

IVC Course Code : 619

MULTI PURPOSE HEALTH WORKER
(MPHW)(F)
First Year
(w.e.f. 2018-19)

Intermediate Vocational Course

Paper I : Community Health Nursing
Paper II : Health Promotion
Paper III : Primary Health Care Nursing



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Commissioner of Intermediate Education, Guntur

DTP

Katari Ravi Kumar B.Com, MCITP.

Text Book Development Committee

Paper - I Community Health Nursing

AUTHOR

Mrs. B. Suhasini, M.Sc (N)
Junior Lecturer in MPHWS (F)
Government Vocational Junior College,
Guntur

Paper - II Health Promotion

AUTHOR

Smt. B. Padma M.Sc (Nursing)
Lecturer, Govt.College of Nursing,
Machilipatnam

Paper -III Primary Health Care Nursing

AUTHOR

Dr. K. Suganthi, M.Sc, (Nursing), Ph.D
Faculty, Govt. College of Nursing, Guntur

EDITOR

Dr. R. Padmavathi, M.Sc. (Nursing), Ph.D
Lecturer, Govt. College of Nursing, Guntur

ANNUAL SCHEME OF INSTRUCTION AND EXAMINATION

FOR 1ST YEAR MPH (F) COURSE

	Part-A	Theory		Practical		Total	
		Periods	Marks	Periods	Marks	Periods	Marks
1	General Foundation	150	50	-	-	150	50
2	English	150	50	-	-	150	50
	Part-B						
3	Paper-I	135	50	135	50	270	100
	Community Health Nursing						
4	Paper-II	135	50	135	50	270	100
	Health promotion						
5	Paper-III	135	50	135	50	270	100
	Primary Health Care Nursing						
6	OJT	-	-	365	100	365	100
total	T	705	250	770	250	1475	500

On the Job Training from 1st November to 31st December

EVALUATION OF ON THE JOB TRAINING:

The “On the Job Training” shall carry 100 marks for each year and pass marks is 50. During on the job training the candidate shall put in a minimum of 90 % of attendance.

The evaluation shall be done in the last week of January.

Marks allotted for evaluation:

S.No	Name of the activity	Max. Marks allotted for each activity
1	Attendance and punctuality	30
2	Familiarity with technical terms	05
3	Familiarity with tools and material	05
4	Manual skills	05
5	Application of knowledge	10
6	Problem solving skills	10
7	Comprehension and observation	10
8	Human relations	05
9	Ability to communicate	10
10	Maintainance of diary	10
	Total	100

NOTE: The On the Job Training mentioned is tentative. The spirit of On the Job training is to be maintained. The colleges are at liberty to conduct on the job training according to their local feasibility of institutions & industries. They may conduct the entire on the job training periods of I year and (450) II year either by conducting classes in morning session and send the students for OJT in afternoon session or two days in week or weekly or monthly or by any mode which is feasible for both the college and the institution. However, the total assigned periods for on the job training should be completed. The institutions are at liberty to conduct On the Job training during summer also, however there will not be any financial commitment to the department.

MULTI PURPOSE HEALTH WORKER

Paper - I

COMMUNITY HEALTH NURSING

INDEX

Unit - 1	Concept of Health	1
Unit - 2	Structure And Organization Of Community	8
Unit - 3	Community Based Assessment	18
Unit - 4	Home Visit	24
Unit - 5	Health Problems And Policies	27
Unit - 6	Communication And Health Education	46
Unit - 7	Concept of Disease	55
Unit - 8	Infection	58
Unit - 9	Immunity	63
Unit - 10	Immunization	68
Unit - 11	Environmental Sanitation	75
Unit - 12	Safe Water	81
Unit - 13	Disposal Of Excreta And Waste	89
Unit - 14	Introduction To Communicable Diseases	98
Unit - 15	Occupational Health	142
Unit - 16	Disaster Management	148

PART A

UNIT-I - CONCEPT OF HEALTH

STRUCTURE

Introduction
Dimensions of Health
Determinants of Health
Primary Health Care
Levels of Prevention

Introduction

Health is a fundamental human right. It is an essence of productive life. Health is common theme in most cultures. Health is an issue of social justice, but not an issue of “Doctors, Social Services and Hospitals”. Health is central to the concept of quality life.

Definitions of Health

1. The oldest definition of Health is “the absence of disease”
2. According to the Oxford English Dictionary, “Soundness of body and mind”. The body functions are effectively discharged.
3. According to World Health Organization (WHO) 1948, “Health is a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity”.

Concepts of Health

Health is viewed differently by different professionals like Biomedical, Social Science Specialists, Health Administrators, Ecologists e.t.c. as follows.

- I. Biomedical Concept: It was based on “Germ Theory Disease”. According to the theory, it is an absence of disease or free from disease. The Medical Professionals viewed as “Human Body is like a machine; disease is occurred mainly by the breakdown of machine.
- II. Ecological Concept: Health is viewed as dynamic equilibrium between man and his environment.
- III. Psychological Concept: Health is influenced by social, psychological, cultural, economic and political factors of the people around.
- IV. Holistic Concept: It is a synthesis of all above concepts. It is wellbeing of whole person.

DIMENSIONS OF HEALTH

Health is multidimensional (many dimensions). According to WHO, it is specified as follows.

a) **Physical Dimension**:

It includes perfect functioning of the body. Physical health includes a great physique, clean skin, bright eyes, lustrous hair, with a body well clothed, sound sleep, regular passing of urine and stools and smooth easy coordinated body movements. All the body parts and organs should be with normal size and function.

All the special senses are intact and vital signs are within the normal range.

b) **Mental Dimension**

It is the balance between the man and his environment. The harmony between oneself and other. Characters of a mentally health person are

- 1) He is well adjusted
- 2) He searches for identity
- 3) He knows himself, his goals, needs and problems
- 4) He has a strong sense of well being
- 5) He has good self-control and emotional balance
- 6) He faces problems and tries to solve them
- 7) He is free from internal conflict

c) **Social Dimension**

It is the balance within the individual, between individuals and members of the society. Social dimension includes the level of social skills possess by each individual as a member of society.

d) **Spiritual Dimension**

It refers to the part of the individual which strives for meaning and purpose of life. It is mainly principles, ethics and purpose of life.

e) **Emotional Dimension**

It is related to feeling of an individual to his environment.

f) **Vocational Dimension**

It plays an important role in promoting both physical and mental health.
Other dimensions include,

- ❖ Philosophical dimension

- ❖ Cultural dimension
- ❖ Socio economic dimension
- ❖ Environmental dimension
- ❖ Educational dimension
- ❖ Curative dimension
- ❖ Preventive dimension

DETERMINANTS OF HEALTH OR FACTORS INFLUENCING HEALTH

Health of an individual is influenced by so many factors. These factors lie both within the individual and externally in the society.

Mainly two factors i.e., (i) Genetic factors and (ii) Environmental factors, are responsible for the occurrence of diseases.

The following other factors influences health are

- I. Biological Determinants
- II. Behavioural and socio cultural conditions
- III. Environmental factors
- IV. Socio and economic conditions
- V. Health services
- VI. Aging of the populations
- VII. Gender
- VIII. Other factors

I. BIOLOGICAL DETERMINANTS

It is mainly by genes at the movements of conception. Every human being physical and mental characteristics are determined by genes. The genetic makeup cannot be altered after conception. A number of diseases are now known to be of genetic origin e.g., chromosomal anomalies, mental retardation and some types of diabetes.

II. BEHAVIOURAL AND SOCIO CULTURAL CONDITIONS

Behavioural and socio cultural conditions also influence the health of an individual. Life style activities like smoking and alcoholism, socio-cultural values, attitudes, customs and habits also directly and indirectly influence health status of an individual. To maintain optimum health receives adoption of healthy life styles.

III. ENVIRONMENTAL FACTORS

It is classified as Internal and External.

- ❖ Internal Environment is within the human body consists of tissues, organs and systems.
- ❖ External Environment is outside the human body i.e., physical, psychological and biological components.

Environmental factors include housing, water supply, psychological stress and family structure.

IV. SOCIO AND ECONOMIC CONDITIONS

Socio and Economic Conditions which includes,

- ❖ Economic Status: It includes purchasing power, standard of living, quality of life, family size etc
- ❖ Education: Literate and Illiterate
- ❖ Occupation: It is type of work whether an individual is employee and unemployee.
- ❖ Political System: It can also influence the health status of country. Political system helps in the resource allocation of manpower using technology and availability of health services.
- ❖ Health Services: Availability of health services like health and family welfare services, helps for prevention of illness, promotion of health and treatment of diseases. Health Services are also important for social and economic development.
- ❖ Aging of population: Because of the increased health services, the population of the aged above 60 years and over and more than two third of the living in developing countries. Increased prevalence of chronic diseases and disability more and special attention of resources.
- ❖ Gender: The global communication on women's health developed an agenda to improve the health status of women which includes nutrition, reproductive health, violence effect, ageing, life style related condition and on occupational health.
- ❖ Other factors: Other factors like health related factors, eg food and agriculture, education, industry, social welfare and rural development. To improve the standard of living, new policies in the economic and social fields like employment, increased salaries and family support scheme.

HEALTH FOR ALL

It was movement decided by World Health Assembly in 1977.

It means an equal health status for all people and countries by the year 2000.

Definition

Health for All is defined as "Attainment of a level of health that will enable every individual to lead a socially and economically productive life".

This was achieved by following some indicators and by providing primary health care in rural areas and urban slums.

CONCEPT OF HEALTH CARE

Health care is defined as various services provided to individuals, families and communities by the agents of health.

Purpose of Health Care

Promoting, Maintaining and Restoring health, there are 3 concepts of health care.

- 1) Comprehensive Health Care: It was defined by Bhore Committee in 1946. It is providing adequate preventive, curative and promotive health services.
- 2) Basic Health Services: This term was used by UNICEF/WHO. It is a network of coordinated services under a selected group of functions by professionals and auxiliary personnel.
- 3) Primary Health Care: It was a new approach of health care came into existence in 1978. Alam-Ata declared Primary Health Care as “First Contact Care”, “Easily Accessible Care”.

Primary Health Care is essential health care made universally accessible to individuals and acceptable to them through their full participation and at a cost, the community and country can afford.

Principles of Primary Health Care

There are mainly four principles of Primary Health Care. They are

1) Equitable distribution

It is the first key principle. Health services must be distributed equally to all sectors of people irrespective of their ability to pay, rich or

- Easily accessible (reachable) to all.
- Should not be imbalance of health services in towns and cities.

2) Community Participation

Involvement of individuals, families, communities in the health services to improve their health status.

- It should be a meaningful involvement.
- Involvement of people at planning, implementation and maintenance of primary health services
- Using of local resources, money, land, man power etc.

3) Inter Sectoral Coordination

It is not possible for health sector alone to provide health services to people.

- Involvement of other sectors like agriculture, animal husbandry, food industry, education, public housing, communication and other resources.
- It helps to avoid duplication of activities.

4) Appropriate Technology

Using of technology provides health services must be

- Scientifically sound, adoptable to local needs acceptable for application to whom it is used and maintained by the people themselves.
- Using of cheaper, scientifically sound procedures instead of using costly equipment and procedures and methods, for example Oral rehydration therapy.

Elements of Primary Health Care

- a) Education about prevailing (existing) health problems and methods of preventing and controlling them.
- b) Promotion of food supply and proper nutrition.
- c) An adequate supply of safe water and basic sanitation.
- d) Maternal and child health care including family planning.
- e) Immunization against infectious diseases.
- f) Appropriate treatment of common diseases and injuries.
- g) Provision of essential drugs.

Levels of prevention

Prevention is better than cure which used frequently known proverb. Prevention of illness or disease occurs at four levels.

1) Primordial Prevention:

- It is mainly used to prevent chronic diseases.
- It is adopted by discourage children to adopt harmful life styles.
- It is mainly protecting high risk group people from many adult health problems (e.g. obesity)
- It is mainly achieved by individual and mass education.

2) Primary Prevention:

- It is achieved mainly by taking certain measures like promote general health and wellbeing and maintenance of quality of people and using specific protective measures.
- It is defined as action taken prior to the occurrence of a disease or in prepathogenic phase.
- It is mainly using prevent the occurrence of chronic disease like heart problems.

3) Secondary Prevention:

- It is defined as action taken to stop the progress of a disease at its early stage and prevent further damage. Mainly it is achieved by early diagnosis and correct treatment.

4) Tertiary Prevention:

- It is mainly achieved by taking measures to limit impairments and disabilities and to minimize suffering caused by disabilities. For example, Providing rehabilitation. It includes medical, psychological, social and vocational rehabilitation.

CONCLUSION

Health is fundamental human right. Every society should have productive life. Social and political systems play an important role to provide health services. Primary Health Care approach is very essential to provide health services equally, easily acceptable to the people. Preventary measures should be taken at every level of health problem.

SHORT ANSWER TYPE QUESTIONS

- 1) Define Health?
- 2) List the elements of Primary Health Care?

LONG ANSWER TYPE QUESTIONS

- 1) Explain about determinants of health?
- 2) Write about levels of prevention?

UNIT-II - STRUCTURE AND ORGANIZATION OF COMMUNITY

Introduction

Meaning/Definitions of Community

Rural community, characteristics and problems

Urban community characteristics and problems

Structure and functions of Panchayat Raj

Role of Panchayat Raj in health

Social Organization-Groups

The Family

Introduction

Man is a social animal. All human beings are part of a group or community. Community is a collection of independent people with residential ties to a particular locality.

Meaning

It is derived from two latin words, namely “com, which means together” and “munis, means to serve together”. Thus Community means to serve together.

Definition

1. Community is a group of people who live together, who belong together. So that they share.
2. According to WHO Expert Committee, community is a social group determined by geographical boundaries and common values and interests.

Functions of Community

The basic functions are

- It determines the use of space for living and other purpose.
- To protect and conserve the health, life, resources and property of individuals.
- Production and distribution of necessary goods and services.
- It works like a vehicle to educate newcomers i.e., children and immigrants.
- It transmits information, ideas and beliefs.
- It helps for interactions between individuals and groups
-

TYPES OF COMMUNITIES

Communities can be classified based on the size of the population extent, wealth and populous ness, the specialized functions of the community with in the whole society.

- 1) Rural Community
- 2) Urban Community
- 3) Urban Slums

RURAL COMMUNITY

In India, 75% of people are living in rural communities or areas. India is a land of villages. For every 1000 population, a village is formed.

Characteristics of Rural Community

- The rural area people are primarily depend upon agriculture.
- They have fertile lands, water and good climate.
- Attracted more people.
- Village community is more prosperous.
- Rural communities are small, less dense and homogenous.
- In rural areas both external and internal peace.
- Family customs are not disturbed.
- The family circle must supply the greater part of economic and social needs.
- Rural people lives in simple way.
- People less adjust to the stimulation.
- Primary relations are more in rural community.
- We feeling and Dependency felling is present.
- People follow cultural practices, beliefs, customs and prejudices.
- Give importance to the marriage system.
- Caste system is very rigid.
- They share love and affection.
- Problems will be solved within a group.

Rural Community problems

The main rural problem is unemployment. Young men leave the village for urban areas in search for jobs. Migration to a distant place for a contractor building, mining and other works.

Health problems

- Health problems are common in rural areas.
- The most common problem is malnutrition among under 5 year children.
- Communicable and infectious diseases are prevalent.
- Maternal deaths and child deaths may also occur.
- Home accidents are common, e.g.: burns and scalds

Other problems

1. Education: The problem of school dropouts, illiteracy, child labour, few teachers, lack of equipment, building is too small or need repairs etc.
2. Transport and communication: Lack of good roads in rainy season causes taking sick to hospitals and marketing.
3. Agricultural problems:
 - a. Insufficient water supply,
 - b. Power cut and repair of pump sets
 - c. Delay in getting supplies of seeds and fertilizers
 - d. Old methods of ploughing, non-availability of tractors
4. Labour problems: Not available, demand is high.

Environmental Sanitation Problems

- 1) Disposal of human
 - a. 80% of people use open field defecation. It is considered harmless by rural people.
 - b. They are ignorant that faces infections and pollutes social and water and promotes fly breeding.
- 2) Disposal of waste
 - a. People in rural areas are not aware of proper disposal of waste.
 - b. The solid waste is thrown in front of houses and it permits accumulation and decompose.
 - c. This decomposed material is used as manure.
 - d. People collect cow dung to prepare manure. In this process, mosquitoes and flies breed causes so many diseases.
 - e. Waste water is also permitted to flow in the streets. It causes mosquito breeding, causing malaria, filarial and other vector borne diseases.
- 3) Water supply
 - a. Sources of water supply in villages are wells, ponds and tanks.
 - b. These are used for drinking, bathing near the wells, washing clothes, washing animals and for their drinking. These practices cause pollution of water. Water pollution in turn leads to diarrhoea, cholera and gastroenteritis etc.

4) Housing

Houses are built with mud. These are katcha houses and without proper ventilation. No separate rooms for cooking, latrine, bathroom and drainage. Houses are regularly white washed and the houses are poorly lighted.

URBAN COMMUNITY

Towns and cities comprises the urban communities.

Characteristics of Urban Community

- Relatively large, dense and permanent settlements of people.
- They depend less on agriculture.
- People do different kinds of jobs.
- The social life is impersonal and less intimate.
- Urban communities have different races and culture.
- Traditional patterns of belief and behaviour to be broken down.
- More dominance of secondary relationships in the urban community.
- Individualism is seen in urban communities.
- Social relationships are selective.
- Less dependency, role feelings are affective.

Urban Community problems

The main problems in Urban community are overcrowding, pollution of air, accidents. In urban community, individual and social problems are common when individual problems affect a large number of people they become social problems. For example, alcoholism, juvenile delinquency, prostitution etc .

1) Prostitution

It is a social problem. The causes of social problem are:

- a. Broken families
- b. Parent quarrels
- c. Want of affection, easy money, low IQ, low moral standards and poverty.

2) Delinquency

It is an abnormal behaviour. It is committing an offense. For example, theft, murder etc. it is mainly due to poverty, disturbed homes and drug addiction. It occurs mainly in the age group below 13 years. social problem. The causes of social problem are:

3) Dowry System

It is also a social problem. It is a symbol of love from parents to their daughter on the event of marriage.

4) Drug addiction

It is also more common in urban communities. Using of Narcotics, Tobacco, Gutkha and Cocaine. Causes are lack of love and affection, depression and to overcome situation, people get addicted by drugs.

5) Alcoholism

It is also social problem and it is consumption of more alcohol. It causes crime, murder, neglect of families, malnutrition, disease of liver, road accidents and causes psychological and social problems.

6) Unmarried mothers

Due to urbanization and industrialization, overcrowding and unemployment, this problem is prevailing. This problem leads to abortion, infections and maternal mortality.

7) Handicapped

It is also social and medical problem.

Urban Slums

Urban slums are present in towns and cities. These look like rural communities.

STRUCTURE AND FUNCTIONS OF PANCHAYAT RAJ

The Panchayat Raj is a 3 tier structure of rural local self-government in India. It ties villages to districts.

The three tier institutions of Panchayat Raj system are

- Panchayat - At the Village level
 - Panchayat Samithi - At the Block level
 - Zilla Parishad - At the District level
- These are public welfare agencies.

At the village level Panchayat Raj consists of

1. Gram Sabha

It is the assembly of all adults of the village. They meet twice in a year. They discuss annual programme, prepare proposals for taxation and elects the members of the Gram Sabha.

2. Gram Panchayat

Population covered by Gram Panchayat varies from 5,000 to 15,000 and members 15 to 30. They hold office for a period of 3 to 4 years.

Functions of Gram Panchayat are

- a. Civil Administration: i.e., Sanitation and Public Health
- b. Social and Economic Development

3. Nyaya Panchayat:

It is a judicial organ of the Gram Sabha. It tries civil cases and minor criminal offences. They impose fine up to Rs. 100/-.

4. At the Block level

It consists of 100 villages and a population of about 80,000 to 1,20,000. It consists of all Sarpanches, MLAs, MPs residing in the block area, Representative of women, Scheduled Castes and Tribes and Cooperative Societies.

5. At the District Level

Zilla Parishad is the local self-government. Its members include heads of Panchayat Samitis, MPs, MLAs of the district, Representatives of women, Scheduled Castes and Tribes and persons having experience in administration, public life or rural development. The Collector of the district is non voting member.

ROLE OF PANCHAYAT RAJ IN HEALTH

- ✓ Maintenance of sanitation of the village.
- ✓ Provision of street light services.
- ✓ Disposal of waste and refuse.
- ✓ Collection of tax.
- ✓ It helps in economic and social development.
- ✓ Propagation of health programmes and provide health services.
- ✓ Conduct health camps with the help of Medical Department.

SOCIAL GROUPS-ORGANIZATIONS

Society is a group of persons together by common bond and work together for the achievements of common goals.

Structure of the Society is based on caste, income and occupation. Other related factors include cultural practices and habits.

Social group is defined as to which individual belongs e.g., family, kindship, caste, religion, village or town.

Other social groups like Panchayat, the club and various associations. These are based on social groups.

Based on the time, social group is decided into temporary and permanent.

Types of Social Groups

1) Family

It is a most powerful group. It is the basic unit of all societies.

2) Religion and Caste Group

Each Caste group is following some rules and regulations. It transmits customs, beliefs, taboos and ritual purity. Each caste group is give certain standardized services.

3) Temporary Social Groups

It includes,

- a) The Crowd: It is a temporary collection of group and is of short period. It is motivated by common interest or curiosity.
- b) The Moti: It is an essential crowd. It has a leader. Group is represented by a flag or slogan. It is more emotional than crowd.

4) Permanent Social Group

- a) The Band: It is the most elementary social group. Group is organized itself and follows a pattern of life.
- b) The Village: It is a small collection of people permanently settle down in a locally with their homes and cultures.
- c) The Town and Cities: Large group, denser and permanent settlement, heterogeneous individuals.

- d) The State: It is an ecological social group. It is based on territory, heterogeneous.
- e) Government and Political Organization: These are like Panchayats, the club and various associations.

THE FAMILY

It is a primary and basic unit in all societies. It is also a unit for the provision of primary health care and social services.

Definition

It is defined as a group of biologically related individuals living together and eating from a common kitchen.

Types of Families

Mainly, there are 3 types of families.

1) Nuclear Family

It is also called Elementary Family. It consists of married couple and their children.

Characteristics of Nuclear Family.

- In this family, husband plays a dominant role.
- Absence of grandparents, uncles, aunties and near relatives.
- More responsibility for child rearing.
- Husband and wife relationship is more intimate.

2) Joint Family

It is also called Extended Family. This family is common in agricultural areas of India. It consists of parents, their children and parents, uncles, aunties, kins and widows.

Characteristics of Joint Family.

- It consists of number of married couple and their children.
- All the men are related by blood and women of the household are their wives, unmarried girls and widows of the family.
- All the property is held in common family purse is same to all and income goes to the same purse.
- Family responsibility held in the senior male member.
- The family relations enjoy primarily over marital relations.

Merits of Joint Family

- Practical sharing of responsibilities in all matters.
- Greater economic and social security provided.

3) Three Generation Family

It is defined as there are representatives of three generations. Young couples are continuing to live with their parents and have their own children.

Functions of Three Generation Family.

- It provides clean and decent one to its members.
- There is division of roles and responsibilities of each member in the family.
- The male had the role to earn a living and support the family.
- The female had the total responsibility for the day to day care of children.
- Reproduction and bringing up of children.
- It transfers civilization the cultural patterns relating to eating cleanliness, dress, speech, language, behaviour and attitudes are all transmitted through the family.
- The family implies economic partnership.
- Social Care: It provides social status in the society. It protects its members from all sorts of insult.
- It regulates its members from political religious and general social activities.
- It regulates sex relation through incest taboos.
- Community resources are needed to meet the vast health needs of the community.

Community Resources

For effective health care services and assessment of the available resources, their allocation and efficient utilization are important.

The basic resources for providing health care are

- 1) Health Man Power: It includes Doctors, Nurses and Auxiliary workers who are needed to provide the health care.
- 2) Money and Material: It is also an important resource for providing health services. Material also received in meeting the needs of the people.
- 3) Time: It is more than money. As someone said it is also important dimension of health care services.

CONCLUSION

Community is group of people with a residential tie in a particular area. As a Multipurpose Health Worker (F) has to know the structure of community to understand the behaviour of people in different communities and to identify the problems of different communities, to assess and plan correctly according to their needs.

SUMMARY

People are living in different rural, urban communities and urban slums. They are facing different problems. Family is a basic unit of community and the families are different types like Nuclear and Joint Families.

SHORT ANSWER TYPE QUESTIONS

- 1) Define Community?
- 2) Mention the characteristics of Rural Community?
- 3) Define Family?
- 4) Mention the characteristics of Joint Family?

LONG ANSWER TYPE QUESTIONS

- 1) Explain in detail about different types of Communities?
- 2) Write in detail about social health problems of Urban Community?

UNIT-III - COMMUNITY BASED ASSESSMENT**STRUCTURE**

Scope and methods of community based assessment
Health assessment
Health assessment and history taking
Care of sick and referral system

Introduction

Community based assessment is to identify the needs and problems of families and individuals.

Definition

It is the process of identifying the needs of community and to determine potential services.

SCOPE AND METHODS OF COMMUNITY BASED ASSESSMENT

Community based assessment is very useful in all areas of health services. They are

1. Nutritional services
2. Environment, MCH and Family Planning
3. Mental health services

Methods of community assessment

1. Community Survey of Baseline survey

It is one of the method of data collection. The data must be collected by conducting door to door visit.

Survey consists of 3 parts. They are

- a) Questionnaire: It contains 30 to 35 questions.
- b) All are open ended questions. For example, instead of asking YES or NO, ask which method of family planning method they are using.
- c) A demographic page.

Principles of Survey

- Questions should be accurate and complete.
- Questionnaire should pretrailed.
- Make sure all areas are covered.
- Use simple statements.
- Avoid duplication.

- Demographic data is placed at the end of survey.
- Answers should be written in the correct words.

2. Interview method

It is method of collecting information face to face. It requires two persons, (i) Interviewer and (ii) Interviewee.

Interviewer is a person who conducts the interview and Interviewee is a person who gives information.

Principles of interview

- Interview should be pre-planned.
- Should be organized in a systematic way.
- Ask only open ended questions.
- Should maintain eye to eye contact.
- Interviewer should sit comfortably.
- Ask one question at a time.
- Give sufficient time to answer.
- Listen carefully.
- End the interview in a cheerful way.
- Should not reveal interview information.

3. Focus Group Discussion

It is method of discussion with particular group. E.g., Youth, women or Adolescents. It is also a method of data collection. The discussion should be only for 2 hours.

- Set date and time
- See that all the group should be participated.
- One leader should lead the group.
- Note the discussed issues.
- Conduct discussion by asking questions.
- After collecting information end the discussion.
- Categorize all the answers.

4. Case Study

Study a case or a diseased patient for a period of time and get the information. It gives the sufficient information about case, signs and symptoms and occurrence of case.

Data should be collected by scrutinizing the records of sub centre and primary health care.

Methods of community assessment1. Planning and organization

- Plan the community assessment with other staff members.
- Assess the needs and objectives based on the population.

2. Data collection and summarization

It should be done by conducting survey.

3. Summarizing the data

- On the basis of importance of needs.
- Needs should be according to priority.

4. Data Analysis

After analysing the data, action plan should be conducted in terms of meaningful specified goals and objectives.

In the final stage, report should be written.

HEALTH ASSESSMENT AND HISTORY TAKING

Health assessment is important to identify the health problems of an individuals. Health assessment procedure is varying from person to person and from age to age.

Health assessment consists of history taking and physical examination.

History taking

History taking includes,

1. Socio economic data: This includes the name, age, date of birth, religion, marital status, occupation, family income, educational qualifications.
2. Family History: Information about all members, grandparents, brothers and sisters. History of any diseases in the family.
3. Past history: List the diseases occurred like allergies, rheumatic fever, heart diseases etc.
4. Surgical history: Any operations, blood transfusions and accidents are included.
5. Obstetrical history: It includes menstrual cycle history of pregnancies and deliveries.

6. Present medical history: It includes present illness, its onset, signs and symptoms and duration of treatment.

Physical Examination

It is a detailed study of the entire body. It helps to determine the general, physical and mental conditions of the patient.

Purpose

- a) To understand the physical and mental wellbeing of the patient.
- b) To identify diseases.
- c) To find the cause and severity of disease.
- d) To understand any changes in the conditions of diseases.

Methods of examination

1. Inspection: It is visual examination or examination of the body with an eye. It helps to detect the defects the structure and functions of the body.
2. Palpation: Palpation of the body or a part with the hands to find the size and position of organs.
3. Head and face: Size and shape of the head and circumference
4. Scalp: Condition of hair, dandruff, pedicure and any infections.
5. Face: Pale, puffiness, fatigue, pain, fear, anxiety, enlargements of any glands e.t.c.
6. Eye
 - Eyebrows - Normal or absent
 - Eyelashes - Infections
 - Eyelids - Oedema, lesions, ectropion, entropios
 - Eyeballs - Sunken or protrude
 - Conjunctival - Pale, red, purulent
 - Sclera - Yellowish discoloration
 - Cornea and Irish - Irregularities and abrasion
 - Pupils - dilated, Constricted, reactions to light
 - Lens - Opaque or transparent or thick
 - Fundus - Congestion, haemorrhagic spots
 - Eye muscle - Stabismus
 - Vision - Normal, short sight or long sight
7. Ears: Any discharges, lesions, infections, obstructing the ear passage, deafness etc.
8. Percussion: It is tapping with the finger on the body to know the condition of the internal organs.

9. Auscultation: It is listening to sound within the body.

General examination or Head to foot examination

- General appearance
- Nourishment: Well-nourished or undernourished
- Body built: Thin or obese or moderately built
- Healthy: Healthy or unhealthy or sick

Nose: External nares, Crusts or discharges

Nostrils: Inflammation, septal deviation

Mouth and Pharynx

Lips: Redness, Swelling, Crusts, Cyanosis, Angular Stomatitis, Odour and foul smelling

Teeth: Discolouration and dental care

Tongue: Pale, Decy, Lesions,

Throat and Pharynx: Enlarges tonsils, redness and ply

Neck: Enlargement of Lymph nodes and thyroid gland

Chest

Throat: Shape, Symmetry, breath sounds

Heart: Size and location

Breasts: Lymph nodes and inverted nipples

Abdomen: Skin rashes, Scar, Hernia, Ascisicitis, pregnancy etc.

Back: Spina bifida

Genitals and Rectum: Inguinal Lymph glands, enlarges palpable, Patency of urinary meatus rectum, descent of the testis in infants

Vaginal discharge: Presence of sexually transmitted disease, haemorrhoid

Mental Status: Conscious/Unconscious, delirium, Styper

Neurological examination: Like test for sensation, reflexes, Coordination, function of cranial nerves

Weight: Should be checked, height, chest circumference.

Care of the sick, referral, health education of individual and family

Care of the sick at home is the response of MPHW(F). she should provide care according to the needs and problems.

If it is not treatable at home, she should refer patient to the PHC, CHC and district hospitals. It saves the patient's life and get treatment as early possible.

Health education should be given based on the disease condition and health status of the patient that should be given individually and to the family.

- 1) Personal hygiene
- 2) Isolation
- 3) Proper treatment/nutrition
- 4) Safe disposal of execution

SUMMARY

Community based assessment is done by using different methods to assess the needs and problems of the community. Care f the sick at home is an important responsibility of the MPHW(F). She should perform need based care.

SHORT ANSWER TYPE QUESTIONS

- 1) Define community based assessment?
- 2) What is interview method?
- 3) Define referral?

LONG ANSWER TYPE QUESTIONS

- 1) Explain in detail about physical examination?
- 2) Describe about methods of community based assessment?

UNIT-IV - HOME VISIT**INTRODUCTION**

Concept, Importance, Principles and Planning

Bag Technique-Equipment, usage of bag at home

Disinfection of equipment

CONCEPT, IMPORTANCE, PRINCIPLES AND**PLANNING Introduction**

70% of the Indian people lives in rural area. Rural health services provided by MPHW (F) or Asha workers. To provide health services, they need to identify health problems and needs of community and family through home visit. So it is a back bone and important function of community health.

Community health**Definition**

Home Visit is defined as “Providing health services at door level”.

Purpose or Importance of Home Visit

- To identify the health needs and problems of family.
- To provide simple nursing care.
- Promotion of health of the family members.
- To prevent diseases by giving health education.

Principles of Home Visit

1. It should be made based on the health needs and problems of the people.
2. Home visit should be part of a planned visiting programme.
3. Collect base lines information about the family e.g., size, number, occupation, income, religion, resources, customs and culture.
4. Establish communication and identify the health needs of the family.
5. Provide nursing care by following scientific principles.
6. Give health education according to the health needs.
7. Develop confidence among the family members.

Planning of Home Visit

Before Home Visit, MPHW(F) should plan priory to achieve the purpose of home visit.

The following steps should be followed in planning of home visit.

- First, make a survey of that particular area.

- Prepare a map with details e.g., the location of the village or area, boarder and important land marks.
- Collect the baseline information.
- Prepare family folders of each family.
- Identify the individuals or families in need of home visiting. E.g., any sick or diseased persons, pregnant mothers or postnatal mothers.
- Maintain diary and enter the family particulars on the day of home visit.
- On the first visit, remove her chappals, enter the house and greet the family members.
- MPHW (F) should introduce herself to the family and explain the purpose of home visiting.
- Give sufficient time to family members to express their doubts.
- Encourage the family members to participate in the communication.
- Provide simple nursing care, if needed.
- Give health education based on the observation of environmental sanitation and other activities. E.g. person hygiene
- Provide sufficient information regarding health.
- Establish good interpersonal relationship and end the home visiting.
- Follow up: It is required now and then, to check whether the instructions given are followed or not. Give encouragement to follow the instructions.

BAG TECHNIQUE

- The community bag should be made of canvas or card board or with light material.
- The bag should be made easy to carry.
- The bag should contain 2 partitions. Outside and inner side. The Outside partition contains space for keeping, newspapers, diary, towel, soap dish, hair brush.

Bag technique or usage of bag

- Keep the bag neat and clean. Some bag may be used in several houses.
- First select the elevated place to keep the bag.
- Spread newspaper in a clean and elevate area and place the bag on it.
- Bag should be kept away from children and pet animals.
- Open the outer packet of the bag and take out soap dish, towel and brush.
- Wash hands before opening the inner part of the bag.
- Remove things which are needed to provide simple nursing care.
- Carry out nursing procedure.
- After completion, wash, boil the equipment after completion of nursing care.
- Wash hands and replace equipment in the bag.
- Collect the soiled cotton balls and dressings in a paper bag and burn it.
- Fold the upper part of newspaper inside and keep it in the outer packet.

Equipment of Bag

- Soap, brush and towel in polythene or plastic bag.
- Clinical Thermometer.
- Rectal Thermometer.
- Scissors, Artery forceps.
- Kidney tray, bag of sterile dressing, measuring tape, bag of cotton swabs, mucus sucker, test tubes, spirit lamp, clinical Thermometer.
- Simple drugs like fab, paracetamol, iron and folic acid, B-complex.
- Solutions like Spirit, Dettol or Savlon, benedict solution, iodine etc.

CARE OF EQUIPMENT OR DISINFECTION OF EQUIPMENT

- It is important to prevent infection.
 - To use equipment for longer time.
 - To maintain equipment in best working condition.
1. Bag: Cover should be washed with soap and water. If contamination is more boiled, the cover of the bag or dry under sun light.
 2. Rubber goods: Rubber goods should be washed with soap and water and rinsed. Rubber goods may be boiled for 10 minutes.
 3. Clinical Thermometer and Scissor: Keep the Thermometer in 5% Dettol solution for 15 minutes and rinse with tap water.
 4. Enamel ware: These are boiled for 20 minutes, dry with clean towel. E.g., Kidney tray.
 5. Instruments: They should be washed well with cold water and boiled for 20 minutes and dry with clean towel.
 6. Sputum Cups: Before use 1/4th should be fill with sand or lime water. It prevents sticking of the sputum.

CONCLUSION

MPHW (F) should aware of doing Home Visit by following principles to identify health needs and problems to render nursing care.

SUMMARY

Home Visiting is back bone to Community Health Nursing. It should render through planning. To render simple nursing care, MPHW (F) should use community bag. So, she should know the bag technique, care of equipment.

SHORT ANSWER QUESTIONS

1. Define Home Visit?
2. Write the purpose of Home Visit?

LONG ANSWER QUESTIONS

1. Explain principles of Home Visit?
2. Describe about planning of Home Visit?

UNIT-V - HEALTH PROBLEMS AND POLICIES

Overview of health problems in India

Trends and developments in National Health Policies

National Population Policy & Five years' plans

National health Programmes

Introduction

An assessment of the health status and health problems is first requisite for any planned effort to develop health care service.

