)
- If serious bleeding is present determine whether it is superficial or life threatening. Severe bleeding is controlled (hemostasis) by applying direct pressure with the hand, fingers or a bulky dressing.
- If there is shock intravenous line should be established and 5% albumin, fresh whole human blood should be administered rapidly.
- Continuous assessment of vital signs and analyzes the data to see the progress.
- Emotional support to be provided to family.
- Diagnostic procedures should carried out according to need.
- Send for surgery if required.

- Legal aspects of emergency situation should be assessed and intervened.

### 3.3.2.3. Stupor and Coma

Stupor is a condition of unconscious, or lethargy with suppression sense or feeling (Tabours Cyclopedia Medical Dictionary 1977).

Coma is a abdominal deep stupor occurring in illness or as a result of it due to an injury (1977) awareness and ability to react to external stimuli refers to state or level of consciousness.

#### Level of Consciousness

- Alert-Responds appropriately to auditory, tactile, and visual stimuli.
- Lost of ability to abstract- Inattentiveness, slowed thinking, difficult to arouse.
- Confusion-Disorientation, inability to follow simple commands.
- Stupor-Responds to verbal commands with moaning or groaning if all.
- Semicomatose-Loss of ability to cooperate, responds only to pain-response may range from purposeful to decerebrate or decorticate,
- Comatose-Loss of ability to respond to any external stimuli and loss of all brain functions (Schenk 1993).

### 3.3.2.4. Etiology of Coma

Structural	Metabolic	Drug	Hypertensive	Respiratory
Trauma, Brain Tumor, Epilepsy	Hypoglycemia, Diabetic Ketoacidosis, Hepatic Failure, Thiamine Deficiency	Babitorate, Narcotic, Depressant Alcohol	Shock, Anaphylaxis, Stroke, Cardiac Arrest	Chronic obstructive pulmonary disease, inhalation of toxic gas

Diagnostic test-Investigation should be done according to cause.

### 3.3.2.5. Management

Prompt and skillful assessment and management can save many lives. After the completion of quick assessment management procedure to be carried out according to the proper cause and priority.

1. The initial priority is to clear the airway for respiratory exchange.

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2. If shock is present intravenous infusion should be established.
3. Patient should be kept in proper position.
4. Continuous assessment and evaluation of vital signs should be carried out.
5. Intake output chart to be maintained.
6. Assist the family accordingly and support by talking at intervals acknowledging their stress and anxiety and keep them informed about management procedure and its progress.



### 3.3.4. Exercise

#### 3.3.4.1. Multiple choice questions

1. Common cause of trauma is -
  - a. Drug reaction
  - b. Poisoning
  - c. Drowning
  - d. Road traffic accidents.
2. Most outstanding accidents-
  - a. Hemorrhage
  - b. Hypotonic
  - c. Marked paleness of the skin
  - d. Trauma.
3. The effects of hypokalemia are-
  - a. Dehydration
  - b. Renal failure
  - c. Respiratory distress
  - d. None of the above.

#### 3.4.2.2. Short and broad questions

1. Write down the management of fluid electrolyte imbalance.
2. What do you understand by burn?
3. Write down a brief description of the management of patient with complete thickness burn.

## Unit 4: Nursing and Medical Management of the Patients with Systemic Medical Disorders

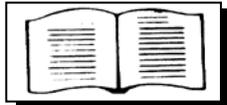
### Lesson 1: Nursing in Oncology

#### 4.1.1. Learning Objectives



At the end of this lesson you will be able to-

- know about nursing problems with patients having tumours,
- know how to handle patients with tumours specially malignant ones in the ward, and
- to know the common anticancer drugs and their side effects.



#### 4.1.2. Introduction to Oncological Nursing

Oncology is the science, which teaches us about tumour. Tumour may be simple called benign or severely bad called malignant. Benign tumours are usually curable but malignant tumours can be fatal or killer diseases. Malignant tumours are popularly known as cancers. However, cancer is not always a fatal disease. Nursing care of patients with malignant tumours needs affection and sympathy from the depth of one's heart. In England, cancer is the second major cause of death. Cancer can occur in many organs and tissues. It is not one disease but many. Each type of cancer and site of it has different problems. Approximately 25% of cancer diseases are curable. Patients who have incurable cancers can live for many years keeping their disease under control.

#### 4.1.3. Common Oncological Disorders

Cancer is one of the oldest recorded diseases of man. Many chemical, physical, and viral agents can cause cancer. Cigarette smoking is a known cause of cancer of the airway (bronchus). But in most cases of cancers the cause remains unknown. Exposure to a cancer-making agent (carcinogen) may initiate development of cancer. But the period between the exposure to a carcinogen and appearance of the cancer may be as long as 15 to 20 years. This explains why people who smoke cigarettes are not serious of giving the habit up immediately. Common oncological disorders include the following-

**Malignancy related to blood (haematological cancers)-** acute lymphoblastic leukaemia, chronic lymphocytic leukaemia, acute myelogenous leukaemia, and chronic myelocytic leukaemia.

**Malignancy related to lymphoid system (lymphomas)-** Hodgkin's disease and various types of non-Hodgkin's lymphomas.

**Solid tumours-** these include cancers of breast, lung, oesophagus, stomach, colon, ovaries, testes etc. *misc.*-Multiple myeloma, various bone tumours, skin tumours, para etc.

#### 4.1.4. Causes of Cancers

In the past, cancer was seen as a curse. Nowadays many causes of cancer are known; though in most cases the exact cause of cancer is not known. Pathology of cancer is better known and many cancers at present are curable. Numerous physical, chemical and infectious agents especially viruses can cause cancer in man. Usually the cause is multifactor (many causes are working at the same time). But the association of smoking with the lung cancer is so strong that it almost certainly represents the cause-and-effect relationship of carcinogen and cancer. Following are some possible factors associated in the causation of the cancer:

Geographic location	Ultraviolet light
Age and genetic factors	Ionizing radiation
	Infective agents
Tobacco	Drugs and chemicals
Alcohol	Occupational hazards
Diet	

#### 4.1.5. Pathology

When a cancer or malignant tumour arises in the body it usually affects one type of cells. It changes the cell into a permanently abnormal cell (now called a malignant cell). This cell, unlike a normal cell, continues to multiply without stopping. In this way it forms numerous cancer cells. All these cells spread to and occupy the surrounding areas. They can go to all tissues and organs of the body (metastasis). They spread directly or through blood vessels and lymphatics to the distant tissues. In this way, they can give rise to further tumours in distant tissues and organs. These new tumours are called secondary or metastatic tumours (or simply "secondaries"). Some tumours spread more rapidly than others. The cancer cells do not have normal functions. But they need more calories than the normal cells. This causes normal cells to starve and the patient loses weight rapidly to become very thin (cachectic). Due to their innumerable number the cancer cells disorganize the surrounding normal cells and eventually, by out-numbering, destroy them.

The tumour can cause obstruction of a lumen if it is in the bowel or the oesophagus. A large blood vessel may be eroded and serious or even fatal

bleeding (haemorrhage) may occur. Involvement of the kidneys may cause renal failure that of bone marrow causes severe anaemia and nervous system convulsion and focal neurological defects. Other organs may similarly be affected and damaged. In this way the patients ultimately succumb to death.

#### 4.1.6. Diagnosis

Early diagnosis, i.e. before spread to other places, is very important to provide effective treatment. Some cancers can be cured if they are detected early. Detailed medical, occupational, social, and environmental history is taken. This is followed by thorough physical examination. Detailed investigations including haematological, ultrasound, diagnostic radiography, radioisotope scanning, endoscopy, biopsy, cytology and biochemical tests are essential to confirm the diagnosis and to see the extent of local and distant spread. All these help to evaluate the patient formulate treatment and assess the prognosis.

Following table shows how early and late diagnosis differ in relation to survival of the patient after treatment-

**Example of 5-year survival rates (%)**

Site	Stage I (early)	Stage IV (late)
Breast	78	6
Larynx	88	20
Mouth	69	11
Skin	90	14
Cervix	2	3

#### 4.1.7. Treatment

Treatment should be given as soon as possible. Treatment differs for different tumours. It depends on the type of tumour, site and extent of spread. Main treatment methods are surgery, radiotherapy and chemotherapy often given in combination. Chemotherapy is also given as multiple drug therapy. Before discussing these in details it is important to know the philosophy of nursing care in complicated ontological disorders:

##### 4.1.7.1. Nursing Care in Complicated Oncological Disorders

One should know that though the patients may have, in common, a dreadful disease like cancer, they vary in presentation, attitude, life-style and cooperation. Although many diseases like cirrhosis, heart attack, chronic renal failure etc. have similar outcome as it is with cancer, our society has a negative attitude towards cancer patients. Cancer is seen as a

## Nursing and Medical Management of the Patients with Systemic Medical Disorders

curse and as a definite death sentence. But it has already been mentioned above that approximately one in four cancers will be cured if treatment is provided earlier before spread has occurred.

Patients are of any age, either sex, and of different social background. Each patient will react to his disease and treatment differently. The nurse should assess the nursing need of each patient on an individual basis and give care and support according to his/her assessment.

Nowadays, some patients need to be better informed about their illness. They should be told about their illness in the best possible way. Providing necessary information in this regard reduces stress for the patient and his family. This also helps the nurse to assess individual case for specific care. It also makes it easy to take various decisions for treatment purposes. The nurse should know that treatment of cancer requires teamwork involving multiple disciplines. In this respect, her work should be a managerial one. Treatment by anti-cancer drugs can give rise to various unpleasant side effects. Many patients are well informed of these. The nurse should place emphasis on the therapeutic value of treatment rather than on negative aspect of side effects. One should encourage the patient to express his/her feeling about having cancer and his/her concern regarding treatment, and his/her worries about his/her future. This will help to reduce his anxiety or tension and she will feel easier towards the staff.

The nurses must realize that cancer is not an infectious disease and is not a curse either. She must be able to show a realistically optimistic approach to cancer similar to that of other diseases. Knowledge about curable and incurable cancers will facilitate nurses to organize adequate care. Cancers, which are not curable, can be treated to give the patient valuable palliation or comfort.

### 4.1.7.2. Treatment of Cancer

**Surgery:** It can be curative or palliative. It is often seen that the tumour is not confined to the locality by the time the cancer is diagnosed. For this reason, systemic treatment is frequently needed in addition to excision of the primary tumour. However if the tumour is detected at an earlier stage and it is confirmed that the tumour is localised within boundaries (carcinoma *in situ*) excision of the affected tissue will be curative. When the disease has spread to other areas surgery along with radiotherapy and/or chemotherapy will improve the possibility of cure. This is especially true in cases of some childhood malignant tumours, e.g. Wilm's tumour.

During surgery utmost care is to be taken so that the tumour is totally removed (en masse) and it is minimally handled as this may cause

loosening of malignant cells. Loose cells may spread to other areas through blood and lymph vessels and can produce secondary tumours. To minimise this surgeon at first ligate and divide the vessels supplying the area.

