

**SCHOOL OF SCIENCE AND TECHNOLOGY**

**PRACTICAL MEDICAL SURGICAL NURSING**

**BSN 3812P**



**BANGLADESH OPEN UNIVERSITY**

# SCHOOL OF SCIENCE AND TECHNOLOGY

## PRACTICAL MEDICAL SURGICAL NURSING

**BSN 3812P**

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# PRACTICAL MEDICAL SURGICAL NURSING

**BSN 3812P**

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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. This module Behavioral Science-II, last of the two modules on Behavioral Science, has been written with the same aim. Behavioral Science includes the fields of sociology, psychology and anthropology. In this module Behavioral Science -II, an attempt has been made to include an introduction to the subject (Unit-1) and sociology (Unit-2). In the second of the modules on the subject, Behavioral Science-II, an endeavor has been made to include psychology (Unit-1-4) and anthropology (Unit-5). 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 it just gives 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 situation. 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 five 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 subjects of this program is Behavioral Science. 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.

# Practical Medical Surgical Nursing

## Contents

### Unit 1 : Care Plan

Assignment 1	: Nursing Care Plan .....	1
Assignment 2	: Nursing Process .....	3
Assignment 3	: Hospital Based Care Plan .....	5
Assignment 4	: Community Care Plan .....	7

### Unit 2 : Drug Therapy

Assignment 1	: Introduction .....	9
Assignment 2	: Routes of Administration, Preparation and Nursing Implication .....	11
Assignment 3	: Maximising Compliance .....	14

### Unit 3 : Radiotherapy

Assignment 1	: Introduction to Radiotherapy .....	17
Assignment 2	: Radiotherapy Treatment .....	19
Assignment 3	: Nursing Support to a Patient Receiving Radiotherapy .....	21
Assignment 4	: Chemotherapy .....	24

### Unit 4 : Preparation of Patient for Diagnostic Test

Assignment 1	: Ultrasonography .....	29
Assignment 2	: Preparation of Patient for Oral Cholecystography .....	31
Assignment 3	: Preparation of Patient for Endoscopy .....	32
Assignment 4	: Preparation of Patient for Colonoscopy .....	33
Assignment 5	: Preparation of Patient for Intravenous Urography .....	35
Assignment 6	: Preparation of Patient for C.T. Scan of Brain and M.R.I. of Brain .....	37
Assignment 7	: Preparation of Patient for Some Blood Test and Urine Test .....	39
Assignment 8	: Preparation of Patient for Hystero Salpingography .....	41

### Unit 5 : Maintenance of Fluid and Electrolyte Balance

Assignment 1	: An Overview of Fluid Balance in the Body .....	43
Assignment 2	: Nursing Assessment for Fluid and Electrolyte Imbalances .....	48

### Unit 6 : Pre-Operative Preparation

Assignment 1	: Pre Operative Nursing Care .....	55
Assignment 2	: Nursing Care for the Day of Surgery .....	59

### Unit 7 : Care of Surgical Wound

Assignment 1	: Wound .....	63
Assignment 2	: Wound Infection .....	66
Assignment 3	: Care of Wound .....	67

# Unit 1: Care Plan

## Assignment 1: Nursing Care Plan



### 1.1. Learning Objective

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

- explain care plan
- describe purpose, advantages, principles of care plan
- able to prepare a care plan by self.



### 1.2. Care Plan

Care plan is the stage of the nursing process in which an individual care plan is produced stating patient's problems, the objective, the goal or expected outcome. It also includes the nursing intervention and the time of date by which the objective is expected to be achieved.

The nursing care plan is a written guideline for patient/client care.

### 1.3. The Purpose of Written Care Plan is to

Care plan is the stage of the nursing process in which an individual care plan is produced stating patient's problems, the objective, the goal or expected outcome.

- document the patient's/client's health care needs
- determine by assessment, the patient's/client's problem and the priorities and goals formulated during planning
- co-ordinate nursing care
- promote continuity of care
- list goals to be used in the evaluation of nursing care
- communicate pertinent assessment data, a list of problems and therapies to other nurses and health care professionals
- decrease the risk of incomplete, incorrect or inaccurate care.

### 1.4. Advantages of Nursing Care Plan Includes

- co-ordinated nursing care, specialty consultations and scheduling of diagnostic tests so that nursing actions to be delivered can be quickly identified
- if all equipment and supplies are included in the care plan, the nurse's time is used more effectively in providing care
- enhance continuity of nursing care by listing specific nursing actions necessary to achieve the goals of care.

### 1.5. Principles Applicable to Nursing Care Plan are as Follows

- nursing care plans focus on nursing problems and have a nursing approach
- nursing care plans are written in clean, specific and "actionable" terms
- nursing care plans are short and concise



## Care Plan

- nursing care plans show the patient needs and nursing problems that are receiving attention as well as the long and short term objectives intervention are designed to be accomplished
- nursing care plans are written in a “non permanent” fashion. A nursing care plan must be able to be changed quickly and easily.

### 1.6. The Structure

The structure of the nursing care plan varies from one health care setting to another. For example, a care plan used in a hospital is different from one used in a community health settings.

When developing an individualized care plan, the nurse involves the family and patient/client.

### 1.7. The Design

A sample nursing care plan diagram is shown below-



NURSING CARE PLAN						
Name of patient :			Reg. No.			
Ward No :			Bed No. :			
Age :						
Sex :						
Date	Time	Problem	Objective	Work plan	Work done	Evaluation /Result
3.1.2004	Morning 10 am	Respiratory Problem	To reduce respiratory difficulty	- To position - To give oxygen	- Propped up position - Oxygen given	Patients feel better. Respiratory difficulty reduced

### 1.8. Activity

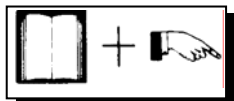
A patient named Patal Babu, of 25 years age; he is a farmer by profession. The previous night at 11 P.M. he was admitted in Chest Disease Hospital at Mohakhali. For last three days he had cough, respiratory difficulty and low-grade temperature. With respiratory difficulty a flute-like sound can be heard. He could not sleep well at night. His appearance is ill looking.

### 1.9. Exercise

With the help of the above description, look for the nursing problems of Patal Babu and make a nursing care plan for him.

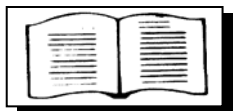
## Assignment 2: Nursing Process

### 2.1. Learning Objective



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

- explain the nursing process.



### 2.2. Nursing Process

Nursing process is basically a problem-solving approach to nursing that involves interactions with the patient. It also involves making decisions and carrying out nursing actions based on an assessment of an individual patient's situation.

Nursing process is basically a problem-solving approach to nursing that involves interactions with the patient.

It is most appropriately carried out co-operatively by the nurse, with the patient and the patient's significant others.

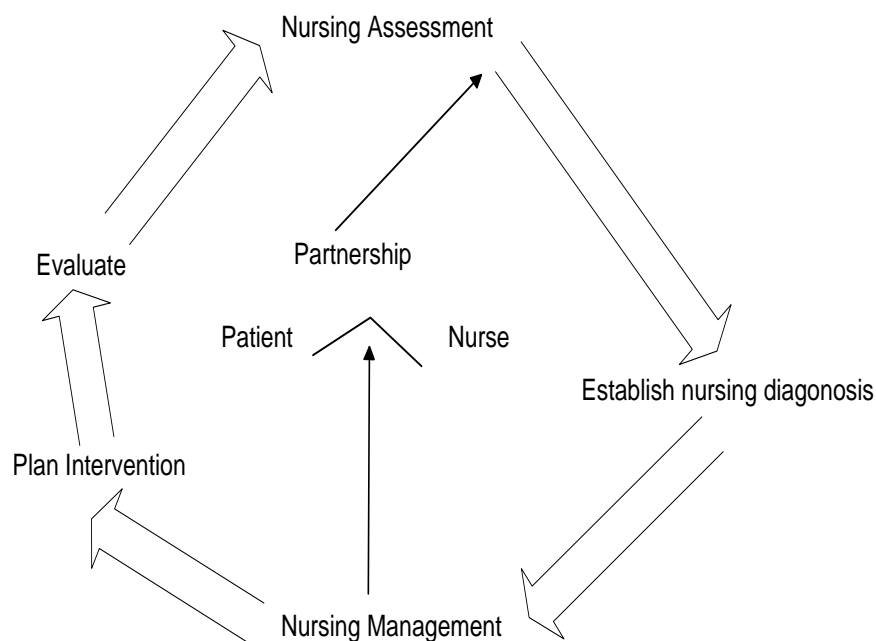


Fig. 2.1: The nursing process.

The patient-nurse partnership is central to the entire process.

### 2.3. Component of Nursing Process

The nursing process is a dynamic, continuous nature, which includes –

- assessment
- planning
- implementation
- evaluation.

## Care Plan

It is convenient to consider the nursing process in terms of nursing assessment. From Figure 2.1 it is seen that patient-nurses partnership is at the center of the entire process.

### **2.4. Nursing Assessment**

Nursing assessment is the systematic collection and ordering of information that allows a nurse to make a nursing diagnosis.

A nursing diagnosis is made when a nurse accurately identifies a patient's needs and the associated nursing problems.

In many hospitals, the nursing process extends upto the operating theatres, the nurses visiting the patients prior to surgery, partially to introduce them and also to take the opportunity to identify and discuss any needs that are relevant to the operating and recovery rooms. Following discharge of the patient to take care of the community health team, the plan should be communicated to them so that the pattern of successful care may be continued.

### **2.5. Planning**

When nursing diagnosis has been made only then it is valid to consider planning of intervention.

From primary, secondary and tertiary sources a patient's needs and associated nursing problems are identified.

Long and short-term objectives are set, based on the nursing diagnosis. With these objectives, planning of nursing intervention can be made.

### **2.6. Implementation**

The chosen interventions are then implemented for patient's care.

### **2.7. Evaluation**

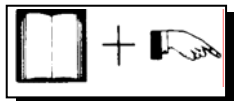
Evaluation procedure is an inherent part of the nursing process.

The excellent nurse is assessing continually whether a nursing intervention is successfully help a patient.

### **2.8. Conclusion**

The nursing process, well utilized, promotes individualized, sensitive, rational, relevant and effective nursing care.

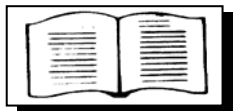
## Assignment 3: Hospital Based Care Plan



### 3.1. Learning Objective

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

- identify and make care plan in hospital.



### 3.2. Planning Nursing Care

There are generally two acceptable ways of organising patient care on a ward -

- task oriented patient care
- individualised, total or personalised patient care.

### 3.3. Task Oriented Care

Here one nurse is assigned a particular duty to perform for a patient, e.g.,

- giving a bed bath
- believed to result in fragmentation of care.
- The nurse tends to focus on carrying out the task rather than on allowing co-ordination and expression of the individual patient's problems.

### 3.4. Planning Considerations

In order to plan and carry out nursing care on a ward, there are five major factors, which have to be taken into consideration -

- a. the individual physical and psycho-social needs of the patient
- b. the individual abilities, characteristics, commitment and limitations of the members of the nursing team
- c. the co-operation, relationship and willingness of medical and other health care colleagues to work together for the good of the patient
- d. the condition, type, suitability and availability of the wards equipment and facilities.
- e. the ward's position, relationship and link within the rest of the hospital and community environment.

### 3.5. Identification of Patient-Orientated Needs

The patient's actual problems are to be defined and it can be done in the following categories-

- maintaining a safe environment, including memory and orientation
- communicating
- breathing

## Care Plan

- eating and drinking
- eliminating
- personal cleaning and dressing
- controlling body temperature
- mobilising
- working and playing
- sleeping
- memorising.

### 3.6. Aims of Nursing Solution

Having the identified patient's problems, care can then be organised, with the aims of nursing being-

- to maintain or increase the patients independence, which ensuring patient comfort
- to reduce carer's stress.

### 3.7. Implementation

The selected solution is then implemented by the nurses in the hospital and in some cases at home by the carer.

### 3.8. Evaluation

Finally, the nurse and caregiver evaluate the outcome of the chosen solution. If the strategy is successful, it should be continued if not; the problem-solving cycle is recommended.

### 3.9. Activity

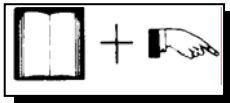
One unconscious patient, aged 30 years, brought to emergency. He has respiratory difficulty also. Patient's attendant told to on-duty doctor that he is suffering from diabetes mellitus for five years. He used to go to diabetes centre regularly and used to maintain restrictions. Recently, he did not follow the disciplines. Now a day he is not doing all that. Attendant also told that he was suffering from severe thirst and frequent micturition for some days before became unconscious. He also complained of vomiting tendency and headache.

### 3.10. Exercise

According to this patient's problems try to make a nursing care plan.

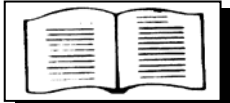
## Assignment 4: Community Care Plan

### 4.1. Learning Objectives



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

- define community
- state care plan in community.



### 4.2. Community

Community is a social group determined by geographical boundaries and common values and interests. Community also means shared relationships, lifestyles and a greater frequency and intimacy of contact among those who live in a community.