Health problems of India

1. Communicable disease problems
2. Non communicable disease problems
3. Nutritional Problems
4. Environmental Sanitation problems
5. Medical Care problems
6. Population problems

1. Communicable disease problems:

This is a common and major problem in India. Communicable diseases like ex. Malaria, Tuberculosis diseases, Acute respiratory tract infection leprosy, Filaria, AIDs and others. These are major public health problems and causes mortality morbidity rates. All these Communicable diseases are due to poor environmental Sanitation.

2. Non communicable diseases

Which include Diabetes, Cancer, Cardiovascular stroke, lung disease are major public health problems these diseases are due to aging of population and changes in behavior.

3. Nutritional problems

India's like deal society consisting of a small group of well lied and very large group of under house shed. The Specific Nutritional problems are,

- (a) Protein energy mal nutrition: it occurs mainly during infancy. It is mainly due to insufficient food. (On inadequate food. It is mild and moderate cases. Nutritional marasmus is more common in children.

- (b) Nutritional Anaemia: Nutritional anaemia is more common in women and children. 60 to 80 percent of pregnant women are anaemia. The main cause of anaemia is iron deficiency and B12 deficiency is less common.
- (c) Low birth weight: This problem occurs due to malnutrition and anaemia during pregnancy. It is a mayor public health problem in India. Children born less than normal birth weight (2.5kg)
- (d) Xerophthalmia (nutritional blindness): This problem is usually occurring in 1-3 year of age children. It is due to vitamin 'A' deficiency and diet is with inadequate Vitamin 'A' food.
- (e) Iodine deficiency disorders: It is an endemic disease. This is due to the iodine deficiency and it causes goitre in adolescent girls.

4. Environmental Sanitation

Man is always associated with his environment. Environment plays an important role in the occurrence of diseases. Poor environmental conditions are Source of so many communicable diseases like Malaria, Filariasis, Chicken Gunya, and Dengue fever and other water born and food borne diseases. This problem is acceding due to the overcrowding over population and industrialization and unsafe disposal of extra.

5. Medical Care Problems

The mayor medical Care problems in India is due to inappropriate distribution of health services between urban and rural areas. In appropriate ration of population and health professional.

6. Population Problem

For all health problems in India all due to growing population indirectly. Day by day the population is increasing. It is feared that the county's population may reach 1 billion it causes indirect consonances like, pollution, housing and other problems.

Trends and developments in National & Health policy

- A policy is important to assess the current situation.
- A National Health Policy sets goals for improving health situation. It gives direction for providing health services.
- Health Policy was developed world wide adoption of the goal of HFA by 2000 A.D. Alma-Ata declaration calling on all government to develop and implement primary health care strategies.
- The first national health policy was evolved by the government of india in 1983, After that a new health policy was developed in 2002.

- The main objective of this policy is to achieve an acceptable standard of good health and concentrated on diseases such as Tuberculosis, blindness and HIV/AIDS. So many goals were formed by National health Policy. e.g. Reduced mortality rate by 50% on account of TB, Malaria and other vector born disease.
- Infant mortality rate to 30/1000
- Maternal mortality rate to 100/1Lack by 20/0

National Population Policy

In 1976 India formed first its national population policy. National Population policy 2000 is the latest in its services.

The National Socio-demographic goals

1. Address the unmet needs of mother and child health service.
2. Make school education upto age 14 years free and Compulsory.
3. Reduced infant mortality rate to below 30/1000 live birth.
4. Reduced maternal mortality ratio to below 100 per 1,00,000 live births.
5. 80% institutional or hospital deliveries.
6. Promote delayed most age for given not earlier than age is and perfectly after 20 years of age.
7. 100% registration of birth, death, marriage and pregnancy.
8. Prevent and control of communicable diseases.
9. Integration of AYUSH in the provision of RCH services.
10. Promote vigorously small family norm.

Five-year Plan

The economic planning of country lives caused through the Five year plans developed, executed and monitored by the planning commission.

The First five year plan was one of the important because it had a great role in the lounge of Indian development after the independent. It was started in the year 1951.

12th Five Year Plan (2012-2017) of the Government of India has been decided to achieve a growth rate of 8.2% but the National Development Council on 27 December 2012 approved a growth rate of 8% for the 12th Five Year plan.

National Health Programmes in India

After independence, several measures have been undertaken by the national government to improve the health of the people.

Prominent among these measures, all the “National Health Programs” which have been launched by the Central Government for the Control/Eradicate Communicable diseases, improvement of environmental Sanitation, nursing the standards of nutrition, control of population and improving rural health.

National Health Programmes are as follows

1. National vector borne disease Control Programme,
 - (a). National malaria Control Programme
 - (b). Elimination of lymphatic Filariasis
 - (c). Control of Kala-Azar
 - (d). Control of Japanese Encephalitis
 - (e). Control of dengue fever
 - (f). Control of Chicken pox
 2. National Leprosy “Eradication” Programme.
 3. Revised National Tuberculosis Control Programme.
 4. National Program for control of blindness
 5. National AIDS Control Programme
 6. Iodine Deficiency Disorder Programme (IDD)
 7. Universal Immunization Programme
 8. Guinea Worm Eradication Programme
 9. National YAWS Eradication Programme
 10. National Cancer Control Programme
 11. National Mental Health Programme
 12. National Programme for Prevention and Control of Diabetes, Cardio vascular diseases
 13. National Programme for Control and treatment of occupational diseases.
 14. National Family Welfare Programme
 15. National Water Supply and Sanitation Programme
 16. National Nutrition Programme
 17. National Rural Health Mission and Urban Health Mission
1. **National Vector borne disease control Programme:** - is implemented in India for prevention and control of vector borne diseases namely malaria, filarial, kala-azar, JE, dengue and Chicken pox.

1) National malaria Control Programme

- It was started in 1953, during the First Five-year Plan Goals during 2007-12
- At least 50% reduction in mortality due to malaria by the year 2010.
- 80% malaria cases get Correct, affordable and appropriate treatment within 24 hours.
- Provide preventive measures at least 80% of high risk malarial cases Such as insect dual treatment and indoor residual spreading.

Main components of strengthened under the project include: -

1. Early Case detection and prompt treatment distributing chloroquine tablets.
2. Vector control and personal protection methods, include insecticide treated, mosquito nets supplying of bed nets at free of cost.
Use of Larvivorous Fish: is being promoted in natural water sources in urban and rural areas.
3. Identification of cases depending upon demographic area. i.e. epidemic planning.
4. IEC activities for generating awareness about malaria.
5. Anti-malaria month Campaign Programme before the onset of monsoon i.e. month of June every year.
6. Elimination of lymphatic Filariasis :-
It is an endemic disease in some districts and union territories. It was launched since 1955. This programme was utilization of avail resources since 1978.

Objectives of the programme are

1. Anti-larval operation
2. Source reduction
3. Detection and treatment of micro lateral carriers.
4. Sickness management and IEC

Elimination of Filaria

Annual Single mass drug therapy with DEC (Di Ethyl Cardomazitine). Home based management of lymphedema cases.

Kala Azar: It is now endemic present in Bihar, Jharkhand, West Bengal and Utter Pradesh.

Activities to eradicate Kala Azar

1. Early identification of case and complete treatment.

2. Vector Control.
3. Communication for behavioural changes.
4. Monitoring, suppression and evolution of cases.
5. Follow research guideline to prevent & control of Kala Azar.

Japanese encephalitis

It is with high mortality rate and who survive also will live with neurological problems.

Action for Control and prevention

- Early diagnosis and prompt treatment
- Vector Control, particularly personal protector and use of larvivorous fishes.
- IEC activities to change behavior.

Dengue Fever:

During 1996 the outbreak of dengue was reported in Delhi.

Control and prevention of Dengue fever:

- Early identification of cases or outbreak.
- Containment of outbreak.
- Case management with early admission in the hospital and taking correct treatment.
- Vector Control.
- IEC activities about DO's and Don'ts for prevention of Dengue.
- Monitoring and reporting System.

2) National Leprosy Eradication Programme

The National Leprosy Control Programme has been in operation Since 1955, it is centrally aided programme.

The Component of the programme are

- Leprosy Services are incorporated with general health care.
- Strengthening of leprosy services
- IEC activities.
- Prevention of disability and rehabilitation of Cases
- Monitoring and Supervision.

Major Activities include

- More focus in identification of new cases full course of complete treatment should be taken by the patients.
- More emphasis disability limitation and rehabilitation.
- Asha workers have been involved in bringing new suspected Cases from their villages for early diagnosis.
- She should see that the patient should take complete Course of treatment.
- For this Asha worker will amount of Rs.100/- on confirmed diagnosis of case, Rs.200/- and MD Leprosy case Rs. 400/-.
- Facilities provided like settled colonies to reside, free medical facilities like care of illness, self-care training, counselling and MCR footwear.

3) Revised National Tuberculosis Control Programme (RNTCP)

This Programme has been in operation since 1962. After that, because of some problems in the programme in 1993. It was renamed as Revised National Tuberculosis Control Programme by adopting DOTS.

Objectives of RNTCP

- At least 85% of cure rate of infectious cases.
- At least 70% of cases must be diagnosed through quality Sputum Microscopic examination.

Revised objectives of RNTCP

- Organizational support, central and state level
- Use of sputum examination for diagnosis.
- Follow standard treatment regimen.
- Regular supply of drugs.
- Emphasis on training, IEC, research and NGO
- Increased budget.

Directly Observed Treatment Short Course (DOTS)

It is a treatment for TB control

Components of DOTS

- 1) Financial support by political system
- 2) Case detection by Sputum examination
- 3) Regular supply of drugs
- 4) Directly observed treatment
- 5) Systematic monitoring

DOTS regimen is recommended by WHO. In this, patients are divided into 4 categories.

- Category I : New case of sputum smear positive
- Category II : Irregularly treated or default less
- Category III: New case of sputum smear positive
- Category IV: Chronic cases who remained sputum smear positive

Daily Regimen RNTCP adult

Wt. (kg)	No. of tablets (FDC)		Inj. Streptomycin Gm
	IP (H, R, Z, E) 75,150,400,275 mg	CP (H, R, E) 75,150,275 mg	
25-39	2	2	0.5
40-54	3	3	0.75
55-69	4	4	1
>70	5	5	1

H: Isoniazid, R: Rifampicin, Z: Pyrazinamide, E: Ethambutol

Revised RNTCP 2017

Changes takenplace

I Change

99 DOTS:

- 99% of the benefits are enrolled in the regime.
- Introduction of fixed dose drug combination.
- Both drugs are combined.
- It is used in the R. I, E, P

1st – 4 4JC Intensive phase: Isodized, Refampicen, Ethambutol, Pyrazinamed. 1st lane drugs combined together and formed tablets.

Dose: I: 75 mg, R:150 mg, E:275 mg, P: 400 mg

This is for one day, one single dose.

2nd, 3FJC: I,R,E dosage is same. It is used in the continuation.

II Change

Previously the regimen was 3 days in a week. But now it is daily treatment.

III Change

Use of Information Technology, mainly for monitoring and implementation with Aadhar Number.

Treatment: Patients are categorized into 2

Category I: All new cases Sputum Senear Positive or Negative
R_x is divided into intensive phase - 1st 4 FDC
First line agents for 8 weeks or 2 months

In continuation phase – (IRE drugs) 3 FDC –give for a period of 16 weeks or 4 moths
Total duration is 6 months

CNS, TB or Skeletal +B – Continuation phase - 12 week extended to 24 weeks to the continuation phase

Category II: Previously treated or Defaulters or relapse

Intensive phase: 4 FDC+Inj. Streptomycin 5 weeks-12 weeks or 3 months
Continuation phase:3 FDC – 20 weeks or 5 months
Total 8 months

4) National Programme for Control of Blindness

It was launched in the year 1976. It was centrally sponsored Programme.

Goal: to reduce the prevalence of blindness.

Objectives

- To perform cataract operations, school eye screening Programmes and distribution of spectacles.
- Identification and treatment of curable blind.
- “Eye Health for All” and prevention of visual impairment, by strengthening of NPCB.
- Community awareness Programme on eye care.
- Increase research activities.
- To secure and participation of voluntary organizations.

Newer initiatives:

- Vision 2020 – The right to sight.
- Universal eye health: a global action plan (2014-2019). It involves provision of effective and accessible eye care services is to key to control measures.

Other New National control Programmes

which includes are

- Reproductive, Maternal, Newborn, Child and Adolescent Health (RMNCH+A) Strategy – 2013.
- National Programme for health care of the elderly.

5) National AIDS Control Programme (NACP)

This Programme was launched in India in the year 1987. The Ministry of Health & Family Welfare has set up National Aids Control Programme. It is a separate wing to implement and closely monitor the various components of the programme.

- The aim of this programme is to prevent further transmission of HIV.
- To decrease morbidity and mortality associated with HIV infection and to maintain socio economic impact resulting from HIV infection.
- In 1992, National Aids Control Programme-I is launched to slowdown the spread of infection. National Aids Control Organization was setup.
- 1999-NACP-II begins, focusing on behavior change, increased decentralization and NGO involvement. State Aids Control Society established.
- 2002-National Aids Control Policy adopted.
- 2004-Antereteo Viral treatment adopted.
- 2007-NACP-III launched for 5 years (2007-2012)
- 2014-NACP-IV launched for 5 years (2012-2017)

Components of National Strategy

- Establishment of surveillance centers.
- Identification of high risk groups and their screening.
- Issuing specific guidelines for managements of detected cases and their follow up.
- Formulating guidelines for blood bank.
- IEC activities by involving mass media.

Package of services under NACP-IV

- Target intervention for high risk groups. (Eg: female sex workers, homosexuals, men who have sex with men, hizaras, injecting drug users)
- Prevention of interventions for migrant population.
- Prevention and control of sexually transmitted infections.
- Blood safety.
- HIV counseling and testing services.
- Prevention of parent to child transmission.
- Information, education and communication activity.
- Youth intervention programmes and adolescent education programmes.

6) Iodine Deficiency Disorder Programme (IDD)

India started a goiter control programme in 1962, based on iodized salt. The manifestations of iodine deficiency are not limited to endemic goiter and cretinism but to a wider spectrum of disability including deaf mutism, mental retardation and various degrees of impairments of intellectuals and motor function.

The essential components of the programme are

- Use of iodized salt in place of common salt.
- Monitoring and surveillance.
- Man power training and mass communication.

7) Universal Immunization Programme

In 1974, the WHO launched its expanded programme on immunization against 6 most common, preventable childhood diseases.

The Government of India has launched its EPI in 1978, with the objectives of

- (a) Reducing mortality and morbidity resulting from vaccine preventable diseases of childhood.
- (b) To achieve self-sufficiency in the production of vaccines.

Universal Immunization Programme was started in India in 1985. The components of this programme are

- a) Immunization of pregnant women against Tetanus
- b) Immunization of children in the 1st year of life.

The main aim of this programme was to achieve 100% coverage of infants with 3 doses each of DPT, OPV and dose of BCG and one dose of Measles and 2 doses of Tetanus toxoid to pregnant women by 1990. The immunization services are being provided through the existing health care delivery system i.e., MCH Centers, Primary Health Centers, Sub Centers, Hospitals, Dispensaries and ICD Unit.

Newer achievements

- Pulse Polio Immunization Programme was launched in the country in the year 1995.
- Additional oral polio drops are given to 0-5 years of age children. This programme dates are 27th January and 11th March of 2018
- Introduction of Measles vaccine.
- Introduction of Hepatitis-B Vaccine.
- Introduction of Pentavalent Vaccine, it contains (DPT+Hep.B+HiB). Five antigens i.e., Hepatitis B, Diphtheria, Pertussis, Tetanus and Homophiles Influenza vaccine.
- Introduction of Japanese Encephalitis vaccine.
- Introduction of Rotavirus vaccine and Rubella vaccine.

Mission INDRADHANUSH

- The Ministry of Health and Family Welfare has launched “Mission Indradhanush”.
- It depicts 7 colors of rainbow.
- It was started in December 2014.
- It is against for seven life threatening vaccines preventable diseases which include Diphtheria, Whooping cough, Tetanus, Polio, Tuberculosis, Measles and Hepatitis B.

8) National Guinea Worm Eradication Programme

India launched this Programme in 1984 with technical assistance of WHO. The recommendations given by the International Commission are as follows.

- Health education to school children and women in rural areas.
- Rumour registration and rumour investigation.
- Maintenance of Guinea worm disease on list of notifiable disease and continuation of surveillance in previously infected area.
- Careful supervision of the functioning hand pumps and sources of safe drinking water and provision of additional units.

9) National Yaws Eradication Programme

This disease was found in the tribal areas living in hilly forests and difficult to reach areas in 49 districts and 10 states. This programme is implemented by the State Health Directorate of Yaws Endemic states, utilizing existing health care delivery system with the coordination and collaboration of the Department of Tribal Welfare and other related institutions.

10) National Cancer Control Programme

It is a public health problem in India with nearly a lakh new cases occurring every year in the country. This programme was launched in 1975-76 and this programme was revised in 1985-86 and in December 2004.

The main objectives of the Programme are

- Primary prevention of cancers by health education.
- Secondary prevention i.e., early detection and diagnosis of common cancer such as cancer of Cervix, mouth, breast and tobacco related cancer by screening, self-examination method.
- Tertiary prevention i.e., strengthening of the existing institutions of comprehensive therapy including palliative care.

The schemes under the revised programme are

- (a) Regional Cancer Centre Scheme
- (b) Oncology Wing Development Scheme
- (c) Decentralized NGO Scheme
- (d) IEC activities at Central level

- (e) Research and training

11) National Mental Health Programme

This programme was launched during 1982 with a view to ensure availability mental health care services for all, especially the community side and under privileged sections of the populations.

Aims of the National Mental Health Programme

- Prevention and treatment of mental and neurological disorder.
- Using of appropriate technology to improve general health services.
- Application of mental health principles in total national development to improve quality of life.

Objectives of the programme

- To ensure availability and accessibility of minimum mental health care.
- Application of mental health knowledge in general health care.
- To promote community participation in the mental health services.

12) National Programme for prevention and control of diabetes and Cardiovascular diseases

India is experiencing with a rising burden of chronic-non communicable especially cardio vascular diseases, diabetes mellitus, cancer, stroke and chronic lung disease due to stress, overcrowding and air pollution.

Components of the Programme

- Health promotion for the general population.
- Diseases prevention for the high risk groups i.e., early diagnosis and appropriate management for reducing morbidity and mortality.
- Assessment of prevalence of risk factors.

13) National Programme for control and treatment of occupational diseases.

Government of India launched a scheme called “National Programme for control and treatment of occupational diseases” in 1988-1999.

The following research projects have been proposed by the government.

- Prevention, control and treatment of silicosis and silico tuberculosis in industry.
- Occupational health problems and tobacco harvesters and their prevention.
- Capacity building to research, education, training at National Institute of Occupational Diseases.
- Health risk assessment and development of intervention programme in cottage industries, cloth and high risk of silicosis.

- Prevention and control of occupational health hazards among salt workers in the remote desert areas of Gujarat and Western Rajasthan.

14) National Family Welfare Programme

- India launched its nationwide Family Planning Programme in 1952, making it the first country in the world.
- In the beginning it was established a few clinics and distribution of educational material, training and research.
- During the 3rd 5th Year Plan, Family Planning Programme was declared as “the very center for planned development”
- The emphasis was shifted from the purely “Clinic approach” to the vigorous “extension education approach” for motivating the people. Acceptance of the “Small Family Norm”.

In 1970, an all India hospital postpartum Programme and in 1972, the medical termination of Pregnancy Act were introduced the National Health Policy (1982) laid down the long term demographes goals of NRR-1 by the year 2000 which implies 92 child family norm – through the attainment of birth rate of 21 and a death rate of 9/1000 population and Complete protection rate of 60% by the year 2000.

The Government of India evolved a more detailed and Comprehensive Population Policy 2000 to promote Family Welfare. All the other relative Programmes were integrated with a Family Welfare Programme like UIP, MCH Programme, CSSM Programme and RCH Programme.

15) National Water Supply and Sanitation Programme

The National Water Supply and Sanitation Programme was launched in 1954 with the objective of providing safe water supply and adequate drainage facilities for the entire urban and rural population of country. In 1972, accelerated Rural Water Supply Programme was started as a supplement to the National Water Supply and Sanitation Programme.

New initiatives

Swajal Dhara

Launched on 25 December 2002. It is a community led participatory programme

AIM: Providing safe drinking water in rural areas better hygienic practices and encouraging water Conservation. Practices along with rainwater harvesting.

Bharat Nirmaan

It was launched by the Government of India in 2005 as a program to build rural infrastructure.

Rural Sanitation Programme**Nirmal Bharat Abhiyan (NBA)**

Total sanitation programme was shifted into launching the Nirmal Bharat Abhiyan, in the 12th Five-year plan (in 2012)

Objective: To attain sustainable behavioral changes with provision of sanitary facilities in entire communities in a phased manner.

Swachh Bharat Mission

It is a national campaign by the Government of India to clean streets, roads and infrastructure of the country. It was launched by the Hon'ble Prime Minister of India on 2nd October 2014 at Rajghat, New Delhi.

AIM: to eradicate open filed defecation by year 2019 and construct 12 million toilets in rural India.

It has 2 Submissions, (1) Swachh Bharat Mission Urban and (2) Swachh Bharat Mission Gramin.

1) Swachh Bharath Mission Urban**Objectives**

- Elimination of open defecation
- Eradication of manual Scavenging
- Modern and Scientifica Minicipal Solid waste management
- To effect behavioral change regarding healthy sanitation practices.
- Awareness about sanitation.

Components

- Household toilets, including Conversion of insanitary latrines into pour flush latrines.
- Community toilets.
- Public toilets
- Solid waste management
- IEC and public awareness.

2) Swatcch Bharat Mission Gramin

Improving the level of cleanness in rural areas through solid and liquid waste management.

Objectives

- Improving of quality of life in the rural areas by promoting cleanliness, hygiene and eliminating open filed defecation.
- To achieve the vision of Swachh Bharath by 2nd October 2019.
- Motivation of communities to adopt Sanitation practices and facilities through awareness creation and health education.
- Encourage effective and appropriate technologies.
- Scientific Solid and liquid waste management systems for overall cleanliness in the rural areas.

16) National Nutrition Programme

The India announced the National Nutritional Policy 1993. Nutrition is multi sectorial issue; it needs to be tackled at various levels.

Interventions includes,

- Specially to vulnerable groups like pregnant and post-natal mother and children under 5 year adolescents.
- Improving growth monitoring between age group 0 to 3 year, with the closer involvement of the mother.
- To prevent birth of 10 weight babies by convening pregnant women.
- Fortification of essential foods.
- Popularization of low cost nutritious food.
- Control of Vitamin deficiencies among vulnerable groups.
- Food Security.
- Improvement of dietary pattern.
- Improving purchasing power.
- Land reforms.
- Health and Family Welfare.
- Basic Health and nutrition knowledge.

- Prevention of food adulteration.
- Nutrition Surveillance.
- Monitoring of Nutritional Programme.
- Equal Remuneration for women
- Communication.

17) National Rural Health Mission (NRHM) and National Urban Health Mission Programmes

National Rural health mission was launched by the Government of India on 5th April 2005 for a period of 7 years, i.e., 2005-2012.

The main aim is to provide

- Accessible, affordable, accountable, effective and reliable primary health care.
- Bridging the gap in rural health care through creation of accredited social health activist.
- Goal achieved by NRHM.
- Infant mortality rate reduced to 30/1000 live births.
- Maternal mortality rate reduced to 100/100000
- Total infertility rate reduced to 2%
- Kala-azar mortality reduction- 100% by 2010 and elimination by 2012.
- Filarial and micro filarial rate reduction 70% by 2010.
- Dengue mortality rate reduction 50% by 2010.
- Japanese encephalitis mortality rate reduction 50% by 2010.
- Tuberculosis DOTS services maintains 85% cure rate through certremission paid.

Major initiatives of NRHM

- Selection of ASHA workers.
- Rogi Kalyan Samithi (Patient Welfare Committee/Hospital Management Society)
- The untide grants to sub centers.
- The village level sanitation and Nutrition Committee.
- Janani Suraksha Yojana Committee.
- Janani Suraksha karyaakrammam.
- National Mobile Medical Units.
- National Ambulances Services.
- Web enabled mother and child tracking system.

New Initiatives:

- Home delivery of Contraceptives i.e., condoms, oral pills.
- Conducting district household survey.

- Promotion of menstrual hygiene.
- Allocation of united funds and Roji Kalyan Samithi grants.
- Involving ASHA in home based new born care.
- Rashtriya Baala Swasthya Karyakramam (RBSK): This initiative was launched in February 2018 and provides for child health screening and early intervention services through early detection and management of 4 diseases namely defects of blood diseases, deficiencies, developmental delays including disability.
- Rashtriya Kishore Swasthya Karyakram (RKSK):- This is launched in January 2014 to reach out 253 million adolescents in the country in their own spaces and introduces peer-led intervention at the community level. This is mainly adolescent health Programme beyond reproductive and sexual health and brings in focus on life skills, nutrition, injuries, violence non communicable disease, mental health and substance in is use.
- Mother and child health wings: 100/50/30 bedded maternal and child health wings have been sanctioned in public health facilities.
- Free deugand free diagnostic services.
- National ironfent initiat a new launch in 2013.
- Reproductive, Maternal, New born, Child and adolescent health services.
- Delivery points.
- Universal health coverage.
- Comprehensive primary health care.

NRHM Programme is now renamed as National Urban Health Mission

- It is mainly seeks to improve the health status of the urban population particularly slum peoples and other sections of the people.
- To improve the access to quality health care.

Main Focus

- Urban poor population.
- All other population such as homeless, rag pickers and lime kiln workers, sex workers and other temporary migrants.
- Public health Services like Sanitation, clean drinking water, vector control.
- Strengthening publish public health capacity of urban local bodies.

Functions of ASHA Workers

Selection of ASHA

- ASHA full form is Accredited Social Health Activist.
- She must be resident of the village.
- Preferable age is 25 to 45 years with formal education up to 8th class.
- Having communication skills and leadership qualities.
- One ASHA is for 1000 population.

Functions

- She creates awareness and provides information to the community on nutrition, basic sanitation and hygienic practices.
- She will counsel women on birth preparedness, importance of safe delivery, breast feeding, immigration and family planning.
- She will mobilize the Community to the health center for immunization, antenatal checkup post-natal checkup.
- She will provide primary medical care for minor elements such as diarrhea, fevers and first aid and for minor injuries.
- She will be a provider of DOTS Programme.
- She will act as depot holder for iron and folic acid tablets, oral pills, and chloramine tablets.
- She will inform about births and deaths in her area.
- She will promote construction of household toilets under total sanitation programme.

CONCLUSION

National health programmes were launched to control and prevent the health problems which were existing in India. Every decade, the Government is launching new programmes, with scenario of the health problems. So it is important that to know the health problems and their prevention and control.

SHORT ANSWER TYPE QUESTIONS

1. Name the health problems in India?
2. What is NUHM?
3. What is DOT?
4. Name the Drugs in MDT?

LONG ANSWER TYPE QUESTIONS

1. List out National health programmes and write any one of the programme?
2. Explain in detail about NRHM?
3. List the functions of ASHA Workers?

UNIT-VI - COMMUNICATION AND HEALTH EDUCATION

Principles, Methods and process of Communication.

Inter personal relationships and communication with different groups and health team members.

Health Education- Definition, uses, principles, scope, approaches

Use of AV Aids, role of mass media.

BCC, IEC, Role and responsibilities of MPHW (F) in IEC

Introduction

Communication is also known as sharing. It is essential to all human association without communication. Human being cannot associate with other persons. All of us are engaged in most of the time in receiving and sending information. Good communication is the essence of good leadership.

Definition

Communication is a process by which two or more persons exchange or share ideas, facts, feelings or impressions.

Purposes

- To educate the public.
- To change attitude and behaviour.
- To promote the health and welfare of community.

It is embodied in 3 words.

1. Information
2. Propagation
3. Entertainment

Principles of Communication

- The information should clear.
- To whom the information is to be given.
- When to give and where
- What method should use.
- Use local language.
- Communication should be easily understanding.
- Feedback should be there.
- Use correct channel of communication.

Methods of Communication

The methods of communication are as follows.

1. One Way Communication

In this communication, information is send by the sender to the audience or receiver. E.g. Lecture method or classroom teaching.

Disadvantages or Drawbacks

- Knowledge is imposed.
- Learning is authoritative.
- Audience participation is less.
- No feed back
- It does not influence human behaviour.

2. One Way Communication

In this, process of communication is very active because the sender and receiver or audience equally take part in the process of communication. Audience may raise questions, add information, ideas and opinions to the information.

3. Verbal Communication

It is by using words by mouth or a talk. It is oldest method, regularly and commonly used method.

4. Non Verbal Communication

It is a communication without words. It is mainly by signs, signals, postures, gestures, facial expressions. E.g. Smile, raised eyebrows, crying etc. it can speak more than words. It is a silent communication.

5. Formal and Informal Communication

It is a sort of instructions, commands etc follows informal network (eg:gossips)

6. Visual Communication

It comprises of charts, graphs, pictograms, tables, maps, posters etc.

7. Telecommunication

This communication is by using of electronic instrument like TV, Radio and Internet, Telegraph, Telex etc. These are mass communication media. These systems are close to interpersonal communication.

Process of Communication

It is a complex process. In this process, 5 components are present.

1) Message

- It is the information. It is in the form of words, pictures or signals. A good message must be meaningful, accurate and sufficient.
- It may be on felt needs.
- Clear and understandable.
- It should be timely and comprehensive
- Using of local language.
- Interesting

2) Sender

Sender is one who sends the message or information.

3) Receiver

Receiver is one who receives the information. Eg: A group of people or students.

4) Channels of communication

To pass the information, sender should use different channels of communication like face to face communication. Mass media communication like TV, Radio, Folk media like folk dance, singing, drama, burra katha, hari katha etc.

5) Feed Back

It is the reaction or opinion feelings of the audience. It is obtained by asking questions, opinion polls and interviews.

INTER PERSONAL COMMUNICATION OR**RELATIONSHIP Inter personal Relationship (IPR)**

It is the face to face relationship. It is most common type. It is more verbal communication.

Uses

- It helps to clarify the doubts.
- It helps to give clear, compete and accurate information.
- It is important skill need to possess in day to day activities of MPHW(F).
- It is also helpful to better understand patient and family needs.

She has to develop interpersonal relationship with different groups like Programme Officers with Health Assistant (Male), Pharmacist, Lab Technician and with subordinates like ASHA Workers, Village Guides, Anganwadi Workers, Trained Das and other NGO organizations.

In order to provide individual and family health services, she needs to maintain interpersonal relationship with all the above groups members.

HEALTH EDUCATION

The main objective of the Health Education is “To win friends and influence people “.

Definition

- 1) Health Education is a process which effects changes in the health practices of people and in the knowledge and attitudes related to such changes.
- 2) Health Education is a process that informs, motivates and helps the people to adopt and maintain healthy practices and life styles.

Uses of Health Education

- To inform about the value of health.
- To help the people with skills, knowledge and attitudes to enable them to solve their health problems by their own activities.
- To promote the development and proper use of health services.

Principles of Health Education

Health is based on some fundamental principles. They are,

- 1) Credibility: Health Education is based on facts and also with local culture, educational and social goals. Credibility means receiver should receive trust worthy (trust) information.
- 2) Interest: Health Education must create interest among the people. So, it should be based on felt needs of the people.
- 3) Comprehensive: As a Health Educator, she must know the level of understanding, education and literacy of the people.
- 4) Participation: Active and personal involvement of the people is necessary.
- 5) Communication: It should be clear, accurate and simple words should be used.
- 6) Motivation: It is stimulation of desires. Health education try to motivate individuals and groups to accept. New ideas and new techniques.
- 7) Reinforcement: Repetition of education at intervals is necessary.
- 8) Learning by doing: Always health education is done with the help of demonstration. Then only the people will not forget about teaching. Eg: Demonstration of homemade ORS preparation.

- 9) Good human relations: It is very important to develop confidence among the people. The health educator must be kind and generous.

Scope of health education

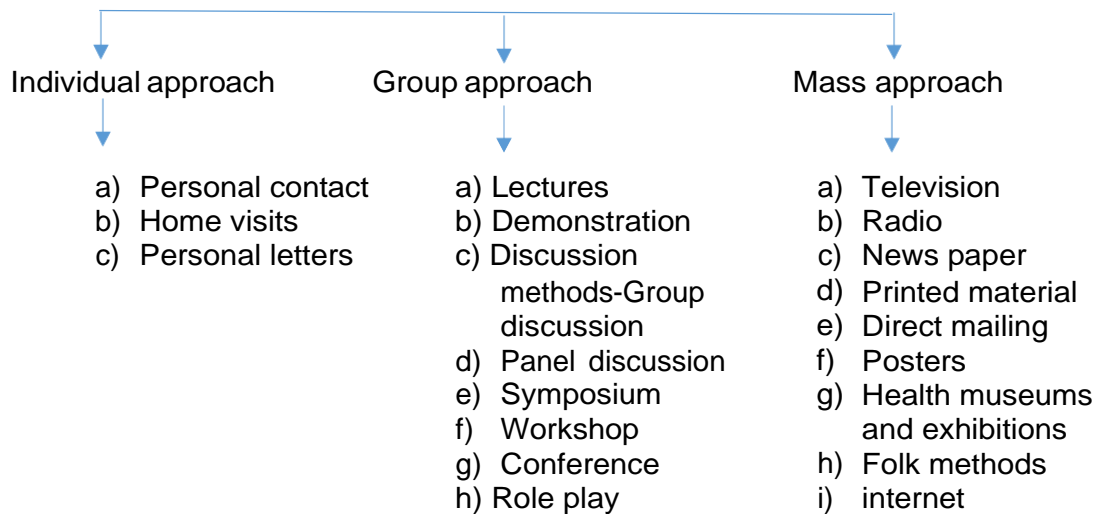
Health education is used in all the branches of community health.

- 1) Human biology: It is educating the illiterate people about the structure and function of the body. The contents include,
 - To maintain physical fitness.
 - Rest and sleep.
 - Reproductive biology.
- 2) Nutrition: Nutrition education is important to maintain optimal nutritional status and to fight against with malnutrition. It includes nutritive value of food, storage of food, cooking, serving and eating of food, good dietary habits.
- 3) Hygiene: It includes personal and domestic hygiene. E.g., Bathing, Clothing, washing hands and lighting, ventilation, control of rats and mice.
- 4) MCH and family planning: Topics included are care of pregnant mother and care of child. E.g.: Diet, rest of the pregnant mother, weaning immunization, infant feeding and family planning of the couple.
- 5) Prevention of communicable diseases: It is mainly by giving information about mode of spread of common communicable diseases (e.g. polio, diphtheria, typhoid) and protection by immunization against these diseases.
- 6) Use of health services: It is for to make the best use of health services by all sectors of the people. E.g., MCH services, medical care. Ambulance services.
- 7) Mental health: It includes to use defence mechanism to cop up with situation to prevent the occurrence of abnormal behaviour like drug addiction, alcoholism, crime, violence etc.

Approaches in health education

Health education is carried out either by using one approach or in combination of approaches. Mainly 3 approaches which are present and they are

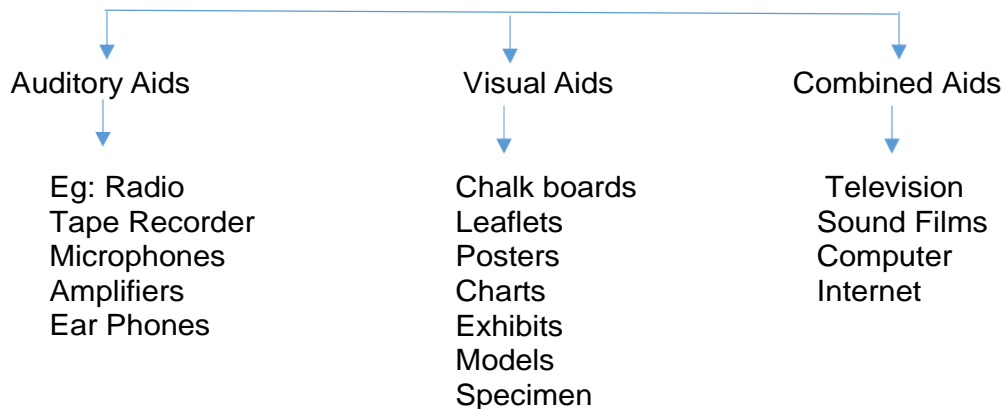
- 1) Individual approach
- 2) Group approach
- 3) Mass approach



AV AIDS

These are educational materials designed to provide new concept and knowledge. It facilitates interpersonal and group discussion.

Types of AV Aids



1. Auditory Aids: Only listening of information or topic
2. Visual Aids: Listening and seeing occurs by using these types of AV Aids. It is not required programme.
3. Combined AV Aids: These are in combination of audio and visual Aids. They receive some projection.