When diagnosis is late and the disease is in its advanced stage, surgery can still give great comfort to the patient by removing cancer masses, relieving obstruction in the lumen of gastrointestinal and other tracts, aspirating ascites from peritoneal cavity and pleural fluid from the chest, removing pressure from a nerve or the spinal cord etc. Cancer patients following surgery (post-operative period) need same alert nursing as for any other surgical patient. Some cancer patients will need additional nutritional support, e.g. those with head, neck and oesophageal cancers because they cannot take adequate food. Cancer patients are also at higher risk of getting infection than other surgical patients. Signs of infection such as fever, cough, tachycardia, tachypnoea, loose motions, urinary complaints etc. must be watched carefully and duly reported to the clinician so that early diagnosis of infection can be made. A strong (bactericidal) antibiotic is needed to treat infection in cancer patients. Culture and sensitivity tests are done to choose the right drug.

Some results of cancer surgery lead to an altered body image, e.g. mastectomy, maxillectomy, and removal of an eye. The nurse should focus on what the patient still has instead of what is lost. The nurse must encourage the patient to achieve self-care.

**Radiotherapy:** The role of radiotherapy may be curative or palliative. As said before it is frequently given in addition to surgery and/or chemotherapy. If radiotherapy has to be curative it must kill all the local tumour cells. To achieve these boundaries of the tumour must be defined with accuracy. The dose of radiation must be high enough to destroy all the tumour cells without damaging the surrounding normal tissues. The patient is better admitted for proper assessment. Not all tumours are radio-sensitive (destroyed by radiation). Radio-sensitive tumours include Hodgkin's disease, lymphomas, seminomas of the testes, and in children Wilm's tumour, leukaemia of central nervous system, and medulloblastoma.

Moderately radio-sensitive tumours include squamous cell carcinoma affecting the skin, mouth, larynx, pharynx, cervix of uterus, and urinary bladder. Radio-resistant tumours include sarcomas (cancer of connective tissues) and adenocarcinoma of the gastrointestinal tract. There are three main ways of delivering radiotherapy to a cancer patient-

1. External beam therapy (teletherapy),
2. Moulds, implants, and applicators (plesiotherapy), and
3. Radioactive isotopes for systemic use (unsealed sources).

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In teletherapy the patient is placed at a specified distance from an external source which may be an x-ray unit or a gamma-ray unit (cobalt unit). The pre-calculated total dose is given in multiple fractions for 3 to 5 times weekly over a period of 5 to 7 weeks.

In plesiotherapy implants are used. These may be in the form of needles, wires, or seeds. After delivering the required dose the implant is removed.

In case of unsealed sources the radioactive chemical, which is used, may be injected into a cavity to treat recurrent pleural effusion or ascites. Radioactive gold is an example of this technique. Gold is not toxic and ceases to be radioactive after a short period. It is then not needed to remove the gold from that cavity. The radioactive chemical may also be administered for selective absorption by the affected organ. Radioactive iodine is an example of this technique. Iodine in the form of  $^{131}\text{I}$  is taken up by the thyroid gland and thus this gland receives a high dose of radiation. Metastatic tumours of the thyroid, which function similarly to thyroid gland, will also concentrate the iodine and can be treated by this method.

Advice of radiotherapy creates unnecessary fears in some patients. The nurse can help the patient in this regard by good communication. Side effects like skin reactions are mild and nausea and vomiting can easily be managed.

**Chemotherapy:** using drugs usually in combinations do this. There are more than thirty drugs now available for treating cancer. These drugs (anti-cancer or anti-malignant drugs or cancer-chemotherapeutics) have dramatically changed the quality and quantity of life of most patients with common tumours like cancer of breast, lungs, and gastrointestinal tract. Cancer drugs are usually, as mentioned earlier, used in addition to other methods of treatment.

The potential advantage of combining drugs with surgery and radiotherapy is that they have the capacity to seek and destroy cancer cells all over the body. The disadvantage of these drugs are that they are not only toxic to the tumour cells but also to the normal cells specially cells with increased multiplication. This is called 'unselective action' of cancer drugs. Scientists are trying to discover drugs with more selectivity.

**4.1.8. Drugs in cancer treatment can be given in a variety of ways:** intravenous, intra-arterial, intramuscular, intrathecal (in the spinal canal), subcutaneous or oral. It is however necessary to read the accompanying literature of the manufacturer to ascertain the correct route and dose of the drug. Following are the different techniques used for administering drugs -

1. **Low doses one drug continuous therapy:** This leads to very high toxic effect on the body and rapid resistance of the tumour to the drug. For this reason this method is seldom used.
2. **Low dose combination therapy over a long period:** This technique also produces toxic effects especially on the bone marrow although resistance to the drug is slower to grow.
3. **High dose intermittent therapy by one drug:** This produces very few toxic effects but resistance to drug develops quickly.
4. **High dose intermittent combination therapy:** This technique produces fewer side effects and resistance to the drugs takes a long time to develop. The drugs are given over a short period of time and the bone marrow is allowed to recover before the next treatment is given. At present this is the most commonly used technique.
5. **Intra-arterial infusion:** Here the drug is infused through the artery supplying the tumour. So the tumour gets the drug in most concentrated form. The drug also enters the systemic circulation and produces toxicity. This method is not frequently used.
6. **Combination with radiotherapy and surgery:** Drugs are used before or after surgery and/or radiotherapy as part of continuous therapy. They are not commonly used together at the same time.

In some hospitals and units cancer drug administration may be the responsibility of nurses after adequate training and supervision. It is very important for the nurses to have information regarding the storage, expiry, diluents and method of dissolving, available strengths, and any other relevant information necessary to ensure the correct and most effective administration of the drug. The nurse may be the first person to recognize even the subtlest signs of either drug toxicity or the therapeutic effects. This is because she observes the patient more closely or because the patient usually talks more easily to the nurse than to the physician. Many patients receiving anti-cancer drugs may appear fairly well and may be up and about in the ward and require minimum nursing care. However, their expression and movement can be deceptive. The nurse must give careful attention to them. These are some areas where the nurse must concentrate her all attention.

**4.1.9. Toxicity of Chemotherapeutic Agents:** Following are some locations where signs of drug toxicity should be looked for:

**Mouth:** Many drugs are toxic to the GI tract and may cause mouth ulceration. One of the earliest signs of possible ulceration is an increased sensitivity to hot and cold foods and painful or burning sensation from citrus or spicy foods. The mouth becomes dry (xerostomia) and the lips feel burning sensation. There can be a line of erythema and oedema along

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the mucocutaneous junction of the lips. Shallow ulcers appear at these points. If therapy is continued despite earlier toxicity signs extensive ulceration may develop leading to severe dysphagia and secondary infection. Good mouth care with frequent prophylactic mouthwash using glycerin and thymol throughout the treatment may reduce discomfort. Highly seasoned or highly acid foods should be avoided. A small percentage of patients may develop fungal infection for which anti fungal lotions or lozenges may be prescribed.

**Stomach:** many drugs may cause Anorexia, nausea, and vomiting. The nurse can help to overcome this problem. The patient should be assisted to a comfortable position and good mouth care should be given before and after eating. He should be offered small attractive looking meals frequently. His environment should be pleasant and free from sights and sound or smell that may contribute to nausea. He should be encouraged to take deep breath and to take small sips of effervescent fluids. If, however, the patient starts vomiting the nurse should take the following measures; proper positioning to prevent inhalation of the vomits, noting the time of onset in relation to food intake and the administration of the drug, and the frequency of episodes. Any sign of dehydration and electrolyte imbalance must be reported promptly. Anti-emetics are usually prescribed and may be given prophylactically.

**Bowel:** Diarrhoea may occur and can cause dehydration. Water loss in stools should be assessed and rehydration done accordingly. The diet should be low-residue and bland. Anti-iarrhoeal drugs may be required.

**Bone Marrow Depression:** This may cause anaemia, leucopenia, and thrombocytopenia (together called pancytopenia). It is the most severe toxic effect of anti-cancer drug therapy (chemotherapy). Leucopenia means low white blood cell count. It increases the risk of infection. The patient's skin and throat should be examined daily to detect any local infection. Temperature should be taken four hourly. Immediate and effective antibiotic therapy must be started for all sorts of local infection to avoid septicaemia. If needed the patient should be isolated in a germ-reduced environment. Thrombocytopenia means a decrease in platelet count. It can cause haemorrhage which may be fatal if occurs in large amount or in a vital area like inside the brain. Petechiae (pinhead bleeds) over the skin not caused by trauma are critical signs. Bleeding may start in the oral mucosa, nasal passage, in the gastrointestinal tract or in the urinary tract. The patient should be instructed to report immediately if he notices any sign of bleeding. Stool and urine should be checked regularly to detect occult bleeding. Soft toothbrush should be recommended where necessary. Intramuscular injections are avoided and a male patient should be encouraged to use a electric razor. Hard and crispy foods should be discouraged to avoid oral abrasions. Platelet transfusion may be necessary

for very low platelet count. In case of severe anaemia blood transfusion may be necessary.

**Skin and Hair:** Some anti-tumour drugs cause alopecia. The nurse must be sure that the patient understands this. A wig should be available. The psychological distress of the patient should be realised and he should be reassured that the hair will grow again at the end of treatment.

Special care must be taken for the pressure areas of patients confined to the bed to avoid indolent bedsores. Nail growth is usually retarded and there may be pigmentation. Rarely some drugs cause exfoliative dermatitis, erythema, and skin pigmentation. The nurse should be able to distinguish between signs of drug toxicity and signs of the underlying disease.

**Some anti-tumour drugs can cause nephrotoxicity:** These drugs are excreted through the kidneys and poor kidney function can cause presence of more drugs in the blood causing more toxic effects to other systems of the body. For these reasons accurate records such as urine volume, blood urea and creatinin levels etc.(renal functions tests) must be kept. Some drugs such as cyclophosphamide can cause cystitis (chemical cystitis). It is a very painful condition. Large intake of fluids and giving antispasmodics for pain can minimise patient's suffering. Most cancer drugs do not cross the blood brain barrier. Presence of small amount of drugs in the CNS can cause serious side-effects such as nausea, vomiting, inability to concentrate, deafness, general depression, peripheral neuritis, and disturbances in autonomic functions. Vinca alkaloids such as vincristine and vinblastin can cause large bowel atony and severe constipation may result. Vinca alkaloids also cause peripheral neuritis characterised by 'pins and needles', lack of coordination, loss of balance, and change of gait. This condition is progressive and must be reported early so that the treatment can be interrupted. Cardiac and respiratory problems such as irregularities in pulse beats and respiratory difficulties require immediate attention as some drugs cause toxicity on the heart and lungs. Close attention must be paid to intravenous infusions. Use of infusion pump is preferable. Excessive infusion can cause pulmonary oedema. On the other hand dehydration due to poor intake can cause poor kidney function. Blood transfusion may be necessary for anaemia, thrombocytopenia, or neutropenia. Care must be taken to see any sort of transfusion reactions.

#### **4.1.10. Rehabilitation and Follow-up**

Rehabilitation is a part of total patient care. The team of patient management will be a physiotherapist, occupational therapist, speech therapist, social worker, chaplain, technician, prosthetist, members of the voluntary associations, and the nursing as well the medical staff. The

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nurse should aware of what each member can do for the patient and how she can help the team to achieve the best for the patient. On discharge, the patient should be given an outpatient follow-up appointment. It should be explained both to the patient and the family that these appointments will be frequent are very important. Such appointments are quite normal and nothing is harmful for the patient.

