Health Care Services

NSQF Level-2

Class-X

Author Manuscript **Student Handbook**

CENTRAL BOARD OF SECONDARY EDUCATION

Shiksha Kendra, 2, Community Centre, Preet Vihar, Delhi-110092

Health Care Services PCA

NSQF Level -2

Class - X

Student Workbook

CENTRAL BOARD OF SECONDARY EDUCATION
Shiksha Kendra, 2, Community Centre, Preet Vihar, Delhi-110092

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भारत का संविधान

उद्देशिका

हम, भारत के लोग, भारत को एक सम्पूर्ण [1]प्रभुत्व-संपन्न समाजवादी पंथनिरपेक्ष लोकतंत्रात्मक गणराज्य बनाने के लिए, तथा उसके समस्त नागरिकों को:

सामाजिक, आर्थिक और राजनैतिक न्याय,
विचार, अभिव्यक्ति, विश्वास, धर्म
और उपासना की स्वतंत्रता,
प्रतिष्ठा और अवसर की समता
प्राप्त कराने के लिए
तथा उन सब में व्यक्ति की गरिमा
[2]और राष्ट्र की एकता और अखंडता
सुनिश्चित करने वाली बंधुता बढ़ाने के लिए

दृढ़संकल्प होकर अपनी इस संविधान सभा में आज तारीख 26 नवम्बर, 1949 ई॰ को एतद्द्वारा इस संविधान को अंगीकृत, अधिनियमित और आत्मार्पित करते हैं।

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1. संविधान (बयालीसवां संशोधन) अधिनियम, 1976 की धारा 2 द्वारा (3.1.1977) से "प्रभुत्व-संपन्न लोकतंत्रात्मक गणराज्य" के स्थान पर प्रतिस्थापित।
2. संविधान (बयालीसवां संशोधन) अधिनियम, 1976 की धारा 2 द्वारा (3.1.1977) से "राष्ट्र की एकता" के स्थान पर प्रतिस्थापित।

भाग 4 क

मूल कर्त्तव्य

51 क. मूल कर्त्तव्य – भारत के प्रत्येक नागरिक का यह कर्त्तव्य होगा कि वह –

(क) संविधान का पालन करे और उसके आदर्शों, संस्थाओं, राष्ट्रध्वज और राष्ट्रगान का आदर करे;

(ख) स्वतंत्रता के लिए हमारे राष्ट्रीय आंदोलन को प्रेरित करने वाले उच्च आदर्शों को हृदय में संजोए रखे और उनका पालन करे;

(ग) भारत की प्रभुता, एकता और अखंडता की रक्षा करे और उसे अक्षुण्ण रखे;

(घ) देश की रक्षा करे और आह्वान किए जाने पर राष्ट्र की सेवा करे;

(ङ) भारत के सभी लोगों में समरसता और समान भ्रातृत्व की भावना का निर्माण करे जो धर्म, भाषा और प्रदेश या वर्ग पर आधारित सभी भेदभाव से परे हों, ऐसी प्रथाओं का त्याग करे जो स्त्रियों के सम्मान के विरुद्ध हैं;

(च) हमारी सामासिक संस्कृति की गौरवशाली परंपरा का महत्त्व समझे और उसका परिरक्षण करे;

(छ) प्राकृतिक पर्यावरण की जिसके अंतर्गत वन, झील, नदी, और वन्य जीव हैं, रक्षा करे और उसका संवर्धन करे तथा प्राणी मात्र के प्रति दयाभाव रखे;

(ज) वैज्ञानिक दृष्टिकोण, मानववाद और ज्ञानार्जन तथा सुधार की भावना का विकास करे;

(झ) सार्वजनिक संपत्ति को सुरक्षित रखे और हिंसा से दूर रहे;

(ञ) व्यक्तिगत और सामूहिक गतिविधियों के सभी क्षेत्रों में उत्कर्ष की ओर बढ़ने का सतत प्रयास करे जिससे राष्ट्र निरंतर बढ़ते हुए प्रयत्न और उपलब्धि की नई उंचाइयों को छू ले;

[1](ट) यदि माता-पिता या संरक्षक है, छह वर्ष से चौदह वर्ष तक की आयु वाले अपने, यथास्थिति, बालक या प्रतिपाल्य के लिये शिक्षा के अवसर प्रदान करे।

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1. संविधान (छयासीवां संशोधन) अधिनियम, 2002 की धारा 4 द्वारा प्रतिस्थापित।

THE CONSTITUTION OF INDIA

PREAMBLE

WE, THE PEOPLE OF INDIA, having solemnly resolved to constitute India into a [1]**SOVEREIGN SOCIALIST SECULAR DEMOCRATIC REPUBLIC** and to secure to all its citizens :

JUSTICE, social, economic and political;

LIBERTY of thought, expression, belief, faith and worship;

EQUALITY of status and of opportunity; and to promote among them all

FRATERNITY assuring the dignity of the individual and the[2] unity and integrity of the Nation;

IN OUR CONSTITUENT ASSEMBLY this twenty-sixth day of November, 1949, do **HEREBY ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION.**

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1. Subs, by the Constitution (Forty-Second Amendment) Act. 1976, sec. 2, for "Sovereign Democratic Republic" (w.e.f. 3.1.1977)
2. Subs, by the Constitution (Forty-Second Amendment) Act. 1976, sec. 2, for "unity of the Nation" (w.e.f. 3.1.1977)

THE CONSTITUTION OF INDIA

Chapter IV A

FUNDAMENTAL DUTIES

ARTICLE 51A

Fundamental Duties - It shall be the duty of every citizen of India-

(a) to abide by the Constitution and respect its ideals and institutions, the National Flag and the National Anthem;

(b) to cherish and follow the noble ideals which inspired our national struggle for freedom;

(c) to uphold and protect the sovereignty, unity and integrity of India;

(d) to defend the country and render national service when called upon to do so;

(e) to promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional or sectional diversities; to renounce practices derogatory to the dignity of women;

(f) to value and preserve the rich heritage of our composite culture;

(g) to protect and improve the natural environment including forests, lakes, rivers, wild life and to have compassion for living creatures;

(h) to develop the scientific temper, humanism and the spirit of inquiry and reform;

(i) to safeguard public property and to abjure violence;

(j) to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievement;

[1](k) to provide opportunities for education to his/her child or, as the case may be, ward between age of 6 and 14 years.

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1. Subs. by the Constitution (Eighty - Sixth Amendment) Act, 2002

Forward

The Student Handbook is a part of the training package developed for the vocational subject under the National Skill Qualification Framework (NSQF), an initiative of Government of India. The NSQF sets common principles and guidelines for a nationally recognized qualification system covering Schools, Vocational Education and Training Institutions, Technical Education Institutions, Colleges and Universities. It is envisaged that the NSQF will promote transparency of qualifications, cross-sectoral learning, student-centred learning and facilitate learner's mobility between different qualifications, thus encouraging lifelong learning. The National Curriculum Framework, 2005 recommends that children's life at school must be linked to their life outside the school. This principle makes a departure from the legacy of bookish learning which continues to shape our system and causes a gap between the school, home, community and the workplace.

Pandit Sunderlal Sharma Central Institute of Vocational Education (PSSCIVE), a constituent of National Council of Educational Research and Training (NCERT) has developed modular curriculum and learning materials for the vocational subjects offered from Classes IX to XII (NSQF Levels 1-4). This Student Handbook, which has been developed keeping in view the National Occupational Standards (NOS) set by the Healthcare Sector Skill Council (HSSC) for the Job Role of Patient Care Assistant/ General Duty Assistant is meant for students who have passed Class-VIII or equivalent examination. The National Occupation Standards are a set of competency standards used for recognizing and assessing occupational skills and knowledge needed to perform effectively in the workplace.

The success of vocationalisation of education in schools depends on the steps that Principals and Teachers will take to encourage children to reflect their own learning and to pursue imaginative and on-the-job training activities. Participation of learners in skill development exercises and inculcation of values and creativity is possible if we involve children as participants in learning and not as receivers of information. Flexibility in the daily time-table would be a necessity to maintain the rigour in implementing the activities and the required number of teaching days will have to be increased for teaching vocational subjects.

The Student Handbook has been developed and reviewed by a group of experts and their contributions are admirably acknowledged. The utility of the Handbook will be adjudged by the qualitative improvement that it brings about in teaching-learning. The likelihood of text errors, including typographical errors cannot be ruled out. The feedback and suggestions on the content by the teachers and other stakeholders will be of immense value to us in bringing about necessary improvement in the Student Handbook.

Chairperson, CBSE

Acknowledgements

Advisors

- **Smt. Anita Karwal, IAS,** Chairperson, CBSE

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Contents

UNIT – 1

HoSPITAL STRUCTURE AND FUNCTIoNS

Learning outcomes

Unit 1	HoSPITAL STRUCTURE AND FUNCTIoNS			
Location Classroom/ Hospital/ Clinic	**Learning outcome**	**Knowledge Evaluation**	**Performance Evaluation**	**Teaching and Training Method**
	● Demonstrate the knowledge of roles and function of various departments, professionals and supportive staff of the hospital.	● Describe the roles and functions of various departments and professionls in the Hospital.	● Identify the various types of hospitals. ● Distinguish between General Hospital Hospitals and Specialized Hospital. ● Draw a chart depicting the roles of departments, professionals and supporting staff of the hospital.	**Interactive Lecture:** ● Roles and function of hospitals. ● **Activity:** Visit a nearby hospitas and study the roles and functions of the various departments, professionals and supportive staff of the hospital. ● Prepare a chart depicting the roles and functions of departments/professionals/supporting staff.
	● Demonstrate the knowledge of roles and function of supporting departments in hosptal.	● Describe the role and functions of various supporting departments of hospital. ● State the services provided by the medical record department and outpatient department. ● Explain the activities performed by the hospital housekeeping department.	● Draw a chain of command in the various department and laboratories of hospital.	**Interactive Lecture:** ● The Role and function of various supporting department in the Hospital. ● **Activity:** Visit nearby hospital and · study the roles and function of the various supporting departments in hosptal. ● Prepare a chart showing the chain of commands in various department.

Learning outcomes

	• Classify the hospitals on the basis of different criteria.	• State the criteria used for classify the hospitals. • Describe the different levels of medical care.	• Classify the hospitals on the basis of bed strength, speciality and level of medical care.	**Interactive Lecture:** • Classifying Hospitals. • **Activity:** Internet search on hospitals and classify them on the basis of bed strength, speciality and level of medical care.
	• Relate the role of General Duty Assistant to the various functions of hospital.	• Describe the roles and functions of General Duty Assistant in hospital. • Explain the various activities/tasks that should be perfomed by GDA to effectively discharge his/her duties and responsibilities in hospital.	• Demonstrate the knowledge of activities for prevention of spread of diseases. • Draw a diagram depicting the various role and function of GDA.	**Interactive Lecture:** • Roles and functions of General Duty Assistant. • **Activity :** Visit a nearby hospital and study the role of General Duty Assistant in providing services. • Draw a diagram depicting the roles and functions of GDA.
	• Demonstrate the knowledge of the qualities of a Good General Duty Assistant.	• Describe the qualities of a Good Genetal Duty Assistant in the hospital.	• Identify the activities performed by GDA in supporting the the healthcare team member. • Demonstrate the ablity to provide personal care.	**Interactive Lecture :** • Qualities of a Good General Duty Assistant. • **Activity :** Visit a hospital and enlist the enlist the qualities of a Good General Duty Assistant.

Session 1: Describe Healthcare Delivery Systems

Relevant Knowledge

Healthcare is provided within many different types of facilities to meet the needs of the people. A hospital is an institution for the medical and nursing care of ill and injured persons needing complex services with a high risk of complications. Hospitals are organized institutions for the care of the sick and injured.

In this session, you will learn about the various roles and functions of hospital. The word hospital is derived from the latin word “hospitalis” which comes from “hospes” meaning a “host”. The English word “hospital” comes from the French word “hospitale” as do the words “hostel” and “hotel”, all originally derived from Latin. The three words hospitals, hostel and hotel, although derived from the same source, are used with different meaning. The term hospital means an establishment for temporary occupation by the sick and injured. The word hospital, therefore, means an institution in which sick or injured persons are cared for and treated for ailments and diseases.

Definition

Hospital is an institution for the care, cure and treatment of the sick and wounded, for the study of the diseases, and for the training of the doctors and nurses (Steadman’s Medical Dictionary). In olden days, hospitals were guest houses for the shelter of the homeless and of the treatment of travellers. In modern times, the chief function of the hospital is to provide care and treatment to the sick. World Health Organization (WHO) defines the term “hospital” as an institution that provides in-patient accommodation for medical and nursing care. It further elaborates the definition to cover hospitals that assume additional functions i.e., curative, rehabilitative and preventive services, directly or in a consultative capacity, also participating in the training of personnel and in research work.

Types of Hospitals

1. **General Hospitals:** These hospitals offer treatment for common diseases. The main objective of General Hospital is to provide medical care, whereas teaching is secondary. For example, Taluka headquarter hospitals, Primary Health Care Centres (PHCs), etc
2. **Specialized Hospitals:** These hospitals concentrate on giving medical and nursing care in a specific area, e.g., ophthalmic hospital (deals with eye related problems), orthopaedic hospital (deals with bone related problems), cardiac hospital (deals with heart related problems), etc.
3. **Isolation Hospital:** This is a hospital in which clients requiring isolation or clients suffering from communicable diseases are taken care of.

4. **Teaching Hospital:** The primary objective of teaching hospital is teaching and training of doctors. For example, Medical Colleges.
5. **Rural Hospitals:** These hospitals are located in rural areas, permanently staffed by at least one or more physicians, which offer inpatient accommodation and provide medical and nursing care for more than one category of medical discipline. A number of healthcare delivery models have been developed for the delivery of healthcare services. The healthcare system/models in India can be categorized under the following sectors or programme:

Departments in a Hospital

The following departments are generally available in a hospital:

1. **outpatient Department (oPD):** The word patient means 'one who suffers' and it comes from the Latin word patiens, meaning "I am suffering". An outpatient is a patient who is not hospitalized for 24 hours or more but who visits a hospital, clinic, or associated facility for diagnosis or treatment. Treatment provided in this fashion is called ambulatory care. The admission to the hospital involves the production of an "admission note". The leaving of the hospital is officially termed discharge, and involves the production of a "discharge note".
2. **Inpatient Department (IPD):** An inpatient is admitted to the hospital and stays overnight or for an indeterminate time, usually several days or weeks. Treatment provided in this fashion is called "inpatient care".
3. **Medical Departments**: The medical departments may include, but not limited to the following:

   Internal Diseases Department: This Department includes specialities of cardiology (related to heart), dermatology (related to skin), diabetics (related to pancreas), endocrine glands (related to hormone), digestive system, hematology diseases (related to blood), infectious diseases, internal diseases, kidney and urology unit, neurology (related to brain and nerves), psychiatry clinic, lung diseases, and rheumatic diseases (related to joints and connective tissues).

   Surgery Department: This department deals with general surgery unit, orthopedics unit, urinary tracts surgery, plastic surgery, brain and neurology surgery, children surgery, ophthalmic surgery, and Ear Nose Throat (ENT) surgery.

   Anesthesia: Doctors in this department give anesthetics for operations.

   Gynecology Department: These departments investigate and treat problems of the female urinary tract and reproductive organs.

   Pediatrics Department: It is the department that deals with the medical care of infants, children, and adolescents, and the age limit usually ranges from birth up to the age of 18 years.

   Dentistry Department: This department deals with the diagnosis, prevention, and treatment of diseases, disorders and conditions of the oral cavity, especially the teeth, and to an extent related conditions in the jaws and face area.

Emergency Department: An emergency department, also known as accident and emergency department, emergency room, or casualty department is a medical treatment facility specializing in acute care of patients who are present without prior appointment, either by their own means or by ambulance.

Nursing: Nursing department provides nursing to patients at all general and specialized clinics in addition to specialized care services to inpatients at all units.

Supporting Departments

Catering and Food Services: This department provides catering and food services to inpatients and accompanying individuals as well as hospital staff.

Central Disinfection and Sterilization: This department is involved in applying policies and procedures related to central disinfection and hospital sterilization.

Cleaning and Laundry: This department is involved in all operations and procedures that will keep the hospital clean and provide laundry services.

Educational Affairs Department: The activities of this unit include organizing training courses and preparing educational programmes, and development of manpower.

Finance Department: It performs all works related to budget, prepares payrolls and monthly wages and contracts of operation and maintenance. It makes available the money required for procurement of materials and equipment.

Human Resources Department: This department works on appointment of human resources to work in all specialties related to management and operation. It applies policies and procedures that keep up the rights of employees.

Laboratory and Blood Bank: This department undertakes lab investigations of patients seeking medical care in the hospital and primary care clinics.

Medical Maintenance and Engineering: Medical Maintenance and Engineering Department is responsible for keeping operable condition of hospital facilities and equipment. It supports workshops, including workshops of air-conditioning, electricity, plumbing, steel works, and joinery and facilitate daily operations of maintenance of such facilities.

Medical Records Department: This department is involved in keeping and organizing medical records (files) of outpatients and inpatients.

Patients Services Department: It provides services directly related to welfare of patients and facilitate procedures and requirements of their referral to the hospital. This unit coordinates, prepares, and arranges reservations and admissions to patients inside various medical departments.

Pharmacy: This department is responsible for providing patients with medicines prescribed by specialist physicians and provision of services corresponding to applicable drug precautions and professional regulations.

Physiotherapy Department: It provides services to specialized clinic inpatients who need physiotherapy. The professionals help people who are physically or mentally impaired, including temporary disability after medical treatment.

Public Relations Department: Public relations department deals with media coverage of the activities of hospitals, including visits, meetings, conferences, etc. It also prepares booklets, leaflets, and posters with the aim of educating people on various aspects of health.

Social Work Department: This unit is involved in providing assistance and help to some patients and their families who have social, psychological, or financial problems.

Transportation Department: This department is involved in providing transportation services to hospital's employees and transporting patients to other hospitals and health centers.

X-Ray Department: The X-ray unit support the medical staff in diagnosing the disease and treatment using advanced X-ray equipment, including Computed tomography (CT) scan, digital X-ray, endoscopy, and ultra-sound scanning equipment.

Professionals

The following professionals are available in a hospital:

1. Doctors
2. Nurses
3. Pharmacist
4. Medical Lab Technician
5. X-Ray Technician
6. Physiotherapist
7. Dietician
8. Medical Social Worker

Supporting Staff

1. Administrator
2. Manager
3. Receptionist
4. Cook
5. Cook Helper

6. Data Entry Operator
7. Washerman
8. Attendant
9. Sanitary Worker
10. Security Guard

Exercise

1. Visit nearby hospitals and study the various departments and their functions. Some of the Departments are listed here in the table. You may add some more departments, depending on the size of the hospital.

S.No.	Name of Department	Functions
1.	Outpatient Department (OPD)	
2.	Inpatient Department (IPD)	
3.	Medical Department	
4.	Nursing Department	
5.	Paramedical Department	
6.	Pathology Department	
7.	Physical Medicine and Rehabilitation Department	
8.	Operation Theatre	
9.	Pharmacy Department	
10.	Radiology Department	
11.	Dietary Department	

2. Visit nearby hospitals and study the roles and functions of the following medical professionals and fill the table given below:

S.No	Professional	Functions
1.	Doctors	
2.	Nurses	
3.	Pharmacist	
4.	Medical Lab Technician	
5.	X-ray Technician	
6.	Physiotherapist	
7.	Dietician	
8.	Medical Social Worker	

3. Visit nearby hospitals and study the roles and functions of the supporting staff and fill the table given below:

S.No.	Staff	Functions
1.	Administrator	
2.	Manager	
3.	Receptionist	
4.	Cook	
5.	Cook Helper	
6.	Data Entry Operator	
7.	Washerman	
8.	Attendant	
9.	Sanitary Worker	
10.	Security Guard	

Assessment

I Short Answer Questions

a) What are the basic roles and functions of a hospital?

_____

_____

_____

b) Name any three medical professionals in a hospital.

_____

_____

_____

c) Name any five medical departments of a hospital.

_____

_____

_____

_____

d) Name any five supportive staff in a hospital.

_____

_____

_____

II. Fill in the Blanks

1. The meaning of latin word hospes is _____
2. The meaning of latin word 'hospitalis' is_____

3. Orthopaedic hospitals deals with problems related with_____
4. ENT stands for_____Nose and Throat.
5. Medical College is an example of_____hospital.
6. Pediatrics department deals with medical case of_____, children and adolescents.

Checklist for Assessment Activity

Use the following checklist to see if you have met all the requirements for assessment activity.

Part A

Differentiated between the following:

1. Medical and nursing care.
2. General hospital and specialized hospital.
3. Specialized hospital and isolation hospital.
4. Outpatient and inpatient.

Part B

Discussed in class the following:

1. Why do we need hospitals?
2. What are the roles and functions of a hospital?
3. What are the characteristic features of a good hospital?

Part C

Performance Standards

The performance Standards may include, but not limited to:

Performance Standards	Yes	No
Identify the various types of hospitals.		
Demonstrate the knowledge of roles and functions of various departments in a hospital.		
Demonstrate the knowledge of roles and functions of medical professionals and supportive staff in a hospital.		

Session 2: Describe the Role of Supporting Departments in a Hospital

Relevant Knowledge

In this session, you will learn about the roles and functions of various supporting departments/sections of a hospital and the equipment and accessories used by the staff members.

Kitchen / Dietary Department

The dietary department has the responsibility for ensuring quality food service to the client and according to their needs and doctor's prescription. This department is responsible for teaching the client with regard to proper diet after their discharge from the hospital.

One dietary staff member is required for about 15 to 20 patients. Dietician, food storekeeper, cook, cook helpers and dish washer are engaged in this Department. One dietician can look after up to 200 beds. One cook, one cook helper, one bearer and one dishwasher are sufficient to prepare and serve meals for 20 patients / staff members. The food service department functions round the year.

Cleaning and Laundry Department: The cleaning and laundry department takes care of the entire linen of the hospital. It has the following functions:

1. Washing the dirty linen
2. Repairing the torn linen
3. Replacing the condemned linen

One laundry operator can wash linen of 25 to 30 beds. One laundry orderly can assist in washing the linen of 50 – 60 beds. The appointment of Laundry Supervisor, Mechanic and Clerk and the number employed depend upon the size of the hospital. One supervisor, one laundry mechanic and one laundry clerk are required in each shift. One washerman can take care of 150 to 200 kg linen per day. Each operation in Operation Theatre produces 7 to 8 kg of soiled linen. Each delivery in labour room produces 7 to 8 kg of soiled linen. Each ward patient produces about 5 to 6 kg of bed linen.

Housekeeping

The housekeeping department has the main function of keeping the hospital clean. Housekeeping incharge should know the simple facts about bacteriology. Sanitation incharge should also be able to train his employees in cleaning techniques that prevent the spread of disease, since all cleaning is meant to remove organic matter in which bacteria is harboured. A sanitary attendant should be allocated a work-area of 1200 to 1500 square feet, keeping in view the policies of the hospital, the degree of cleanliness required, and the electrical cleaning equipment used such as scrubbing machine, vaccum cleaner, etc. For a nursing unit one sanitary attendant over 10 beds

is recommended on the basis of round the clock service. In Intensive Care Unit (ICU) and Critical Care Unit (CCU) of higher degree of cleanliness is required, therefore more sanitary attendants are provided there. One supervisor to supervise 10 sanitary attendants is generally kept. For a 300 bed hospital, there should be 01 sanitation incharge, 04 supervisors and 40 sanitary attended (30 sanitary attendants for the daily requirement and 10 sanitary attendants as leave reserve).

out Patient Department

Most hospitals now have an Out Patient Department (OPD). The advantage of OPD is that much of the investigative and curative work can be done there without admitting the client, thus curtailing medical expenses. The scope of OPD includes the following:

1. Consultation and investigation
2. Preventive and promotive healthcare
3. Rehabilitation services
4. Health education
5. Counselling

OPD is located at the entrance of the hospital. It should be separate from inpatient area connected to it. It should have easy access to Medical Record Department (MRD), X-ray, Laboratory, Pharmacy and Billing counter. It should be easily accessible to Casualty, but should be separated from Casualty.

Laboratories

The following laboratories are usually found in a hospital:

- **Bacteriology Laboratory:** It conducts tests related to bacteria and the toxins produced by them.
- **Clinical Biochemistry Laboratory:** It is involved inconducting tests and research in biochemical basis of diseases and clinical trials of new drugs.
- **Haematology Laboratory:** It is responsible for making haemoglobin determinations, coagulation time studies, red and white cell counts and special blood pathology studies for anaemia, leukaemia, etc.
- **Parasitology Laboratory:** it studies the presence of parasites and the cyst and ovas of the parasites that are found in the faeces.
- **Blood Bank:** It has the responsibility for collecting and processing all blood used in the hospital for transfusions. It makes studies on newborn infants who may have haemolytic disease and does antibody studies on the prenatal client.

Laboratory services must be available day and night and the laboratories must be located on the ground floor. Laboratory services should be easily accessible to the outpatients.

Administration

The administration of the entire hospital cannot be vested on the administrator alone. It is the collective responsibility of the medical professionals and supporting staff. The administrative staff, depending upon the size of the hospital, comprises the administrator, the assistant administrator, the business manager and the departmental heads.

Purchasing Department

The purchasing department has the responsibility for purchasing all supplies and equipment for the hospital.

Finance and Accounts Department

The Finance and Accounts Department has the responsibility for collecting the money, paying for the supplies and equipment, handling all records pertaining to hospital finance, keeping records of assets and liabilities and assist in budget preparation. The business manager is responsible for the functions of the department and the accountants help the business manager.

Exercise

Visit a hospital and write a function of the following departments of a hospital.

S.No.	Name of Department	Functions
1.	Dietary Department	
2.	Laundry	
3.	Out Patient Department	
4.	Laboratories	
5.	Administration	

Assessment

I. Short Answer Questions

a) Describe three services provided by the Medical Record Department.

_____

_____

b) Write a note on hospital housekeeping.

_____

_____

_____

_____

_____

_____

c) Describe two services provided by outpatient Department.

_____
_____
_____
_____

d) Suppose you are a General Duty Assistant, and a patient approaches you, to direct him to the laboratory for blood test. What will you do?

_____
_____
_____
_____
_____

II. Fill in the blanks

1. The blood test is done in_____Laboratory
2. A sanitary attendant should be allocated a work-area of _____ square feet, keeping in view the policies of the hospital.

Use the following checklist to see if you have met all the requirements for assessment activity:

Part A

Differentiated between the following:

1. Roles and functions of various types of laboratories.

2. Roles and functions of administration and accounts.

Part B

Discussed in class the following:

1. Why a hospital needs so many departments and sections?

2. Why different types of laboratories should be established in a hospital?

3. Why utmost cleanliness and sanitation should be maintained in a hospital?

Checklist for Assessment Activity

Use the following checklist to see if you have met all the requirements for assessment activity:

Part A

Differentiated between the following:

1. Roles and functions of various types of laboratories.
2. Roles and functions of administration and accounts.

Part B

Discussed in class the following:

1. Why a hospital needs so many departments and sections?
2. Why a different types of laboratories should be established in a hospital?
3. Why utmost cleanliness and sanitation should be maintained in a hospital?

Part C

Performance Standards

The performance Standards may include, but not limited to:

Performance Standards	Yes	No
Demonstrate the knowledge of roles and functions of supporting departments in a hospital.		
Demonstrate the knowledge of roles and functions of various types of laboratories in a hospital.		
Draw a chain of command in the various department and laboratories of hospital		

Session 3: Classify Hospitals

Relevant Knowledge

In this session you will learn about the classification of hospitals. Hospitals have been classified, on the basis of different criteria, which include size or bed capacity, ownership or control, objectives of the hospitals.

1. **Size or Bed Capacity:** The size of a hospital is determined by the number of beds it has. Based on the bed capacity, hospitals can be categorized as follows:
    1. Small hospital - Bed capacity of 100 or less.
    2. Medium size hospital - Bed capacity of 101 to 300 beds.
    3. Large hospital - Bed capacity of 301 to 1000 beds.

The bed strength of different types of hospitals is as follows:

1. Teaching and Referral Hospital - 200 to 300
2. District Hospital - 50 to 200
3. Taluka Hospital - 50 to 200
4. Community Health Centre - 30 to 50

5. Primary Health Centre - 6 to 10

2. **ownership or Control:** On the basis of ownership or control, hospitals are classified into the following:

    1. **Government or Public Hospital**: These are run by Central or State Governments or local bodies on non-commercial lines. These are funded by the government. They can be general or specialized hospitals.

    2. **Non-Government Hospitals:** They are supported by client's fees, donations, or endowments (relating to funds or property donated to institutions or individuals). Non-government hospitals are further classified as either proprietary or non-profit organization. Proprietary hospitals are owned by individuals, partnerships or corporation whose dividend is shared by the partners. They can be categorized as follows:

        a) **Voluntary Hospitals**: These are established and incorporated under the Societies Registration Act 1860 or Public Trust Act 1882 or any other Central or State Governments. They are run by public or private funds on a non–commercial basis.

        b) **Private Nursing Homes / hospitals:** They are generally owned by an individual doctor or group of doctors and they are run on a commercial basis.

        c) **Corporate Hospitals:** They are public limited companies formed under the Companies Act and are run on commercial lines. They can be either general or specialized or both.

3. **objectives of the Hospital:** Based on the objectives, hospitals can be classified into the following:

    1. **Teaching-Cum-Research Hospital:** The primary objective is training of doctors and research. Healthcare is secondary. For example, Medical Colleges.

    2. **General Hospitals:** These hospitals offer treatment for common diseases. The main objective is to provide medical care, whereas teaching is secondary.

    3. **Specialized Hospitals:** These hospitals concentrate on giving medical and nursing care in a specific area, e.g. ophthalmic hospital, heart hospital, etc.

    4. **Isolation Hospital:** This is a hospital in which client requiring isolation or clients suffering from communicable diseases are taken care of.

    5. **Rural Hospitals:** They are located in rural areas permanently staffed by at least one or more physicians, which offer inpatient accommodation and provide medical and nursing care for more than one category of medical discipline.

4. **Systems:** According to the system of medicine, hospitals are classified into the following:

    1. **Long – Term Care Hospitals or Chronic Care Hospital:** In this client stays in

the hospital for a long time and the disease may be of chronic nature (Chronic Disease is a long-lasting condition that can be controlled but not cured), e.g. leprosy (leprosy is an infectious disease that causes severe, disfiguring skin sores and nerve damage in the arms and legs), cancer, etc.

2. **Short – Term Care Hospital or Acute Care Hospital:** In this the client stay in the hospital for a short period only and the disease is usually of acute nature, e.g. pneumonia gastroenteritis.