Uses of AV Aids

- They simplify the teaching and learning process.
- Easy understand by the audience.
- Make use of all senses effectively.
- They avoid monotony of lecture method.
- Creates interest.
- Memory is long lasting
- It provides new knowledge
- Feedback is possible.
- It creates enthusiasm

Role of mass media

Mass media means use of different channels to reach the information relatively large group of people at a time.

printed material, TV, radio and propagation.

Advantages

- Information reaches to all the people.
- It develops enthusiasm.
- Creates interest to enquire about information.
- Easily understand by illiterates.
- It helps to promote knowledge.
- All types of organizations are using to promote and develop organizations.
E.g: Shopping malls, colleges
- It is widely used media in all the sectors. E.g.: Education and Entertainment

BEHAVIOURAL CHANGE COMMUNICATION (BCC)

- This type of communication is used to change the behaviour and attitude of the people.
- This communication removes beliefs, taboos, customs and practices.
- It helps to promote health.

INFORMATION EDUCATION AND COMMUNICATION (IEC)

It is a type of communication. It changes attitudes, lifestyles of people through information, education and communication.

1. Information

It is awareness of a topic, event or an issue. It provides scientific knowledge. It helps in maintaining and promoting health. E.g. Pulse Polio Programme and Antenatal care.

Uses

- It eliminates ignorance, false beliefs of people about health matters.
- It helps to meet the health needs of people.

Providing information is the responsibility of government health professionals and mass media people.

2. Education

Education regarding health. It can change the behaviour, life styles and risk factors of disease. Simple health education can prevent the occurrence of many communicable diseases.

3. Communication

It is sharing of ideas, habits, opinions and customs, it is either one way or two-way communication. The process of communication is done by using different channels like mass media, folk media and by interpersonal relationships.

Role of MPHWH (F) in IEC activities.

- She should give correct, factual information to the public.
- Information should be specific.
- Inform about date, time, place and resource of information.
- Prior information is given to involve the public.
- Health education and IEC activities should be based on the health needs.
- She must use correct AV Aids to simplify health education.
- She should use two-way communication in sending the information.
- Should use of all channels of communication.

SUMMARY

Communication is a process of exchange of ideas. MPHw (F) should use communication skills in interpersonal communication. Health education is important to prevent the occurrence of many communicable diseases.

AV Aids is important educational material used to create interest while giving health education among the public.

SHORT ANSWER TYPE QUESTIONS

1. Define communication?
2. What is IPR?
3. Define Health education?
4. Expand BCC?

LONG ANSWER TYPE QUESTIONS

1. Explain the principles of health education?
2. List out different types of Aids? Explain one of it?

PART B

UNIT VII - CONCEPT OF DISEASE

Identification of illness.

Disease causation

Classification of diseases

Introduction

So many theories were given definitions of disease. A Disease is defined as deviation of health from normal situation. Diseases are classified in many forms like infections, hereditary, congenital and communicable diseases.

IDENTIFICATION OF

ILLNESS Illness

It is one's own feeling about health. It is a higher personal state in which the physical, emotional, intellectual, social and spiritual development of a person is diminished.

Illness is defined as any deviation from the function.

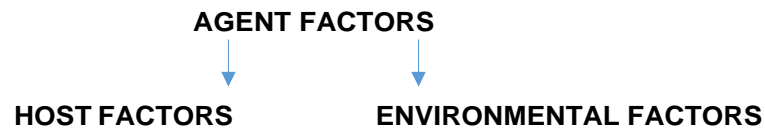
Definition of disease

It is an alteration in body function resulting in a shortening of normal life span.

CAUSATION OF DISEASE

Causation of disease or causes or factors responsible for disease is same. The causative factors of diseases are many and they are

1. Agent factors
2. Host factors
3. Environmental factors



1. Agent Factors

- Agent is living or non-living factor.
- It is biological (bacteria, viruses, fungus)
- Physical: These are heat, cold, pressure and radiation.
- Nutrient: These are proteins, carbohydrates, fats and vitamins etc.
- Mechanical: It is either by trauma or fractures.

2. Host Factors

It includes age, sex, nutritional status, occupation, customs and habits (eg: smoking and alcoholism).

3. Environmental factors

- Physical environment like poor housing, lack of safe drinking water and poor environmental sanitation.
- Biological environment includes cultural factors, hereditary and congenital in nature.

CLASSIFICATION OF DISEASES

Diseases are mainly classified into two types.

1. Acute diseases and
2. Chronic diseases

1. Acute Diseases

- Onset of disease is sudden.
- Duration (time) is very short.
- Symptoms appear abruptly and severe. They subside quickly.
- Sometimes it may reverse treatment or not.

2. Chronic Diseases

- Slow onset.
- Symptoms appear for some time and disappear.
- These diseases present usually 6 months or longer.

Other classification of diseases

1. Communicable diseases: Diseases spread from person to person, directly or indirectly from source of infection.
Eg: Malaria, Diphtheria
2. Congenital diseases: It occurs by birth.
Eg: Congenital disease and Congenital heart disease
3. Functional diseases: It occurs by failure of function of an organ.
Eg: Kidney failure or heart failure
4. Malignant diseases: It is caused by extra growth of cell.
Eg: Cancer tongue, lungs etc
5. Psychosomatic Diseases: Physical disease causes psychological illness. Eg: Peptic ulcer
6. Idiopathic diseases: Causative factors are unknown.
7. Degenerative diseases: It occurs due to the degeneration of tissue or bone.

SUMMARY

Disease is known as alteration in the body function. Multi factors are responsible for disease. MPHWN (F) should know the causes of disease.

SHORT ANSWER TYPE QUESTIONS

1. What is meant by illness?
2. Define disease?

LONG ANSWER TYPE QUESTIONS

1. Explain the causative factors of disease?
2. Describe about classification of disease?

UNIT-VIII - INFECTION

Meaning and types of Infection and causes of infection

Classification and characteristics of microorganisms, pathogenic and non-Pathogenic.

Incubation period and spread of infection-transmission

Factors affecting growth and destruction of microbes

Introduction

Infection is caused by entry of microorganisms into the body. Infections will spread from one person to another person.

MEANING OF INFECTION

1. When pathogenic microorganisms enter and multiply in or on the bodies of human beings may produce a reaction on the part of the host is called Infection.
2. Infections is the entry and development or multiplication of a disease producing agent in the body of man or animal.

Types of Infection

1. Primary Infection: The first attack of a pathogen on a host is Primary Infection.
2. Secondary Infection: It is when in a host immunity is lowered by pre-existing infection. Another new organism may set up an infection is called Secondary Infection.
3. Focal Infection: If an infection is localized in certain places is called Focal Infection. Eg : Appendix, Tonsels
4. Cross Infection: Infection transmits from person to person or crossing over of pathogens between two infectious persons is called Cross Infection.
5. Re Infection: Infection occurs again and again with same organisms, same person is called Re Infection.
6. Nosocomial Infection: It is hospital acquired infection. Eg: Hepatitis B and Urinary Tract Infections.
7. Iatrogenic Infection: It is due to instruments and diagnostic procedures used in the hospital.
8. Congenital Infection: This infection occurs by birth from the mother to the new born baby. Eg: Syphilis, HIV

9. Auto Infection: Infection in two places of the same host is called Auto Infection.
10. Mixed Infection: Infection occurs by two or more pathogenic organisms.
11. Acute infection: It is sudden and lasts for short period. It is usually from few days to two to three weeks.
12. Chronic Infection: Infection remains for months to years.
13. Subclinical Infection: In this infection, signs and symptoms are not appeared.
14. Opportunistic Infection: Chance of getting infection in the same host due to its different infection.
15. Zoonoses: Infection transmits from animals to persons. Eg: Plague and Anthrox.

Causes of Infection

1. Man
 2. Animals
 3. Insects
 4. Soil
 5. Water and
 6. Food
- 1) Man: Man himself is a common cause of infection from a patient or a carrier.
 - a) Carrier: It is who harbours the pathogens in his body but look like a healthy person.
 - b) Convalescent: He is carrier who has recovered from the illness but still harbours the pathogens and causes infection to the other person.
 - 2) Animals: Some diseases are transmitted from animals to man. Eg: Bacteria, fungal, Protozoa, Helminths and Ricketistical
 - 3) Insects: Diseases or infections also transmitted by mosquitoes, flies etc. Eg: Food poison
 - 4) Soil: Through soil also infection occurs by roundworm and hookworm.
 - 5) Water: Infection occurs through contaminated water.
 - 6) Food: Contaminated food also is one source of infection.

**CLASSIFICATION AND CHARACTERISTICS OF MICROORGANISMS,
PATHOGENIC AND NON-PATHOGENIC**

Micro Organisms are tiny living things. There are so many microorganisms in the world. There are 5 types of microorganisms.

- 1) Bacteria
- 2) Virus
- 3) Algae
- 4) Fungi
- 5) Protozoa

1) Bacteria

- It is unicellular organisms with a body size of 3-5micrometre.
- This cells contains Cytoplasm, It has a cell wall formed with protein called mucopeptide.
- Some bacteria cause infections in human beings.
- Bacteria can be classified based on their cell wall, structure stains in two types. i.e., (1) Gram Positive and (2) Gram Negative.
- Bacteria can be further divided based on their response to oxygen are (a) Aerobic and (b) Anaerobic.

2) Viruses

- These are non-cellular organisms.
- It contains nucleic acid core DNA or RNA.
- They surrounded by a protein coat.
- Viruses are classified as Microorganisms.
- They cause viral infections in human beings.

3) Algae

- These are called blue green algae.
- They are unicellular or multicellular.
- They live in water, damp soil and rocks.
- They produce oxygen and carbohydrates.

4) Fungi (Mushroom, Molds and Yeasts)

- They contain true nucleus
- They are multi cellular
- Their cell wall is composed of chitin.
- Fungi reproduced by releasing spores.

5) Protozoa

- These are unicellular aerobic organisms.
- They have nucleus.
- Cell wall is made up of Cellulose.
- They are divided based on their mobility like flagellates, Ciliates, Amoeboid and Sporozomes.

Except congenital diseases, all other diseases are caused by certain microorganisms. These organisms are called as Pathogens. They effect some body system or specific tissues or organs. Some human disease caused by Pathogens, are Polio, Cholera, Mumps, Rabies and Malaria.

Microorganisms are smallest organism on earth. Microorganisms means “Microscopic Organisms”. They are seen under microscope.

INCUBATION PERIOD AND SPREAD OF INFECTION-TRANSMISSION

Incubation Period

It is the time interval between the entry of the disease causing agent into body and the appearance of signs and symptoms.

Spread of Infection

- It occurs by direct contact, physically and indirect contact by Fomites (Patient used articles)
- Ingestion (drinking and eating) of contaminated water, milk or food.
- By inhalation of bacteria, viruses and fungi present in the atmosphere.
- By inoculation (injecting) the pathogens deep into the tissues. Eg: Rabies through dog bite, malaria through insect bite, by mother to foetus.

Transmission of Infection

Infection transmits from patients to other healthy persons in the following ways.

1. Direct transmission

- a) Direct contact: It is by physical contact with the patient through to touch, handshake and hug.
- b) Droplet infection: Through cough, sneeze, common cold etc
- c) Contact soil: Play in the mud and consumption of food and water without hand washing. Eg: worm infestations
- d) Inoculation into the skin: Biting of the mosquitoes causes malaria, dog bite causes rabies.
- e) Trans placental transmission: From mother to foetus. Eg: Syphilis, HIV.

2. Indirect transmission

Other than direct contact.

- a) Vehicle and Vector Borne: Eg: Malaria, Water and Air
- b) Mechanical transmission: Through insects like flies
- c) Dust: Through dust, infection occurs

3. Airborne

It occurs due to polluted air through droplet, nuclei and dust. Eg: Respiratory infection

4. Fomiteborne

Through the articles used by the patients. Eg: Towels, Plates, glasses

5. Unclean hands and fingers of infected person. Eg: Hepatitis

FACTORS AFFECTING GROWTH AND DESTRUCTION OF MICROBES

- 1) Presence of Oxygen: Some organisms receive Oxygen (O_2) for growth. If Oxygen is not available, they will die.
- 2) Temperature: Some of the patho organisms require temperature to grow. In over heat, they will die.
- 3) Hydrogen Ion Concentration: Some organisms grow in acidic, alkaline and in neutral phase.
- 4) Moisture: Helps for the growth of microorganisms.
- 5) Nutrition: Helps in the growth of microorganisms.

SUMMARY

Infection is a state where pathogenic organisms enter into the body and alters the normal health status of the body. Different types of infections are present. This infection is caused by different types of microorganisms that they may enter the body in different ways.

CONCLUSION

As a MPHWF, she should know the meaning, types, transmission and spread of infection and control and prevention of infection.

SHORT ANSWER TYPE QUESTIONS

- 1) Define infection?
- 2) Name the different types of microorganisms?
- 3) What is incubation period?

LONG ANSWER TYPE QUESTIONS

- 1) Explain the mode of transmission of infection?
- 2) Describe about different types of microorganisms?

UNIT-IX - IMMUNITY

Body defence mechanism, Immunity concept
Hypersensitivity, antigen and antibody reaction
Classification or types of immunity
Types of vaccines
Storage and cold chain system

Introduction

Human body is equipped with defence mechanisms against disease causing agent. This is known as Immunity. This defence mechanism is produce antibodies against toxins released by antibodies.

The term Immunity refers to the resistance exhibited by the host towards injury caused by microorganisms and their products.

MEANING OF IMMUNITY

3. It is defined as the ability of the body to fight against bacteria, viruses.
4. It is also defined as the ability of the body to recognize, destroy and eliminate antigenic material.

The Immunity mechanism has two components.

1) Humoral Immunity and 2) Cellular Immunity

- 1) Humoral Immunity: It is based on the production of antibodies. They are specific.
- 2) Cellular Immunity: It is more complex. It is based on a type of white cells known as 'T' Cells. These T Cells are active against some pathogens.

Hyper Sensitivity (Allergy)

It refers to the reaction occurs when a foreign body introduced into out body. The allergic reaction occurs within a few seconds. This is due to circulating antibodies. Hypersensitivity reactions are immediate and delayed.

Immediate Hypersensitivity

It is either anaphylactic shock or Atopy.

Signs and symptoms of Immediate Hypersensitivity reaction

- Itching of the scalp and tongue.
- Flushing of skin all over the body.

- Difficulty in breathing.
- Fall of B.P.
- Loss of conscious and patient finally in anaphylactic

Atopy is a most commonly naturally occurring hypersensitivity. Signs and symptoms are fever and asthma. It occurs due to inhalation of pollen or house dust, ingestion of egg or milk.

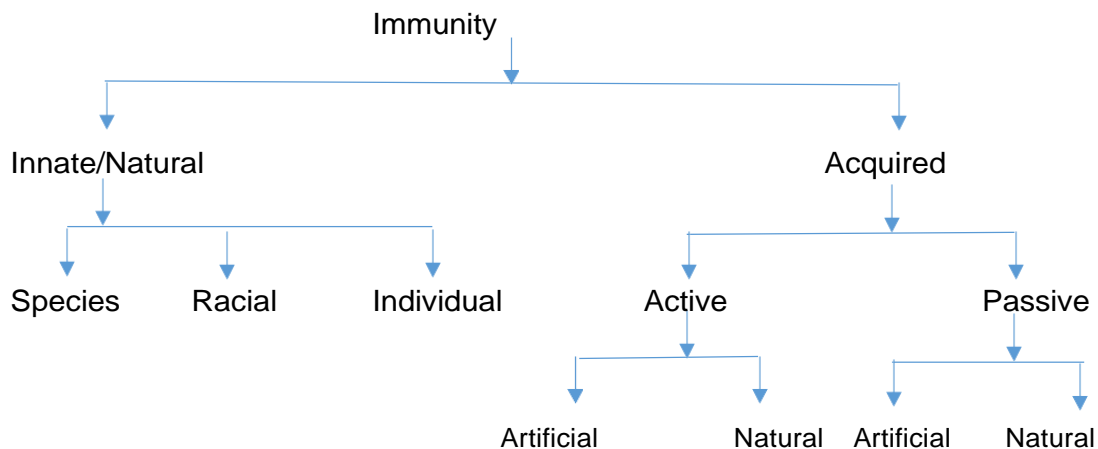
Delayed hypersensitivity

It is very late type of hypersensitivity.

Treatment:

- Keep the patient in head low position.
- Check vital signs B.P., Pulse and respiration.
- Give injection to Adrenaline 0.5 ml Subcutaneous/Intramuscular for adults and 0.25 ml for children.
- Start I.V. infusion.
- Start O₂ inhalations at a rate of 4-6L/ml

Classification of Immunity



7. Natural immunity: This immunity possesses by an individual by birth though genes. By this reason, some diseases will occur in human and do not occur in animals.
8. Acquired immunity: This immunity occurred by an individual during his life time. This is of two types. (a) Active immunity and (b) Passive immunity.
 - a) Active immunity: Which a person develops immunity as a result of infection by pathogenic organisms or their toxic products.
 - Body produces its own antibodies to fight like infection.

- It is occurred due to an attack of disease. Eg: Chickenpox, measles.
- b) Passive immunity: It is opposite to active immunity. Body does not produce its own antibodies. It is developed by transferring from one person to another person. It is short lived and declines in a few weeks.
 - It is occurred by antisera injection like Diphtheria Antitoxin.
 - Injection Gamma Globulin obtained from an immune person (measles, hepatitis).
 - Maternal antibodies transferred to foetus across the placenta or by giving milk.

TYPES OF VACCINES

These are immunizing agents.

Vaccine

It is a preparation of toxic product or disease agent administered to stimulate antibody formation. Vaccine produces active immunity.

Vaccines are prepared from

- a) Live attenuated organisms. Eg: Polio vaccine
- b) Killed organisms. Eg: Cholera and Typhoid vaccine
- c) Toxoids. Eg: Diphtheria and Tetanus vaccines

Types of vaccines

- a) Live attenuated vaccines. Eg: Oral polio, measles
- b) Killed vaccines. Eg: Typhoid, whooping cough, rabies and influenza
- c) Toxoids. Diphtheria, Tetanus

THE COLD CHAIN SYSTEM

It is a system used maintain the temperature of vaccines and storage.

It is defined as “Storage and maintenance of vaccines at a correct temperature in order to be effective.”

It helps to maintain the potency of vaccines at a correct temperature.

Equipment used for Cold Chain System

The equipment used for cold chain system are

- 1) Walk in coolers
- 2) Walk in freezers
- 3) Cold boxes
- 4) Vaccine Carriers
- 5) Day Carriers

1. Walk in Cold rooms:

- In this, vaccines are stored for 3 months and transported to 4 to 5 districts.
- These are at regional levels.

2. Deep freezers (300 Ltrs)

- Ice lined refrigerators.
- These are used to store vaccines.
- These will be supplied to all district and the WIC to store vaccines.
- It is also used for making ice packs and store OPV and measles vaccine.

3. Small deep freezers and ice lined refrigerators

- These are supplied to all PHCs, family planning centres and postpartum centres.
- Deep freezers are used to prepare frozen ice packs.
- It contains a dial thermometer, should be kept in the ILR and temperature recorded twice a day. Vaccines like DPT, TT, DT are kept in the basket of ILR.

4. Cold Boxes

- These are supplied to all peripheral areas.
- These are used to transport vaccines.
- Fully frozen ice packs are placed at the bottom and sides.
- The vaccines are kept in the polythene bags.
- DPT, TT, DT vaccines should not be placed directly with the contact frozen ice packs.

5. Vaccine Carriers

- These are used to carry small quantities of vaccines specially at Sub Centre.
- 4 fully frozen ice packs are used in the vaccine carriers.
- Vaccine carriers are closed tightly.

6. Day Carriers

- These are used to carry small quantities of vaccines for small sessions only.
- Two fully frozen ice packs are used.
- It is used only for few hours.

7. Ice Packs

- The ice packs contain water filled upto level marked on the outside.

SUMMARY

Immunity is body's defence mechanism helps to maintain health and to protect from diseases. Immunity is mainly of 2 types, (1) Active immunity and (2) Passive immunity. Vaccines are used to protect the children from 7 target killer diseases.

CONCLUSION

As a MPHWF, should know about immunity, types of immunity and cold chain system

SHORT ANSWER TYPE QUESTIONS

- 1) Define immunity?
- 2) What is Vaccine?

LONG ANSWER TYPE QUESTIONS

- 1) Explain about different types of immunity?
- 2) Describe in detail about Cold Chain System?

UNIT X- IMMUNIZATION

Immunization against different infections

Revised immunization schedule

Injection safety, methods of administering vaccine

Sterilization of syringes and needles

Immunization in the community

Immunization hazards, precautions while giving vaccines

Special immunization drives and programmes, records and reports

Introduction

Immunization takes place a vital role in the prevention of occurrence of infectious or communicable diseases.

Immunizations against different infections

- Immunizations produce passive immunity against some bacterial and viral infections.
- Immunization protects the health of the individuals and community
- These immunizations start early in the infancy, mainly given to 0 to 5 years
- Some are given as booster doses; some are as special driven.

National Immunization Schedule

VACCINE	WHEN TO GIVE	DOSE	ROUTE	SITE
For infants				
BCG	At birth or as early as possible till one year of age	0.1ml (0.05ml until 1 month age)	Intra-dermal	Left Upper Arm
Hepatitis B - Birth dose	At birth or as early as possible within 24 hours. 1 st dose: 6 weeks 2 nd dose: 10 weeks 3 rd dose 14 weeks	0.5 ml	Intra-muscular	Antero-lateral side of mid-thigh
OPV-0	At birth or as early as possible within the first 15 days	2 drops	Oral	Oral (Mouth)
OPV 1, 2 & 3	At 6 weeks, 10 weeks & 14 weeks (OPV can be given till 5 years of age)	2 drops	Oral	Oral (Mouth)
DPT 1, 2 & 3	At 6 weeks, 10 weeks & 14 weeks (DPT can be given till 5 years of age)	0.5 ml	Intra muscular	Antero-lateral side of mid-thigh
Measles /MR 1st Dose\$	9 completed months-12 months. (can be given till 5 years of age)	0.5 ml	Sub-cutaneous	Right upper Arm
Vitamin A (1st dose)	At 9 completed months with measles-Rubella	1 ml (1 lakh IU)	Oral	Oral (Mouth)
For Children				
DPT booster-1	16-24 months	0.5 ml	Intra-muscular	Antero-lateral side of mid-thigh
Measles/ MR 2nd dose \$	16-24 months	0.5 ml	Sub-cutaneous	Right upper Arm
OPV Booster	16-24 months	2 drops	Oral	Oral
Vitamin A*** (2nd to 9th dose)	16-18 months. Then one dose every 6 months up to the age of 5 years.	2 ml (2 lakh IU)	Oral	Oral
DPT Booster-2	5-6 years	0.5 ml.	Intra-muscular	Upper Arm
TT	10 years & 16 years	0.5 ml	Intra-muscular	Upper Arm
For Pregnant women				
TT 1 and TT 2				

REVISED IMMUNIZATION SCHEDULE

This revised (latest) immunization schedule (2018) is recommended by IAP (Indian Academy of Paediatrics).

S. No.	Vaccine	Prevents	Minimum age for Dose1	Interval between Dose1 & Dose2	Interval between Dose2 & Dose 3	Interval between Dose3 & Dose4	Interval between Dose4 & Dose5	Route of admn
1	BCG	TB & Bladder Cancer	Birth					Intradermal (ID)
2	HepB	Hepatitis B	Birth	4 weeks	8 weeks			
3	Polio virus	Polio	Birth	4 weeks	4 weeks			Intramuscular (IM)
4	DPT	Diphtheria, Tetanus & Pertussis	6 weeks	4 weeks	4 weeks	6 months (Booster-1)	3 years (Booster-2)	Intramuscular (IM)
5	Hib	Infections caused by bacteria	6 weeks	4 weeks	4 weeks	6 months (Booster-1)		
6	PCV	Pneumonia	6 weeks	4 weeks	4 weeks	6 months (Booster-1)		Oral
7	RV	Severe diarrheal disease	6 weeks	4 weeks				
8	Typhoid	Typhoid fever, Diarrhoea	9 weeks	15 months (Booster-1)				
9	MMR	Measles, Mumps & Rubella	9 weeks	6 months				SC
10	Varicella	Chickenpox	1 year	3 months				SC
11	HepA	Liver disease	1 year	6 months				
12	Tdap	Diphtheria, Tetanus & Pertussis	7 years					
13	HPV	Some Cancers & Warts	9 years	For child aged 9-14 years: 6 months. For child aged 15 or more: 1 month	For child aged 15 or more: 5 months			

INJECTION SAFETY

- The site of injection should be well cleaned with spirit and cotton.

- A sterile disposable syringe and needle should be used for each injection.
- Prevent infection by following standard sterile technique.
- Place child in correct position.

Safe disposal of injection equipment

- Safety box is made to collect used disposal syringes, needles, and other contaminated sharps.
- Collect used day material like empty vials, cotton pad, compression dressing material, IV bags, extensive tubes, used gloves, plastic waster material in dry bin.
- After giving, injection placed into the safety box to avoid needle prick injuries.
- Burn or incinerate after collection.

Methods of administration vaccines

Steps to follow the administer vaccines.

1. Screening

- Check immunization card for either it is new or it is old for due date.
- Check the vial for expiry date label.
- Check for expiry date.
- Make sure that vaccine is clear or not.

2. Reconstitution of BCG and Measles Vaccine

- BCG and Measles vaccines are freeze and dried.
- Diluent for BCG in normal saline.
- Diluent for Measles in sterile water.
- Take 5 ml syringe and needle to dilute not for injection.
- Do not freeze diluents.
- To mix the vaccine and diluent, do not shake it but roll between palms of hands.
- Use reconstituted vaccine for one session preferably within 3 hours.

3. Locate the site for injection

- Place the baby in comfortable position.
- Clean the site with cotton and spirit.

4. Site for different vaccines

- BCG is given on left upper arm.
- DPT is given. Muscle of the outer part of the middle thigh site.
- Hepatitis B injection is outer part of the middle thigh.
- DPT and Hepatitis B should not be given to the same limb.
- Measles vaccine is subcutaneous injection to the right upper arm.
- Administration of polio, orally.

5. Appropriate technique of administering vaccine

- Load syringe with correct vaccine and dose.
- Expel a drop or two of vaccine through the needle to make sure the needle is not blocked.

- Hold your hand side under the left arm and your thumb on the one side finger on the other of the arm and stretch the skin.
- Hold the syringe in your right hand with the level and scar point up towards.
- Insert the tip of the needle into skin and adjust the level and a little but more.
- Do not push too far and do not point downwards or the needle will go under the skin.
- Now put your left thumb over the needle end of the syringe to hold it in position.
- Hold the plunger to end of the syringe between the index and middle fingers of your hand.
- Inject the medicine into the site and withdraw.
- Fix the needle firmly to avoid leakage of medicine.
- Avoid occurring swelling, bleeding at the site of injection.
- For intradermal injection, give it to the muscle and needle should be $3/4^{\text{th}}$ entered into the muscle.
- For subcutaneous injection, $1/4^{\text{th}}$ of the intra muscular needle should go into the subcutaneous tissue.
- In case of oral polio vaccine, remove metal dropper on the vial, 2 drops are put under the tongue.
- So it is mix with saliva and swallowed by the child.

STERILIZATION OF SYRINGES AND NEEDLES

Now days, we are using disposable syringes and needles for safety of the patients and the health care professionals. It minimizes transmission of infection from person to person. Previously sterilization of syringes and needles (glass syringes and metal needles) are done by boiling method.

1. Boiling

Boiling at 100°C for one hour, but it is not safest method. It won't kill the spores properly.

2. Autoclave

It is also called as hot air method. In this method, under 160°C temperature and with some pressure for one hour syringes and needles are sterilized.

IMMUNIZATION IN THE COMMUNITY

- Special days are used to give immunization in the community.
- It is given in the morning session only between 9 AM to 12 Noon.
- It is conducted at one place either in the school or community hall or Anganwadi.
- The day before immunization, inform people or mothers time to time and place of immunization.
- Encourage mothers to bring their children.
- Arrange properly in one room.
- Room should be with sufficient light and ventilation.
- Arrange tables, chairs and stools.

- Give vaccine according to the age of child or to pregnant mothers.
- Maintain records and reports.
- The main aim of immunization is to achieve 100% coverage of all eligible children.

IMMUNIZATION HAZARDS

The common immunization hazards are,

- Local systematic reactions like pain, local swelling, fever and pruritus.
- Sepsis due to lack of care in vaccination.
- Hyper sensitivity reactions.
- Rarely convulsions and encephalopathy.
- Live attenuated vaccines are hazards for the immunosuppressive people as they cause fatal.

Precautions while giving vaccines

- Check the label on the vial or ampoule.
- Check whether it is correct vaccine or right vaccine.
- Check for expiry date.
- Make sure that vaccine is clear or not.
- Frozen vaccines should not be given.
- Shake test is used to identify the frozen of vaccine.
- The freezing can damage DPT, DT, Tetanus and Hepatitis B.
- Reconstitute the BCG and Measles vaccine.
- Do not freeze diluents because the ampoule will break.
- Use sterile syringes for mixing.
- Use A.D. Syringes for vaccination.
- DPT and Hepatitis B vaccine should not give the same limb.

SPECIAL IMMUNIZATION PROGRAMME

Pulse Polio Immunization Programme

- It is a largest single day public health immunization programme.
- It was started on 09.12.1995 and 26.01.1996.
- It consists of two immunization days with 6 weeks' interval i.e. on 9th December and on 26th January, every year.
- Regardless of previous immunization it is given.
- It is given in two rounds. It is almost reachable to all 0-5 years children.
- Polio drops are given at Bus stops, Railway stations, Airports, Markets, Schools, Anganwadis, Chowrastas, in business areas apart from Sub centres, Primary Health Centres and Government Hospitals.
- Second day, the conduct door to door immunization for missing children.
- 3rd days also do the same.
- The main objective is to cover 100% immunization of 0-5 year children.
- Polio occurs rapidly in the months from June to September.
- Recently Pulse Polio Immunization Schedule is changed i.e., on 27th January, 2018 and 11th March, 2018.

- After immunization each child is marked with brown ink to identify whether immunized or not.
- It is important to maintain the correct temperature of vaccine.
- Recently, in India, MMR Vaccine Programme and JE Vaccine Programme were conducted.

Records and Reports

- After vaccination, immunization records are maintained.
- In this record all vaccines according to the age wise are recorded.
- Each child is given Immunization Card or Road to Health Chart.
- In this card, child data and immunizations given and to be given are recorded with due date.
- Mother is informed about the due date.
- If any untoward reactions are occurring during the immunizations, it is bringing to the notice of Medical Officers or District Immunization Officer.

SUMMARY

Immunization helps the child to develop resistant power against 7 target killer diseases. These play an important role in the prevention of communicable diseases. Always use sterile syringes and needles to prevent adverse reactions.

CONCLUSION

As a MPHWF student, should know about the 7 target killer diseases and about the Immunization Schedule.

SHORT ANSWER TYPE QUESTIONS

- 1) What are 7 Target Killer Diseases?
- 2) Name the precautions while giving the vaccines?

LONG ANSWER TYPE QUESTIONS

- 1) Explain Immunization Schedule?
- 2) Write about hazards of Immunization Schedule?

PART C

UNIT-XI - ENVIRONMENTAL SANITATION

Environment and ecology of healthy living basic sanitary needs

Air, Sunlight and ventilation

Home Environment-Smoke animals, drains and toilets

Introduction

Environment is in which man lives. It implies both living and non-living area which is surrounding man. Environmental Sanitation means clean and safe environment which influences the health of an individual.

Definition

According to WHO, Environmental Sanitation is defined as control of all those factors in physical environment which may exercise a deleterious effect on human physical development, health and survival.

The term environment includes all living and non-living material which is so surrounds human being. It includes water, air, social and environmental conditions.

Components of Environment

1. Physical Component: It includes water, soil, housing wastes and radiation.
2. Biological Component: It includes plants, animals including bacteria, viruses, insects, rodents, flies having life.
3. Social Component: It includes customs, culture, habits, income, occupation and hygiene.



Ecology of healthy living

- It is very important component of community healthy.
- It prevents the occurring of diseases.
- To provide safe water drinking, avoid to drink contaminated water.
- Wash hands after defecation. Follow good habits.
- Wash hands before preparation and eating of food.
- Proper disposal of refuse and human waste.

BASIC SANITARY NEEDS**AIR**

Major part of the human's environment is Air. It supplies oxygen and also it serves many other functions like our body is cool down with its contact. It stimulates the special senses like hearing and smell. Diseases agents are also carried by air.

Air composition

Air composes mixes of gases like Nitrogen (N₂) 78.084% and Oxygen (O₂) 20.947% and remaining other gases like Argon, Carbon dioxide, Neon and others. It also contains water vapour, traces of ammonia and dust, spore and bacteria.

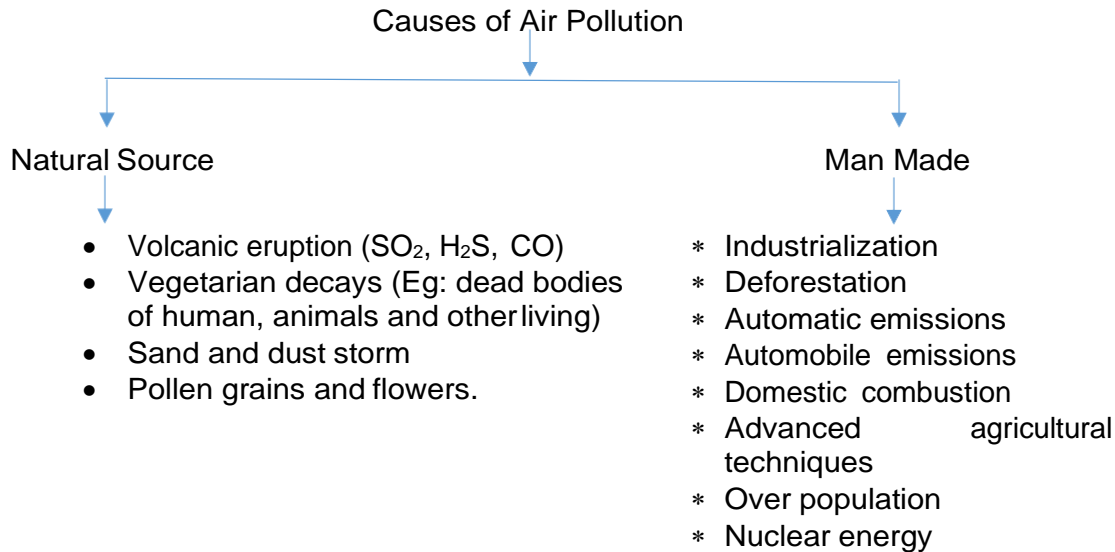
Factors maintain Air composition

1. Wind: By its constant movements, it dilutes and sweep away impurities.
2. Sun light: It kills the bacteria.
3. Rain: It washes away the impurities.
4. Plant life: Use Carbon dioxide and produces oxygen

Air pollution

It is mainly due to the chemicals, biological waste, releases in the environment. Air pollution in other ways, it is the imbalance of gases present in the natural environment.

Eg: More Nitrogen or Carbon dioxide levels

Sources**Effects of Air pollution**

1. Immediate Effect: On the respiratory system, on lungs, acute bronchitis and sometimes death due to suffocation.
2. Delayed effect: Lung cancer, asthma, chronic bronchitis.

Prevention and control of air pollution

1. Containment: Controlling of air pollution by increasing ventilation, air cleaning and providing arrestors.
2. Replacements: Coal is replaced by gas, use of electricity, decreasing use of petrol.
3. Dilution: Growing more plants, trees, gardens in industrial areas and residential areas.
4. Follow strict rules and regulations to prevent air pollution. Eg: Prohibition of smoking in external environment like markets, offices and other working areas punishes fine up to Rs. 500/-
5. Disinfection of air by mechanical ventilation through air filters providing UV rays, dust control by providing AC.
6. Using pollution controlling equipment: Such as setting chambers, cyclone filters, electro static precipitations, wet collectors etc.

LIGHTING

Good and sufficient lighting is essential for proper vision. Otherwise our eyes are put to strain and causes fatigue and loss of efficiency.

Requirements of good lighting

- Sufficient and enough good light is essential to carry out work without any eye strain.
- Height should be evenly distributed in whole area or total place.
- Absence of sharp light is essential to prevent confusion. Eg: glare
- Lighting should be constant, should not be flickering of light. It causes accidents.
- Should not use any colourful lights.

Types of lighting**1. Natural Lighting**

- a) It is mainly from sky.
- b) It depends upon time of day, season, weather and even clouds.
- c) It occurs mainly by building schools, colleges, laboratories, facing north and south for uniform lighting.
- d) Removal of obstructions near to buildings.
- e) Windows should be planned with regards to their shape and size.
- f) Unnecessary use of curtains and screens
- g) White washing of the buildings.

2. Artificial Lighting

- a) Sometimes, we need artificial lighting.
- b) It is mainly derived from two sources. (1) Electric bulb (2) Tube lights (3) Luminous efficiency lights
- c) We can't completely depend on natural light, so we need artificial lighting during nights and in early mornings.