Patients receiving chemotherapeutics require regular estimations of blood chemistry, and haematological studies. Care should be taken to avoid excessive venepuncture.

### **4.1.11. Planning an Ideal Oncological Ward in a General Hospital**

A full ward should be utilised for such purpose. This will enable nurses to acquire knowledge continuously about nursing problems in cancer patients. The patients will also know each other and this will help them to understand their diseases and develop a philosophical attitude towards life.

There will be one consultant, one assistant registrar, one registrar and three assistant doctors. The nurse's- and doctor's room should be situated at the centre of the ward. This should be separated by glass structure so that the whole ward is visible at a glance. A senior staff nurse will be in charge (called ward sister) of the proposed ward. As said above, caring a cancer patient often demands combined team approach. For this, the ward sister should utilize the potential of her colleagues. There should be three to four additional nurses who are trained in oncological nursing. They will work in rotation. There will be three to four ward attendants and one physiotherapist. As for other wards the oncological ward sister will derive services from common hospital staffs like social workers, dieticians, occupational therapists, speech therapists, pharmacists, electricians, etc.

Common instruments and appliances should be available in the ward. Oxygen therapy set, suction machine, infusion pump, etc. should be purchased in multitude. Glucometer, endotracheal set, tracheostomy set, cardiac defibrillator, wheel chair, physiotherapy instruments, etc. should be available at hand. The ward sister should check all these instruments daily and if needed refer to the medical instrument caretaker for any fault.

All emergency medicines must be available in the shelf located in the nurses' room.



#### 4.1.12. Exercise

##### 4.1.12.1. Write 'T', if the statement is true and 'F' if the statement is false

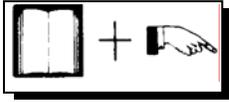
- a. Oncology means science of blood.
- b. Benign tumour can be dangerous when it is inside the cranial cavity.
- c. Many malignant tumours are nowadays curable.
- d. A tumour always means a solid mass.
- e. Lymph nodes produce some of the blood cells (*corpuscles*).
- f. Leukaemia means tumour of red cells.
- g. Alcohol can cause cancers.
- h. A cancer is less dangerous when it has metastasis.
- i. Treating cancers needs multidisciplinary approach.
- j. Some cancers are infectious.
- k. In malignancies body's defense mechanism is usually intact.
- l. Many tumours infiltrate the bone marrow and cause anaemia.
- m. Hair loss is a common side effect of anti-cancer drugs.
- n. Young people are more affected by tumours than old people.
- o. Patients with cancers vary markedly in their attitude towards the disease.
- p. Anticancer drugs themselves can cause cancer.
- q. Some viruses can cause cancer.
- r. Melanin (skin pigment) protects us from skin cancer.
- s. Food habit has no role in initiating cancer.
- t. Infection is not common in cancer patients.
- u. Smoking has direct role in initiating cancers.
- v. Ionizing radiation is a known cause of cancer.

##### 4.1.12.2. Short and broad questions

1. Describe the aetiological factors in cancers.
2. Why people have a negative attitude towards cancers?
3. Describe the outlines of treating cancers.
4. What are the commonly used anti-cancer drugs?
5. What are the toxicities of anti-cancer medicines?
6. Plan an ideal oncology ward in a general hospital.

## Lesson 2: Nursing in Neurology

### 4.2.1. Learning Objectives



At the end of this lesson you will be able to-

- state what are the neurological problems,
- explain how to nurse neurological patients,
- describe how to assess neurological patients, and
- explain how to care a comatose (unconscious) patient.



### 4.2.2. Introduction

Diseases affecting the nervous system may be congenital or acquired. Congenital causes are hydrocephalus, microcephaly, etc. Acquired causes are various types of injury of the head or spinal cord, infection like meningitis, encephalitis; neoplastic diseases, strokes, etc. Various symptoms caused by diseases of the central nervous system (CNS) are produced due either to irritation of the meninges by blood or product of infection, degeneration or death of the nerve cells or fibres, or to pressure exerted on the brain or spinal cord.

### 4.2.3. Signs and Symptoms of Meningeal Irritation

It is usually also associated with increase in pressure of the cerebrospinal fluid (CSF). Symptoms are headache which usually radiates to the neck and back, fever and vomiting. There may be blurring of vision. Signs are neck rigidity (inability to flex the neck forward), and often the *Kernig's* sign is positive (limitation in extending the leg while the hip is flexed. The patient feels intense pain). Photophobia when present is an important sign. Nerve tissues at various sites of the brain have unique actions. For example, nerve cells in the occipital cortex are responsible for visual perception. If nerve cells or fibre of this area are damaged the person will be blind though his eyes are all right. Various symptoms and signs will be created by damage of nervous tissues at various locations. For these reasons, one has to have expert knowledge of neuro-anatomy and neuro-physiology to reach a correct diagnosis. Functions, which are lost, may be motor or sensory. It is very important to know that the right side of our body controls the left side and vice versa. Areas subserving speech are located in the left cerebral hemisphere in the right-handed persons. Circulation and respiration are controlled within the brain stem. Any sort of space occupying lesion in the rigid cranial cavity can cause rise in intracranial pressure producing disastrous consequences. Pressure upon the spinal cord can also produce serious effects like paralysis of the lower limbs.

#### **4.2.4. Increased Intracranial Pressure**

The main symptoms will be headache and vomiting, and the main sign will be papilloedema (oedema of the optic disc), which is to be seen by an ophthalmoscope. If the rise in this pressure is localised to one part of the brain, then damage and shifting of the cranial contents occur causing neurological deficits. Localised high intracranial pressure can also lead to herniation of brain tissue through the foramen magnum or the tentorium cerebri. This is popularly known as 'coning' of the brain. Commonly temporal lobe herniates through the tentorial hiatus causing pressure on the mid-brain, which lies within this hiatus. This is a life-threatening condition. There is increasing drowsiness and due to stretching of the nucleus of the oculomotor nerve (third cranial) the patient develops dilatation of the pupil with sluggish light reflex and ptosis on the side of the lesion. The pulse rate falls (bradycardia) and blood pressure rises. Gradually the patient becomes comatose and pupils become dilated and fixed with decerebrate rigidity. Nursing observation must be frequent to detect the first sign of such an event in a vulnerable patient, as treatment must be started without delay.

Cerebellar tonsils may herniate through the foramen magnum in the posterior cranial fossa. This is called posterior fossa coning. This may occur as a final stage of tentorial cone or can occur due to space occupying lesion in the posterior fossa. This type of cone causes pressure on the medulla oblongata. The respiratory centre is situated in this part of the brain. One of the early sign of posterior fossa cone is Cheyne-Stokes breathing. Respiration is very slow. It is vital that a respiratory rate less than 12 per minute is reported immediately in any patient with a posterior fossa lesion. It is also vital to note that a lumbar puncture in which CSF is removed may precipitate coning in a patient with raised intracranial pressure due to space occupying lesion.

#### **4.2.5. Treatment**

This is an acute emergency and intracranial pressure must be reduced as soon as possible. Intravenous mannitol 20% reduces raised intracranial pressure. If this step fails surgical approach is sought to do a burr hole in the skull to introduce a blunt brain needle into the lateral ventricle to remove cerebrospinal fluid. A ventricular drain may be inserted to prevent the pressure in the ventricle from building up again. Dexamethasone is effective in reducing intracranial pressure but it takes about 12 hours to work and therefore of no value in an acute emergency like this. But it can be extremely valuable in prevention of rise in intracranial pressure.

#### **4.2.6. Nursing in a Neurological or Neurosurgical Ward**

A patient with neurological disease or undergoing neurosurgical intervention, and his family require great deal of support and understanding from the nursing staff. Having something wrong with the brain or the spinal cord is potentially both lives threatening and crippling to one's mind. The nurse caring for these patients should have the ability to understand the reactions of them towards their ailments. She should encourage them and their friends to express their anxieties so that she can give adequate support. She should be a good listener to various queries made them and a good informer regarding the various diagnostic and therapeutic procedures the patient will undergo and how these will affect him. Talking must be in very simple language without any ambiguity. She should avoid technical jargons while talking to them.

Working in the neurological or neurosurgical ward requires skilled nursing care. Frequently a number of patients are unconscious or otherwise unable to carry out themselves their daily routine works. Observation is extremely important since deterioration in a patient's condition may have serious consequences, particularly if occurs rapidly. In a neurological ward there may be dramatic incidents when many members of staff are engaged in saving the life of a critically ill patient and it is particularly important that other patients also get adequate nursing care and information at these times.

The nurse should also know that some lesions of the brain might affect the behaviour of the patient by altering his personality. She should not be frightened by these changes and follow these changes and report to the doctor without delay.

#### **4.2.7. The Nursing Care History**

When a neurological patient is not well oriented it is often needed to collect the admission history from a relative or friend. The nurse should inquire about any visual or hearing handicap or any problem with mobility the patient might have. Any difficulty in micturition and defaecation should be noted because these may indicate compression of the cord. Any sort of allergies particularly towards drugs should be inquired of. Attacks of headaches, blackouts or dizziness should be noted, as are names of the drugs he is currently using. The nurse should also inquire whether there are any sensori-motor or communication skills, which are vital to the patient's work.

#### 4.2.8. Assessment of the Neurological Patient

This is very important and needs good knowledge about the nervous system. If the patient is mobile his gait should be noted. His face for color and expression, and mouth for smell of alcohol, acetone, and vomit should be examined. One must note whether there is any discharge from ears or nostrils. Any scalp injury or abrasion should be noted. Clear colourless discharge from ears or/and nose indicates CSF leakage from a fracture at the base of the skull. It also heralds ascending infection of the brain (meningitis, encephalitis) and requires immediate intervention. Any bruising of the eyelids should be noted.

First of all pulse, temperature, respiration and blood pressure should be noted. Respiration should be carefully observed. Noisy respiration usually indicates obstruction and warrants urgent intervention. Is there any bruising, swelling or deformity of the neck? Has the patient any neck stiffness? Is the patient dehydrated, pale or has cold clammy skin? Presence of shock must be excluded at the outset. Look all over the body and see if there is any bruising, haematoma or bleeding injury. Look for faecal or urinary incontinence or any urinary retention. Assessments should be carried out at frequent intervals so that the progress of the patient can be seen. If the patient were the narrator it would be easier to assess his mental state. While greeting or talking to him try to assess whether he is rational and oriented in time and place. Is he anxious, depressed, euphoric or emotionally labile? Has he any difficulty in speech such as defect in expression (dysphasia), in articulation of sounds (dysarthria). If the patient does not have verbal response one should try to find out if he can understand what is said to him by, for example, performing some movements. Movement of all four limbs should be checked whether it is equal in all areas.

Pupils must be checked using a pencil torch in every neurological patient. The size, shape, equality, and response to light should observe. Photophobia, if present, is noted. Any degree of protrusion of the eye-ball (exophthalmos), squint, nystagmus (oscillatory movement of the eyes) should be noted. Consensual reaction of the other pupil should also be observed. Asking the patient to smile, and to frown should check facial weakness. Any asymmetry in movement should be noted.

In case of an unconscious patient test of response should be done by giving some painful stimuli. Giving some pressure on his sternum while calling him by name may cause him to rouse. Then it would be easier to check the response of individual limb by giving pressure on nails. All observational findings should be recorded on a neurological assessment chart. Frequent assessment will show whether the patient is improving or deteriorating.