Community is a social group determined by geographical boundaries and common values and interests.

A community must be distinguished from surrounding areas by some particular characteristic. It is assumed that individual living within a community have something in common.

Care means meeting needs, in this case of the patient and his or her family living in a community.

### 4.3. Health Care

Health care in the community is provided primarily by an individual's family, friends and neighbours in his own home. The family are supported by persons who are mainly members of the primary health care team.

A community must be distinguished from surrounding areas by some particular characteristic. It is assumed that individual living within a community have something in common.

The voluntary organization also plays an important part in the delivery of health care in the community.

Community care is directed towards the population as a whole. It is a continuous process. It starts with the care of a newborn baby and continues for the whole period of life.

The prime objective is to teach people how to help themselves to avoid illness by, for example, not over eating and taking enough exercise. It is still concerned with the control of communicable diseases by environmental control and immunization.

### 4.4. Nurse's Role in Community Care

Nurse with post-registration qualification provides a continuing service to families and individuals in the community.

Her work has five main aspects -

- a. prevention of mental, physical and emotional ill-health and its consequences.
- b. early detection of ill-health and the surveillance of high risk groups.

## Care Plan

- c. recognition and identification of need and mobilization of appropriate resources when necessary
- d. health teaching
- e. provision of care.

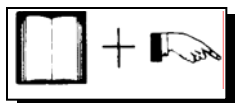
Jharna, 55 years, complained of swelling of right breast with reddish orange appearance, associated with severe pain. She went to local doctor who advised her to do mammography and fine needle cure Hage biopsy (F.N.A.C.). After getting the report, the doctor was confirmed that Jharna is having cancer of breast. He advised her to do resection of breast (mastectomy). After operation, Jharna became well and went home.

### **4.5. Exercise**

Write down what you have to do as a community nurse so that Jharna can lead normal life style in her community.

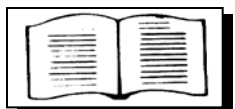
## Unit 2: Drug Therapy

### Assignment 1: Introduction



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

- definition of drug therapy
- main drug-group and their action
- pharmacological concepts of drug therapy.



#### Definition

Drug therapy is defined as administering drugs and or facilitating compliance with prescribed medication.

Drug therapy is defined as administering drugs and or facilitating compliance with prescribed medication.

#### Drug Group

Medications are numerous and the actions of some common drug groups are as follows-

<u>Group</u>	<u>Action</u>
1. Anaesthetic	Produces loss of all sensation
2. Analgesic	Relieves pain
3. Antacid	Counteracts gastric acidity
4. Anti-anxiety	Relieves anxiety
5. Antibiotic	Combats bacterial infection
6. Anti-coagulant	Reduces rate of blood clotting
7. Anti-convulsant	Prevents or relieves fits
8. Ante-emetic	Relieves nausea and vomiting
9. Anti-pyretic	Lowers elevated body temperature
10. Anti-psychotic	Modifies symptoms of severe mental illness
11. Laxative	Stimulates peristalsis and evacuation of the bowel
12. Cytotoxic	Kills rapidly dividing malignant cells
13. Diuretic	Stimulates urine production
14. Hypnotic	Promotes sleep

Drug are classified into 14 major group by their action.

Many different routes and preparations are used for drug therapy, which will be discussed later. To use drugs safely requires pharmacological familiarity and technical know-how. The nurse is responsible for expanding her knowledge of specific drugs, their actions and side-effects in each new clinical area.

#### Pharmacological Concepts

An understanding of following concepts would enable the nurse to explain her actions to administering drugs.



**1. Absorption:** The rate at which drug levels in the bloodstream rise determines the rate of onset of action. Levels rise immediately after intravenous administration and more slowly after injections into muscle or subcutaneous tissue. Following oral administration, absorption is slower than by injection. The rate is determined by chemical characteristics of the drug, functioning of the gastrointestinal tract and extent of first pass metabolism.

**2. First pass metabolism:** Some drugs are extensively metabolized by the liver and therefore never reach the systemic circulation if they are given orally. This is known as first pass metabolism, and when it occurs at a significant rate, another route must be used.

**3. Therapeutic range:** This term describes the lower and upper plasma levels of a drug for safe therapeutic effect. Under the lower limit therapeutic action may not occur and above the upper limit side-effects or, toxicity may occur. For some drugs the therapeutic range is narrow, the upper limit being only just under the level where toxicity occurs.

Pharmacologically  
8 points should be  
remembered:

1. Absorption
2. First pass metabolism
3. Therapeutic range
4. Distribution
5. Elimination
6. Tolerance
7. Dependence
8. Withdrawal symptoms

**4. Distribution** After absorption has occurred, the drug is taken in the bloodstream to its site of action. For some drugs, certain barriers to tissue distribution exist, for example many drugs do not cross the bloodbrain barrier. Another barrier may be the placenta; however many drugs cross this barrier and cause harm to the developing fetus. Drugs which have this effect are referred to as **teratogenic** (drugs are not prescribed during pregnancy except after careful consideration).

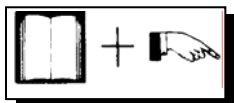
**5. Elimination:** into the urine, or excretion, of most drugs takes place in the kidneys. Drugs which are metabolised and/or excreted rapidly are given more frequently. Immaturity or impairment of renal or hepatic function predisposes to accumulation of drugs within the body.

**6. Tolerance:** is associated with repeated use of some drugs, a larger dose being required to produce the same therapeutic effect after several doses. In this situation, the synthesis of liver enzymes, which metabolise these drugs, may be increased, thereby reducing their therapeutic effect and duration of action.

**7. Dependence:** is present when a person must continue taking regular doses of a drug to prevent the occurrence of withdrawal symptoms.

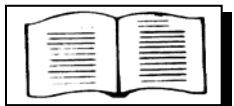
**8. Withdrawal symptoms** are psychological and physical problems experienced by a person who stops taking a drug on which he is dependent. Physical symptoms can be explained physiologically but are unrelated to psychological effects or perceived benefits of such drugs.

## Assignment 2: Routes of Administration, Preparation and Nursing Implication



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

- definition of drug route and how drugs are administered
- types of routes
- nursing implication of different routes.



### Definition

Routes of administration of drugs may be defined as the way through which drugs (or therapeutic substances) are introduced into the body.

Many routes are available for administering drugs, and these fall into two categories: systemic and local.

Routes of administration of drugs may be defined as the way through which drugs are introduced into the body.

**Systemic routes** result in the drug circulating, in the bloodstream around the whole body including the site of action. However, it is sometimes possible to deliver a smaller dose of a drug directly to the site of action, and in such cases the route used is referred to as local. For example, an inhaler may be used to relieve breathlessness caused by constriction of bronchiolar smooth muscle. When absorption of an inhaled drug occurs, plasma levels will be much lower than they would have been if a systemic route was used to achieve the same therapeutic effect.

**Local routes** are used when appropriate as the incidence of dose related side-effects is significantly reduced. Routes of administration, the preparations used and related nursing implications are as follows.

### Routes of Drug Administration, Preparation use and Nursing Implications

#### Routes

#### Preparations used

#### SYSTEMIC

Drugs are administered through many routes, under systemic and local introduction.

- |               |   |
|---------------|---|
| a. Oral       | Tablets, capsules, linctuses, suspensions   |
| b. Sublingual | Tablets   |
| c. Parental   | Injection equipment and ampoules, subcutaneous injection, intramuscularly injection |
|               | Intravenous injection   |
| d. Rectal     | Suppositories enema   |

## Drug Therapy

### LOCAL

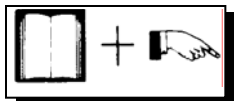
- a. Rectal                      Suppositories Enema
- b. Vaginal                    Pessary, cream
- c. Inhalation                Steam alone or with aromatic oils, metered dose inhaler, nebulizer
- d. Topical
  - Skin                      Cream, ointment, liquid
  - Ears                      Drops
  - Eyes                      Drops, ointment

### Routes of Drug Administration and Related Nursing Implications

Preparations	Nursing Implications
Tablets, capsules linctus, suspensions	<ul style="list-style-type: none"><li>▪ Requires absorption from and therefore functioning of small intestine</li><li>▪ Follow instructions on label to ensure optimal action, e.g. before meals</li><li>▪ When stomach is empty, swallow whole to enable slow release of contents</li><li>▪ Pour liquids away from the label to prevent staining which may render</li><li>▪ Label unreadable</li><li>▪ Shake liquids before use to ensure thorough mixing of ingredients</li><li>▪ Unsuitable route if there is no swallow reflex (e.g. unconsciousness),</li><li>▪ Vomiting, drugs which are protein or acid sensitive (inactivated in stomach)</li></ul>
Injection equipment and ampoules Subcutaneous injection Intramuscular injection	<ul style="list-style-type: none"><li>▪ Aseptic technique used to minimise risk of infection when penetrating skin</li><li>▪ Suitable for self-administration of small volumes at suitable sites</li><li>▪ Rate of absorption (usually 10-30 min) is related to blood flow through</li><li>▪ Suitable muscle (greatly reduced in shock)</li><li>▪ Depot preparations of oily substances available for long-term release over several weeks</li><li>▪ No preparation hazard</li><li>▪ Only observation/ checking required</li></ul>
Intravenous injection	<ul style="list-style-type: none"><li>▪ Rapid onset of action and therefore side-effects, intravenous injections are</li><li>▪ Only given by doctors and suitably qualified</li></ul>

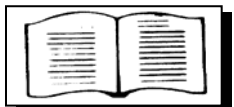
Preparations	Nursing Implications
	registered nurses <ul style="list-style-type: none"> <li>Parental route of choice for patients who are shocked or have a bleeding tendency</li> </ul>
Suppositories Enema	<ul style="list-style-type: none"> <li>Absorption slower than oral route but overcomes a difficulty if oral route</li> <li>Cannot be used</li> <li>Cultural acceptancy of this route varies</li> <li>Also used as a local route, e.g. haemorrhoids</li> </ul>
Pessary, cream	<ul style="list-style-type: none"> <li>Require applicator to administer</li> </ul>
Steam alone Inhaler Nebulizer	<ul style="list-style-type: none"> <li>Patient requires supervision to prevent injury from scalds</li> <li>Patient must be able to coordinate activating inhaler and perform deep</li> <li>Inspiration to receive a preset dose of the drug</li> <li>Requires supply of pressurized air or oxygen to deliver the drug in droplet form from container via a face-mask</li> <li>Effective in patients with acute respiratory distress as it is Inhaled over several minutes</li> </ul>
Cream, ointment, liquid	<ul style="list-style-type: none"> <li>Use of gloves is recommended as long-term exposure to staff may result</li> <li>In side-effects caused by absorption through the skin of the hands</li> </ul>
Drops	<ul style="list-style-type: none"> <li>Use a separate labelled bottle for each ear</li> </ul>
Drops, ointment	<ul style="list-style-type: none"> <li>Use a separate labelled container for each eye</li> </ul>

## Assignment 3: Maximising Compliance



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

- what is compliance
- factors responsible for poor compliance
- nursing role in compliance



### Definition

Compliance means that a patient takes his medication as it has been prescribed.

It is increasingly recognised that this is often not the case and patient consequences of non-compliance are ineffective treatment, which may arise either from omission or overdose. Non-compliance is also wasteful of already stretched financial health service resources.

Compliance means that a patient takes his medication as it has been prescribed.

### Factors, Which Predispose to Poor Compliance

1. Polypharmacy
2. Lack of knowledge about prescribed treatment
3. Presence of side-effects
4. Improvement or relief of symptoms, especially if the time-scale of treatment is not understood
5. Complex regimens, e.g., before AND after meals
6. Physical difficulties - getting to a chemist, opening containers, poor vision so unable to read instructions or count drugs
7. Psychological - lack of understanding or memory; idiosyncrasies, e.g., sharing drugs or hoarding until the problem is really severe.

**Polypharmacy** is said when a drug regimen consists of many drugs. It is often the result of multiple prescribing for coexisting and unrelated problems and is prevalent in elderly people. Several factors may be involved -

**Polypharmacy** is said when a drug regimen consists of many drugs.

- prescribing by several different doctors
- presence of multiple pathologies
- repeat prescriptions being given on demand without regular assessment of all drug therapy.

The consequences of polypharmacy are serious. The risk of side-effects and drug interactions increases with the number of individual drugs taken.

### Nursing Role in Facilitating Compliance

When admitting a patient, an accurate record of all medications taken is established.

It is also important to ask the patient about any remedies bought 'over the counter' that they may take, as these and the contraceptive pill are not considered as 'medicines' by many people. This action enables identification of the potential problems of polypharmacy and poor compliance.

A doctor then carries out evaluation of overall drug treatment. While listing the drugs, the nurse can assess what that patient already understands about his medication and determine a baseline for any further education needed. This should start after admission, and not just prior to discharge.

The nurse then has an informed point from which to plan necessary interventions when administering medication. The patient is shown the number of drugs and their appearance at each treatment time. Later asking which drugs he should be having at that time reinforces this. Effects and side-effects are also discussed. The teaching process continues with reinforcement until the patient is familiar with the prescribed regimen. A card detailing drug treatment is a useful *aide-memoire* and can be given to the patient for reference after discharge.