5. **Management:** According to the management, hospitals are classified as follows:

1. **Hospitals Run by Union Government / Government of India:** These hospitals are funded by Government of India. For example, hospitals run by railways and army.
2. **Hospitals Run by State Government:** These are hospitals which are funded and administered by State Government.
3. **Hospitals Run by Local Bodies:** E.g. hospitals run by municipality, Zila parishad, Panchayat, etc.
4. **Autonomous Bodies:** These hospital have the operational responsibility to the hospital governing board, usually granted by the government. The management authority with respect to personnel administration and budget administration rests with the governing board for more efficient performance and more discretion by management to achieve it.
5. **Private Hospital:** A private hospital is owned by a profit company or a non-profit organisation and privately funded through payment for medical services by patients themselves.
6. **Voluntary Hospital:** It is a hospital supported in part by voluntary contributions and under the control of a local, usually self-appointed board of governors.

Levels of Medical Care

It is customary to describe healthcare service at 4 levels, viz., primary, secondary, tertiary and quaternary care levels. These levels represent different types of care involving varying degree of complexity.

1. **Primary Care Level:** Primary care providers may be doctors, nurses or physician assistants. Primary healthcare is the first level of contact with individuals, the family and community, where “primary health care” (essential healthcare) is provided. As a level of care, it is close to the people, where most of their health problems can be dealt with and resolved. It is at this level that healthcare will be most effective within the context of the area‘s needs and limitations.

   In the Indian context, primary health care is provided by the Primary Health Centres (PHCs) and their sub-centres through multipurpose health workers, village health guides and trained Dais. Besides providing primary healthcare, the village “healthcare centres” bridge the cultural and communication gap between the rural people and organized health sector.

2. **Secondary Care Level:** The next higher level of care is the secondary (intermediate) healthcare level. At this level more complex problems are dealt with. In India, this kind of care is generally provided in district hospitals and community healthcare centres which also serve as the first referral level. Secondary care simply means you will be taken care of by someone who has more specific expertise. Specialists focus either on a specific body system or on a specific disease or condition. For example, if there is problem with heart and its pumping system, then the client need to consult a Cardiologist. If someone is suffering from problems related to hormone systems and some specialize diseases like diabetes or thyroid disease, then he/she needs to consult an Endocrinologist.
3. **Tertiary Care level:** The tertiary level is a more specialized level than secondary care level and requires specific facilities and attention of highly specialized health workers. This care is provided by the regional or central level institutions. For example, highly specialized equipment and expertise is required for coronary artery bypass surgery.
4. **Quaternary Care:** Quaternary care is an extension of tertiary care and is more specialized and highly unusual, therefore every hospital or medical center cannot offer quaternary care. It includes experimental medicine and procedures.

Exercise

1. Visit any 3 hospitals and fill the information in the table given below:

   Name of Hospital:

Type of Ownership	
Management	
Objectives of Hospital	
System of Medicine	
Bed Capacity	
Level of Healthcare	
No. of Doctors	
No. of Nurses	
No of General Duty Assistant	

2. Visit any 03 hospitals and fill the information in the table given below:

Name of Hospital	Number of Beds	Type of Hospital (small, medium, large)

Assessment

I Fill in the Blanks

1. A highly specialized hospital comes under_____level.
2. The bed strength of the Community Health Centre is_____.

Checklist for Assessment Activity

Use the following checklist to see if you have met all the requirements for assessment activity:

Part A

Differentiated between the following:

1. Corporate hospital and voluntary hospital.
2. Hospital and Community Health Centre.

Part B

Discussed in class the following:

1. How hospitals are categorized based on bed strength?
2. How hospitals are categorized based on levels of medical care?

Part C

Performance Standards

The performance Standard may include, but not limited to:

Performance Standards	Yes	No
Identify the type of hospital based on bed strength, speciality and level of medical care		

Session 4: Describe the Role of and Function of General Duty Assistant/Paitent Care Assistant

Relevant Knowledge

In this session, you will learn about the role and functions of General Duty Assistant/ Patient Care Assistant in a hospital.

The purpose of healthcare services is to effectively meet the total health needs of the community. Hospitals play a major role in maintaining and restoring the health of the community. The main functions of the GDA are as follows:

- **Promotive Functions:** Health promotion is the process of enabling people to

increase control over health related problems and to improve health. It is not directed against any particular disease, but is intended to strengthen the host (client) through a variety of approaches such as health education, environmental modification, nutritional support, lifestyle and behavioural changes. The GDA has to educate the client on various aspects of health and nutrition. The GDA provides information about health, treatment or therapy and lifestyle changes.

- **Preventive Functions:** It includes supervision of pervasion of normal pregnancies and childbirth, supervision of normal growth and development of children, control of communicable diseases, prevention of prolonged illness, provision of health education services, occupational health services and preventive health checkup.
- **Diagnostic Functions:** The GDA helps the patient and health professional in inpatient services involving medical, surgical and other specialties and specific diagnostic procedures.
- **Emergency Services functions:** The GDA assists in emergency services required for dealing with accidents, natural disasters, epidemics, etc. as per the instruction of the healthcare team members.
- **Caregiver:** A GDA meets the client's holistic healthcare needs to promote health and the healing process. The GDA provides treatment for specific disease and applies measures to restore the emotional and social well–being of the client.
- **Communicator:** A GDA is required to communicate effectively with doctors, nurses and other staff members, therefore he/she should possess good communication skills.
- **Curative Functions:** It includes treatment of all ailments/diseases with the help of healthcare team members. The GDA assist nurse in treatment of ailments/ diseases.
- **Rehabilitative Functions:** It include activities related to physical, mental and social rehabilitation. The GDA ensures that the client returns to a maximal state of normal functioning.

Exercise

I. Short Answer Questions

a) How GDA can assist in prevention of spread of diseases?

_____

_____

_____

b) What is the role of GDA in discharging the following functions by a hospital:

1 Promotive_____

2. Curative_____

_____

3. Rehabilitation_____

_____

4. Preventive_____

_____

Checklist for Assessment Activity

Use the following checklist to see if you have met all the requirements for assessment activity:

Part A

Differentiated between the following:

1. Preventive and curative role of GDA.

Part B

Discussed in class the following:

1. Why a GDA is expected to play so many role and functions?
2. How a GDA can effectively discharge various functions in a hospital?

Part C

Performance Standards

The performance Standards may include, but not limited to:

Performance Standards	Yes	No
Identify the role and functions of GDA in a hospital		
Draw a diagram describing the various role and functions of GDA		

Session 5: Understanding the Qualities of a General Duty Assistant/Patient Care Assistant

Relevant Knowledge

In this session, you will learn about the qualities of General Duty

Assistant/ Patient Care Assistant in a hospital.

A health team consists of a group of people who use their skills to assist a client or his family. The personnel commonly included in the health team are Physicians, Nurses, Dietitian, Physiotherapist, Occupational Therapist, Paramedical Technologist, Pharmacist, Social Worker, etc.

The qualities that a GDA should possess to effectively deliver the services include the following:

- The GDA must be loyal, honest, dependable and willing to carry out the Doctor‘s

and Nurse‘s orders in the matter of treatment and care of the client. Due respect should be given to the Doctor’s and Nurse’s.

- The GDA should respect Nurses and give them full cooperation. The problems experienced by the GDA in their work should be solved through Nurses. The Nursing Superintendent has a complete control and responsibility of the Nurses and the GDA.
- Any GDA who is senior even by a day must be treated with respect.
- Client is the most important person in the hospital. The client in the hospital experiences new and unfamiliar surroundings. Due to hospitalization, the client faces many physical and psychological problems. A GDA has to see that clients feel homely. A GDA should help the client in adjusting to the new environment and regaining health. A GDA should be sympathetic and understanding. He/she should create confidence in the client about the care taken by the healthcare team. GDA should help in establishing a good nurse–client relationship. He/she should always speak of the client by his name and not by the bed number or disease. He/she should be pleasant, cheerful and courteous, but should not become too informal. GDA should not discuss personal affairs or whisper anything in front of client. GDA should not have any personal reservations regarding caste, creed, etc.

Qualities of a General Duty Assistant

A General Duty Assistant has to provide service which calls for certain special qualities. A GDA is required to provide personal care to the client, which include hygiene, bathing, shampooing, shaving, nail trimming, dressing, skin care and so on. In order to provide effective personal care, a GDA should possess the following qualities:

- Love for the fellow men
- Honesty and loyalty
- Discipline and obedience
- Alertness
- Technical competence
- Dependability and adjustability
- Ability to inspire confidence
- Resourcefulness, Ability to manage time and resources
- Courtesy and dignity
- Sympathy and Empathy
- Intelligence and common sense
- Patience and sense of humour
- Good physical and mental health
- Generosity
- Gentleness and quietness

Exercise

1. Write any three essential roles and functions of GDA in the table given below:

Roles and functions of GDA in supporting the healthcare team member
1.
2.
3.

Assessment

a) List five qualities of a General Duty Assistant.

_____

_____

_____

Checklist for Assessment Activity

Use the following checklist to see if you have met all the requirements for assessment activity.

Part A

Differentiated between the following:

1. Sympathy and empathy.
2. Physical and mental health.
3. Gentleness and generosity.

Part B

Discussed in class the following:

1. Why is it important for a GDA to be pleasant and courteous to his/her client?

2. What are those qualities that a GDA should possess while dealing with patient?

Part C

Performance Standards

The performance Standards may include, but not limited to:

	Performance Standards	Yes	No
	Demonstrate the knowledge of developing and maintaining good relationship with people.		
	Demonstrate the ability to provide personal care.		

UNIT – 2

INTRoDUCTIoN To CARE PLAN AND CARE oF PATIENTS

Learning outcomes

Unit 2	INTRoDUCTIoN To CARE PLAN AND CARE oF PATIENTS			
	Duration: 25 Hours			
Location Classroom/ Hospital/ Clinic	**Learning outcome**	**Knowledge Evaluation**	**Performance Evaluation**	**Teaching and Training Method**
	● Identify the role of General Duty Assistant in implementing Care Plan.	● Describe the objectives of care plan. ● Describe the role of General Duty Assistant in preparation and implementation of care plan.	● Enlist the various steps involved in formulating acare plan. ● Identify role of General Duty Assistant in formulating care plan.	**Interactive Lecture:** ● Role of General Duty Assistant in preparation and implementation of Care Plan. ● **Activity:** Visit a nearby hospital and study the care plan prepared for the patient care.
	● Demonstrate the knowledge of roles of General Duty Assistant in feeding a patient.	● Describe the characteristics of a healthy person. ● Describe the various types of diets and their importance with regard to nutrition.	● List the various types of diet available in the hospital / home. ● Demonstrate the knowledge of feeding and assisting patients with their meals, according to their needs and in a safe and dignified manner.	**Interactive Lecture:** ● Feeding Patients. ● **Activity:** Visit a hospital and observe the type of diets being served to different patients. ● Observe the procedure adopted by the General Duty Assistant / Nurses in feeding patients. ● Prepare a diet chart for feed ing a patient.
	● Identify and report vital signs.	● List the important vital signs of the body. ● Describe the abnormal vital signs.	● Demonstrate the knowledge of taking temperature reading pulse rate and measuring blood pressure. ● Fill the form for documenting information on vital signs.	**Interactive Lecture:** ● Identify and Reporting vital signs. ● **Activity :** Visit to nearby hospital and observe the

Learning outcomes

				● procedures and recording being done for vital signs.
	● Prepare bed according to the patient's need.	● Describe the features and importance of various types of bed in a hospital. ● Describe the various steps of bed making. ● Describe the role and function of General Duty Assistant in bed making.	● Demonstrate the knowledge of articles used in bed making. ● Demonstrate the steps involved in in making of open bed.	**Interactive Lecture :** ● Preparing Bed for Patients. ● **Activity :** Visit a nearby hospital and learn the steps for making bed.
	● Position the patient according to the need.	● Enlist various position of patients ● Describe therapeutic position. ● Describe the importance of Fowler's position.	● Identify the various position of a patient. ● Demonstrate the procedures for changing the patient's position. .	**Interactive Lecture:** ● Positioning the patient. ● **Activity :** Visit a nearby hospital and learn the various position in which patients are placed on the bed

Session 1: Describe the Role of General Duty Assistant Patient Care Assistant in Care Plan

Relevant Knowledge

In this session, you will learn about the role of General Duty Assistant (GDA)/Patient Care Assistant (PCA) in the implementation of a "Care Plan". A Care Plan outlines the care to be provided to an individual. It is a set of actions that the GDA will have to implement to support patient care. The terms Plan of Care and Care Plan are used interchangeably. The Care Plan provides a systematic method of individualized care that focuses on the patient's response to an actual or potential alteration in health, based on patient's assessment. This plan reflects all disciplines involved in providing care to the patient. It communicates pertinent patient problems or needs, outlines appropriate medical and nursing interventions to meet these needs, and documents the effectiveness of those interventions in the medical record.

Characteristics of a Care Plan

The purpose of a care plan is to guide all who are involved in the care of a person and to provide appropriate treatment in order to ensure optimal outcome during the stay in hospital. The care plan process is dynamic and ever changing as the patient's identified needs change and/or problems are resolved. It involves the following processes:

1. Collection and recording health status.
2. Analysis of health status data.
3. Priorities and actions for care.
4. Implementation of Care Plan.
5. Evaluation of Care Plan.

A Care Plan has the following characteristics:

1. It is holistic and is based on the clinical judgment of the nurse using assessment data.
2. It is based upon identifiable nursing diagnoses (actual, risk or health promotion), which include clinical judgments about individual, family or community's experiences / responses to actual or potential health problems.
3. It focuses on client-specific nursing outcomes that are realistic for the care recipient.
4. It includes nursing interventions which are focused on the risk factors.
5. It relates to the future course of actions.

objectives of Care Plan

The various objectives of a care plan includes the following:

- To provide each patient an individualized plan of care so that the patient can be cured at the earliest.
- To determine priorities for action.
- To provide for effective communication among the nursing staff and professionals from other disciplines.
- To encourage patient participation in planning patient's care and taking decisions about patient healthcare.
- To provide for continuity of care, planning for further actions, and goal setting.
- To assist in documentation of the patient's response and recovery.

Steps in Administration of Care Plan

The five steps involved in the planning and implementation of Care Plan are as follows:

Step 1 : Assessmentw

A systematic collection and analysis of history and health data about a client is the first step in delivering nursing care and preparing a Care Plan. Assessment includes not only physiological data, but also psychological, socio-cultural, spiritual, economic, and life-style of the client.

All patients shall be assessed on admission, and a written Care Plan should be developed and initiated within 8 hours of admission. The Care Plan shall reflect those standards of care applicable to that individual. Care plan preparation process may vary with hospital.

The admission assessment provides evidence of the patient's history. The Care Plan, along with the history/assessment reflects integration of information from various disciplines involved in care of the patient and provides for identification of individualized patient needs/problems and care prioritization. It helps in setting long term and short term realistic measureable goals with target date for resolution of problem.

Step 2 : Problem Identification

It is the clinical judgment about the client's response to actual or potential health conditions or needs. It reflects not only that the patient is in pain, but that the pain has caused other problems, such as anxiety, poor nutrition, and conflict within the family or has the potential to cause complications.

Step 3: Planning Interventions

Based on the assessment and problem Identification, the GDA sets measurable and achievable short-and long-range goals for the patient that might include moving from bed to chair, maintaining adequate nutrition by giving smaller and more frequent meals, resolving conflict through counselling or managing pain through adequate medication. A GDA can assist the nurse in making care plan.

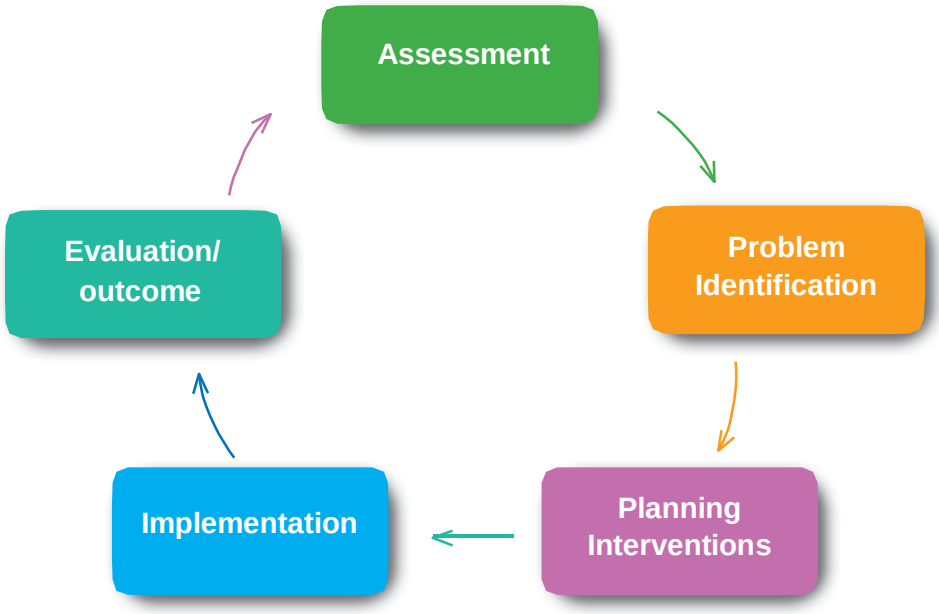
Step 4: Implementation

When care is implemented according to the care plan, continuity of care for the patient during hospitalization and in preparation for discharge needs is assured. Care is

documented in the patient's record and the progress in resolving the health problem is continuously monitored.

Step 5: Evaluation / outcomes

Both the patient's status and the effectiveness of the nursing care must be continuously evaluated, and the Care Plan should be modified as per the need of the patient.



Exercise

1. Visit a hospital nearby and see the care plan prepared for a patient. The format of the care plan will look something like the one given below:

Nursing Care Plan

Name:_____Area:_____Date:

Year/Section:_____Clinical Instructor_____Group No._____

Assessment	Nursing Diagnosis Explanation of the Problem	Scientific	Planning	Interventions	Rationale	Evaluation
1. Subjective				1. Dependent		
				2. Independent		
2. Objective				3. Interdependent		

2. Suppose you have a grandmother who is 80 years old and takes medicine in the forenoon and evening. She is suffering from diabetes and hypertension and needs medication on time before the meals. Consult a doctor and prepare a Care Plan for your grandmother. Collect the sample of Care Plan being implemented in the hospitals.

Assessment

I. Short Answer Questions

a) What is Care Plan?

_____

_____

_____

b) What are the characteristics of Care Plan?

_____

_____

_____

c) What are the objectives of formulating a Care Plan?

_____

_____

_____

II. Fill in the blanks

1. The Care Plan is a_____process.
2. _____ is first step of preparing a Care Plan.
3. The Care Plan is formulated within _____ hours of patient admission.

Checklist for Assessment Activity

Use the following checklist to see if you have met all the requirements for assessment activity.

Part A

Differentiated between the following:

1. Care plan and care management
2. Care plan and care standards

Part B

Discussed in class the following:

1. What are the advantages of a care plan?
2. What are the most essential data elements for preparing an effective care plan?

Part C

Performance Standards

The performance Standards may include, but not limited to:

Performance Standards	Yes	No
Demonstrate the knowledge of various steps of care plan.		
Identify the role of GDA in formulating care plan.		

Session 2: Feed a Patient

Relevant Knowledge

All staff of a hospital should understand the fundamental importance of nutritional care and treatment of patients. In this session, you will learn about the various aspects of nutrition and the role of General Duty Assistant in feeding a patient.

Nutrition

Nutrition is a basic human need that changes throughout the life cycle and along the wellness-illness continuum. Food provides nutrition for the body and mind. Eating is not only a necessity in life, but it may also be a source of pleasure, a pass time, a social event, or an integral component of a medical treatment. Because nutrition is vital for life and health, and a poor nutrition can seriously decrease one's level of wellness, therefore it is a vital component of nursing. Nutrition is the science of food and nutrients and of the process by which an organism takes them in and uses them for producing energy to grow, maintain function and renew itself. Nutritional status is the condition of the body resulting from the use of essential nutrient available to it. A client's nutritional status may be good, fair or poor depending on the intake of dietary essentials, on the relative need for them and on the body's ability to use them. A good nutritional status is essential for normal growth, development and functions of the organs, or normal reproduction, growth and maintenance, for optimal activity and working efficiency, for resistance to infection and for repair of injury.

Factors affecting Nutritional Status

A person's dietary pattern is usually slow to change because food habits are deeply rooted in the past. Food choice has always been influenced by non-nutritional factors including religious taboos, ethnicity, gender roles and social status.

Characteristics of a Well-Nourished Person

1. Normal weight and height for age, body build up and developmental stage.
2. Adequate appetite.
3. Active and alert.
4. Firm and healthy skin.
5. Erect posture with straight arms and legs.
6. Well – developed muscle without excess body fat.
7. Normal schedule of tooth eruption and healthy teeth and gums.
8. Normal urinary and bowel elimination patterns.
9. Normal sleep patterns.
10. Normal haemoglobin, haematocrit and serum protein levels.
11. Absence of diet related abnormalities.

Signs of Poor Nutrition

- **Hair:** Thin, coarse, lacking luster, breaks easily.
- **Skin:** Excessive bruising, bleeding, pressure sores, poor wound healing, lack of growth.
- **Skeletal:** Motor weakness, poor posture, painful joints, bowed legs, increase in bone fracture.
- **Mental:** Confusion, motor weakness.

Types of Diets Served in Hospital

A good diet must have all four food groups. The four food groups are as follows:

- Dairy Products: cheese, milk, paneer, ice cream, etc.
- Meat: chicken, fish, red meat, etc.
- Fruits and vegetables: apples, pears, lettuce, tomatoes, orange juice and potatoes.
- Grains: Chapati, bread, cereals.

Full Diet

It is a regular, well–balanced and normal diet. It is either vegetarian or non–vegetarian. It is served for clients who do not require any modification.

Soft Diet

It is full diet but consisting of food substances that are easy to chew and digest. Some clients, particularly the aged clients cannot take food which require chewing or the food that is difficult to digest. A soft diet is enjoyed by these clients. A soft diet may include double boiled rice, soft – cooked pulses and dals, steamed fish, poached eggs, custards, sliced bread, sieved cooked vegetables, cooked or ripe bananas, dalia, etc.

Liquid Diet

Liquid diets must be used for clients who are unable to take or tolerate solid food. It consists of clear fluids (non – residual diet) and full fluid diet (residual fluid diet).

- **Clear Fluid Diet:** Clear fluids are used when there is a marked intolerance to foods and roughage. These include clear tea, weak black coffee, clear soups, whey water, strained fruit juices, soda water and other aerated beverages. Such fluids have particularly no food value, but can help to maintain the fluid balance of the body. Calories can be added by the use of sugar or glucose. Clear fluid diet should be used only for a short time since the clients may develop deficiency symptoms.

- **Full Fluid Diet:** Full fluid diet is given when the total nutrition of the client has to be maintained by fluids for a considerable time. This is necessary when a client is unable to swallow solid food or if the client is fed by tube feeding. Milk forms the basis of the diet. To this can be added egg in the form of egg flips, thin custard, etc. to supply calcium, protein vitamin A, and iron calories can be made up from carbohydrate in the form of starch in thin cereal preparation or by adding sugar or glucose. Adequate amounts of vitamins can be supplied in the form of medical concentrates. Salt should be added unless it is restricted.

Special Diets

Many pathological conditions bring about changes in the body process which necessitate addition or omission of certain nutrients in the diet, as part of the treatment. Some of the special diets served in the hospitals are as follows:

- High caloric or low caloric diet.
- High protein or low protein diet.
- Low salt or salt free diet.
- Sippy's diet (a bland diet for the treatment of peptic ulcer consisting mainly of measured amounts of milk and cream, farina, and egg taken at regular hourly intervals for a specified period of time).

Diet in Sickness

Diet is as important as medicine in the treatment of disease, a modification in the diet or in the nutrients can cure certain diseases. For example, a client suffering from peptic ulcer needs a bland diet for his recovery. Similarly, a salt free can reduce the blood pressure in a client with hypertension. When a person is ill, the food intake becomes a problem. The GDA's responsibility with regard to the nutrition of the patient can be analyzed into four major areas:

1. Assisting clients to obtain needed nourishment, either through feeding or assisting with eating e.g. tube feeding, feeding a helpless client to eat his food, etc.
2. Motivating client to eat.
3. Assisting clients to obtain needed nourishment by proper planning of the diet.
4. Assisting clients with special problems about therapeutic diets, etc.
5. Helping a client to accept a salt free diet.
6. Refer charts of dietician.

Principles Involved in Diet Therapy

Diet therapy refers to the usage of food and nutrition in creating the best possible life for you through health and wellness. Some illnesses can be effectively managed by altering your diet, and diet therapy is sometimes used to effectively manage health and wellness. Some of the principles involved in the diet therapy are as follows:

1. The diet must be planned in relation to changes in metabolism, occurring as a result of disease.
2. The diet must be planned according to the food habits of the client, based on culture, religion, socio-economic status, personal references (likes and dislikes),

physiological and psychological conditions, hunger, appetite, as well as their conditions.

3. Changes in the diet should be brought gradually and adequate explanation should be given to the client for the changes made.
4. In short and acute illness, food should not be forced because as appetite is very poor and the client may soon recover the normal appetite, but in prolonged illness it is essential to provide adequate food to prevent wasting of tissues and proper wound healing.
5. Whatever the diet prescribed, a variety of food should be selected for the diet.
6. Small and frequent feeds are preferred to the usual three meals.
7. Hot food should be served hot and cold foods should be served cold.

General Instructions for GDA in Feeding Patients

1. The diet of every patient in the hospital should be planned according to his need, metabolic changes, food habit and socio-economic status.
2. Prepare the patient or resident for the meal.
3. Wash or ask the person to wash hands and face. Give time for mouth care. Make sure that the clothes are clean. Ask if the patient would like to use the bathroom, commode, urinal or bed pan before eating the food.
4. All food, regardless of who prepares it or serves it, should be presented to the patient in an appealing way.
5. Food and drink should be served at the correct temperature for patient preference and meets safety standards at all times.
6. Create a pleasant environment for the patient before serving the food.
7. Room should be well ventilated during the meals. Attractive surroundings and a cheerful atmosphere add to the enjoyment of a meal by the patient. The environment should be free from anything offensive to the senses, such as noise, disorder, confusion, dirt unpleasant odours, excessive heat or cold, etc.
8. The patient should be undisturbed by treatments dressings, visitors, doctor's rounds, loud cries of other patients during their meal times.
9. Dressings and painful treatments are finished at least 1 hour before meal is served.
10. Offer bedpans or urinals about half an hour before serving meals so that the patients are not disturbed during meal.
11. Strong emotions of fear, worry, anger, depression, homesickness, pain, etc. interfere with digestion by inhibiting the flow of saliva, gastric and intestinal juices. Eating should be postponed until a strong emotion on excitement of the patient subsides.
12. Playing a soft music adds to the pleasure of the patient and can serve as appetizer to the meals.

13. The patient should be placed in a comfortable position in bed or out of bed.
14. The bed patients should be able to see the food or they should be told what food is served. The patients on tube feeding may be given a chance to taste the food so as to arouse the appetite and for their satisfaction.
15. Physical exhaustion can be relieved by allowing to rest before a meal.
16. If the GDA sits near the patients and engages in the conversation, it makes the meal a pleasure experience for the patient.
17. Meals should be served in clean and covered containers.
18. Care is to be taken to prevent transmission of diseases through the food and drinks.
19. Provision should be made to wash hands and the face of the patient before and after the meals.
20. Remember that a sick person has a poor appetite and poor liking for food. Small and frequent feeds are appreciated. Never force the food.
21. The food should be cut into small pieces (mouth-sized) and is served one piece at a time, one food after another.
22. The patient should have time to chew and taste the food. Never make hurry to the patient.
23. The patient should be encouraged to take a variety of foods.
24. Fluid requirement should be met to prevent dehydration. Fluids are given at the end of a meal or in between the meals.
25. Keep the patient in a sitting position for at least 30 minutes after the meal so they do not choke.
26. The quantity of food that is left in the tray, the food that is vomited if any, any signs of allergies developed after taking food should be reported to the Dietician by the GDA so that appropriate and timely action can be taken.
27. The GDA should record and report the quantity of food the patient has eaten.

Exercise

1. Visit a hospital and observe the procedure adopted by the General Duty Assistant/ Nurse in feeding patients.
2. Visit near by hospital and observe the type of diets being served in the hospital to different patients. Fill the name of food in the table given below for any three patients.

Patient No. (Code No.)	Diagnosis of the Patient	Type of Diet	Name of Food

Assessment

I. Short Answer Questions

a) What is the difference between nutrition and nutrient?

_____

_____

_____

b) What are the characteristics of a healthy person?

_____

_____

_____

II. State whether the statement is true or false

a) A good appetite is a sign of good health_____.

b) A balanced diet is an essential part of recovery from medical treatment_____.

c) Culture, ethnic, and religious restrictions of food must be considered while planning a diet of a patient_____.

d) A patient should be kept in a sitting position for at least 30 minutes after the meal _____.

e) Patients should be fed during strong emotions of fear, worry, anger, depression, homesickness or pain _____.

Checklist for Assessment Activity

Use the following checklist to see if you have met all the requirements for assessment activity:

Part A

Differentiated between the following:

1. Soft diet and liquid diet.
2. Clear fluid diet and full fluid diet.

Part B

Discuss in class the following:

1. What are the special needs of patients with respect to nutrition and meals?
2. What are the precautions to be taken while serving meals to a patient?

Part C

Performance Standards

The performance Standards may include, but not limited to:

Performance Standards	Yes	No
Identify the various types of diet available in the hospital/home.		
Demonstrate the knowledge of feeding and assisting patients with their meals, according to their needs and in a safe and dignified manner.		

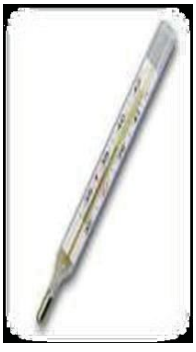
Session 3: Identify Vital Signs and Report

Relevant Knowledge

Vital signs are measurements of the body's most basic functions. Vital signs are a basic component of assessment of physiological and psychological health of a client. In this session, you will learn about the various vital signs and how to identify them. Body temperature, pulse, respiration and blood pressure are the four vital signs of life. Assessment of vital signs allows the GDA to identify specific life threatening conditions and plan the needed GDA interventions. It also helps a GDA to detect changes in the client's health status.

Vital signs / cardinal signs in a normal healthy individual remain constant. Vital signs are useful in detecting or monitoring medical problems. Vital signs can be measured in a medical setting, at home, at the site of a medical emergency, or elsewhere.