VENTILATION

Ventilation is defined as exchange of air between outdoors and indoors. By this process, stagnated air is replaced by fresh air.

Types of ventilation**1. Natural Ventilation**

Wind is great force in nature which brings about natural ventilation by its movements from one place to another place when wind blows. It sweeps the impurities.

- a) Diffusion: Diffusion is also one method or process helps air to enter even though the small openings.
- b) Temperature: Temperature is different between indoors and outdoors. This causes movement of air from hotter regions moving towards cooler regions. In India, we depend much on natural ventilation.

2. Artificial Ventilation

- a) Exhaust ventilation: In this, air is exhausted by special fans. These fans are installed in places of over growing such as cinema halls, assembly halls, operation theatres, industries and kitchens.
- b) Venum ventilation: This is the opposite of exhaust ventilation. It is seen in industries. In this system, air is forces into the room.
- c) Balanced ventilation: This is the combination of exhaust and plenum system of ventilation. Eg: Air-conditioning

HOME ENVIRONMENT

- Housing includes physical structure providing shelter and also immediate surroundings and the related community services and facilities.
- Healthy house provides physical protection and shelter.
- Must have environment, air, light, ventilation, recreation, exercises and rest facilities.
- Psychological needs, cleanliness, privacy are essential to promote mental health.

SMOKE

It causes pollution of air. Smoke causes due to coal and firewood burning, vehicle emissions, factories and industries.

Prevention

- By increasing ventilation, air cleaning and providing airarrestors.
- Growing more plants and trees in reduction of air pollution.
- Dust control providing air or application of oil in floors.
- Reducing of pollution discharge by the dilution of source of equipment.

ANIMALS

- Control of all animals or anthropods such as mosquitoes, house flies, sandity, fleas, ticks, itchmitic, rodents (rats) etc.
- Control from all pet animals such as dogs, cats, birds such as pigeons and parrots.
- These are produces communicable diseases.

DRAINS

There should be drain to carry out waste water to a soakage pit or public drain. such spilled or waste water is carried well beyond the cone of filtration of the well.

TOILETS

Toilets should be adequate privacy, safe water supply, bathroom for bathing and washing with privacy at least one toilet for house.

SUMMARY

Basic sanitary needs like air, sun light, ventilation are important aspects in the maintenance of environment of human beings. Good environmental sanitation plays vital role in the prevention and control of communicable diseases to promote the health of individuals and communities.

SHORT ANSWER TYPE QUESTIONS

- 1) What is meant by Environmental Sanitation?
- 2) Define Ventilation?

LONG ANSWER TYPE QUESTIONS

- 1) Write about prevention and control of air pollution?

UNIT XII - SAFE WATER

Introduction

Sources and characteristics of safe water.

Sources of contamination and prevention.

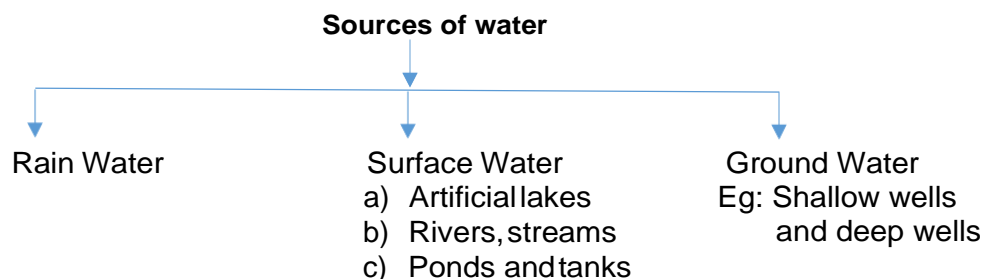
Purification of water for Drinking-Methods Small and Large Scale

Disinfection of well-Tube well, Tank and Pond in a village

Water borne diseases

Introduction

Water is one of the basic need of human being, we can use water for domestic, public, agricultural and industrial purposes without water. It is difficult to survive.



1. Rain Water

It is purest water in nature. It is clear, bright, sparkling soft and contains traces of dissolved soils. Rain water is free from harmful pathogenic organisms.

2. Surface Water

When rain water reaches the surface, it is called surface water. Main Indian towns and cities depend upon surface water sources. These are artificial lakes, rivers and tanks.

- a) Artificial Lakes: These are constructed in upland areas for the storage of rain water. These are also impending reservoirs. The area changing into a reservoir is called Catchment area.
- b) Rivers: Rivers are good source of water supply. Cities such as Delhi, Kolkata and Allahabad get their water supply from rivers. It is polluted by washing, cleaning, sewage and industrial and trade waste drainage from industrial areas.
- c) Tanks: These are storages of surface water. These are sources of water supply in villages.

3. Ground water: When rain water sinks into the ground, it becomes ground water. This water is purified by percolation method.

Eg: Wells. These wells are of two types.

- a) Shallow wells: It is 10 feet or 30 to 50 feet deep. It is one which taps the subsoil water. These are contaminated by drains, latrines and soakage pits. So, these shallow wells are health hazard community, if they are not properly disinfected.
- b) Deep wells: In which it is penetrates the first, impervious layer and taps the water lying beneath the impervious layer. They supply pure water. Deep wells are opened, poorly constructed and not protected against contamination.

Differences between Deep wells and Shallow wells

Shallow Wells	Deep Wells
Taps the water from above the first impervious layer.	Taps the water from below the first impervious layer.
Chemically moderately hard	Chemically much harder
Contaminated by bacteria	Pure water
Becomes dry in summer	Constant supply of water in all seasons

Characteristics of Safe Water

Safe water and wholesome water is defined as water that is free from pathogenic agent's harmful chemical substances.

- 1) Water must be free from pathogenic agents.
- 2) Water must be free from harmful chemical substances.
- 3) Pleasant to taste i.e., free from colour and odour.
- 4) Used for domestic purposes

Uses of water

Water requirement is varying from quantity to quality.

- 1) Domestic use: Water is useful for domestic use that is for drinking, cooking, washing and bathing etc.
- 2) Public use: Water is used for street washing, firefighting, maintenance of public gardens.
- 3) Industrial use: Some industries like paper industry needs enormous quantities of water.
- 4) Agricultural use: With water, the food and raw material can be produced.

Sources of contamination of water

- 1) Sewage: Sometimes due to leakage of sewage pipes causes water pollution which contains decomposable organic matter and pathogenic agents.
- 2) Industrial and trade wastes: which contains toxic agents ranging from metal salts to complex synthetic organic chemicals.
- 3) Agricultural pollutants: Comprises fertilizers and pesticides.
- 4) Physical pollutants: Heat and radioactive substances

Causes of contamination of water

- People defecate on the banks of rivers and tanks.
- People take bath, wash clothes, vessels and animals in or near water resources.
- Bird dropping and leaves falling into the water.
- Well water is contaminated by soakage pits etc.
- Dirty containers used to collect water.
- Containers are uncovered and drinking water is exposed to dust, flies, rats and dust.

Methods of water purificationPurification

It is a process of removing dust, dirty particles and bacteria, viruses or pathogenic organisms.

Water purification is done in two methods.

- 1) Small scale and
- 2) Large scale

1. Small Scale purification: It is also called "Household method of purification". It is by using 3 methods. They are

- a) Boiling

- Boiling water for 5 to 10 minutes, kills all bacteria, spores, cysts and intestinal parasites
- Hard water becomes soft by boiling
- It is a satisfactory method of purifying water for household.
- It is a good practice to boil water in the same container in which it is stored.

- b) Chemical disinfection or by adding chemicals

- It is done by adding bleaching powder

- To disinfect 1000 litres of water, 2.5 gms of bleaching powder is required.
- To disinfect 10000 litres of water, 25 gms of bleaching powder is required.
- To disinfect 100000 litres of water, 250 gms of bleaching powder is required.

Chlorine tablets

- Chlorine tablets are good for disinfecting small quantity of water.
- One pot of water requires 2 chlorine tablets.
- It will act as a germicide, kills bacteria and viruses.
- It is a very easy method.
- It is a very cheapest method. It is useful for household drinking.

Potassium Permanganate

- It is not recommended for water disinfection.

Alum

- It removes only turbidity. It is not for disinfection.

c) Using domestic filters

- These filters consist central enlarged tube known as the filter candle.
- It is made up by infusorial earth and has back the impurities including bacteria.
- The filter candle must be clean from time to time at least once in a week by scrubbing with a hard brush under running water.

2. Large Scale purification: Large scale purification comprises of (a) Storage and (b) Filtration and disinfection.

a) Storage

- Water is drawn from the source and impounded in natural and artificial reservoirs.
- It prevents further pollution.
- It is natural method of purification.
- By this method, impurities settle down in 24 hours by gravity.
- The water becomes clearer.
- Chemical changes take place during storage.
- The aerobic bacteria oxidize the organic matter present in the water.
- Ammonia levels are reduced and rise in nitrates occurs.
- Bacterial count is dropped due to storage. The pathogenic organisms dies.

b) Filtration

- It is second stage. 98 to 99% of bacteria will be removed.

There are two types of filter commonly used.

- 1) Slow sand or biological filters
- 2) Rapid sand or mechanical filters

Slow sand or Biological filters

- Water is next stored again for 1-2 days
- Natural purification takes place.
- 90% of the impurities are settle down by gravity.
- The water becomes much clear.
- This water is allowed into slow sand filter.
- Filter bed consists of 1.4 meters of standing water, 1.2 meters of graded sand and 0.4 meters of graded gravel.
- Sand is the filtering medium.
- At the bottom of the bed, perforated pipes are collected the filtered water.
- The following steps are involved in this process.
 - (i) Mechanical staining
 - (ii) Sedimentation
 - (iii) Absorption
 - (iv) Oxidation of impurities and
 - (v) Bacterial action_

Rapid sand or Mechanical filters

There are two types of Rapid sand filters.

- 1) Gravity type
- 2) Pressure type, Eg: Candys filter

The following steps are involved in this process.

- (a) Coagulation
- (b) Mixing
- (c) Flocculation
- (d) Sedimentation
- (e) Filtration

(a) Coagulation: The raw water treated with chemical coagulant alum. The dose varies from 5-40mg/litre or more. It removes the turbidity of water.

(b) Rapid mixing: then the water is subjected to violent again in mixing chamber for a few months. This allows a quick dissemination of alum, throughout the bulk of water.

- (c) Flocculation: Keep slow and gentle stirring of the treated water in a flocculation chamber for 30 minutes. This stirring results in the formation of a thick copiers when flocculate precipitate or Aluminium Hydroxide.
- (d) Sedimentation: Now, the water is now led into sedimentation tanks where it is detained for periods varying from two to six hours. At least, 95% of the flocculent precipitate needs to be removed before this water is admitted into the rapid sand filters. The precipitate settled at the bottom is removed from time to time without disturbing the operation of the tank. For proper maintenance of the tank, tank should be cleaned regularly from time to time. Otherwise, they may become a breeding ground for molluses and sponges.
- (e) Filtration: The partly clarified water is now subjected to rapid sand filtration.

Advantages

- Rapid sand filters can deal directly with raw water.
- Filter bed occupies less space.
- Filtration is rapid 40 to 50 times that of a slow sand filter.
- The washing of the filter is easy. There is more flexibility in operation.

DISINFECTION

It is the process of killing of pathogenic bacteria in water. It is necessary to kill minute microorganisms.

There are various methods such as

- 1) Chlorination
- 2) Ozonisation
- 3) UV radiation

1) Chlorination

- It is done mainly by chlorination of water.
- Bacteria are killed and water is reduced for safe drinking purposes.
- It controls algae and minute organisms and aids coagulation.
- Chlorine is available in the form of gas, chlorine tablets, bleaching powder for 60 mls is needed to kill all bacteria and viruses.

2) Ozonisation

It is powerful oxidizing agent.

Advantages

- It inactivates virus in few minutes.

- it eliminates undereviable odour and taste.
- It removes organic compounds including chlorine.

3) UV rays radiation

It kills bacteria including viruses. Water should be free from turbidity and suspensions.

Advantages

- Exposure for short period is enough.

Disinfection of wells

These are main sources of water supply in the rural areas. The best method is by adding bleaching powder during epidemics of cholera and any other gastro intestinal problems.

Steps

- (i) Measurement of diameter of well by a rope or a tape.
- (ii) Amount of water in the well it includes the depth of the water in meters, the diameter of well in meters.
- (iii) Amount of bleaching powder added is for 1000 litres of water, 2.5 gms bleaching powder is needed.
- (iv) Mixing of bleaching powder is taken in buckets and made into thin paste by using little water.
- (v) Then add more water and stir well and allow to sediment 5 to 10 minutes. It allows the lime is settled down at the bottom and chlorine suspension.
- (vi) One hour is enough to kill the bacteria and viruses.
- (vii) After one hour, orthotolidin test is done to detect the free residual chlorine.

Water borne diseases

- 1) Biological: it is caused by infective agent.
- 2) Viral: Viral hepatitis, Poliomyelitis, Diarrhoea
- 3) Bacterial: Typhoid, Paratyphoid, Bacillary Dysentery
- 4) Protozoal: Amoebiasis, Giardiasis
- 5) Helmenthic: Roundworm, Threadworm, Hydatid
- 6) Leptospirosis: Weils diseases

SUMMARY

Safe water is free from pathogenic agents and harmful chemicals. Purification is needed to prevent the occurrence of water borne diseases.

SHORT ANSWER TYPE QUESTIONS

- 1) What are the sources of water?
- 2) List the characteristics of safe water?

LONG ANSWER TYPE QUESTIONS

- 1) Explain the purification of water on large scale or small scale method?
- 2) Write about prevention and control of water borne diseases?

UNIT-XIII - DISPOSAL OF EXCRETA AND WASTE

Methods of excreta disposal

Types of Latrines

Handling of animal excreta

Methods of waste disposal

Hazards due to waste

Maintenance of village drains, ponds and wells

Introduction

Disposal of excreta and waste is an important function of human beings. Disposal is very proper and safe. If disposal is improper and unsafe, it causes air pollution, soil pollution, water pollution and causes infectious diseases.

Excreta

Excreta means night soil or faces. It is collected from toilets and latrines by human agencies.

Methods of excreta disposal

There are several methods of excreta disposal.

1) Unsewered areas and rural areas

(a) Service type conservancy system

- Pail or bucket type of latrines
- Disposal by burning or composting

(b) Non service type (Sanitary latrines)

- Borehole latrines
- Dug well or pit latrines
- Water seal type of latrine
- PRAT type-SULABH Sowchalay
- Septic tank
- Aqua privy

(c) Latrines suitable for camps and temporary are

- (i) Shallow trench latrine (ii) Deep trench latrine (iii) Pit latrine and
- (iv) Borehole latrine

2) Swered areas

Water carriage system and sewage treatment.

a) Primary treatment: Screening removal of grit plansedimentation

b) Secondary treatment: Tricking filters activated gludge process

3) Other methods

(i) Sea Outfall (ii) River outfall (iii) Sewage outfall and (iv) oxidation outfall.

Service Type

- This type is still prevalent.
- Night soil is collected from pails or buckets by sweeper and later disposed by burying or compositing.
- It is exposed to flies.
- There is soil and water pollution possibility.
- The buckets are pans are get spoiled easily and replacement frequently needed.
- Emptying of the bucket is not always satisfactory.
- More workers are needed.

Non service type (Latrines)

- It is a type of sanitary latrine.
- Excreta will not come outside.
- It is not polluting the air or soil.
- Faces should not be exposed to flies and rodents and animals namely pigs.
- It will not create nuisance due to smell or appearance.

Borehole latrines

- It consists of a hole about 30 to 40 cm in diameter and depth of 20 feet.
- It dug vertically.
- A concrete slab with a control opening and foot rest is placed over the hole.
- Surrounding area is enclosed to provide privacy.
- It is useful for a family for one year.
- It is completely filled, it is closed and another borehole is digged.

Dug well latrines

- It is better than borehole latrine.
- It is modified borehole latrines
- It is easier to construct.
- It's diameter is 30 inches larger, depth is 10-12 feet or more.
- It is longer life usage. It serves for a period of 5 year for a small family.

Water seal latrines

- Also known as hand flushed latrines.
- These are more suitable for rural areas.
- It is widely used in the country.
- It should be located within a range of 15 meters from a water supply source to prevent water contamination.
- It should not be built in area which flood during rainy season.
- Squatting plate is made up of cement concrete.
- It is a three feet square with two inches' thickness with foot rest on it.
- Pan should be smooth to prevent any thing sticking onto its side.
- Connecting pipe is three feet long and two inches in diameter.
- It connects the latrine to pit. Pit is 30 inches in diameter and 10 to 12 feet deep.
- Night soil is purified by anaerobic bacteria in the pit.
- When the pit fills up another is dig.
- Connected pipe is directed towards the other side.

Septic Tank

- This type of a tank is built by the mason with bricks and cement and is water tight.
- Capacity will depend on the number of users.
- Tank capacity is 20 to 30 gallons.
- Length is more than its breadth in the proportion of 2:1
- Depth is 5 to 7 feet but liquid depth is only 1 to 2 mtrs
- Minimum of one foot air space is necessary.
- It has an inlet and outlet.
- Cover is placed with a manhole on top.
- Septic tank is designed to allow a retention period of 24 hours.

Working of a Septic Tank

- Night soil settles down at the bottom of the tank.
- Purification occurs by anaerobic digestion.
- Accumulation of solids takes place sludge effluent.
- It is the liquid which comes out of the outlet and contains a lot of bacteria over, cysts and other fine suspension.
- It is organic matter gets attached by anaerobic bacteria.

Maintenance

- Use of soap water and disinfectants should not be used much as it destroys the bacterial flora in the septic tank.
- Too much of sludge collection disturbs the working of the tank and hence needs to be cleared periodically.

SULABH SHOUCHALAY

- It is an improved type of the RCA type of latrine.
- It has specially designed pan and a water seal trap.
- It is connected to a pit three feet square and deep.
- Excreta is converted to a compost by bacterial action.

Aqua privy

- It functions like a septic tank.
- It consists of a water tight chamber filled with water.
- A drop pipe, short in length from the latrine floor dips into the water.
- Capacity of 1 cubic meter is adequate for a small family.
- Night soil is purified by bacterial action.
- There is vent provided in the gases to escape.

Shallow trench latrine

- It is a 30 cm wide and 90 to 150 cms deep
- A three meter (10 feet) long trench is adequate for the use of 100 people.
- Faces should be covered with earth and compacted.
- It is necessary, a new trench can be dug.

Deep trench latrine

- It is 6-8 feet deep, 30 cm wide and 10 feet long. This type of latrines are used for camps of longer duration.

Water Carriage System

- It consists of a whole network of underground pipes which carried excreta.
- It is useful in more population areas.

There are two types of water carriage system

1. Combined types
2. Separate types

In Combined Types, it carries sewage and surface water but in separate no surface water is allowed.

a) Household sanitary fittings

- It is either Indian squatting type and commode system.
- It is for urinal and a wash basin.

b) House Drain

- House drain is laid in the country and below ground level about 15 cms on a bed of cement concrete with sufficient gradient towards the main drain.
- This empties into the main sewer.

c) Public sewer/Trunk sewer

- Not less than 9 inches or 22.5 cms in diameter
- The bigger ones are 8-10 feet in diameter.
- They are laid on a bed of cement concrete about 10 feet below ground level with sufficient gradient to ensure self clearing velocity.

Handling of animal excreta

- Animal excreta should be collected in a proper way to avoid environment and air pollution.
- Separate vessels are used to collect animal excreta specially for pet animals like buffaloes, cows, oxes etc.
- Other pet animals like dogs, cats are needed some training to pat excreta.
- Proper disposal of excreta is important.
- Choose one place like manure pit, for composting and to use as fertilizers.
- Proper handwashing is important after handling animal excreta.

Hazards due to improper excreta disposal

- Soil pollution, air pollution
- Breeding of mosquitoes, flies
- Contamination of food and water,
- Diseases occurring are typhoid, paratyphoid fever, diarrhoea and dysentery
- Intestinal worms such as round worm and hook worm
- Cholera, poliomyelitis, viral hepatitis etc

Waste

Waste is defined as unwanted material and useless material produced by human and animal excreta. This waste is of different types.

- a) Solid Waste: which includes both garbage (food waste)
- b) Rubbish waste: which is from broken materials of glasses and bricks etc
- c) Other discarded material like sludge, manure, dead animals etc

Refuse: Solid waste or discarded waste material is called Refuse. It is also termed as Litter. It includes waste from houses, streets, sweeping, commercial industries and agricultural operation.

Sources of Refuse

- 1) Street Refuse: Animal dropping
- 2) Market Refuse: Industrial Refuse
- 3) Staple Refuse: Domestic Refuse

Methods of waste disposal

It is very important process to dispose waste in proper way whether in urban and rural area.

Disposal of refuse in urban areas

It depends upon proper storage and collection of refuse.

- a) Storage of refuse
- b) Collection of refuse
- c) Disposal of refuse

- a) Storage of refuse

- At homes, it is stored in plastic buckets, steel bins, plastic bags and paper bags.
- It is stored in bins or PVC containers. These bins are left open as they are not linked to be touched by human beings.
- These bins are emptied by municipality workers and collected in tractors.
- Industries will construct dumping yards or stored in large containers.

- b) Collection of refuse

- House to house collection by municipality people daily or alternate days.

- They collect waste i.e., solid days' waste in separate bin, wet waste in separate bins. After collection, they are transported to dumping or compost yard by tractors or lorries.

c) Methods of disposal of waste or refuse

It is done in the following ways or methods.

- 1) Dumping
- 2) Incineration
- 3) Controlled tipping
- 4) Composting by Bangalore method
- 5) Manure Pits
- 6) Burning

1) Dumping:

- This is done by depositing the refuse in low lying area in order to level the ground.
- It is unhygienic method. It is not good method.
- It creates nuisance to the public.
- It acts as a breeding place for leeches, flies and mosquitoes.

2) Burning or incineration

- It is the best method and hygienically good method.
- It is suitable method of disposal for hospital waste.
- It is very costly method.
- If the waste contains glass, tin, sand and dust which creates problem during burning.
- They need to be sorted out.
- It has drawback; it is not utilized as manure pit for community.

3) Controlled tipping

- Waste is buried in pits. These pits are 3 feet deep.
- It is useful for 3 to 6 months.
- During this period, the refuse is broken into simple chemical substances.
- Then it is converted into manure.
- After 6 months, the manure is brought to the surface.
- Again these pits are reused.
- Advantage: These pits are reused.

4) Composting

- In this method, refuse and night soil or sludge together are disposed. Organic matter naturally breaks down under bacterial action.
- Intense heat is produced by this within these pits.
- Because of heat, all the pathogenic and other organisms are killed.

- After that the pit is cool down.
- At the end of 4 to 6 months, the decomposition is complete.
- The resulting product is manure which is very useful for agricultural process.

a) Bangalore method (Anaerobic method)

b) Mechanical composting (Aerobic method)

- In this method, compost yard is selected two miles away from town area or residential areas.
- The pit is 3 feet depth and 8 feet broad.
- It is ideal pit for composition.
- In this 6 refuse is laid over 2 layers of night soil.
- Like this the pit is filled up to one foot above the ground level.
- The top of the earth is covered with excavated earth.
- Within a week, heat is produced and bacterial action takes place.
- Heat present over 2 to 3 weeks. Decompose not only capable of decomposing the refuse.
- This is suitable for smaller municipality.
- Now it is most suitable method of practicing.

Mechanical Composting

- This method is followed in developed countries.
- It is now practicing in metropolitan cities.
- In this method, rubbish material is separated like glass, metals, stones etc to prevent late in grinding process.
- It is then pulverized in a pulverizing equipment in order to reduce the particle to less than two inches.
- The pulverized refuse is subsequently mixed with night soil or sludge in a rotating mixed.
- Then this material is incubated in incubator to have pit.
- This process of composting is complete in a period of 4 to 6 weeks

Screening



Pulverizing equipment



Rotating Mixer → Incubator → Compost is prepared after 4-6 weeks

5) Manure Pits

- It is most commonly used in rural areas. In rural areas, no proper method of collecting and disposal of refuse.
- This problem is solved by digging manure pits by individual house holder.
- The garbage, cattle dung, leaves, grass should be dumped into the manure pits and covered with carch after each days dumping.

- These manure pits are dig far away from houses.
- Two pits are dig when one is in sue and the other will be closed.
- It takes 5 to 6 months' time to convert into manure.
- Then it is used as fertilizers.
- It is simple and effective method in rural communities.
- These are located at higher places.
- It is protected against contamination of source such aslatrines.
- There should be proper facilities for cleaning and washing.
- Wells should be disinfected properly.
- In the ponds, animals should not be cleaned, clothes should not be washed.

SUMMARY

Human and animal excreta is source of infection. If it is not disposed in a sanitary way, gives chance to spread diseases. It causes soil, water and air pollution which are base for infectious diseases.

SHORT ANSWER TYPE QUESTIONS

- 1) What is meant by excreta?
- 2) List the types of latrines?
- 3) What are hazards due to waste?

LONG ANSWER TYPE QUESTIONS

- 1) Explain methods of excreta disposal in rural areas?
- 2) Describe the methods of waste disposal?
- 3) How will you maintain drainage system in the villages?

PART D

UNIT XIV- INTRODUCTION TO COMMUNICABLE DISEASES

Introduction

Childhood Seven Target killer diseases

Other communicable diseases

Communicable Diseases

Diseases are defined as the diseases are transmitted from person to person (or) from animals to human beings, directly through bacteria, viruses and their poisonous substances, indirectly through contaminated articles and flies.

1) Diphtheria

It is a bacterial and air borne diseases occurs among small children (0-5yrs). It is an epidemic and endemic diseases in our country.

Causative Organism

It is caused by corini bacteria diphtheria. These bacteria release exotoxics.

Host factors

It occurs mainly in small children and school children.

Environmental Factors

- Diphtheria is more common in between August to January months.
- It is also common in overcrowded, poor environmental sanitation condition.

Transmission of Diseases

- (a) Through droplets
- (b) Droplet nuclei
- (c) Dust contained bacteria
- (d) Contaminated articles & milk
- (e) Person to person

Incubation period

2 to 5 Days

Period of communicability

2 to 4 weeks after appearance of signs and symptoms.

Signs and Symptoms

- Formation of white false membrane and surrounded area is red in color.
- Swelling (or) Oedema of the neck.

- This diphtheria layer is appeared in Larynx, Pharynx, Nose, and throat.
- Cold, cough, fever.
- Difficulty in swallowing and swelling of lymph glands.
- Difficulty in taking respiration.
- Sometimes (toxaemia) releasing of toxins.

Diagnosis

By shick test, it is an intradermal injection of 0.2ml shick toxin in to the skin.

Treatment

- Antibiotics like Penicillin (or) Erythromycin for 10 days helps to eliminate infection.
- Bed rest to prevent heart failure.

Specific treatment

Diphtheria antitoxin which must be given immediately in doses ranging from 10,000 to 80,000 units.

Control Measures

The control measures include,

- Early identification of diseases based on signs and symptoms.
- Prompt treatment of cases
- Isolation of cases
- Proper disinfection of all articles and clothes soiled by the patient
- Children who have been exposed to infection and notification of the disease and inform to medical officer
- Give immunization to 0-5yrs children with DPT vaccine.
- Identification of carriers (who carries the disease from one person to another person)
- Do the surveillance of more cases in that area give health education on spread of disease, vaccination, isolation of child and articles, disinfection of the articles, care of child.

2) Pertussis

- It is also called as whooping cough. It is a severe respiratory tract infection. In this child will suffer from cough which is preceded by a sound.
- In this disease prolonged inspiration is present which is called whoop. It is very serious condition.
- In India it is endemic diseases often it occurs as epidemic disease.

Causative organism

- Causative Organism is Bordetella Pertussis.

- The structure and arrangement of bacteria is on rods shape. Sometimes these are like egg shape.

Host factors

More commonly occurs in children 0-5 years. It is more prevalent in malnourished children.

Environmental factors

It occurs in all seasons. It occurs more probably in the month of March and April.

Spread of Disease

- Bacterial transmission from infected children to non-infected children.
- It is droplet infection. It also spreads from freshly contaminated articles.

Incubation period

7 to 14 days.

Period of communicability

One week before appearance of the signs and symptoms to 3 weeks more communicability during the 1st week.

Signs and Symptoms

- In initial state cold, fever present after that cough starts.
- More cough during 2nd week followed by deep inspiration and sound during cough.
- Vomiting, inability to take respiration
- Swelling of eyeball, redness in the eyes.
- Bleeding from the nose.
- Cough present for 2-4 weeks.

Complications

Bronchitis, Broncho pneumonia, etc

Prevention and Control measures: -

- Early identification of disease based on signs and symptoms.
- Early diagnosis by laboratory test.
- Immediate treatment with antibiotics.
- Notify the diseases.

- Isolation of the patient and used articles.
- Disinfection of the articles.
- Immunization with DPT (triple antigen) in 3 doses starting from 1 ½ month (or) 4 to 6 weeks with an interval of 1 month.
- Booster doses should be given in 2nd & 5th year.
- Given health education to parents on.
- Care of children.
- Immunization.
- Isolation of child.
- Disinfection of articles.
- Spread of infection etc.

3) Tetanus

In India more deaths are occurred due to tetanus. Neonatal tetanus is occurred in rural India. 80% of the children were died with neonatal tetanus.

Causative Organism

- Causative Organism is Clostridium tetani, It is a gram positive anaerobic, spire bearing organism. it produces toxins.
- Organism is present in red soil, intestines of human and animals. Present in animal dung.
- From animal dung it reaches to the dust of street, houses, and hospitals.
- It is developed in acid less environment. It is developed as spores under good environmental condition.
- It is acute disease affects mainly voluntarily muscles.

Causative Factors

It occurs from 5yr to 40yr of age. High incident rates are present in males and agriculture workers, but females are more exposed to the risk factors. The disease is mainly present in rural area compared to urban areas.

Social factors

- such as unhygienic customs, and habits eg.(application of dust (or) animal dung to wound) unhygienic delivery practices.
- Using unsterilized instruments for cutting the umbilical cord.
- Ignorance of infection, and lack of primary health care services.

Mode of transmission

- It is occurred by contamination of wounds with tetanus spores.
- The range of injuries and accidents which may lead to tetanus.
- Comprise a trivial pin prick, skin abrasion puncture wounds, burns, human bites, animal bites and stings, unsterile surgery, intrauterine death, bowel surgery, dental extractions, injections, unsterile cutting of umbilical cord, compound fractures, otitis media, chronic skin ulcers, eye infections and gangrenous limbs.

Incubation period

- Usually 6 to 10 days.
- Neonatal Tetanus is a major cause of infant death in India. It is prevented by giving tetanus toxoid injection for every pregnant woman.
- Many mothers die after delivery because of tetanus caused by unsafe delivery practices. This can be prevented by six cleans.

Prevention

- Active Immunization with injection tetanus toxoid 0.5ml, 2 doses with an interval of 6 weeks.
- Passive Immunization is a temporary protecting a person with wound can be prevented by an injection of human tetanus immunoglobulin.
- Human immunoglobulin is the best prophylactic. The dose for all ages is 250 to 500 IU. It gives a longer passive protection up to 30 days.
- ATS: - Anti Tetanus Serum is a dose 1500 IU, injected subcutaneous, with suitable precautions. It gives passive protection for about 7 days to 10 days.
- The purpose of anti-toxin is for immediate temporary protection, and the purpose of toxoid is of long lasting protection.
- Antibiotics: - If Tetanus toxoid is not available immediately after an injury, patient may be given antibiotics.

Signs and Symptoms of Tetanus

- Muscular rigidity.
- Painful spasms of the voluntary muscles, especially the jaw muscles, (trismus (or) lock jaw)
- The facial muscle, the muscles of the back and neck and lower limbs and abdomen.
- It also affects the nervous system.

4) Polio myelitis

It is an acute viral infect disease of the human alimentary tract, but may affect the brain, spinal cord and nerves resulting in paralysis.

Incidence

- It is present in all countries of the world.
- India is the only country reporting polio cases during 2009 as a total of 741 cases of polio were reported in India.

Causative Factors

Agent factors: Causative organism is poliovirus is a RNA type virus. It lives for long times in the external environment in a cold weather, it can live in water for 4 months and in faces of patient for 6months. Man is the only reservoir of the infection. Most infections are mild, subclinical infections and plays a dominant role in the spread of infection.

Infectious material

It is found in mouth and pharyngeal secretums and in the faces of an infected person.

Period of communicability

- Affected persons are more infectious 7 to 10 days before and after onset of symptoms.
- In the faces the virus is excreted commonly for 2 to 3 weeks.
- It affects all ages, but children are usually more susceptible than adults because of the immunity power.

Risk factors

Risk factors includes fatigue, trauma, intramuscular injections, operative procedures such as tonsillectomy etc.

Immunity

The disease can affect non immune persons. Infants born of immune mothers are protected up to 6months of age because of maternal antibodies.

Environmental factors

- Polio occurs during rainy season. It occurs mainly during June to September.
- The environmental sources of infections are contaminated water, food, flies, virus survive for a long time in a cold environment.
- Overcrowding and poor sanitation provide opportunities for exposure to infections
- Modes of transmission mainly by routes
 - (a) **Faeco-oral route:** - It is the main route of spread the infection may spread directly through contaminated water, milk, foods, flies and articles of daily use.
 - (b) **Droplet infection:** - Occurs in acute phase of disease when the virus occurs in the throat. Close personal contact with an infected person facilitates droplet spread.
 - (c) **Incubation period:** - Usually 7 to 14days range of 3 to 35 days.

Signs and Symptoms:

- Fever, headache, diarrhoea, vomiting, and drowsiness.
- The warning signals are pain, weakness, stiffness, of the neck and back.
- Paralysis of the affected limb.

Diagnosis

By serological test for polio viral anti bodies.

Prevention

- Polio can be prevented by active immunization of all infants, and children.
- The vaccine is oral polio vaccine.
- It is a Sabine type of vaccine.
- It is given orally in 3 doses at monthly intervals starting when the child is 6 weeks of age.
- It can be administered soon after birth.
- One booster dose is given at the age of 16-24 months.
- Vaccine is stored at sub-zero temperature in a deep freeze to prevent inactivation.
- In case a deep freeze is not available, the vaccine may be stored for periods in the freezing chamber of the refrigerator.

While giving OPV the following points will be followed

- The dose is 2 drops instilled in the mouth by using dropper supplied with the vaccine.
- Turn the child's back, and gently squeeze the cheeks, (or) pinch the nose to make the mouth open.
- Let the drops fall from the dropper on the child's tongue.
- Repeat the process if the child spits out the vaccine.
- In case of diarrhoea, also OPV given.
- Hot milk and fluids should not be given at least half an hour after the administration vaccine.
- Breast milk can be given whenever the child is hungry.

Pulse polio programme

- It is largest single day public health event occur
- The government of India conducted the first round of pulse polio immunization consisting of 2 immunization days about 6 weeks on 9th December 1995 and 20th January 1996
- The age group of children initially are 0-3yr after that WHO decided to increase the age group of 0-5yr.
- The dose of OPV during PPI are extra doses which supplement and do not replace the doses received during the routine immunization services.
- Since 1999 four rounds of PPIS will be conducted every year. Each round will last for 3 days, The first day of each round will be post based activity as done

during the previous PPIS, at the end of the 3rd day house to house search will be made for missed children.

- Gention violet solution will be used to make the children vaccinated at the fixed posts on the first day.
- This program is conducted at railway stations inside long distance trains, major bustops, market places, religious congregations throughout the country.

Health education:- The community should be protected by improving environmental safe.

(provision of safe and adequate water supply and sanitary disposal of solid waters)
Health education in matters of personal hygiene such as hand washing with soap and water after defecation and before handling food.

Measles:-

It occurs in human beings.

It is an acute highly infectious upper respiratory tract disease.

Incidence:- It has a world distribution in India measles is a major cause of sickness and death among children.

Causative factors:-

- It is caused by rubeola virus. It is a RNA virus.
- Source of infection is a case of measles.
- Infective material is secretion of nose, throat.

Communicability:- It is approximately 4days after the appearance of rash.

Isolation of the patient for a week from the onset of rash morethan covers the period of communicability.

It affects infants and children between 6months and 3 years of age, equally it affects male and female children.

One attack of measles generally confer life long immunity second attack are rare.

Infants are protected by maternal antibodies upto 6months of age.

It is vey severe in the malnourished children.

The virus can spread in any season. In a temperature climates,measles is a winter disease, because people together indoors. Epidemics of measles are common in India during winter and early springs.

Transmission:- Occurs directly from person to person mainly by droplet infection and droplet neuclei, from 4days before onset of rash until 4days there after.

The portal of entry is a respiratory tract.Infection period is common 10days from exposure to onset of fever and 14days to appearance of rash.