Drug treatment is often an expected consequence of seeking medical advice. Compliance with this treatment is of paramount importance and the nursing roles can optimising this.

Compliance with this treatment is of paramount importance and the nursing roles can optimising this.

### Tips for Nurses

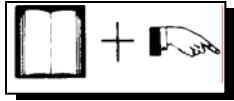
The nurse should be able to **answer** patients' queries regarding their drugs and **reinforce** explanations given by doctors/others, and therefore be knowledgeable about **drugs** commonly used in the area in which she is working.

Sometimes **extra information** is needed by patients receiving drug treatment in order to minimise **interactions** with certain **foodstuffs** or commonly used **remedies** bought from a pharmacy.

In other cases it may be necessary for the patient to carry a card or wear an **identity bracelet** outlining treatment.

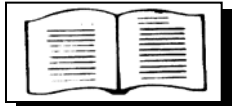
## Unit 3: Radiotherapy

### Assignment 1: Introduction to Radiotherapy



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

- what is radiotherapy
- types of radiotherapy
- what is tumour and why it treats with radiotherapy
- how to safe from radio-hazards.



#### 3.1. Radiotherapy

Radiotherapy is used in the management of malignant only tumor and is carried out in specialized regional centers. It utilizes invisible high-energy radiation known as ionizing radiation, which penetrates and destroys living tissue.

#### 3.1. Types

The ionizing radiation used in radiotherapy comes from two main sources-

1. Beams of high energy X-rays which are produced by a large machine called linear accelerator.
2. Gamma rays emitted from radioactive sources, called radioisotopes.

Ionizing radiation, irrespective of its source, causes tissue damage by the same process and although the characteristics of tissue penetration vary the principles of nursing management and care are the same.

#### Radiotherapy to Tumours

Tumours vary in their sensitivity to radiotherapy. Rapidly dividing cells are most sensitive to ionizing radiation, or radiotherapy. This is because cells are most sensitive to damage by ionizing radiation immediately before cell division. The rationale of treatment is to administer a lethal dose to malignant cells with minimal exposure of surrounding healthy tissue. Side effects are also most apparent when nearby healthy tissue with a rapid rate of cell division falls within the field of treatment.

#### Factors Associated with Radiosensitivity Are

- rapid growth rate
- poorly differentiated cells
- vascular tumours with good oxygen supply
- small size
- early stage
- ability of surrounding tissue to withstand ionizing radiation.

Radiotherapy is used in the management of malignant only tumor utilizes invisible high-energy radiation known as ionizing radiation.

### Decision Making

Diagnosis and accurate staging is carried out prior to commencing radiotherapy. The aims of treatment may be any one of the following -

1. *Curative or radical:* Radiotherapy is the only treatment planned to maximize destruction of the tumour.
2. *Adjuvant:* Radiotherapy is combined with surgery or chemotherapy with the aim of destroying the tumour.
3. *Palliative:* Radiotherapy is used to relieve distressing symptoms with the aim of increasing quality of life when no cure is available. Lower doses are used and side effects should not occur.

Common symptoms which may be relieved by this means include bone pain, haemoptysis and others caused by compression of the respiratory or alimentary tracts.

### How to Protect from Radio-Rays

Prold Maximize distance use shield minimize time.
--

The International Radiation Symbol is displayed prominently to alert staff in areas where ionizing radiation, including X-rays, is used. As the characteristics of ionizing radiation are such that tissue penetration and damage result, staff working in the proximity of ionizing radiation must protect themselves from its potential risks. Radio-protection precautions must be taken in such areas, as indicated by local guidelines, which are based on the following principles -

- maximize distance from the source
- use of protective shielding materials such as lead or concrete
- restrict time of exposure to irradiation.

These principles are applied to any particular situation, which involves ionizing radiation (and includes plain X-rays) to ensure the safety of staff involved.

During X-ray procedures, it is necessary for staff in the vicinity to wear lead aprons if they must remain with the patient.

Women of child-bearing age must not be exposed to ionizing radiation after day 10 of the menstrual cycle if there is a possibility of pregnancy in order to prevent congenital abnormalities caused by exposure of a fetus.

Exposure of personnel is monitored to ensure the amount of radiation received over periods of time remains less than agreed international safety levels.



## Assignment 2: Radiotherapy Treatment



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

- practical knowledge regarding radiotherapy.

Radiotherapy treatments are often given by two methods, such as, external beam therapy and internal radiotherapy.



### 2.1. External Beam Therapy

External beam therapy is also known as teletherapy or deep X-ray therapy (often abbreviated to DXT). The patient is exposed to a carefully controlled beam or beams of ionizing radiation. This is carried out in a room with thick concrete walls to contain ionizing radiation generated. The patient remains alone during treatments surrounded by large pieces of machinery. There is a two-way communication system between the patient and staff, and although the treatment itself is painless, it is a lonely and potentially frightening experience for the patient.

Treatment is prescribed after taking the following factors into account -

- patient - age, general fitness
- tumour - type, size, stage, location
- field(s) of treatment – (see below).

### 2.2. Field, Direction and Position

Radiotherapy types  
1. External beam therapy  
2. Internal radiotherapy

Points to consider  
age fitness tumour  
type, size, teration  
etc.

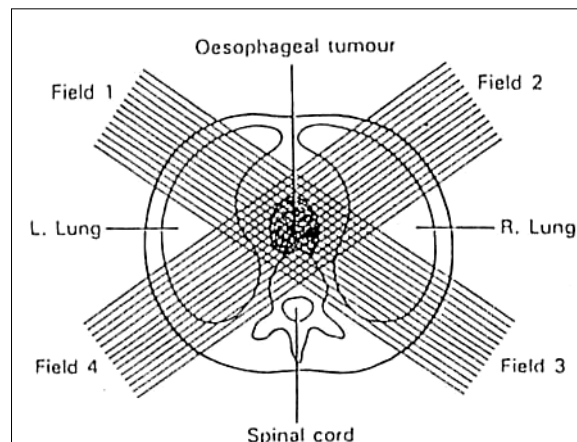


Fig. 1: Multi-field irradiation technique used to treat oesophageal carcinoma. The spinal cord is avoided, and although a portion of the lungs is unavoidably involved in the irradiation zone, the dose received is lower than the dose delivered to the tumour. (*Reproduced from Boore et al 1987, figure 16.1*)

Use of more than one field, or beam, directed towards the tumour will cause less destruction of surrounding healthy tissue than constant exposure of the same skin and underlying tissues.

With two beams directed towards the tumour site, this area receives a larger dose of radiation than the tissue between the tumour and the two skin sites. This technique also allows protection of sensitive tissue, for example, the spinal cord.

## Radiotherapy

Accurate positioning of the beams may be achieved either by marking treatment fields on the skin or by using a custom-made latex shell as a guide.

### **2.3. Dose**

The total dose is then prescribed detailing the number of treatments, or fractions, their length and sites to be used. A record of treatments is kept as the effects of radiotherapy are cumulative. Tissue becomes less sensitive to repeated irradiation and overdose can cause tissue necrosis.

### **2.4. Internal Radiotherapy**

A radioisotope which emits ionizing radiation may be inserted internally, in close proximity to tumours in some locations.

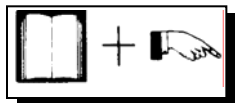
### **2.5. Points to Remember**

Patients receiving internal radiotherapy are potential source of irradiation to all others and nursed in areas where radioprotection is available often in a protected cubicle whose walls do not allow, penetration of ionizing radiation.

Nursing care is carried out expediently and as far from the radioactive source as is practicable. The impact of physic and social isolation can be dramatic and this may alleviated by communicating via an intercom an providing appropriate diversional therapy.

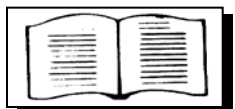
A radioactive hazard sign and specific radioprotection precautions to be taken by staff are clearly displayed the cubicle door.

## Assignment 3: Nursing Support to A Patient Receiving Radiotherapy



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

- basic need of a nurse for radiotherapy treatment
- common fears of the patients and its type
- side effects of radiotherapy by type and by location.



### 3.1. Introduction

A multidisciplinary approach is essential when caring for a patient receiving radiotherapy. Good teamwork between all health-care professionals will enhance relationship building with the patient, who in the recent past is likely to have had to deal with the diagnosis of cancer followed by meeting a new team of doctors and nurses.

It is vital to be aware that people equate radiotherapy treatment with cancer, irrespective of other information, including euphemisms, which may have already been given.

A nurse caring for these patients must develop sensible communication skills and the ability to face a diagnosis of cancer with an honest and optimistic attitude.

### 3.2. Common Fears of a Patient with Cancer

The nurse plays an important role in alleviating many of the anxieties her patients will have. Diagnosis of cancer is often associated with fear, fright, pain suffering and expectation of death.

### 3.3. Types of Fears Arise for a Variety of Reasons

- lack of knowledge and presence of false beliefs
- challenge to one's beliefs and values about the meaning of life and death
- change in family role and responsibilities
- unfulfilled business and unachieved goals
- feelings of shame, guilt or anger
- insomnia.

The nurse should know and learn the art of minimizing these problems offering maximum technical and mental support.

### 3.4. Preparation for Treatment

A patient is prepared for the radiotherapy treatment by providing information about its nature and possible side effects. Optimism and reassurance that the impact of any side effects can be minimized, and that their occurrence is now less common with advances in technology, is helpful. The nurse can enable her patient to overcome many of his anxieties by allowing their expression and reinforcing explanations given by other members of the multidisciplinary team.

## Radiotherapy

Anticipation and early recognition of side effects enables appropriate moral support and early nursing intervention if necessary. Side effects or reactions are related to the site and dose of radiotherapy.

### 3.5. Potential Side Effects

**3.5.1. Skin reactions:** These affect skin of treatment fields and may be compared to sunburn of varying severity -

1. Inflammatory- manifest by erythema and slight oedema.
2. Dry desquamation- temporary reduction in activity of sweat and sebaceous glands causes drying, flaking and itching. The patient may also complain of a burning sensation.
3. Moist desquamation- blistering and oozing from the skin occurs and may be accompanied by peeling. Further treatment may be postponed until epithelial repair is evident.
4. Late effects- occur a few years after high doses of irradiation and include depilation (hair loss), telangiectasis (damaged epithelial capillaries are seen as tiny red outlines on the skin), atrophy and fibrosis.

Areas should be gently washed and dry with soft towel no adhesive tape should be used.

**Skin care:** for treatment field's advice must be sought before applying anything to treated skin as many soaps, creams and lotions contain zinc and other metals which may sensitize the treated areas.

Areas of treatment are gently washed with plain warm water and patted dry using a soft towel to prevent trauma. Markings around treatment areas should be avoided. Adhesive tape must not be used as it causes peeling of treated skin. Loose-fitting clothing will reduce the risk of chaffing.

**3.5.2. Fatigue and anorexia:** These side effects appear during the first week of treatment and disappear a few weeks after treatment is finished. The patient often feels depressed and may associate these problems with worsening of the cancer rather than the radiotherapy. They arise as the removal of dead cells and debris takes place. This process increases the body's energy requirements. Repair of healthy tissue, makes further demands on energy supplies and consequently, fatigue and lethargy often result.

Nutritional intake frequently does not meet increased energy requirements even if anorexia is not a problem. Side effects of radiotherapy may include stomatitis, nausea, vomiting, dysphagia or indigestion which if present will exacerbate poor nutrition intake caused by anorexia.

The nursing challenge is to provide appetizing meals, which provide sufficient protein and energy meet increased demand for tissue repair. Nourishing fluids and dietary supplements can add to soil intake. Total fluid intake should be at least 2000 ml to 3000 ml per day to facilitate excretion of nitrogenous waste products.

**3.5.3. Altered body image:** This problem may arise in patient with cancer for a variety of reasons, including alopecia, surgical amputation, sudden weight loss and skin reactions.

Practical interventions include anticipation of this potential problem and ensuring, the availability of appropriate appliances.

**3.5.4. Local reactions:** These side-effects arise due to the damage within healthy organs inside the treat must field and are most marked in those tumour which have a rapid growth rate. A list is provided hereafter to memorize this categorically.

### 3.6. Potential Side-Effects Following Exposure of Organs to Ionizing Radiation

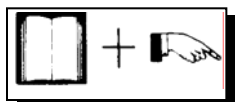
Treatment field	Potential side-effects
Head	Alopecia
	Cerebral oedema (headache, nausea, irritability)
	Stomatitis
	Altered sense of taste
Neck and chest	Pharyngitis
	Oesophagitis
	Pneumonitis
Abdomen	Gastritis (nausea, vomiting, indigestion)
Pelvis	Colitis (diarrhoea)
	Cystitis
	Vaginitis (bleeding, discharge)
Flat bones, (skull, pelvis, sternum)	Bone marrow suppression (decreased formation of erythrocytes, leucocytes, thrombocytes (platelets))

Side effects  
Alopecia  
Stomatitis  
Pneumonitis  
Other infection.