#### **4.2.9. Diagnostic Tests**

Some of the diagnostic tests in neurology require good nursing care. It is therefore important for nurses to know about these tests so that the patient can be prepared correctly and followed up afterwards. Some of these tests are very complex and simpler tests should be carried out first. Tests to investigate the central nervous system include: plain x-rays of the skull and spine, EEG (Electroencephalography), echoencephalography, lumbar puncture, cisternal puncture, lumbar air encephalography, ventriculography, myelography, CT (computerised tomography) scan, and angiography.

The nurse should take consent preferably in written form from the patient for all sorts of invasive procedures. She should inform the patient about the nature and procedure of the tests and explain what benefit these will bring for him. She will also explain to him what effects these procedures will have on him. The patient must be told whether he will be given sedation before the investigation or it will be carried out under general anaesthesia (GA). Physical experience during the procedure of the test, the environment in which it will be carried out, identity of the persons who will attend it and whether the nurse will be with him all the time should be told to him. These will alleviate undue anxiety from his mind and will ensure better compliance from his part.

Lumbar puncture and cisternal puncture are usually carried out in the ward. It is always desirable to keep the procedure out of sight of other patients by using a folded screen. For a cisternal puncture an appropriate area of scalp must be shaved and its reason must be explained to the patient. These are some examples of how to help the patient for invasive procedures. The nurse should know about all investigations so that she can act as an expert organizer on whom both the doctors as well as the patients can rely.

Potential complications of many of the diagnostic tests in neurology include an exacerbation of the disorder, severe headache especially in case of lumbar puncture, subcutaneous bleeding etc. In case of carotid angiography the neck must be observed carefully for any swelling, bleeding, or bruising. After lumbar or cisternal puncture the patient must be lying supine for several hours.

#### **4.2.10. Care of a Comatose Patient**

As expected the number of unconscious patients in the neurological and neurosurgical wards are greater than in other wards. It is said “the nurse is temporarily the consciousness of the unconscious”. During coma the protective reflexes and the behavioural responses are lost, thus placing the

life of the patient at risk. There are two objectives of care for these patients: fulfilling the physiological needs of the body, and preventing the complications of coma. For example, the breathing which is a vital function of the body can be impaired in a comatose patient due to obstruction of the airway by swallowing the patient's own tongue or aspirating one's secretion or vomits. An unconscious patient does not cough up secretions. False teeth are sometimes inhaled and obstruction of the airway occurs. Smoke, chemical fumes, toxic gases can cause rapidly developing oedema of the airway and the patient can die of intense suffocation. The nurse should know about these mishaps and take appropriate measures urgently. The well-known dictum "prevention is better than cure" is very appropriate in this case. The nurse should examine the unconscious patient as soon as he is brought to the hospital and ensure clear airway by: removing the dentures, loosening the clothes, mechanical sucking out of respiratory secretion, positioning the patient on his side so that the secretion is automatically drained out and the flaccid tongue is not swallowed in.

The position of choice is semi-prone position with the patient flat, or with the head-end of the bed tilted downwards. Use of pillow should be avoided, although a very small and hard pillow may be allowed to support the neck. When the semi-prone position is not possible, an airway must be inserted inside the mouth to prevent swallowing of the tongue. This is not necessary if the patient has endotracheal tube already inserted or he has undergone tracheostomy.

The nurse should be able to recognise the signs of obstructed breathing. Obstructed breathing is always noisy. There is in drawing and vibration of the chest wall and the patient may be cyanosed. Any noisy breathing must be investigated to relieve it immediately. Positioning of the patient, clearing the secretion by using a mechanical pump, introducing an airway tube or an endotracheal tube, or lastly doing a tracheostomy are the main steps to tackle a case of airway obstruction. Oxygen should be given as per advice of the doctor.

#### **4.2.10.1. Changing the Posture**

The comatose patient cannot move, and this may cause pressure sores, chest and urinary tract infection, deep vein thrombosis, joint adhesions, and muscle wasting. The nurse should have adequate knowledge to prevent these mishaps.

The patient's position must be changed two hourly or more frequently. Physiotherapy should be started as per advice of the doctor. A neuro-ward should have its own physiotherapy department. To maintain joint mobility all joints must be passively moved with full range. Prevention of deep vein

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thrombosis is very important. Pillows can cause obstruction in venous return and should therefore be avoided, passive movements of the lower limbs, change of position, physiotherapy all these help to prevent venous thrombosis.

### **4.2.10.2. Nutritional Needs**

The comatose patient cannot swallow because his swallowing reflex is lost. But his nutritional needs are always present as his vital organs are functioning all the time to keep him alive. Sometimes lack of adequate nutrition will delay recovery or even can worsen the prevailing disease condition. Good nutrition hastens wound healing. For these reason the nurse must have good care to maintain or improve the nutritional state of the patient. Good nutrition also includes maintenance of electrolytes, nitrogen and fluid balance.

Initially an intravenous fluid may be necessary to correct dehydration, electrolyte imbalance, and supply of calories and vitamins. When the unconscious state will persist the patient can better be managed for his nutritional needs by introducing a nasogastric tube. This tube is very easily introduced. But before each feed one must check the position of its end inside the stomach. This can be done by listening over the stomach with a stethoscope for the sound of bubbling while injecting air with a syringe through the upper end of the tube. Aspirating fluid from the tube and testing it for acidity using litmus paper can also testify that the end of the tube lies in the stomach. Gastric juice has hydrochloric acid and has a low pH value. If the end remains in the throat or in the airway there will be aspiration of food materials in the lungs causing very severe pneumonia (aspiration pneumonia). This latter condition is very difficult to treat and must be prevented. So it is the responsibility of the nurse or doctor to check that the end of the tube is safely in the stomach before the feed is given.

Feeds prescribed for the patient should be adequate to maintain the body-weight, meet the daily requirements of vitamins and trace elements. These should ensure adequate fluid need of the patient.

To monitor the nutritional state of the patient the nurse should record his weight every alternate day. An accurate fluid balance chart (intake-output chart) must be kept. Serum electrolyte and haemoglobin levels should be checked at regular intervals. Intelligent nurse changes the position of her unconscious patient before a feed is given because doing this following a feed might induce vomiting.

#### 4.2.10.3. Need for Disposal of Excreta

**Urinary care:** An unconscious patient is commonly incontinent of urine but retention of urine may also occur. Prolonged contact of skin with urine through incontinence can predispose to the development of pressure sores (bed sores). The nurse should take care to detect urinary retention or incontinence, to maintain urinary bladder tone, to prevent urinary tract infection, and to prevent deterioration of the skin. If a male patient is incontinent a urinal can easily be placed so that it collects all urine, which is passed. The urinal must be placed carefully so that it does not cause any pressure. The urinal must be emptied frequently.

In case of a female patient a self-retaining catheter may be inserted. In that case the tube should be released every hour, increasing to two- hourly to prevent the loss of bladder tone. It must also be remembered that catheterization always increases the risk of introducing infection in the urinary tract. This procedure always must be done under adequate aseptic precautions.

To detect urinary retention, a careful record of fluid intake and urinary output must be kept. Retention of urine with overflow incontinence may be mistaken for simple urinary incontinence. Palpation and percussion in the suprapubic region can detect the presence of full bladder. Acute retention of urine may be the cause of restlessness in an unconscious patient. In case of retention of urine catheterisation of the urinary bladder must be done followed by intermittent drainage to prevent loss of tone of the bladder.

#### 4.2.10.4. Bowel Care

Constipation is a potential problem of an unconscious patient. If diarrhoea occurs it is likely to cause both dehydration and deterioration of the skin. The objective of nursing care is to prevent constipation, to detect and treat diarrhoea, to prevent excoriation of the skin and to maintain skin health.

Care must be taken to record the frequency, amount and consistency of bowel movement, since faecal incontinence may be associated with impaction of faeces. The administration of simple evacuant suppositories every third day may be most efficient method of preventing constipation. In case of diarrhoea an infective cause is to be excluded first. If it is not due to an infectious agent, type of feeds may need to be changed. Rehydration is better done by ORS through the nasogastric tube or by an intravenous fluid that will replace the loss of water and salts in the liquid stools.

#### **4.2.10.5. Physical Cleanliness**

Oral hygiene is particularly important in an unconscious patient. He is not using his mouth for eating and drinking and is probably breathing through it causing dirtiness and dryness of the mouth. While cleaning the mouth the nurse should take care not to leave pieces of cotton in it. These may enter the airway causing obstruction and cough. Frothy lotions should better be avoided. Face and hands should be washed twice daily, and the body should be sponged with lukewarm water once daily. Male patient should be shaved daily. Hairs and nails should be attended to daily.

#### **4.2.10.6. Protection from Danger**

The nurse should be alert to potential dangers for the unconscious patient. Electrical appliances, heat, and oxygen instruments may be source of dangers to the unconscious patient. Fire fighting materials should be available nearby. Careful checking of drugs is also vital. The comatose patient has lost his normal sensation. Appliances in contact with the skin of the patient must always be placed carefully to prevent pressure or friction occurring. If the patient is restless, well-padded bedsides should be in place to prevent him from falling. An unconscious restless patient should never be tied with ropes to the bed. The cause of restlessness should be sought out and treated accordingly.

#### **4.2.10.7. Care of the Eyes**

A deeply unconscious patient has lost most of his reflexes including those of the eyes. He does not blink if the cornea or conjunctiva is touched with cotton wisps. The eyes may be continuously open and dry rendering themselves susceptible to infection by germs. Corneal ulceration and conjunctivitis may occur and can cause permanent damage to the visual functions. The nurse must know how to prevent drying, infection and abrasion of the cornea.

Ensure that the eyes of the comatose patient are closed. Eyes should be washed every four hours with normal saline. Lubricant drops may be instilled in the eyes. An antibiotic ointment applied six hourly can be a good alternative to the lubricant drops. The ointment protects the eyes from drying.

#### **4.2.10.8. Tracheostomy**

It may be needed to perform tracheostomy when there is airway obstruction. Tracheostomy reduces the anatomical dead space of the respiratory tract and thus helps to easier breathing, washes stagnant CO<sub>2</sub> from the lungs and allows secretion to be sucked from the airway more

easily. A patient who has undergone tracheostomy is usually nursed in the intensive care unit (ICU). The nurse should stand by the patient till his general condition has settled. If he is not in the ICU he should be in a cubicle adapted for emergency patients under continuous supervision of the nurse. There must be sufficient supply of disposable suction catheters, which are used only once. If the patient is a child or is restless extra measures are needed to ensure that the tube stays in place. Holding the tube with tape tied around the neck better does this. Depending on the general condition of the patient, fluid intake should be encouraged and swallowing should be advised normally. This will restore the confidence of the patient and improve his general condition.

The danger of infection must be borne in mind. The nurse should wear gown, gloves and mask to prevent cross infection. While suctioning the tube sterile catheter must be used. Some tubes contain an inner tube, which should be removed regularly for cleansing. When the secretions are thick or dry, making it difficult to aspirate, they can be loosened by humidification. A few ml of normal saline can be injected into the tube before aspiration. The wound must be dressed aseptically.

Physiotherapy should be started shortly after all sorts of neurological operations or when the patient recovers from a period of unconsciousness.