Signs and Symptoms:- Characterized in 3 stages:

- (a) **Pre eruptive stage:-** It begins 10days after infection and lasts until day 14, it is characterized, by fever, caryza, with sneezing and secretions cough, redness of the eyes, watery eyes and often fear to light. There may be vomiting (or) nausea. Small bluish-white spots known as occur on the inner surface of the cheek.
- (b) **Eruptive phase:-** It is characterized by a typical, dresky-red, macular(or) macula popular raw which begins behind the ears and spread rapidly in a few hours over the face and neck and extends down the body taking 2 to 3 days to progress to the lower extrimities.
It lasts for about 5 to 6 days and gradually fades leaving an dark, pigmentation of the skin.

Post measles stage:- The child will remain weak for a number of days. There may be growth retardation diarrhoea, cancer, pyogenic infection candidiasis, reactivation of pulmonary tuberculosis.

Prevention of measles:

- (a) **Measles vaccine:** - A live measles vaccine is available. The child should be immunized according to the national immunization schedule at the age of 9 to 12 months.

One dose of the vaccine appears to give 95% protection lasting for atleast 15year.

Measles vaccine can be combined with other live attenuated. Vaccine such as measles, mums, rubella.

Immunoglobulin:- Administration of human measles immunoglobulin in dose ranging from 250 to 750mg can modify (on prevent measles if given within 3days of contact.

Control measures:-

1. Isolation of the child as soon as signs of measles appear.
2. Protection of the child eyes from light.
3. Disinfection of the nose and throat secretions.
4. Immunization of susceptible children.

Tuberculosis:- It is a specific infectious disease, primarily affects the lungs.

It can also affect intestine, meninger, bones and joints, lymph glands, skin and other tissues of the body.

The disease also affects animals such as cattle. This is known as bovine tuberculosis.

Incidence:- It is a world wide public health problems above 5.1 million were new sputum smear positive cases. Were reported to WHO during the year 2005 of these notifications,4.9 million were DOTS areas.

India:- Is the highest T.B burden in the world and accounts for nearly 20% of the global burden of tuberculosis, of which about 0.8million are new smear positive highly infectious cases.

Causative factors:

Agent:- The causative organism of T.B is mycobacterium tuberculin, a human strain the "bovine" strain affects the cattle and other animals.

Source of infection is the patient whose sputum is positive for tuberculi bacilli

Bovine source is usually infected milk and milk products. It is more common in the older age group (35 years and above) than in the younger age group. The disease is more prevalent in males than females.

Hereditary: - Tuberculosis is not a hereditary disease malnutrition is a predisposing cause to tuberculosis.

Immunity: - It is acquired as a result of natural infection (or) B.C.G vaccination.

This disease occurs equally in urban and rural areas.

Social factors: - Tuberculosis is more likely to occur in malnourished people.

- Overcrowded areas.
- Poor hygienic areas.

Period of infectivity: - It is infectious as long as the bacilli ate excreted in the sputum by the human host.

This may be from 7months to a few years. If the case is not adequately treated.

Mode of transmission:-

- (1) **Droplet infection**:- Tuberculosis spread mainly by droplet infection- coughing generates the largest number of droplets.
- (2) **Incubation period**:- This may be weeks (or) months depending up on the host parasite relationship and the dose of infection.

Signs and Symptoms:- are

- (a) Chronic cough more than 3weeks
- (b) Continous low grade fever
- (c) Chest pain
- (d) Harmoptisis
- (e) Loss of weight

Diagnosis: - Tuberculin testing:-

The tuberculin Montoux test was developed in 1907. This test identifies that persons who are positive& negative to TB

The tuberculin test is carried out by injecting introdermally one tuberculin unit of purified protein derivative of tuberculine (ppn)into the fore arm. The result is read on the third 72 hours.

If there is swelling of atleast 10mm in diameter at the site of infection is known positive to TB

A positive test indicates that person is indicated by tuberculo bacilli

Reactions under 5mm are considered negative those between 6 and 9mm are considered doubt full.

Control of Tuberculosis

The basic principles of tuberculosis control are

- (a) Early diagnosis(identification)
- (b) Treatment
- (c) Using the drugs
- (d) Immunization with BCG vaccine
- (e) Health education
- (f) Patient teaching
- (g) Early diagnosis
- (h) Identification.

Early diagnosis by 1. Sputum examination 2.Chest Xray 3.Tuberculin test.

1. **Sputum examination**:- By dirext microscopy is now considered the method of choice for early detection of case.

Three sputum smears are collected for microscopic examinations.

1st sample is collected initially when a person contacts medical people for the first time.

2nd sample is collected on the next day, should collect early morning sample.

3rd sample is collected on the 'spot' on the second day. Early morning sputum sample is more likely to contain tuberculosis bacilli than later in the day
Sputum examination can conducted on any person presenting one of the more following symptoms

- (a) Cough lasting more than 2weeks
- (b) Continous fever(or) chest pain
- (c) Coughing of the blood

Sputum examination is cheapest, reliability is more, and easy.

Treatment or Drugs

2. Chest X ray is also important routine examination to know TB.
3. Tuberculin test (or) mantoux test:- It is also important test in the diagnosis of TB.

Treatment (or) drugs:- A person who diagnosed as TB positive is treated with multi drug therapy.

- These drugs are available very easily.
 - Free of charge given to every patient detected.
 - These drugs are called anti tuberculosis drugs.
- These are effective, free from side effects, easy to administer and reassembly cheap.

These drugs are 2 types

1. **Bacteriocidal drugs:-** These drugs kill the mycobacterium bacilli eg. rifamycin, INH, streptomycin and pyrazinamide.
2. **Bacterio static drugs:-** These drugs complete controls and multiplication and growth of bacteria and lead to their destruction by the immune mechanism of the host eg. ethambutol, thioacetazone, kanamycin and amikacin, cycloseris, ethionamide

Cause of treatment:- there are two causes of treatment

1. **Lung course treatment:-** The treatment is given for 18 months. It is classified again (a). daily regimen (b). biweekly (or) intermittent regimen- 2 times in a week the anti tuberculosis drugs are to be given to the diagnosed patients.

In this treatment INH is given along with one (or) two bacterio static drugs

2. **Short course chemotherapy:-** This course of treatment is only for 6 months. This treatment is very effective low toxicity and well tolerated by the patients. In this course during the initial intensive phase patient is given 4 days like INH, rifamycin and pyrazinamide supplemented by either streptomycin (or) ethambutol for a period of 2 months, followed by 2 days in the continuous phase given daily (or) inter monthly. This course should be given to the patient under supervision and monitoring by bacterial examination.

Directly observed treatment short course

- It is a community based tuberculosis treatment.
- It is supervised treatment and community care
- In the year 1993 WHO address the importance of global tuberculosis control programme as DOTS.

In this programme a health worker (or) ASHA worker (or) village health guide watches as the patient taking the drugs in his presence.

During continuation phase, the patient is issued medicines for one week in a multiblister combipack of which the first dose is swallowed by the patient in the presence of health worker.

After completion of treatment the patient should return the empty multiblistер combipack, when the patient comes to collect medicine for the next week.

The drugs are provided in the patient wise boxes with sufficient shelf life.

- In this programme alternate day treatment is based. Immunization with BCG vaccine:- BCG full form is bacilli calmette Guerin. It is a live vaccine.
- It is prepared from bovine strain of tubercle bacilli .
- The dose of vaccine is 0.1ml.
- For below 1month babies the dose is 0.05ml.
- BCG vaccine is given intradermal using a tuberculin (or) BCG syringes.
- It should be given to deltoid muscle of the left upper arm.
- This vaccine is given soon after birth with in 4weeks.

BCG is also given when the infant is 6weeks patient teaching (or) health education. It is very important to clear doubts of patients regarding drugs, nutrition, disposal of sputum and follow up services.

Eg. Teach the patient that taking of rifampicin give red coloured urine.

Domiciliary care (home care) of tuberculosis patient:-

- (a) **Isolation:-** The patient should isolated(or) kept Separated from the other people specially children should keep away from the patient until his sputum is negative to TB bacilli.
- (b) **Good ventilation:-** the room should be well ventilated and the room should get sufficient sunlight.
- (c) **Disinfection of sputum and other articles:-** Sputum must be collected in a closed container.
Bottom of the container should be filled with water to avoid sticking of the sputum. other articles should be disinfected to prevent cross infection.
- (d) **Prevention of cross infection:-** the patient should avoid direct contact with other family members specially children
 - While talking, sleeping, laughing(or) sneezing, coughing, should cover his mouth with a handkerchief (or) towel(or) piece of cloth.
 - Avoid spitting of sputum here and there.

Nutrition:- The patient should take high protein and high calorie diet to maintain optimum nutritional status.

Course of treatment:- Regular taking drugs without fail till the complete course of treatment.

Health education regarding:

- Regular treatment
- High protein diet
- Personal hygiene
- Proper collection and disposal of sputum
- Prevention of cross infection
- Stopping of smoking
- Follow up services

Chicken pox

It is an acute infectious diseases characterized by highly vesicular rash, fever and weakness.

Causative factors:

Causative organism is varicella-zoster.

Source of infection:- virus is present in the secretions of mouth, pharynx, and lesions of skin and mucosa. Infectivity it is 1 to 2 days before the appearance of rash, and 4 to 5 days there after.

It is highly communicable disease. 90% secondary attack rate in house hold contacts. It occurs mainly under 10 years of age. It is also seen in normal adults.

Immunity:- the attack of chicken pox will give immunity to the child. Second attacks are rare.

Environmental factors:- It occurs mainly during the first 6 months of the year. It occurs mainly January to June.

- It is a seasonal disease.

Transmission:- It is mainly by droplet infection and face to face contact. The organism enters the body by respiratory tract.

Incubation is usually 14 to 16 days and sometime 10 to 21 days.

Signs and Symptoms are 2 stages

1. **Presumptive stage:-** Very short stage, lasting about 24 hours occurs suddenly. The signs and symptoms are
 - Mild to moderate fever
 - Pain in the back
 - Shivering and weakness
 2. **Eruptive stage:-** Appearance of rash is seen on the trunk, face, arms, and legs.
 - The rash advances quickly through the stages of macule, papule, vesicles, and scars.
- Fever:- does not run high temperature.
Complications:- bleedings, pneumonia, encephalitis, acute cerebral ataxia.

Laboratory diagnosis:- By examination vesicle fluid under electromicroscope.

Control measures: are

- Early notification of cases.
- Isolation of cases for about 6 days after the appearance of rash.
- Proper disinfection of articles.
- Drugs used are acyclovir, famcyclovir.

Preventive measures:-

1. Varicella zoster immunoglobulin is given within 72 hours of exposure.
2. **Vaccine:-** varicella vaccine is a live attenuated vaccine is safe and recommended for children between 1-1½ years age (12 to 18 months). High risk adolescents and adults should be immunized. High risk group includes health care worker, household, contacts of immune suppressed individuals, teacher in day care centre's, non pregnant women of child bearing age, college students, international travelers.

Mumps:-

It is caused by RNA virus. Infection is common in winter. It is caused by paramyxovirus. Cases of people with mumps (or) subclinical cases are source of infection.

Period of infectivity:- Four to six days before the onset signs and symptoms until the swelling of parotid glands.

Age is common in the age group of children 5 to 9 yrs.

Immunity:- one attack of mumps gives lifelong immunity.

Environmental factors:- like over crowding, it is an endemic disease.

Mode of transmission is by droplet infection and direct contact with infected persons.

Incubation period from 2 to 3 weeks usually 18 days.

Signs and Symptoms:- Pain and swelling of the parotid glands sublingual and submandibular glands

- Pain in the ear
- Pain and stiffness on opening of the mouth.
- It also affects the testes in male children, pancreas ovaries in girl child etc.

Complications include, orchitis, ovaritis, thyroiditis, meningo encephalitis, pruritis, and myocarditis.

Prevention:-

Vaccination:- Live attenuated vaccine is available. A single dose of 0.5ml of intramuscular in children. It is given along with other same vaccine.

Immunoglobulin:- specific immunoglobulin is available.

Control:- By isolation of cases.

Disinfection of articles.

Rubella:-

It is also called german measles. It is viral infection. It is caused by toga virus. Source of infection is infected children. Infective material is secretions of nose and throat.

Period of Communicability:- A week before symptoms to about a week after rash appears.

Age:- Commonly in the age group of 3 to 10years immunity one attack results in lifelong immunity.

Environmental factors:- Occurs in winter, and spring in temperature zone areas.

Mode of transmission:- Direct transmission by droplets from nose and throat and droplet nuclei.

Incubation period:- 2 to 3 weeks average 18 days.

Signs and Symptoms:- common cold, sore throat low grade fever, enlargement of lymphnodes appears as early as 7 days.

Rash appears on the face, within 24 hours rash is very small, pinkish and macular rash.

Diagnosis:- By serological test throat swab culture.

Congenital rubella:- Refers to infants born with rubella. It occurs if the mother suffer with rubella during the first trimester of pregnancy.

Prevention:- Is by giving rubella vaccine it is single dose vaccine of 0.5ml subcutaneously.

Enteric fever (or) Typhoid fever:-

It is an acute communicable disease. It is also called as typhoid fever. In India it is widely present. This is due to poor sanitation, poor standards of drinking water facility.

Causative factors:

Causative organism is salmonella typhi, it is responsible for 90% of cases.

Salmonella paratyphi 'A' is responsible for about 5% of cases.

Source of infection:- Patients and carriers.

Infective material:- Is urine and faeces(stools) of infected persons.

Environmental and social factors:-

It occurs during July, September months. The bacilli is found in water, ice, food, milk .

Social factors:- such as

- Polluted water
- Open air defecation and urination.

- Low standards of food and personal hygiene.
- Ignorance.

Incubation period:- 10 to 14days.

Mode of transmission:- mainly by the faeco oral route(or) urine-oral route.

Direct infection occurs cooled hands contaminated with faces (or) urine, cases of carriers.

Indirect transmission occur through drinking contaminated water, milk, food.

Signs/Symptoms:- Sudden onset of fever with chills

- High grade fever
- Weakness, headache, cough and sore throat.
- Abdominal pain and constipation
- Fever occurs in zig-zag manner

Diagnosis:- By bloodtest.

Control measures:- it includes

- Contrl of reservoir
 - Environmental sanitation
 - Immunization.
1. **Control of reservoir:-** Cases identification isolation of cases, treatment and disinfection.

Identification of cases: By early diagnosis with the help of blood and stool culture.

Treatment:- the drug of choice is chloramphenacol.

Disinfection:- All soiled clothes , and articles used by the patients are disinfected with 5% cresol for 2hours.

Specially the soiled cloths should be soaked in a solution of 2% chlorine and steam sterilized.

2. **Environmental sanitation:-** Portable water supply

- Improvement of basic sanitations
- Promotion of food hygiene

Immunization:- with anti typhoid vaccine. It is given subcutaneously two doses of 0.5ml each for adults at an interval of 4 to 6weeks. Children under the age of 1 year are not usually immunized. Children are given small doses.

Boosters doses of 0.5ml are recommended at interval of 3years.

Follow up:- The patient should be continuous contact with medical person after discharge at 3 to 4 months and again after 12 months. Carriers must be identified and treated with ampicilline. 4 -6g/day together with probenecid 2g/day for 6weeks.

Hepatitis:-

It is a viral infection of the liver. It includes different forms of hepatitis “ A,B,C,D,E and G”. It is also called water borne and food borne disease.

Hepatitis: 'A'

An infectious hepatitis caused by hepatitis 'A' .It is an enterovirus.

Source of infection :- infected persons are source of infection.

Infective material:- mainly mans faces, blood is infective for a short period during the stage. When the virus is present in the blood.

Age:- The disease is most common among children and adults.

Both sex are equally affected. It is an endemic diseases. Immunity occurs through the subclinical infection.

Environmental factors:- It occurs during the periods of heavy rainfall.

- Poor sanitation and overcrowding are spreads the disease more.

Mode of transmission:-

1. **Faeco-oral route:-** Through contaminated food and water.
2. **Direct contact:-** Person to person contact via contaminated hands(or) objects.
3. Hepatitis 'A' is rarely transmitted by blood products.
4. **Incubation period:-** 10 to 50days.

Signs/symptoms:-

Nausea, vomiting

- Anorexia and mild fever.
- **Diagnosis:** liver function test.

Prevention and control:

Isolation of infected persons common infective person.

- Proper disposal and disinfection of faeces and articles.
- Provide good hygiene and sanitary conditions. Eg. Portable water supply, safe disposal of human excreta, promoting food hygiene
- Enforcing sanitary measures at hostels and fast foods and other eating places.
- Proper sterilization and disposal of needles and syringes.
- Administration of human normal immunoglobulins to all contacts before with in a week of exposure.

Hepatitis B:- It is also known as serum hepatitis. It is acute systematic infection with major infection in the liver.

It is a blood borne infection.

Causative factors:

- Causative organism is hepatitis 'B' virus.
- **Source of infection:-** patients and carriers. The carrier state can persist many years.
- **Infective materials:-** blood, saliva, and semen are infective material.
- **Period of communicability:-** is present usually several months. Usually occurs in adulthood. High risk groups includes dental doctors,nurses,blood bank technician and other hospital and laboratory, workers, drug addicts, prostitutes.

Modes of transmission:- The disease is spread.

1. **Parental routing:-** It is transmitted by blood and blood products. Through transfusion, dialysis, contaminated syringes, needles, handling of infected blood. occur during surgical and dental procedures, immunizations, ear piercing, nose piercing, tattooing, circumcision, acupuncture etc.

Perinatal transmission:- From infected mother to fetus sexual transmission.

Other routes includes from child to child transmission occurs when children play together(or) share the same bed.

Incubation period is 30 to 180 days.

Prevention and control:- Since there is no specific treatment for hepatitis B, the only way of managing hepatitis, 'B' is prevention.

Hepatitis 'B' vaccine is now available like 1. Plasma derived vaccine. 2.

Recombination HBV vaccine.

The vaccine is given in 3 doses of 1ml each. The first 2 doses at an interval of one month and the third dose 6 months after the first dose.

Other measures:- includes all blood donors should be screened for HBV infection. Accurate & proper sterilization of instruments. Practicing simple hygienic measure. Carriers should not share razors (or) tooth brush. Carriers should not donate blood. Used to avoid sexual transmission use barriers methods of contraceptives.

Hepatitis 'C':-

It is parentally transmitted hepatitis recognized in the year 1989.

High risk population groups are haemodialysis patients, blood transfusion patient. High prevalence of cases has been identified in patients with chronic liver failure.

Delta hepatitis:- It occurs always in association with hepatitis B.

Hepatitis E:- It is caused by hepatitis 'E' virus, identified in 1990, is usually a water borne disease. The incubation period is 2-9 weeks.

Rabies:- It is a zoonotic disease also known as hydrophobia (fear of water) it is transmitted by the bite (or) licks of animals like dogs, cats, jackals, wolves, etc.

Causes:- It is called lyssa virus type. Source of infection is the saliva of rabid animals. All warm blooded animals including men are susceptible to rabies.

Rabies in man is a dead-end infection; death occurs.

Modes of transmission:-

1. Animal bite:- due to dog bite.
2. Licks:- licks on abraded skin and mucosa can transmit the disease.
3. Person to person:- man to man transmission is rare.

Signs and Symptoms:-

- Head ache, slight fever.
- Weakness and twitchings.
- Pain and numbness at the site of bite.
- Classical signs of rabies are
- Intolerance to bright light and noise.
- Difficulty in swallowing
- Fear of water.
- Intense pain on swallowing food (or) fluids.
- Deaths occur due to respiratory paralysis.

Rabies in dogs:- May be identified

change in behavior:- A tendency to attack and bite without provocation, biting unusual objects like sticks, straws, plastic materials.

- Run away from home and wander
- Change of voice occurs.
- Difficulty to take respiration at final stage
- The dog dies within 10 days.

Prevention:-

- Bite site should be washed immediately with soap and water for several minutes and then treated with spirit (or) tincture of iodine.

- To kill the virus.
- T.T should be given
- Cover the wound with sterile dressings.

Observe dog for 10 days. If the dog dies within 10 days after bite, anti rabies treatment should be started immediately.

Indications for antirabies treatment:-

- If the dog shows signs of rabies within 10 days after bite.
- If the biting animal cannot be traced out (or) identified.
- All bites from wild animal.

Anti rabies treatment:-

Vaccine is prepared from brain tissue of infected animals. The vaccine is given subcutaneously (or) intramuscularly. The dosage is 1ml. the vaccine is given at 0,3,7,14 and 30 days. A booster dose on day 90 is optional.

Malaria

It is protozoal disease caused by infection with parasite of the genus. Plasmodium. It is transmitted to man by certain species of infected female anophalus mosquito.

Incidence: - In 2008, there were estimated 243 million cases malaria world wise.

Causative factors: Malaria in man is caused by four distinct species of the malaria parasite.

1. Plasmodium vivax
2. Pl.falciparum
3. P.malaria
4. Pl. ovale.

Life cycle of mosquito

1. **A sexual human cycle:-** It begins when an infected mosquito bites a person and injects sporozoite. In this human cycle three phases are present.
 - (a) **Hepatitis phase:-** The sporozoites disappear within 60 minutes from the peripheral circulation. Many of them are destroyed by phagocytes but some reach the liver cells, after 1-2 weeks of development. They become hepatic schizonts which eventually divide releasing a number of merozoites. The number of merozoites produced from a single sporozoite considerably varies with the infecting species. They begin to grow and undergo erythrocyte schizogony, thus liberating merozoites into the blood stream causing relapses of these infection.
 - (b) **Erythrocytic phase:-** Many of the merozoites are quickly destroyed but a significant number attach to specific receptor sites on the R.B.C. The merozoites then penetrate the RBC and pass through stages of trophoblast and schizont. The duration of the erythrocytic phase is 48 hours for p.falciparum, p.vivax, p.ovale, and 72 hours for p.malaria.
 - (c) **Gametogony:-** In all species of malaria some erythrocytic forms do not divide but become male and female gametocytes. These are the sexual forms of the parasite which are infective to mosquito.
 - (d) **Sexual cycle:-** The mosquito cycle begins when gametocytes are injected by the vector mosquito when feeding on an infected person.

In the stomach of mosquito is exflagellation of the male gametocyte 4-8 thread like filamentous called "microgametes" are developed.

The female gametocyte undergoes a process of maturation and becomes a female gamete (or) macrogamete.

By a process of "chemotaxis" male gametes are attached towards the female gametes, and it causes fertilization of the female gamete.

- It forms zygote, a motionless body, but within 18-24 hours.
- It becomes motile.
- This is ookinete which penetrates the stomach wall of the mosquito and develops a cyst on the outer surface of the stomach.
- It grows rapidly and develops within it numerous sporozoites and liberates into the body cavity of mosquito. These sporozoites reach to the salivary glands of the mosquito and the mosquito now becomes infective to man. The period of time received for the development of the parasite from the gametocyte to sporozoite stage in the body of the mosquito is about (0 to 20 days) depending upon the favourable conditions of atmospheric temperature and humidity. This period is called extrinsic incubation period.

Host factors:-

Age:- malaria affects all ages.

Sex:- males are more exposed.

Race:- who are having haemoglobin sickle cell type.

Pregnancy increases the risk of malaria in women.

Social economic development:- Incidence of malaria is more in developing countries.

House:- The ill ventilated and ill tight houses provided ideal indoor resting places for mosquito.

Occupation:- It is a rural disease and is closely related to agriculture work.

Habits:- Sleeping outdoors, not using protective measures like nets, spraying of walls etc.

Immunity:- It is acquired only after repeated exposure over several years.

Environmental factors:-

- (a) **Season:-** It is a seasonal disease. It occurs mainly in the months from July to November.
- (b) **Temperature:-** The optimum temperature for the development of parasite in insect vector is between 20°C to 30°C.
- (c) **Humidity:-** 60% is considered necessary to mosquito.
- (d) **Rainfall:-** It provides opportunity for the breeding of mosquitoes give rise to epidemics of malaria.
- (e) **Manmade malaria:-** garden pools, irrigation channels and engineering projects like construction of hydroelectric bridges, have led to the breeding of mosquitoes and an increase in malaria.

Mode of transmission:-

1. **Vector transmission:** It is transmitted by female anopheles mosquito.
2. **Direct transmission:-** Intramuscular (or) intravenous injections of blood (or) plasma.
eg. Blood transfusion, drug addiction.
3. **Congenital malaria:-** It occurs in new born cases with infected mother.

Incubation period usually not less than 10 days.

Clinical features:- the onset is fever, headache, nausea, vomiting and chilly sensation. followed in an hour(or) so by rigors.

The temperature rises rapidly to 39-41°C. headache is severe and commonly there is vomiting, skin feels cold, later it becomes hot flushes are present parasites are appear in the blood.

The pulse is rapid and may be weak. This stage is last for ¼-1 hour.

Hot stage:- The patient feels burning and casts off his clothes. The skin is hot and dry to touch. Headache is intense but nausea commonly diminishes. The pulse is full and respiration is rapid. This stage lasts for 2 to 6 hours.

Sweating stage:- Fever comes down with profuse sweating.

The temperature drops rapidly to normal and skin is cool and moist the pulse becomes slower.

Diagnosis

Malaria will be diagnosed by

1. Microscopic test
2. Serological Test
3. Rapid Diagnostic Test

Treatment: Tab. Chloroquine is full therapeutic dose of 25 ml/kg divided over 3 days.

Measures against Malaria

- Early identification of fever cases
- Administration of Tab. Chloroquine for all fever cases
- Collection of blood smears
- Administration of radical treatment to all positive cases of malaria

Mosquito control measures

- 1) Anti-adult measures: Like insecticide spraying. Eg: DDT, Malathion
- 2) Anti-larval measures: By larvicidal agents, Eg: Temphos, pouring of kerosene in mosquito breeding places, using gambusia fish to kill the larvae as a biological control.
- 3) Protection against mosquito bites by using nets, repellents, creams and jellies

Community Measures

- Source reduction measures like elimination of breeding places
- Environmental sanitation, proper drainage system
- Used coconuts should be disposed properly.

- Health education of community regarding the importance of taking treatment and spraying houses.
- Proper drying of plant pots, removing of water from air collers.

Life history of malaria parasite: - The malaria parasite undergoes 2 cycles of development.

1. The human cycle(a sexual cycle)
2. The mosquito cycle(sexual cycle)

Man is the intermediate host and the mosquito the definite host.

Dengue fever facts

- Dengue fever is a disease caused by a family of viruses that are transmitted by mosquitoes.
- Symptoms such as headache, fever, exhaustion, severe joint and muscle pain, swollen glands (lymphadenopathy), and rash. The presence (the “dengue triad”) of fever, rash, and headache, (and other pains) is particularly characteristic of dengue fever.
- Dengue is prevalent throughout the tropics and subtropics. Outbreaks have occurred recently in the Caribbean, including Puerto Rico, the U.S Virgin Islands, Cuba, and in Paraguay in South America, and Costa Rica in Central America.
- Because dengue fever is caused by a virus, there is no specific medicine or antibiotic to treat it. For typical dengue fever, the treatment is purely concerned with relief of the symptoms.
- The acute phase of the illness with fever and myalgias lasts about one to two weeks.
- Dengue haemorrhagic fever(DHF) is a specific syndrome that tends to affect children under 10years of age. It causes abdominal pain, haemorrhage (bleeding), and circulatory collapse(shock).
- The prevention of dengue fever requires control or eradication of the mosquitoes carrying the virus that causes dengue.
- There is currently no vaccine available for dengue fever.

Causes, incidence, and risk factors

Dengue fever is caused by one of four different but related viruses. It is spread by the bite of mosquitoes, most commonly the mosquito *Aedes aegypti*, which is found in tropic and subtropic regions. This includes parts of:

Dengue fever is being seen more often in world travellers.

Dengue fever should not be confused with Dengue hemorrhagic fever, which is a separate disease that is caused by the same type of virus but has much more severe symptoms.

Symptoms

Dengue fever begins with a sudden high fever, often as high as 104-105 degrees Fahrenheit, 4 to 7 days after the infection.

A flat, red rash may appear over most of the body 2-5 days after the fever starts. A second rash, which looks like the measles, appears later in the disease. Infected people may have increased skin sensitivity and are very uncomfortable.

Other symptoms include

- Fatigue
- Headache (especially behind the eyes)
- Joint aches
- Muscle aches
- Nausea
- Swollen lymph nodes
- Vomiting

Signs and tests

Test that may be done to diagnose this condition include:

- Antibody titer for dengue virus types
- Complete blood count(CBC)
- Polymerase chain reaction(PCR) test for dengue virus types

Treatment

There is no specific treatment for dengue fever. You will need fluids if there are signs of dehydration. Acetaminophen (Tylenol) is used to treat a high fever. Avoid taking aspirin.

Expectations (prognosis)

The condition generally lasts a week or more. Although uncomfortable, dengue fever is not deadly. People with the condition should fully recover.

Complications

- Febrile convulsions
- Severe dehydration

Prevention

Clothing, mosquito repellent, and netting can help reduce exposure to mosquitoes. Traveling during periods of minimal mosquito activity can also be helpful.

Mosquito abatement programs may reduce the risk of infection.

Filaria

Filaria is caused by the parasite known as *Wuchereria bancrofti* in most parts of India. The infection is common in both urban and rural areas in India. *Culex* mosquito is the vector that transmits the disease from one person to other. The adult parasite produces small, immature larvae known as microfilariae and one adult parasite can produce millions of microfilariae in its life period of 4-6 years. The microfilariae circulate in the peripheral blood usually in the night. The disease is transmitted by bite of an infected *Culex* mosquito.

When the *Culex* mosquito bites an infected person the microfilariae enter the body of a mosquito. In the mosquito microfilariae takes about 7-21 days to develop. After this when the mosquito bites a healthy person it transmits the disease.

Filariasis develops usually after many mosquito bites over several months to year. The risk of infection is higher in people living for a long time in areas where filariasis is common. The risk of infection in short-term tourists to filarial endemic areas is very low.

Kala-Azar

- Kala-azar is a slow progressing indigenous disease caused by a protozoan parasite of genus *Leishmania*
- In India *Leishmania donovani* is the only parasite causing this disease
- The parasite primarily infects reticuloendothelial system and may be found in abundance in bone marrow, spleen and liver.
- Post Kala-azar Dermal Leishmaniasis (PKDL) is a condition when *Leishmania donovani* invades skin cells, resides and develops there and manifests as dermal lesions. Some of the kala-azar cases manifest PKDL after a few years of treatment. Recently it is believed that PKDL may appear without passing through visceral stage. However, adequate data is yet to be generated on course of PKDL manifestation.

Signs & Symptoms of Kala-Azar

- Recurrent fever intermittent or remittent with often double rise
- Loss of appetite, pallor and weight loss with progressive emaciation
- Weakness
- Splenomegaly –spleen enlarges rapidly to massive enlargement, usually soft and nontender
- Liver- enlargement not to the extent of spleen, soft, smooth surface, sharp edge
- Lymphadenopathy- not very common in India
- Skin-dry, thin and scaly and hair may be lost. Light coloured persons show grayish discolouration of the skin of hands, feet, abdomen and face which gives the Indian name Kala-azar meaning “black fever”
- Anaemia- develops rapidly
Anaemia with emaciation and gross splenomegaly produces a typical appearance of the patients

Transmission

- Kala-azar is a vector borne disease
- Sandfly of genus *Phlebotomus* argentipes are the only known vectors of kala-azar in India
- Indian Kala-azar has a unique epidemiological feature of being **Anthropometric**; human is the only known reservoir of infection.
- Female sandflies pick up parasite (Amastigote or LD bodies) while feeding on an infected human host.
- Parasite undergo morphological change to become flagellate (Promastigote or Leptomonad), development and multiplication in the gut of sandflies and move to mouthparts
- Healthy human hosts get infection when an infective sandfly vector bites them

Kala-azar vector in India

- There is only one sandfly vector of kala-azar in India *Phlebotomus argentipes*
- Sandflies are small insects, about one fourth of a mosquito. The length of a sandfly body ranges from 1.5 to 3.5mm.

- Adult is a small fuzzy, delicately proportionate fly with erect large wings. The entire body including wings is heavily clothed with long hairs.
- Life cycle consists of egg, four instars of larvae, pupa and adult. The whole cycle takes more than a month, however, duration depends on temperature and other ecological conditions
- They prefer high relative humidity, warm temperature, high subsoil water and abundance of vegetation
- Sandflies breed in favourable micro-climatic conditions in places with high organic matter that serve as food for larvae
- These are ecologically sensitive insects, fragile and cannot withstand desiccation

Diagnosis**Clinical**

A case of fever of more than 2 weeks duration not responding to antimalarials and antibiotics. Clinical laboratory findings may include anaemia, progressive leucopenia, thrombocytopenia and hypergammaglobulinemia

Laboratory

Serology tests: variety of tests are available for diagnosis of kala-azar. The most commonly used tests based on relative sensitivity; specificity and operational feasibility include Direct Agglutination Test (DAT), rk39 dipstick and ELISA. However, all these tests detect IgG antibodies that are relatively long lasting. Aldehyde test is commonly used but it is a non-specific test. IgM detecting tests are under development. Tests are under development and not available for field use.

Parasite demonstration in bone marrow/spleen/lymph node aspiration or in culture medium is the confirmatory diagnosis. However, sensitivity varies with the organ selected for aspiration. Though spleen aspiration has the highest sensitivity and specificity (considered gold standard) but a skilled professional with appropriate precautions can perform it only at a good hospital facility.

Differential Diagnosis:

- Typhoid
- Military tuberculosis
- Malaria
- Brucellosis
- Amoebic liver abscess
- Infectious mononucleosis
- Lymphoma, Leukemia
- Tropical splenomegaly
- Portal hypertension

Treatment of Kala-azar

Kala-azar drugs available in India

- Sodium stibogluconate (indigenous manufacture, registered for use & sale)
- Pentamidine Isethionate: (imported, registered for use)
- Amphotericin B: (indigenous manufacture & import, registered for use and sale)
- Miltefosine (imported/registered for use & sale)

Trachoma**Causes, incidence, and risk factors**

Trachoma is caused by infection with the bacteria *Chlamydia trachomatis*.

The condition occurs worldwide, mostly in rural settings in developing countries. It frequently affects children, although the effects of scarring may not be seen until later in life. While trachoma is rare in the United States, certain populations marked by poverty, crowded living conditions, or poor hygiene are at higher risk for this illness.

Trachoma is spread through direct contact with infected eye, nose, or throat secretions or by contact with contaminated objects, such as towels or clothes. Certain flies can also spread the bacteria.

symptoms

symptoms begin 5 to 12 days after being exposed to the bacteria. The condition begins slowly as inflammation of the tissue lining the eyelids (conjunctivitis, or “pink eye”), which if untreated may lead to scarring.

Symptoms may include:

- Cloudy cornea
- Discharge from the eye
- Swelling of lymph nodes just in front of the ears
- Swollen eyelids
- Turned in eyelashes

Signs and tests

An eye exam may reveal scarring on the inside of the upper eye lid, redness of the white part of the eyes, and new blood vessel growth into the cornea.

Laboratory tests are needed to accurately identify and detect the bacteria and diagnose trachoma.

Treatment

Antibiotics can prevent long-term complications if used early in the infection. Antibiotics include erythromycin and doxycycline. In certain cases eyelid surgery may be needed to prevent long-term scarring which can lead to blindness if not corrected.

Expectations(prognosis)

Early treatment before the development of scarring and lid deformities has an excellent prognosis.

Complication

If the eyelids are severely irritated the eyelashes may turn in and rub against the cornea. This can cause eye ulcers, additional scars, vision loss and possibly, blindness.

Prevention

Improved sanitation and not sharing items such as towels are important measures for limiting the spread of trachoma.

Conjunctivitis

Conjunctivitis is swelling (inflammation) or infection of the membrane lining the eyelids (conjunctiva).

Causes, incidence, and risk factors

The conjunctiva is exposed to bacteria and other irritants. Tears help protect the conjunctiva by washing away bacteria. Tears also contain enzymes and antibodies that kill bacteria.

There are many causes of conjunctivitis. Viruses are the most common cause. Other causes include:

- Allergies(allergic conjunctivitis)
- Bacteria
- Certain diseases
- Chemical exposure
- Chlamydia
- Fungi
- Parasites(rarely)
- Use of contact lenses(especially extended-wear lenses)

“pink eye” refers to a viral infection of the conjunctiva. These infections are especially contagious among children.

Newborns can be infected by bacterial in the birth canal. This condition is called ophthalmia neonatorum, and it must be treated immediately to preserve eyesight.

Symptoms

- Blurred vision
- Crusts that form on the eyelid overnight
- Eye pain
- Gritty feeling in the eyes
- Increased tearing
- Itching of the eye
- Redness in the eyes
- Sensitivity to light

Signs and tests

- Examination of the eyes
- Swab of conjunctiva for analysis

Treatment

Treatment of conjunctivitis depends on the cause.

Allergic conjunctivitis may respond to allergy treatment. It may disappear on its own when the allergen that caused it is removed. Cool compresses may help soothe allergic conjunctivitis.