Temperature



Normal human body temperature, also known as normothermia or euthermia, depends upon the place in the body at which the measurement is made, and the time of day and level of activity of the person. Different parts of the body have different temperatures. Rectal and vaginal measurements, or measurements taken directly inside the body cavity, are typically slightly higher than oral measurements, and oral measurements are somewhat higher than skin temperature.

The commonly accepted average core body temperature (taken internally) is 37.0 °C (98.6 °F). The typical oral (under the tongue) measurement is slightly cooler at 36.8° ± 0.4°C (98.2° ± 0.7°F), and temperatures taken in other places (such as under the arm or in the ear) produce different typical numbers. Although some people think of these numbers as representing the normal temperature, a wide range of temperatures has been found in healthy people.

Preparations for taking temperature

a) Wash hands.

b) Select appropriate equipment.

c) Introduce self and explain the procedure to the patient.

d) Shake the glass thermometer to lower the chemical to < 960 or inserts the tip of an electronic thermometer into a disposable probe cover.

Taking oral Temperature

a) Place the tip of the thermometer in posterior sublingual pocket.

b) Maintains the thermometer in the mouth for at least 3-5 minutes.

c) Remove and wipe the thermometer with tissue from

the stem towards the bulb in order to read the calibrations accurately.

d) Read the temperature at eye level and rotate slowly until chemical level is visualized then read to the nearest tenth of a degree or the digital display on an electronic thermometer.

e) Record the reading.

Taking a Rectal Temperature

a) Place the patient in a Sim's position with upper knee flexed. Drape the patient to expose only anal area.

b) Wear gloves.

c) Prepare the thermometer.

d) Lubricate the tip of the thermometer with water or vaseline.

e) With dominant hand, grasp thermometer. With other hand, separate the buttocks to expose anus.

f) Instruct the patient to take a deep breath. Insert the thermometer or probe gently into anus: infant - ½ inch, adult- 1½ inches. If resistance is felt, do not force insertion.

g) Hold in place for 1 minutes.

h) Wipe secretions off glass thermometer with tissue and dispose of tissue.

i) Read temperature same as oral.

j) Documents the reading

Taking an Axillary Temperature

a) Gain access to the axillary area (remove gown from one side).

b) Make sure axillary area is dry; if necessary, pat dry.

c) Place the thermometer or probe into center of axilla. Fold patient's arm straight down and place arm across the patient's chest.

d) Leave the thermometer in place, usually 5 minutes or until signal heard.

e) Remove and read the calibration accurately.

Conclusion

a) Shake thermometer down and clean the reusable thermometer with soapy cold water or alcohol wipe in a twisting motion.

oR

Push ejection button and discard disposable cover on electronic thermometer.

b) Return to appropriate storage container.

c) Wash hands.

d) Record the temperature on a piece of paper for future reference.

e) Assist patient to comfortable position.

f) Record the temperature on appropriate form.

Pulse

The pulse rate is a measurement of the heart rate, or the number of times the heart beats per minute. As the heart pushes blood through the arteries, the arteries expand and contract with the flow of the blood. Taking a pulse not only measures the heart rate, but also can indicate the following:

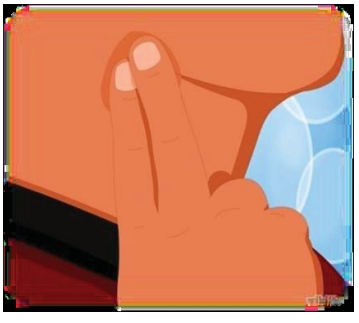
a) Heart rhythm.

b) Strength of the pulse.

The normal pulse for healthy adults ranges from 60 to 80 beats per minute. The pulse rate may fluctuate and increase with exercise, illness, injury, and emotions. Females aged 12 years and older, in general, tend to have faster heart rates than do males. Athletes, such as runners, who do a lot of cardiovascular conditioning, may have heart rates near 40 beats per minute and experience no problems.

As the heart forces blood through the arteries, feel the beats by firmly pressing on the arteries, which are located close to the surface of the skin at certain points of the body. The pulse can be found on the side of the lower neck, on the inside of the elbow, or at the wrist. For most people, it is easiest to take the pulse at the wrist. If you use the lower neck, be sure not to press too hard, and never press on the pulses on both sides of the lower neck at the same time to prevent blocking blood flow to the brain. When taking pulse, the following steps are followed:

a) Using the first and second finger tips, press firmly but gently on the arteries until you feel a pulse.



b) Begin counting the pulse when the clock's second hand is on the 12.

c) Count pulse for 60 seconds (or for 15 seconds and then multiply by four to calculate beats per minute).

d) When counting, do not watch the clock continuously, but concentrate on the beats of the pulse.

Respiration Rate

The respiration rate is the number of breaths a person takes per minute. The rate is usually measured when a person is at rest and simply involves counting the number of breaths for one minute by counting how many times the chest rises. Respiration rates may increase with fever, illness, and with other medical conditions. When checking

respiration, it is important to also note whether a person has any difficulty breathing.

Normal respiration rates for an adult person at rest range from 12 to 16 breaths per minute.

Blood Pressure

Blood pressure, measured with a blood pressure cuff and stethoscope by a GDA or other healthcare provider, is the force of the blood pushing against the artery walls. Each time the heart beats, it pumps blood into the arteries, resulting in the highest blood pressure as the heart contracts. One cannot take his or her own blood pressure unless an electronic blood pressure monitoring device is used. Electronic blood pressure monitors may also measure the heart rate or pulse.

Two numbers are recorded when measuring blood pressure. The higher number or systolic pressure, refers to the pressure inside the artery when the heart contracts and pumps blood through the body. The lower number or diastolic pressure, refers to the pressure inside the artery when the heart is at rest and is filling with blood. Both the systolic and diastolic pressures are recorded as “mm Hg” (millimeters of mercury). This recording represents how high the mercury column in an old-fashioned manual blood pressure device (called a mercury manometer) is raised by the pressure of the blood.

High blood pressure or hypertension directly increases the risk of coronary heart disease (heart attack) and stroke (brain attack). With high blood pressure, the arteries may have an increased resistance against the flow of blood, causing the heart to pump harder to circulate the blood.

High blood pressure for adults is defined as 140 mm Hg or greater systolic pressure 90 mm Hg or greater diastolic pressure. These numbers should be used as a guide only. A single elevated blood pressure measurement is not necessarily an indication of a problem. Multiple blood pressure measurements should be taken over for several days or weeks before making a diagnosis of hypertension (high blood pressure) and initiating treatment. A person who normally runs a lower-than-usual blood pressure may be considered hypertensive with lower blood pressure measurements than 140/90.

Aneroid Monitor

The aneroid monitor is less expensive than the digital monitor. The cuff is inflated by hand by squeezing a rubber bulb. Some units even have a special feature to make it easier to put the cuff on with one hand. However, the unit can be easily damaged and become less accurate. Because the person using it must listen for heartbeatswith the stethoscope, it may not be appropriate for the hearing-impaired.

Digital Monitor

The digital monitor is automatic, with the measurements appearing on a small screen. Because the recordings are easy to read, this is the most popular blood pressure measuring device. It is also easier to use than the aneroid unit, and since there is no need to listen to heartbeats through the stethoscope, this is a good device for hearing-impaired patients. One disadvantage is that body movements or an irregular heart

rate can change the accuracy. These units are also more expensive than the aneroid monitors.

Before Measure Blood Pressure:

- Place the patient for rest for three to five minutes without talking before taking a measurement.
- Place the patient on a comfortable chair, with back supported and legs and ankles uncrossed.
- Place the patient still and place your arm, raised level with heart, on a table or hard surface.
- Wrap the cuff smoothly and snugly around the upper part of arm. The cuff should be sized to fit smoothly, while still allowing enough room for one fingertip to slip under it.
- Be sure that the bottom edge of the cuff is at least one inch above the crease in elbow.

It is also important, when taking blood pressure readings, that the date and time of day are recorded along with the reading.

Alteration in Vital Signs

Vital Signs	High	Low
Temperature	Hyperthermia	Hypothermia
Pulse	Tachycardia	Bradycardia
Respiration	Tachypnoea	Bradypnoea
Blood Pressure	Hypertension	Hypotension

Exercise

1. Visit a nearby hospital and observe the procedures adopted for observing vital signs

Fill the information in the table given below for any five patients

Name of the Patient/Code No.	Temperature	Pulse	Respiration	Blood Pressure

Assessment

I. Short Answer Questions

a) What is vital sign?

_____
_____
_____

b) List the important vital signs of the body.

_____
_____
_____
_____
_____

I. Fill in the Blanks

1. The normal body temperature is_____.
2. Pulse and blood pressure are related to_____functioning.
3. The respiration rate is the_____a person takes per minute.

Checklist for Assessment Activity

Use the following checklist to see if you have met all the requirements for assessment activity:

Part A

Differentiated between the following:

1. Psychological and physiological health.
2. Pulse rate and heart rate.
3. Hyperthermia and hypothermia.
4. Hypertension and hypotension.

Part B

Discussed in class the following:

1. What is the role of GDA in checking the vital signs?
2. What are abnormal vital signs?

Part C

Performance Standards

The performance standards may include, but not limited to:

Performance Standards	Yes	No
Demonstrate the knowledge of taking temperature.		
Demonstrate the knowledge of reading pulse rate.		
Demonstrate the knowledge of taking blood pressure.		

Session 4: Make Bed for Patient

Relevant Knowledge

In this session, you will learn how to make bed for the client/patient. Comfort is a basic need of all human being. Every individual require basic comfort like mattress, pillow, good environment, comfort devices for a good sleep. Bed making is the procedure adopted for making beds using scientific principles of nursing so as to provide maximum comfort of the patient.

Bed Making

The purpose of bed making is as follows:

1. To provide the clients with a safe and comfortable rest and sleep.
2. To give the ward a neat appearance.
3. To adapt to the needs of the client and to be ready for any emergency or critical condition of illness.
4. To economize time, material and effort.
5. To prevent bedsores.
6. To observe the client, for the presence of bedsore, oral hygiene, client's ability of self care, etc.
7. To promote cleanliness.
8. To establish an effective GDA – client relationship.
9. To provide active and passive exercise to the clients.
10. To help the relatives to learn to care for the sick at home.

Principles involved in Bed Making

1. Micro-organisms are found everywhere on the skin, on the article used by the client and in the environment. The nurse takes care to prevent the transference of micro-organisms from the source to the new host by direct or indirect contact or prevent the multiplication of the micro-organisms.
2. A safe and comfortable bed will ensure good sleep and would thus help to prevent several complications in bedridden clients e.g. bedsore, foot drop, etc.
3. Good body mechanism maintains the body alignment and prevents fatigue.
4. Systematic ways of functioning saves time, energy and material.

General Instructions for Bed Making

1. Wash hands before and after the procedure.
2. Do not expose the client unnecessarily.
3. Protect the client from draught.
4. Do not cover the client's face while placing the linen.
5. Do not mix clean linen with soiled linen.

6. Never place the woolen blanket next to the client‘s body except the bath blanket and never allow the client to lie down on the mackintosh without lining.
7. Shake the linen gently.
8. Do not let the linen touch your body or uniform.
9. Maintain good body mechanics.
10. Make the bed firm, smooth and unwrinkled.
11. Practice economy of time, energy and material.
12. Arrange the bed clothes in such a way that they allow freedom in the day time but come over the shoulders at night and the top linen loose over the feet.
13. The cotton mattress should be turned, aired and made free of lumps and creases.
14. Make adaptations according to weather, climatic difference, individual needs, customs and habits of our clients.
15. Always get extra help to make a bed for helpless client’s and prevent them from falling. The side rails may be used to prevent them falling if extra help is not available.
16. Keep a reasonable distance from the face of the client to prevent cross infection
17. Inspect the cot, mattress and pillow daily for the presence of vermin‘s and destroy them if found on the bed.

Preparation

The usual articles in the client’s unit are:

- Cot
- Mattress and pillow
- Chair or stool
- Bedside table or locker
- Mackintosh
- Blanket

Articles needed for the compete change of linen are:

- Mattress cover
- Two Sheets (Bottom and top sheets)
- Draw sheet
- Pillow Case
- Counterpane

Additional Articles Needed	Purpose
Laundry Bag	To discard the soiled linen and to send the soiled linen to the laundry.
Dusters	One dry duster to dust the mattress and sheets. One damp duster to dust the furniture.
A bowl with antiseptic lotion	To carbolise the furniture.

Different Types of Bed

1. Open bed
2. Closed bed
3. Admission bed
4. Occupied bed
5. Cardiac bed
6. Fracture bed
7. Amputation bed
8. Blanket bed

Preparation of Client and the Unit

1. Explain the procedure to the client to win the cooperation and confidence of the client.
2. Explain how the client can assist.
3. Screen the client to provide privacy.
4. Move furniture away from the bed and move the bed away from the wall.
5. Lower the backrest, if any.
6. Place the chair at the foot end of the bed and place the clean linen on it in the reverse order of use.
7. Place the laundry bag within the reach.

Stripping and Remaking an open Bed

1. Wash hands.
2. Remove the pillow and place it on the seat of the chair with the open end away from the entrance.
3. Remove the top linen.
   a) Loosen the top linen stating from the head end and proceed to the foot end.
   b) Remove the sheets one by one, by folding them into one. Bring the lower third over the middle third and fold the upper third over the lower third. Fold at the centre towards you, so that it falls in six. Shake them gently, and place it over the back of the chair if it is to be reused or put it in the laundry bag.
   c) Remove the bedspread, blanket and top sheet separately, holding the open end towards the floor.
4. Fold the draw sheet.
5. Bring the opposite end to the middle of the bed and the near end over it and thus fold them into three. Place it over the chair.
6. Roll the mackintosh and place it over the chair.
7. Remove the bottom sheet folding it into six.
8. Remove the mattress cover if soiled.
9. Turn the mattress.
10. Dust the mattress with a dry duster.

11. Clean all the surface of the furniture using a damp duster dipped in antiseptic lotion. Dust the cleaner areas first and then the less clean area.
12. Pull the mattress to the top. Put on the mattress cover. If it is loose on the mattress, the excess can be under the mattress.
13. Make the base of the bed on one side of the bed.
    a) When placing the linen on the bed and when tracking them under the mattress, face in the direction of the work and move with the work rather than twisting the body and over reaching.
    b) When tucking the linen under the bed, separate the feet slightly apart (one leg forward and the other leg backward) an flex the knees instead of the back.
    c) Accomplish a task with each movement, e.g. when placing the bottom sheet on the bed begin at the foot end, smooth to the head end, trunk the head end under the mattress.
    d) Place the bottom sheet on the middle of the mattress. Making sure that the central longitudinal crease in the longitudinal axis of the bed. Unfold it and spread it straight over the mattress allowing 30 to 37cm to tuck under the top of the mattress and leaving just enough at the foot end to tuck in.
    e) Tuck it securely at the top in the near side. Make a mitered corner. Tuck at the foot end, secure the corner as before. Tuck the sheet along the sides.
    f) Place the mackintosh approximately 37 cm from the head end and truck it along the side.
    g) Place the draw sheet over the mackintosh, keeping it about 25 cm from the top of the mattress.
    h) Go to the opposite side and tuck the sheets in the same manner.
14. Return to the side of the bed first made. Place the top sheet with the wrong side out. Unfold it with the top edge even with the top of the mattress.
15. Place the blanket over the top sheet 15 to 20 cm below from the top of the mattress.
16. If the bedspread is used place it over the blanket with the outer side out.
17. Make the head end of the linen. Cuff the bedspread under the blanket and then bring the top sheet over the spread as second cuff. Make sure that it will reach upto client's chin.
18. Tuck at the foot end altogether or separately and make mitre corners allowing the sides to hand free or tucked according to the hospital routine.
19. Put the pillow case on the pillow and place the pillow at the head end. The open end away from the entrance. While putting on the pillow case the pillow should not touch the GDA uniform.

After Care of Client

1. Help the client to get into the bed. One corner of the top linen is folded back to let the client in. Cover the client with the top linen.
2. Any comfort devices used by the client should be replaced.

3. See that the whole unit is clean and tidy before you leave the unit. Ensure the following:

a) The beds in a general ward should be arranged in a straight line.

b) The bedpans, urinals, sputum cups, kidney trays, etc. lying in the client's unit are taken away, emptied, cleaned and put back in their proper places.

c) The windows and doors are dusted to keep them dust free.

d) The cupboards are dusted and the articles are arranged in order and according to the use.

e) The water flasks is washed and filled with clean water.

f) The flower vases are arranged and replaced.

g) The washing sinks if provided in the unit are clean.

4. Send the laundry bag with the soiled linen to the laundry if stains are present on the sheets. Remove them by appropriate methods before it is sent to the laundry.
5. If there are any blankets, put them in the sun and disinfect before they are stored in the cupboard.
6. The duster is soaked in antiseptic lotion to disinfect it. Rinse it with clean water and put to dry.
7. Record the observations made on the client.

GDA Responsibility in Bed Making

1. Check the doctor's order for specific precautions regarding the movement and positioning of the client.
2. Assess the client's ability for self care.
3. Check the furniture and linen available in the client's unit.
4. Assess the number of clean linen needed.
5. Assess the articles needed for the comfort of the client e.g. blankets, backrest etc.
6. Change the linen.

Exercise

1. Visit a nearby hospital and see the various comfort devices used. Record the procedure adopted for bed making in the hospital.

Assessment

I. Short Answer Questions

a) What is the purpose of bed making?

_____

_____

_____

b) What are the different types of bed?

_____

_____

_____

c) Describe the responsibility of GDA in bed making.

_____
_____
_____
_____

d) Enumerate the steps involved in making of open bed.

_____
_____
_____
_____

Checklist for Assessment Activity

Use the following checklist to see if you have met all the requirements for assessment activity:

Part A

Differentiated between the following:

1. Open and closed bed
2. Occupied and unoccupied bed

Part B

Discussed in class the following:

1. Why training is needed for bed making?
2. What are the precautions to be taken while shifting a patient?

Part C

Performance Standards

The performance standards may include, but not limited to:

Performance Standards	Yes	No
Demonstrate the knowledge of articles used in bed making.		
Demonstrate the knowledge of bed making.		

Session 5: Demonstrate Patient Positioning

Relevant Knowledge

One of the basic procedures that a General Duty Assistant/Nursing performs most frequently is that of changing the patient's position. Any position, even the most comfortable one, will become unbearable for a patient after a period of time. In this session, you will learn about the procedure adopted for positioning the patients as per the need. Reasons for Changing Patient's Positions The following are the reasons for changing a patient's position on the bed:

1. It helps in promoting comfort and relaxation.
2. It relieves pressure on the diaphragm.
3. It improves gastrointestinal function.
4. It improves respiratory function.
5. It allows for greater lung expansion.
6. It prevents deformities and pain.
7. It stimulates circulation of blood.
8. It helps in giving a range of motion exercises for relieving from stress.

Shearing of skin occurs when skin is dragged across a hard surface. The deep layers of the skin are torn by the resistance of being dragged, which in turn may lead to skin breakdown and ulceration. To prevent the shearing of skin and infection, position of the client is changed frequently. Friction and excoriation can disturb the skin integrity, which in turn can cause infection.

Therapeutic positions are used to promote comfort of the client. Proper turning and positioning allows the healthcare personnel to make clients as comfortable as possible, prevent contractures and pressure sores, and facilitates diagnostic tests or surgical intervention and make portions of the client's body available for treatment or procedures. While positioning clients, three factors must be remembered: pressure, friction and shear force.

Common positioning postures and their brief description are given in the table below:

Prone	Face down
Supine	Lying on back
High Fowler's	Head of the bed elevated (300 – 900)
Semi Fowler's	Head of the bed elevated (300 – 450)
Dorsal recumbent	Supine with legs flexed in an elevated position
Knee – chest	Client rests on his knees and chest
Trendelenburg	Supine with head lower than feet
Lateral	Side – lying position
Sim's lateral (semi prone left lateral position)	Between prone and side – lying position

Regardless of the specific position, general principles of body mechanics must be utilized in changing any position. The following points must be remembered:

1. Maintain proper body alignment.
2. Support all body parts.
3. Avoid pressure especially over bony prominences by adequately padding these areas.
4. Use pillow, splints, foot boards and foam protectors which are helpful in maintaining the position.

Prone Position

The client lies flat on the abdomen with head turned to one side. The head rests on a pillow. One or both arms rest in a comfortable way either beyond the head or at the sides of the head.

Uses

1. Assess the hip joint.
2. Assess the posterior thorax.
3. Position the client with injuries, burns and surgeries of the back.
4. Give comfort.
5. Relive pressure from pressure sore prone areas by providing a change of position.
6. For clients after anesthesia to prevent aspiration of saliva, mucus and blood.

Contraindication

1. Clients with respiratory or spinal problems.
2. Clients after abdominal surgery.

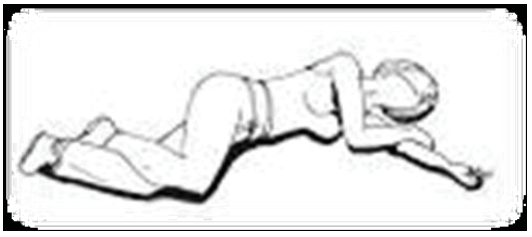
Supine/Dorsal / Horizontal Recumbent Position

The client lies flat on back with legs extended and knees slightly flexed. Supine is horizontal position. Pillows may be used under the head, knees and calves to raise heels off the mattress: cotton rings at the elbow and heels, air cushion under the buttocks to take off the pressure and thereby prevent pressure sores. In bedridden clients, a foot rest is used to prevent the foot drop.

Uses

1. For comfort of the client.
2. Assessment of vital signs.
3. Physical examination of head, neck, anterior thorax and checking peripheral pulses.
4. After surgeries involving the anterior portions of the body.

Dorsal Elevated or Semi – recumbent Position



Client lies in the bed with two or more pillow which may be arranged in armchair fashion to support the shoulders, arms and elbows. Additional comfort may be provided by means of pillow under the knees and foot support.

Uses

1. Clients in convalescence period.
2. Clients with minor respiratory diseases.

Lateral or Side–Lying Position

The client lies on the side with weight on his hips and shoulder. Pillows support and stabilize uppermost leg, arm, head and back. In the position the trunk is at right angle to the bed. To increase the base of support and comfort, one or both legs are bent and both arms are extended in front of the body. Because the body weight is borne on the shoulders and hips, the semi-prone or the semi-supine position is preferred. A pillow under the head supports the head, a pillow at the back gives support to the back, a pillow in front supports the arms and abdomen, a pillow in between the knees takes the weight off the upper leg.

Uses

1. To relieve pressure on bony prominences of the back and sacral region.
   Contraindication
2. Not to be used after hip replacement and other orthopedic surgery.

Left Lateral Position

In this lateral position, the client is placed on the left side, with one pillow under the head.

Uses

1. For giving enemas.
2. For inserting suppositories.
3. To take rectal temperature.
4. For performing rectal examination.

Fowler's Position

This is a more erect position, in which an effort is made to maintain the position of the client in sitting posture as nearly upright as possible. In this, the client's head is raised to 80°– 90°. This position can be maintained by means of a back rest and additional pillows. The arms should be supported on pillows so that client sits with arms supported in an arm

chair fashion. An air cushion under the buttoks prevents the pressure over the sacral areas. The knees may be raised over knee pillow or a bolster to prevent the client from slipping.

Uses

This position improves cardiac output, promotes ventilation and eases eating, talking and watching TV.

1. To relieve breathing difficulty (dyspnoea).
2. To relieve tension on the abdominal sutures.
3. To help in the draining of the abdominal cavity.
4. To relax the large muscles of the back and thighs.

This position gives the client a sense of well – being and makes it easier for self care.

Contraindication

1. Not to be used after brain or spine surgery

Precautions

Change of position is important to prevent circulation from getting sluggish and development of thrombosis and pulmonary embolism. The chance of thrombosis and embolism is increased when knee pillows are used for a long period due to pressure on the blood vessels.

Exercise

1. Visit a nearby hospital and observe the various positions in which patients are placed on the bed.

Assessment

a) What is therapeutic position?

_____

_____

_____

b) List out various positions of patients.

_____

_____

_____

c) What are the uses of Fowler's position?

_____

_____

_____

Checklist for Assessment Activity

Use the following checklist to see if you have met all the requirements for assessment activity.

Part A

Differentiated between the following:

1. High Fowler and Semi-Fowler Positions.
2. Lateral or Side–Lying Position and Left Lateral Position.

Part B

Discussed in class the following:

1. Why position of patient's should be changed frequently and as per need?
2. What are the precautions to be taken while changing the positions of patient's?

Part C

Performance Standards

The performance standards may include, but not limited to:

Performance Standards	**Yes**	**No**
Identify various positions used in a hospital.		
Demonstrate the knowledge of changing the patient's position.		

UNIT – 3

STERILIZATIoN AND DISINFECTIoN

Learning outcomes

Unit 3	STERILIZATIoN AND DISINFECTIoN			
	Duration: 20 Hours			
Location Classroom/ Hospital/ Clinic	**Learning outcome**	**Knowledge Evaluation**	**Performance Evaluation**	**Teaching and Training Method**
	● Describe the diseases caused by microorganism .	● What is disease ● What is the process of infection due to microbes. ● What is pathogen. ● What are the three vertices of the epidemiological triangle. ● Differentiate between different types ofmicroorganisms.	● Demonstrate the knowledge of common places of the body were microbes are commonly found. ● Identify the common places in the hospital with highest rate of infection ● Identify the factors affecting the occurrence and prevention of disease causing microorganisms.	**Interactive Lecture:** ● The disease causing microorganisms. ● **Activity:** Visit a nearby hospital and discuss with the medical professionals about the common causes of diseases.
	● Demonstrate the knowledge of common human disease s and their casual agents.	● State the common diseases. ● Enlist the names of bacteria and viruses causing diseases in human.	● Differentiate between bacteria, virus, fungi and parasites. ● Differentiate the knowledge of human diseases caused by the Bacteria, Virus, Fungi and Parasites.	**Interactive Lecture:** ● Human disease and their causal agents. ● **Activity:** Visit a hospital and discuss with doctors about the common human diseases, their source of infection of infection and casual agents.
	● Demonstrate the knowledge of the role of professionals and staff prevention and control of Hospital Acquired Infections.	● Describe the meaning of Hospital Acquired Infection (HAI) ● Describe the activities to be performed by DGAfor controlling	● Enlist the common places of infection in the hospital. ● Demonstrate the knowledge of causes of HAI.	**Interactive Lecture:** ● Prevention and control of Hospital Acquired Infection ● **Activity:** Visit to nearby hospital and

Learning outcomes

				study the activities performed by various professional in prevention of microorganism or hospital acquired infection.
	● Perform disinfection of ward and equipment.	● State the difference between antiseptic, sterilization and disinfectant. ● Differentiate between the physical agents and chemical agents used in disinfection and sterilization.	● Perform physical method of sterilization. ● Enlist the common disinfectant used the hospital. ● Enlist the chemical used for disinfecting glassware	**Interactive Lecture :** ● Disinfecting ward and equipment. ● **Activity:** Visit a nearby hospital and study the various method of sterilization and disinfection.

Session 1: Describe the Disease Causing Microorganisms

Relevant Knowledge

In this session, you will learn about the disease causing microorganisms. A microorganism (from the Greek: mikrós, “small” and organismós, “organism”) or a microbe is an organism that is microscopic (too small to be seen by the naked human eye). The study of microorganisms is called microbiology, a subject that began with Anton van Leeuwenhoek’s discovery of microorganisms in 1675, using a microscope. A microbe, which is another word for microorganism is a tiny individual living thing that is way too small to be seen by the human eye alone. The only way this tiny organism can be seen is by using a microscope. This is why microbes are often called “microscopic organisms.” These organisms are found almost everywhere you can think of here on Earth i.e. in air, water, soil, rock, plants, animals and the human body.

Microorganisms are very diverse. They include bacteria, fungi, archaea, and protists, etc. Some microbiologists also include viruses, but others consider these as non-living. Most micro-organisms are unicellular (single-celled), but this is not universal, since some multicellular organisms are microscopic.

Microorganisms live in all parts of the biosphere including water, soil, springs, ocean, and air. Pathogenic microbes are harmful, since they invade and grow within other organisms, causing diseases that kill people, animals and plants. Some microbes can live in very hot temperatures, and others can live in the freezing cold. Some need oxygen to grow and stay alive, while others survive without it. In the table given below, a list of some microbes that are found in our bodies are given. The number of microorganisms living on and in us is about ten times higher than the number of cells that make up our entire body.

Microbes in Healthy Human Body	
Microbes found in	
Ear (outer)	Aspergillus (fungus)
Skin	Candida (fungus)
Small Intestine	Clostridium
Intestine	Escherichia vaginails
Stomach	Lactobacillus
Urethra	Mycobacterium
Nose	Staphylococcus aureus
Eye	Staphylococcus epidermidis
Mouth	Streptococcus salivarius
Large Intestine	Trichomonas hominis (protozoa)

What are disease causing micro-organisms?

How many times we have been told to wash our hands before sitting down at the dining table or before taking food? By washing our hands with soap and water we clean our hands and make them micro-organism free. We take baths, cook our food and even cover our mouths when we cough and sneeze to prevent the spread of those tiny dirty particles (the disease causing microbes) that could make us sick.

While some microbes play an important part in our daily lives by keeping us healthy, others are nothing but bad ones. These “bad-ones” are called disease-causing microbes and can make humans, animals and plants sick by causing infection and disease.

Most microbes belong to four major groups: bacteria, viruses, protozoa or fungi. Disease-causing microbes can also be called pathogens, germs or bugs and are responsible for causing infectious diseases.

Bacteria (singular: bacterium)

Bacteria are unicellular microorganisms. They are typically a few micrometers long and have many shapes including curved rods, spheres, rods, and spirals. Bacteria are prokaryotic and unicellular beings. Bacteria have simple organization. They have an external cell wall, plasma membrane, Circular Deoxyribonucleic Acid (DNA) within the cytoplasm and ribosomes for protein synthesis. The bacterial cell wall is made of peptidoglycans. Some bacteria are encapsulated, i.e., they have a polysaccharide capsule outside the cell wall.

According to their necessity of oxygen, bacteria are classified into anaerobic (those that survive without oxygen) and aerobic (those that do not survive without oxygen). Obligate anaerobes are those living beings that do not survive in the presence of oxygen. For example, the bacteria Clostridium tetani, agent of tetanus, is an obligate anaerobe. In superficial wounds, it is common to use hydrogen peroxide to expose anaerobic microorganisms to oxygen and kill them.