#### **4.2.10.9. Psycho-Social Needs**

While nursing an unconscious patient due respect should be attached in all steps. The nurse will behave in a way, as she will do if the patient were conscious. Throughout the period of unconsciousness the relatives will require support and information from the nursing staff. When the patient starts regaining consciousness he will need information to orient himself in time and place.

#### **4.2.10.10. Additional Points of Nursing Care**

Nursing care of the patients with speech defects requires great skills and patience. The speech therapists will teach nurses how to help these patients. When feeding a patient with facial weakness, the food should be placed in good side of the mouth and swallowing reflex should be initiated by gentle pressure upon the tongue with a spoon. If the patient has an epileptic fit, the nurse should immediately prevent him from injuring himself. A padded metal spatula should be inserted over the tongue to ensure a clear airway. Hard objects nearby should be removed to prevent injury to the head or other parts of the body. Various stages of the fit including movement patterns of the limbs and eyes, time of onset, duration etc. Should be recorded. After the fit the patient should be told what happened. If this is the first fit detailed history should be taken.

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A patient suffering from paraplegia or in the later stages of multiple sclerosis may develop painful flexor spasms of the lower limbs. Gentle yet firm handling of the patient, can prevent these by prevention of infections, by passive movements of the limbs, and by careful positioning of the patient.

### **4.2.10.11. Care in Craniotomy**

Before operation the patient should be informed all about the operating procedures, the likelihood of regaining consciousness. Frequent assessment of TPR and BP is essential in the post-operative room. Tepid sponging is done if the temperature rises above 100 °F. Any signs of focal epilepsy must be reported. Analgesics should be used with caution since many analgesics may depress consciousness. Restlessness may indicate retention of urine.



#### 4.2.11. Exercises

##### 4.2.11.1. Write 'T', if the statement is true and 'F' if the statement is false

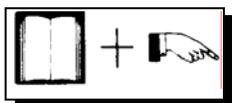
- a. Intracranial hypertension is always due to raised blood pressure.
- b. Hypoglycemia can cause fit and unconsciousness.
- c. Meningitis is a fatal disease.
- d. Epileptic patient can be allowed to drive a car.
- e. Old people have less memory due to continuous loss (death) of neurons.
- f. Prolonged convulsion causes damage to the brain.
- g. Severe headache is a common symptom of raised intracranial pressure.
- h. Diabetes mellitus can cause blindness.
- i. An unconscious patient should be nursed in propped up position.
- j. Full urinary bladder in a comatose patient causes restlessness.
- k. Demented patient can behave like a child.
- l. Mannitol (20%) can be used to reduce the raised intracranial pressure.
- m. Papilloedema dilatation of the pupil.
- n. Brain stem controls circulation and breathing.
- o. We see by our occipital lobe.
- p. Severe vomiting is an important sign of intracranial hypertension.

##### 4.2.11.2. Short and broad questions

1. Write the symptoms and signs of raised intracranial pressure.
2. How will you treat a patient with meningitis?
3. Write the outlines of care of a unconscious patient.
4. How do you assess a neurological patient?
5. What are the causes of unconsciousness

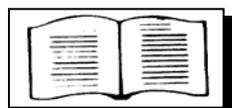
## Lesson 3: Nursing in Urinary Disorders

### 4.3.1. Learning Objectives



At the end of this lesson you will be able to-

- understand urinary nursing,
- describe applied anatomy and physiology related to urology,
- discuss the disorders of urinary system, and
- explain the nursing management of the disorders.



### 4.3.2. Introduction to Urinary Nursing

Disorders of urinary system occur in all age groups and occupy about 20% of general medicine (Gabriel, 1977). Care of these patients involves health workers from many disciplines. Recent development of dialysis and renal transplantation require nurses to acquire additional knowledge in this complicated field. Though there are many diseases that can affect this system, nursing care like in other systems is designed to preserve the vital functions of circulation, respiration, assimilation, elimination, and to assist the patient to maintain a normal or near normal state of health-or to death-with a minimum of discomfort, indignity, uncertainty and fear.

A patient who is suffering from a urinary disorder may require direct or indirect help regarding some tasks, which he would have done without, support of another person or in private. This is very important aspect of genitourinary nursing. The nurse must realize that to touch and expose the body of another person are very sensitive issues in most societies. The ailing person is usually cooperative and friendly but in many situations especially in this country resentment may be a common experience. This is especially true in case of a male person to be attended by a female (nurse). Much information is really confidential and the patient is often unwilling to discuss these with even a close relation. He should be given prior explanation of what is going to happen to his body. Care must be taken to ensure that his spirituals needs are not neglected.

### 4.3.3. Applied Anatomy and Physiology

Formation of urine occurs inside the two kidneys. Each kidney contains thousands of minute tube-like structures called renal tubules. Blood comes in the capillaries of the kidney (glomeruli) and plasma is filtered into the renal tubules. In the tubules most of the filtered fluid (glomerular filtrate) is absorbed again (reabsorption) into the blood circulation and only a small amount of filtrate is passed as urine. Function of the kidneys or urinary system as a whole depends not only on the urinary collecting system but also on the functioning of the cardiovascular, nervous and

endocrine system. The renal blood flow (RBF) is the determinant of amount of filtration by the kidneys. If renal blood flow were less, volume of urine would be equally less. In case of severe blood loss or dehydration blood flow to the kidneys may be virtually withdrawn. This will cause shut down of renal function and result in cessation of urine formation called anuria. If such a situation is prolonged kidneys will be permanently damaged (necrosis). Sudden stopping of urine formation is called acute renal failure (ARF).

The nervous system helps to regulate blood pressure so that filtration can occur and it also controls micturition (periodic voiding of the bladder). The endocrine system releases two important hormones named aldosterone and anti-diuretic hormone (ADH). Aldosterone retains salts or electrolytes and ADH retains water from the filtered fluid. In their absence volume of urine would be very large. You would have in that case to drink water eats salt all day and night long!

#### **4.3.4. Disorders of the Urinary System**

These include infections, immunological reactions, toxic reactions, neoplastic growth, metabolic and vascular changes and genetic and congenital abnormalities.

#### **4.3.5. Infection**

Infections are very common in the urinary tract. It is usually acute but may be recurrent and chronic. Frequent infections can lead to chronic renal problems and ultimately to renal failure. The germs reach the urinary tract by ascending through the urethra. Blood borne (haematogenous) infections are rare. Infections may occur without any symptoms (asymptomatic or silent) asymptomatic infections are more dangerous because severe renal damage can occur before these are detected. Congenital anomalies, reflux of urine from the urinary bladder back to the ureters (Vesicle-Ureteric Reflux or VUR), enlarged prostate, stricture of urethra, inadequate voiding of urine, poor perineal hygiene etc. are important precipitating causes of urinary tract infection (UTI). Patients who have diabetes mellitus, gout, and renal calculi have more UTI. Catheterisation and instrumentation of the urinary tract also increases the likelihood of infection. Urinary tract infections are more common in females because the female urethra is shorter, straighter, and close to the anus so that ascending infection can easily occur. During pregnancy infections are more common because immunity is depressed and enlarging foetus presses the urinary bladder and causes stasis of urine. The hormone progesterone, which is much elevated during pregnancy, also decreases smooth muscle activities and hence lowering of ureteric movement. This results in urinary stasis.

#### **4.3.5.1. Clinical Features**

As said before the patient may be asymptomatic. Symptoms may be variable. Children may have fever, frequency, abdominal pain, vomiting, and *failure to thrive* (failing to gain weight and height). Adults may have fever, frequency, loin pain, backache, dysuria (difficulty in passing urine), elevated blood pressure, headache and vomiting. Organisms commonly isolated from infected urine are *E. coli*, *Proteus*, *Staphylococcus*, *Pseudomonas*, *Streptococcus*, etc.

#### **4.3.5.2. Nursing Management**

A clean-catch mid-stream specimen of urine must be examined within the 30 minutes of patient's voiding. Antibiotic selection is based on the culture-sensitivity test for the organism. Usually 14 days of oral therapy are sufficient. Common drugs are co-trimoxazole, amoxycilin, nalidixic acid, nitrofurantoin, gentamicin, and mecillinam. A high fluid intake washes the urinary system better and helps to cure the patient earlier and prevent further infections. The nurse should inform the patient about importance of completing the course of antibiotic though he is symptom-free earlier. Good compliance will reduce chance of relapse and appearance of resistance towards the drug. Follow up urine tests are very vital and must be complied with. Underlying problems such as stone, stricture, reflux, diabetes, etc. should be attended to as advised by the physician. Surgical help may be needed.

#### **4.3.6. Obstruction**

This can occur at any point in the urinary tract and can cause stasis with infection and stone formation. Causes of urinary obstruction includes stenosis or stricture specially of the urethra as caused by gonorrhoea or trauma, prostatic enlargement, ureteric obstruction due to stones, blood clots, tumours, pressure by a mass from outside etc. Clinical features vary with specific cause and extent of the lesion. Common manifestations are pain, fever, dysuria, frequency, nocturia, haematuria, and retention of urine. Difficulty in starting micturition, a poor stream, and dribbling at termination are features of prostatic enlargement. When acute retention occurs the patient is unable to pass urine and there is distention of the bladder and severe abdominal pain. Renal colic or pain due to affection of the kidney is intermittent but very severe. It may radiate from 'loin to groin'. The patient becomes pale, anxious and may vomit. Plain x-ray in erect posture may reveal stones but an Intra Venous Urogram (IVU) is essential to locate the defects in details. Cystoscopy will detect the defects in the lower urinary tract and per rectal examination will delineate the enlargement of the prostate. Laboratory tests have limited value in diagnosing urinary stones.

### 4.3.6.1. Nursing Management

Early diagnosis and early treatment is very important in urinary tract problems. Antibiotics are given for infections and surgery may be required for a variety of causes. Following are some surgical procedures used for treating specific urinary obstructive problems:

<b>Disorders</b>	<b>Procedures</b>
Benign enlargement of the prostate	Suprapubic prostatectomy Retropubic prostatectomy Perineal prostatectomy Transurethral stricture
Urethral stricture	Urethral dilatation
Renal stones	Pyelolithotomy
Ureteric stones	Ureterolithotomy
Ureteropelvic stricture	Pyeloplasty
Ureter-bladder stricture	Ureteroplasty

### 4.3.7. Prostatic Enlargement

The enlarged prostate causes obstruction to the urinary flow. This will cause stasis, infection and damage of the kidneys due to increasing backpressure. The sufferer is usually an elderly and may have other associated medical problems such as heart disease, hypertension, chronic lung problem or even urinary impairment since before. These patients may develop acute retention of urine. This is a very painful condition and warrants immediate medical attention. Enlarged prostate will ultimately need operative removal but if the patient has acute retention of urine a catheter must be introduced to relieve it. A self-dwelling catheter may be used if drainage is required for a couple of days. In that case care must be taken so that leakage of urine does not occur. It will cause urethra and surrounding skin. The procedure must be done under strict aseptic conditions and the catheter should not be left inside for long time. This is because catheterisation carries risk of introducing infection into the urinary tract. After introducing a catheter a specimen of urine is sent for urinalysis, culture and sensitivity studies. Intake output chart must be maintained for every patient with catheterisation.