Antibiotic medication, usually eye drops, is effective for bacterial conjunctivitis. Viral conjunctivitis will disappear on its own. Many doctors give a mild antibiotic eye drop for pink eye to prevent bacterial conjunctivitis.

You can soothe the discomfort of viral or bacterial conjunctivitis by applying warm compresses(clean cloths soaked in warm water) to your closed eyes.

Expectations(prognosis)

The outcome is usually good with treatment.

Complications

Reinfection within a household or school may occur if you don't follow preventive measures.

Calling your health care provider

Call for an appointment with your health care provider if your symptoms last longer than 3 or 4 days.

Prevention

Good hygiene can help prevent the spread of conjunctivitis:

- Change pillowcases frequently.
- Do not share eye cosmetics.
- Do not share towels or handkerchiefs
- Handle and clean contact lenses properly.
- Keep hands away from the eye.
- Replace eye cosmetics regularly.
- Wash your hands often.

Scabies

Sarcoptes scabiei

Scabies is an easily spread skin disease caused by a very small species of mite.

Causes, incidence and risk factors

Scabies is found worldwide among people of all groups and ages. It is spread by direct contact with infected people, and less often by sharing clothing or bedding. Sometimes whole families are affected.

Outbreaks of scabies are more common in nursing homes, nursing facilities, and child care centers.

The mites that cause scabies burrow into the skin and deposit their eggs, forming a burrow that looks like a pencil mark. Eggs mature in 21 days. The itchy rash is an allergic response to the mite.

Scabies is spread by skin-to skin contact with another person who has scabies. Pets and animals cannot spread human scabies. It is also not very likely for scabies to be spread by:

- A swimming pool
- Contact with the towels, bedding, and clothing of someone who has scabies, unless the person has what is called “crusted scabies”

Symptoms

- Itching, especially at night
- Rashes, especially between the fingers
- Sores (abrasions) on the skin from scratching and digging
- Thin, pencil-mark lines on the skin

Mites may be more widespread on a baby’s skin, causing pimples over the trunk, or small blisters over the palms and soles.

- In young children, the head, neck, shoulders, palms, and soles are involved.
- In older children and adults, the hands, wrists, genitals, and abdomen are involved.

Signs and tests

Examination of the skin shows signs of scabies. Tests include an examination under the microscope of skin scrapings taken from a burrow to look for the mites. A skin biopsy can also be done.

Treatment

Prescription medicated creams are commonly used to treat scabies infections. The most commonly used cream is permethrin 5%. Other creams include benzyl benzoate, sulfur in petrolatum, and crotamiton. Lindane is rarely used because of its side effects.

Creams are applied all over the body. The whole family or sexual partners of infected people should be treated, even if they do not have symptoms. Creams are applied as a one-time treatment or they may be repeated in 1 week. Wash underwear, towels, and sleepwear in hot water. Vacuum the carpets and upholstered furniture.

For difficult cases, some health care providers may also prescribe medication taken by mouth to kill the scabies mites. Ivermectin is a pill that may be used.

Itching may continue for 2 weeks or more after treatment begins, but it will disappear if you follow your health care provider's treatment plan. you can reduce itching with cool soaks and calamine lotion. Your doctor may also recommend an oral antihistamine.

Expectations(prognosis)

Most cases of scabies can be cured without any long-term problems. A severe case with a lot of scaling or crusting may be a sign that the person has a disease such as HIV.

Complications

Intense scratching can cause a secondary skin infection, such as impetigo

Prevention

Avoid contact with infected persons. While there have been great strides in the prevention of HIV transmission and care of HIV infection and AIDS since AIDS was first recognized in 1981, many people still have questions about HIV and AIDS. The information below is designed to answer some of these questions based on the best available science.

Other communicable Diseases

Sexually Transmitted Diseases

The sexually transmitted disease are a group of communicable disease that are transmitted predominantly by sexual, viral, protozoal agents and ectoparasites.

Causative Organism

A. Bacterial agents:

- Neisseria gonorrhea
- Chlamydia trachomatis and other
- Treponema pallidum

B. Viral agents:

- Herpes virus 1 or 2 (herpes simplex virus)
- Hepatitis B
- Human papilloma virus
- Human immunodeficiency virus

C. Protozoal agents:

- Entamoeba histolytica
- Giardia Lamblia
- Trichomonas vaginalis

D. Fungal agents

- Candida albicans

E. Ecto parasites

- Sarcoptes scabiei.

Preventive care

Case Detection

Case detection is a prime part of any control programme. The usual methods of early detection of STD control programme are

1. Screening(or) testing

Screening is the testing of apparently healthy volunteers from the general population for the early detection of disease. High priority is given to screening of special groups like pregnant women, blood donors, industrial workers, army, police, prostitutes, convicts etc.

2. Identification of contacts

Identification of contacts by which the sexual partners of diagnosed patient are identified, located, investigated and treated. It helps in controlling the spread of infection.

3. Group testing

Here the patients are asked to name other persons of either sex, who move in the same socio-sexual environment.

Eg: blood testing

4. Treatment

Adequate treatment of patients and their contacts is very important in STD control programme.

5. Contact treatment

Contact treatment has become a keystone of control of the administration of full therapeutic dose of treatment of persons.

6. Personal protectors

Using of condoms and diaphragms for personal prophylaxis against STD's

7. Health education

Health education is an integral part any control programmes. The aim of educational intervention is to help individual's alter their behavior to avoid STD's and to minimize disease and transmission. And using of contraceptives maintain a partner's while inter course. Be faithfull with the partner. Avoid pregnancy to prevent infection. The blood doners always test before donating a blood.

The razers and towels brushes should not use of the others.

The vaccine should take without breaking the booster doses.

AIDS and HIV

AIDS, the acquired immune-deficiency syndrome is a fatal ill ness caused by a retro virus.

HIV- Human Immuno-deficiency virus.

HIV-which the disease breaks down the body's immuno system leaving the victim vulnerable to a host of life threatening

Incubation period

Incubation period is few months 10years.

Mode of Transmission**(a) Sexual transmission**

AIDS is first and foremost a sexually transmitted disease. Any vaginal, anal or oral sex can spread AIDS. The cases were in homosexual or bisexual men. Every single act of unprotected inter course with HIV infected person exposes the unprotected partner to the risk of infection. Anal inter course carries a higher risk of transmitted than vaginal inter course because it is more likely to inquire tissues of the receptive partner 1 sexual intercourse.

(b) Blood contact

AIDS is also transmitted by contaminated blood transfusion of whole blood cells; platelets and factors VIII and IX derived from human plasma. HIV or AIDS transmission through blood depends on the getting infection through contaminated needle, syringe or any other skin piercing instrument, infected person blood transfusion to a healthy person(2) transfusion of blood and products.

(c) Maternal-Foetal Transmission

Mother to child transmission. HIV may pass from an infected mother to her foetus, through the placenta or to her infant during delivery or by breast feeding. There is no evidence HIV is transmitted through mosquitoes or any other insects or contact with infected persons food or water, razors etc tissue and organ transplantation.

Clinical Manifestations

The clinical features of HIV infection have classified into four broad categories.

(a) Initial infection with the virus and development of antibodies. Within a few weeks of infection with virus. Mild illness, fever, sore throat and malaise, headache, lymphadenopathy, rashes and arthropathy.

(b) Asymptomatic Infection

All the patients infected with HIV whether they experience of acute infections or not pass through a phase of symptom less infection lasting for symptoms several months to years.

In some the infection may not progress any further while in others.

(c) Persistent Generalized

There is presence of enlarged lymphnodes, atleast 1cm in diameter that persists for at least 3months in the absence of any current illness. This by itself begin.

(d) AIDS Related complex

A person with AIDS has illness caused by damage to the immune system. Clinical signs-unexplained diarrhea lasting longer than a month, fatigue, malaise, loss or more than 10 percent body weight, fever, night sweats, or other milder infections such as oral thrush, generalized lymphadenopathy or enlarged spleen, tuberculosis, herpes zoster, malignancies.

(e) AIDS

This is the end stage disease leading to irreversible break down of immune defense mechanisms chronic tuberculosis, pneumonia, encephalopathy, candida esophagitis.

Laboratory Diagnosis

1. ELISA- Enzymed Link Immuno Sarabitcate Assay
2. Western bilt

Prevention and Treatment of HIV/AIDS

Prevention of AIDS at present depends upon health education, identification of source and eliminate of high risk activities.

1. These include practice safe by use of condoms, stoppage of drug abuse of disposable syringes and needles, testify the blood and blood products, prior sterilization of instruments used for surgery.

- a. Womens suffering from AIDS and high risk of infection should avoid becoming pregnant.
- b. Educationg the people about AIDS about its causes and its nature of transmission and prevention.
- c. Educating about use of contraceptive with safety to minimize the disease of transmission.

For Treatment of a patient with AIDS

1. HIV refers to antiretroviral drug treatment started within hours following accidental exposure to the virus.
2. Treatment and prophylaxis of infections.
3. Immuno restrictive measures and
4. Specific anti HIV drugs.
5. General management of patients.
6. A large number of antiviral retro drugs have been treatment tried in AIDS patients. Only one drug zidovudine 200mg(AZT azidothymidine) has been licensed for used in AIDS.

Japanese Encephalitis

Encephalitis or Japanese encephalitis(JE) is a mosquito caused by a group B arbovirus(flavi virus) and transmitted by culicine mosquitoes It is a zoonotic disease i.e: infecting mainly animals and incidentally man.

Epidemiological Features

Unlike the dengue virus, JE virus infects several extra human hosts eg: animals and birds. Available evidence indicates that the basic cycles of transmission.

- (a) Pig-Mosquito-Pig.
- (b) The Ardeid bird- Mosquito Ardeid bird.

The disease is transmitted to may by the bite of infected mosquitoes. Man is an incidental “ dead end host”. Man to man transmission has not so far been recorded.

Signs and Symptoms

The course of the disease in may may be divided into three stages.

(a) Prodromal stage

The onset of illness is acute and is heralded by fever, headache, and malaise.
The duration is 1-6 days.

(b) Acute Enmcephalitis Stage

Fever usually high 380 to 400c etc.

(c) The prominent Feature

Fever, nunchal rizidity, focal signs, loss of coordination and altered sensitivity. Acute. Paralysis, disorientation

Diagnosis: Laboratory tests, Antigen Antibody detection.

Treatment: Antiviral medicines

-Fluid and electrolyte balance

-control of convulsion

Prevention and control : Early diagnosis & proper casemanagement

-integrated vector contrl

-personal protection, IEC activities, vaccination

Leptospirosis

Leptospirosis is essentially animal infection by several serotypes of leptospira and transmitted to man under certain environment condition.

Incubation period

Usually 10 days with range of 4-20 days.

Causative Organism

Leptospira are thin light motile spirochetes. 0.1-0.2 cm wide and 5-15 cm long with hooked ends.

Mode of transmission**(a) Direct contact**

Leptospira can enter the body through skin abrasions or through intact mucous membrane by direct contact with urine or tissue of infected animal.

(b) Indirect contact

Through the contact of the broken skin with soil water etc contaminated by urine of infected animals.

(c) Droplet infection

Infection may also occur through inhalation as when milking infected cows or goats by breathing air polluted with droplet of urine.

Signs and Symptoms

The disease manifestations are varied ranging in severity from a mild febrile illness to severe and sometimes fatal diseases with liver and kidney.

Prevention and control**(a) Antibiotics**

Penicillin is the drug of choice but other antibiotics (tetracycline or doxycycline) are also effective. The dosage of penicillin is 6 million units daily I.V.

(b) Environmental measures

This includes preventing exposure to potentially contaminated water, reducing contamination by rodent control and protection of workers in hazardous occupation. Measures should be taken to control proper disposal of waste and health education etc.

Vaccination

Immunization of humans and pets, prevents diseases. In some countries for example, Italy, USSR, China where certain occupations carry a high risk of infection vaccines are available. It is important that they should incorporate strains of the serotypes that predominate in the particular area since immunity to one type of leptospira may not protect against infection by another.

Acute Respiratory Infections**Pneumonia**

An inflammation of the alveolar spaces of the lung, resulting in consolidation of lung tissues the alveoli fill with exudates.

Causative agent:

Pneumonia aurea, E. coli and influenzae.

Signs and Symptoms

1. Cough with greenish to rust colored sputum, production rapid shallow respirations and nasal flaring.
2. High pitched bronchial breath sounds, rales or crackles progressing to cause.
3. Fever chills, chest pain, weakness, generalized malaise.
4. Tachycardia, cyanosis profuse perspiration.

Nursing responsibilities

1. Administer oxygen.
2. Provide adequate ventilation.
3. Place the client in semi Fowler's position.
4. Administer analgesics as ordered to relieve pain while breathing.
5. Monitor airway breathing gavage.
6. Facilitate removal of secretions (general hydration, deep breathing and coughing, chest physiotherapy)
7. Administer antibiotics as ordered.
8. Avoid visitors to prevent infection.
9. Maintain pleasant environment.
10. Provide adequate rest and relief control and pain observe color, characteristics of sputum and report any changes.
11. Encourage the oral hygiene to prevent halitosis.

Bronchitis

It is defined as an infection of the major bronchi that may be treated and bronchitis.

Viral Infections:**Signs and Symptoms:**

1. Fever, productive cough, cold i.e worse in night and becomes productive in 2 and 3 days.
2. Loss of appetite, chills, running nose, difficulty in breathing.

Mode of Transmission

By oral and direct to direct contact while coughing, sneezing etc.

1. Monitor for respiratory diseases
2. Provide cool humidified air.
3. Monitor for signs such as sunken eyes, poor skin, decreased and concentrated urinary output

4. Increased fluid is taken.
5. Administer nebulizer as ordered by physician.
6. Provide semifowler position.
7. Administer nebulizer as ordered by physician.
8. Removal of secretion by deep breathing coughing chest therapy.

Asphyxia

It is defined a deficiency of oxygen in the blood and an increase of carbon dioxide in the blood and tissues. It occurs due to an interruption in the normal exchange of Oxygen and CO₂ between the lungs and outside air.

Causes

1. Drowning
2. Electric shock
3. Foreign body in the air passage.
4. Inhalation of smoke and poisonous gases
5. Suffocation of breath
6. Hanging strangulation by tight rope.

Signs and Symptoms

- Rate of breathing rises
- Breath gets shorter
- Veins of the neck becomes swollen
- Clients suffering with peripheral as well central cyanosis
- Pulse gets faster and feeble
- Unconscious
- Froth may appear
- Fit may occur

Nursing Management

1. Remove the cause if possible.
2. Very quickly, make sure that air passage is not obstructed.
3. Loosen his collar.
4. Remove false teeth and foreign bodies.
5. Pull tongue forward.
6. If the heart is beating, carotid pulse can be felt on the neck.
7. Place the individual on his back with his support at the gap of neck. This will extend the head on the neck and lift the tongue to clear of the airway.
8. Apply artificial respiration to ensure prompt ventilation of the lungs and if necessary to external cardiac massage.
9. During artificial respiration rhythmically and without interruption until natural breathing resumed.
10. During artificial respiration also help in calling doctor and ambulance.
11. After breathing is restored keep the victim at rest and arrange for medical care.

Diarrhoea Diseases

Diarrhoea is defined as the passage of loose liquid or watery stools. These liquid stools are usually passed more than three times a day.

Hence inconsistency and character of stools rather than the number of stools that is more important.

Causative Organism

1. Virus - Rotavirus
2. Bacteria - Vibrio cholera, Escherichia coli
3. Others – Giardia intestinalis, intestinal worms

Diarrhea is most common in children especially those between 6 to 12 years. Incidence is highest in the age due to lack of active immunity the enteric pathogens from contaminated food and direct contact with human and animals faeces and contaminated. And cow's milk or infant feeding formulas is due malnutrition leads to infection due to premature gastric acidity immunodeficiency, lack of personal and domestic hygiene or incorrect feeding.

Mode of Transmission

Most of the pathogenic organisms that cause diarrhoea and all the pathogens that are known to be major causes of diarrhoea in many ways to transmitted by primary or exclusively by the faecal oral route.

Faeco Oral transmission may be water-borne, food borne or direct transmission which implies an entry of other than faeco oral routes such as via fingers, fomites, or dirt which may be ingested by young children.

Contaminated hands and flies. After preparation, cooked food may be improper covering or vegetables or fruits washed with contaminated water.

Public drinking water contaminated by environment or contaminated fingers, handling excreta or vomit by patients.

Signs and Symptoms

1. Loose watery stools associated with mucous discharge.
2. Sunken eyes.
3. Dry lips.
4. Dehydration, pale skin
5. Weakness fatigue.
6. If bloody stools present that conditions is called dysentery.
7. Cramps in legs.
8. Restlessness
9. Intense of thirst
10. Anuria.

Laboratory Tests

1. Collection of stool should be done by culture test.

Prevention and Control Measures

The diarrhoeal diseases control programme of WHO has since 1980 given several intervention.

1. Maintenance of personal hygiene while handling of food and cooking and water storage.
2. Maintenance of environmental sanitation mainly in rainy and winter season by disposing of waste in proper methods.
3. Educating about the communication disease and its infections cases.
4. Immunization importance and advantages.
5. Educating proper isolation then a person has suffering from infection

6. Educating about ORS preparation and its uses of taking.
7. Educating the mothers about hygiene before and after feeding.

Control

1. Short term
 - (a) Appropriate clinical management
2. Long term
 - (a) Better MCH care practices
 - (b) Preventive measures
 - (c) Preventing diarrhoeal epidemic

Appropriate Clinical Management**1. Oral Rehydration Therapy**

The oral rehydration treatment can be safely and successfully used in treating acute diarrhoea.

ORS is a therapy that glucose gives orally and intestinal absorption of salt and water and is capable of correcting electrolyte and deficit.

The composition of oral dehydration fluids.

Sodium chloride	3.5 gm
Sodium bicarbonate	2.5 gm
Potassium chloride	1.5 gm
Glucose (dextrose)	20.0 g
Potable water	1 litre

Packets of ORS mixture is now freely available at the primary health centres, subcentres. The one litre of drinking water. The solution should be made fresh daily and used within 24 hours. The water should be boiled or sterilized.

The simple mixture a table spoon of salt(5) gm and sugar 20 gm dissolved in a litre of water may be safely dissolved and used.

Appropriate Feeding

Medical profession has related or rendered that is important to “rest the gut” during diarrhea. The current view is that during episodes of diarrhea, normal food intake should be promoted as soon as children are able to eat. This is especially relevant to the exclusively breast feeding to infants all the nutrients must supply to protect from infection.

Chemo Therapy

Antibiotics should be considered where in cause of diarrhea has been clearly identified as shigella, typhoid or cholera.

Better MCH care practices**(a) Maternal nutrition**

Appropriate diet during pregnancy will reduce the low birth weight babies antenatal and postnatal nutrition will improve the quality of life of child.

(b) Child nutrition

Is improved by breast feeding appropriate weaning practices, supplementary feeding, vitamin A supplementation.

(c) Preventive measures includes

1. Improved sanitation, water supply, improved excreta disposal and improved domestic and food hygiene practices.

Simple measures like, hand washing with soap, preparing food, before eating, before feeding a child, after defecating, after cleaning a child and after disposing off a child's stool.

- Lavatory facilities should be there
- 2. Health education about environmental sanitation measures require education support, people use and maintenance of facilities.
- 3. Immunization: Against measles is a potential intervention for diarrhoeal control.
Immunization with rotavirus vaccine.
- 4. Fly control: Human and animal faeces should be controlled, to prevent breeding of flies.

Assessment Dehydration

Dehydration is a sign of severe diarrhoea. Dehydration is mild and severe.

Mild Dehydration**Signs and Symptoms**

Thirsty, restless, pulse normal, B.P. normal, normal skin elasticity, tongue is moist, urine output normal.

Severe Dehydration: It is drowsy, cold, clammy skin, rapid, feeble pulse, B.P less than 80mm of Hg, skin elasticity loose, tongue is very dry, urine output is less(or) more.

Mild hydration is corrected by oral dehydration solution severe dehydration is by intravenous fluids administration I.V fluids like ringer's lactate solution should be administered.

After initial fluids and electrolyte deficit has been corrected, oral fluids should be used for maintenance therapy.

Worm Infestation

Hook worm infection is defined as any infection caused by *ancylostoma duodenal*. They may occur as single or mixed infections.

Incubation period

5 weeks to 9 months.

The adults worms live in small intestine and jejunum. Eggs pass in the faeces enter into the human beings. The larva rapidly develops in warm, moist soil and develops egg in for 2 days. It can enter through by skin and by mouth, intestines, lungs, blood stream etc. They break down into alveoli, bronchi and trachea are coughed up swallow to reach the small intestine.

Clinical Features

1. Hook worm infection causes chronic blood loss in body by depletion of iron deficiency anaemia.
2. Child health is retarded physical and mental growth and development.
3. For pregnant mother gives to low birth babies, abortion, still births and impaired lactation.
4. Loss of appetite, dysentery, constipation and abdominal pain, puffiness of face, loss of weight.

Mode of Transmission

Hook worm enter the body, usually feet by penetrating skin. Direct ingestion of oral route by contaminated water, fruits and vegetables.

Transmission through blood by contaminated donor.

Prevention and Control

The primary prevention are the most effective in interrupting transmission. They should follow sanitary disposal of human excreta to prevent faecal

contamination. Health education about personal hygiene, sanitary latrines and safe drinking water changing behavioural patterns.

Secondary Prevention

The effective drug is tetrachloroethylene or albendazole 400 mg children orally alternative 3 days.

Ferrous sulphate 20 mg to 50 mg for children till anaemia corrects to 12 gm/dl.

Amoebiasis

The term amoebiasis has been defined by WHO condition of harboring the protozoan parasite. *Entamoeba histolytica*.

Incubation period

About 2 to 4 weeks or longer.

Clinical Manifestations

The symptomatic disease has been further subdivided into intestinal and extra intestinal amoebiasis.

The Intestinal infection

Mild discomfort in abdominal, diarrhea, to acute fulminating dysentery, loss of weight loss of appetite.

Extra Intestinal amoebiasis

Involvement of liver, lungs, brain, spleen, skin, etc.

Mode of Transmission

1. Faeco- oral route

This may readily take place through intake of contaminated water or food. Infection occurs heavily in contaminated drinking water supply vegetable, especially those eaten raw from fields and irrigated with sewage polluted water cysts have been found in the hands and finger nails.

2. Sexual transmission

By oral rectal contact.

3. Vector

Such as flies, cockroaches and rodents of carrying cysts and contaminate the food and drink.

Diagnosis

1. Stool examination-containing of red cells.
2. Serological test- Indirect haemorrhagic agglutination.

Prevention and Control

1. Prevention measures- preventing by contamination of water, food, vegetables and fruits with human faeces.
 - (a) Sanitation- Safe disposal of human excreta coupled with elementary sanitary practice of washing hands after the defecation and before eating.
 - (b) Water supply- The protection of water supply from faecal contamination amoebic cyst. The cysts are killed by chlorine in water and by sand filters are quite effective in removing cysts.
 - (c) Food hygiene- Environmental measures include the protection of food and drink against faecal contamination. Uncooked vegetables and fruits can be disinfected with acetic acid.

Treatment

Symptomatic- Metronidazole orally 30mg/kg after meals. Tinidazole orally 30mg duration of 8-10 days.

Asymptomatic- Diloxanide furoate 500mg orally 10 days.
Ferrous sulphate 50mg daily 3 months till anemia corrects.

Ascariasis

An infection of the intestinal tract caused in the adult by *ascaris lumbricoides*.

Incubation period

About 2 months.

Ascaris lumbricoides eggs enter lumen of small intestine. They become mature into adults, start its growth in favorable condition. The laid eggs that will develop in conditions like low temperature, moisture, oxygen pressure and ultra violet radiation from the sunlight.

Clinical features

Nausea, abdominal pain, cough, vomiting and intestinal obstruction and worms are passed in stools, fever. Loss of appetite, anaemia, diarrhea.

Mode of Transmission

By the faecal-oral route i.e. by ingestion of infective eggs with food or drink.

Foods such as vegetable salads readily convey the infection, and so is polluted water.

Other means of spread by finger's contaminated with soil or by ingestion of contaminated soil. While children playing with soil.

Prevention and Control**Prevention**

Primary prevention are the most effective in interrupting transmission. These are sanitary disposal of human excreta to prevent or reduce faecal contamination of the soil, provision of safe drinking water by food hygiene habits and health education, built sanitary latrines and changing behaviour patterns.

Secondary prevention

Effective drugs are available for the treatment of the human reservoir.

These are piperazine citrate syrup and tablets by orally 75mg/kg for 2 days.

Mebendazole

The dose is 100mg twice daily 3 days single dose orally.

Ferrous sulphate 50 to 150 mg is given orally for 3 months to anemia.

Dracunculiasis

Dracunculiasis or guinea worm disease is a vector borne parasitic disease mainly of the subcutaneous tissues. It is caused by *dracunculus medinensis*.

Incubation period

About 2 months.

The larvae enter by subcutaneous tissue mainly of the legs and other parts of body including head and neck. The larvae may remain active in water for 3-6 days. They are picked up by small fresh water crustaceans called Cyclops. The larvae require period of about 15 days for development in Cyclops. The incidence for peak transmission in dry season March to May. Wells are the source of water supply after rains. June to September transfer to ponds. Larval temperature to develop 25 to 30°C.

Mode of Transmission

The disease is transmitted through consumption of water containing Cyclops.

Clinical features

Dermatitis, puffiness of face, loss of appetite, vomiting, diarrhea, abdominal loss of weight, blister appears and redness, nervousness.

Prevention and Control

1. Primary prevention: provision of safe drinking water.(eg: piped water, installation of hand pumps.)
2. Control of Cyclops by adding disinfect agents like bleaching powder, chlorine tablets.
3. Using the filters to purify the water and boiling etc.
4. Educating to follow sanitary methods of sanitary latrines and environment sanitation.
5. Personal hygiene protection and contamination to prevent.

Secondary prevention

The effective drugs to take albendazole 400mg alternatively 3 days orally.

Mebendazole 500mg orally 2 days.

Leprosy

Leprosy(hansen's disease) is a chronic disease. There is no racial immunity against it, but it is more frequently in those persons who are exposed to the disease in early life.

It is mainly affects the peripherak nerves, it also affects the skin, muscles, the eye, bones testis and internal organs.

Incidence**Causative Organism**

It is known as leprosy bacillus or microbaterium leparae. Varieties of leprosy it is divided into two main types.

Types of leprosy**(a) Infective leprosy**

It is known as lepromatos leprosy in which organisms are shed out from the nose, throat and skin of the patient. It is also known as multibacillacy leprosy.

(b) Non infective leprosy:

It is also known as neural or non-lepromatous leprosy. Which is again divided into two types.

1. Leprosy with patches on the skin.
2. Leprosy without patches on the skin paucibacilly leprosy.

Incubation period

This period is not yet determine but it is long incubation period, and average of 3 to 5 years or more for lepromatous cases.

Causative factors

1. Agent or Causative Organisms

It is caused by "microbacterium leprosy". The organism is now grown in the foot pads of mice and in the anteater.

2. Source of infection

Cases are only the source of infection.

3. Infective material

Nose, throat section and skin discharges. Articles used by the infectious patients.

4. Age

It affects all age group people.

5. Sex

More common in men than women.

6. Social factors

Poverty, ignorance, illiteracy poor feeding, poor hygiene, and poor sanitation.

7. Genetic factors

Genes transmit the disease from generation to another generation.

Signs and Sympoms

1. Onset of disease is gradual and the patient may have malaise, headache, chilliness, mental depression and numbness of the body, where disease later makes its appearance.
2. Lesions patched are see on the skin, which are present in the form of macules, papules, and nodules.
3. These involve peripheral nerves with consequate anesthesia.
4. Muscles become weak and paralysis occur, patients suffers from trophic changes in the skin, muscles and bones.
5. In lepromatous leprosy, the membranes of the upper respiratory that are also usually involved.

Mode of Transmission

The mode of transmission of leprosy has not been established with certainty the following theories are frequently.

- (a) Droplet infection- The respiratory tract as the portal of entry.
- (b) Contact transmission- Leprosy is transmitted from person to person by close contact between an infectious and healthy person.
- (c) Other routes like through broken skin or tattooing needles, insect, vectors.

Test for detecting

Testing for loss of sensation for heat, cold pain, and touch in the skin patches by with needle. It cannot be emphasized that not all the hypopigmented patches show sensory impairment.

Paresis or paralysis of the muscles of the hands and feet leading to the disabilities or deformities.

Lepromin Test

The test is performed by injecting intra dermally 0.1ml of lepromin into the inner aspect of the forearm is read in 48 hours and 21 days. An inflammatory response within 24 to 48 hours tends to disappear after 3 to 4days. If is evidenced by redness and induration at the site of inoculation if the diameter of red area is more than 10mm at the end of 48 hours the test is positive.

Treatment for adult multibacillary case of leprosy is multi drug therapy

1. Rifampicin- 600mg, once in a month given under.
2. Dapsone- 100mg. daily - self administer.
3. Clofazimine- 300mg. once in a month, and 50 mg daily self administered.

This treatment should be for 12 months.

Paccibacillary leprosy

Treatment Rifampicin-600 mg once in a month for 6months supervised.

Dapsone – 100mg of body weight daily for 6 months , self administer.

vaccination the value of B.C.G vaccination is not known.

Specific Treatment

1. Patient may be treated with oil of choulmogra hydrocarpate of sodium and morphate sodium.
2. Penicillin and streptomycin are useful in controlling secondary infections.
3. Isonizide and other drugs are under evaluation 100mg/orally.

4. New group of sulphone drugs such as dapsone 100 mg-orally.
Rifampicin 600mg.

Domiciliary care of leprosy patient

- Teach the patient and family about the nature of disease, isolation of the patient and need for regular treatment of the patient.
- Instruction should be given about keeping the eating and drinking utensils of the patient separate.
- Follow up of patients during and after completion of chemotherapy.
- Finding of more cases in the family and in the community during home visit.
- Demonstration of nursing care.
- Advice the family on general sanitation, prevention of over crowding and family planning.

Educate the patient about

- Leprosy is a curable disease.
- Leprosy is a preventable disease.
- Leprosy is a disease like other disease.
- Leprosy is not the result of divine curse.
- Patients need sympathy and understanding.
- Help the patient to take regular treatment.

Prevention and Control measures

1. Provision of domiciliary multi drug treatment [MDT course].
2. Children must be separated from the infected person.
3. In endemic areas, infants should be separated from leprous parents at birth.
4. Marriages of leprosy cases may be postponed until the case to be non infectious.
5. In religious places, fairs, big cities etc. discouragement giving alms to the lepers, because it will encourage lepers for begging and also spreading infection. Only organized charity meant for the benefit of leprosy should be allowed.
6. Lepers should not be allowed to roam about the streets to handle food or keep shop or wander about in the cities or villages as peddlers, mendicants or beggars because it will spread infection.
7. Facilities should be made available for diagnosing surveying and treating leprosy.
8. Educate people about the dangers of this disease direct them for check up and try to remove of false beliefs, about the disease, to enable them to take treatment of this disease in time.
9. Socio- economic rehabilitation of the sufferers.
10. Educating the people to identify the leprosy signs and symptoms to early detection.

Control Measures

1. Report about the patient to health, authorities at once.
2. All those patients who are infectious must be admitted in the hospitals or colonies for isolation and treatment until they become non infectious.

3. If hospitalization is not possible for long period then they must be treated until their clear heads and then allowed to go home and continue isolation at home. But their parents must be checked periodically(at least every 6 month).
4. The care givers should be covered with masks and gloves before dressings procedures.
5. Infants must be separated from leperous patient at birth.
6. Surrounding of the patient must be kept clean.
7. Discharges from lesions should be collected and disinfect before destroying them. Articles contaminated with discharges like bleeding and secretions, through cleaning and disinfection of the living premises of the patient must be done as terminal disinfection.
8. All using instruments must be kept in sunlight.
9. All the waste material discarded and incinerated.
10. Though the long and uncertain incubation period do not help in discovering the source of infection but efforts should be made to find out the source of infection and contacts. Periodically examination of contact will help in finding out secondary cases- Investigation should be undertaken in cases.
11. Institutional treatment, diagnosis, check up facilities should be available in the endemic areas.
12. Government should exercise international right to refuse entry to immigrants who are found to have leprosy in their country.
Rehabilitation of patients physically, mentally and socially.
 - Establishment of colonies for people.
 - Provide occupational therapy.Health education to patient, family and community regular treatment, protection of children.
 - Family planning.

SUMMARY

Lakhs of people are suffering from one or other communicable diseases in India. They spread easily from person to person through different ways. If received correct treatment and isolation measures to prevent and control communicable diseases. Simple health educational measures helps to prevent the occurrence of communicable diseases.

Knowledge about communicable diseases is very essential to MPHW(F) to prevent the occurrence of different communicable diseases in her area.

SHORT ANSWER TYPE QUESTIONS

1. Define communicable diseases?
2. Name the diseases spread by mosquitoes?
3. Name the causative organism of 'Tetanus'?
4. List out the agent, host and environmental factors of diphtheria?
5. What is the vaccine to be given to Rabies?
6. What is meant by Diarrhea?
7. Expand O.R.S.?

LONG ANSWER TYPE QUESTIONS

1. Describe about malarial diseases?
2. Write about signs and symptoms and care of T.B patients?
3. Explain about preventive and control measures of HIV/Aids?
4. Write in detail about poliomyelitis?
5. Write about prevention and control of diarrhoea?

UNIT XV- OCCUPATIONAL HEALTH

Definition

List the occupational diseases

Prevention of occupational hazards

Role & responsibilities of MPHWF in prevention of occupational diseases

Introduction

In new modern societies, focussing on occupational health is very important. Industrial workers constitute only a segment of the general population and the factors that influence the health of the population also apply equally to industrial workers. The factors influencing are housing, water, sewage, waste disposal, nutrition and education.

Definition

It is defined as Occupational Health should aim at the promotion and maintenance of the highest degree of physical, mental, social wellbeing of workers in all occupations.

List the occupational diseases

Diseases occur in the course of occupation or employment or work.

1) Diseases due to physical agents

- a) Heat: Heat hyperpyrexia, heat exhaustion, heat syncope, heat cramps, burns and local effects
- b) Cold: Frost bite, chil blains and trench foot.
- c) Light: Occupational cataract, miners nystagenus
- d) Pressure: Air embolism, blast
- e) Noise: Occupational deafness
- f) Radiation: Cancer, Leukaemia, Aplastic Anaemia
- g) Mechanical factors: Injuries, accidents
- h) Electricity: Burns, shock

2) Diseases due to chemical agents

a) Gases: CO₂ (Carbon dioxide), CO (Carbon monoxide), HCN, CS₂, NH₂, N₂, H₂S, HCl, SO₂. These causes gas poisoning.

b) Dusts:

- (i) Coal dust: Anthracosis
- (ii) Silica: Silicosis
- (iii) Asbestors: Asbestosis, Cancer lung
- (iv) Iron: Siderosis
- (v) Canc fibre: Bagassosis
- (vi) Cotton dust: Byssinosis
- (vii) Tobacco: Tobacosis
- (viii) Hay or grain dust: Farmers lung
- (ix) Metals and their compounds: Lead, Mercury, Manganese causes toxic hazard
- (x) Chemicals: Acids, Alkalis and Pesticides

3) Diseases due to biological agents

Brucellosis, Leptospirosis, Anthrax, Actinonycosis, Hydatidosis, Psittacosis, Tetanus, Encephalitis, Fungal infections

4) Occupational Cancers

Cancer of skin, lungs, bladder

5) Occupational Dermatoses

Dermatitis, Eczema

6) Diseases of psychological origin

Industrial neurosis, Hypertension, Peptic ulcer

Prevention of occupational hazards

Industrial or factory workers are exposed to 5 types of hazards based on their occupation.

- a) Physical hazards
- b) Chemical hazards
- c) Biological hazards
- d) Psychological hazards

a) Physical Hazards: Produced by excess heat and cold, light, noise, vibration, ultraviolet radiation, ionizing radiation.

- b) Chemical hazards: Dermatitis, allergic reactions, cancer.
- c) Biological hazards: Brucellosis, Leptospirosis, Anthrax, Hydatidosis, Tetanus etc. these are same as occupational diseases.
- d) Psychological hazards: Fatigue, Frustration, lack of job satisfaction, insecurity, poor human relationships, emotional tensions.

Occupational hazards of agricultural workers

It is a new concept. It includes,

- a) Zoonotic diseases: Due to close contact of the animals or their products, increases, causes Brucellosis, Anthrax, Leptospirosis, Tetanus, Tuberculosis.
- b) Accidents: Because of use of agricultural machinery causes accidents are more common.
- c) Toxic hazards: Use of fertilizers, insecticides or pesticides causes toxic effects. Other hazards include malnutrition, parasitic infestation, poisoning etc.
- d) Physical hazards: Inadequate ventilation, uncomfortable positions for long periods of time.

Accidents in industries

Workers may prone to get accidents, due to the following conditions.