Bacteria reproduce by binary fission. Some bacteria, however, present a kind of sexual reproduction (transformation, transduction or conjugation) with a combination of genetic material from different individuals. Sexual reproduction occurs when bacteria incorporate genetic material into other bacteria of the same species; the inserted genetic fragment then becomes part of the genetic material of the second bacteria. This kind of reproduction can happen by means of transformation, transduction or conjugation.

Pathogenic bacteria have characteristics, known as virulence factors that help them to parasite their host. Some bacteria have fimbriae, cilium-like structures that attach the bacterial cell to the host tissue. There are bacteria specialized in intracellular parasitism. Other bacteria secrete toxins, molecules that cause disease.

There are also bacteria that cause diseases. Some human diseases caused by bacteria are tuberculosis, pertussis, diphtheria, bacterial meningitis, gonorrhea, syphilis, bubonic plague, leptospirosis, cholera, typhoid fever, trachoma, tetanus, anthrax.

Fungi

Fungi are like plants made up of many cells. They are not called plants because they

cannot produce their own food from soil and water. Fungi are eukaryotic, so they possess a true nucleus. Bacteria are prokaryotic, meaning they do not possess a true nucleus. Viruses can not reproduce on their own, so they are sometimes just classified as infectious biological agents.

Virus

A virus (from the Latin noun virus, meaning toxin or poison) is a sub-microscopic particle (ranging in size from 20–300 nm) that can infect the cells of a biological organism. A virus may have a spiny outside layer, called the envelope. Viruses have a core of genetic material, but no way to reproduce it on their own. Viruses infect cells and take over their reproductive machinery to reproduce.

The main viral diseases transmitted by respiratory secretions (sneezes, cough) and by saliva drops are flu, mumps, smallpox (variola, already considered eradicated), rubella, measles, Severe acute respiratory syndrome (SARS). Main viral diseases transmitted through blood or sexual contact are Acquired Immuno Deficiency Syndrome (AIDS), hepatitis B, hepatitis C, Human Papillomavirus (HPV), ebola hemorrhagic fever. Main viral diseases transmitted by animal vectors are rabies, dengue fever, yellow fever. Some viral diseases transmitted by fecal-oral route, including contaminated food, is Hepatitis A.

Flu is a disease caused by the influenza virus, a highly mutant DNA virus. Due to the high mutation rate of the virus, that forms many different strains, flu always presents epidemic features in affected populations and people may have several flu episodes during life.

Rabies, also known as hydrophobia, is a viral disease. It is found in dogs, cats, bats and other wild mammals. The transmission to humans occurs through the saliva of contaminated animals, mainly through bites.

Smallpox is a viral infection like measles. Smallpox is transmitted by respiratory secretions, saliva and objects in contact with contaminated patients. The disease is characterized by the appearance of numerous vesicles on the skin of the face, trunk and limbs that can suppurate and form crusts; smallpox complications can lead to death. Measles is transmitted by saliva drops and respiratory secretions too.

Bacteria, fungi and viruses are all very different from one another. A big difference is what cell coating they have surrounding their cells. Bacterial cell walls are made of peptidoglycan, fungal cell walls are made of Chitin and Viruses have a protein coat around their genetic material. Bacteria and fungi are all extremely small, requiring a microscope to view them. All bacteria and viruses operate as single cell, whereas fungi can be unicellular or multicellular.

Bacteria form colonies containing large numbers of individuals, whereas viruses do not usually colonise areas, since they can not reproduce on their own.

Parasite

A parasite is any organism which lives inside a different organism in a symbiotic relationship in which only the parasite benefits from the symbiosis. This means that a parasite basically feeds off a host and the host suffers as a result of this. Parasites can be as small as viruses, or as big as a metre-long tapeworms.

Microbes – The ones that make us Sick

Pathogens are organisms that cause disease. They are frequently, but not necessarily micro-organisms. Whether an organism is pathogenic depends on the species with which it is in contact.

Not all micro-organisms are unicellular, and not all micro-organisms cause disease. Many micro-organisms reside in or on animals or plants without seemingly causing any harm. Indeed, in many cases the union is advantageous for both a relationship, known as symbiosis, for example, the cellulose digesting bacteria in the rumen of cattle.

It is Important to RememberThat:

- A pathogen is a micro-organism that has the potential to cause disease.
- An infection is the invasion and multiplication of pathogenic microbes in an individual or population.
- Disease is when the infection causes damage to the individual's vital functions or systems.
- An infection does not always result in disease.

Infectious diseases caused by disease-causing microbes are responsible for more deaths worldwide than any other single cause! Microbes can quickly develop new features that make them resistant to the drugs that were once able to kill them. The effects of infection by pathogenic bacteria are also variable and can include the following:

- Fever
- Inflammation
- Antibody synthesis
- Shock (only in extreme cases)
- Impaired blood clotting (only in extreme cases)

Some of the diseases caused by bacteria include tetanus, whooping cough, pneumonia, gonorrhoea, meningitis and some forms of tonsillitis.

How do Microbes Infect?

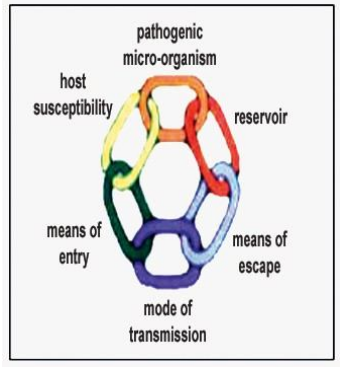
How do we actually get infected with a disease-causing microorganism? Every day we come into contact with people or animals that may be infected with disease-causing microbes. This puts us at risk

of being exposed to disease. Disease-causing microorganisms use simple tricks to enter our bodies so that they can cause disease. These germs have developed the ability to trick the human immune system and get past the body's defense system, just like a thief enters the house by breaking the lock at the door or enters through the window.

Becoming infected depends on the link between the pathogen, the environment and the host - the host being you or I. The infection method may be thought of as six different steps that all join together to form a circular chain, as shown in the figure below.

The process of infection begins with a certain disease-causing microbe being present. It is the first link in the chain.

The second link is the reservoir, the environment where the pathogen can survive. Examples of a reservoir include water, soil and inside someone who is already infected with the germ. Having a way to escape from the reservoir makes up the third link. If we are the reservoir, the pathogenic microorganism can escape when we cough or sneeze.



The fourth link of the chain is the mode of transmission from the reservoir to the host. If water is the reservoir, its mode of transmission could be our drinking water supply.

To cause infection, the pathogen must find a way inside the host. A pathogen in water would enter us if we drank the water it was in. A pathogen in the air would enter us if we inhaled it.

The final link of the chain is how susceptible the host is to infection. Depending on the germ and the disease it causes, some hosts will be easier to infect than others.

To cause an infection, microbes must enter our bodies. The site at which they enter is known as the portal of entry. There are four major portal of entry:

- Respiratory tract (mouth and nose) e.g. Influenza virus, which causes the flu.
- Gastrointestinal tract (mouth oral cavity) e.g. Vibrio cholerae which causes cholera.
- Urogenital tract e.g. Escherichia coli, which causes cystitis.
- Breaks in the skin surface e.g. Clostridium tetani which causes tetanus.

To make host ill, microbes have to:

- reach their target site in the body.
- attach to the target site they are trying to infect so that they are not dislodged.
- multiply rapidly.
- obtain their nutrients from the host.
- avoid and survive attack by the host's immune system.

The Epidemiological Triangle

The word epidemiology comes from three Greek root words: Epi-means “on, upon, befall”, Demo-means “people”, -ology-means “the study of”. So Epidemiology is literally defined as “the study of that which befalls people.” The Epidemiologic Triangle is a model that scientists have developed for understanding infectious diseases and how they spread. There are other factors relating to the host and environment which are equally important to determine whether or not disease will occur in the exposed host.

The Triangle has three corners called vertices, with agent, host and environment.

1. **The Agent:** The agent or microbe that causes the disease (the “what” of the Triangle) is the cause of the disease. When studying the epidemiology of most infectious diseases, the agent is a microbe.
2. **The Host:** Hosts or organism harbouring the disease (the “who” of the Triangle) are organisms, usually humans or animals, which are exposed to and harbour a disease. The host can be the organism that gets sick, as well as any animal carrier (including insects and worms) that may or may not get sick. Although the host may or may not know that it has acquired the disease or have any outward signs of illness, the disease does take lodging from the host. The “host” heading also includes symptoms of the disease. Different people may have different reactions to the same microbe.
3. **The Environment:** The environment or those external factors that cause or allow disease transmission (the “where” of the Triangle) is the favourable surroundings and conditions external to the host that cause or allow the disease to be transmitted.

Exercise

1. Visit a nearby hospital and discuss with the medical professionals about the common causes of diseases.
2. Visit a microbiology lab in a nearby hospital and study the following:
   - Agent, Host and Environment relationship.
   - Bacteria, Viruses, Protozoa and Fungi.
   - Pathogens and microbes.

Assessment

I. Short Answer Questions

a) What is Disease?

_____

_____

_____

b) What are the three vertices of the epidemiological triangle?

_____
_____
_____

c) What is pathogen?

_____
_____
_____
_____
_____
_____

Checklist for Assessment Activity

Use the following checklist to see if you have met all the requirements for assessment activity.

Part A

Differentiated between the following:

1. Pathogen and parasite
2. Disease and disorder
3. Microorganism and pathogen

Part B

Discussed in class the following:

1. What is the process of infection caused by a pathogen?
2. What are the different modes of transmission of microbes?

Part C

Performance Standards

The performance standards may include, but not limited to:

Performance Standards	Yes	No
Demonstrate the knowledge of differentiating between different types of microorganisms.		
Identify the factors affecting the occurrence and prevention of disease causing micro-organisms.		

Session 2: Describe the Causal Agents of Common Human Diseases

Relevant Knowledge

In this session, you will learn about the common diseases of human beings and their causal agents. There have been many attempts to define disease. Webster's Dictionary defines disease as "a condition in which body health is impaired, a departure from a state of health, an alteration of the human body interrupting the performance of vital functions". The Oxford English Dictionary defines disease as a condition of the body or some part or organ of the body in which its functions are disrupted orderanged."
A disease is a particular abnormal, pathological condition that affects part or all of an organism. Illness and sickness are generally used as synonyms for disease. A disease is associated with specific symptoms and signs. Distinction is also made between the words disease, illness and sickness which are not wholly synonymous. The term "disease" literally means "without ease" (uneasiness) – disease, the opposite of ease – when something is wrong with bodily functions. "Illness" refers not only to the presence of a specific disease, but also to the individual's perceptions and behaviour in response to the disease, as well as the impact of that disease on the psychosocial environment. "Sickness" refers to a state of social dysfunction. It is easy to determine illness when the signs and symptoms are manifest, but in many diseases the border line between normal and abnormal is indistinct as in the case of diabetes, hypertension and mental illness. The end-point or final outcome of disease is variable recovery, disability or death of the host.

Difference between Sign and Symptoms

Sign and Symptom are terms with different meanings. While symptoms are problems that a patient notices or feels, signs are whatever a physician can objectively detect or measure. For example, if a patient feels hot after fever, this is a symptom. When a physician examines the patient, touches the patient's skin and notes that it is warm, this is a sign. Fatigue is a symptom while muscle weakness is a sign of fatigue. Therefore, a symptom is a phenomenon that is experienced by the individual affected by the disease, while a sign is a phenomenon that can be detected by someone other than the individual affected by the disease.

Infectious Diseases

Infectious diseases are diseases caused by microbes that spread. There are many diseases including common cold and flu (influenza) that are infectious in nature. Infectious diseases are caused by microbes-organisms too small to be visible to the naked eye. The most common infectious disease-causing microbes are bacteria, viruses, fungi, and protozoa (a type of parasite). The diseases may be passed from person to person (for example, if someone coughs or sneezes on another person). Sometimes, the disease is passed through another medium, for example, by drinking water or eating food infected with bacteria. Sometimes, infectious diseases develop new strains that resist older treatments.

Common Human Diseases

Athlete's Foot: A contagious fungal foot infection that causes the feet to itch, blister and crack.

Autoimmune Disease: When the immune system attacks our body's own cells, tissues and organs, thinking that they are unwanted invaders.

Cancer: Any harmful growth or tumour caused by irregular and uncontrolled cell division; it may spread to other parts of the body through the lymphatic system or the blood stream.

Chickenpox: A very contagious viral infection that causes a blistery red rash.

Cholera: An acute infectious disease of the small intestine that causes frequent watery diarrhea, vomiting, muscle cramps and severe dehydration.

Chronic Lung Disease: A long-term illness that affects the function of the lungs.

Coronary Artery Disease: The build-up of cholesterol in the inside layers of the arteries.

Hepatitis A: An infection of the liver caused by a virus that is usually spread by swallowing infected food and water. It is also known as infectious hepatitis.

Hepatitis B: Is irritation and swelling (inflammation) of the liver due to infection with the hepatitist B virus (HBV). One can catch Hepatitis B through contact with the blood or body fluids (such as semen, vaginal fluids, and saliva) of a person who has the virus.

Hepatitis C: An infection of the liver caused by a virus that is usually spread by blood and blood products and sometimes through sexual contact.

Malaria: An infectious disease that is passed to humans by female mosquitoes. It affects the red blood cells and has fever, chills and sweating as its symptoms.

Measles: An acute, contagious, infectious disease caused by a virus. It usually occurs in children and causes red spots on the skin, fever and inflammation of the air passages of the head and throat.

Meningitis: Inflammation of the membrane that covers the brain and spinal cord, caused by either bacteria (bacterial meningitis) or a virus (viral meningitis). Its symptoms are fever, vomiting, intense headache and stiff neck.

Multiple Sclerosis: An autoimmune disease that affects the central nervous system-the brain, spinal cord and optic nerves. The fatty tissue that surrounds the nerves is lost in many areas leaving scar tissue behind. When the fatty tissue called myelin is missing, the nerves cannot do their job of passing signals to and fro the brain, resulting in the symptoms that are associated with this disease.

Pneumonia: Acute or chronic inflammation of the lungs.

Polio: A viral infection that attacks the nerve cells that activate the muscles, the brainstem (the base of the brain that connects with the spinal cord) and the spinal cord.

Rabies: An acute, infectious and often fatal disease that attacks the central nervous system (brain and spinal cord) and is passed to humans by the bite of an infected animal.

Shingles: A disease in adults caused by the same virus that causes chickenpox in

children. It causes an inflammation of the spinal and cranial sensory nerve cells that will result in the appearance of blisters or cysts along the affected nerve path. It usually affects only one side of the body and causes sudden, severe attacks of pain.

Sinusitis: Inflammation of a sinus or the sinuses, especially in the nasal area. Strep Throat: a throat infection that causes fever and inflammation of the tonsils.

Tuberculosis: An infectious disease that is characterized by the formation of tubercles on the lungs and other tissues of the body. A tubercle is a nodule or swelling, especially a mass of lymphocytes (white blood cells) and epithelioid cells (cells that resemble epithelium) that form the wound of tuberculosis.

Typhoid Fever: An acute, infectious disease caused by bacteria that is spread by contaminated food or water. Its symptoms include fever, headache, coughing, bleeding intestines and rose-coloured spots on the skin.

Urinary Tract Infection: An infection of any organ (kidneys, ureters, urethra) of the urinary tract (tract involved in the formation and excretion of urine).

Whooping Cough: A bacterial infection that has symptoms including runny nose, low-grade fever, inflammation of the eye membrane and a characteristic cough that ends in a 'whoop' caused by the forceful inspiration of air.

Yellow Fever: An infectious tropical disease that is passed by mosquitoes. Those infected will have high fever, jaundice (a yellowing of the skin), black vomit, an absence of urination and bleeding in the digestive tract.

Exercise

1. Visit a hospital and discuss with the doctors about the common human diseases and their source of infection. Also take notes of the measures adopted by the hospital to prevent and avoid the spread of diseases.
2. Visit a nearby hospital laboratory and write down the various instruments / chemicals used in testing the following in the table given below:

Microbes	Instruments / Chemical used
Bacteria	
Virus	
Fungi	
Parasites	

Assessment

I. Short Answer Questions

a) List any three human diseases caused by bacteria.

_____

_____

_____

_____

b) List any five human diseases caused by viruses.

_____

_____

_____

_____

c) List any two human diseases caused by fungi.

_____

_____

_____

_____

Checklist for Assessment Activity

Use the following checklist to see if you have met all the requirements for assessment activity:

Part A

Differentiated between the following:

1. Bacteria, virus, fungi and parasites
2. Antibiotic and vaccine

Part B

Discussed in class the following:

1. What are the common diseases caused by micro-organisms?
2. What are the practices adopted in a hospital for preventing the spread of pathogenic microorganisms?

Part C

Performance Standards

The performance standards may include, but not limited to:

Performance Standards	Yes	No
Demonstrate the knowledge of human diseases caused by viruses.		
Demonstrate the knowledge of human diseases caused by bacteria. Demonstrate the knowledge of human diseases caused by fungi. Demonstrate the knowledge of human diseases caused by parasites.		

Session 3: Understanding the Role of Hospital Personnel in Prevention and Control of Hospital Acquired Infections

Relevant Knowledge

In this session, you will learn about the role of doctors, nurses, general duty assistants and other personnel in preventing and controlling the spread of Hospital Acquired Infections.

Hospital Acquired Infections

Nosocomial infections, also called “Hospital-Acquired Infections” (HAI), are infections acquired during hospital care which is not present or incubating at admission. Infections occurring more than 48 hours after admission are usually considered as nosocomial infection. Nosocomial infections may also be considered either endemic or epidemic. Endemic infections are most common. Bacteria are the most common cause of “Hospital-Acquired Infections” (HAI). HAI or nosocomial infections occur at a cost to the community and the patient because they cause:

1. Illness to the patient.
2. Longer stay in hospital.
3. Longer recovery time.
4. Costs associated with a longer stay in hospital and longer recovery time.

Risk Factors

All patients admitted to hospital are at some risk of contracting an HAI. If you are very sick or have had surgery, you have an increased risk. Some patients are more vulnerable than others. They include the following:

1. Very young people or premature babies.
2. Very sick children.
3. Very old people.
4. People with medical conditions, such as diabetes.
5. People with defective immunity or people who are being treated with chemotherapy (for cancer) or steroids.

There are other risk factors that may increase your likelihood of acquiring HAI. These include the following:

1. **Length of stay:** A long hospital stay can increase the risk: for example, admission for complex or multiple illnesses.
2. **operations and surgical procedures:** The length and type of surgery can also have an impact.
3. **Hand washing techniques:** Inadequate hand washing by hospital staff and patients may increase your risk of acquiring an infection.
4. **Antibiotics:** Overuse of antibiotics can lead to resistant bacteria, which means that antibiotics become less effective.

5. **Equipment:** Invasive procedures can introduce infection into the body: for example, procedures that require the use of equipment such as urinary catheters, Intravenous (IV) drips and infusions, respiratory equipment and drain tubes.
6. **Wounds:** Wounds, incisions (surgical cuts), burns and ulcers are all prone to infection.
7. **High-risk areas:** Some areas of the hospital are more likely to have infection, such as intensive care units (ICU) and high dependency units (HDU), where critically ill patient are admitted.

Controlling Infection

Spread of infection can be controlled and reduced by adopting the following:

- Strict hospital infection control procedures and policies.
- Correct and frequent hand washing by all hospital staff involved in patient care.
- Cautious use of antibiotic medication.

Role of Hospital Management

The various measures that could be adopted by the hospital management include, but not limited to the following:

- Establishing a multidisciplinary Infection Control Committee.
- Identifying appropriate resources for a programme to monitor infections and apply. the most appropriate methods for preventing infection.
- Ensuring education and training of all staff through support of programmes on the prevention of infection in disinfection and sterilization techniques.
- Delegating technical aspects of hospital hygiene to appropriate staff, such as:
  - ❖ Nursing
  - ❖ Housekeeping
  - ❖ Maintenance
  - ❖ Clinical Microbiology Laboratory
- Periodically reviewing the status of nosocomial infection.
- Effectiveness of interventions to contain them.
- Reviewing, approving, and implementing policies approved by the Infection Control Committee.
- Ensuring that the infection control team has the authority to facilitate appropriate programme function.

Role of Physicians

Physicians have unique responsibilities for the prevention and control of hospital infections. They can contribute in the following ways:

- By providing direct patient care using practices which minimize infection.
- By following appropriate practice of hygiene (e.g. handwashing, isolation).
- By supporting the Infection Control Committee.
- Supporting the infection control team.

- Protecting their own patients from other infected patients and from hospital staff who may be infected.
- Complying with the practices approved by the Infection Control Committee.
- Obtaining appropriate microbiological specimens when an infection is present or suspected.
- Notifying cases of HAI to the team, as well as the admission of infected patients.
- Complying with the recommendations of the Antimicrobial Use Committee regarding the use of antibiotics.
- Advising patients, visitors and staff on techniques to prevent the transmission of infection.
- Instituting appropriate treatment for any infections they themselves have, and taking steps to prevent such infections being transmitted to other individuals, especially patients.

Role of Microbiologists

The microbiologist is responsible for the following in prevention and control of HAI:

1. Periodic collection of specimen from wards and other areas.
2. Handling patient and staff specimens to maximize the likelihood of a microbiological diagnosis.
3. Developing guidelines for appropriate collection, transport, and handling of specimens.
4. Ensuring laboratory practices to meet appropriate standards.
5. Ensuring safe laboratory practice to prevent infections among staff.
6. Monitoring sterilization and disinfection wherever and whenever necessary.

Role of Nurses and General Duty Assistants

Implementation of patient care practices for infection control is the role of the nursing staff. Nurses should be familiar with practices to prevent the occurrence and spread of infection, and maintain appropriate practices for all patients throughout the duration of their hospital stay.

The Senior Nursing Administrator is responsible for the following:

1. Promoting the development and improvement of nursing techniques, and ongoing review of aseptic nursing policies, with approval by the Infection Control Committee.
2. Developing training programmes for members of the nursing staff.
3. Supervising the implementation of techniques for the prevention of infections in specialized areas, such as the operating suite, the intensive care unit, the maternity unit and newborns units.

The Nurse and the GDA is responsible for the following:

1. Strictly following universal precautions.
2. Maintaining hygiene, consistent with hospital policies and good nursing practices in the ward.

3. Monitoring aseptic techn iques, including hand washing and use of isolation.
4. Reporting promptly to the attending physician any evidence of infection in patients under the care.
5. Initiating patient isolation and ordering culture specimens from any patient showing signs of a communicable disease, when the physician is not immediately available.
6. Limiting patient exposure to infections from visitors, hospital staff, other patients, or equipment used for diagnosis or treatment.
7. Maintaining a safe and adequate supply of ward equipment, drugs and patient care supplies.

The Nurse and GDA is a member of the infection control team and are responsible for the following:

1. Identifying nosocomial infections.
2. Participating in training of personnel.
3. Surveillance of hospital infections.
4. Educating people on proper disposal of wastes.
5. Initiating patient isolation and ordering culture specimens from any patient showing signs of a communicable disease, when the physician is not immediately available.
6. Limiting patient exposure to infections from visitors, hospital staff, other patients, or equipment used for diagnosis or treatment.
7. Maintaining a safe and adequate supply of ward equipment, drugs and patient care supplies.

The Nurse and GDA is a member of the infection control team and are responsible for the following:

1. Identifying nosocomial infections.
2. Participating in training of personnel.
3. Surveillance of hospital infections.
4. Educating people on proper disposal of wastes.

Role of the Central Sterilization Service

The responsibilities of the central sterilization service are to clean, decontaminate, test, prepare for use, sterilize, and store aseptically all sterile hospital equipment.

Role of Food Service Department

The Food Service Department is responsible for setting the standards and criteria for the purchase of foodstuffs, equipment use, and cleaning procedures so as to maintain a high level of food safety and quality service.

1. Ensuring that the equipment used and all working and storage areas are kept clean.
2. Issuing written policies and instructions for hand washing, clothing, staff responsibilities and daily disinfection duties.

3. Ensuring that the methods used for storing, preparing and distributing food will avoid contamination by microorganisms.
4. Issuing written instructions for the cleaning of dishes after use, including special considerations for infected or isolated patients where appropriate.
5. Ensuring appropriate handling and disposal of wastes.
6. Establishing programmes for training staff in food preparation, cleanliness, and food safety.

Role of Laundry Service

The laundry service department is responsible for the following:

1. Selecting fabrics for use in different hospital areas, developing policies for working clothes in each area and group of staff, and maintaining appropriate supplies.
2. Distribution of working clothes and, if necessary, managing changing rooms the appropriate method for disinfecting infected linen, either before it is taken to the laundry or in the laundry itself.

Role of Housekeeping Department

The housekeeping department is responsible for the following:

1. Classifying the different hospital areas by varying need for cleaning.
2. Developing policies for collection, transport and disposal of different types of waste (e.g. containers, frequency).
3. Ensuring that liquid soap and paper towel dispensers are replenished regularly.
4. Informing the maintenance service of any building problems requiring repair: cracks, defects in the sanitary or electrical equipment, etc.
5. Caring for flowers and plants in public areas.
6. Pest control (insects, rodents).

Role of the Central Sterilization Service

The responsibilities of the central sterilization service are to clean, decontaminate, test, prepare for use, sterilize, and store aseptically all sterile hospital equipment.

Exercise

1. Visit a nearby hospital and check the role of various health professional in prevention of microorganism or hospital acquired infection.

Assessment

I. Short answer Questions

1. What is a Hospital Acquired Infection (HAI)?

_____

_____

_____

_____

_____

_____

_____

2. What are the roles and functions of GDA in controlling HAI?

Checklist for Assessment Activity

Use the following checklist to see if you have met all the requirements for assessment activity:

Part A

Differentiated between the following:

1. Microbiologist and pathologist.
2. Infection and hospital Acquired Infection.

Part B

Discussed the role of following in class:

1. How training of personnel helps in reducing the possibility of HAI?
2. What are the measures adopted by the hospital management for controlling HAI?

Part C

Performance Standards

The performance standards may include but not limited to:

Performance Standards	Yes	No
Identify the common places of infection in the hospital.		
Demonstrate the knowledge of causes of HAI.		
Demonstrate the knowledge of roles and functions performed by medical professionals and staff in preventing and controlling HAI.		

Session 4: Disinfecting Ward and Equipment

Relevant Knowledge

Microorganisms are present everywhere. Since they cause contamination, infection and decay, it becomes necessary to remove or destroy them from materials or from areas in the hospital. There are various measures adopted in order to prevent the spread of microorganisms in the hospital. Good housekeeping is therefore, of paramount importance in a hospital. Providing safe, clean and orderly environment is the responsibility of all the personnel in a hospital. Every patient has the right to be protected from the Hospital Acquired Infections. In order to ensure that the patients are protected from HAIs, various procedures and practices are adopted which include cleaning, sterilization and disinfection using physical, chemical and other methods. In this session, you will learn about the various agents, machines, equipment and methods adopted by the medical staff in disinfecting ward and equipment.

Let us first try to understand the meaning of some of the common terms, such as cleaning, sterilization and disinfection used in prevention and control of microorganisms.

Cleaning

Cleaning plays an important preparatory role before sterilization or disinfection. Cleaning helps in removing soil and other dirt and reducing the microbial burden, making sterilization more effective. The various equipments that are used for cleaning include, but not limited to the following:

- Floor cleaning machines.
- Swiping machines.
- Floor scrubbing machines.
- Floor polishing machines.
- High pressure machines to clean bathrooms.

Daily Cleaning: This includes sweeping and mopping floors, dusting furniture, cleaning fixtures, walls, ceilings, windows and bathrooms, emptying trash cans, etc

Periodic Cleaning: It includes washing windows, waxing floors, cleaning carpets, dusting high ceilings and changing drapers.

Discharge Cleaning: This includes cleaning patient room after discharge or transfer of a patient and readying it for another patient.

Exterminating Bugs and Pests: Hospital's Integrated Pest Management (IPM) plans help direct a hospital in carrying out its pest control practices regularly. An IPM programme is a pest management approach to preventing and managing pest problems in the least hazardous manner possible. It emphasizes on pest prevention through good sanitation practices and maintaining structures in optimum repair. Pesticides are used only when needed, primarily in baits. Records are kept of all pesticide applications. The hospital should utilize the services of a licensed pest control agency. All hospital staff should be educated about the hazards of pesticides and the advantages and principles of IPM.

Prior notification of pesticide use in the hospital should be done well in advance and all precautions should be taken. Trash and garbage removal: Waste generated from the hospital has to be carefully disposed of as per the guidelines issues by the government. The various types of waste generated in the hospital include, but not limited to the following:

a) **Solid waste:** This waste is also called municipal waste or non-regulated medical waste. This is general trash, similar to what you would find in a hotel but with more plastics and packaging.

b) **Regulated Medical Waste (RMW):** This waste stream is also called. potentially infectious material, red bag waste or bio-hazardous waste.

c) **Pharmaceutical Waste:** Some pharmaceutical waste is considered hazardous while a large majority may not require handling as hazardous waste, but should receive special disposal considerations, including controlled substances.

d) **Universal Waste:** Universal waste include batteries, pesticides, mercury-containing equipment, bulbs (lamps), etc.

e) **Recyclables:** Recyclables are items and materials bound for the waste stream that can be converted into a reusable material. Recyclables in healthcare include the usual suspects found in commercial buildings such as paper, cardboard, beverage and food containers, metal and glass.

Sterilization

Sterilization is defined as the process by which an article, surface or medium is freed of all living microorganisms either in the vegetative or spore state.

Disinfection

Disinfection means the destruction or removal of all pathogenic organisms, or organisms capable of giving rise to infection. This is the freeing of an article from some living organisms and is used in conditions where sterilization is not needed, e.g., disinfection of bed-pans, wash basins, furniture, eating utensils and clothes. A perfect disinfectant would also offer complete and full sterilization, without harming other forms of life, be inexpensive, and non-corrosive.

Antisepsis

Antisepsis is used to indicate the prevention of infection, usually by inhibiting the growth of bacteria in wounds or tissue. Chemical disinfectants which can be safely applied on the skin or mucous membrane and are used to prevent infections by inhibiting the growth of bacteria are called antiseptics.

Decontamination

Decontamination refers to the process of rendering an article or area free of danger from contaminants, including microbial, chemical, radioactive and other hazards.

Difference between Antiseptics and Disinfectants

Antiseptics	Disinfectants
● Use on skin and mucous membrane to kill microorganisms. ● Not for use of inanimate objects.	● Use to kill microorgansim on inanimate objects. ● Not for the use on skin and mucous membrane.