### 3.7. Discharge Planning

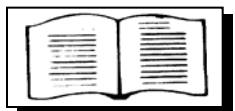
A course of radiotherapy can be carried out either as outpatient, inpatient or both. In each case, the patient should be given oral and written information about commonly experienced problems and how help can be sought.

## Assignment 4: Chemotherapy



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

- general principles of a nurse for chemotherapy treatment
- common fears of the patients and its type
- side effects of radiotherapy by type and by location.



### 4.1. Definition

Combination of more than one drugs for treatment of cancer or rapidly growing tumor is known as chemotherapy.

### 4.2. General Principal Cytotoxic Chemotherapy

These drugs kill rapidly dividing cells by interrupting normal cell synthesis. The drugs do not distinguish between tumors and healthy tissue. Therefore healthy tissues that have rapidly dividing cells, for example hair, mucosal tissue of the gastrointestinal tract, the gonads and the bone marrow, may also be damaged.

Cytotoxic agents depress the bone marrow leaving the patient vulnerable to opportunistic commensals. Steroids are also used to suppress lymphopoiesis in patients with certain leukaemias and lymphomas.

### 4.3. Some of the Side-Effects of Chemotherapy Are

- alopecia: although this is short term, this hair loss can cause great distress
- epistaxis and gastrointestinal bleeding: bruising due to thrombocytopenia may further exacerbate
- anaemia
- nausea and vomiting: some agents cause diarrhoea, while others cause constipation
- paralytic ileus
- gingivitis and taste changes
- oral ulceration.

### 4.4. Some Important Chemotherapeutic Drugs and its Side-Effects

Group	Side-effects
<i>Alkylating agents</i>	
Busulphan	Myelosuppression. Loss of bone marrow function Hyperpigmentation may occur in some patients
Chlorambucil	Nausea. Gastrointestinal disturbances. Bone marrow depression is less severe
Cyclophosphamide	Nausea. Haemorrhagic vomiting. Cystitis
<i>Antimetabolites</i>	
Cytarabine	Hyperuricaemia. Depression of bone marrow
Fluorouracil	Nausea. Gastrointestinal disturbance. Leucopenia. Alopecia

<i>Cytotoxic antibiotics</i>	
Aclarubicin	Nausea. Vomiting. Leucopenia. Thrombocytopenia
Actinomycin D	Bone marrow depression. Gastrointestinal, disturbance. Stomatitis
<i>Vince alkaloids</i>	
Vincristine	Gastrointestinal disturbance. Constipation. Weight loss. Polyuria. Alopecia

Cytotoxic drugs used singly are of little use, but the more aggressive use of a combination of drugs has proved effective. Red cell and platelet transfusions may be given at intervals to maintain the haemo-globin level above 10g/dl and to control bleeding problems caused by thrombocytopenia.

#### 4.5. The Patient's Problems Fall into Three Distinct Areas

1. The patient's realization that he/she has a life-threatening illness.
2. The side-effects of the treatment and alteration in body image.
3. The need for maintenance therapy involving further admissions to hospital and an uncertain future.

#### 4.6. Nursing Care

**4.6.1. General Advice:** The patient is faced with the realization that he may soon **die** which may precipitate a crisis - the patient will have to go through the stages of the grieving process of shocked disbelief, anger 'why me', and depression, before coming to terms with his condition. **Anger** is common, and the nurse may well be the focus of this. Knowledge of this behaviour allows the nurse to provide support and involve others such as a religious advisor or counsellor as appropriate. Both the family and the patient may take time to accept the situation, and over this time nurses can provide support allowing both parties to express their fears, **answering questions honestly** about the patient's **condition** and the **treatment**. It is important that both medical staff and nursing staff are giving the patient and relatives the **same information** and are united in putting the needs of the individual and his family first. Family members may find it difficult to put on a **brave face** when visiting a loved one as they, too, are consumed by anxiety about the future. The nurses can advise about **self-help** groups that are available where relatives can discuss their fears with others that are undergoing the same difficulties.

Common Reaction  
Death fear  
Anger  
Queries

Cytotoxic chemotherapy can **delay** or sometimes **cure** the disease but the side-effects can cause great distress and discomfort to the patient.

**4.6.2. Soothing Effects:** To prevent exogenous infection, infection control policies must be strictly adhered to. Special care must be taken by nurses and others involved in the patient's care to prevent cross-infection, **hand washing** being vitally important. It is important to **restrict** the number of **visitors**, and **educate relatives**, so that no person with an infection visits, including small children who may have been in contact with an infection that can potentially life-threatening to the patient. Patients undergoing intensive cytotoxic chemotherapy will require to be in protective **isolation** because the effect of the cytotoxic

Hand washing  
visitors educate  
relatives.

agents depressing the bone marrow. The decision to use isolation is influenced by individual circumstances and available facilities. This can be achieved in several ways-

A purpose-built unit, which has a filtered air **supply**. A series of **single rooms with integral toilets and showers**. A hatch system allows the transfer of equipment and food without affecting the air sure.

**Plastic isolator** is a framework erected around a single bed from which a PVC tent is suspended. The tent has an air supply attached to inflate the whole tent.

**Isolation** of a patient can cause distress to an already ill individual. Careful explanation must be given and access to nursing staff must be easily available. Relatives must also be informed so that they can fully co-operate with the restrictions.

**Oral complications**, i.e., mucositis induced by cytotoxic agent's cause's mucosal thickening, sloughing and redness leading to ulceration of the mouth. The most common oral infections are caused by gram negative bacteria viruses and fungi. These infections cause severe pain to the patient who will be reluctant to eat or drink.

Isolation  
Oral Care  
Weighing  
Fluid balance

The nurse's role in assessment of oral status is vital and maintenance of oral hygiene is a nursing responsibility. The aim of oral hygiene is to keep the oral **mucosa clean**, soft, moist and intact. The **lips** should be pre-yented from becoming dry and cracked. Frequent cleaning and removal of **debris** using a soft tooth-brush or sponge can prevent the development of **plaque** and development of mouth ulcers. Any oral **infection** should be identified quickly and treated aggressively. Oral hygiene is an integral part of the patient's care and will improve the quality of his life.

**Weight loss and anorexia** are common. The patient should be **weighed** daily. The nutritional needs of the patient require a team approach involving the dietician, nurses and most important of all the patient. The diet should contain all the vital elements but also take into account the likes and dislikes of the patient and the patient's ability to eat.

**Fluid and electrolyte balance** should be monitored carefully as reduced fluid intake can increase the risk of toxic side-effects on the liver and kidneys.

**Diarrhoea and constipation** can cause distress and these problems must be identified and treated with the appropriate medications.

**Vomiting** is also a very distressing. Side-effect of some cytotoxic agents and can prove very distressing for the patient. Drugs are available to control vomit-ing. The patient requires a lot of support during these episodes.

If **sterility** is a cause for concern the availability of sperm banking before commencement of treatment, is offered.



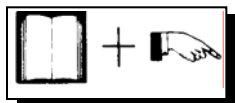
Chemotherapy can cause **alopecia** and these changes in body image can cause great distress. Some of thf distress can be alleviated by allowing the patient i choice of wig or hair piece before commencement of treatment. During the course of treatment the patient's image of himself changes - some find their body repugnant due to the disease. They may hav excessive reactions towards the side-effects of chemotherapy, but this is often a way of expressing grief a the knowledge of diagnosis.

#### **4.7. Appropriate Manners**

The nurse is usually the receiving end of this seemingly irrational behaviour and should be able to **listen and support** th patient through this difficult time. The patients will b very sensitive towards the behaviour of others an relatives should be aware of these difficulties and try not to display shock or distress at the appearance of their loved one. This can cause tremendous stress of relatives and the nurse should be able to comfort an **advise** relatives and support the patient.

## Unit 4: Preparation of Patient for Diagnostic Test

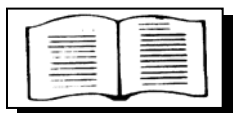
### Assignment 1: Ultrasonography



#### 1.1. Learning Objectives

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

- explain ultrasonography
- prepare patient.



#### 1.2. Ultrasonography

The principle of ultrasound imaging lies in the passing of a beam of high frequency sound into the patient and detecting returning sound echoes. These are electronically converted into anatomical images. Since no ionising rays are used in this method of investigation it is extremely safe and can be repeated frequently.

Ultrasound is now the primary means of investigating suspected gall bladder disease since the radiologist can look at the liver, kidneys and pancreas at the same time.

Imaging of soft tissue structures such as breasts and thyroid are now widely available. The intracranial contents of the infant can be assessed by imaging through the anterior fontanelle.

The principle of ultrasound imaging lies in the passing of a beam of high frequency sound into the patient and detecting returning sound echoes.

#### 1.3. Preparation

Patient should take appointment first.

He/she should take previous night meal by 8 P.M.

He/she should come to the laboratory for investigation after passing of bowel. No food in morning.

This method of investigation it is extremely safe and can be repeated frequently.

#### 1.4. General Rules

The following rules to be followed-

- for ultrasonography of whole abdomen- should come in empty stomach at least for four to six hours with full bladder
- for ultrasonography of lower abdomen, KUB, and pelvis- he/she should come with full bladder
- for ultrasonography of upper abdomen and hepatobiliary system– should come in empty stomach at least for 4 to 6 hours.

Appointment  
Previous night  
meal at 8 P.M.  
Attend in empty  
stomach.

## Preparation of Patient for Diagnostic Test

### **1.5. Clothing**

Patient should wear cotton cloth at the time of examination.

### **1.6. Echocardiography**

Patient should come with E.C.G. and X-ray chest report.

It is the use of ultrasound as a diagnostic tool for studying the structure and motion of the heart.

### **1.7. Exercise Tolerance Test**

Patient should come with empty stomach. It is the test to assess how much body strain a person's heart can tolerate without having any problem.

### **1.8. Activity**

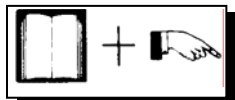
One street hawker, named Abul, aged 24 years was seen by a health visitor who was sitting in front of his house depressed mood. His eyes are yellow in color. When he was asked he told that, he is suffering from low-grade temperature, unwilling to take food for some days. He is weak. He is having vomiting tendency and headache. His urine is also yellow in colour.

### **1.9. Observation**

According to health condition in 1.8 what investigations do you have to think–write serially?

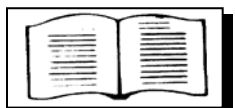
## Assignment 2: Preparation of Patient for Oral Cholecystography

### 2.1. Learning Objectives



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

- explain oral cholecystography
- prepare patient.



### 2.2. Oral Cholecystography

Oral cholecystography is a process by which the site and general nature of structural lesions in the liver and biliary tree can be determined. It involves opacification of the structure with contrast medium.

It is rarely used now due to the availability and reliability of ultrasound.

Oral cholecystography is a process by which the site and general nature of structural lesions in the liver and biliary tree can be determined.

### 2.3. Preparation

Patient should take appointment from a good laboratory. It needs total five days preparation.

Patient should not take any vegetables and oily foods for three days before the date of examination.

Nurse must explain properly and check every step.

### 2.4. Medicines to be Taken Before Examination

1. Tab Ultracarbon– 2 tablets every 6 hourly for hours many days.
2. Tab Dulcolax– 2 tablets at bed time for 2 days before the date of examination.
3. On the 4th day, patient should come to the laboratory at early morning in empty stomach to take one plain x-ray abdomen as control.
4. On the same day patient will start to take Tab. Chemopac space Telepaq after lunch at 1 P.M. 6 tablets in total, 1 tablet after every five minutes, with water.
5. Another 6 tablets to be taken in the same manner after dinner at 8:30p.m. on that night only.
6. On the fifth day, patient will go to the laboratory at 8 A. M. in the morning in empty stomach.

### 2.5. Things to be Taken to the Examination Room Are

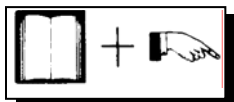
- |                 |   |           |
|-----------------|---|-----------|
| 1. Butter bread | - | 2 Pieces  |
| 2. Boiled egg   | - | one       |
| 3. Milk         | - | one glass |

### 2.6. Clothing

Patient should wear cotton cloth at the time of examination.

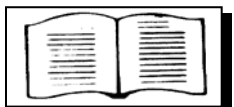
## Assignment 3: Preparation of Patient for Endoscopy

### 3.1. Learning Objectives



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

- explain endoscopy procedure
- prepare patient and help or assist the patient.



### 3.2. Endoscopy

Endoscopy is a process by which esophagus, stomach, duodenum and colour can be examined. Endoscopy was done previously by fibre optic instrument; in recent years video endoscopy has replaced fibre optic endoscopes. In video endoscopy images are displayed on colour television monitor. Endoscopy can be done for both diagnostic and therapeutic procedures. Sample can be taken for biopsy at the same time.

Endoscopy is a process by which esophagus, stomach, duodenum and colour can be examined. Endoscopy was done previously by fibre optic instrument.

### 3.3. Preparation

Patient should fast for at least six to eight hours (light night meal).

Light intravenous sedation to be given to patient.

Local anaesthetic throat spray to be used. Patient should lie in the left lateral position.