- 1) Human factors: which includes,
 - a) Physical factors: Inadequate qualification, lack of proper vision.
 - b) Physiological factors: includes women will get more accidents.
Age: Younger age persons prone to get more accidents.
Experience: Inadequate or insufficient experience causes more accidents.
 - c) Psychological factors include carelessness, inattentiveness, over confidence, slow celebratory ignorance, inexperience, emotional stress and accident proneness.
- 2) Environmental factors: Humidity, Poor illumination, temperature causes accidents.

Prevention of accidents

- Adequate preparation
- Adequate job training

- Continuing education
- Ensuring safe working environment
- Establishing safety department
- Periodic examination
- Careful reporting

Prevention of occupational hazards

- 1) Provide health promotional measures
- 2) Ensure specific protection
- 3) Protecting patients undergoing X-ray
- 4) Provide gloves, goggles, mask, different diseases.
- 5) Early diagnosis and treatment
- 6) Rehabilitation services
- 7) Replacement of job

Apart from this, prevention of occupational diseases.

- a) Medical measures: Replacement of examination of worker before joining into the duty. It involves conducting some tests. Eg: Chest X-ray, Electro Cardio Gram (ECG), vision testing, urine and blood examination.
- b) Periodic examination: The frequent examination is needed.
- c) Medical and health care services: Provide diagnostic and treatment facilities. Immunization and first aid services.
- d) Notification: It is to provide measures for prevention and protection services.
- e) Supervision of working environment: Such as temperature, lighting, ventilation, humidity, noise, cubic space, air pollution and sanitation.
- f) Maintenance of records: Proper records should be maintained. The workers' health record should be maintained. It is also helpful to prevent disability conditions.
- g) Health education and counselling:
 - It should be start before the worker enters the factory.
 - Measures for personal protection
 - Correct use of protective devices.
 - Simple rules of hygiene like Hand washing, Caring of the nails, bodily cleanliness, cleanliness of clothes, should be impressed upon him.
 - Frequently reminded dangerous in industry.
 - Use health education media like charts, posters and handbills.
 - Health education helps the worker helps to adjust the working, home and community environment.
 - The design of the building i.e., the type floor, walls heights, ceiling, roof, doors and windows, cubic space all are in such a that to prevent the occupational diseases.

- Good housekeeping is necessary i.e., general cleanliness, ventilation. Lighting, washing, food arrangement to prevent occupational hazards.
- Good general ventilation, efficient exhaust ventilation is needed to decrease the airborne diseases.
- Machines are in such a way that prevents the accidents and hazards.
- Instead of using harmful substances, use harmless substances.
- Dust can be controlled by water sprays use of dust free resources.
- Enclosing the harmful materials and processes will prevent the escape of dust and fumes.
- Isolation of offensive process in a separate building.
- Use of protective devices like ear plugs, ear muffs, helmets, safety shoes, aprons, gloves, gumboots, barrier cream, screens and goggles.
- Employees should provide benefits like
 - a) Medical benefit
 - b) Sickness benefit
 - c) Maternity benefit
 - d) Disablement benefit
 - e) Dependent benefit
 - f) Funeral expenses
 - g) Rehabilitation allowances

Role & responsibility of MPHWF in prevention of occupational diseases

- Pre-employment examination is done by MPHWF as an occupational health nurse. Eg: checking of height and weight, vision test, HB examination, urine examination and general physical examination.
- She should do periodical examination for every 6 months.
- She should provide first aid and immunization services.
- She should provide Crèche services.
- Maintain health record of each individual worker.
- She should provide health education and counselling services.
- She should educate the importance of use of protective devices.
- She should provide good environmental condition.
- She should explain the use of employee benefits.

SUMMARY

Occupational health is an important in the life of the workers. Workers of different fields will expose to different occupational hazards and diseases. MPHWF who is working in industries should mainly concentrate in prevention of occupational hazards.

SHORT ANSWER TYPE QUESTIONS

- 1) Define occupational health?
- 2) List out the occupational diseases?

LONG ANSWER TYPE QUESTIONS

- 1) Explain role and responsibility of MPHWF in the prevention of occupational hazards?

UNIT XVI- DISASTER MANAGEMENT

Concept & Definition

Types and Management of disasters

Role and responsibilities of MPHWH (F) in disaster management

Introduction

Emergencies and disasters do not only affect health and wellbeing of people. Large number of people are displaced, injured and killed. Disasters occur anywhere in the world and at any time.

Definition

It is defined as any occurrence that causes, damage, ecological disruption, loss of human life or deterioration of health.

Types of disasters

Many types of disasters are there. They are

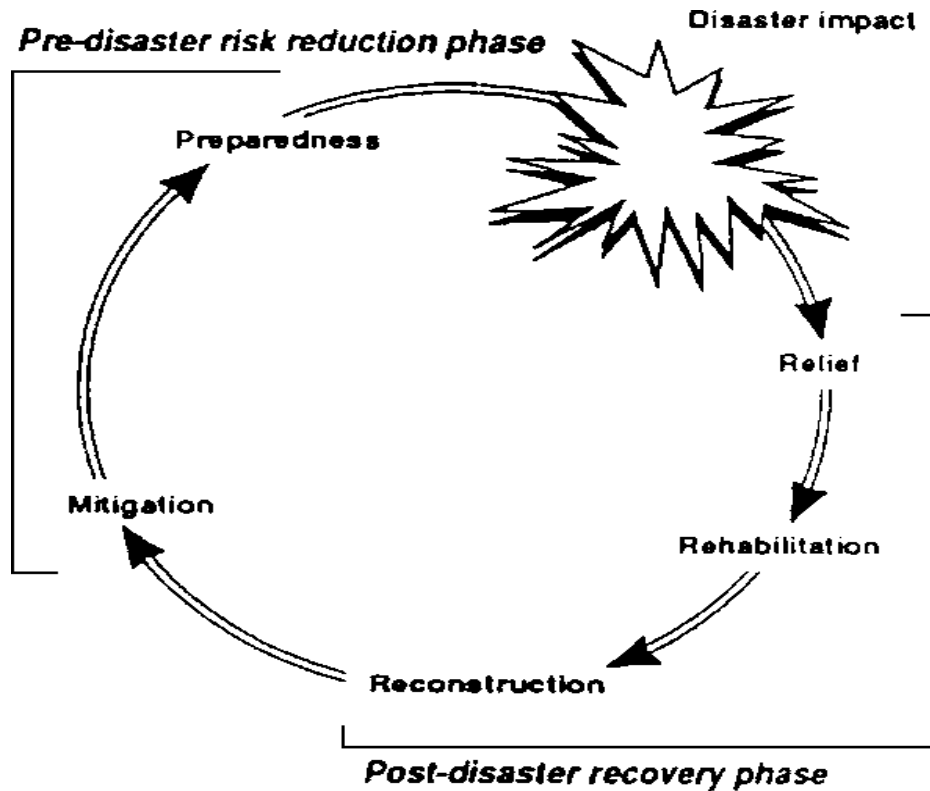
- 1) Earthquakes
- 2) Cyclones, floods, tidal waves
- 3) Land slides, volcanic eruptions
- 4) Tornadoes, fires, hurricanes, snow storms
- 5) Severe air pollution (smog), heat waves
- 6) Famines, epidemics, building collapses
- 7) Toxicological collapse, nuclear accidents warfare

Management of disasters

Mainly 3 basic aspects of disaster management.

- a) Disaster response
- b) Disaster preparedness
- c) Disaster mitigation

These three stages are called as Disaster Cycle



Disaster impact and response

- Due to sudden disaster, more number of injuries occurred.
- They need immediate medical treatment and emergency care of mass casualties.
- This includes search and rescue, first aid, triage and stabilization of victim's hospital treatment and redistribution of patients to other hospitals.
- Relief phase: This starts from when help from outside starts to reach the disaster.

Rehabilitation

- It is restoration of pre disaster conditions.
- It starts from the first movement of disaster.
- It includes water supply, food safety, basic sanitation and personal hygiene, vector control.

Disaster preparedness

- It is to ensure that appropriate systems, procedures and resources are in place to provide prompt effective help to disaster victims.

Disaster mitigation

- It prevents hazards from causing emergency or to lessen effects of emergencies. It includes food mitigation works, appropriate land use, planning, improved building codes and protection of vulnerable population.

Personal protection in different types of emergencies

- Do not use the telephone, only to call for help.
- Listen to the messages by various media.
- Carry out the official instructions.
- Keep family emergency kit.

Roles and responsibilities of MPHWS (F) in disaster management**Floods**During Floods

- Turn off the electricity
- Protect people and property
- Be aware of water contamination.
- Evacuate danger zones as ordered by the local authorities.

After floods

- Wait until the water declared safe before the drinking
- Clean and disinfect any room that has been flooded.
- Wash thoroughly all kitchen utensils.
- Throw away all canned foods and foods kept in refrigerators.
- Keep aside all consumables (drinks, medicines, cosmetics etc)

Earth quakesDuring earth quakes

- Keep calm, do not panic.
- Keep away from the stairs
- People who are indoors should stay there but move to the central part of the building.
- People who are outside should stay there.
- Keep away from buildings to avoid collapsing walls and away from electric bulbs.
- If a person is in a vehicle, stop driving, keep vehicle away.

After earth quakes

- Listen and follow instructions
- Do not enter into the damaged building
- Give first aid to the injured people.
- Keep emergency packages.
- Make sure that water is safe to drink and food stored at home is fit to eat.

SUMMARY

Disasters occur suddenly and it causes damage to the health and wealth. Disasters, sometimes are manmade. Disasters are different types. It should be managed by using different actions.

SHORT ANSWER TYPE QUESTIONS

- 1) Define disaster?
- 2) List the types of disasters?

LONG ANSWER TYPE QUESTIONS

- 1) Explain about disaster management?
- 2) Describe role of MPHWS (F) during and after floods?

BIBLIOGRAPHY

- 1) Park's Text Book of Preventive and Social Medicine by K. Park, 24th Edition.
- 2) Multipurpose Health Worker (F) Text Book by Smt B. Suhasini, M.Sc. (N) published by State Institute of Vocational Education, A.P., and Board of Intermediate Education, 2012.
- 3) Essentials of Community Health Nursing by K. Park, 5th Edition
- 4) Text Book of Communicable Diseases by Dr. K. Raghava Prasad, M.D., and Dr. Y. Srihari Rao, M.D., Telugu Academy, 2000
- 5) www.google.com

MULTI PURPOSE HEALTH WORKER

Paper - II

HEALTH PROMOTION

INDEX

Unit - 1	Essential Nutrients	157
Unit - 2	Nutritional Problems	166
Unit - 3	Nutritional Assessments	177
Unit - 4	Promotion Of Nutrition	181
Unit - 5	The Human Body	188
Unit - 6	Mental Health	221
Unit - 7	Mal Adjustment	236
Unit - 8	Mental Illness	239
Unit - 9	Geriatric Nursing	247
Unit - 10	Counselling And Guidance	253

**MULTIPURPOSE HEALTH WORKER (V) I YEAR SYLLABUS
THEORY PAPER-II
HEALTH PROMOTION**

A.NUTRITION**1. ESSENTIAL NUTRIENTS****6-13**

1.Introduction, 2. History of Nutrition, 3. Concepts of Nutrition,4. Keywords, 5. Essential Nutrients, 6. Importance of Nutrition in Health & Sickness, 7., Essential Nutrients by Functions, Sources & Requirements for Different Age Groups, 8. Classification of Foods & Their Nutritive Value Balanced Diet for Different Age Groups, 9. General Dietary Guidelines.

2. NUTRITIONAL PROBLEMS**14-23**

1.Nutritional deficiencies,2. correction, treatment and referral anemia, in women 3.The role of MPHWF in planning supplementary foods 4. Special diets of individuals for different age group,

3. NUTRITIONAL ASSESSMENT**24-27**

1.Methods of nutritional assessment of individual and family mother and child ,2. food fads, taboos customs and their influences on health

4. PROMOTION OF NUTRITION**28-35**

1.Life style and food habits ,2. Planning diets and special diets for a family -3. methods of using locally- 4. available foods for special diets -5. principles and methods of cooking 6. Promotion of kitchen garden -7. Food hygiene and safe preparation storage and preservation –8. Food adulteration precautions during festivals and Melas

B.PHYSICAL AND MENTAL HEALTH**5.THE HUMAN BODY****36-71**

1.Structure and functions of the human body 2. Body systems and their functions-Digestive system,3. Respiratory system,4. Genito urinary system,5. Cardio vascular system,6. Nervous system.7. Musculoskeletal skeleton system, 8.Endocrine system,9.Special sensory organs

6.MENTAL HEALTH**72-88**

1.Concept of mental health-Body mind relationship-factors influencing mental health
2.Characteristics of a mentally healthy person,3.Developmental tasks of different age groups,
4.Mental health services 5.Different defense mechanisms-Emotions 6.motivation7.Learning
8.Memory9.Thinking

7.MAL ADJUSTMENT:**89-91**

1.Features of a mal adjusted individual-Common causes for mal adjustment,2.Relevance of Adjustment to Nursing

8.MENTAL ILLNESS**92-100**

1.Definition,2. Mis-conceptions about mental illness,3. Symptoms of poor mental health,4. Causes of Mental illness,5. Classification of Mental Illness:6. Types of Mental Disorders,7. Treatment of the Mentally ill:8. Abnormal Behaviour,9. Psychiatric Emergencies.

9.GERIATRIC NURSING**101-107**

1.Definition,2. Aging process and changes,3. Healthassessment of Elderly,4. National policy on Elderly,5. Nurses Responsibilities.

10.COUNSELLING AND GUIDANCE**108-110**

1.Definition of Guidance,2. Characteristics,3. Types of Guidance,4. Counselling,5. Goals of Counselling:6. Principles,7. Process of Counselling:8. Counselling skills,9. Characteristics of Counsellor,10Types of Counselling,11Role of Nurse in Counselling.

MULTI PURPOSE HEALTH WORKER(F)**I YEAR****THEORY PAPER-II****HEALTH PROMOTION****Allotted Hours-135****Learning Objectives**

1. To know the definitions & terms involved in understanding the science of nutrition
2. Explain importance of nutrition in health & sickness
3. Promote nutrition of an individual, family, community.
4. Describe the importance cognitive aspects of the individual
5. Describe the balanced diet in promotion of health.
6. Apply this knowledge in providing Therapeutic diet in care of the sick
7. Domestic skills in selection, preparation & preservation of food
8. To highlight the importance of food faddism & faulty food habits.
9. To through light on the nutritional problems in India.
10. Describe the structure & function of the body.
11. Promote Mental health of family & community

A.NUTRITION**Introduction:**

In ancient time, even before the dawn of civilization, human beings believed in live to eat or eat to live notion because probably, these were the first & fundamental lessons they could learn from the experience of existence & survival. According to Maharshi Charaka, the sage & physician of ancient times, emphatically observed- The body is the outcome of the food", the distinction between ease & disease arising, totally or Partially, due to faulty food or diet

History of Nutrition:

The science of nutrition is relatively a youngster in the scientific community & Isrecognized: as a distinct discipline only in 1934. It emerged only after the development of the other branch of science like chemistry, biology, etc.

The history of nutrition is divided into four eras:

- Naturalistic era (400 BC to 1750 AD)
- Chemical-analytical era (1750 to 1900)
- Biological era (1900 to 1955)
- Cellular or molecular era (1955 to present).

Human has evolved as omnivorous hunter-gatherer over the past 25Q,000 years. The diet of early modern humans varied significantly depending on location & climate. The diet in the tropics tended to depend more heavily on plant foods, while the diet at higher latitudes tended

more toward animal products. Agriculture developed about 10,000 years ago in multiple locations throughout the world, providing grains, farming also provided milk & dairy products, sharply increased the availability of meats & diversity of vegetables.

Concepts of Nutrition

- We eat food to live, to grow, to keep healthy & well & to get energy for work & play.
- when-nutrient mixed with other nutrients they do their best for individual.
- Every nutrient has its specific role in body to perform.

Keywords:

Nutrient: A substance essential for the growth, maintenance, function & reproduction of a cell or of an organism.

Nutrition: The science of food & its relationship to health.

Micro Nutrients: Required in small amounts but play an important role in the regulation of metabolic activities, e.g., vitamins & minerals.

Macronutrients: Required in large quantity & form the bulk of our food e.g., proteins, fats & carbohydrates.

Malnutrition: Impairment of health resulting from a deficiency, excess or imbalance of nutrients

Lipid: A small water insoluble biomolecule generally containing fatty acids, sterols or isoprenoid compounds.

Carbohydrates: Polyhydroxy aldehydes or polyhydroxy ketones or substance that yield such compound or hydrolysis

Proteins: A macromolecule composed of one or more polypeptide chain, each with a characteristic sequence of amino acids like peptide bonds.

Vitamins: An organic substance required in small quantities in the diet of some species, generally functions as a component of a coenzyme.

Energy: Capacity to do work.

Food taboos: Religion based food habits like vegetarianism in Hindu society & prohibition of pork in Muslim society.

Fluorosis: Fluoride toxicity.

Lathyrism: Paralyzing disease of human & animals by consuming "Khesari Dal"

Protein energy malnutrition (PEM): A wasting condition resulting from a diet inadequate in either protein or energy or both.

Obesity: The generalized accumulation of excess adipose tissue in the body

Balance diet: A diet containing all essential (macro & micro) nutrients in optimum quantities & in appropriate proportions that meet the requirements

Calorie: Unit used to indicate the energy value of foods. Quantitative requirements are expressed in terms of energy i.e. kilo calories (Kcals) unit for energy in K joules.

Basal metabolic rate (BMR): It is the rate of metabolism when an individual is at complete rest in a warm environment & is in post absorptive state (12 hours after taking a meal).

Digestion: Digestion Is the mechanical & chemical process of breaking down food into its smaller molecules, which can then be absorbed into the blood stream.

UNIT-1**ESSENTIAL NUTRIENTS****Importance of nutrition in health & sickness****Essential nutrients****Essential Nutrients by Functions, Sources & requirements for different age groups****Classification of foods & their nutritive value****Balanced Diet for different age groups****General Dietary Guidelines****Importance of nutrition in health & sickness***1.1.1 Role of food:*

- Promotes health & prevent diseases.
- Treats & control disease condition.

Food in the Prevention of Disease:

If a person takes balanced diet, i.e. the right kind of foods in the required amounts, he or she will maintain good health provided no other factors intervene. Contrary to this, poor eating habits or eating too much or too little will result in poor health. Malnutrition is like two sides of the same coin.

- Reduced intake of food for specific nutrients leads to nutritional deficiency disorder such as PEM, vitamin A deficiency or anemia.
- It may lead to degenerative diseases. Fibers have a valuable role to play in the prevention of disease.

Food as Therapy

Food as a whole & nutrients alone in medicinal form (oils, syrups, capsules & tablets) are used to treat disease. Diet is an important part of treatment for patients with metabolic disorders such as diabetes. Special dietary modification is often necessary to maintain the lives of patient who have chronic kidney disease, heart, liver & gastrointestinal disorders. Similarly, dietary modifications are also essential in other situations such as burns, bone fracture & in surgical conditions. Deficiency of a single nutrient is rare. If it does exist, it can be corrected by adding the specific nutrient through the diet or supplementation.

Diseases that are not directly related to food & nutrients, for example chicken pox, measles, malaria, infectious diseases, etc. Similarly, high intake of fats, especially saturated fats & cholesterol is believed to be a cause of deposition of fats in arteries which leads to narrow of the vessels also known as atherosclerosis, a leading cause of cardiovascular diseases. In such diseases diet cannot cure the disease but can prevent the progression & prevent associated

complications. Thus, diet therapy helps patient lead a quality life, without which the disease can become uncontrolled. Mild conditions can be controlled by diet alone.

Role of nutrition in maintaining health

- Good rich in nutrient values provides individual strong immunity to fight against various dreadful diseases like tuberculosis
- Good nutrition is important for optimal growth & development of Child
- There are so many diseases which are directly or indirectly related to food & nutrition of individual such as diabetes, mellitus, coronary heart diseases, renal diseases, etc.
- There are so many deficiency diseases caused by poor nutrition called nutritional deficiency diseases protein-energy malnutrition, goiter, anemia, blindness
- our lifestyle with proper nutrition, health habits & exercise program will affect our health & will reduce medical care expenditures.

Essential nutrients

There are 6 essential Nutrients

- Carbohydrates
- Proteins
- Fats
- Vitamins
- Minerals
- Water

Essential Nutrients by Functions, Sources & requirements for different age groups

Table 1.1 Essential Nutrients their functions, sources & their requirements

S. No	Essential Nutrients	Functions	Sources	Requirements
1.	Carbohydrates	<ul style="list-style-type: none"> • Chief source of energy 	starches, Sugars	300-400gms per day
2.	Proteins	<ul style="list-style-type: none"> • Developing of new tissues. • Repair & maintenance of body tissues • Synthesize hemoglobin enzymes 	Milk, Milk Products, Dry fruits, Eggs, meat, Fish	1.5-2 gm/kg body weight in case of children & lactating women.
3.	Fats	<ul style="list-style-type: none"> • Increase flavor & taste of food • Absorption of fats & soluble vitamins(ADKE) • Provide support for internal vital 	Ghee, Butter, Fish, oils, Coconut oil	10-20gms /day Young Children need 25% extra amount of fat

		organs • Prevent heat loss from the body		
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Table 1.2 Essential Nutrients (Vitamins fat soluble) their functions, sources & their requirements

Vitamin Fat Soluble:	Functions	Sources	Requirements
Vitamin A	Vitamin A(Retinol): Helps in vision	Vitamin: Carrot, papaya, Milk& eggs.	Adult:750µg Infants 300-400µ g Children 400-600µ g Pregnancy 750+400µ g Lactation 750+400µ g
Vitamin D	Vitamin(Cholecalciferol): Increasesintestinalabsorbtion, Mineralization of Bones & teeth.	Vitamin D: Fish& cod liver oil.	Infants & children 10µg Adults 7.50µg Pregnancy&lactation 15µg
Vitamin E	Vitamin E (Anti sterility Vitamin): Prevent& delay aging process	Vitamin: Oils, Eggs, Meat	10mg
Vitamin K	Vitamin K (Antihemorrhage) vitamin): Helps in clotting	Vitamin K: Green leafy vegetables, Cereals Fruits	30mg

Table 1.3 Essential Nutrients (Vitamins Water soluble) their functions, sources & their requirements

Vitamin water Soluble:	Functions	Sources	Requirements
VitaminB ₁	VitaminB ₁ (Thiamine):Maintenance of good appetite& digestion.	Meat,Eggs, cereals, nuts.	Children: 0.5-1.0mg
VitaminB ₂	VitaminB ₂ (Riboflavin):Helps in protein,fat,carbohydrate metabolism	Green leafy vegetables,liver.	2mg
VitaminB ₄ :	VitaminB ₄ (Niacin):Helps in Normal functioning of skin & nervous system.	Yeast,Germinating seeds	10-15mg
VitaminB ₆	VitaminB ₆ (Pyridoxine):Helps in metabolism of amino acids.	Wheat,legume.	1.5mg
VitaminB ₁₂	VitaminB ₁₂ (Cyanocobalamin):Necessary for DNA synthesis & RBC production.	Liver,Meat.	Children-0.2-1.0µg Adults,

			Pregnancy & lactation: 1.0µg
Vitamin C	Vitamin C: Wound Healing, anti-Oxidant	Citrus Fruits	Infants :20mg Children:40mg Adults:40mg Pregnancy & lactation:80mg

Table 1.4 Essential Nutrients (Minerals) their functions, sources & their requirements

Type of Mineral	Functions	Sources	Requirements
Calcium	<ul style="list-style-type: none"> Formation & maintenance of bones & teeth Coagulation of blood 	Fish, Milk, Dry Fruits	Children & adult-400-500 mg. Pregnant & lactation: 1000 mg
Phosphorus	<ul style="list-style-type: none"> Helps in regulation of Ph of blood & urine. Gives rigidity to bones & teeth 	Meats, poultry, fish	Adults: 2.5-5 mg Children: 5-6mg
Sodium	<ul style="list-style-type: none"> Maintenance of body fluids Smooth functioning of nerve muscles, & body cells 	Common salt	Min-1-2 gm Average: 8-10gm
Potassium	<ul style="list-style-type: none"> It constitutes an important cation of the body 	Goa, Citrus fruits	2-5 gm
Iron	<ul style="list-style-type: none"> Helps in oxygen transport & cellular respiration 	Liver, Meat, Fish	Children & adult-20mg, 25-30mg, Infants-1mg. Pregnancy & lactation-40 mg
Iodine	<ul style="list-style-type: none"> For synthesis of thyroid hormone T₄ & T₃ 	Sea foods, sea Fish	0.12-0.15 mg
Fluorine	Essential for normal mineralization of bones & formation of dental cement	Drinking water, Sea fish	0.5-0.8mg per liter in water
Water	It acts as a carrier of nutritive elements to tissues & removes waste material from tissues	River water, Lakes, Canals. Rain water	Four-Five liters per day

Classification of foods & their nutritive value

Classification of foods is mainly four types

1. By its origin
2. By chemical composition
3. By Predominate functions

4. By Nutritive value

By its origin two types**Food of animal origin**

1. milk & milk products
2. animal foods -meat,fish,& eggs
3. fats & oils

Food of Plant Origin

1. Cereals & Millets
2. Pulses
3. Nut & Oil Seeds
4. Vegetables
5. Fruits
6. Sugar & Jaggery
7. Condiments & Spices
8. Miscellaneous Food Beverages

By its chemical composition

1. Carbohydrates
2. Proteins
3. Fats
4. Minerals
5. Vitamins
6. Dietary fibers
7. Water

By its predominant functions

1. Energy yielding foods :Rich in carbohydrates, Fats eg:Cereals,Sugars,oils
2. Body building foods: Rich in proteins Eg: Milk& milk products, Pulses& meat
3. Protective foods: Rich in vitamins & minerals Eg: Milk, egg, green leafy vegetables, Fruits

By Nutritive value**Table 1.5 Classification of foods & their examples**

S. No	Foods	Examples
1.	Cereals Millets	Rice, Wheat, Maize, Ragi
2.	Pulses	Peas, Beans
3.	Nuts & Oil Seeds	Groundnut, Coconut, Cashewnut
4.	Vegetables	Green Leafy Vegetables
5.	Fruits	Apple, Banana
6.	Milk & Milk Products	Butter, Ghee, Cheese
7.	Animal Foods	Meat, Fish, Egg
8.	Fats & Oils	Fish liver Oil
9.	Sugar & Jaggery	Sugar & Jaggery
10.	Condiments & Spices	Pepper, Clove, Turmeric
11.	Miscellaneous	Coffee, Tea, Soft Drinks

Balanced Diet for different age groups

A healthy diet is one that helps to maintain or improve overall health. A healthy diet provides the body with essential nutrition: fluid, adequate amino acids from protein, essential fatty acids, vitamins, minerals, fiber & adequate calories.

Table Summary of RDA for Indians given by ICMR in 2000

GROUP	CATEGORY	Body Weight (kg)	Net Energy (Kcal/Day)	Viable			Vit A		Vitamin E	Niacin equivalent	Pyridoxine	Ascorbic acid	Dietary fibre	Vit B12	Magnesium	Zinc
				Proteins (g/day)	Fat (g/day)	Calcium (mg/day)	Iron (mg/day)	Retinol								
Man	Sedentary work		2320	25		600	17		12	14	15	40	200	1.0	340	12
	Moderate work		2750	60.0	30			600	14	16	18					
	Heavy work	60	3950		40				17	21	21					
	Sedentary work		1910	20		600	21		10	11	12					
Woman	Moderate work		2350	55.0	25			600	11	13	14	40	200	1.0		10
	Heavy work		2850	30					14	17	15				300	
	Pregnant women	55	+350	82.2	30	1200	35	800	+0.2	+0.3	+2	60	500	1.2		12
	Lactating 0-6m		+810	77.9	30				+0.3	+0.4	+4					
Infants	6-12 m		+520	70.2	30	1200	25	950	+0.2	+0.3	+3	80	300	1.5		
	0-6 months	5.4	50 kcal/kg/d	-	-	320	46µg/kg/d	-	0.2	0.3	210µg/kg	25	25	8.0	30	-
	6-12 months	8.4	80 kcal/kg/d	1.6g/kg/d	19		05	550	0.3	0.4	650µg/kg				45	-
	1-5 years	11.9	1050	16.7	27		02		0.5	0.6	8	30			50	5
Children	4-6 years	18.0	1350	20.1	25		13	400	0.7	0.8	11	100			70	7
	7-9 years	25.1	1650	29.5	30	620	15	600	0.8	1.0	13	40	120	0.2-1.0	100	8
	10-12 years	34.3	2150	39.9	35	800	21		1.1	1.3	15				120	9
	13-15 years	47.6	2750	54.3	45	800	32		1.4	1.6	15				165	11
Boys	16-17 years	55.4	3020	61.5	50	800	38		1.5	1.8	17	40	150	0.2-1.0	200	11
	18-20 years	69.1	2440	55.5	35	800	35	600	1.0	1.2	14	40	200	0.2-1.0	235	12
	21-25 years	75.0	2440	55.5	35	800	35	600	1.0	1.2	14	40	200	0.2-1.0	235	12
	26-30 years	75.0	2440	55.5	35	800	35	600	1.0	1.2	14	40	200	0.2-1.0	235	12

Figure 1.1 Balanced Diet for different age groups

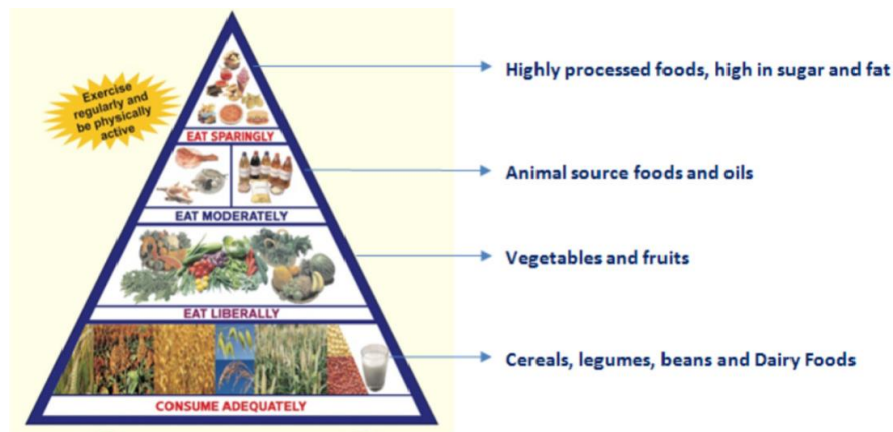


Fig 1.2: Food pyramid designed by ICMR

General Dietary Guidelines:

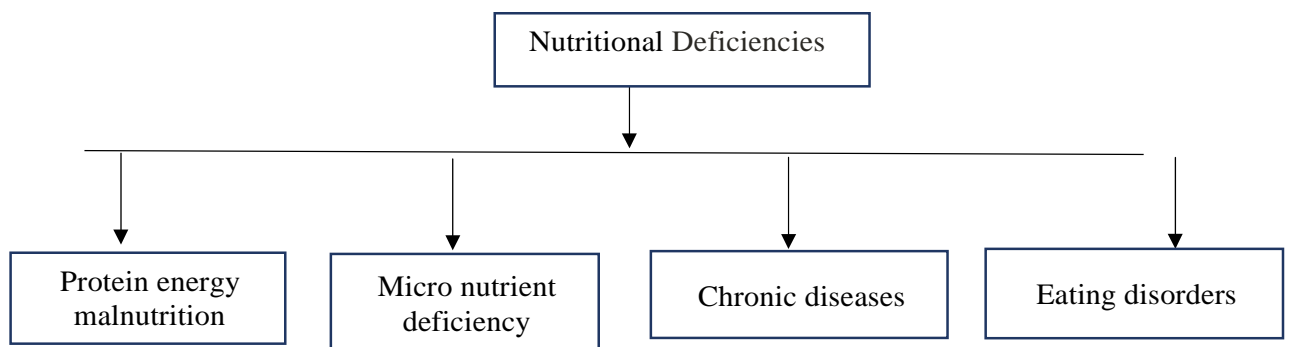
The following general dietary guidelines are suggested by ICMR to plan balanced diets.

- Eat variety of foods to ensure a balanced diet.
- Ensure provision of extra food & healthcare to pregnant & lactating women.
- Promote exclusive breastfeeding for six months
- Feed home based semi solid foods to the infant after six months.
- Ensure adequate & appropriate diets for children, adolescents
- Eat plenty of vegetables & fruits.
- Ensure moderate use of edible oils & animal foods & limit use of ghee/butter
- Avoid overeating to prevent overweight & obesity
- Exercise regularly & be physically active to maintain ideal weight
- Ensure the use of safe & clean foods

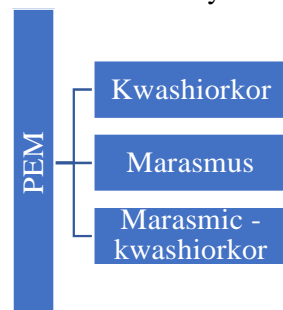
- Adopt right pre-cooking processes & appropriate cooking methods.
- Drink plenty of water & take beverages in moderation.
- Minimize the use of processed foods rich in salt, sugar & fat.

Review questions:

1. What is the importance of nutrition in Health and sickness?
2. Explain about the role of Nutrition in maintaining health.
3. Explain about the essential nutrients of the body.
4. Explain about various classifications of foods and their nutritive values.
5. Explain briefly about Balanced diet for different age-group

UNIT-2**NUTRITIONAL PROBLEMS****Nutritional Deficiencies in India****Anemia****Role of MPHWH in nutritional education****Special diets of individuals for different age groups****Nutritional Deficiencies in India****Protein Energy Malnutrition (PEM)**

- It refers to a form of malnutrition where there is inadequate protein & calorie intake
- It is considered as the primary nutritional problem in India
- PEM is due to the "food gap" between the intake & requirement
- Causes childhood morbidity & mortality

**Causes & risk factors:**

- Inadequate intake of food
- Diarrhea
- Respiratory infections

- Measles
- Intestinal worms
- Infants



& preschoolers

Contributory factors

- Poor environmental conditions
- Large family size
- Poor maternal health
- Failure of lactation
- Premature termination of breast feeding
- Use of over diluted cow's milk.

KWASHIORKOR

Kwashiorkor is the most common & widespread nutritional disorder in developing countries. It is a form of malnutrition caused by not getting enough protein in the diet



Fig:1.3 kwashiorkor baby

MARASMUS

- Marasmus is a severe form of malnutrition that consists of the chronic wasting away of fat, muscle, & other tissues in the body.
- Malnutrition occurs when the body does not get enough protein & calories.
- This lack of nutrition can range from a shortage of certain vitamins to complete starvation.
- Marasmus is one of the most serious forms of protein-energy malnutrition (PEM) in the world.

Fig :1.4 Marasmus baby

MARASMIC KWASHIORKOR

- A malnutrition disease, primarily of children, resulting from the deficiency of both calories & protein.
- The condition is characterized by severe tissue wasting, dehydration, loss of subcutaneous fat, lethargy, & growth retardation

Fig:1.5 MiasmicKwashiorkor

Table 1.6 kwashiorkor & chart

S.n o	Kwashiork or	Marasmus
	Acute illness/infect ions, chronic/recu rring infections measles, AGE, trauma, sepsis are some causes	Severe prolonged starvation. chronic/recu rring infections
	protein are principal nutrients	Calories & protein are principal nutrients
	18 months to 3 years	6 months to 2 years
	Rapid. acute onset disease	Chronic, slow onset



marasmus comparative

	condition	
	Some weight loss	Severe weight loss
	Mortality	Low mortality unless related to underlying

Prevention

- Oral rehydration therapy helps to prevent dehydration caused by diarrhea
- Exclusive breast feeding for 6 months thereafter supplementary foods may be introduced along with breast feeds
- Immunization for infants & children
- Nutritional supplements
- Early diagnosis & treatment
- Promotion & correction of feeding practices
- Family planning & spacing of birth
- Periodic surveillance
- Nutritional rehabilitation



Low birth weight (LBW)

An LBW newborn is any newborn with a birth weight of less than 2.5 kg (including 2.499 kg) regardless of gestational age.

Fig:1.6 Low birth weight**Risk factors**

Maternal malnutrition

Anemia

Causes

1. Illness & infections
2. Short maternal stature
3. Very young age
4. High parity
5. Close birth intervals
6. IUGR
7. Hard physical labor during pregnancy
8. Smoking

Prevention

- Identification of mothers at risk – malnutrition, heavy work load, infections, disease & high BP
- Increasing food intake of mother, supplementary feeding, distribution of iron & folic acid tablets.
- Avoiding if smoking
- Improved sanitation methods
- Improving health & nutrition of young girls
- Early detection & treatment of medical disorders – DM HTN
- Controlling infections – UTI, rubella, malaria.

Vitamin A deficiency:**Xerophthalmia**

Xerophthalmia i.e., dry eyes refer to all the ocular manifestation of vitamin A deficiency in man.