#### 4.3.7.1. Nursing Care after Removal of the Prostate (Prostatectomy)

It is a common operation in the elderly people. It is a major operation and the care needed for this is a challenge for nurses. Some problems are

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common to all major operations. But in case of prostatectomy a number of specific problems are to be considered. Of these the most important are the bleeding from the prostatic bed and clot retention, infection, and incontinence. All patients having prostatectomy will return from the operation theatre with running intravenous fluids or transfusing blood. IV fluids are usually run for 48 hours till the total oral fluid intake is established. The patients also have running fluids for bladder irrigation passing through the three-way indwelling Folly's catheter, which is left inside when the operation is finished.

The purpose of irrigating the bladder is to dilute the blood oozing from the operation site so that it cannot clot and thus plugs the urine outlet causing acute retention of urine. But if the bleeding is very severe clot can still occur and can cause blocking of the urethra. Irrigation fluid comes out along with oozing blood and urine coming from the ureters. For this reason the color of the returning fluid is darker and the volume is also more than that of the irrigation fluid. The near-correct volume of urine can be calculated by deducting the volume of irrigation fluid from volume of returning fluid through the indwelling catheter. This information is very vital for nurses, as they have to show the intake-output chart correctly.

If suddenly urinary flow is halted the nurse must immediately check the catheter for any kinking, accidental clipping off, dragging down of the catheter tip from its position, blocking of catheter lumen by blood clot. To prevent kinking and accidental clipping close surveillance is essential. To prevent dragging of the catheter tip, the outside portion of the tube should be strapped to the patient's thigh by adhesive tape. Irrigation usually prevents blood clots. If clot has already occurred it must be immediately evacuated by using large syringe. Remember that if this method fails the patient must be taken back to the theatre.

### **4.3.8. Renal Stones**

Renal stones (renal calculi or nephrolithiasis) cause severe pain, bleeding in the urine and ultimate renal damage. When a kidney fails to work we call it a non-functional kidney. Kidneys can be non-functional due to chronic. glomerulonephritis, acute renal failure, renal stones, obstruction of the urinary tract etc. Most renal stones are calcium stones. Minority are magnesium ammonium phosphate and uric acid stones.

Stone disease is frequently a recurrent problem. Some recognised causes of renal stone formation are dehydration, hypercalcaemia, hypercalciuria, hyperoxaluria, and infection of the urinary tract, hyperuricaemia, hyperuricosuria and cystinuria. When stones in the kidneys are detected steps are taken to prevent their development and to dissolve them. Very small stones can move through the ureters and finally pass through the

urethra into the urine. Uneven gravel-like stones may cause injury to the urinary tract while they move down. This will result in severe pain and bleeding in the urine. Moving sufficiently and taking plenty of fluids by mouth will help the stones move easily through the urinary tract. The whole day urine is collected to strain through gauze to detect expelled stones. These are then examined for their chemical composition. Doing culture and sensitivity test of the stones also identifies types of microorganisms associated with urinary infections.

When the stones are of larger size they are better removed by cystoscopy or surgical procedures like nephrolithotomy (removal of stone from the kidney) pyelolithotomy (removal of stone from the renal pelvis) and ureterolithotomy (removal of stone from the ureter). Using extracorporeal shockwave lithotripsy now can fragment renal and ureteric stones. Bladder stones are removed by endoscopy or if very big by open surgery. Calcium intake (milk and dairy products) may have to be reduced for persons who continue to form calcium stones. Keeping urine alkaline will help reduce formation of uric acid stones. Foods containing purines and lipids are better avoided in case of uric acid stone formation.

Follow-up care for patients with obstruction includes periodic urine examination and appropriate antibiotic therapy. Urine should be voided frequently at regular intervals. Overdistension of the bladder should be avoided. If the obstruction problem is due to recurring stone formation then dietary advice, high fluid intake, acidifying or alkalinising agents may be helpful. Prolonged obstruction may cause permanent damage to the kidneys. Sudden obstruction can cause acute renal failure.

#### **4.3.9. Acute Renal Failure**

When the kidneys suddenly fail to form urine over hours and days; and there is accumulation of urea and creatinin in the blood, the situation is called acute renal failure (ARF). The cause is sudden fall of blood volume and blood pressure due to bleeding, diarrhoeas, vomiting, extensive burns, heart failure, or trauma. Drugs and toxins may damage the kidneys as well. Acute obstruction of the urinary tract can also cause acute renal failure. Acute renal failure is potentially reversible.

**Acute renal failure may be described in three phases:** oliguric, diuretic and post diuretic phases. With oliguria (defined as volume of urine in adults to be less than 400 ml per 24 hours) the volume of urine is too low to maintain the normal blood levels of waste products. The oliguric phase lasts about two weeks.

The diuretic phase follows if the kidneys start recovering from acute damage the tubular functions recommences and the volume of urine may

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increase by tenfold of the volume during the preceding oliguric phase. This phase lasts about several days. During the post-diuretic phase the urinary volume returns gradually to its normal level.

Acute renal failure varies greatly in symptoms and signs because of the various causes and variable severity. At the beginning the general condition of the patient may be good. But there are often mental confusion, postural hypotension, and cold extremities in addition to oliguria, which will suggest acute renal failure. The oliguric urine is often dark brown and contains red cells. This is damage of the nephrones. Blood potassium and urea levels start rising. Within a few days the patient starts vomiting, becomes increasingly drowsy, and may start convulsing. If electrolytes and acid-base balance is maintained the patient usually recovers and the diuretic phase starts. If there is no improvement dialysis is to be started. There is significant mortality and hence early diagnosis and treatment is very important.

### **4.3.9.1. Nursing Management of Acute Renal Failure**

It is now clear that the urine volume and blood biochemical balance are the important parts of management of ARF. Fluid and electrolyte balance is maintained and for this the intake output chart must be kept carefully. Nutrition of 2000 kcal with protein intake of 20-60 g/day and carbohydrate 100g is ideal. Oral feeds are preferable. IV fluids are necessary for those who cannot tolerate oral feeds. In the latter situation hypertonic glucose saline can be used.

Oral hygiene is meticulously maintained. Care of pressure points, alertness for signs of infection, physical cleanliness, etc. are vital points for nurses. Catheterisation is better avoided. When antibiotics are used care must be taken to choose drugs, which are least, excreted through the kidneys. Sulphas must not be given.

When the condition of the patient does not improve on conservative treatment carrying out of haemo-or peritoneal-dialysis must be considered. The objective is to give the damaged kidneys more time to get chance of recovery; and at the same time carrying out functions of the kidneys through some other means. These are more needed in elderly patients and in those with infections or trauma. Care of wound sites and infections are also very important.

Doing dialysis means making another wound and this means that extra care must be observed for these wounds. Haemodialysis also increases the likelihood of haemorrhage due to addition of heparin.

The prognosis in acute renal failure is dependent on the cause and extent of renal damage. In uncomplicated ARF the mortality rate is around 25%. This increases sharply with addition of complications such as surgery, trauma, infections, and hypovolaemia. Older age, severe illness, sepsis and late presentations are all bad prognostic signs.

#### **4.3.10. Glomerulonephritis**

Some immunological processes cause damage to the glomerulus. The damage is due to deposition of antigen-antibody complexes in the glomeruli. One such disease is the post-streptococcal infection glomerulonephritis. This is an acute condition and needs intensive nursing care.

##### **4.3.10.1. Cause**

Sometimes in a susceptible person streptococcal infection of the throat or skin initiates immune response in the body. This takes several weeks to become apparent. This is called a lag period. When the symptoms of glomerulonephritis appear the original infection in the throat and skin may be absent. The antibodies formed in response to streptococcal infection binds with the glomerular antigen (autoantigen, hence called autoimmune disease) and cause inflammatory damage. Not all streptococci can do this damage but a few strains of Group A beta haemolytic streptococci do this damage.

##### **4.3.10.2. Clinical Manifestations**

Children of school going age (5-15 years) are usually affected. Both the kidneys are affected and there is an acute diffuse non-suppurative inflammation, which damages the filtering system and cause leakage of protein, red and white blood cells into the urine. Filtration becomes less and the urine volume is decreased and oedema develops in the body first in the face (puffy face). Urine is smoky-colored due to high content of blood cells in it along with passage of protein. The patient develops palpitation, hypertension, and headache, short of breathing and mild anaemia. Blood urea level is raised. Convulsion may occur. The child may present with acute respiratory distress due to heart failure caused by hypertension. Anti-streptolysin O (ASO) titre may be elevated and usually indicates the presence of antibodies to the streptococcal infection.

##### **4.3.10.3. Nursing Care**

No specific treatment is available. The main point of management is bed-rest. This will give rest to the patient and his kidneys. The aim of treatment is to prevent cerebral (cerebral oedema with convulsion) and

cardiac (heart failure) complications. Intake output chart, measuring blood pressure regularly, taking daily weight, looking for complications, laboratory reports are all essential for good patient care. Though the outcome is good a few patients die of acute complications such as acute left ventricular failure, acute uraemia, and acute cerebral oedema. Nine out of ten patients recover completely.

Bed rest is advised till the patient passes normal urine, blood pressure lowers, weight is stable, and the patient feels better. This usually takes a period of 3-4 weeks. Fluid and salt restriction including restricted potassium intake is advised till oedema disappears and hypertension is corrected. Protein intake is adjusted to the blood urea level and the amount of proteinuria. The patient and the family are to be informed about the aim of dietary restriction. This will ensure good patient compliance.

Antihypertensive agents and diuretics may be needed. Throat and skin swabs are cultured and if infection is present it is corrected by using antibiotics specially penicillin.

#### **4.3.11. Nephrotic Syndrome**

This is a clinical condition in which there are massive proteinuria, hypoproteinaemia, generalized oedema, and hypercholesterolaemia. Children below 5 years of age are commonly affected. Most cases (about 80%) are due to unknown causes (called idiopathic). Other causes are systemic lupus erythematosus, diabetic nephritis and some rare diseases.

##### **4.3.11.1. Clinical Manifestations**

The main signs are generalized oedema (anasarca), hypoproteinaemia, and massive proteinuria. The oedema is severe and genitalia are characteristically affected. Pleural effusion, ascites and leg oedema are remarkable. The child looks pale and apathetic (unhappy). He is weak and depressed. There may be short of breathing, cough, and loss of appetite. Signs of secondary infections may appear and demand vigorous treatment. The urine is scanty, foamy; deep colored and contains hyaline casts. Renal function tests are usually normal but may be abnormal if there is damage to the kidneys.

##### **4.3.11.2. Nursing Care**

Dietary care is very important. The diet should have enough protein to replace the protein lost in the urine. Salt restriction is necessary but salt-free foods are not tasty and the child who is already anorexic may refuse to take such foods. For these reasons salt restriction in the child's diet

should be exclusion of table salt only. It will be preferable if the table salt containers are removed from the table for all family members.

Nephrotic patients are susceptible to infections and need to be protected from other children with obvious infections. Oedematous skin needs care to be clean thoroughly and not to be damaged anyway because it may start spreading type of skin infections (cellulitis). When the patient is on corticosteroids the likelihood of infection is increased and symptoms and signs of infection are often minimal.

Often the patients have to be admitted in the hospital for long time or for repeated times. This is extremely tiresome and needs sympathetic understanding and help from the nursing staff. These children are depressed and need emotional support from the medical profession and the family. Most of them recover completely and enjoy normal life. Some children develop chronic renal failure with its associated prognosis.