### 3.4. Problems

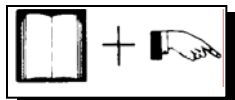
Mr. Shahinul Islam is one influential and rich man of his village. He went to his village during Eid holiday. After going there he saw that, one of his daily labour named Matin was suffering from severe pain in abdomen. He told that, he is suffering from same type of pain frequently for nearly one year. He used to have at the same time burning sensation in central part of chest and abdomen. Pain used to reduce in intensity after taking food, but sometimes he used to wake up at night due to sever pain.

### 3.5. Observation

According to the problems described in 3.4. what investigations do you think are important for Matin? Write down.

**3.6.** Write one nursing care plan of the problems of Matin, which can be relieved by some intervention. Write one nursing care plan of these problems.

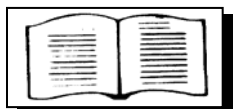
## Assignment 4: Preparation of Patient for Colonoscopy



### 4.1. Learning Objectives

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

- define colonoscopy
- prepare patient.



### 4.2. Colonoscopy

Colonoscopy is a process by which entire colour can be visualised using a fiberoptic colonoscope. Before doing this, cleansing of whole bowel should be done.

Colonoscopy is a process by which entire colour can be visualised using a fiberoptic colonoscope.

### 4.3. Preparation

Patient should take appointment from a good laboratory.

Patient should not take any vegetables and fruits two days before the date of examination. On the day of examination he should take light breakfast.

### 4.4. Medicine to be Taken Before Examination

For person more than twelve's years of age and if there is not much loose motion or the day of examination at 1:30 PM 350CC 20%-

- Mannitol to be taken in glass.
- Then after every loose motion enough water to be taken.

For persons less than twelve years or in adult if there is history of loose motion for many times, then tablet laxenna to be taken in the following manner-

- three tablet at 2 PM on the day
- three tablet at night before examination
- three tablet at morning on the day of examination.

**4.5.** On the day of examination light food to be taken before coming for examination at afternoon.

### 4.6. The Medicines to be Taken to the Examination Room Are

Sl No.	Type	Name	Amount	Dose
1.	Injection	Pethidine	100 mg	one
2.	Injection	Toradol	30mg	one
3.	5 CC	Syringe		One

In case of children, in place of injection Pethidine injection Dormicum 7.5mg one tablet to be brought.

## Preparation of Patient for Diagnostic Test

### **4.7. Clothing**

Patient should wear cotton cloth at the time of examination.

### **4.8. Activity**

Mr. Abdur Rahman, aged 55 years, came to emergency department of a hospital with some complaints. He was admitted to surgical ward. He complained of bleeding along with stool, change of bowel habits, abdominal pain and weight loss. He also have anorexia, nausea and sometimes vomiting. He informed that he used to have feeling of incomplete evacuation of bowel.

### **4.9. Observation**

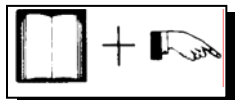
What are the investigations that will be suggested by the doctor for this patient –write down serially.

The problems of Mr. Rahman, which can be relieved.

Write one nursing care plan of those problems.

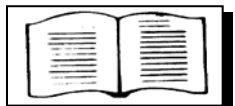
## Assignment 5: Preparation of Patient for Intravenous Urography

### 5.1. Learning Objectives



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

- explain urography
- prepare patient.



### 5.2. Intravenous Urography

This is the radiographic visualization of the pelvis of kidney and ureter by injection of a contrast medium. The medium may be injected into the blood stream when it is excreted by the kidney. It remains better for examining renal papillae, stones and urothelial malignancy.

### 5.3. Method

A control x-ray of abdomen is to be taken at first. Then an iodine-containing contrast compound is to be injected intravenously. Then serial radiography are taken at intervals.

An early image of first one minute after injection used to demonstrate the nephrogram phase of renal perfusion.

This is followed by contrast filling the collecting system, ureters and bladder.

This is the radiographic visualization of the pelvis of kidney and ureter by injection of a contrast medium.

### 5.4. Preparation

It needs three days preparation -

- patient should take appointment from a good laboratory
- before the date of examination
- for three days patient should not take leafy vegetables. He should perform normal daily activities.

### 5.5. Medicines to be Taken

- a. Tab. ultracarbon, two tablets every 8 hours for two days
- b. Tab. Dulcolax/ Duralax two tablets at bed time for two nights
- c. Tab. Avil/ Sinamin one tablet three times on the day before examination. Patient should take less water on the day before examination.
- d. Glycerine suppository– 2 sticks to be used through anal canal at 5 AM on the day of examination.



## Preparation of Patient for Diagnostic Test

**5.6.** On the day of examination patient should come in empty stomach to do the test.

### **5.7. Things to be Brought**

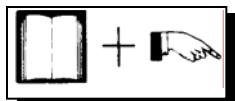
- a. Blood report of serum creatinine and blood urea
- b. Patient should not wear any ornaments or metal things.
- c. Patient should not wear cotton cloth while coming for test.

### **5.8. Plain X-ray KUB**

Patient should take two tablets Dulcolax/Duralax at bed time the night before.

In the morning he/she should perform bowel movement before coming for investigation.

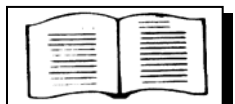
## Assignment 6: Preparation of Patient for C.T. Scan of Brain and M.R.I. of Brain



### 6.1. Learning Objectives

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

- define C.T Scan and MRI
- prepare patient.



### 6.2. Computerized Tomographic Scan

The principle involved is the combination of a rotating x-ray tube moving around the patient together with a series of x-ray detectors, which move in a circular fashion completely around the patient. The images obtained from this moving x-ray tube and its detectors are fed into a computer and cross-sectional slices of the patient built up electronically. It is now common to increase CT scans with an iodine-containing contrast medium.

It is probably the best for demonstrating all intracranial pathology. It is also possible to demonstrate the chest, abdomen, pelvis and neck.

The lungs, heart, major blood vessels, solid organs of the abdomen and pelvis are very readily assessed by CT scanning.

The principle involved is the combination of a rotating x-ray tube moving around the patient together with a series of x-ray detectors, which move in a circular fashion completely around the patient.

### 6.3. Magnetic Resonance Imaging (MRI)

This is a new imaging modality based on the use of high-powered magnets. It is a method of visualising physiological distribution of protons within the body, enabling very high quality anatomical images to be obtained. Unlike CT it is capable of producing images at any plane.

Using these techniques very small lesions have been demonstrated within the brain.

It is possible to do MRI of chest, abdomen, pelvis, orbit, different regions of spine and joint.

### 6.4. Preparation

Patient should take appointment from a good laboratory who provides CT/ MRI imaging at first.

Patient should be in empty stomach for at least 4 to 5 hours before coming for examination.

### 6.5. Clothing

Patient should wear cotton clothing at the time of examination.

**6.6. For Magnetic Resonance Hardware and Safety the Following to be Checked**

Whether patient is having along with-

- pacemaker
- any metallic implant
- any electronic device
- any artificial denture
- any prosthesis
- any history of gunshot injury

**6.7. Activity**

One college student, named Prachi, suddenly became sick. Her parents became anxious and brought her to the emergency department of a hospital. Her father informed emergency doctor that for the last three to four days Prachid is suffering form severe headache and high fever.

Nurse examined Prachi and found-

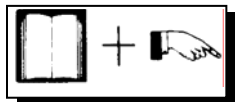
Pulse: 110/min.; B.P. : 110/70 mmHg; Temp : 101<sup>0</sup>F; Respiratory rate “ 30/min.

**6.8. Observation**

As a nurse what should you do about this patient illustrated in activity- write down?  
What are the investigations requested by doctor for this patient-write down serially.

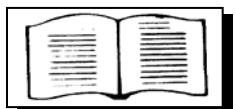
## Assignment 7: Preparation of Patient for Some Blood Test and Urine Test

### 7.1. Learning Objectives



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

- explain blood and urine tests
- prepare patient.



### 7.2. Blood Sugar Test

#### Fasting Blood Sugar

It is the test to detect amount of sugar/ reducing substance present in one's blood. The sample to be taken on twelve hours of nothing by mouth.

Blood sugar two hours after breakfast: blood sample to be taken two hours after breakfast. Patient can take only water in between.

Blood sugar two hours after glucose:

Blood sample to be taken two hours after 75 gm glucose intake.

#### Glucose Tolerance Test

Three blood samples to be taken-

- one in empty stomach
- one after one hour of 75gm. glucose intake
- third one after two hour of second sample.

### 7.3. Lipid Profile

It is the test to detect amount of cholesterol and triglyceride present in one's blood. Three to 4 days before examination, patient have to avoid taking oily food.

The sample to be taken after twelve hours of nothing by mouth.

### 7.4. Urine Test

- albumen
- sugar
- acetone
- creatinine clearance rate
- urinary total protein.

First, appointment to be taken from laboratory. Some medicine related to test have to be taken from that laboratory.

## Preparation of Patient for Diagnostic Test

Urine of twenty four hours has to be collected in a clear pot. Then that urine to be brought to that laboratory.

After 250 ml. of urine collection that medicine to be added.

One blood sample to be given for creatinine clearance.

### 7.5. Activity

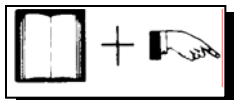
One attendant of an admitted patient, named Farid Ali of 52 years came to hospital and told to an-duty sister that he used to feel weak for some days. He also noticed that for some days, over the place he used to pass his urine, some ants used to come and gathered.

### 7.6. Observation

Fill in the blank positions with appropriate words

- a. Farid Ali is suffering form \_\_\_\_\_ (what is yours idea, write down).
- b. Ants are gathering as Farid Ali's urine is having \_\_\_\_\_ in it \_\_\_\_\_ (write down your idea).
- c. Investigations are suggested for Farid Ali by a nurse \_\_\_\_\_ (write down all).

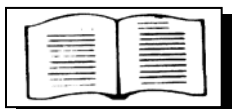
## Lesson 8: Preparation of Patient for Hystero Salpingography



### 8.1. Learning Objectives

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

- explain hysterosalpingography
- prepare patient.



### 8.2. Hysterosalpingography

Hysterosalpingography is radiological visualisation of the genital tract of female by injection of radio-opaque contrast medium through the cervix. Hysterosalpingography allows the site of tubal blockage to be demonstrated which is helpful if surgery is thought to be done.

Hysterosalpingography is radiological visualisation of the genital tract of female by injection of radio-opaque contrast medium through the cervix.

### 8.3. Ultrasound Assessment of Tubal Potency

Tubal patency can now be assessed by ultrasound. A solution containing galactose microparticle visible on ultrasound is injected through cervix. If the fallopian tubes are patent the solution can be observed passing along the tubes and out through the fimbrial end. This technique is sometime called hysterosalpingo-contrast sonography.

### 8.4. Preparation

- Preparation should take appointment from a good laboratory.
- Patient should have a clear understanding of the procedure, which is to be performed.
- The procedure should be done in the first half of the menstrual cycle or at any phase of a cycle or at any phase of a cycle when adequate contraceptive precautions have been taken

### 8.5. Medicine to be taken to the laboratory are as follows

a. Injection	Iiopamaro (300mg)	1 vial
b. Injection	Voltaren	1amp
c. Disposable	syringe (20 c.c)	1

### 8.6. Activity

Mrs. Ayesha, aged 28 years came to one gynaecologist with complains of that – she is married for six years but she is not having any child till now. On asking questions, the gynaecologist came to know that Ayesha had one abortion two years back. At that time she had an operation for removing tumour from uterine cavity.

### **8.7. Observation**

Investigations necessary for these patients prescribed by the gynaecologist – one nurse can think of write down those investigations serially.

Write down what you have to do as a community nurse so that Mrs. Ayesha can lead normal life style in her community.

## Unit 5: Maintenance of Fluid and Electrolyte Balance

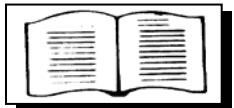
### Assignment 1: An Overview of Fluid Balance in the Body



#### 1.1. Learning Objective

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

- explain body fluid and electrolyte
- distribution of body fluids
- composition of body fluids.



The input and output of water and electrolytes maintain these balances.

Fluid and Electrolytes balances within the body are very important to maintain normal function of all systems of the body. The input and output of water and electrolytes maintain these balances. Their imbalance distribution in the body and the regulation of renal and pulmonary function may result from many factors and are associated with illness. Excessive temperature or excessive activity can disturb the balance.

Human body fluid is divided into two portions-

1. Intracellular fluid- are liquids within cell membranes.
2. Extracellular fluid- are liquids outside the cell.

Intracellular fluid constitutes to 40% or 30 litres in a normal kg average of total body weight. Extracellular fluid is found outside the cells. It is subdivided into three compartments.

1. Intravascular- e.g. plasma.
2. Interstitial- e.g. lymph
3. Transcellular- e.g., pleural, peritoneal, synovial fluid.

#### 1.2. Distribution of Body Fluid

The major fluid constituent of the body is water. Body water content depends on weight, age, sex and the relative amount of body fat.

Body fluid, which is composed of water and many dissolved substances.