Properties of an Ideal Disinfectant

The properties of an ideal disinfectant include the following:

- Resistant to inactivation.
- Broadly active in killing pathogen.
- Non-poisonous.
- Penetrating to pathogens.
- Not damaging to non-living materials.
- Stable.
- Easy to work with and not unpleasant.

The various agents used in sterilization can be classified as follows:

A. Physical Agents

- ❖ Sunlight
- ❖ Drying
- ❖ Dry heat : flaming, incineration, hot air
- ❖ Moist heat: pasteurization, boiling, steam under normal pressure, steam under pressure
- ❖ Filtration : candles, asbestos pads, membranes
- ❖ Radiation
- ❖ Ultrasonic and sonic vibrations

B. Chemical

- ❖ Alcohols: ethyl, isopropyl, trichlorobutanol
- ❖ Aldehydes: formaldehyde, glutaraldehyde
- ❖ Dyes
- ❖ Halogens
- ❖ Phenols
- ❖ Surface – active agents
- ❖ Metallic salts: e.g.salts of Ag, Cu, Hi
- ❖ Gases : ethylene oxide, formaldehyde, beta propiolactone

Effectiveness of Antimicrobial Agent Activity

Destruction of microorganism and inhibition of microbial growth are not simple matters because the efficiency of an antimicrobial agent (an agent that kills microorganisms or inhibits their growth) is a affected by at least six factors.

1. **Population Size:** Because an equal fraction of a microbial population is killed during each interval, a larger population requires a longer time to die than a smaller one. The same principle is applicable to chemical antimicrobial agents.
2. **Population Composition:** The effectiveness of an agent varies greatly with the nature of the organisms being treated because microorganisms differ markedly in susceptibility. Bacterial endospores are much more resistant to most antimicrobial agents than are vegetative forms, and younger cells are usually more readily destroyed than mature organisms. Some species are able to withstand adverse conditions better than others. Mycobacterium tuberculosis, which causes tuberculosis, is much more resistant to antimicrobial agents than most other bacteria.
3. **Concentration /Intensity of an Antimicrobial Agent:** Often, but not always, the more concentrated a chemical agent or intense a physical agent, the more rapidly microorganisms are destroyed. Sometimes an agent is more effective at lower concentrations. For example, 70% ethanol is more effective than 95% ethanol.
4. **Exposure Time:** The longer a population is exposed to a microbiocidal agent, the more organisms are killed.
5. **Temperature:** An increase in the temperature at which a chemical acts often enhances its activity. Frequently a lower concentration of disinfectant or disinfectant or sterilizing agent can be used at a higher temperature.
6. **Local Environment:** The population to be controlled is not isolated but surrounded by environmental factors that may either offer protection or aid in its destruction. A second environmental factor is organic matter that can protect microorganisms against heating and chemical disinfectants. It may be necessary to clean an object before it is disinfected or sterilized. Surgical and medical or dental equipment should be cleaned before sterilization because the presence of too much organic matter could protect pathogens and increase the risk of infection. The same care must be taken when pathogens are destroyed during the preparation of drinking water. When a city's water supply has a high content of organic material, more chlorine must be added to disinfect it.

Antimicrobial Mode of Action of Disinfectants and Antiseptics

The disinfectants and antiseptics acts in the following ways:

1. Denaturation of bacterial proteins by disrupting hydrogen and disulfide bond (for example phenol in high concentration, alcohol, heavy metal in high concentration, acids, alkalis, aldehydes).
2. Damages to bacterial membrane (lipids and / or proteins), causing leakage of intracellular molecules. (for example phenol in low concentration, surfactants, dyes).
3. Interference of bacterial enzyme and metabolism (for example oxidants, heavy metals in low conc., alkylating agents).

Common Methods of Disinfection in Hospital

Soaps and Detergents

Soaps are sodium or potassium salts of fatty acids. Detergents instead, are artificial surfactants . Soaps are always negatively charged, some detergents are negatively charged while others are positively charged.

Halogens

Two halogens are employed as antimicrobials; Iodine and Chloride. Iodine commonly used as an antiseptic against all microbes, fungi, and viruses. It inhibits protein synthesis and oxidizes-SH groups of amino acid. Chlorine used as disinfectant (10% bleach). Hypochlorous acid (HOCl) is a product formed in water, that is the active form of disinfectant, is applied in the treatment of drinking water, swimming pool and sewage.

Phenols

Phenolics disinfectant are effective against bacteria, specially gram positive and enveloped viruses. These disinfectants maintain their activity in the presence of organic material. Phenolics are not reccommended for semi critical items, because of the lack of validated efficacy data for many of the avaliable formulations and the residual disinfectants on porous materials may cause tissue irritation, even when thoroughly rinsed.

Alkylating Agents

- Formalin (formaldehyde) used as surface disinfection, air, surgical instruments
- Glutaric dialdehyde used for disinfecting high precision instruments, endoscopes
- 50mg/L epoxy ethane used for disinfecting surgical instruments and dressing.

oxidants

- 3% peroxide used for disinfecting small trauma wound
- 0.2% -1% peroxyacetic acid used for disinfecting plastics and glassware.
- 0.1% potassium permanganate used for disinfecting skin

Alcohols

Alcohols refers to two water soluble chemicals: ethyl alcohol and isopropyl alcohol. These alcohols are rapidly bactericidal rather than bacteriostatic against vegetative forms of bacteria. Their germicidal activity drops sharply when diluted below 50% concentration. Alcohols are commonly used as topical antiseptics, also used to disinfect the surface of medical equipments. 70-75% ethyl or isopropyl alcohol is used for skin and thermometer disinfection.

Iodine and Iodophore

These compounds have been incorporated in time release formulation and in soaps (surgical scrubs). Simple iodine tincture (dissolve in alcohol) have limited cleaning

ability. These compounds are bactericidal, sporicidal, virucidal, and fungicidal but require a prolonged contact time.

Besides their use as an antiseptic, Iodophore have been used for the disinfection of blood culture bottles and medical equipment (like hydrotherapy tanks, thermometers, and endoscopes).

The disinfective ability of Iodine, like chlorine, is neutralized in the presence of organic material and hence frequent applications are needed for thorough disinfection. Iodine tintures can be very irritating to tissues, can stain fabric and be corrosive.

Hypochlorites

Hypochlorites have a broad spectrum of antimicrobial activity. They are unaffected by water hardness, are inexpensive, and fast acting, and have low incidence of serious toxicity. Disadvantages of hypochlorites include corrosiveness to metals in high concentration, inactivation by organic matter, discolouring or bleaching of fabrics, and release of toxic chlorine gas when mixed with ammonia or acid.

Hypochlorites can eliminate both enveloped and non-enveloped viruses if used in correct dilution and contact time. They are also effective against fungi, bacteria, and algae but not spores. Bleach solutions have been recommended for use in both hospitals and the community as disinfecting solutions.

Hypochlorites are also agent of choice in disinfecting surface used for food preparation or in bathrooms. Hydrogen Peroxide Stabilized hydrogen peroxides can be used to disinfect surfaces.

Formaldehyde

Formaldehyde is used as disinfectant and sterilant both in the liquid and gaseous states. Formaldehyde is sold and used principally as water based solution called formalin, which is 37% formaldehyde by weight. The aqueous solution is bactericidal, tuberculocidal, fungicidal, virucidal, and sporocidal. Formaldehyde should be handled in the workplace as a potential carcinogen with an employee exposure standard that limits an 8 hour time weighted avarage exposure to a concentration of 0.75 ppm. For this reason, employees shoud have limited contact and this limits its use as disinfectant.

- Highly effective against most microbes.
- Higly diffusive.
- Compatible with a wide variety of materials in devices and packaging.

Glutaraldehyde

Aldehydes have a wide germicidal spectrum. Gluteraldehyde are bactericidal, virucidal, fungicidal, sporicidal, and parasiticidal. They are used as a disinfectant or sterilant in

both liquid and gaseous forms. They have moderate residual activity and are effective in the presence of limited amounts of organic material.

Quaternary Ammonium Compounds

The quaternaries are good cleaning agents but high water hardness and material such as cotton and gauze pads may make them less microbicidal because these materials absorb the active ingredients. As with several other disinfectants (e.g. Phenolics, Iodophore) gram negative bacteria have been found to survive or grow in these preparation.

They are not effective against non - enveloped viruses, fungi, and bacterial spores. They are commonly used in ordinary environmental sanitation of non-critical surfaces such as floors, furniture, and walls.

Physical Agents

Dry heat and steam are used for sterilization. Steam above 100 C or saturated steam has a better killing power than dry heat. Bacteria are more susceptible to moist heat as bacterial protein coagulates rapidly. Saturated steam can penetrate porous materials easily. When steam comes into contact with a cooler surface it condenses to water and liberates its latent heat to that surface. For example, 1600 ml of steam at 100^0 C and at atmospheric pressure condenses into one ml of water at 100^0 C and releases 518 calories of heat. The large reduction in volume sucks in more steam to the same site and the process continues till the temperature of the article is raised to that of steam. The condensed water produces moist conditions for killing the microbes present. For all glass syringes and glasswares, hot air oven is a better sterilising equipment.

Uses

- To sterilise culture media, rubber material gowns, dressing, gloves, etc.
- It is particularly useful for materials which can withstand the higher temperature of hot air oven.

Exercise

1. Visit a nearby hospital and prepare a write-up on the various methods of sterilization and disinfection. Study the various equipment, chemicals and procedures used by the hospital.
2. Visit a nearby hospital and observe the use of following chemicals. Write any three use of each chemical given in the table below:

Chemical	Use
Chlorine	1 2 3
Phenol	1 2 3
Alcohol	1 2 3

Iodine	1 2 3
Hydrogen Peroxide	1 2 3

Assessment

I. Answer the following questions:

1. What is sterilization?

_____
_____
_____
_____

2. What is disinfection?

_____
_____
_____
_____

3. What is antisepsis?

_____
_____
_____
_____

II. Fill in the Blanks

1. _____ is used as a disinfectant or sterilant in both liquid and gaseous form.
2. _____is used on skin and mucous membrane to kill microorganisms.

Checklist for Assessment Activity

Use the following checklist to see if you have met all the requirements for assessment activity:

Part A

Differentiated between the following:

1. Physical agents and chemical agents.
2. Sterilization and disinfection.

Part B

Discussed in class the following:

1. What precautions should be adopted while using chemical agents as disinfectants?
2. What is the role of GDA in sterilizing and disinfecting glassware, plastic wares, linen and equipment?

Part C

Performance Standards

The performance standards may include, but not limited to:

Performance Standards	**Yes**	**No**
Demonstrate the knowledge of physical methods of sterilization.		
Demonstrate the knowledge of common chemical disinfectants used in a hospital.		
Demonstrate the knowledge of chemicals used for disinfecting glass-ware.		

UNIT – 4

BASIC FIRST AID AND EMERGENCY MEDICAL RELIEF

Learning outcome

Unit 4	BASIC FIRST AID AND EMERGENCY MEDICAL RELIEF			
	Duration: 20 Hours			
Location Classroom/ Hospital/ Clinic	**Learning outcome**	**Knowledge Evaluation**	**Performance Evaluation**	**Teaching and Training Method**
	● Describe the principles and rules of First Aid. .	● Describe the purpose of First Aid. ● State the principles of First Aid.	● Identify types of health risk and hazards at various departments of hospitals. ● Enlist emergency situations in a hospital. ● Perform ABC on a dummy.	**Interactive Lecture:** ● Principles and Rules of First Aid. ● **Activity:** Visit a hospital and study the First Aid practices.
	● Identify facilities, equipment and materials used for First Aid.	● Describe the facilities and materials used for administering First Aid.	● Enlist the equipment used for First Aid. ● Demonstrate the knowledge of the First Aid.	**Interactive Lecture:** ● Facilities, equipment and materials for First Aid. ● **Activity:** Prepare a First Aid box.
	● Perform the role role of first aider in fever, heat stroke, back pain, asthma and food borne illness.	● Describe the role and function of a First Aider.	● Perform ABC (Airway, Breathing and Circulation). ● Measure body temperature using a digital thermomete.	**Interactive Lecture:** ● Role of First Aider in fever, heat stroke, back pain, asthma and food borne illness. ● **Activity:** Perform activities for measuring and controlling temperature.
	● Perform the role of first aider in cuts, bleeding, burns, insect bites and stings dot bites and snake bites.	● Describe the cause of various types of burns. ● Describe the reasons for using methods for treating burns.	● Administer first aid for cut and burns in hypothetical situations. ● Demonstrate the knowledge of dealing with inset, dog and snake bite.	**Interactive Lecture :** ● Role of First Aider in cuts, bleeding, burns, inset bites and snake bites. ● **Activity:** Practice First Aid on a dummy with the help of a First Aider.

Session 1: Describe Principles and Rules of First Aid

Relevant Knowledge

Injuries and pain are part of human life. In case of injury, some kind of immediate medical attention or treatment is needed to reduce the discomfort, pain and deterioration of the condition. The medical attention that is given at the first instance before seeking professional medical help is called “First Aid”. First-aid is the immediate and temporary treatment given to the victim of an accident or sudden illness, while awaiting the arrival of “Medical Aid”. In this session, we will study the purpose, principles and general rules of basic First Aid.

First Aid means providing the initial treatment and life support for people suffering with an injury or illness at work. Here it is important to understand that First Aid has its limitations and does not take the place of professional medical treatment. Proper early assistance given by First Aider helps in saving the life of a patient. The ISO specified symbol for the First Aid is white cross on a green background.

Purpose of First Aid

The purpose of first aid includes but not limited to:

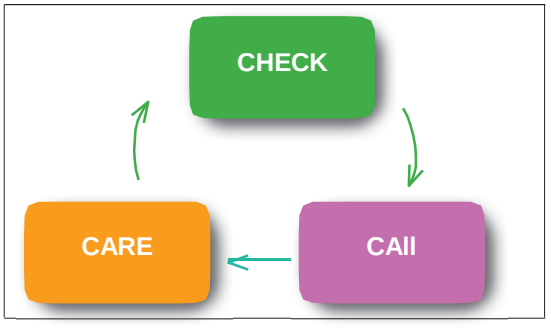
- Save the life of the victim before the arrival of a qualified medical expert.
- Lessen pain.
- Help in early recovery.
- Prevent condition from worsening.

Principles of First Aid: The basic principles of first aid are as follows:

- **Preserve life:** This includes the life of the casualty and rescuer.
- **Protect the casualty from further harm:** Ensure the scene is safe and the casualty is not affected by the presence of people.
- **Provide pain relief:** This could include the use of ice packs or simply applying a sling.
- **Prevent the injury or illness from becoming worse:** Ensure the treatment you provide as part of the First Aid does not make the condition of the casualty worse.
- **Symbol of First Aid:** The ISO specified symbol for the First Aid is white cross on a green background.

Rules of First Aid

Important rules for First Aid are as follows:



- **Check:** Find out what has happened, and then what is wrong with the person. Comfort the victim and arrange shelter.
- **Call:** Arrange for professional medical aid.
- **Care:** Help the victim, preferably without moving him or her.

Health Emergency

A health emergency is a situation in which the health of a person is in danger because of sudden illness or accident, and immediate help is required to “save a life”. In case of any health emergency, the ill or injured person should be given immediate attention and first aid before the medical help arrives. Now the question arises -What could be various emergency situations? It could be (i) electric shock, (ii) difficulty in breathing due to asthmatic attack, (iii) burns, (iv) bleeding, (iv) injury, (v) fracture, (vi) heart attack, etc.

The Human Body

The human body is an amazing living machine in which hundreds of parts work together to flawlessly perform countless tasks. It consists of a head, neck, torso, two arms and two legs. By the time the child reaches adulthood, the body consists of close to 100 trillion cells, the basic unit of life. These cells are organized biologically to eventually form the whole body. At birth, a newborn baby has over 300 bones, whereas on an average an adult human has 206 bones. The body includes the musculoskeletal system (related to muscles), cardiovascular system (related to heart), digestive system (related to stomach), endocrine system, integumentary system, urinary system (related to kidney), lymphatic system, immune system, respiratory system (related to lungs), and reproductive system.

We will now look at two aspects of life which are important from the point of view of First Aid.

Breathing

Breathing is vital to life and a person breathes about 20,000 times a day. All of this breathing could not happen without the respiratory system, which includes the nose, throat, voice box, windpipe, and lungs. Air can be taken in through the nose and the mouth. These two openings of the airway (the nasal cavity and the mouth) meet at the pharynx or throat, located at the back of the nose and mouth. The diaphragm that separates the chest from the abdomen plays a lead role in breathing. It moves downward when we breathe in, enlarging the chest cavity and pulling air in through the nose or mouth. When we breathe out, the diaphragm moves upward, forcing the chest cavity to get smaller and pushing the gases in the lungs up and out of the nose and mouth. When you breathe in, which is called as inhalation, the diaphragm moves downward toward the abdomen, and the rib muscles pull the ribs upward and outward. In this way, the volume of the chest cavity is increased.

Air pressure in the chest cavity and lungs is reduced, and because gas flows from high pressure to low, air from the environment flows through the nose or mouth into the lungs. When you breathe out i.e. exhalation, the diaphragm moves upward and the chest wall muscles relax, causing the chest cavity to contract. Air pressure in the lungs rises, so air flows from the lungs and up and out of respiratory system through the nose or mouth.

Blood Circulation

Blood is the viscous fluid composed of plasma and cells. The composition of the blood includes plasma, red blood cells, white blood cells and platelets. The centre

of the circulatory system is the heart, which is the main pumping organ. The heart is made of muscles. The heart is in the middle of the chest. It is located between the two lungs. The heart is tipped somewhat so that there is a little more of it on the left side. The pointed tip at the bottom of the heart touches the front wall of the chest. Every time the heart beats it goes "thump" against the chest wall. You can also listen to them with your ear. When the heart contracts it pushes the blood out into two major loops or cycles. In the systemic loop, the blood circulates into the body's systems, bringing oxygen to all its organs, structures and tissues and collecting carbon dioxide waste. In the pulmonary loop, the blood circulates to and from the lungs, to release the carbon dioxide and pick up oxygen. The systemic cycle is controlled by the left side of the heart, the pulmonary cycle by the right side of the heart.

Health and Safety Risks at Workplace: Risk is the chance or probability that a person will be harmed or experience an adverse health effect if exposed to a hazard. Let us now learn about the various types of hazards and their cause. This will help you to recognize the various hazards that you may encounter at workplace.

Types of Hazards

- **Biological:** Biological hazards are caused by living organisms like bacteria, viruses, insects, plants, birds, animals, humans, etc.
- **Chemical:** Chemical hazards, which include acids, poisons, cleaning agents, etc. depends on the physical, chemical and toxic properties of the chemical. The severity of the hazard depends on the toxic properties of the chemical.
- **Radiation:** Radiation hazards are related to exposure to radiations from radioactive substances.
- **Ergonomic:** Ergonomic hazards are caused due to repetitive movements, improper set up of workstation (e.g. computer workstation, workstation for repair of electrical gadgets, etc.), faulty designed chairs, tools and equipment, wrong postures, etc. Wrong postures often bring about physical fatigue and/or bodily harm, including back pain, and discomfort in shoulders and lower limbs.
- **Physical:** Physical hazards are caused due to slippery surfaces, falling objects, manual handling (lifting, pushing, carrying), sharp tools and equipment, radiation, magnetic fields, extreme pressure (high pressure or vacuum), excessive loud and prolonged noise, and bullying (abnormal, repeated behaviour directed against a worker or group of workers which results in a risk to health and safety). It may result in stress, depression, loss of self-esteem, feelings of guilt, phobias, sleep and eating disorders, sexual harassment (a

situation in which unwanted behaviour with a sexual connotation, expressed physically, verbally or non-verbally takes place), verbal threat, abusing, use of weapons, etc.

- **Psychosocial:** Psychosocial hazards are caused due to violence, excessive pressure or stress at workplace for meeting deadlines, conflicts at workplace, etc. It also includes hazards due to discrimination on the grounds of caste, race, skin colour, ethnic origin, sex, religion, etc.
- **Safety:** Safety hazards at workplace include slipping or tripping, inappropriate machine guarding, collision, bumps, road accidents, fire accidents, equipment malfunctions or breakdown and electrical accidents (it could result in skin burns affecting the areas that have been in contact with the electrical current or electric shock due to electrical discharge).

Exercise

1. Visit a hospital and find out first aid measures adopted. In your school find out the steps taken by the administration to provide first aid during health/medical emergency.
2. Visit a nearby hospital and observed various hazards. Fill the common hazards in the table given below:

Type of Hazards	Place Prone to Get the Hazard in the Hospital
Biological	
Chemical	
Radiation	
Ergonomic	
Physical	
Psychosocial	

Assessment

I. Short Answer Questions

a) What is the purpose of First Aid?

_____

_____

_____

b) State the principles of First Aid.

_____

_____

_____

Checklist for Assessment Activity

Use the following checklist to see if you have met all the requirements for assessment activity:

Part A

Differentiated between the following:

1. Physical and mental health.
2. Danger and hazard.

Part B

Discussed in class the following:

1. What are the common health problems and safety risks of General Duty Assistant?
2. What are the basic principles of First Aid?

Part C

Performance Standards

The performance standards may include, but not limited to:

Performance Standards	Yes	No
Identify types of health risks and hazards at workplace.		
Enlist emergency situations in a hospital.		
Demonstrate the knowledge of ABC.		

Session 2: Identify Facilities, Equipment and Materials for First Aid

Relevant Knowledge

In this session, you will learn about the various facilities, equipment, and materials used for First Aid. First Aid facilities should be located at points convenient to workers. An ambulance should also be made available at the workplace to meet any emergency. Ambulance is a vehicle specifically designed to transport critically sick or injured people to a medical facility. Most ambulances are motor vehicles, although helicopters, airplanes, and boats are also used. The interior of an ambulance has room for one or more patients plus several emergency medical personnel. It also contains a variety of supplies and equipment that are used to stabilize the patient's condition en route.

It is the responsibility of the head of the organization or the employer that the first aid facilities, such as a First Aid room, a First Aid kit, a health centre and First Aid equipment are made available in the premises to meet any emergency.

Once the employer has set up First Aid facilities, one or two persons should be nominated as First Aider. They should be trained for First Aid facilities and services at the workplace. Now let us look at each of these facilities and the important aspects that we need to keep in mind when arranging these facilities.

- **First Aid Room:** It is the place where equipment and materials are made available and systematically arranged for providing first aid services. It should have the following:

- A name plate with the symbol of FIRST AID.
- Proper lighting and ventilation.
- Toilets, which should be friendly for differently-abled persons (Persons with disability).
- Facilities for easy movement of a person on a stretcher or a wheelchair.

The facilities at the First Aid Room should include:

1. Table and chairs.
2. Telephone.
3. Directory of emergency telephone numbers. (For example, in India telephone number for fire service station is 101, for police it is 100 and for emergency services/ambulance it is 108).
4. First Aid kit.
5. Examination lamp.
6. Medical examinations couch with blankets and pillows.
7. A portable screen.
8. Container for sharp equipment like surgical knives, etc.
9. Sink and wash basin with hot and cold running water.
10. Sterilizer.
11. Stretcher.
12. Workbench or dressing trolley.
13. Oxygen cylinder.
14. Sphygmomanometer – blood pressure measuring instrument.
15. Resuscitation equipment.
16. Cupboards for storing medicines, dressings and linen.
17. Electric power points.
18. Suitable seating.
19. Container for soiled dressings.
20. Medical waste containers.

First Aid Kit: The contents of the First Aid Kit are mainly meant for providing first aid incase of bleeding, bone fractures and burns. The contents of the first aid kit could also be made industry/organisation specific (nature of the job being undertaken at the industry/ organisation). For example, in casting and forging industries, medicine used in burns and scalds should be kept in the First Aid kit. A basic First Aid kit should include the following:

1. Band-aids of all sizes.
2. 4” by 4” gauze pads - for cleaning wounds.

3. 4” by 4” dressing bandages - for wounds, cuts, and abrasions.
4. 2” dressing rolls or crepe bandage - for wrapping and bandaging injuries.
5. Medical tape.
6. Cotton balls.
7. Safety pins.
8. Alcohol pads or isopropyl alcohol for cleaning wounds.
9. Antimicrobial hand wipes - placed in a sealed plastic bag to keep them moist.
10. Hydrogen Peroxide for cleaning skin wounds.
11. Sterile water bottle.
12. Eye flushing solution bottle with an eye cup.
13. Ace bandage for wrapping sprains and contused soft tissue.
14. Arm sling.
15. Chemical ice pack.
16. Chemical hot pack.
17. Thermometer - oral and rectal (for kids).
18. Tweezers.
19. Scissors.
20. Torch.
21. Nail clippers.
22. Jack-knife.
23. Clean string for a variety of uses.
24. Sterile gloves.

Important medications and other relief materials that should be kept in a First Aid kit and updated (check for expiry of the medicine and replace immediately with fresh batch) include the following:

1. Antibiotic ointment - for cuts and scrapes of the skin.
2. Medicated sunburn spray or cream.
3. Calamine lotion.
4. Insect sting relief pads.
5. Tablet Tylenol (Acetaminophen) – It is used as pain and fever reducer.
6. Tablet Advil (Ibuprofen) – It is anti-inflammatory, used for pain, swelling, and fever.
7. Syrup Benadryl (Diphenhydramine) – It is antihistamine for allergic reactions, itching, and runny nose.
8. Cough suppressant.

9. Throat lozenges.
10. Oral Rehydration Salts (ORS).
11. Defibrillators: An electronic device that administers an electric shock of preset voltage to the heart through the chest wall. It is used to restore the normal rhythm of the heart during ventricular fibrillation.
12. Tourniquet bandage (compression bandage): If the bleeding does not stop with direct pressure within 15 to 20 minutes the tourniquet bandage is applied.
13. Slings: Sling is a bandage used to support an injured forearm. It is a wide triangular piece of cloth which is used to support the hand from around the neck.
14. Splints: Splints are orthopedic mechanical devices used to immobilize and protect a part of the body in the case of a fracture (such as a broken leg or hand).

Drugs for Common Ailments: There are a variety of common ailments from which people suffer from. These ailments are not very serious and can be cured by referring to some home remedies or over the counter medicines. A number of common illnesses are treated at home using non-prescription medicines. Some ailments are serious enough to require professional medical attention; even the common cold can become very serious if not treated correctly, as it can advance to other infectious diseases such as influenza and pneumonia. If ailments persist, then the patient should immediately consult a doctor. Some of the common ailment and the drugs generally prescribed are given in the table below:

DRUGS FoR AILMENTS

Ailments	Drugs
Allergies	Tablet Cetirizine.
Headache	Saridon, Aspirin (Aspirin is also used in case of chest pain).
Heartburn/ Acidity	Tablet/Syrup Digene.
Nasal Congestion	Vaporub for rubbing on nose and chest.
Cough and Cold	Tablet for cough & cold or syrup.
Fever/Flu	Paracetamol (also used as a General Pain Killer).
Constipation	Isabgol Husk (with hot milk/water).
Sprains and Strains	Tablet Flexon/Combiflam (used as a anti infla-mmatory painkillers).
Dehydration	Oral Rehydration Salt (ORS).

Exercise

1. Prepare a First Aid box with all equipment and materials.

Assessment

Fill in the blanks

1. _____ is a vehicle specifically designed to transport critically sick or
2. _____ is an electronic device that administers an electric shock of preset voltage to the heart.
3. _____ is a bandage used to support an injured forearm.
4. A _____,_____is someone who takes charge of an emergency scene.
5. ORS stand for_____Salt.

Checklist for Assessment Activity

Use the following checklist to see if you have met all the requirements for assessment activity:

Part A

Differentiated between the following:

1. Sling and splints

Part B

Discussed in class the following

1. What facilities should be established for administering First Aid at workplace?
2. What are the contents of a First Aid kit?

Part C

Performance Standards

The performance standards may include, but not limited to:

Performance Standards	Yes	No
Identify equipment used for First Aid.		
Demonstrate the knowledge of the use of first aid kit injured people to a medical facility and gives first aid.		

Session 3: Performing the Role of First Aider in Fever, Heat Stroke, Back Pain, Asthma, and Food Borne Illness

Relevant Knowledge

A First Aider is a person who takes charge of an emergency scene and gives first aid. Often the first aider at an emergency scene is passerby who is willing to help. A parent can be a First Aider to his or her child, a firefighter can be a First Aider to an injured pedestrian, or an employee can be trained as a First Aider. A First Aider do not diagnose or treat injuries and illnesses (except perhaps when they are very minor). In this session, you will learn how to give first aid to a casualty with fever, heat stroke, back pain, asthma and foodborne illness.

As a First Aider, the first thing is to take charge of the situation and stay in charge until the arrival of the medical help or ambulance. While in charge, many other people may offer to help and crowd the place. In an emergency, where there is a confusion and fear, the actions of a calm and effective First Aider reassure everyone, and can make the whole experience less traumatic.

Besides giving First Aid, one should ensure the following:

- Keep unnecessary people away.
- Protect the casualties belongings.

General Considerations and Rules

The elementary life saving procedures are head tilt, First Aid at choking and recovery position. Important rules for first aid are as follows:

Check: Find out: (a) what has happened, (b) what is wrong with the person, (c) comfort the victim and arrange shelter.

Call: Arrange for professional aid.

Care: Help the victim without unnecessary handling the casualty.

Now let us imagine that a person has met with an accident. The services of priority that should be followed by the first aider in an emergency are as follows:

Step 1: Check for bleeding: Stop bleeding by applying direct pressure on the wound site.

Step 2: Check for head, neck and spinal injury: If any of these are suspected, do not move the victim unless it is absolutely necessary to prevent further injury. Moving a victim will often make injuries worse, especially in the case of spinal cord injuries.

Step 3: Determine responsiveness: If a person is unconscious, try to arouse by gently shaking and speaking. Do not give fluid, the victim cannot swallow and could suffocate. Look for the victim's chest to rise and fall and listen for sounds of breathing (place your ear near the nose and mouth and feel for breath on your cheek).

If the victim is not breathing then mouth to mouth resuscitation is to be given. If you are not trained to do that, then call for medical help at the earliest.

If the victim is breathing, but unconscious, roll the casualty on one side, keeping the head and neck aligned with the body. This will help drain the mouth and prevent the tongue or vomit from blocking the airway if the person remains unresponsive, carefully roll the casualty on back and open the airway.

a) Keep head and neck aligned.

b) Carefully roll onto the back while holding the head.

c) Open the airway by lifting the chin.

observe ABC as follows:

A – Airway

B – Breathing

C – Circulation

1. **Airway:** Ensure that the tongue or any foreign body does not obstruct the airway.
2. **Breathing:** Make sure the victim is breathing. If you are trained to give mouth to mouth respiration, then facilitate breathing.
3. **Circulation:** Check for the pulse to ensure that the heart is beating properly. Check heart beat/pulse of the victim. If there is no pulse and if you are trained to do Cardiopulmonary Resuscitation (CPR), then begin CPR immediately.