#### **4.3.12. Chronic Renal Failure**

Chronic renal failure (CRF) is a condition in which impairment of renal function persists for long time (usually months or years). CRF is usually an irreversible condition.

##### **4.3.12.1. Causes**

There are many causes of chronic renal failure. The kidneys may be damaged due to their parenchymal diseases or due to backpressure caused by obstructive diseases of the urinary tract. Renal parenchymal diseases include chronic glomerulonephritis, pyelonephritis, renal tuberculosis, hypertensive nephropathy, diabetic renal disease and analgesic nephropathy. Obstructive urinary conditions include enlarged prostate, urinary stones, stricture of the urethra, vesicoureteric reflux (VUR), and posterior urethral valve in male infants and young boys.

##### **4.3.12.2. Clinical Manifestations**

The most clinical features are polyuria and nocturia for years together. The affected person may appear normal, cackectic and pigmented. There may be thirst, breathlessness, nausea and vomiting. Oedema, leg cramps, pale discolored skin, and purities may be associated features. Small children fail to thrive, become pale and often vomit. Physical examination shows hypertension, anaemia, and shrunken or enlarged kidneys. Urine analysis always shows proteinuria. Blood urea and plasma creatinine will be elevated.

#### 4.3.12.3. Nursing Management

As already mentioned CRF is usually an irreversible process management is usually supportive. Control of hypertension, correction of anaemia, acidosis and hyperkalaemia, management of nausea and vomiting, treatment of infection, pruritus, and neurological changes are the major components of medical care of CRF.

Controlling the intake of protein, calories, sodium, potassium, and fluids are very important specially for controlling hypertension. If antihypertensive drugs are prescribed the blood pressure of the patient should be taken in supine, sitting, and standing positions. Calorie intake and balanced nutrition must be ensured but the protein intake should be controlled. Acidosis is usually corrected by giving sodium bicarbonate. In case of hyperkalaemia fruit intake is restricted and drugs containing potassium are avoided.

Application of Vaseline or bland oil on the skin will protect it from dryness and hence control the pruritus. Antihistamines may offer some relief. Trauma to the skin must be avoided and fingernail is to be kept short to prevent scratch and infection. Oedematous limbs should be elevated and protected from injury. Mouth care is very important. Offering foods served attractively and in small amounts may relieve nausea and vomiting. Antiemetics may be helpful.

In case of infection drugs should be chosen on the basis of route of excretion. Extra care is needed for patients who are confused and who are convulsing. Confused patients may need side-rails and low beds. Anticonvulsants and sedatives may be required for patients with fits. Some patients under-estimate their illnesses and some over-estimate. They may show anxiety, hostility, resentment, and aggression. Patients who become psychologically upset knowing their incurable illness may need psychiatric help.

The patient and his family must be taught about the nature of his illness, symptoms, dietary and fluid restriction, activity, mouth and skin care, medication, regular weight taking (using same machine, wearing same dress, at the same time everyday), follow-up after discharge, etc. in details so that his disease is well managed. He should learn to identify oedema and realise the importance of dyspnoea. If the patient and his family members can understand and carry out these vital self-care procedures he can lead a near normal life at home. Periodic check up for evaluation of the patient will show some patients are nearing the need for dialysis and some renal transplantation. Arrangements may be put in motion for these patients while they are on conservative therapy. The overall prognosis in CRF is guarded.



### 4.3.13. Exercises

#### 4.3.13.1. Multiple choice questions

1. Cessation of urine formation is called
  - a. Crystalluria
  - b. Anuria
  - c. Haematuria
  - d. Dysuria.
  
2. In absence of ADH
  - a. Increase volume of urine
  - b. Decrease volume of urine
  - c. Increase salts or electrolytes relationtionond
  - d. Increase body weight.
  
3. Urinary tract infections are more common in females because the female urethra is
  - a. Shorter
  - b. Straighter
  - c. Close to anus
  - d. All above.
  
4. Chronic renal failmre is associated with renal parenchymal disease include
  - a. Renal tuberculosis
  - b. Pyelonephritis
  - c. Hypertensive nephropathy
  - d. All above.

#### 4.3.13.2. Write 'T', if the statement is true and 'F' if the statement is false

1. Sudden stopping of urine formation is called chronic renal failure.
2. Mid-stream specimen of urine is used for examination.
3. Obstruction can occur at a specific point in the urinary tract.
4. Prostatectomy is a common operation in the younger people.
5. Acute renal faiure may be decribed in three phases.
6. Nephdrotic patients are susceptible to infections.
7. CRF is usually a reversible condition.

**4.3.13.3. Short and broad questions**

1. What are disorders of urinary system?
2. What are the causes of infection of urinary system?
3. Discuss the nursing care after prostatectomy.
4. Discuss the nursing management of acute renal failure.
5. Discuss about the causes of glomerulonephritis and its nursing care
6. What are the clinical manifestations of nephrotic syndrome?
7. Define chronic renal failure and its causes.

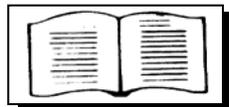
## Lesson 4: Cardiac (Heart) Nursing

### 4.1.4. Learning Objectives



At the end of this lesson you will be able to-

- know about heart diseases and their causes,
- effects of heart diseases on other systems, and
- nursing care in heart patients.



### 4.4.2. Introduction

It is a common experience that patients with cardiovascular diseases are very anxious. They are also fearful of death (*thanophobia*). They are usually fat people and a little bit more emotional than other persons. They will respond happily to your nursing care. So, you should be very caring and loving towards them.

Heart disease is very common. It may be congenital or acquired. About 1.2 of each 100 live births has congenital heart disease, most commonly minor defects.

Acquired heart disease is much more common than congenital heart disease. It is the commonest cause of death in the western countries. Here we shall discuss about acquired heart disease. Heart diseases are usually very serious. But unfortunately it is often without symptoms at the beginning (*asymptomatic*). *It is often said that your heart can deceive you!*

### 4.4.3. Etiology (Causes)

In most cases of congenital heart diseases the cause is not known. Congenital infection (*antenatal* infection), radiation, etc. are documented causes.

Acquired heart diseases commonly results from decreased O<sub>2</sub> (*hypoxia*) supply to the heart due to decreased blood circulation through its blood vessels (*ischaemia*). It is therefore called ischaemic heart disease.

Other causes of heart diseases are infections, collagen vascular diseases, metabolic defects, thiamine (vitamin B<sub>1</sub>) deficiency, etc.

Ischaemic heart diseases occur due to defect in blood vessels namely narrowing of the lumen, which results from deposition of plug (*atheroma*) on the vessel wall. When ischaemia is severe the patient can develop acute damage of the heart particularly its muscle (*myocardium*). It is called *myocardial infarction* (MI) or popularly said *heart attack*. Atheroma

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occurs more in thickened and roughened blood vessels particularly arteries (*arteriosclerosis*). This condition is commonly the outcome of aging. So you get these problems more in advanced ages. Raised blood pressure (*hypertension*) and raised blood fats (*hyperlipidaemia*) can cause this.

Such changes also occur in the blood vessels of other organs. For example, when cerebral blood vessels become blocked by atheromatous plug (*cerebrovascular disease*) the patient may develop permanent damage to the brain-giving rise to paralysis, loss of speech (*aphasia*), and other neurological problems.

When clot (*thrombus*) accumulates (*vegetation*) inside the heart chambers particularly the left atrium in heart diseases like mitral stenosis, atrial fibrillation, myocardial infarction, and infective endocarditis the thrombus can travel (*embolus*) to the brain (*cerebral embolism*) and blocks a artery (*ischaemia*). Clot can occur locally in a brain vessel (*cerebral thrombosis*). A brain vessel can also rupture and bleed (*cerebral haemorrhage*). All these 3 conditions cause ischaemic damage to the brain. This (ischaemic damage of the brain) is popularly called as *stroke*.

Infective causes of heart diseases are infective endocarditis, rheumatic fever, and toxic myocarditis in systemic infections. Though rheumatic fever is caused by *S haemolyticus* the bacteria do not directly invade the heart rather damages the heart indirectly through formation of antigen antibody complex.

Commonest causes of heart disease are *hypertension, rheumatic fever, hyperlipidaemia, diabetes mellitus, thyrotoxicosis*, etc.

### 4.4.4. Symptoms and Signs

Remember that, as said earlier, severe heart disease may be asymptomatic. Common symptoms and signs described below.

Because heart pumps blood and blood gives oxygen in addition to other things, most important symptom in heart disease is *tiredness and breathlessness (dyspnoea)* in normal activities. If the disease is severe tiredness may even be felt at resting condition (*orthopnoea*). Breathlessness occurs from pooling of blood in the lungs behind the left heart (*pulmonary congestion, pulmonary oedema*). There is cough with production of sputum. This explains why there are respiratory symptoms in heart disease. For these reasons we nurse cardiac principals in propped up position like patient with bronchial asthma.

*Chest pain* is the most common symptom associated with Ischaemic heart disease. A strangling pain (*angina*) felt in the part of the chest overlying

the heart (*precordium*). It is called *angina pectoris*. If there is *pericarditis* the pain commonly felt in the centre of the chest.

When heart, due to weakness from hypoxia, cannot pump blood properly the patient feels weak and *fatigued* (excessively tired). Too less pumping leads to *cyanosis* (bluish discolouration resulting from less O<sub>2</sub> attached to haemoglobin), pooling (stasis) of blood behind the heart in the veins. Stasis of blood causes oedema through leakage of fluid from blood through the capillary wall (*cardiac oedema*). Cardiac oedema first starts in the most dependent parts of the body, i.e. legs. If the patient is always lying in the bed cardiac oedema will appear in the sacral area (*sacral oedema*).

Pooling of blood behind the right heart causes congestion in the liver and this organ then enlarges to accommodate excessive blood. The liver becomes very big (*hepatomegaly*) and severely painful (*tender*). Blood is also pooled in the blood vessels of the abdomen (mesenteric or *splanchnic* blood vessels) and causes leakage of fluid, which accumulates into the peritoneal cavity (*ascites*). In ascites the patient becomes anorexic. If you press on the abdomen in these patients excessive blood in the veins will swell up the neck veins (*hepatojugular reflux, engorged neck veins*). These are called signs of congestive cardiac failure (CCF). Cardiac patients may have clubbed fingers and splinter haemorrhage.

Because blood cannot reach tissues properly the kidneys get insufficient blood to make urine. So urine volume is less (*oliguria*) in Congestive Cardiac Failure.

Very poor cardiac pumping causes cyanosis, running or rapid pulse, and restlessness. When the patient himself feels his or her heartbeats (subjective awareness) we call it *palpitation*. Palpitation can occur in heart diseases. The heartbeats can be high (*tachycardia*), low (*bradycardia*) with or without irregularities (arrhythmia). These can be *paroxysmal* (occurring now and then). Normal cause of palpitation is sudden exertion.

Congenital cyanotic heart disease can cause *clubbing* of fingers.

#### **4.4.5. Investigations**

Patients with heart disease need some tests for diagnosis. Of these ECG, echocardiography, chest x-ray, and cardiac catheterization are commonly done.