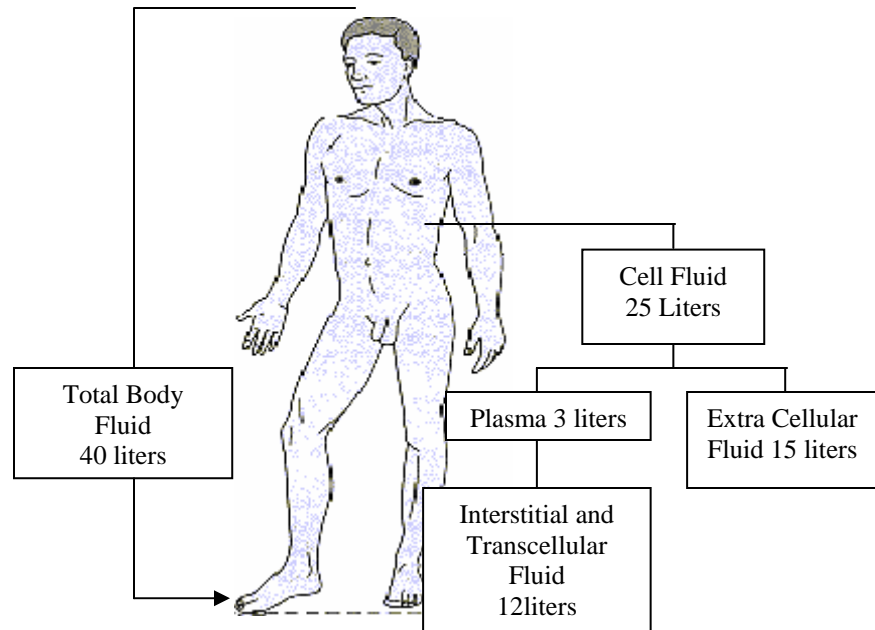


Fig. 1: Distribution of total body fluid in and adult male weighting 70 k.g.

Secretion means the product of a gland.  
Excretion means waste product by the cells, of the body.

Secretions and excretions are also part of the bodies' total fluid volume and acts very important functions. Secretion means the product of a gland e.g., the salivary gland secretes saliva and the gastric gland secretes gastric juice.

Excretion means waste product by the cells of the body.

Nurses need to be aware of abnormal secretions and excretions. Excessive loss can seriously affect first, the extra cellular fluid volume, and then the intracellular fluid volume.

Fluid deficit from active loss may also result in the following condition-

- concentrated urine
- decreased urine output
- decreased venous filling
- decreased serum sodium
- output greater than input
- sudden wt. loss
- altered mental function.

Now we can see a comparison of assessment findings for fluid deficit and fluid excess is found in the following table:

Assessment	Fluid Deficit	Fluid Excess
Blood pressure	Decreased systolic Decreased pulse pressure Postural hypotension	Increased
Blood pressure	Decreased systolic Decreased pulse	Increased
Respirations	Normal	Moist, Cracklet, Wheezes
Jugular vein	Flat	Distended
Edema	Rare	Dependent
Skin turgor	Loose, Poor turgor	Taut
Intake and output	O>I	O<I
Urine specific gravity	High	Low
Weight	Loss	Gain

### 1.3. Composition of Body Fluids

Body fluids are not static. The fluids circulating through extra cellular and intracellular spaces contain electrolytes, minerals and cells.

Electrolyte is an element when it dissolved in water or another solvent, dissociate, into ions and in able to carry a positive charge are called cations, e.g.  $\text{Na}^+$ ,  $\text{U}^+$ ,  $\text{Ca}^{4+}$ ,  $\text{Mg}^{2+}$  and when carry a negative charge are called anions, e.g.  $\text{Cl}^-$ ,  $\text{HCO}_3^-$ .

Electrolytes are measured in milli moles per litre (mmol/l).

Minerals are constituents of all body tissues and fluids. It is essentials in maintaining physiological process e.g., iron and zinc.

Cells which are located in body fluids and these are functional units of living tissue e.g. RBC, WBC.

### 1.4. Movement of Body Fluids

Fluid and electrolytes shift from compartment to compartment, to meet metabolic needs. These movements occurs by the following method-

Diffusion  
Filtration  
Osmosis  
Active Transport

**Diffusion:** It is a process in which solid, particulate matter (e.g., sugar in a fluid) moves from higher concentration to lower concentration.

**Filtration:** Filtration is the process by which water and diffusible substances move together in response to fluid pressure.

**Osmosis:** Osmosis is a transport process by which water moves across a membrane that is permeable to water but impermeable to dissolved substances.

**Active Transport:** Active transport is the process by which substances can move across cell membranes from a less concentrated solution to a more concentrated one.

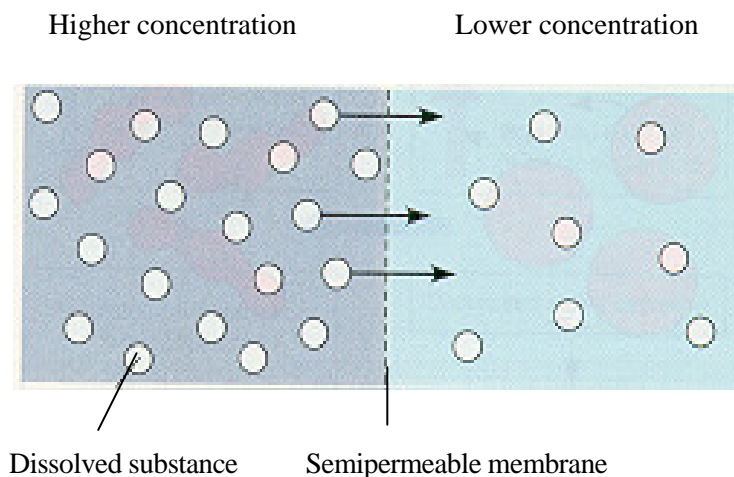


Fig. 2: Diffusion.

### 1.5. Regulation of Body Fluids

**Fluids Intake:** Fluid intake is regulated primarily through the thirst mechanism. The thirst centre is located in the brain and a number of stimuli trigger this centre. During periods of moderate activities at moderate temperature, the average adult drinks about 1500ml/day.

Water is also acquired from food intake, e.g. Fruit, vegetable, meat and from oxidation of food substances during digestion.

#### Average Daily Fluid Intake Requirement by Age and Weight

<i>Age</i>	<i>Approximate Body Weight (kg)</i>	<i>ml/24 hours</i>
3 days	3.0	250 to 300
1 year	9.5	1150 to 1300
2 years	11.8	1350 to 1500
6 years	20.0	1800 to 2000
10 years	28.7	2000 to 2500
14 years	45.0	2200 to 2700
18 years (adult)	54.0	2200 to 2700

#### Fluid Output

Fluid losses from the body counter balance the adult; 2500ml average daily intake of fluid.

Fluid output occurs through the following routes-

- Kidneys– Urine
- Lung– as water vapor in the expired air
- Skin as sweat
- Loss through the intestines in feces.

**Average daily fluid output for an adult**

<i>Route</i>	<i>Amount (ml)</i>
Urine	1400 to 1500
Insensible losses	
Lungs	350 to 400
Skin	350 to 400
Sweat	100
Faeces	100 to 200
<b>Total</b>	<b>2300 to 2600</b>

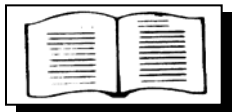
## Assignment 2: Nursing Assessment for Fluid and Electrolyte Imbalances

### 2.1. Learning Objective



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

- taking a nursing history
- obtaining clinical measurement
- assessing skin lung or neuro muscular irritability
- performing physical examination
- reviewing results of laboratory test.



Full assessment is a very important component of care in all area-hospital, home or community

### 2.2. Nursing History

Data must be obtained about the patient fluid and food intake fluid output, recent fluid losses signs of fluid deficit or excess common signs of electrolyte problems, long term and recent disease process and medication and treatments that alter fluid and electrolyte balance.

### 2.3. Clinical Measurements

Some clinical measurements that the nurse can initiate without physicians order these are -

#### Daily Weights

Daily weight measurements can provide a relatively accurate assessment of a patient's fluid status. To obtain accurate weight measurements, the nurse should balance the scale before each use and weight the client (a) at the same time each day (b) wearing the same or similar clothing, and (c) on the same scale.

#### Vital Signs

Changes in the vital signs may indicate fluid and electrolyte imbalances. Body temperature increases may be result of dehydration or a fluid balances problem. Tachycardia is one of the first signs of hypovolemia. Pulses volume decrease in fluid deficit, increase in fluid excess. Irregular pulse rates may occur with Potassium imbalance. Blood pressure may fall in case of FVD (Fluid Volume Defect) increase in case of FVE (Fluid Volume Excess).

#### Fluid Intake and Output

Nurse must measure or check accurately each time.

Maintain intake and output record for 24 hours period. Nurse must inform patient, family members and all caregivers that accurate measurement of the patient's fluid intake and output are required and explaining why and emphasizing need to use a bedpan or urinal.

INTAKE AND OUTPUT RECORD						Patient Label					
						Patient Name _____					
						Patient # _____					
						Physician _____					
Intake						Output					
Total IV	Intravenous			Tube Feed	Oral	Time	Urine	NG	Emesis	BM	MISC
						Date:					
						6-2					
						2-10					
						10-6					
						24 <sup>0</sup> hr					
						Date:					
						6-2					
						2-10					
						10-6					
						24 <sup>0</sup> hr					

Fig. 1: A sample of 24 hours fluid intake and output record.

### 24 Hour Fluid Chart

Name \_\_\_\_\_ Ward \_\_\_\_\_ Date \_\_\_\_\_

	Intake						Drugs in Infusi on	Output				
		Intravenous				Oth er		Gastri c Conte nts	Uri ne	Faec es	Oth er	Blood Press ure
Time	M o u t h	Bloo d/ Plas ma	Norm al Salin e	Dextr ose Saline	5% Dextr ose							
6.00												
7.00												
8.00												
9.00												
10.00												
11.00												
12.00												
13.00												
14.00												
15.00												
16.00												
17.00												
18.00												
<b>Total 12 Hours</b>												

## Maintenance of Fluid and Electrolyte Balance

19.00												
20.00												
21.00												
22.00												
23.00												
24.00												
1.00												
2.00												
3.00												
4.00												
5.00												
6.00												
<b>Total 12 Hours</b>												

### Physical Examination

Physical examination may be required for assessing a patients fluid and electrolyte states-

- skin
- oral cavity
- the eyes
- the jugular veins
- the veins of the hands
- the neuralgic system.

### Fluid Volume Deficit (FVD)

<b>Risk Factors</b>	<b>Clinical Signs</b>	<b>Nursing Interventions</b>
1. Excessive losses from <ul style="list-style-type: none"> <li>▪ Vomiting</li> <li>▪ Diarrohea</li> <li>▪ Suction</li> <li>▪ Drainage of secretions</li> <li>▪ Extreme sweating.</li> </ul>	Weight loss <ul style="list-style-type: none"> <li>▪ 2% loss–mild</li> <li>▪ 5% loss-moderate</li> <li>▪ 8% loss–severe</li> </ul>	Assess change in clinical sings of FVD. Administer oral fluids as indicated.
2. Insufficient fluid intake due to <ul style="list-style-type: none"> <li>▪ Anorexia</li> <li>▪ Nausea, vomiting</li> <li>▪ Inability to swallow</li> <li>▪ Unavailability of fluid</li> <li>▪ Confusion, depression.</li> </ul>	Decreased tissue turgor Weak and rapid pulse. Decreased blood pressure Postural hypotension. Decreased blood volume. Clean breath sounds.	Provide pre medication for nauseas as required. Monitor vital signs and weight. Assess tissue turgor Assess breath sounds.

3. Laboratory values <ul style="list-style-type: none"> <li>Increased hematocrit</li> <li>Increased haemoglobin</li> <li>Increased blood urea nitrogen</li> <li>Decreased central venous pressure</li> </ul>	Fluid intake less than fluid output. Decreased urine specific gravity. Dry mucous membranes, Flat neck veins. Slow filling of hand veins when dependent hand. Report of weakness and thirst.	Monitor fluid intake and output. Implement measures to prevent skin break down. Monitor laboratory findings.
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### Fluid Volume Excess (FVE)

Risk Factors	Clinical Signs	Nursing Interventions
1. Excessive intake of sodium containing fluids from intravenous therapy	Weight gain <ul style="list-style-type: none"> <li>2% gain–mild</li> <li>5% gain–moderate</li> <li>8% gain–severe</li> </ul>	Assess changes in clinical signs of FVE.
2. Excessive ingestion of sodium salts in diet or drugs (e.g., Alka-Seltzer or hypertonic enemas)	Peripheral oedema Full, bounding pulse; increased pulse rate	Encourage intake of low-sodium food and fluid as ordered.
3. Disturbed regulation of fluid balance as in <ul style="list-style-type: none"> <li>Heart failure</li> <li>Renal failure</li> <li>Cirrhosis of the liver</li> </ul>	Increased blood pressure and central venous pressure Moist breath sounds, dyspnea; shortness of breath. Fluid intake greater than fluid output	Monitor fluid intake and output  Administer diuretics as ordered.
4. Laboratory values <ul style="list-style-type: none"> <li>Decreased hematocrit</li> <li>Decreased hemoglobin</li> <li>Decreased BUN</li> <li>Inceased CVP</li> </ul>	Possible oliguria and decreased urine gravity (less than 1.003). Moist mucous membranes Distended neck and peripheral veins. Slow emptying of hand veins (e.g., 5 seconds) when hand elevated. Mental confusion.	Employ measures to prevent skin break down.