(Note: CPR is administered when both heart and lungs have ceased to function).

Step 4: Call Emergency Services: Call for help or tell someone else to call for help as soon as possible.

If you are the only person on the scene, try to establish breathing before calling for help, and do not leave the victim alone for an extensive amount of time. Stay calm and don't give up. Continue to aid the victim until medical help arrives.

Let us now learn about the basic first aid practices that may be utilized by the first aider to provide first aid to people working in various occupations, with special reference to the health sector.

Considering your age and body strength, we will take up only those first aid practices that you can easily perform.

Fever

Fever is higher-than-normal human body temperature (normal body temperature is 37^0 C or 98.6^0 F). Your body temperature is a good indicator of your health. Fever is a symptom and not disease. Fever can be categorized as given below:

- Low fever: 98.8^0 F to 100.8^0 F
- Mild to moderate: 101^0 F to 103^0 F
- High fever: 104^0 F and above

If the temperature is high, then it is a sign that body is fighting illness.

Causes: Fever may be caused due to hot weather, bacterial or viral infection, spending too much time under the sun or allergy to medication or food/water.

Symptom: Symptoms may include hot flushed face, nausea, vomiting, head and body ache, constipation, diarrhea.

First Aid: Monitor temperature using a digital thermometer. Remove the excess clothing. Keep the person in a cool place and if required give a sponge bath in tap water. Give plenty of fluids and prescribed dose of tablet paracetamol.

Taking Body Temperature

In case of fever, the body temperature is measured using a thermometer. Let us now learn how to take body temperature.

Step 1 – Prepare: Wash the tip of the digital thermometer with clean water and wipe it with a clean cloth. Wipe it with a paper tissue after it has been cleaned. This will remove certain germs on the surface.

Step 2 – Switch on: Switch on the digital thermometer to make sure that it is working properly. The LCD screen should read "0". If this does not occur or the screen remains blank, you may have to replace the battery. Check the instruction manual to replace the battery. Use the thermometer when the starting reading is correct.

Step 3 – Position: Place the thermometer in the mouth of the person by laying the tip on a middle point at the back of the tongue before asking the patient to close the lips around it to hold the length of it.

Step 4 – Take Temperature: Press the button to make the appliance read the temperature. This can take few seconds to a few minutes. Remove the thermometer from the mouth and read the temperature.

Step 5 – Store: After you have finished using the thermometer, switch off the thermometer and clean the tip with water and wipe with tissue paper or dry cloth. Keep the thermometer in its protective case and store it at safe place, away from the reach of children.

Heat Stroke

Heat stroke is the most severe of all heat-related illness. It could be life threatening. It is caused when the cooling mechanism of the body fails due to excessive heat and humidity. Impairment in sweat gland function may be another cause of heat stroke.

Symptoms: Body temperature greater than 104^0 F. Fever may cause headache, dizziness, fatigue, fluctuating blood pressure and irritability.

First Aid: Shift the person to a shady place. Cool the person by sponging with wet towel. Apply ice packs in armpits and groin. Give luke warm water with electrolyte.

Back Pain

Back pain is a short-term acute pain in the back of the body. It indicates that the body is under stress. It is caused due to problems in bones, ligaments and muscles of spine and nerves.

Triggering Factors:

Back pain may be aggravated due to poor posture, inappropriate footwear, incorrect walking habits, prolonged sitting, sleeping on soft mattresses, kidney, bladder prostate disorders, constipation, stress, etc.

First Aid:
Massage with hot/cold packs and use painkillers or relaxants for pain relief.

Asthma
Asthma is a chronic inflammatory lung disease that causes airways to tighten and narrow. It creates narrowing of air passages of the lung and therefore produces difficulty in breathing.

Symptoms: Symptoms may include wheezing, cough and cold, tightness in the chest, sticky mucus, disturbed sleep, and breathlessness.

Causes: It is believed that heredity factors are the main cause of asthma. Environmental factors like dust, mite, pollen and occupational exposure to irritants aggravate asthma. Cold, viruses, cigarette smoking, scent, pollution, change in weather, etc. are the triggering factors.

First Aid: In case of asthmatic attack, use asthma inhalers. Asthma inhalers are hand-held portable devices that deliver medication to the lungs. A variety of asthma inhalers are available to help control asthma symptoms in adults and children. Types of asthma inhalers include: **(i) Metered Dose Inhalers:** These inhalers consist of a pressurized canister containing medication that fits into a boot-shaped plastic mouthpiece. **(ii) Metered Dose Inhaler with a Spacer:** A spacer holds medication after it's released, making it easier to inhale the full dose. Releasing the medication into the spacer gives you time to inhale more slowly, decreasing the amount of medicine that's left on the back of your throat and increasing the amount that reaches the lungs, **(iii) Dry Powder Inhaler:** These inhalers do not use a chemical propellant to push the medication out of the inhaler. Instead, the medication is released by breathing in a deep, fast breath. Available types include a dry powder tube inhaler, a powder disk inhaler and a single-dose powder disk inhaler. Finding the right asthma inhaler can help make sure you get the right dose of medication to prevent or treat asthma attacks whenever you need it.

Foodborne Illness

Foodborne illnesses occur by eating unhygienic food and water. Bacteria are the most common cause of food contamination.

Symptoms: Common symptoms include diarrhoea, which may be bloody, nausea, abdominal cramps, vomiting, fever, dehydration, shallow breath, rapid pulse, pale skin, and chest pain.

First Aid: Oral Rehydration Salt (ORS) should be given with luke warm water. In severe cases, the patient should be hospitalized immediately. Recipe for making a 1 litre ORS solution using Sugar, Salt and Water.

1. Clean Water - 1 litre - 5 cupfuls (each cup about 200 ml.).
2. Sugar - Six level teaspoons.
3. Salt - Half level teaspoon.
4. Stir the mixture till the sugar dissolves.

Exercise

1. Practice the Cardiopulmonary Resuscitation (CPR) procedure on simulation.

Assessment

Fill in the Blanks

1. A person is suffering from fever ranging from 98.8° F – 100.8° F is said to be suffering from_____fever.
2. A person is suffering from a temperature of 104° F and above is said to be suffering from_____fever.
3. In high fever, a person should be kept_____by sponging with wet towel or applying ice packs in armpits.
4. _____ is a chronic lung disease.
5. Back_____is caused due to problems in ligaments and muscles of spine.
6. Bronchodilators are used in case of_____attack.
7. _____ are the microorganisms which are said to be the most common cause of food contamination.

Checklist for Assessment Activity

Use the following checklist to see if you have met all the requirements for assessment activity.

Part A

Differentiated between the following:

1. Low, mild and high fever

Part B

Discussed in class the following:

1. What are the role and functions of first aider?
2. What are the precautions to be taken while taking temperature?

Part C

Performance standards

The performance standards may include, but not limited to:

Performance Standards	Yes	No
Demonstrate the knowledge of ABC (airway, breathing and circulation) of first aid		
Demonstrate the steps for measuring body temperature using a digital thermometer		

Session 4: Performing the Role of First Aider in Cuts, Bleeding, Burns, Insect Bites and Stings, Dog Bites and Snake Bites

Relevant Knowledge

Let us now learn about the various first aid procedures that we need to adopt while handling patients with cuts, bleeding, insect bites and stings, dog bites, and snake bites.

Cuts

Cut is an injury which forms an opening in the skin.

Types of Cuts: The two types of cuts are minor and deep cuts.

(i) **Minor Cuts / Scrapings:** Minor cuts are caused by sharp tools and equipment like scissors, razors, saws, knives, pruners, chisels, and snips.

First Aid: Clean the cut with clean water and then with savlon. Apply antibiotic ointment or first aid band. Apply first aid bandage.

(ii) **Deep Cuts:** Deep cuts may expose the underlying tissues and cause heavy bleeding.

First Aid: In deep cuts, stitching of tissues may be required, therefore, immediate medical aid needs to be given. Tetanus toxoid injection should be given to prevent tetanus.

Bleeding

Bleeding refers to the loss of blood. Bleeding can happen inside the body (internal bleeding) or outside the body (external bleeding). Internal bleeding may also occur due to an injury to blood vessel. External bleeding could be blood flowing through a natural opening (such as the mouth, vagina or rectum). A cut on the skin can lead to severe external bleeding. It involves loss of large amount of blood.

Causes: Severe bleeding may occur in case of accidents, blow to the head, or due to certain illness like hemophilia, scurvy, cancer, thrombocytopenia, leukemia, hemorrhage, peptic ulcer, etc.

Symptoms: Symptoms include discharge of blood from a wound.

First Aid: Wash your hands and wear surgical gloves before administering first aid to victim. Make the victim lie down. Keep the affected area elevated. Remove any obvious debris/particle. Apply direct pressure using clean cloth/bandage. Hold the bandage in place using an adhesive tape. In case of bleeding does not stop, call the doctor.

Burns

Burns are injuries to the skin and tissues caused due to heat (e.g., fire, hot water, etc.), chemicals (e.g., acids), electricity or radiation. Burns can cause swelling, blistering, scarring and, in serious cases, shock and even death. They can lead to serious

infections as they damage the skin's protective covering. Severe burns affect muscles, fat and even bones.

Burns can be classified into three categories viz., first, second and third degree burns, depending on the severity of burn.

(i) **First degree burns:** In first degree burns, injuries are superficial or mild.

Symptoms: Swelling and redness of the injured area takes place. Pain develops. No blisters are seen. Burned area becomes white on touch.

First Aid:

- Remove patient from heat source.
- Remove the burnt clothing.
- DO NOT apply lotions, ointment or fat (e.g. ghee) to burns.
- Run cool water over burnt area.
- Wear surgical gloves and gently clean the injured area and dry.
- Apply antibiotic, such as Silver Sulphadiazine or Burnol.
- Use a sterile bandage to cover burns.

(ii) **Second-degree burns:** Burns extend to middle skin layer. 90% body surface injury results in death, while 60% injury in elderly is fatal.

Symptoms: Swelling, redness and pain are observed. Blisters develop, that ooze a clear fluid. Dehydration may occur.

First Aid:

- Make the patient lie down.
- Apply antibiotic cream over affected area.
- Splints may be used to rest the affected joints.
- Take the patient immediately to the hospital.

(iii) **Third-degree burns:** Damage occurs to all the three skin layers. It destroys adjacent hair follicles, sweat glands, and nerve endings.

Symptoms: Lack of pain due to destroyed nerves. The injured area does not turn white on touch. No blisters observed. Swelling occurs. Skin develops leathery texture. Discoloration of skin is observed. Scars develop. Crusty surfaces may occur.

First Aid: Move the patient to the hospital, without any delay.

Insect Bites and Stings

Insect bites are mostly not severe. Sometimes they cause a severe allergic reaction known as anaphylaxis. Sting of bees, wasps, hornets, and bites of fire ants are painful. Bites of insects, like mosquitoes cause itching and may result in diseases like malaria. The bite of a black widow spider can be fatal, if left untreated.

Symptoms: General symptoms of insect bites and stings include localised pain, swelling, redness, itching, numbness, burning, tingling sensation, breathlessness, and weakness.

First Aid:

- Remove the stinger using a straight- edged object like sterilized needle.

- Wash the area thoroughly with soap and water. Place ice wrapped in a cloth on the affected area. Repeat after every 10 minutes.
- Apply a gentle cream to prevent itching.
- Consult a doctor in case of severe bite symptoms.

Dog Bite

Dogs can cause slight injuries such as lesions, light traumas (scratches and bruises) and serious injuries such as bites. They may also cause diseases as a result of infections and allergies caused by bacteria, fungi, acarids or viruses. Rabies-Latin rabies, means-madness is (an acute viral disease of the central nervous system that affects humans and other mammals.) Rabies may be caused by non-immunized dogs or stray dogs.

Symptoms: Symptoms may include skin break, bruise or puncture, cuts, bleeding, swelling and redness of the area, and oozing of fluid. In case of rabies, the affected person is scared of water (hydrophobia).

First Aid:

- Wash hands before attending to wound.
- Wash wound with soap and running water.
- Apply antibiotic ointment.
- Dress using sterile bandage.

Tetanus booster or antibiotics/ anti-rabies injection are required to be given at the hospital.

Snake Bite

Snakebite is an injury caused by a bite from a snake often resulting in puncture wounds. The outcome of snake bites depends on numerous factors, including the species of snake, the area of the body bitten, the amount of venom injected, and the health conditions of the victim. Feelings of terror and panic are common after snakebite and can produce a characteristic set of symptoms mediated by the nervous system such as increased heartbeat, nausea and giddiness. Even bite from a harmless snake can cause allergic reaction.

Causes: Snakes which may bite a person includes Viper, Cobra, Rattlesnake, Water moccasin and Coral snake.

Symptoms: Symptoms may include fang marks, swelling or severe pain at the site, bloody discharge from wound, burning, blurred vision, numbness or tingling sensation, vomiting, loss of muscle co-ordinations, rapid pulse, fainting, etc.

Treatment:

- Immediately call for medical help. Get the victim to the hospital as soon as possible.
- Check the snakebite for puncture wounds. If one or two fang markings are visible, the bite is from a poisonous pit viper.

- Remember what the snake looks like. The doctor will need to know this to provide proper treatment.
- Keep the victim calm. Keep the bitten arms or leg below the level of his heart to slow the blood flowing from the wound to the heart. The more the victim moves, the faster the venom spreads through the body.
- Wash wound with soap/water, keep the bitten area slightly elevated, and apply cool compress/wet cloth to the affected part. Be sure to wipe away from the bite. This keeps any venom on the unbroken skin around the bite from being wiped into the wound.
- Watch for general symptom (i.e. sharp pain, bruising, swelling around the bite, weakness, shortness of breath, blurred vision, drowsiness, or vomiting). If any of the these symptoms occur within 30 minutes from the time of the bite, and you are over two hours away from medical help, tie a constricting band (3/4 to 1 ½ inches wide) two inches above the bite or above the swelling.
- The band needs to be loose enough to slip a finger underneath it. The band slows blood flow away from the bite, keeping the venom from reaching the heart. The band must be applied within 30 minutes after the time of the bite to be effective. If the swelling spreads, move the band so that it is two inches above the swelling. Monitor for pulse, respiration and blood pressure till the medical aid is given to the victim.

Exercise

1. Practice first aid on a dummy with the help of a first aider.

Assessment

Fill in the Blanks

a) The two types of cuts are_____and deep cuts.

b) Tetanus_____injection is given to prevent tetanus, which may be caused due to cut in the skin.

c) In certain illnesses like ulcer, excessive_____takes place.

d) A first-aider should always wash hands with antiseptic soap and water before and after administering_____.

e) You should wear surgical_____before administering first aid.

Checklist for Assessment Activity

Use the following checklist to see if you have met all the requirements for assessment activity.

Part A

Differentiated between the following:

1. Different types of cuts.
2. Different degree of burns.

3. Dog bite and snake bite.

Part B

Discussed in class the following:

1. How burns are caused?
2. Why bite of non-immunized dogs is dangerous?

Part C

Performance Standards

The performance standards may include, but not limited to:

Performance Standards	**Yes**	**No**
Demonstrate the knowledge of administer first aid for cuts in a hypothetical situation.		
Demonstrate the knowledge of steps involved in providing first aid to a victim of snake bite.		

UNIT – 5

STRUCTURE, FUNCTIoNS AND NUTRITIoN

Learning outcomes

Unit 5	HUMAN BoDY: STRUCTURES, FUNCTIoNS AND NUTRITIoN			
	Duration: 20 Hours			
Location Classroom/ Hospital/ Clinic	**Learning outcome**	**Knowledge Evaluation**	**Performance Evaluation**	**Teaching and Training Method**
	● Identify the parts of human body. .	● Describe the various tems of anatomy and physiology. ● Describe functions of various tissues and bones in human body.	● Identify the different parts of the body. ● Draw diagrams of tungs, urinary system, heart and and kidney. ● Demonstrate the knowledge of roles and functions of various systems of human body.	**Interactive Lecture:** ● Biological Parts of Human Body. ● **Activity:** Visit a biological lab, Research Laboratory and study the anatomy and physiology of human body.
	● Demonstrate the knowledge of nutrients in the nutrition of human body.	● Describe the role of various nutrients and vitamins. ● Describe the importance of a balanced diet.	● Enlist the food source of carbohydrate, protein and fat. ● Demonstrate the knowledge of dieses / disorders caused due to the dificiency of vitamins. ● Demonstrate the knowledge of a balanced diet.	**Interactive Lecture:** ● Nutrition and Balanceed Diet. ● **Activity:** Preparing a balanced diet.

Session 1: Identify the Parts of Human Body

Relevant Knowledge

Anatomy

The science that deals with the structures of the body and the relationship of various parts to each other is known as Anatomy. The knowledge of these structures in very important in order to understand the functions of the body. The discipline of anatomy is subdivided into gross (or macroscopic) anatomy and microscopic anatomy. Gross anatomy is the study of structures that can be seen by unaided vision with the naked eye. Microscopic anatomy is the study of structures on a microscopic scale, including histology (the study of tissues) and cytology (the study of cells).

Physiology

The science that elucidates the normal functions of the body and explains how the various organs and systems work together to function as a single unit is called Physiology. Human physiology is the science of the mechanical, physical, and biochemical functions of normal human or human tissues or organs. Anatomy and physiology are closely related fields of study: anatomy, the study of form, and physiology, the study of function. The study of how physiology is altered in disease is Pathophysiology.

The subject anatomy includes the following

- Histology - Study of Tissues
- Cytology - Study of Cells
- Myology - Study of Muscles
- Osteology - Study of Bones
- Arthrology - Study of Joints
- Neurology - Study of Nervous System
- Splanchnology - Study of Visceral Organs

Anatomical terminology is often chosen to highlight the relative location of body structures and the human anatomy may thus be described as per the following:

1. Median Line : The central plane which divides the body into two halves, i.e. right and left.
2. Medial : Nearer to the median line.
3. Lateral : Away from the median line.
4. Anterior : Towards the front surface of the body, also called Ventral.
5. Posterior : Towards the back surface of the body, also called Dorsal.
6. Superior : Nearer to the head, also called Cranial.
7. Inferior : Nearer to the foot, also called Caudal.
8. Proximal : Position that is closer from the trunk of the body.
9. Distal : Position that is further from the trunk of the body.
10. Superficial : Nearer to the skin and surface.
11. Deep : Deeper from the skin and surface.

General motion

The various parts of the body move with respect to each other and the plane of the body and these movements can be described in general as follows:

- Flexion a movement that decreases the angle between body parts.
- Extension a movement that increases the angle between body parts.
- Abduction a motion that pulls a structure away from the midline of the body or limb.
- Adduction a motion that pulls a structure towards the midline of the body or limb.
- Internal rotation (or medial rotation) refers to rotation towards the center of the body.
- External rotation (or lateral rotation) refers to rotation away from the center of the body.
- Elevation refers to movement in a superior direction.
- Depression refers to movement in an inferior direction.

Composition of Body

The human body is organized into various levels that begin at the very small and basic and come together to form the complete body whose different parts work in unison. This can be seen as a kind of 'ladder' going from the basic to the very complex. At the simplest level, the body is comprised of atoms.

Cell

The basic unit of body structure is the cell. It is like one brick of a wall. All cells need food, water, and oxygen to live and function. As cells use or metabolize food and oxygen they give off carbon dioxide and other wastes. The cell is comprised of the cell membrane, which is the outer covering; it encloses the cell and helps it hold its shape.

The nucleus is the control centre. It directs the cell's activities. Cytoplasm surrounds the nucleus. Organelles are structures that are suspended in the cytoplasm. The protoplasm refers to all structures, substances and water within the cell.

Functions of the cell 2

- Respiration - all cells require oxygen to metabolize food.
- Ingestion and assimilation - cells are able to select chemicals from the surrounding fluid for their structure.
- Growth and repair - cells can synthesize new cytoplasm so that growth can occur and repair worn out parts.
- Excretion - waste products are eliminated into surrounding tissue to be transported by the blood for elimination via organs.
- Irritability and activity - cells are able to respond to stimuli. For example, a stimulus causes a muscle to contract or relax.
- Metabolism - cells are able to break down and use substances from food as fuel.
- Reproduction - cells reproduce by simple division but some cells can never be replaced once destroyed. For example, central nervous system cells.

Tissues

Tissues are groups of similar cells that perform a common function. There are four categories of tissues in the human body: epithelial, connective, nervous, and muscle.

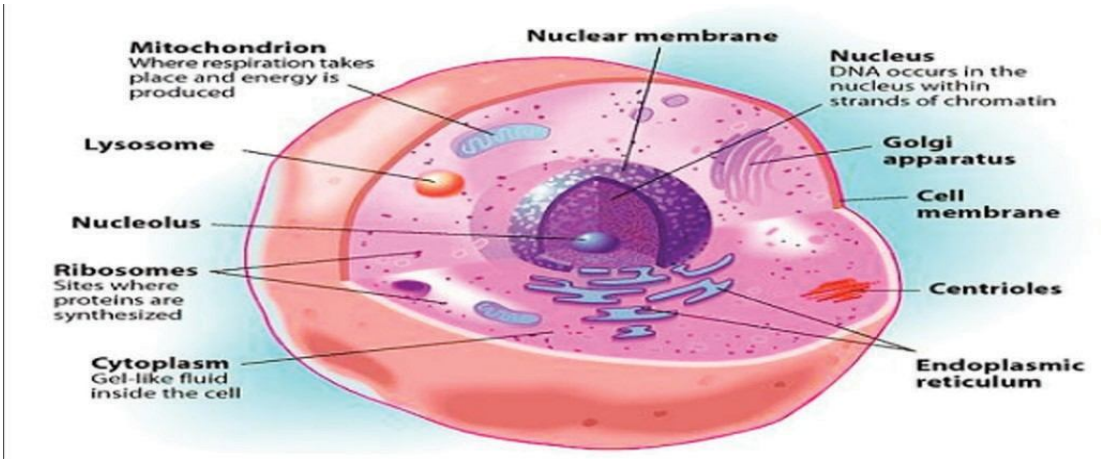


Figure 1 – A typical Human Cell

Types	Function	Example
Epithelial	Protection	Skin
Connective	Support	Bones
Muscular	Movement	Skeletal
Nervous	Communication	Brain

Epithelial Tissue

This tissue covers the body surfaces and lines its cavities. Some specialize to form glands. The functions of epithelial tissue include:

- Protection.
- Absorption.
- Secretion.
- Excretion.
- Surface transport.
- Reception of sensory information - like touch, heat/cold, pain.

A gland is one or more epithelial cells specialized to produce and discharge substances. Endocrine glands have no ducts or tubes and secrete hormones directly into the bloodstream, for example pituitary gland. Exocrine glands release their secretions through ducts, for example salivary and sweat glands.

Connective tissue

This tissue joins other tissues of the body together, supports the body and protects underlying organs.

Some main types are:

- Ordinary connective tissue - subcutaneous tissue and collagen (Just below the skin)
- Adipose tissue - stores fat
- Cartilage - protects joints and supports soft tissues
- Bone - rigid supporting tissue of the skeleton

- Blood - lymph and lymphoid tissue (produce blood cells)

Muscular tissue

- Muscle is composed of cells, specialized to contract.
- Skeletal muscle is striated (striped) and is under voluntary control (in our control).
- Cardiac muscle is present only in the walls of the heart, is striated and is controlled by involuntary nerve messages from the brain.
- Smooth muscle, also involuntary (not in our control), is responsible for movement of food through the digestive tract, and changing the diameter of blood vessels.

Nervous tissue

Nervous tissue forms the brain, spinal cord and the nerves. The basic cell is called the neuron. Specialized to receive stimuli and send impulses (messages) from one part of the body to another.

The various systems that form the human body are:

- Cardiovascular system
- Respiratory system
- Digestive system
- Muscular system
- Nervous system
- Urinary system
- Integumentary system
- Organs of the sensory system
- Reproductive system
- Endocrine system
- Immune system

Cardio Vascular System

The circulatory system is an organ system that permits blood and lymph circulation to transport nutrients, oxygen, carbon dioxide, hormones, blood cells, excretory material, etc. to and from cells in the body to nourish it and help to fight diseases, stabilize body temperature and pH, and to maintain homeostasis (i.e balance of chemicals).

The essential components of the human cardiovascular system are the heart, blood, and blood vessels. An average adult contains about 5 liters of blood, which is approximately 7% of total body weight. Blood consists of plasma, red blood cells, white blood cells, and platelets.

Heart

Human heart is a pump with four chambered, hollow organ, which is responsible for the circulation of blood throughout the body and along with it all the necessary gases, nutrients and others. The heart is located in the thorax (chest) between the lungs and behind the sternum. Two thirds of the heart lies on the left side and it is placed obliquely. The heart has a mass of between 250 and 350 grams and is approximately the size of the fist of the Individual. Heart is made of four chambers, two auricles

and two ventricles, each further classified into right and left auricle and right and left ventricle.

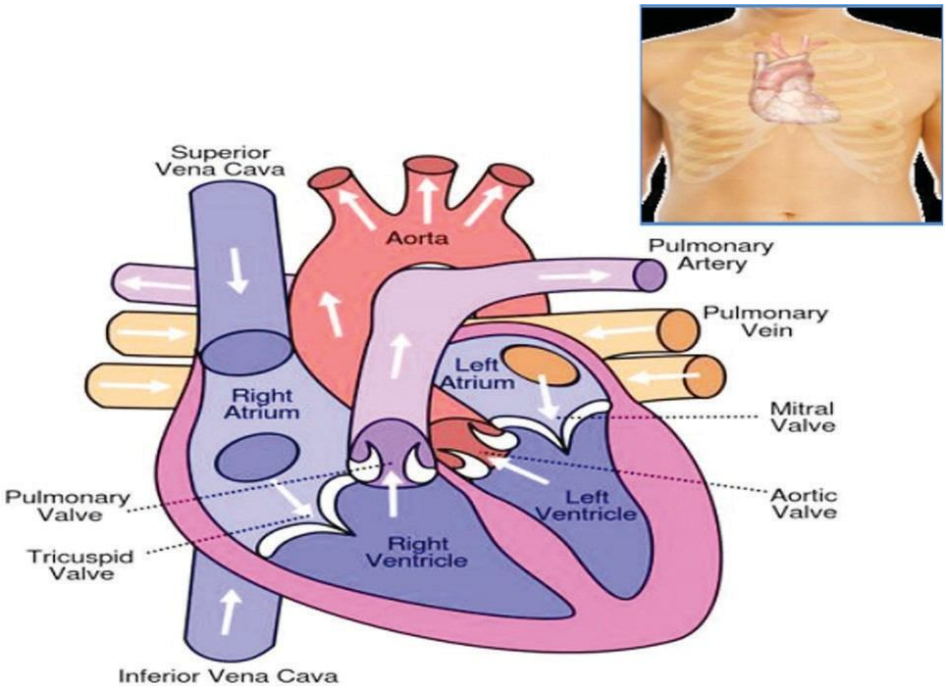


Figure 2 – Diagram of the Human Heart and the Location of heart in the Body (Inset picture)

The heart beat is denoted by heart sounds – the —Lub - Dub and the activity of the heart is visualized electrically by the ECG, i.e., Electro Cardiogram.

The blood vessels are the part of the circulatory system that transports blood throughout the body. There are three major types of blood vessels:

- Arteries - which carry the blood away from the heart
- Veins - which carry blood from the capillaries back towards the heart.
- Capillaries (Thinnest, located between Arteries and Veins) - which enable the actual exchange of water and chemicals between the blood and the tissues

Respiratory System

The respiratory system is a system consisting of specific organs and structures used for the process of respiration in an organism. The respiratory system is involved in the intake and exchange of oxygen and carbon dioxide between an organism and the environment. The respiration takes place in the respiratory organs called Lungs. The passage of air into the lungs to supply the body with oxygen is known as inhalation, and the passage of air out of the lungs to expel carbon dioxide is known as exhalation; this process is collectively called

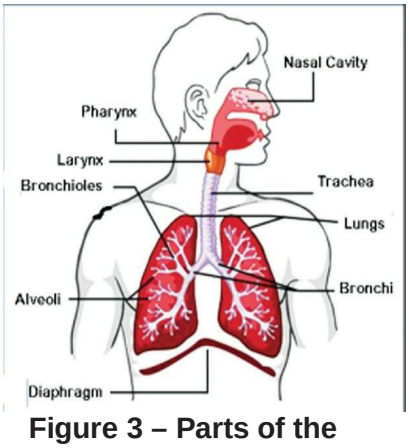


Figure 3 – Parts of the Respiratory

breathing. The anatomical features of the respiratory system include trachea, bronchi, bronchioles, lungs, and diaphragm. Molecules of oxygen and carbon dioxide are passively exchanged, by diffusion, between the gaseous external environment and the blood. This exchange process occurs in the alveoli or air sacs in the lungs.

Digestive System

The human gastrointestinal tract (GI tract is divided into the upper and lower gastrointestinal tracts). It includes all the structures from the mouth to the anus. The digestive system is a broader term that includes other structures, including the digestive organs and their accessories. The whole digestive tract is about nine meters long and is divided in to two major parts, the Upper GI tract and the Lower GI tract. The upper gastrointestinal tract consists of the esophagus, stomach, and duodenum. The lower gastrointestinal tract includes most of the small intestine and all of the large intestine.

The main organs in the digestive system are as follows:

- Oesophagus
- Stomach
- Duodenum
- Jejunum
- Ileum

} Small Intestine

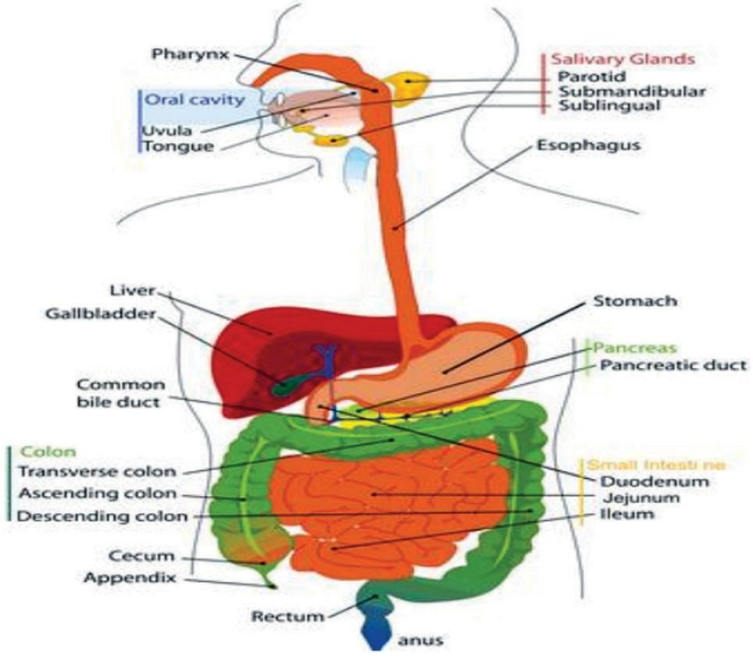


Figure 4 – Major organs of the Digestive System

- Ascending Colon
- Transverse Colon Large Intestine
- Descending Colon
- Rectum
- Anus

} Large Intestine

Musculo-Skeletal System

The human musculoskeletal system is an organ system that gives humans the ability to move using the muscular and skeletal systems. The musculoskeletal system provides form, support, stability, and movement to the body. It comprises of the body's bones (the skeleton), muscles, cartilage, ligaments, tendons, joints, and other connective tissue that supports and binds tissues and organs together.