*ECG or electrocardiography* is the commonest test done to detect heart disease. ECG can detect abnormal cardiac rhythm (*arrhythmia*), defect in the pathway of electric impulse of the heart (*conduction defect*), chamber

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hypertrophy, cardiac ischaemia and infarction, electrolyte imbalance, and some drug toxicity.

*Echocardiography* is basically an ultrasound study on the heart. It is done to see the position, setting and movement of the cardiac valves, movement of blood within heart chambers, and activity of the heart muscle (*myocardium*). Doppler echocardiography can show the direction of blood flow within the heart. This helps to see any abnormal mixing of blood within the heart.

*Chest x-ray* shows the outline of the heart and great vessels and the condition of the lung fields. It gives impression about the size of the heart.

*Cardiac catheterization and coronary angiography.* Here a special long catheter is introduced into the heart via a distal (*peripheral*) large blood vessel. It is an invasive investigation because you have to invade the heart with a catheter! Through this catheter you can measure the blood pressure in different chambers of the heart and great vessels. This allows seeing the severity of different valvular diseases of the heart (*stenosis or regurgitation*). Catheter once introduced into the coronary arteries can pour radio-opaque dye and thus make all branches of the arteries to be visible through x-rays (coronary angiography). This will help to see any blockade in any coronary artery.

### **4.4.6. Nursing Care of Patient with Heart Disease**

You need to be very sympathetic to the heart patients. They are put in absolute bed rest with minimum disturbance. The environment must be quiet. Crowding and emotional activities or news should be avoided. Cardiac patients are comfortably nursed in propped up position. They usually need O<sub>2</sub> inhalation. Pulse, temperature, blood pressure and intake output chart must be maintained meticulously. Any complaint from the patient must be taken seriously and conveyed to the doctor. Breathlessness, cyanosis, chest pain, confusion, and restlessness are signs deserving urgent attention.

Drug therapy in heart disease is very important and noncompliance on the patient's part may cause sudden deterioration. Community nursing programmes to help with drug compliance and to detect early deterioration may prevent acute hospitalization. The nurse must be meticulous in administration of drugs to the cardiac patient.

Prolonged bed rest may lead to development of deep vein thrombosis. Leg exercise is very important to prevent it. Low dose subcutaneous heparin and elastic support stockings are useful.

Balanced food, reduction of weight for obese person, avoidance of large meals, salty foods and added salt, abstinence from alcohol, illicit drugs, and smoking etc. Are very important in the treatment of heart disease.



#### 4.4.7. Exercise

##### 4.7.1. Write 'T', if the statement is true and 'F' if the statement is false

- a. Human heart has 4 chambers.
- b. Right ventricle pumps oxygenated blood.
- c. Mitral valve is in the right ventricle.
- d. In shock and Congestive Cardiac Failure kidneys can make urine in normal amount.
- e. Oedema in Congestive Cardiac Failure first appears in the face.
- f. Echocardiography is basically an ultrasound study on the heart.
- g. Doing ECG we can see the hypertrophy of the heart chambers.
- h. Hypertension does not cause heart disease.
- i. Rheumatic fever causes damage to the heart valve.
- j. Coronary angiography is done by introducing catheter through esophagus.
- k. Heart disease is always symptomatic.
- l. Smoking causes lung disease but not heart disease.
- m. Dietary restriction is very important in heart patients.
- n. Salt restriction is not essential in hypertension.
- o. Dehydration can damage kidneys.
- p. Heart attack is also called stroke.

##### 4.4.7.2. Short and broad questions

1. What are the causes of heart diseases?
2. What are the symptoms and signs of congestive cardiac failure?
3. How will you nurse cardiac patients?
4. How neurological problems can develop from heart disease?

## Lesson 5: Nursing in Lung Diseases

### 4.5.1. Learning Objectives



At the end of this lesson you will be able to-

- know what are the respiratory diseases,
- know what are the symptoms and signs of respiratory illnesses,
- how to treat pneumonias, and
- how to care patients with respiratory diseases.



### 4.5.2. Introduction

The respiratory system supplies O<sub>2</sub> to the blood and takes out CO<sub>2</sub> from the later. In addition it gives us voice (speech) from the larynx (voice box) and we smell with our nose, which is also a part of the respiratory system.

This system is always exposed to the outside atmosphere and thus is very prone to be contaminated by airborne polluting particles namely bacteria, viruses, and harmful environmental and industrial pollutants. Bronchial asthma is also very common and affects almost 10-15 % children.

Infectious agents more commonly affect this system than all other systems put together. Commonest infecting microorganisms are the viruses. Children are most commonly affected. Acute respiratory infections particularly pneumonias claim about 5 million lives of children in a year and is the commonest cause of childhood death all over the world.

Conventionally respiratory system is divided into 2 parts: *the upper respiratory tract*, and *lower respiratory tract*. The upper respiratory tract includes the nose, sinuses, middle ear cavity, pharynx, and larynx. The lower respiratory tract includes the trachea, bronchi, bronchioles, and the lungs. Air exchange occurs in the alveoli of the lungs.

### 4.5.3. Etiology

Lack of breast feeding, faulty feeding, bottle-feeding, and deficiency of vitamins namely A, lack of immunization, overcrowding, poor housing and sanitary condition, malnutrition, etc are important causes of overwhelming respiratory infections. Obviously it is much more common in the poor countries. Respiratory infection is much less common in the rich western countries.

Infection is the commonest cause of respiratory illness. Other illnesses are asthma, bronchitis, emphysema, lung diseases from pollution

(*pneumoconiosis*), cancers etc. commonest micro-organism to infect respiratory system is virus. Bacteria are the next offender.

#### 4.5.4. Symptom and Signs

Common symptoms are cough, runny nose or nasal stuffiness, sneezing, and sore throat wheezing or ronchi. Nasal congestion, sneezing, flushing of face, and associated red eyes, body aches and headache are suggestive of viral aetiology.

Ear pain, chest pain, stridor, croupy cough, whoop, chest indrawing etc. are dangerous findings. Hoarse voice and bovine cough indicates involvement of the larynx.

Recurrent wheezy chest with breathlessness are symptoms of bronchial asthma. The most important sign is fast breathing (*tachypnoea*) which indicates more breaths are required to supply oxygen to the body. It is also very important sign to follow up a patient. Counting of breathing is very simple and does not need an instrument like stethoscope. You should count breathing for a full minute. Fall in breath count in a tachypnoeic child always indicates improvement.

Other signs are chest indrawing, croupy or bovine cough. Remember that, what the patient or the attendant says is symptom and what you observe is sign.

Stridor, whoop, poor chest movement or bulged chest, poor air entry in the lungs, and cyanosis are very dangerous signs. There may be clubbing, oedema. A patient with severe respiratory illness may not be able to complete a verbal sentence. He may be drowsy, confused or even unconscious.

#### 4.5.5. Investigations

There are many investigations for respiratory illnesses.

*Chest x-rays.* It is the commonest investigation done in respiratory medicine. Though it has radiation hazards one can take a few exposures in a year. Many respiratory diseases including tuberculosis of lungs and bronchial carcinoma cannot be diagnosed at an early stage without an x-ray of the chest. A lateral view film can provide additional information about position and nature of the abnormality. Follow up x-rays may be needed to see the progress.

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There are some special x-rays (*imaging*) of the chest. These are fluoroscopy (screening), computed tomography (CT), bronchography, angiography, etc.

Ultrasonography can be done to see any collection of fluid in the pleural space (*pleural effusion*). Normally there is no visible fluid in the pleural space.

*Sputum, throat swabs, blood, tracheal and bronchial washings and aspirates* can be examined to detect bacteria, viruses, and fungi. Sputum exam is a very important test to identify active infection like tuberculosis and others. Usually 3 consecutive sputum samples are examined.

*Tuberculin test* (Mantoux Tuberculin test) of briefly MT. It is very valuable test to detect tuberculosis particularly in children. Purified protein derivative (PPD) is used for a hypersensitivity test and a strongly positive test suggests tuberculosis.

*Laryngoscopy*. It can be direct or indirect. When a mirror is used to see the larynx, it is called indirect laryngoscopy. You can visualize the larynx directly by using a fiberoptic laryngoscope and the image can be magnified. It allows seeing directly if there is any abnormal growth or other lesions.

*Pulmonary function tests*. Now a day sophisticated instruments are machines are available to see the respiratory functions. The tests are ventilatory capacity (VEV1, VC, PEF), blood gas analysis, etc.

### 4.5.6. Nursing in Respiratory Diseases

Like cardiac patients a respiratory patient also needs good nursing care. Oxygen is often needed particularly when the patient has fast breathing, chest indrawing or cyanosis. If a child has pneumonia O<sub>2</sub> is more urgently needed than antibiotics. There are deficit of oxygen in the blood in pneumonia. So, if you do not give pure O<sub>2</sub> immediately, the child may die soon. Antibiotics cannot immediately ensure more oxygen entry through the inflamed and oedematous lungs because they kill only bacteria. So you need to give concentrated oxygen in pneumonias and asthma.

Small children and unconscious patients who cannot cough out secretion (sputum) needs suction clearance of the airway. Chest physiotherapy namely postural drainage is very important to drain out sputum from deeper parts inside the lungs. In addition small children with acute respiratory infection need warm environment.

Fever, which is a common symptom, adds extra load to the respiration and blood circulation. You should lower temperature if it is very high. This will reduce breathing rate and thus the heart rate as well.

Nebulised medicines namely salbutamol, ipratropium, and adrenaline helps dilatation of the bronchial tree (bronchodilation) and thus passage of air becomes easier through the airway. Salbutamol and ipratropium also reduce cough, which may be much harassing. Steam inhalation can relieve dry irritating cough. Humidification of the air particularly during winter when the air is dry (low relative humidity) is useful for distressing cough and in asthma.

Smoking, dusty environment, pet animals, carpets particularly in damp environment can cause cough and wheezing more and therefore better avoided. Parents should be taught not to smoke in the house where small children are suffering from respiratory infections.

#### **4.5.7. Prevention**

This is very important because acute respiratory infection is the greatest killer in childhood. Breast feeding, avoidance of bottle feeding, distribution of vitamin a capsule to under 6 years old children and immunization together can bring down the incidence of acute respiratory infection significantly. Correction of malnutrition can further improve the scenario. Avoidance of overcrowding, treatment of infectious diseases particularly tuberculosis can further lower down the prevalence of respiratory diseases. Health education should be given to all people regarding personal hygiene, food hygiene and clean environment.



#### 4.5.8. Exercise

##### 4.5.8.1. Write 'T', if the statement is true and 'F' if the statement is false

- a. Micro-organism most commonly affects the respiratory system.
- b. Acute respiratory infection is the commonest cause of childhood death.
- c. Children with pneumonia die from fever.
- d. Salbutamol is a bronchoconstrictor.
- e. Smoking only causes heart disease.
- f. Lung disease can cause heart disease.
- g. Tuberculosis most commonly affects the abdomen.
- h. Fast breathing is the most important sign in pneumonia.
- i. Stridor is a benign sign.
- j. X-ray is most commonly done to diagnose respiratory diseases.

##### 4.5.8.2. Short and broad questions

1. What are the common respiratory diseases?
2. How can you prevent respiratory infections?
3. Outline the nursing care in respiratory diseases.
4. How air pollution affects the lungs?
5. What are the tests commonly done to diagnose respiratory diseases?