### 2.4. Laboratory Test

Laboratory test are conducted to detect the existent of fluid, electrolyte imbalances. Some common tests are discussed here-

- Serum electrolytes are measured to determine the hydration states. The most commonly occurred serum for Na, K, Cl, HCO<sub>3</sub>.



## Maintenance of Fluid and Electrolyte Balance

- Complete Blood count–determination of the on and type of RBC, WBC Pcumm/ of blood. Change in the CBC especially in the haematocrit occurs in response to dehydration or over hydration.
- Serum creatinine levels are useful in measuring in kidney function.

### 2.5. Planning

The care plan is individualized according to the participate fluid and electrolyte imbalance. The plan should be based on of the following goals-

- Patients fluid and electrolyte balances are restored and maintained
- Causes of imbalances are identified and corrected.
- It is important to include the patients and his family in this planning process. The patient family should understand preventive measure; sign and symptoms to report and measure that can be implemented if the imbalance occurs.

### 2.6. Implementing

- Prevention of fluid and electrolyte imbalance is important. Oral fluids and electrolytes can be orally in the home and hospital if the overall condition of the patient health permits.
- When oral fluid therapy is failed. Then effective and efficient method of supplying fluid directly into the intravascular fluid compartment. The nurse is responsible for administering and incriminating the therapy.

### Ways of Correcting Fluid and Electoral Imbalance

- Daily weighing
- Measuring fluid intake and output
- Restriction of fluid
- Enteral replacement of fluids
- Parental replacement of fluids.

### Commonly Administered Intravenous Fluids

	Fluid ad Tonicity	Uses
<b>Dextrose in Water Solutions</b>	5% dextrose in water (D5W) Isotonic	Replaces water losses Re-establishes plasma volume Provides free water necessary for renal excretion of solutes Lowers sodium in hypernatremia
	10% dextrose in water (D10W) Hypertonic	Provides free water Provides nutrition (supplies 340 kcal/L)
	20% dextrose in water (D20W) Hypertonic	Supplies 680 kcal/L May cause diuresis
	50% dextrose in water (D50W) Hypertonic	Supplies 1700 kcal/; often used if client very hypoglycemic

<b>Saline Solutions</b>	0.45% sodium chloride Hypertonic	Provides free water to replace hypotonic fluid losses Maintains levels of plasma sodium and chloride
	0.9% sodium chloride Hypertonic	Expands intravascular volume Replaces water lost from extracellular fluid Used with blood transfusions Replaces large sodium losses (as from burns)
	3% sodium chloride Hypertonic	Corrects serious sodium depletion
<b>Combined Dextrose and Saline Solution</b>	5% dextrose & 0.45% sodium chloride Hypotonic	Provides free water Provides sodium chloride Maintenance fluid of choice if there are no electrolyte imbalances
<b>Multiple Electrolyte Solutions</b>	Ringer's solution Isotonic (electrolyte concentrations of sodium, potassium, chloride, and calcium are similar to plasma levels)	Expands the intracellular fluid Replaces extracellular fluid losses
	Lactated Ringer's solution Isotonic (similar in composition of electrolytes of plasma but does not contain magnesium)	Replaces fluid losses from burns and the lower gastrointestinal tract Fluid of choice for acute blood loss

### Complication of IV Therapy

The major complications of IV therapy are as following-

Careful continuous observation of and inform medical person.

- extravasation
- phlebitis
- fluid overload
- bleeding
- infection.

**Discontinuing IV infusion** is necessary after the prescribe amount of fluid or drug has been infused. And the following-

- when an extravasation occurs
- if phlebitis is present
- if the infusion catheter or needle develops a clot at its tip.

### Commonly Used Venipuncture sites

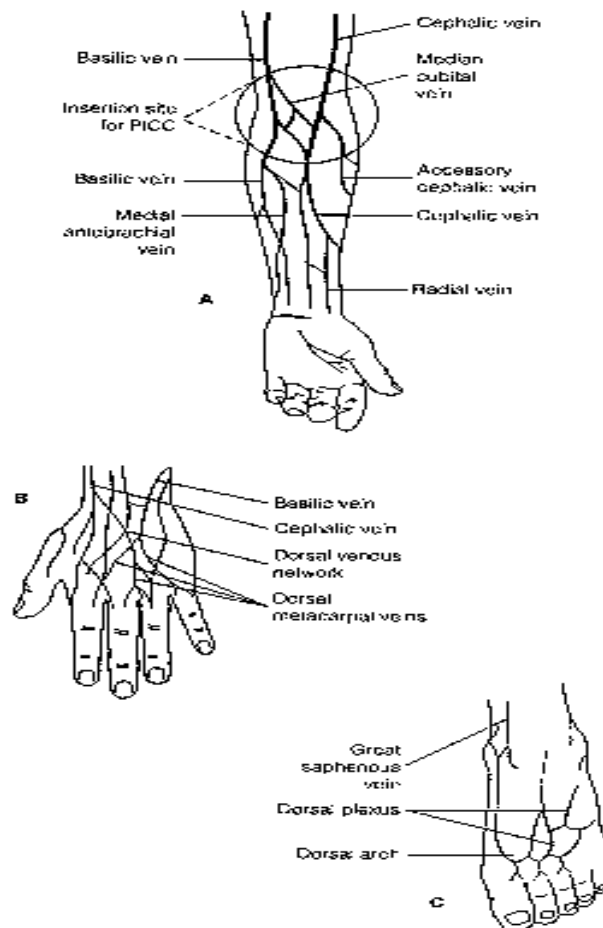


Fig. 2: 4 Possible site of infusion.

### Evaluation

Nurse can evaluate the effectiveness of care provided to the patient with alteration in fluid and electrolyte imbalances based on expected outcomes. Using evaluation data, he or she can determine if the care goals have been met or if the care plan requires modifications.

### Activity

1. Mrs. Rokey Begum 45 years old, she developed a serious renal infection that resulted in acute renal failure. She has very little urine and then she has been admitted in hospital for better care. Discuss nursing care plan for above patient.
2. Mr. Abdul Latif is receiving intravenous fluid. He complains that his right arm hurts just above the IV insertion site. The nurses find that IV site is warmer than the surrounding skin and the vein is reddened. Based on these findings, which complaint has Mr. Latif developed? What is the most appropriate nursing intervention?

## Unit 6: Pre-Operative Preparation

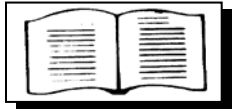
### Assignment 1: Pre Operative Nursing Care



#### 1.1. Learning Objectives

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

- explain per operative nursing
- meaning of pre operative nursing
- identify pre-operative laboratory test.



Florence Nightingale said, “the hospital should do the patient no harm” – a statement which remains true today. The majority of pre operative care, routine or specific, is aimed to prevent complications of surgeries. As well as helping the patient to understand what is to happen to him. Thus ensuring both his physical and mental well being.

#### 1.2. Per-Operative Nursing

Per operative Nursing is a specialized area of practice for providing nursing care to the surgical patient.

Per operative nursing has three phases-

The hospital should do the patient no harm.

1. Pre operative phase
2. Intra operative phase
3. Post operative phase

#### 1.3. Pre Operative Nursing Activities

Pre operative Phase (home/clinic)-

The nurse should consider individual psychological and physical difference. The type of surgery and the circumstance are surrounding the need for surgery.

- initiate pre operative assessment
- to plan teaching method appropriate to patients needs
- involve family in interview
- the response to planned surgery varies greatly when planning care.

The nurse should consider individual psychological and physical difference. The type of surgery and the circumstance are surrounding the need for surgery. So a thorough nursing assessment is needed to determine the most appropriate care for each patient under going surgery.

#### 1.4. Assessing Pre Operative Nursing History

- to provide patient data
- to help the nurse to plan pre operative each and post pre operative.

### Essential Pre-operative Information that Should be Followed

- Age
- Nutritional States
- Fluid and Electrolyte States
- General Health
- Medication
- Mental Health and Attitude.

### Pre Operative Nursing History

- **Physical condition.** General appearance (i.e., skin coloring, weight, hydration status and energy level).
- **Mental attitude.** Mild anxiety is a normal response to surgery; severe anxiety can increase surgical risk.
- **Understanding of surgical procedure.** A well-informed client knows what to expect and in general accepts and copes more effectively with surgery and convalescence.
- **Previous experience.** May influence the physical and psychological response to the planned surgery.
- **Expected outcomes.** May alter a client's body image and life style to varying degrees.
- **Medications.** List all current medications. Certain medications, such as anticonvulsants and insulin, must be continued throughout the operative period to prevent adverse effects. A physician's order to this effect is required, however.
- **Smoking.** Smoker's lung tissue may be chronically irritated, and a general anesthetic agent irrigates it further.
- **Alcohol.** Heavy consistent use can led to problems during anesthesia, surgery and recovery
- **Coping resources.** Employing previously effective coping mechanisms or developing new strategies (e.g., divisional activities such as reading and relaxation exercises) may be helpful.
- **Self-concept.** A healthy, positive self-concept predisposes clients to approach a surgical experience with confidence that they can handle it successful.
- **Body image.** Possible disfigurement or change in physical identity may be a concern prior to surgery. Providing accurate information often allays fears based on misconceptions.

Look for:  
Physical condition  
Mental attitude  
Understanding of  
surgical procedure  
Previous experience  
Expected outcomes  
Medications  
Smoking  
Alcohol  
Coping resources  
Self-concept  
Body image

### 1.5. Physical and Psychological Preparation

Before planning and implementing care for the surgical client, the nurse should **assess** the needs of the patient and the factors that may increase the risks associated with surgery. They should take **history** and performing a **physical examination** and above this information the nurse establishes base line data, identifies physical needs determines teaching needs and psychological support for the patient and family. This information should be attached in **care plan**, using appropriate nursing diagnosis and **intervention** to all of the patient's needs and assist the patient to full post operative recovery.

### 1.6. Pre Operative Patient and Family Teaching

Patient teaching is very important nursing responsibility in the important period. Patient education with support has a positive mental result on the patient physical and mental well being both before and after surgery.

At the same time, teaching the patient, family about measure that will decrease the risk of complication. The nurse provides other pre operative information prepare the patient and family for surgery.

### 1.7. Preoperative Regimen

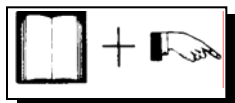
- Explain the need for preoperative tests (e.g., laboratory X-ray, ECG).
- Discuss bowel preparation, if required.
- Discuss skin preparation, including operative area and preoperative bath or shower with antimicrobial agents.
- Discuss preoperative medications.
- Explain individual therapies ordered by the physician, such as intravenous therapy, the insertion of a urinary catheter or nasogastric tube use of a Spirometer or intermittent positive pressure breathing (IPPB) machine or antituberculous stockings.
- Discuss the visit by anesthetist.
- Explain the need to restrict food and oral fluids at least 8 hours before surgery.
- Provide general timetable for perioperative events.
- Discuss the need for the removal of jewelry, makeup, and all prostheses (e.g., eyeglasses, hearing aids, complete or partial denture, and wig) immediately before surgery.
- Confirm time to surgery
- Inform client about the preoperative holding area and give the location of the waiting room for support persons.

### 1.8. Routine Pre operative Diagnostic Tests

Test	Rationale
Urinalysis	To detect urinary tract infections and glucose in the urine
Chest x-ray	To identify lung pathology and heart size and location
ECG (usual for clients who have cardiac pathology)	To determine cardiac pathology
Complete blood count (CBC)	To determine Hgb, Hct, RBC (i.e., the blood's ability to carry oxygen), and WBC (which signals infection when elevated)
Blood grouping and cross-matching	To establish blood type for possible blood transfusion
Serum electrolytes (Na <sup>+</sup> , K <sup>+</sup> , Mg <sup>+</sup> , Ca <sup>2+</sup> , H <sup>+</sup> )	To determine electrolyte imbalances
Fasting blood sugar	To detect presences of glucose in the blood, which may indicate metabolic disorders (e.g., diabetes mellitus)
Blood urea nitrogen (BUN) and or creatinine	To assess urinary excretion

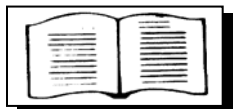
## Assignment 2: Nursing Care for the Day of Surgery

### 2.1. Learning Objectives



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

- notice the important tasks for the day of surgery
- understand different operative position
- identify different areas to be clean.