The functions of the musculoskeletal system are as follows:

- Protect and support the internal structures and organs of the body
- Allow movement
- Give shape to the body
- Produce blood cells
- Store calcium and phosphorus

Skeletal System

The skeletal system is comprised of bones and joints and provides the basic supporting structure of the body. It consists of the joined framework of bones called the skeleton. The human skeleton is made up of 206 bones.

Bones

Bone is a dry, dense tissue composed of a calcium-phosphorus mineral and organic matter and water. The centre of Long bone contains bone marrow where blood vessels, fat cells and tissue for manufacturing blood cells are all found. There are the following four main shapes of bones:

- flat - as in ribs
- irregular - as in the vertebral column
- short - as in hands and foot
- long - as in femur and humorous

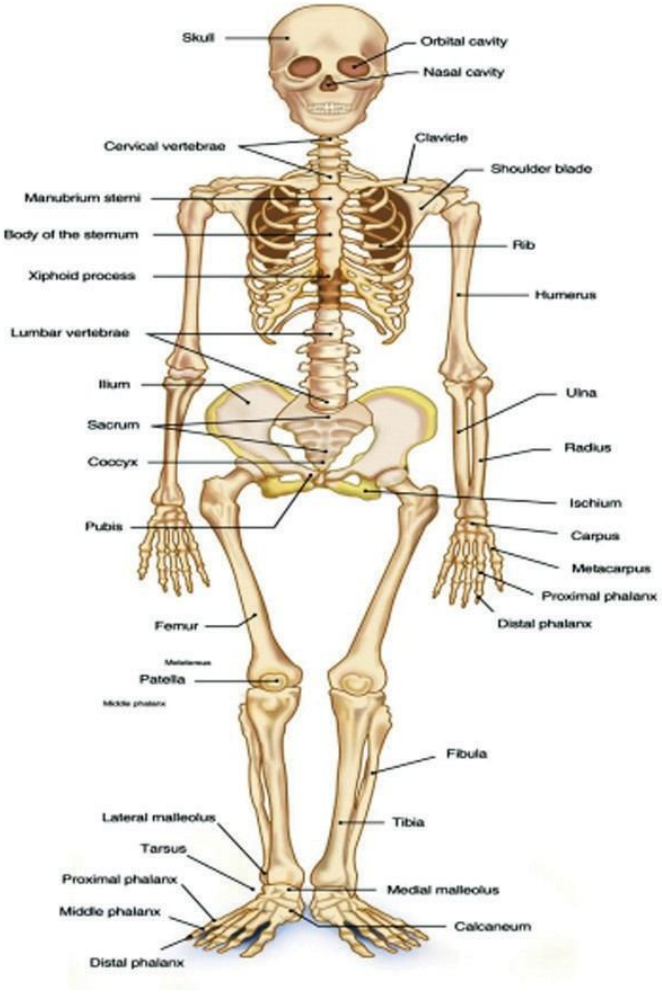


Figure 5 – Major Bones in the Skeletal System

Joints

A joint is an area where two or more bones come in contact with each other. Joints allow the movement of the bones and attached organs. The bones forming the joint are held together by ligaments. There are the following 3 types of joints:

1. Fibrous or immovable e.g. skull
2. Cartilaginous or slightly moveable e.g. vertebrae
3. Synovial or freely movable. These include the following:

a. Ball and socket - As in hip, shoulder
b. Hinge - As in elbow
c. Gliding - As in carpals at wrist (small bones of hand)
d. Pivot - As in radius and ulna

Muscular System

The muscular system allows us to move with help of the skeletal system. The human body is composed of over 500 muscles working together to facilitate movement. The major function of the muscular system is to produce movements of the body, to maintain the position of the body against the force of gravity and to produce movements of structures inside the body. There are the following 3 types of muscles:

1. Skeletal (voluntary) muscles are attached to bone by tendons
2. Smooth (involuntary) muscles control the actions of our gut and blood vessels
3. Cardiac muscle in the heart

The Nervous System

The nervous system is responsible for conducting and coordinating all the activities of the body. It controls not only the maintenance of normal functions but also the body's ability to cope with emergency situations.

Function

The nervous system has three general functions: a sensory function, an interpretative function and a motor function.

1. Sensory nerves gather information from inside the body and the outside environment. The nerves then carry the information to central nervous system (CNS).
2. Sensory information brought to the CNS is processed and interpreted.
3. Motor nerves convey information from the CNS to the muscles and the glands of the body.

Structure

The nervous system is divided into two parts:

1. The central nervous system consisting of the brain and spinal cord. These structures are protected by bone (Skull and Vertebral Column) and protected from injury by the cerebrospinal fluid (CSF) which acts as cushion or shock absorber
2. The peripheral system which connects the central nervous system to the rest of the body.

Brain and Spinal Cord

The brain is a mass of soft nerve tissue, which is placed within the skull. It is made up of grey matter, mainly nerve cell bodies, and white matter which are the cell processes. The grey matter is found at the periphery of the brain and in the centre of the spinal cord. White matter is found deep within the brain, at the periphery of the spinal cord and as the peripheral nerves. The spinal cord is about 45 cms long, acting as a message pathway between the brain and the rest of the body. Nerves conveying impulses from the brain, otherwise known as efferent or motor nerves, travel through the spinal cord down to the various organs of the body.

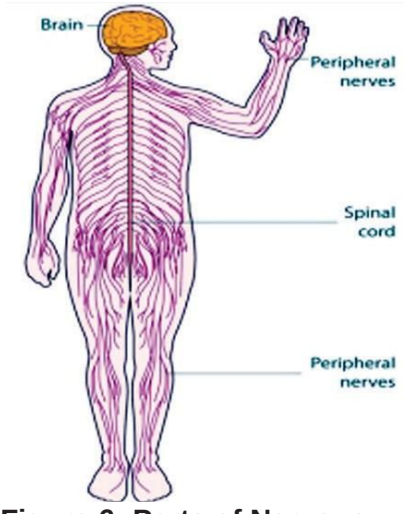


Figure 6: Parts of Nervous System

Urinary System

The urinary system, also known as the renal system, consists of the two kidneys, ureters, the urinary bladder, and the urethra. The purpose of the renal system is to remove wastes from the body, regulate blood volume and pressure, regulate blood pH, and control levels of electrolytes and metabolites. The kidneys have extensive blood supply which enter the kidneys through the renal arteries and leave the kidneys through the renal vein. After the filtration of blood, wastes in the form of urine exit the kidney via the ureters, tubes made of smooth muscle fibers that propel urine towards the urinary bladder, where it is stored and subsequently expelled from the body by urination. The female and male urinary system is very similar, differing only in the length of the urethra. Each kidney consists of millions of functional units called nephrons.

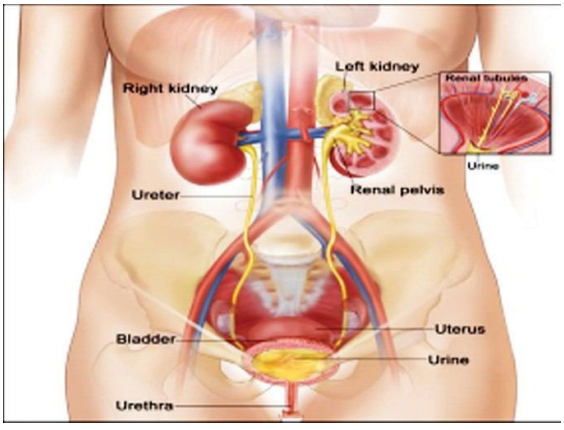


Fig. 7: Parts of Urinary System

Functions of the Urinary System

There are several functions of the Urinary System:

- Removal of waste product from the body (mainly urea and uric acid).
- Regulation of electrolyte balance (e.g. sodium, potassium and calcium).
- Regulation acid-base homeostasis.
- Controlling blood volume and maintaining blood pressure.

Ureters

These are two hollow tubes that run from the kidney to the bladder. Urine is transported through the ureters by peristalsis and gravity.

Urinary bladder

The Urinary bladder is a hollow sac situated towards the front of the lower part of the abdomen. The function of the bladder is to store urine.

Urethra

Urine is transported from the bladder through the urethra. In the female the urethra is about 10cms long; in the male the urethra is about 20cms long and also conveys semen.

The Nephron

The nephron is the functional unit of the kidney. Blood enters the nephron under pressure and passes through the structures of the nephron for filtration. Most of the water and many substances that are needed by the body are retained back after filtration. The kidneys produce 1-1.5 litres of urine per day.

Many factors affect the production of urine. These include age, illness, the amount of and type of fluids ingested, the amount of salt in the diet, caffeine, alcohol and medications.

Integumentary system

The Integumentary system is the skin. It is the outermost covering of the body.

Functions

- Protection
- Temperature regulation — the skin has an abundant blood supply, which is primarily for temperature regulation. For example, when we become hot, the blood supply rushes to the skin surface and heat is lost through radiation.The skin also regulates temperature by perspiration and when we perspire, heat is lost through evaporation.
- Sensory input — the skin has millions of nerve endings, which allow us to respond to the sensations of pain, heat and cold.
- Excretion of water and waste products.
- Manufacture of vitamin D.

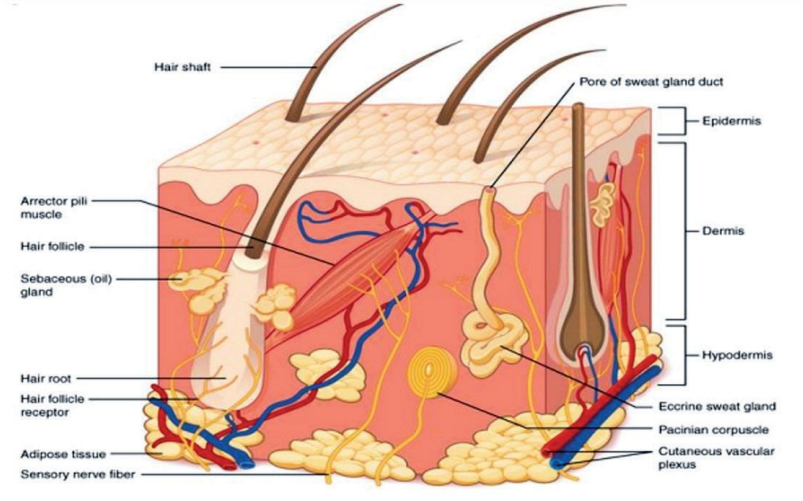


Figure 8: Structure of the Skin

Body Temperature

Body temperature is the balance between the amount of heat produced and the amount of heat lost by the body. Body temperature remains fairly stable. Factors affecting body temperature are age, weather, exercise, emotions, stress, pregnancy, the menstrual cycle and illness. The normal body temperature range for an adult is between 97.02–
°F. Any temperature above 99.50 °F is considered a fever or Pyrexia.

The Sensory organs

Tongue

The receptors for taste lie in the tongue and are able to identify the following four types of taste:

- Sweet
- Salty
- Bitter
- Sour

These taste pores or taste buds are found on papillae on the tongue and when they are stimulated by chemicals in the saliva. They send impulses to the brain to be interpreted by a specific area of the cortex.

The Nose

The receptors for smell are located in the upper part of each nasal cavity. Sniffing helps bring more air (containing odours) over the olfactory mucosa.

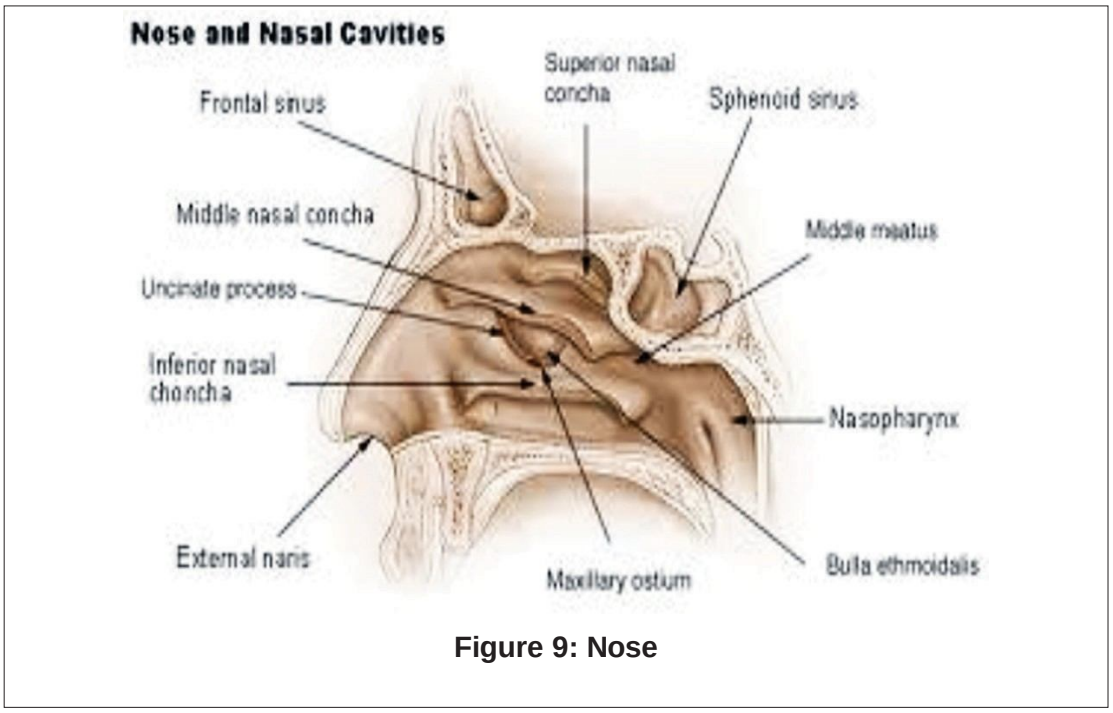


Figure 9: Nose

Hearing and Balance - The Ear

The ear is divided into three main areas: the external ear; the middle ear; and the inner ear. The outer and middle ear is involved in hearing only. The inner ear functions in

both balance and hearing. The external ear is composed of the pinna and the external auditory canal. In the walls of the external auditory canal are glands that secrete earwax or cerumen.

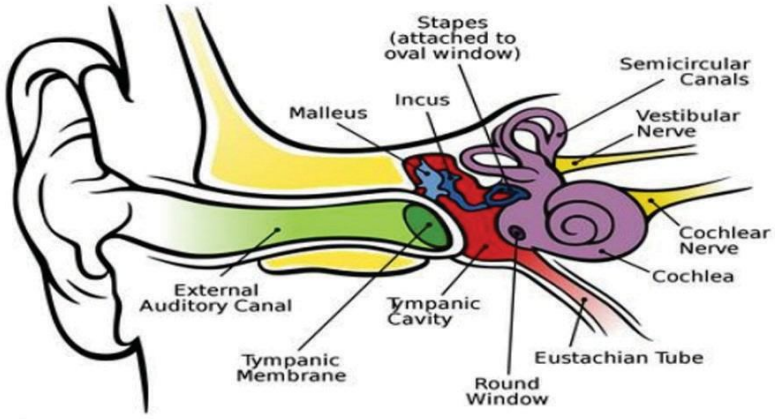


Figure 10: Parts of Ear

Eye

The eye is a hollow sphere. The accessory structures of the eye include the extrinsic eye muscles, the tear (lachrymal) glands and ducts, the eyelids, the eyelashes and the conjunctiva.

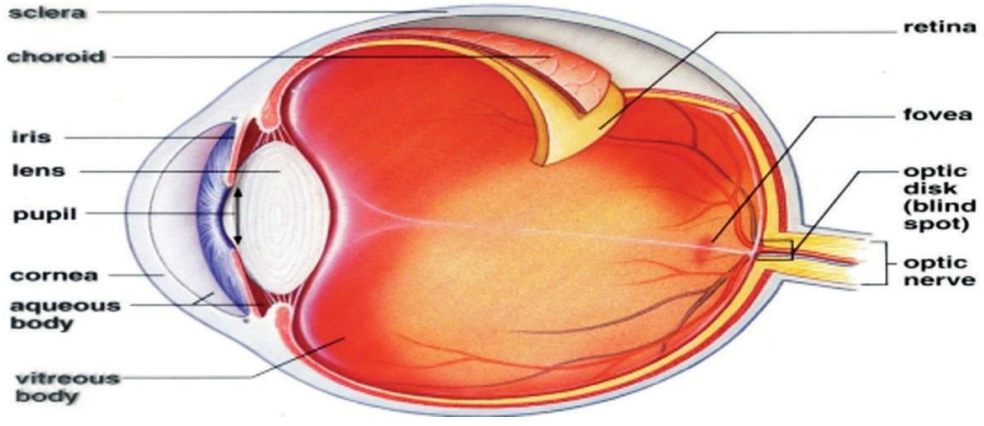


Figure 11: Parts of Eye

Exercise

1. Visit a Anatomy Lab and identify the following:
   a. Gross and microscopic slides of various body parts.
   b. Draw and imaginary Medial, Median and lateral line on Torso.
   c. Identify the anterior, posterior, superior and inferior parts of liver.
2. Prepare diagrams of the following organs and label them:
   1. Lungs

2. Urinary system
3. Heart

3. Visit a nearby laboratory and observe various body tissues. Fill the table given below

Types	Tissue obtained from which body parts
Epithelial	
Connective	
Muscular	
Nervous	

Assessment

I. Short Answer Questions

1. Describe the functions of following:

a) Epithelial tissues

_____
_____
_____
_____

b) Muscular tissues

_____
_____
_____
_____

c) Nervous tissues

_____
_____
_____
_____

d) Heart

_____
_____
_____

e) Lungs

_____
_____
_____
_____
_____

f) Kidney

_____
_____
_____
_____

g) Artery

_____
_____
_____
_____

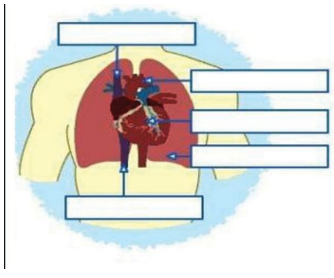
II. Match the following

Column 1	Column 2
Integumentary	Heart, vessels, blood
Cardiovascular	Trachea, bronchus, lungs
Nervous	Brain, spinal chord
Urinary	Muscles, bones
Digestive	Glands, hormones
Respiratory	Kidney, bladder
Musculoskeletal	Mouth, oesophagus, intestines, rectum

III. Fill in the blanks

1. Blood cells are manufactured in _____
2. Normal temperature of a human being is _____
3. The number of chambers in a heart are _____
4. An adult human skeleton has_____bones
5. Study of tissues is known as _____
6. Study of bones is known as _____
7. Study of nervous system is known as _____

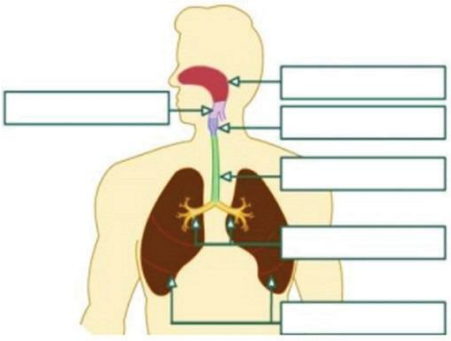
IV. Match the organs with respect to their location in the body



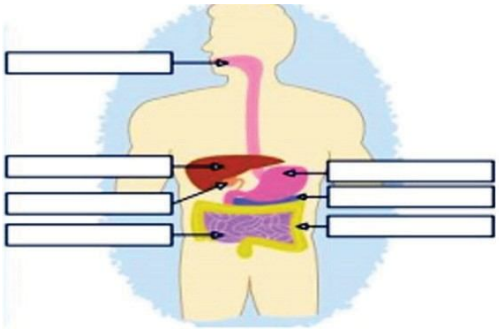
1. Heart
2. Superior Venacava
3. Lungs
4. Inferior venacava
5. Heart

V. Fill in the blank boxes from the following words:

Pharynx	Larynx	Bronchus
Trachea	Nasal cavity	Lungs



VI. Identify the parts of the body



1. Mouth
2. Stomach
3. Gall Bladder
4. Pancreas
5. Liver
6. Large Intestine
7. Small Intestine

Checklist for Assessment Activity

Use the following checklist to see if you have met all the requirements for assessment activity.

Part A

Differentiated between the following:

1. Anatomy and physiology
2. Cells and tissues
3. Capillaries and veins
4. Metabolism and catabolism
5. Endocrine and exocrine glands
6. Histology and myology

Part B

Discussed in class the following:

1. Why is it necessary to study the human anatomy and physiology?
2. What are the roles and functions of various tissues in human body?
3. How the study of human anatomy and physiology would help a GDA in performing effectively?

Part C

Performance Standards

The performance standards may include, but not limited to:

Performance Standards	Yes	No
Identify the parts of human body.		
Demonstrate the knowledge of roles and functions of various systems of human body.		
Demonstrate the knowledge of different types of tissues and bones in human body.		

Session 2: Describe the Role of Nutrition in the Growth and Development of Human Body

Relevant Knowledge

Nutrition is the process of providing or obtaining the food necessary for health and growth. Nutrition is the intake of food, considered in relation to the body's dietary needs. Good nutrition – an adequate, well balanced diet combined with regular physical activity is a cornerstone of good health. Poor nutrition can lead to reduced immunity, increased susceptibility to disease, impaired physical and mental development, and reduced productivity.

Why is Nutrition Important?

The food habits of people have changed drastically in a short time and this has had a big impact on our health. What we eat helps us to grow and develop properly, and stay healthy and strong. Food plays an important part in healthy pregnancy, promoting healthy babies and children that grow to their best mental, physical, social and emotional potential.

Food plays an important role in preventing and treating conditions affecting people such as diabetes, heart disease, hyperactivity, and obesity. Our food choices take place in a social, cultural, political and economic environment that can aggravate the health of communities unless active measures are taken to make the environment a health promoting one. Nutrition also focuses on how diseases, conditions and problems can be prevented or lessened with a healthy diet. In addition, nutrition involves identifying how certain diseases, conditions or problems may be caused by dietary factors, such as poor diet (malnutrition), food allergies, metabolic diseases, etc.

The human body requires seven major types of nutrients

A nutrient is a source of nourishment and an ingredient of foods, such as protein,

carbohydrate, fat, vitamin, mineral, fiber and water. Macronutrients are nutrients we need in relatively large quantities. Micronutrients are nutrients we need in relatively small quantities.

A) Macronutrients

Carbohydrates

Molecules consist of carbon, hydrogen and oxygen atoms. Carbohydrates include monosaccharides (glucose, fructose, glactose), sisaccharides, and polysaccharides (starch). Nutritionally, polysaccharides are more favoured for humans because they are more complex molecular sugar chains and take longer to break down - the more complex a sugar molecule is the longer it takes to break down and absorb into the bloodstream. It yields energy equal to approx. 4 kcal per gram.

Pyramid of Nutrition

Proteins

Molecules contain nitrogen, carbon, hydrogen and oxygen. Simple proteins, called monomers, are used to create complicated proteins, called polymers, which build and repair tissue. When used as a fuel the protein needs to break down, as it breaks down it gets rid of nitrogen, which has to be eliminated by the kidneys. It yield energy, approximately 4 kcal per gram.

Fats

Molecules consist of carbon, hydrogen, and oxygen atoms. Fats are triglycerides - three molecules of fatty acid combined with a molecule of the alcohol glycerol. Fatty acids are simple compounds (monomers) while triglycerides are complex molecules (polymers). These do not provide energy. It yield approximately 9 kcal per gram.

Fiber

Fiber consists mostly of carbohydrates. However, because of its limited absorption by the body, not much of the sugars and starches get into the blood stream. Fiber is a crucial part of essential human nutrition.

Water

About 70% of the non-fat mass of the human body is water. Nobody is completely sure how much water the human body needs - claims vary from between one to seven litres

per day to avoid dehydration. We do know that water requirements are very closely linked to body size, age, environmental temperatures, physical activity, different states of health, and dietary habits.

B) Micronutrients

Nutrients required in small quantities throughout a person's life include the following:

Minerals

Dietary minerals are the other chemical elements our bodies need, apart from carbon, hydrogen, oxygen and nitrogen. The term "minerals" is misleading, and would be more relevant if called "ions" or "dietary ions". People whose intake of foods is varied and well thought out - those with a well balanced diet - will in most cases obtain all their minerals from what they eat. Minerals are often artificially added to some foods to make up for potential dietary shortages and subsequent health problems. The best example of this is iodized salt - iodine is added to prevent iodine deficiency, which even today affects about two billion people and causes mental retardation and thyroid gland problems. Iodine deficiency remains a serious public health problem in over half the world.

Potassium

Potassium is a systemic (affects entire body) electrolyte, essential in co-regulating ATP (an important carrier of energy in cells in the body, also key in making Ribonucleic Acid (RNA)) with sodium.

- Deficiency of phosphorus may result in hypokalemia (can profoundly affect the nervous system and heart).
- Excess potassium may result in hyperkalemia (can profoundly affect the nervous system and heart).

Chloride

Chloride is a key for hydrochloric acid production in the stomach, also important for cellular pump functions.

- Deficiency of chloride may result in hypochleremia (low salt levels, which if severe can be very dangerous for health).
- Excess chloride may result in hyperchloremia (usually no symptoms, linked to excessive fluid loss).

Sodium

Sodium is a systemic electrolyte and essential in regulating ATP with potassium.

- Deficiency of sodium may result in hyponatremia (cause cells to malfunction; extremely low sodium can be fatal).
- Excess sodium may result in hypernatremia (can also cause cells to malfunction, extremely high levels can be fatal).

Calcium

Calcium is important for muscle, heart and digestive health. Builds bone, assists in the synthesis and function of blood cells.

- Deficiency of calcium may result in hypocalcaemia (muscle cramps, abdominal cramps, spasms, and hyperactive deep tendon reflexes).
- Excess calcium may result in hypercalcaemia (muscle weakness, constipation, undermined conduction of electrical impulses in the heart, calcium stones in urinary tract, impaired kidney function, and impaired absorption of iron leading to iron deficiency).

Phosphorus

Phosphorus is a component of bones and energy processing.

- Deficiency of phosphorus may result in hypophosphatemia, an example is rickets-weak bones in children.
- Excess phosphorus may result in hyperphosphatemia, often a result of kidney failure.

Magnesium

Magnesium processes ATP and required for good bones.

- Deficiency of magnesium may result in hypomagnesemia (irritability of the nervous system with spasms of the hands and feet, muscular twitching and cramps, and larynx spasms).
- Excess magnesium may result in hypermagnesemia (nausea, vomiting, impaired breathing, low blood pressure). Very rare, and may occur if patient has renal problems.

Zinc

Zinc is required by several enzymes.

- Deficiency of zinc may result in short stature, anemia, increased pigmentation of skin, enlarged liver and spleen, impaired gonadal function, impaired wound healing, and immune deficiency.
- Excess zinc suppresses copper and iron absorption.

Iron

Iron is required for proteins and enzymes, especially hemoglobin.

- Deficiency of iron may result in anemia.
- Excess of iron may result in overload disorder, iron deposits can form in organs, particularly the heart.

Manganese

Manganese is a cofactor in enzyme functions.

- Deficiency of manganese may result in wobbliness, fainting, hearing loss, weak tendons and ligaments. Less commonly, can be cause of diabetes.
- Excess of manganese may result in interferes with the absorption of dietaryiron.

Copper

Copper is a component of many redox (reduction and oxidation) enzymes.

- Deficiency of copper may result in anemia or pancytopenia (reduction in the number of red and white blood cells, as well as platelets) and a neurodegeneration.
- Excess copper can interfere with body's formation of blood cellular components; in severe cases convulsions, palsy, and insensibility and eventually death.

Iodine

Iodine is required for the biosynthesis of thyroxine (a form of thyroid hormone).

- Deficiency of iodine may result in developmental delays, among other problems.
- Excess iodine can affect functioning of thyroid gland.

Vitamins

These are organic compounds we require in tiny amounts. Vitamin cannot be synthesized in the body or if at all it is synthesized, it is not sufficient for the body. So we have to obtain it from our food.

Vitamins are classified by what they do biologically.

Vitamins are classified as water soluble (they can dissolve in water) or fat soluble (they can dissolve in fat). In humans, there are 13 vitamins, out of which there are 4 fat-soluble (A, D, E, and K) and 9 water-soluble (8 B vitamins and vitamin C) vitamins.

Vitamin	Chemical name	Daily Requirement	Deficiency disease/ disorder	Food sources
Vitamin A	Retinol	900 µg	Night-blindness, and Keratomalacia	Orange, ripe yellow fruits, leafy Hyperkeratosis, vegetables, carrots, pumpkin, spinach, milk
Vitamin B1	Thiamine	1.2 mg	Beriberi	Oatmeal, brown rice, vegetables, potatoes, eggs
Vitamin B12	Cyanocobalamin, hydroxycobalamin, methylcobalamin	2.4 µg	Megaloblastic anemia	Meat and other animal products
Vitamin B2	Riboflavin	1.3 mg	Glossitis, stomatitis	Angular Dairy products, bananas, popcorn, green beans,
Vitamin B3	Niacin, niacinamide	16.0 mg	Pellagra	Meat, fish, eggs, many vegetables, mushrooms,
Vitamin B5	Pantothenic acid	5.0 mg	Paresthesia	Meat, avocados
Vitamin B6	Pyridoxine, pyridoxamine, pyridoxal	1.3–1.7 mg	Anemia, peripheral neuropathy.	Meat, vegetables, tree nuts, bananas
Vitamin B7	Biotin	30.0 µg	Dermatitis, enteritis	Raw egg yolk, liver, peanuts, certain vegetables
Vitamin B9	Folic acid, folinic acid	400 µg	Megaloblastic anemia and deficiency during pregnancy is associated with birth defects, such as neural tube defects	Leafy vegetables, pasta, bread, cereal, liver
Vitamin C	Ascorbic acid	90.0 mg	Scurvy	Many fruits and vegetables,
Vitamin D	Cholecalciferol,	10 µg	Rickets and	Fish, eggs, liver, mushrooms

	Ergocalciferol	16 µg	Osteomalacia	
Vitamin E	Tocopherols, tocotrienols	15.0 mg	Deficiency is very rare; sterility in males and abortions in females, mild hemolytic anemia in newborn infants.	Many fruits and vegetables, nuts and seeds
Vitamin K	phylloquinone, phylloquinone,	120 µg	Bleeding menaquinones diathesis	Leafy green vegetables such as spinach, egg yolks, liver

Exercise

1. Identify the food products available in nearby market according to nutritional classification.

   Fill the table given below with the five rich sources –

Nutrient	Rich source
Carbohydrate	
Fat	
Protein	
Vitamin A	
Calcium	
Phosphorous	
Sodium	

Assessment

I. Short Answer Questions

1. Give three examples of food that provide the following nutrients:

(a) Carbohydrates

_____
_____
_____
_____
_____

(b). Proteins

_____
_____
_____
_____

(c). Calcium

(e) Fats

(f). Vitamin A

Checklist for Assessment Activity

Use the following checklist to see if you have met all the requirements for assessment activity:

Part A

Differentiated between the following:

1 Macronutrients and micronutrients

2. Vitamins and minerals

Part B

Discussed in class the following:

1. What are the roles and functions of different vitamins?

2. What is the importance of minerals in our growth and development?

3. Why is it important to take a balanced diet?

4. Why is it important to understand the importance of nutrients in the diet?

Part C

Performance Standards

The performance standards may include, but not limited to:

Performance Standards	Yes	No
Demonstrate the knowledge of nutrition in the growth and development of human body.		
Demonstrate the knowledge of diseases/disorders caused due to the deficiency of vitamins.		

UNIT – 6

PUBLIC RELATIoNS IN HoSPITAL

Learning outcomes

Unit 6	PUBLIC RELATIoNS IN HoSPITAL			
	Duration: 20 Hours			
Location Classroom/ Hospital/ Clinic	**Learning outcome**	**Knowledge Evaluation**	**Performance Evaluation**	**Teaching and Training Method**
	● Domenstrate the knowledge of the roles and function performed by a Medical. Receptionist.	● Describe the qualities of a good medical receptionist. ● Describe the tasks performed by a Medical Receptionist.	● Demonstrate the knowledge of greeting patients and other callers in a courteous and efficient manner. ● Answer telephone calls courteously and as per procedure and norms. ● Demonstrate the knowledge of making appointments for patients and maintaining file medical records.	**Interactive Lecture:** ● Function of Medical Receptionist. ● **Activity:** Visit a nearby hospital and study the activities in reception area and the tasks being performed by a Receiptionist.
	● Demonstrate the knowledge of responding to emergency calls. .	● Describe the knowledge of responding to emergency calls. ● Describe the roles and functions of “on call duty doctor”. ● Describe the various equipments available in a 108 emergency service ambulance.	● Demonstrate the knowledge of the responsibility in emergency management activities. ● Demonstrate the knowledge of routine call and emergency call.	**Interactive Lecture :** ● Responding to emergency calls. ● **Activity:** Visit a nearby hospital and study the major and minor emergency and non-emergency services provided by the hospital
	● Use computers in maintaining public relations.	● Describe the impact of technoogical revolution in healthcare sector. ● Describe the use of computer in hospital administration. ● Identify the use of computer in various sections / departments of a hospital.	● Demonstrate the knowledge of application of computer in hospital. ● Demonstrate the knowledge of maintaining files and records in computer.	**Interactive Lecture :** ● Using computers in maintaining public relations. ● **Activity:** Visit a nearby hospital and study the use of computer in maintaining files and records in a hospital.

Learning outcomes

	● Demonstrate the knowledge of dealing with.	● Enlist the general stressful situation in hospital. ● Describe the factor affecting relation-ship between a General Duty Assistant and patient.	● Demonstrate the knowledge of handling people with emotional stress or emotional outbursts. ● Enlist the skills required for General Duty Assistant in managing stressful situation.	**Interactive Lecture :** ● Dealing with patients attendant. **Activity :** ● Visit a nearby hospital and study health professional handling the patient's rela-tive to emerg-ency situation.

Session 1: Describe the Role and Functions of Medical Receptionist

Relevant Knowledge

Medical Receptionist is part of the health services front line staff. He/she is the first link for patients and visitors who visit a doctor or other member of staff for the first time. A General Duty Assistant may be required to serve as Medical Receptionist, therefore, he/she should be trained in the medical terminology, application of software and office procedures.

The Reception is located near the entrance of the hospital. The receptionist at the reception centre handle all visitor's enquires, direct visitors to the Public Relations Officer (PRO) and coordinates with other hospitals. A sufficient number of reception staff / receptionist shall be there for assisting the patient and relatives. The hospital reception functions 24 x 7. If it is not functioning during the night, an alternative arrangement is made to provide services to the clients. The size of the reception area and facilities depends on the size of the hospital and number of visitors and patients.

Physical Setup of Reception Counter

The following are the part of reception counter

- Reception desk
- Registration counter
- Record room
- Lightning
- Telephones
- Waiting area
- Public utility service
- Information kiosk
- Clock system
- Signage system
- Facilities for deaf/hard of hearing
- Seating facility

Role and Functions of Receptionists

Medical Receptionists are the first point of contact for the patients, visitors doctors, and staff members. Doctors, nurses, and other medical and administrative staff members depend on the receptionist to create a friendly, welcoming and well-organized front office for patients and to facilitate their flow through the facility. Receptionist is required to ensure paper work to be completed by the patients or his/her family/relatives/friends.

- Medical Receptionists work on their own or with one or two other receptionists.

- They might also collect patient notes and ensure that these vital records goto the concerned healthcare professional.
- In a clinic, they may arrange appointments and patient transport.
- Hospital receptionist helps the patient regarding information on Outpatient Department‘s timing, investigation reports, location of department, etc.
- They have to manage the crowd.

Qualities of a Receptionist

The knowledge, skills and abilities that a receptionist should possess include the following:

- Knowledge of departments and sections of the hospital
- Greeting clients.
- Arranging meetings.
- Answering and forwarding phone calls.
- Sorting and distributing posts.
- Recording information.
- Well organized.
- Efficient.
- Computer skills.
- Communication skills.
- Polite.
- Efficient.
- Discretion.
- A friendly, sympathetic and reassuring manner.
- Compassionate.

The size of the reception area and facilities depends on the size of the hospital and number of visitors and patients.

Exercise

1. Visit a nearby hospital and observe the activities in the reception area and tasks being performed by a Reception. Prepare a note on your observations

Assessment

Q1.Where the hospital reception is generally located?

_____

_____

_____

Q2. What are the qualities of a hospital receptionist?

_____

_____

_____

Q3. What are the tasks performed by a Medical Receptionist?

_____
_____
_____
_____
_____

Checklist for Assessment Activity

Use the following checklist to see if you have met all the requirements for assessment activity.

Part A

Differentiated between the following:

1. Front desk operations and back office operations.
2. Customer and client.
3. Verbal and non-verbal communication.

Part B

Discussed in class the following:

1. What are the role and responsibilities of a medical receptionist?

Part C

Performance Standards

The performance standards may include, but not limited to:

Performance Standards	Yes	No
Greet patients and other callers at the in a courteous and efficient manner.		
Answer the telephone promptly and courteously.		
Demonstrate the knowledge of making appointments for patients following set procedures.		
File medical records.		

Session 2 : Responding to Emergency Calls

Relevant Knowledge

The perception of emergency may be different for patients and doctors. Emergency or urgency is ill defined. It is derived from the Latin word “urgens” mean “pressing”. What is urgent has to be done without delay. Casualty, as defined by the Ministry of Health, London, means “a patient who comes to the hospital un-announced, with accidental injury and is seen and treated otherwise that at consultative session”. Every hospital big or small, therefore, requires setting up a well organized emergency unit, because the image of the hospital mainly depends upon the quality and type of treatment a hospital can provide to a patient suffering from any medical or surgical emergency.

Emergency department of a hospital, therefore, means a part of the hospital to which person injured in road accidents or those suffering from serious complications are admitted for treatment. The emergency department works round the clock. Immediate diagnosis and urgent treatment for illness of emergency has been defined as “a condition determined clinically or considered by the patient or his relative or representative, requiring immediate medical, dental or allied services failing which may result in loss of life or limb”.

Emergency situation may be dealt in the following manner:

01 Physically – Handled by expert available in the hospital like doctor, nurses, etc.

02 Telephonically – Handled telephonically by an expert or general consultant.

Responding to Emergency Calls

An Emergency medical dispatcher is a professional telecommunicator tasked with the gathering of information related to medical emergencies, the provision of assistance and instructions by voice, prior to the arrival of Emergency Medical Services (EMS), and the dispatching and support of EMS resources responding to an emergency call.

A skillful GDA may be appointed to deal with telephone as a receptionist in the front office. They may be placed in a central telephone exchange room also. Like receptionists, they are an important first point of contact for patients and their families and are a vital link between a caller and the person who can help. Callers might be anxious or upset, waiting to hear about a friend or relative, or phoning to check details of an important clinic appointment, therefore good communication skills are important.

GDA can also handle urgent calls between members of the healthcare team in hospitals and the community. A GDA might call to arrange an emergency appointment for a patient or a health visitor might want to check some key information about a child.

The emergency team is a group people with different roles who provide the vital back-up, as well as the non-emergency patient transport service that is valued by the community. Before the accident and emergency crews take over, other members of the trained team take the call, decide rapidly what action is needed and then ensure that it happens. If the situation is critical, one of the control staff might have to talk a distressed caller through a lifesaving procedure or collect more essential information

as the ambulance travels to the scene. Less obvious on streets, but still essential, are the non-emergency ambulances. Day after day, patient transport services, as they are known, carry disabled, elderly and vulnerable people to and from outpatient appointments, hospital admissions, day centres and clinics. Without them, many people would be unable to carry on leading independent lives in the community.

Role of GDA during Emergency Call

Communicating an emergency situation outside hospital:

- Identify basic call information, including the location and telephone number of the caller, the location of the patient, the general nature of the problem, and any special circumstances.
- Prioritize incoming calls, providing expert systematized caller interrogation in order to determine the likely severity of the patient's illness or injury, so that the most appropriate type of response resource may be expedited.
- Selection and assignment of the most appropriate type of response resource, such as an ambulance, from the closest or the most appropriate location, depending on the nature of the problem, and ensuring that the crew of the response resource receive all of the appropriate information.
- Provide and assist the caller with pre-arrival instructions to help the victim, using standardized protocols developed in hospital. Such instructions may consist of simple advice to keep the patient calm and comfortable or to gather additional background information for responding paramedics. The instructions can also frequently become more complex, providing directions over the telephone for an untrained person to perform Cardiopulmonary Resuscitation (CPR), for example. CPR is an emergency procedure performed in an effort to manually preserve intact brain function until further measures are taken to restore spontaneous blood circulation and breathing in a person who is in cardiac arrest.
- Provide information support to the responding resources. This may include call backs to the call originator to clarify information. It may involve clarifying the exact location of the patient, or sending a bystander to the ambulance and direct paramedics to the patient.

Communicating an emergency situation to "oN CALL DUTY DoCToR"

"On-call" duties come with the privilege of practicing in a hospital. Every hospital should have policies to ensure appropriate "on-call" coverage of the emergency department by specialists and sub-specialists. Hospitals must maintain a list of physicians, including specialists and sub-specialists, who are on call to evaluate and treat patients in the

emergency department. Hospitals are responsible for ensuring that on-call physicians respond within a reasonable period of time. The medical staff by laws or policies and procedures must define the responsibility of on-call physicians to respond, examine, and treat patients with emergency medical conditions. GDA may be given responsibility to communicate with doctor on call. He/she should respond to the situation in effective manner.

108 Emergency Response Service

108 Emergency Response Service (ERS) in India has two dimensions, one is the promptness with which the ambulance arrives and the second is the care provided en route. Trained paramedical staff and equipping the ambulances with all necessary consumables and equipment, including five types of stretchers and a wheel-chair are part of ERS. Every aspect of quality of care during transport, before reaching a health facility is taken care of. There is a documented and verifiable system in place for measuring the time taken from the moment of receiving the call to the moment of reaching the patient and the time taken to deliver the patient to the facility. This system is well monitored and supervised in a control room.

On dialing 108, ambulance of 108 reaches the scene. 108 can be dialed from landline and mobile without adding any code. In an ambulance there is a paramedic to provide appropriate medical help and handles the victim carefully. The 108 ambulance is fully equipped with all the medicines and equipments which are required in an emergency. The victim is then taken to hospital and on the way medical help is given in the ambulance itself. With pre-hospital care, a life can be saved even in a critical condition. So if there is an emergency, call 108 and wait till the ambulance to reach. Taking a victim into an ambulance is a wise decision. So instead of rushing the victim from a private vehicle or auto, it is smart to wait for 108 ambulance.

Responding to Patient's Feedback

The following are the important point to be kept in mind while responding to patients:

- Patient feedback is completely separate from the official complaints process. If someone is following that process, they are still entitled to leave feedback.
- Respond to all comments, good or bad, as it shows you listen.
- Welcome all opinions and try not to be defensive or aggressive if they're negative.
- Do not use the same stock response to each comment.
- Practice to respond to most comments without breaching patient confidentiality.
- Know who is asking and why particularly applicable to the group of people.
- Listen carefully, do not try to interrupt and give a straight answer.

- Ensure first, who is authorized to communicate for a particular task.
- Develop your own communication skill.
- Do not answer quires that you do not know.

Exercise

1. Visit a nearby hospital and observe the major and minor emergency and non-emergency services provided by the hospital.

Assessment

Q1. What is emergency?

_____
_____
_____

Q2. What is 108 emergency services?

_____
_____
_____

Q3. Explain the term —call duty doctor ?

_____
_____
_____

Checklist for Assessment Activity

Use the following checklist to see if you have met all the requirements for assessment activity:

Part A

1. Differentiated between a routine call and an emergency call
2. Differentiated between an ambulance service and 108 emergency ambulance service

Part B

Discussed in class the following:

1. What is the role of GDA in emergency situation?
2. What are the skills required for responding in emergency situation?

Part C

Performance Standards

The performance standards may include, but not limited to:

Performance Standards	Yes	No
Demonstrate knowledge of the responsibility in emergency management activities.		

Session 3 : Using Computers in Maintaining Public Relations

Relevant Knowledge

Technology has revolutionized many aspects of business and society, and hospitals are no exception. Hospitals rely on computers to perform numerous tasks whether it is the cataloging of medical data with regard to storing medical records or basic tasks, such as medical billing. Computers are utilized in scanning and imaging procedures as well. The procedures range from simple blood tests to sophisticated Computerized Tomography (CT) scans. Computers are also used in the monitoring of patients records. Doctors are able to keep an eye on everything from blood glucose levels to heart rates. Perhaps the biggest advantages computers provide to hospitals is speed and accuracy.

The application of computer and information is used to promote and support the practice of patient care and the delivery of care. In addition to the routine use of computer-assisted technology, such as email, computers have many other applications in patient care.

Computers are used in the administrative areas for basic tasks that once were done on paper. Staffing and scheduling systems are used to construct daily, weekly or monthly schedules. Many scheduling systems also collect data on individual employees, such as the amount of sick time used or vacation hours accumulated. Staffing and scheduling systems often provide a variety of reports to the administrative officer. Budgeting and financial tracking are another way in which computers are used in administration. Computers are valuable for patient and education. Hospitals often use computer programmes to teach patients about chronic disease management or to provide educational handouts. Preprinted documents, such as discharge or pre-operative instructions can also be stored in the computer and printed, as necessary.

Clinical applications of computers in patient care are numerous. Physicians prescribe medications and treatments on the computer, and the GDA may be required to either transcribe these orders onto paper or print the paper documents for use in patient care. GDA may order medications or supplies on the computer.

A General Duty Assistant use computers for documentation with an electronic health record or electronic medical record. When an organization uses an Electronic Medical Record (EMR), all documentation related to patient care, diagnostic testing, specialty referrals or any other aspect of patient care or management is done on the computer. The computers can be stationed at the bedside, used on mobile carts or might be in the form of a portable electronic tablet that the nurse carries in lieu of a clipboard with paper documents.

Exercise

1. Visit a nearby hospital and identify the use of computer for various services.

Assessment

Q1. Describe the impact of technological revolution in healthcare sector?

_____
_____
_____

Q2. What are the uses of computer in hospital administration?

_____
_____
_____

Q3. What are the use of computer in a hospital?

_____
_____
_____

Checklist for Assessment Activity

Use the following checklist to see if you have met all the requirements for assessment activity:

Part A

1. Differentiated between use of computers in diagnosing a patient disease and maintaining public relation in hospital

Part B

Discussed in class the following:

1. What is the difference between office records and medical records?
2. What are the advantages of maintaining medical records on computer?

Part C

Performance Standards

The performance standard may include, but not limited to:

Performance standards	Yes	No
Demonstrate the knowledge of applications of computer in hospital.		
Demonstrate the knowledge of maintaining files and records in computer.		

Session 4 : Dealing with Patients Attendant

Relevant Knowledge

Communicating in an effective manner, irrespective of the mode of communication used is a skill. Effective communication occurs only if the receiver understands the exact information or idea that the sender intended to transmit. It involves the use of proper equipment, providing information to the appropriate people and carrying out communication effectively. A simple rule that one should follow is that the message must be complete, clear and delivered timely. Communication with others is to be conducted in a courteous manner. The secret of good communication is to tailor your approach to the individual. Breakdown in communication is either due to lack of skills in communicating or lack of coherent thought process. It can also happen due to the breakdown of the communication network. At times we do not listen, but only hear, especially when there are more important things to be taken care of. For instance, if a visitor comes to you at the same instance when you are answering the phone, then it is important to excuse yourself from the person on the phone so that exclusive attention can be given to the visitor or you may request the visitor to wait for some time.

Systematic communication between health care providers, patients and their families results in better patient care and shorter hospital stays.

The quality of communication in the care of patients, with advanced and serious illness, is a key determinant of patient‘s. Research in a variety of settings has found that communication is often suboptimal. Patients and their families do better when they are involved, informed and engaged in the process. Communication in the care of patients with advanced and serious illness can be increased using quality improvement interventions, particularly for healthcare utilization as an outcome.

Responding to Patients

Stress is common among caregivers, with significant increased risk for depression, anxiety, and health problems. Because of stress, the patients and their attendant lose control.

The GDA should remember the following points while responding to patient and relatives during stressful situations:

- The first rule is to avoid taking the behaviour personally. Remember that in most cases, patient or his/her relatives are speaking due to fear and are not being intentionally aggressive.
- Focus on developing a therapeutic relationship with patient‘s family.
- Be patient, as the most important thing is to listen.
- Do not be defensive, even if the points raised by relatives seem irrational or unjustified.nderstand that family members may feel that they are the only ones who know how to care for the patient properly. Take advantage of this attitude by making them feel they are valued members of the patient‘s healthcare team, this in itself will reduce their stress and help them regain a sense of control in a positive way.

- If you can not answer a question, find a colleague who can address the problem of patient
- Know the organization's protocols for safe nursing, and plan for the possibility of violence.
- Be alert for cues to potential violence, such as glaring, pacing, agitated behaviour, and clenched fists

Emotional state at a particular point of time also affects communication. For example, if you are shocked for whatever reasons, you may not able to express yourself as you are in unstable state of mind. Stress and anxiety are two major facets of life. They are natural physiological and psychological reactions that occur within everyone. Stress results from an imbalance between demands and resources. In simple words, stress arises when individuals perceive that they cannot adequately cope with the demands being made on them or with threats to their well-being. The leading source of stress is the workplace. The workplace and the type of work hold a number of anxiety producers or stressors. Anxiety is defined as a state of uneasiness and apprehension about future uncertainties. It usually occurs after the onset of stress and is a lot like fear. Stressors are upsetting bad events and problems of life.

To communicate with patients and their relatives effectively, it is essential that you develop good communication skills and listening skills. The following are some suggestions for becoming a better listener:

- Do Not Interrupt: People have a tendency to become impatient while listening and cannot wait for the speaker to finish. This limits the information exchange and breaks the communication process.
- Do Not Jump to Conclusions: Do not assume that you know what the speaker is going to say. Allow him/her to complete his message and then say whatever you wish to say about the idea, issue or the problem.
- Concentrate on the Content: While communicating you must concentrate on the content of the message. In case you miss out on certain points, you must seek clarification.
- Ask Questions: Ask good questions and provide feedback.

Causes of anger: Anger could be caused by internal and external causes. Internal causes are to do with the personality of the individual and external causes are to do with the factors outside the individual. Some personality characteristics that cause anger include the following:

- Negative self-talk
- Blaming
- Taking things personally
- Assuming
- Overeating
- Drinking alcohol
- Driving recklessly

- Taking drugs
- Involvement in fights
- Feeling outraged

External factors

- Crisis in the form of an emergency or an important event.
- Angry visitors or customers.
- Being short-staffed.

Repercussions of anger: Anger can have immediate or far-reaching consequences. Some of these consequences can be categorised as follows:

(i) Immediate consequences

- Physical harm to someone or self.
- Destruction of property.

(ii) Far-reaching consequences

- Getting a bad reputation
- Loss of family / friends
- Loss of job
- Loss of social privileges
- Going to jail

Anger Management

You can manage your anger in several ways. Some of the measures and methods that could be adopted include the following:

- Take time out from your routine work and relax.
- Take deep breaths.
- Count to ten mentally.
- Name the problem, look for plausible solutions, pick the best solution and solve the problem. Do not forget to congratulate yourself.
- Stop blaming others and self, as blaming only keeps people upset and keeps you from respecting others.
- Do not holds on to anger, but find ways of letting it go.
- Look for someone with whom you will be comfortable enough to express yourself.
- Be open to discuss your own words and actions that hurt others.
- Know yourself and choose to contain your rage and decide what to do.
- Stand up for yourself and others when you see that there is a chance of being hurt.
- Watch your thoughts, words and actions about others.

- Take ownership of the hurtful things that you do and say.
- Stop hurting people with your actions and words. Bullying hurts everyone.

Exercise

1. Visit a nearby hospital and observe health professional handling the patient's relative in emergency situation.

Assessment

Q1. How effective communication skills are useful in dealing with patients?

_____
_____
_____

Q2. What are the factors that affect relationship between a General Duty Assistant and patient?

_____
_____
_____
_____
_____
_____

Checklist for Assessment Activity

Use the following checklist to see if you have met all the requirements for assessment activity:

Part A

1. Differentiated between stress and anxiety?

Part B

Discussed in class the following:

1. What is the role of GDA in managing conflicts?
2. How a GDA should handle angry relatives of a patient in a hospital?

Part C

Performance Standards

The performance standards may include, but not limited to:

Performance Standards	**Yes**	**No**
Demonstrate the knowledge of handling people with emotional stress or emotional outbursts.		

GLoSSARY

Adhesive Tape	Tape coated on one side with an adhesive mixture to stick on something
Administrative and clerical staff	Staff engaged in administrative and clerical duties
Admitted patient	A patient who undergoes a hospital's admission process to receive treatment and/or care
Adolescents	One that is in the state or process of growing up
Aggravate	To make worse, more serious, or more severe
Anthrax	Acute infectious disease of animals that can besecondarily transmitted to humans
Anxiety	A painful or apprehensive uneasiness of mind usually over an impending or anticipated ill
Appetite	Any of the instinctive desires necessary to keep up organic life, like desire to eat
Arteries	A blood vessel that conveys blood from the heart to any part of the body
Aseptic	Preventing infection or free from pathogenic microorganisms
Available beds	The average number of beds which are immediately available for use by an admitted patient or resident within the establishment
Average available beds for overnight-stay patients	The number of beds available to provide overnight accommodation for patients, averaged over the counting period
Average available beds for same-day patients	The number of beds, chairs or trolleys available to provide for same-day patients, averaged over the counting period accommodation
Bacterial Maningitis	Meningitis is inflammation of the protective membranes covering the brain and spinal cord, known collectively as the meninges. The most common symptoms of meningitis are headache and neck stiffness
Bacteriology	A science that deals with bacteria and their relations to medicine, industry, and agriculture
Binary Fission	Reproduction of a cell by division into two approximately equal parts
Blistering	A fluid-filled elevation of the epidermis
Cardinal	Of prime importance, may be related to heart
Cardiovascular	Pertaining to, or affecting the heart and blood vessels
Care type	The care type defines the overall nature of a clinical service provided to an
Coagulation	A change to a viscous, jellylike, or solid state admitted patient during an episode of care
Communicable diseases	An infectious disease transmissible (as from person to person) by direct contact with an affected individual or the individual's discharges or by indirect means
Conjugation	The act of functioning or operating simultaneously as if joined

Contagious	Communicable by contact
Continuum	Anything that goes through a gradual transition from one condition, to a different condition, without any abrupt changes
Cortex	The outer or superficial part of an organ or body structure
Curative	Able to cure diseases or heal people
Diagnosis	The art or act of identifying a disease from its signs and symptoms
Diaphragm	A body partition of muscle and connective tissue; the partition separating the chest and abdominal cavities in mammals
Diastolic Pressure	The diastolic arterial pressure is the lowest pressure during the resting phase of the cardiac cycle
Diphtheria	A disease typically marked by the formation of a false membrane especially in the throat which produces a toxin causing inflammation of the heart and nervous system
Electrolytes	A nonmetallic electric conductor in which current is carried by the movement of ions
Elucidates	To make something clear or explained
Epidemics	Affecting or tending to affect an atypically large number of individuals within a population, community, or region at the same time
Ethnicity	The fact or state of belonging to a social group that has a common national or cultural tradition.
Fatigue	Weariness or exhaustion from labor, exertion, or stress
Gastroenteritis	Inflammation of the lining membrane of the stomach and the intestines
General Duty Assistant	An individual who gives basic nursing care under the supervision of a registered nurse or a licensed nurse. A GDA is also called Nurse's aide, Nursing attendant, Healthcare Assistant and Patient Care Assistant
Gonorrhea	A common infectious disease caused by a bacterium. It may occasionally spread to membranes in other parts of the body, especially those of the joints and the eyes
Hair follicles	The tubular epithelial sheath that surrounds the lower part of the hair shaft
Harboured	To contain or be the home, habitat, or host of
Healthcare Provider	Healthcare professionals and institutions, including hospitals, clinics, laboratories, physicians, therapists, home health agencies, chiropractors, etc.
Hemolytic Disease	Hemolytic disease of the newborn (HDN) loss and death among newborn babies
Holistic	Relating to or concerned with wholes or with complete systems rather than with the analysis of, treatment of, or dissection into parts
Hospital	A health care facility that has a governing body, an organized medical and professional staff, and inpatient facilities and provides medical, nursing, and related services for injured patients

Hyperphosphatemia	The presence of excess phosphate in the blood
Hypertension	Abnormally high arterial blood pressure that creats a risk factor for various pathological conditions or events (as heart attack, heart failure, stroke, end-stage renal disease, or retinal hemorrhage)
Hypophosphatemia	Deficiency of phosphates in the blood that is due to inadequate intake, excessive excretion, or defective absorption and that results in various abnormalities
Infants	A child in the first year of life
Inflammation	Reaction of the body to injury or to infectious,allergic, or chemical irritatio n. The symptoms are redness, swelling,heat, and pain resulting from dilatio n of the blood vessels in theaffected part with loss of plasma and leucocytes (white bloodcells) into the tissues
Ligaments	Strong band of white fibrous connective tissue that joins bones to other bones or to cartilage in the joint areas
Medication	The act or process of medicating
Mental Retardation	Below average level of intellectual functioning
Metabolism	The sum of the processes by which a particular substance is handled in the living body
Monomers	A chemical compound that can undergo polymerization
Normothermia	A condition of normal body temperature
Nurse	Nurse is a graduate of a recognized nursing school who has met the requirements for a registered nurse in a state in which she is licensed to practice
Pasteurization	partial sterilization of a substance and especially a liquid (as milk) at a temperature and for a period of exposure that destroys objectionable organisms without major chemical alteration of the substance
Pedestrian	A pedestrian is a person travelling on foot, whether walking or running
Peristalsis	Progressive wavelike muscle contractions
Pertusis	An infectious disease especially of children caused by a bacterium causing cough and sometimes followed by a crowing intake of breath also called whooping cough
Phobia	Extreme and irrational fear of a particular object, class of objects, or situation
Pituitary Gland	Pituitary gland, small oval endocrine gland that lies at the base of the brain. It is sometimes called the master gland of the body because all the other endocrine glands depend on its secretions for stimulation
Pneumonia	A disease of the lungs that is characterized especially by inflammation and consolidation of lung tissue followed by resolution, is accompanied by fever, chills, cough, and difficulty in breathing, and is caused chiefly by infection
Polymers	A chemical compound or mixture of compounds formed by

	polymerization and consisting essentially of repeating structural units
Preventive	To stop (something) from happening or existing
Rehabilitative	To bring (someone or something) back to a normal, healthy ondition after an illness, injury, drug problem, etc.
Roughage	Food containing much indigestible material acting as fiber
Sanitation	The promotion of hygiene and prevention of disease by maintenance of sanitary conditions
Scalds	To burn with hot liquid or steam
Sterilization	Process of making free from living organisms and especially microorganisms
Stethoscope	An instrument used to detect and study sounds produced in the body
Systolic Pressure	It is defined as the peak pressure in the arteries, which occurs near the beginning of the cardiac cycle when the ventricles are contracting
Taboos	A prohibition in some cultures against touching, saying, or doing something for fear of immediate harm from a mysterious superhuman force
Therapentic Position	Arrangement or posture of the human body
Trachoma	Trachoma , infection of the mucous membrane of the eyelids caused by the bacterium. It begins as congestion and swelling of the eyelids with tearing and disturbance of vision
Transduction	The action or process of converting something and especially energy or a message into another form
Transfusions	The process of transfer fluid into a vein or artery
Traumatic	An often serious and body altering physicalinjury, such as the removal of a li mb
Tuberculosis	Tuberculosis is a disease caused by a mycobacterium which causes bloody coughs, lesions involving the necrosis of tissue and severe weight loss
Ultrasonic Vibration	Ultrasonic vibrations would refer to sound waves that have a frequency higher then human hearing
Unicellular	Having or consisting of a single cell
Venom	Poisonous matter normally secreted by some animals
Vesicals	Of or relating to a bladder and especially to the urinary bladder
Viscous	Quality of sticking or adhering or resistance of a fluid to flow

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