### 2.2. Preparation the Day of Surgery

A preoperative surgical checklist serves as an outline for finalizing preparation of the client for surgery. The nurse completes the checklist before the client is transported to surgery. Nursing responsibilities the day of surgery include the following-

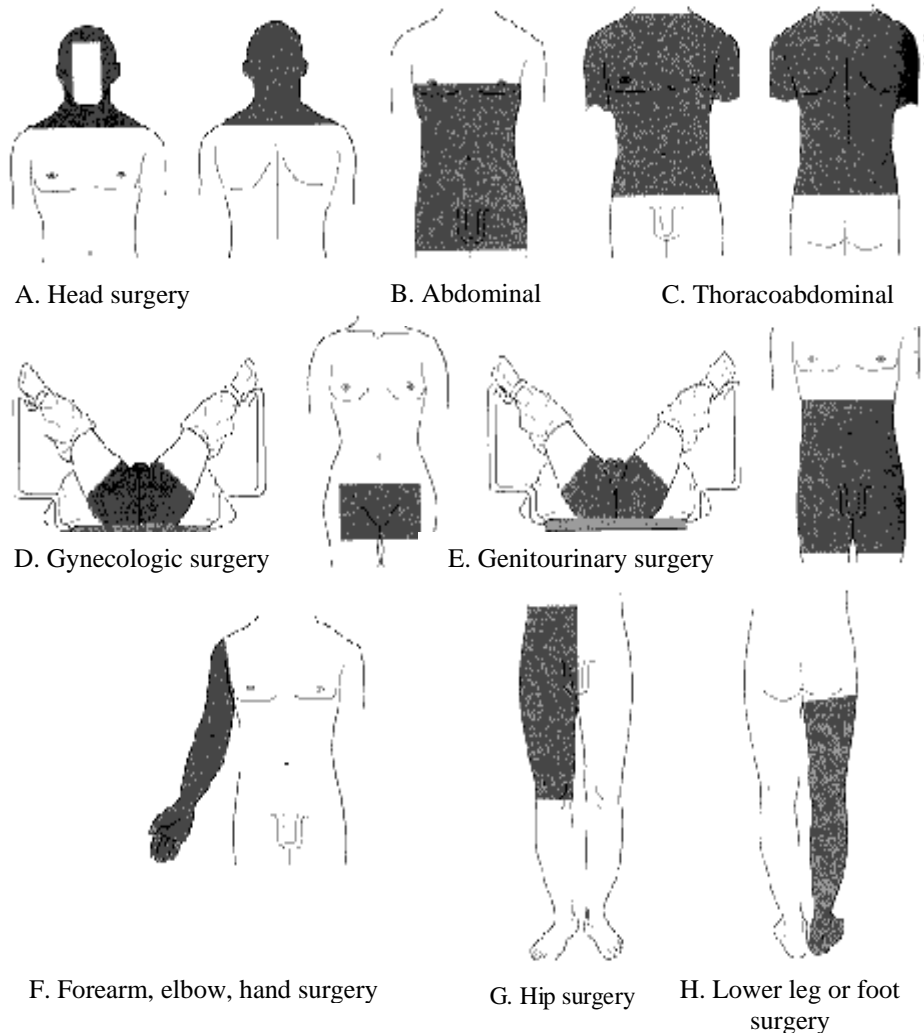
- Assist with bathing, grooming, and changing into operating room gown.
- Ensure that the client takes nothing by mouth (NPO).
- Remove nail polish, lipstick, and make-up to facilitate circulatory assessment during and after surgery.
- Ensure that identification, blood, and allergy bands are correct, legible, and secure.
- Remove hair pins and jewelry.
- Complete skin or bowel preparation as ordered.
- Insert an indwelling catheter, intravenous line, or nasogastric tube as ordered.
- Remove dentures artificial eye, and contact lenses, and store them in a safe place.
- Leave a hearing aid in place if the client cannot hear without it, and notify the operating room nurse.
- Verify that the informed consent has been signed prior to administering preoperative medications.
- Verify that the client's height and weight are recorded in the chart (for dosage of anesthesia).
- Verify that all ordered laboratory and diagnostic test reports are in the chart.
- Have the client empty the bladder immediate before the preoperative medication is administered (unless an indwelling catheter is in place).
- Administer preoperative medication as scheduled.
- Obtain and record vital sign: Body wt, pulse, temp, BP etc.
- Complete laboratory and diagnostic test reasons and preparation.
- Family should arrive timely.
- Sending medicine should be taken in night before surgery to promote rest and sleep.
- Informed consent.
- Expected time table for surgery and the recovery room.
- Transfer to the surgery department.
- Location of the surgical waiting room.



### 2.3. Day-Surgery Clients

- Confirm place and time of surgery, including when to arrive (e.g., 1 hour before scheduled surgery) and where to register (e.g., receptions desk or IPD).
- Discuss what to wear (e.g., clients having hand surgery should wear a garment with large sleeve openings to fit over a bulky dressing); all clients need to leave valuables at home.
- Explain the need for someone to accompany the client home and arrange a place for pickup.
- Review available medical and insurance forms.
- Review with the client any tests ordered and need for a urine specimen the morning of surgery
- Communicate by telephone the evening before surgery to confirm time of surgery and arrival time and call again the evening after surgery to assess progress.

### 2.4. Different Operative Area Should be Shaved



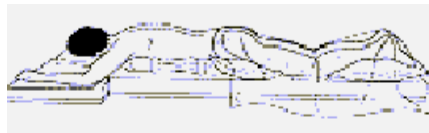
## 2.5. Common Surgical Positions



Dorsal recumbent or supine position.



Semi-sitting position.



Prone position.



Lateral chest position.



Lithotomy position.



Jackknife position.

- a) **Dorsal recumbent (or supine) position** is used for many abdominal surgeries e.g., colostomy and herniorrhaphy and some thoracic surgeries e.g., open heart surgery.
- b) **Semi-sitting position** is used for surgeries on the thyroid and neck areas.
- c) **Prone position** is used for spinal fusions and removal of hemorrhoids.

## Pre-Operative Preparation

- d) **Lateral chest position** is used for some thoracic surgeries, as well as hip replacements.
- e) **Lithotomy position** is used for gynecologic, perineal, or rectal surgeries.
- f) **Jackknife position** is used for proctologic surgeries, such as removal of hemorrhoids.

### 2.6. Activity

1. What types of patient education can reduce pain and nausea following surgery?
2. If you were to have surgery tomorrow, what would you want your nurse to tell you?

# Unit 7: Care of Surgical Wound

## Assignment 1: Wound



### 1.1. Learning Objective

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

- define surgical wound.

### 1.2. Wound

A wound is a breach in the normal tissue continuum, resulting in a variety of cellular and molecular sequelae.

### Classification of Wound

A wound may be classified according to the mode of damage-

#### A. Acute

- Closed wounds
  - bruise/ contusion
  - haematoma
- Open wounds
  - puncture wounds and bites
  - abrasions and friction burns
  - lacerations
  - sharp
  - bursting type
- Complex
  - crush/ avulsion
  - internal organs
  - war wounds and gunshot injuries
  - tissue loss
- Injuries to special tissues
  - fat
  - muscle
  - bone

## Care of Surgical Wound

- nerve
- artery
- vein
- Chronic wounds
  - ulcers
  - pressure sores

### 1.3. Wound Healing

Wounds heal by forming fibrous scar tissues over which epidermis grows. Wounds are said to heal by-

- First intention
- Second intention.

Both the processes are identical and merely a question of the quantity of new tissue required healing a wound forms the difference between them.

### 1.4. Factors Which Influences Wound Healing Are

- the site of the wound
- blood supply
- infection
- some disease, such as-
  - malnutrition
  - diabetes Mellitus
  - hemorrhagic diatheses
  - hypoxia
  - corticosteroid therapy
  - immunosuppression
  - radiotherapy.
- some surgical factors such as-
  - gentle tissue handling
  - avoidance of undue trauma
  - accurate tissue apposition
  - hemostasis
  - appropriate choice of suture material.

### **1.5. Contamination of Wound**

By reducing the contamination of wound we can help to prevent the delay in healing.

But a skilled nurse should have knowledge about management of contamination of wound without any delay.

A good nurse should also give attention to the factors which influence wound healing.

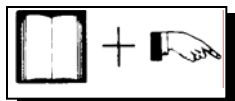
### **1.6. Treatment of Contamination**

Treatment can be done according to following-

- wound must be cleansed in order to wash out any micro-organisms and foreign material with an antiseptic solution
- wound toileting is essential, whenever tissue is damaged with a solution such as normal saline.

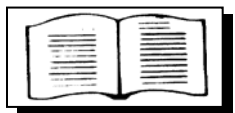
## Assignment 2: Wound Infection

### 2.1. Learning Objective



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

- identify wound infection.



### 2.2. A Nurse Should Pay Attention to all Sources of Wound Infection

The sources of wound infection are-

- a. dust in the air of the ward
- b. poor hygiene in nurses or patient
- c. lack of cleanliness of the wound environment
- d. infected droplets from mouth and noses
- e. the hands of the dresser or contamination of instruments during procedure
- f. cross infection from other infected wounds.

### 2.3. Risk of Infection to Surgical Wound is Influenced by Some Factors such as

- i) General factors
- ii) Local factors.

#### General Factors Are-

- patients age
- presence of inter current infection
- nutritional status
- cardiorepiratory disease.

#### Local Factors Are-

- bacterial contamination
- antibacterial prophylaxis
- aseptic technique
- degree of trauma
- presence of devitalized tissue
- hemorrhage and foreign bodies.

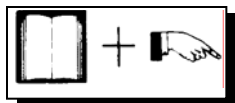
### 2.4. Activity

One patient name Ashfaque one day came to emergency room of a hospital with moderate sickness and was admitted and went to surgical ward. He was having a big infected wound caused by crush injury or his leg. The wound was discharging.

### 2.5. Observation

As a duty nurse how the patient should be received by you and care should be given, write down.

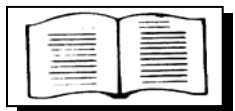
## Assignment 3: Care of Wound



### 3.1. Learning Objective

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

- explain how to take care of wound.



### 3.2. Care of Wound

To take one should at first try to reduce the risk of infection to wound.

To reduce the risk of infection a good nurse should look at the following points-

1. The air in the ward should keep clean as far as possible by observing the following rules-
  - while making beds, the clothes are handled slowly and gently
  - bed making, floor-cleaning and dusting should be ceased at least one hour before the first dressing is uncovered
  - when dressing begin the ward is to be closed to all visitors and all unnecessary personnel. Windows and doors are to be shut
  - staff with minor septic lesions should not be on duty in a surgical ward.

### 3.3. Dressing of Surgical Wound

Dressings should ideally be carried out in a room or cubicle specially designed for the purpose.

While doing dressing the following points should be maintained-

- hands should not come in contact either with the wound itself or with any material in the vicinity of the wound.
- the hands should be thoroughly washed using plenty of soap and water. A disposable paper towels are used to dry them.
- masks should always be worn during dressings

It is to be noted that clean wound which have been closed without drainage and have a dressing need not be uncovered until it is time to remove the stitches.

Infected discharging wounds require regular dressings.

### 3.4. Change of Dressing

Changing a simple dressing should be done according to following way with one nurse -

- a basic trolley is prepared



## Care of Surgical Wound

- the nurse washed and dries her hands and puts on a mask.
- the whole trolley is washed with soap and water and dried. It is then swabbed with a disposable swab soaked in spirit
- a basic dressing pack (containing wollen balls, gauze swabs), adhesive tape, recommended antiseptic, and any other necessary equipment are placed on the bottom shelf
- the procedure is explained to the patient. Privacy is ensured and nearby windows are closed as necessary. The trolley is then taken to the bed side
- the patient is placed into an appropriate position and made comfortable
- the bed cloths and personal clothing are adjusted as necessary
- any unused wool or gauze is saved for suitable unsterile procedures
- all used things are to be placed aside
- used instruments are taken for sterility purpose
- soiled dressings are taken for incinerations
- the trolley is removed and cleaned
- the nurse finally should washed and dries hands.

### 3.5. Drains

Sometimes drains are used-

- a. to drain fluid which has collected or is expected to collect; e.g. blood, serum, pus, bile.
- b. as a safety valve to an anastomosis or suture line.

Nurse should know how to manage drains.

The following points are to be noted-

- a. naturel of drainage fluid should be carefully noted
- b. quantity of drainage fluid have to be measured accurately and it should be recorded every twenty-four hours.

### 3.6. Complications of Wounds

The nurse must know when to suspect complications, which necessitate inspection of the wound.

The following are a guide-

- a. the continued presence of pain
- b. swelling and/or redness around the wound
- c. persistent rise of temperature
- d. discharge from the wound.

The following complications can occur in a wound-

- a. infection
- b. haemorrhage
- c. failure to heal
- d. sinus or fistula formation
- e. contracture
- f. sloughing
- g. keloid formation.

### **3.7. Activity**

Helen, aged 44, has been wheel chair bound for two years. During a home visit, Helen informs the nurse that she has developed a small pressure sore on her left heel.

A full assessment is necessary to identify the type and severity of the pressure sore. Dressings that fulfil the requirements necessary for good healing are to be thought by nurse prescriber utilising his or her clinical judgement based on a careful and accurate assessment of Helen's general condition describe.

Assessment and regular reassessment of wound is essential.

Advice regarding diet, fluid intake and relief of pressure on the affected part should also be given.