It is the most widespread & serious nutritional disorder leading to blindness.

Risk factors

1. Faulty feeding practices
2. Weaning
3. PEM

Clinical features

1. Corneal ulcers
2. Softening of cornea
3. Keratomalacia

4.Infections

4. Bitot spot

5.1-3

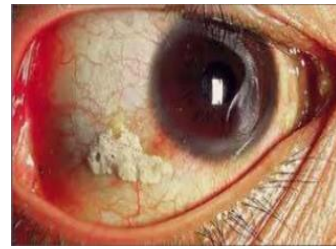
years

control



Prevention

&



- Administering large doses of Vitamin, An orally on a periodic basis
- Regular & adequate intake of Vitamin A
- Fortification of certain food with vitamin A – sugar, salt, tea, & skimmed milk.

Fig:1.8 Bigot spot

Fig:1.9 Xerophthalmia

Anemia

Anemia is a condition where the hemoglobin content of blood is lower than normal as a result of a deficiency of one or more essential nutrients, regardless of the cause of such deficiency.

Table 1.7 Age Groups and their Hemoglobin percentage

Age groups	Normal Hemoglobin %
Adult male	13.8 to 17.2 gm/dL
Adult female	12.1 to 15.1 gm/dL
Pregnant woman	11 to 12 g/dL
Children	11 to 16 g/dL

Risk factors

Causes

- Infants & children
 - Pregnant women
 - Pre-menopausal women
 - Adolescent girls
 - Older adults
 - Alcoholism
 - Chronic /critically ill.
 - Excessive exercise
- 1.Inadequate diet
 - 2.Insufficient intake of iron
 - 3.Iron malabsorption
 - 4.Pregnancy
 - 5.Excessive menstrual bleeding
 - 6.Hook worm infestation
 - 7.Malaria
 - 8.Close birth intervals

Clinical Manifestations:

- Lethargy
- Fatigue
- Anorexia
- Intolerance to cold
- Weakness
- Shortness of breath
- Pallor
- Insomnia
- Headache

Effects of Anemia during Pregnancy

- Increases risk of maternal & fetal morbidity & mortality
- Abortions, premature births, PPH, low birth weight are associated with anemia during pregnancy.

Prevention

- Estimation of Hb to assess degree of anemia
- Blood transfusion in severe cases of anemia (<8g/dL)
- Iron & folic acid supplements
- Food fortification with iron
- Changing dietary habits
- Control of parasites
- Nutritional education & awareness.

Obesity (Over weight):

Obesity is an epidemic disease, which consists of body weight that is in excess of that appropriate for a person's height & age to account for differences, leading to an increased risk to health-related problems.

Over-weight & obesity are defined as abnormal or excessive fat accumulation that presents a risk to health. A crude population measure of obesity is the body mass index (BMI), a person's weight (in kilograms) divided by the square of his or her height (in meters). A person with a BMI of 30 or more is generally considered obese.

Causes

- Family lifestyle
- Smoking
- Unhealthy diets
- Age
- Pregnancy
- Certain medical problems & medications
- Genes

Diseases caused by Obesity

- Liver disease
- Type 2 diabetes
- Mood disorders
- Hypertension
- Reproductive disorders
- Heart diseases
- Cancer risks
- Dyslipidemia

Role of MPHW in nutritional education:

- Nutrition education is a major intervention for the prevention of malnutrition, promotion of health & improving the quality of life
- Nurse has many opportunities of influencing people & helping them towards better eating habits
- A Nurse can guide people to choose optimum & balanced diets, remove prejudices & promote good dietary habits
- In hospital areas the nurse should teach patients regarding therapeutic diets.

Special diets of individuals for different age groups:**Diet for Infants:**

Breast milk is the natural food for infant. Colostrum, the first few days secretion from mammary gl&s contain interferon like substance possessing antiviral activity. It is rich in protein & vitamin A.

Breast milk alone is not able to provide sufficient amounts of all the nutrients needed to maintain growth after the first 6 months. If the baby is to maintain the expected rate of growth & remain healthy & well-nourished, supplementary feeding has to be restored to around sixth month of life.

Weaning begins the moment supplementary food is started & continues till the child is taken off the breast completely.

Table1.8: Guidelines for Weaning process

Age	Supplementary foods (breastmilk continued)	Frequency of supplements
4-6 months Liquids	Fruit juices, mashed banana with milk, cow's milk (if tolerated), porridge from wheat flour, ground rice, ragi, ground millet, cod liver oil.	Start with 1 feed/day, gradually increase the frequency to 3 feeds/day by 6 th month of age
6-9 months Semisolids	Mashed banana, mango, chickoo ripe, boiled egg yolk with milk, mashed rice with dal, mashed vegetables, chapati softened with milk, green leafy vegetables can be added to dal.	4-5 times/day
9-12 months Solids	Fruits, cut finely or stewed. Khichdi, idli, upma, curd rice, chapati, Variety of vegetables, egg, minced meat, fish.	4-5 times/day

Points to be considered in introducing weaning foods:

1. Introduce only one food at a time
2. Allow the infant to become familiar with the food before trying to give another
3. Give very small amounts of any new food at the beginning, for example, one teaspoonful or less.
4. Use very thin consistency when starting solid foods. Gradually the consistency is made more solid as the infant learns to propel the food back with the help of tongue.
5. Food should be only slightly seasoned.
6. At first strained fruits, vegetables & cereals are given.

Diet for Pre-school children:

In the succeeding period of 1-2 years, the same diet may be continued with slightly increased quantities. Food from all food groups are to be included to provide a balanced diet for the child.

Special dietary guidelines:

- Pre-school child should have 2 small servings of protein-rich foods eg: chapatis, puris can be made into shapes or can be served in attractive plates.
- Foods should be slightly seasoned
- Child should never be hurried while taking food
- Foods like tea, coffee should be restricted as they overstimulate the system

Diet for school children:

School lunch program provides about 300kcal. With right guidance & nutrition education children learn to prefer healthy foods such as carrots, raisins & low-fat dishes.

Diet for Adolescents:

It is during this period that the final growth spurt occurs.

Diet in adolescents is very significant because it influences the future nutritional status.

- Adequate well balanced nutritious foods should be taken to prevent obesity or undernutrition
- An adolescent girl should take enough calcium rich foods in her diet to increase bone density which delays the onset of osteoporosis.
- Iron rich food may be included in the diet to prevent anemia.
- Include fruits & vegetables.

Diet for expectant mothers:

Diet during pregnancy should contain larger amounts of 'tissue building' & 'protective foods' without any greater increase in the 'energy-yielding' foods.

Diet during Lactation:

In a mother's life, this is the stage in which she requires maximum nutrients.

- Number of meals can be increased
- Diet can include lactose which stimulate the production of milk. Garlic, almonds, milk, meat, fish, mutton increase the secretion of breast milk. Special foods like sonth laddu, gond laddu etc. are given during lactation.

Diet during Old age

Thin foods (other than pure water taken alone in small sips) may need to be avoided. Thickening agents in foods can be used.

Elders usually should not prefer sweets, salty foods or fried foods.

Certain whole pulses may produce flatulence in the elderly age. Hence such pulses should be avoided in diet. Sulphur containing vegetables are avoided if they produce gas & discomfort.

Modification of diet during Old age:

- Foods rich fiber should be given.
- Foods rich in calcium like milk should be given
- Green leafy vegetables can be given liberally.
- Clear soup at the beginning of the meal.
- Small & frequent meals instead of three heavy ones
- A glass of hot milk just before going to sleep
- Plenty of fluid.

Review Questions:

- 1.Explain about different Nutritional deficiencies and their prevention/treatment.
- 2.Explain the role of MPHWS in planning supplementary foods.
- 3.Briefly discuss about the special diets for different age groups.

UNIT-3**NUTRITIONAL ASSESSMENTS****Methods of Nutritional Assessments:****Food fads, taboos customs & their influences on health****Methods of Nutritional Assessments:**

The methods employed include:

1. Clinical examination
2. Anthropometric measurement
3. Laboratory & biochemical examination
4. Dietary examination
5. Study of vital statistics
6. Assessment of ecological factors

1. Clinical examination:

The goal is to assess the levels of health of individuals or by population groups in relation to the food they consume. It is a head to foot examination

2. Anthropometric measurements:

Anthropometric measurements such as weight, height, median circumference, head circumference & skinfold thickness are valuable indicators of nutritional status.

Mid-arm circumference:

- It is measured at the midpoint of the left upper arm
- Midpoint is marked by making central point of the distance between the olecranon of the ulna & the acromion of the scapula, when the arm is at the elbow.
- The left arm will be hanging on the side. With a steel tape, the circumference of the arm is measured by passing it around the arm applying firmly.

3. Laboratory & biochemical examination:**Laboratory tests:**

Hemoglobin: The estimation of hemoglobin plays a vital role in health in nutritional surveys, as it acts as a major index for overall nutrition state.

Stool & urine: Stool examination would detect any intestinal parasites present. Urine can be examined for albumin and sugar.

Biochemical tests:

Biochemical tests are time consuming & expensive & hence they cannot be applied in large scale. Most of the biochemical tests would give information about the current nutritional status.

4. Dietary examination:

1. Weighing of raw foods.
2. Weighing of cooked foods
3. Oral questionnaire methods are analyzed.

5. Study of vital statistics:

Vital statistics here involve mortality & morbidity data in a community.

6. Assessment of Ecological factors:

In any nutritional survey, it is necessary to collect certain background information of the given community in order to make the assessment complete.

- Conditioning influence: Bacterial, viral & parasitic agents (amebiasis, ascariasis, etc.)
- Cultural influence: Food habits & practices. Cooking beliefs & taboos, child-rearing practices, feeding of pregnant or lactating mothers
- Socioeconomic factors: Family size, occupation, education, income, housing, expenditure on food.
- Food production: Customs related to the methods of cultivation (of food, storage & distribution)
- Health & educational services: The number of hospitals & health personnel, preventive & curative services, mass media & communication.

Food fads, taboos customs & their influences on health:**Economic factors**

1. Caste system: Data from the National Family Health Survey-III (2005-2006) documents - mug, wasting, underweight & anemia in children are higher among lower castes: Postnatal, infant, child & under five statistics clearly show a higher mortality among the SCs & STs. Problems in accessing health care is higher among the lower castes. Caste is linked to socio-economic status India.

2. Economic status: Families belonging to higher economic status usually have good food better access for health care. Awareness of nutritional facts & governmental schemes is better in this category.

People belonging to poverty have problem with respect to food at all levels—availability, affordability & access.

3. Education: Usually educated families have less faddism & superstition. Those who are minimally educated have less technical skills & unable to secure employment to earn a satisfactory living wage.

4. Time spent on the family: The working mother may not have enough time for shopping & for preparing meals. Children being neglected applies not only in families of low socio-economic status but also in higher socio-economic status.

Cultural influences:

- People choose poor diets when good ones are available because of cultural influences. These vary from country to country & region to region.
- Family plays an important role in shaping the food habits. These habits are passed from one generation to another. Rice eaters may not be happy to include other cereals in their diets.
- Customs & beliefs apply most often to vulnerable groups—infants, toddlers, expectant mothers, & lactating women. Papaya is avoided during pregnancy because it is believed to cause abortion. In some communities, fresh fruits & vegetables are avoided during certain period. There is wide spread belief that if a pregnant woman eats more, her baby will be big & delivery would be difficult. Some families avoid certain combination of foods due to superstitious beliefs.
- Religion & caste have a powerful influence on the food habits of the people. Hindus do not eat beef & Muslims pork. Some orthodox Hindus & Jains do not eat meat, fish, egg, & certain foods like onion & garlic. These are known as food taboos which prevent people from consuming nutritious food, even though they can afford. Fasting may affect families who belong to low socio-economic status.
- Food faddisms, that is, irrational views & prejudices about food are not confined only to developing countries. Food myths, fads & fallacies are held tenaciously in all communities. In some communities, men eat first & women eat last & left overs. When resources are limited, women are neglected.

Life style & food habits:

- Families are changing their life style & they lead sedentary lives & eat junk food. Children who spend over three hours a day watching television are at a higher risk of life style diseases. After people started using computers, vehicles, cell phones, grinders & washing machines, the physical activity levels decreased. Even in some schools, too much importance is given to class-room learning & physical activity is neglected.
- Eating balanced diet is becoming difficult as more & more junk food outlets are opened. Foods rich in salt (chips), sugar (sweets) & fats (cakes) come under the category of junk food. Foods made of maida like noodles are not nutritious. Rich people imitate western & middle class imitate rich in following food habits. Sweetened drinks are expensive & do not give any nutrients other than calories. Children can also be malnourished in families who are economically well off. There is need to change present life-style pattern to prevent obesity, hypertension, diabetes, joint pains & even psychological problems.

Production & Distribution:

Uneven distribution between the countries & within the countries occurs. Uneven food distribution can take place even at household level.

Health Condition:

Pathological changes that occur in disease condition affects food consumption. Gastro-intestinal disorders like oral cancer, tumors or strictures in throat or esophagus & cancer of the stomach & intestine can affect food intake. The disease & the treatment cause nausea, vomiting & loss of appetite. Symptoms like anorexia & diarrhoea can affect the food consumption. Infections can also affect the food consumption pattern.

Man eats what his forefathers ate. & what his environment offers, A young child does not form fixed food habits but is patterned by adults, who eat certain foods & not others. The environment, the physical, psychological & social setting which relate to the culture of a group & health condition of an individual determine the food patterns & nutritional status.

Review Questions:

1. What are the different methods of Nutritional assessments
2. Explain about food fads, taboos customs and their influences on health
3. Discuss about local foods and their importance

UNIT-4

PROMOTION OF NUTRITION**Life style and food habits:**

Planning Diets and Special Diets for a Family:

Methods of using locally available foods for special diets

Promotion of Kitchen Garden:

Methods of Cooking:

Food hygiene- Importance & safety:

Storage and preservation of Food:

Food adulteration:

Food hygiene during festivals and Melas:

Life style and food habits:

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Planning Diets and Special Diets for a Family:**Break Fast:**

You can skip your lunch or dinner but never mess with breakfast. According to a balanced Indian healthy food diet plan, take a cup of tea with two slices of toast. You can also choose to eat milk and cereal or two Idlis or an Uthapam.

A Mid-day Snack:

If you have your breakfast at 8 a.m., have a small snack around 10 a.m. To maintain Indian diet plan, you may eat a small bowl of yogurt. Seasonal fruits serve as wonderful mid-day snacks. Have a cucumber or an orange or any other fruit you like.

Lunch Time:

Don't stuff yourself heavy with a lot of food. Keep it simple and the portions must be small. Two roti's or a small bowl of rice with a bowl of vegetable and dal is ideal within the Indian healthy diet plan for vegetarians. You can also have a piece of fish or 2-4 pieces of chicken. Having a bowl of salad is must in Indian diet plan.

Munch On Something:

If you feel hungry, then have a snack at 4-4.30 p.m. Have some almonds or walnuts. You may choose popcorn as an evening snack but don't use butter with it.

Dinner Time:

Indians almost never have dinner before 10 p.m. Try to avoid this habit to be happy and satisfied with your food. 8-9 p.m. is good time to have your dinner. The food gets enough time to be digested during the night. You can have the same food as lunch but try to avoid rice.

Sum up with Something More :

Around 10-10.30 P.M, have a glass of milk or any seasonal fruit before going to bed. A cup of watermelon or an apple is good to have at this time. Never forget to have plenty water throughout the day. Hopefully this Indian diet plan can keep you happy as it helps to maintain weight and can satisfy your cravings at the same time.. You may make changes to the diet plan as and when required. For instance, you may choose to use olive oil instead of sunflower oil. Along with this diet plan, follow aregular workout routine to see the best results.

Methods of using locally available foods for special diets**Vegetarian Diets:**

A vegetarian diet is one which excludes meat. Vegetarians also avoid food containing by-products of animal slaughter, such as animal-derived rennet and gelatin.[2]

- **Fruitarian diet:** A diet which predominantly consists of raw fruit.[3]
- **Lacto vegetarianism:** A vegetarian diet that includes certain types of dairy, but excludes eggs and foods which contain animal rennet.[4] A common diet among

followers of several religions, including Hinduism, Sikhism and Jainism, based on the principle of Ahimsa (non-harming).[5]

- Ovo vegetarianism: A vegetarian diet that includes eggs, but excludes dairy.
- Ovo-lacto vegetarianism: A vegetarian diet that includes eggs and dairy.[4]
- Vegan diet: In addition to the abstentions of a vegetarian diet, vegans do not use any product produced by animals, such as eggs, dairy products, or honey.[2] The vegan philosophy and lifestyle is broader than just the diet and also includes abstaining from using any products tested on animals and often campaigning for animal rights.

Semi Vegetarian Diet:

Semi-vegetarianism: A predominantly vegetarian diet, in which meat is occasionally consumed.

- Pescatarian diet: A diet which includes fish but no other meats.
- Plant-based diet: A broad term to describe diets in which animal products do not form a large proportion of the diet. Under some definitions a plant-based diet is fully vegetarian; under others it is possible to follow a plant-based diet whilst occasionally consuming meat.[8]
- Proletarian: someone who eats chicken or other poultry, but not meat from mammals, often for environmental, health or food justice reasons.
- Pollo-pescatarian: someone who eats both poultry and fish/seafood, though no meat from mammals.

Low Calorie Diets:

- Intermittent fasting: Cycling between non-fasting and fasting as a method of calorie restriction.
- Body for Life: A calorie-control diet, promoted as part of the 12-week Body for Life program.
- Cookie diet: A calorie control diet in which low-fat cookies are eaten to quell hunger, often in place of a meal.
- The Hacker's Diet: A calorie-control diet from The Hacker's Diet by John Walker. The book suggests that the key to reaching and maintaining the desired weight is understanding and carefully monitoring calories consumed and used.
- Nutrisystem's Diet: The dietary element of the weight-loss plan from Nutrisystem, Inc. Nutrisystem distributes low-calorie meals, with specific ratios of fats, proteins and carbohydrates.
- Weight Watchers diet: Foods are assigned point values; dieters can eat any food with a point value provided they stay within their daily point limit.

Promotion of Kitchen Garden:

- Department of horticulture and social forestry should encourage production of green leafy vegetables, fruits and vegetables which are rich in micronutrients like vitamin A, iron and vitamin C.
- Identifying less familiar local fruits and vegetables
- Promoting production and consumption of non-conventional foods

- Krishi Vigyan Kendra's to emphasize on the production and consumption of fruits and vegetables, through demonstration, vocational training, in-service training and on-farm research.
- School gardens and kitchen gardens to be encouraged.
- Strengthening linkages between the infrastructure of agriculture (Horticulture), Nutrition (ICDS,FNB) and Maternal Child Health (MCH) with a view to ensure nutrition oriented horticulture activities at village level.

Purpose of cooking:

Cooking is an art. It is linked with the habits and cultural pattern of the people. Food preparation requires creativity in blending of flavor, texture as well as color.

Aims and objectives of cooking food:

- Cooking makes food attractive in appearance
- Cooking makes food soft, making it easily chewable.
- Cooking partly sterilizes food.
- Cooking also improves storage quality of food. Boiling sterilizes milk, which can then be stored for a longer time.
- Cooking helps to make food more digestible.
- Cooking helps to provide a balanced diet.

Methods of Cooking:

Heat can be transferred to food by conduction, convection, radiation or microwave energy.

Conduction:

In conduction, heat flows from source to food. For efficient conduction from one hot surface to another, the area of contact has to be as large as possible. Hence the bottom of pans should be flat and thick, e.g. Steaming, poaching.

Convection:

When a liquid or air is heated, the parts nearest to the heat becomes warm and less dense. Roasting is mainly by convection, e.g. baking.

Radiation:

When heat radiations reach foods, only the surface is heated by them. They do not penetrate the food. The rest of the food is cooked by conduction and to a less extent by convection, e.g. boiling or toasting of bread.

Cooking media:

- **Cooking in Air:** Grilling, roasting and baking take place in air. The term roasting is used to cook meat and baking is used for breads, buns, cakes, biscuits etc. Food is cooked partially in dry heat and partially in moist heat.
- **Cooking in Water:** Boiling or simmering involves cooking in water. Some of the different methods of cooking include roasting, baking, frying, boiling, poaching,

steaming, stewing, braising, broiling and grilling.

- **Roasting:** Roasting includes the following types:

1. Split roasting: Is done only with good quality meat. The food is brought in contact with direct flame in front of a bright fire.

2. Oven roasting: This is done in a closed oven. Meat, poultry and vegetables are put into a fairly hot oven for 5-10 minutes and temperature is lowered to allow the joint to be cooked.

3. Pot roasting: This is for cooking small joint and birds when no oven is available.

- **Baking:** Bread, cakes, pastries, puddings, potatoes and vegetables are cooked by baking. The food is surrounded by hot air in a closed oven.
- **Frying:** Two types of frying are shallow fat frying and deep fat frying.

Shallow fat frying: This method is applied to precooked food unless the food takes very little time to cook (omelet, liver etc.).

Deep fat frying: Sweets and savories can be cooked by this method. Food cooked by deep fat frying has a better look than that cooked by shallow frying, as food is evenly browned.

- **Boiling:** Food is cooked by surrounding it by boiling or simmering liquid (stock or water). Only sufficient amount of liquid should be used just to cover the items to be cooked.
- **Poaching:** Poaching is cooking slowly in a minimum amount of liquid, which is not allowed to boil, but kept below boiling point. Fish, eggs and fruits are poached.
- **Steaming:** Steaming is a slow process of cooking and used for easily cooked food.

Advantages: Steaming advantages are as follows:

1. All nourishment and flavors are preserved in the food.
2. Food by this method is easily digested.
3. Food cannot be overcooked.

- **Stewing:** Stewing is a very gentle method of cooking in a cold pan with only a small quantity of liquid. Meat and vegetables may be cooked.
- **Grilling/Boiling:** In boiling, food is cooked uncovered on a hot metal grill or a frying pan. The pan or grill is oiled slightly to prevent sticking.
- **Microwave cooking:** Microwaves penetrate the food and are absorbed. The heating is very fast. Foods placed in the microwave oven are heated by microwaves from all directions. This helps in cooking very easily.
- **Pressure cooking:** Steam cooking are 3 types - steam cooking, waterless cooking and pressure cooking. In steaming, food is cooked by steam from added water. In waterless cooking, the steam originates from food itself. Pressure cooking is a device

to reduce the cooking time by increasing the pressure so that the boiling point is quickly reached. e.g. rice, dal, puttu etc.

Cooking Principles:

- Should be washed just before they are cooked
- Wash before paring and cutting
- Cook until tender, do not over cook
- Use a large sharp knife in chopping vegetables
- Paring vegetables as thinly as possible.

Food hygiene- Importance & safety:

Proper food hygiene is very important when it comes to food preparation. Without washing hands and kitchen tools, diseases may easily spread. One thing you can do for preventing cross-contamination is, keep separate chopping boards for raw and cooked foods.

Safe steps in food handling, cooking and storage are essential to prevent foodborne illness. You can't see, smell or taste harmful bacteria that may cause illness. In every step of food preparation, follow the four steps of food safe families campaign to keep food safe: Clean - Wash hands and surfaces often.

Storage and preservation of Food:

Below are some of the most common methods of food preserving:

- Freezing- Meat, vegetables.
- Sugaring - Dates, Amla
- Salting - Pickles, dry fish
- Drying -All grains
- Smoking- Meat, Fish
- Vacuum sealing - Chips
- Pickling - Vegetables

Food adulteration:

Food adulteration is the process in which the quality of food is lowered either by the addition of inferior quality material or by extraction of valuable ingredient. A food item is said to be adulterated if: A substance which is added is injurious for human consumption.

Types of Adulterants:

- Cream is adulterated with gelatin.
- Butter with a product of beef fat.
- Chilli powder with brick powder.
- Turmeric with Colored chalk powder.

- Ghee with Vanaspati or daldha.
- Coffee powder with tamarind seed powder.
- Milk with water.
- Pepper with papaya seeds.
- Rice with stones.
- Honey with sugar syrup.
- Vegetable oils with cheaper oils.

Food hygiene during festivals and Melas:

- Wash hands often before and after food intake.
- Food preparation procedures followed by the vendors.
- Hot food should be served
- Do not eat food that looks like it has been sitting at room temperature for a long time.
- Foods should be covered by some type of guard or cover.
- Plates and cutlery should be clean and dry.
- Not being reheated adequately.

Review Questions:

- 1.Explain few methods of using locally available foods for diet.
- 2.Explain the principles and different methods of cooking
- 3.Briefly discuss about the concept of Kitchen Garden
- 4.Discuss about the food hygiene precautions to be taken during festivals and Melas
- 5.Explain the concept of Food adulteration and different types of food adulterants.

B. PHYSICAL AND MENTAL HEALTH**UNIT-5****THE HUMAN BODY****Structure and function of Human Body.****Body systems and their functions:****Digestive system:****Respiratory system****Genito Urinary System****Cardiovascular System****Nervous System:****Musculo-Skeletal System****Endocrine system****Structure and function of Human Body.**

The Human body is the entire structure of a human being. It is composed of many different types of cells that together create tissues and subsequently organ systems. They ensure homeostasis and viability of the human body. Physiology focuses on the systems and organs of the human body and their functions.

5.1.1 Functions of Human Body: Our body consists of number of biological systems that carryout specific functions necessary for everyday living. The job of the circulatory system is to move blood, nutrients, oxygen, carbon dioxide and hormones around the body. It consists of heart, blood, blood vessels, arteries and veins.

A tissue is a specialized group of cells and their products that function together. The four tissue types in the human body are as follows: epithelial, muscle, nervous and connective tissue. Epithelial tissue is great for building structures with walls and passageways and compartments.

Body systems and their functions:

The 11 organ systems of the body are the integumentary, muscular, skeletal, nervous, circulatory, lymphatic, respiratory, endocrine, urinary/excretory, reproductive and digestive. Although each of our 11 organ systems have a unique function, each organ system also depends directly or indirectly on all others.

1. Integumentary System

- It constitutes of skin, hair, nails.

Functions:

Skin is a major sensory organ responsible for:

- Protection of body
- Regulation of body temperature
- Elimination of wastes.

2. Skeletal system

It constitutes of Bones, joints and associated cartilages.

Functions:

- Provides support and protection to body.
- Helps in body movements

3. Muscular system

It constitutes of skeletal muscle, smooth muscles and cardiac muscles.

Functions:

- Skeletal muscles help in body movements
- Maintenance of posture
- Production of heat

4. Nervous system

It constitutes of Brain, spinal cord, nerves, and special sense organs like eyes, ears.

Functions:

- Regulation of body activities and body's internal and external environment by nerves impulses.

5. Endocrine system

It constitutes of Hypothalamus, Pituitary gland, thyroid gland, pineal gland, parathyroid gland, pancreas, ovaries/testes, adrenal glands.

Functions:

- Regulation of body activities by releasing hormones.

6. Urinary system

It constitutes of kidneys ureters, urinary bladder, urethra.

Functions:

- Production, storage and elimination of urine.
- Regulation of volume and chemical composition of blood.
- Maintenance of acid-base of the body

7.Cardiovascular system

It constitutes of heart, blood vessels - arteries and veins, blood.

Functions:

- Heart pumps the blood through blood vessels.
- Blood carries oxygen and nutrients to the cells and takes away the waste and carbon dioxide from cells.

8.Lymphatic system

It constitutes of Spleen, thymus, tonsils, lymph nodes and lymphatic vessels.

Functions:

- Return proteins and fluids to the blood.
- Removes bacteria, toxins and other foreign bodies from tissue
- Lymph serves as an important route for intestinal fat absorption
- Sites of maturation and proliferation of B and T cells

9.Respiratory system

It consists of pharynx, larynx, bronchial tubes, trachea, lungs,

Functions:

- Transfer of oxygen from inhaled air to blood and carbon dioxide from blood to exhaled air.
- Regulation of acid-base balance of body fluids.

10.Digestive system

It consists of mouth, pharynx, esophagus, stomach, small and large intestines, salivary glands, liver and gallbladder, pancreas.

Functions:

- Digestion of food
- Absorption of nutrients
- Elimination of wastes

11.Reproductive system**a.Female Reproductive system:**

It constitutes of ovaries, uterine tubes, uterus, vagina, mammary glands.

Functions:

- Production of gametes
- Release of hormones that regulate reproduction and help in development of secondary sexual characteristics
- Mammary glands are for lactation

b.Male Reproductive system:

It constitutes of testes, ductus deferens, seminal vesicles, prostate gland, penis

Functions:

- Production of gametes
- Release of hormones that regulate reproduction and help in development of secondary sexual characteristics
- Penis is the main copulatory organ

Digestive system:

The purpose of digestion is to change the foodstuffs by mechanical and chemical action to simple forms, which can be easily absorbed into blood and utilized by various tissues in the body. It is also involved in maintaining the water and electrolyte balance of the body. The gastrointestinal tract consists of an alimentary canal of 8 - 10 meters length, extending from the mouth to the anus, salivary glands, liver and exocrine part of pancreas.

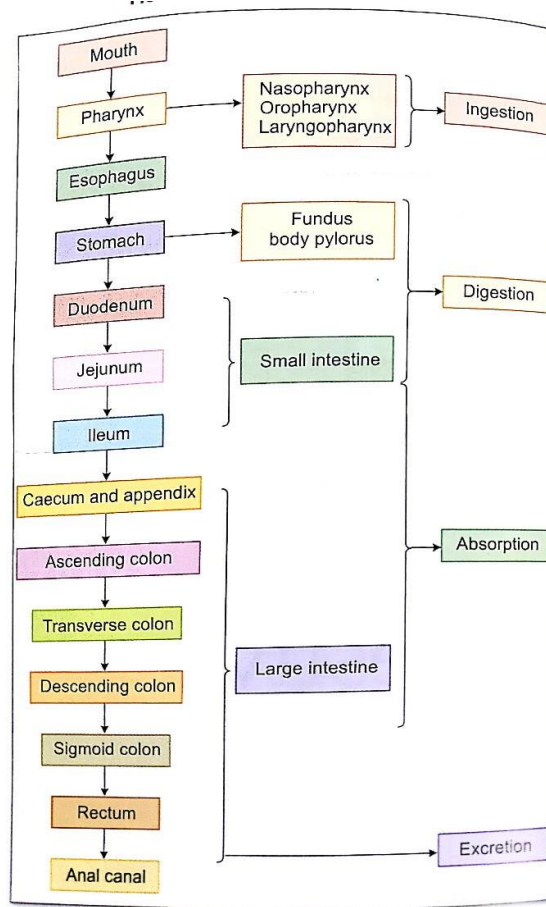


Figure 5.1 Process of Digestion

Gastrointestinal (GI) tract is formed by two types of organs:

- Primary digestive organs
- Accessory digestive organs

Primary Digestive Organs:

Primary digestive organs are the organs where actual digestion takes place. These organs are:

- Mouth
- Pharynx
- Esophagus
- Stomach
- Small intestine
- Large intestine

Accessory Digestive Organs:

Accessory digestive organs are the organs which help the primary digestive organs in the process of digestion. These organs are:

- Teeth
- Tongue
- Salivary glands
- Exocrine part of pancreas
- Liver
- Gallbladder

Process of Digestion:

The process of digestion takes place in the alimentary canal and is assisted by some accessory organs like salivary glands, liver and pancreas.

Food is processed within the body in 4 steps:

Ingestion

Digestion

Absorption

Excretion

Ingestion:

Ingestion or taking in of food and mastication (chewing) are functions performed by mouth and teeth, aided by tongue, pharynx and esophagus are concerned with swallowing.

Digestion:

Digestion occurs in the stomach and upper part of small intestine.

Absorption:

Absorption can occur from any part of alimentary canal (mainly by small intestine)

Excretion:

Large intestine absorbs major quantity of water and the residue is excreted in the form of feces.

Parts of Digestive system

- 1.Oral cavity or Mouth: The mouth or oral cavity is the first part of the digestive tube.
- 2.Lips: Lips (labia) are fleshy folds lined externally by skin and internally by mucous

membrane.

3. Cheeks: Cheeks (buccal) are fleshy flaps, forming a large part of each side of the face.

4. Gums: Gums are the soft tissues which cover the alveolar processes of the upper and lower jaws and surround the necks of the teeth.

5. Teeth: A tooth consists of a crown which is exposed to oral cavity and single or multiple roots, lying in socket of jaw bones.

- Enamel: It is the hardest tissue in human body, covering the crown of the tooth.
- Dentin: It is less calcified, more resilient, vital, hard tissue forming the main bulk of the tooth.
- Cementum: It is less mineralized tissue, covering the radicular portion of the tooth.
- Pulp: It is the soft, connective tissue in the central part of tooth enclosed by dentin.
- Periodontium: The tissues (periodontal ligament, cementum, alveolar bone) which support the teeth in jaws are collectively termed as periodontium.

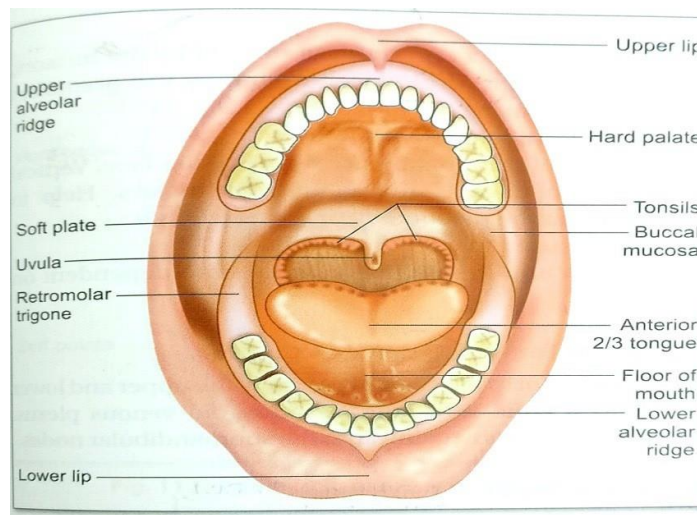


Figure 5.2 Parts of Mouth

Functions of teeth:

- Help in mastication
- Helps in speech
- Give a shape and beauty to face
- For self-protection
- Blood supply to teeth - Branches of maxillary artery
- Nerve supply to teeth is through Maxillary nerve

- **Palate:** It forms the arched roof of the oral cavity and the floor of the nasal cavities. It divides into 2 regions, Hard pallet and soft pallet.
- **Tongue:** The tongue is highly mobile muscular organ. It is situated partly in mouth and partly in oropharynx.

Functions:

- Mastication
- Taste
- Swallowing
- Speech
- Oral cleansing

The lingual arteries supply blood to the tongue. Lymph from the tongue drains into the superior and inferior deep cervical lymph nodes. There are small barrel-shaped structures called taste buds.

Pharynx: It is a wide muscular tube, situated behind the nose, mouth and larynx. It is about 13 cm long.

It is divided into 3 parts

- Naso pharynx
- Oro pharynx
- Laryngo pharynx

Functions:

- Air way
- Middle ear ventilation
- Speech
- Taste

Salivary glands: The secretions of these glands help to keep the mouth moist and provide a protective and lubricant coat of mucous.

Salivary glands are 2 types:

- **Major salivary glands** - These are also called duct glands. These are 3 types
 1. Parotid glands
 2. Sub-maxillary glands
 3. Sub-lingual glands

- **Minor salivary glands** - These open directly in oral cavity. These are 3 types.

1. Buccal glands
2. Lingual glands
3. Palatine glands

Saliva: Total amount of saliva secreted is 1500ml per day. It contains 99% water and 1% of solids like sodium, calcium, potassium, enzymes and mucus.

Functions:

- Lubrication and speech
- Digestion
- Line of defense
- Taste and excretion

Esophagus: It is a narrow part of the elementary canal. Its length is 25cm and diameter 1.5cm. Its main function is transportation of food from mouth to stomach. It is having 2 sphincters.

- **Upper Esophageal sphincter** - It is about 3 to 5 cm long and functions during the act of swallowing. It is closed at rest and protects respiratory passage from regurgitation of esophageal contents.
- **Lower Esophageal sphincter** - It is situated at lower portion of esophagus. It opens in response to primary peristalsis and vomiting and allows air to escape from the stomach.

Stomach: It is the most dilated part of the alimentary tract. Upper end continues with esophagus, while lower end continues with duodenum. It is J-shaped. The holding capacity of the stomach is 30ml of milk in new born and 2 to 3 liters of food in adults.

It is divided into

- Cardiac part
- Fundus
- Body of the stomach
- Pyloric region

Functions:

- Reservoir of food
- Converts food into chyme

- Destroy microorganisms present in food
- Digestion of proteins
- Absorption of vitamin B12
- Excretes toxic alkaloids and metals

Small intestine: It extends from the pylorus to the ileo-cecal junction. It is about 6 meters long. It is divided into

- a. Fixed upper part called duodenum, approximately 25 cm long
- b. The lower mobile part, which is again divided into jejunum and ileum.

Functions:

- Maintenance of water balance
- Hemopoietic function
- Mechanical function
- Digestive function

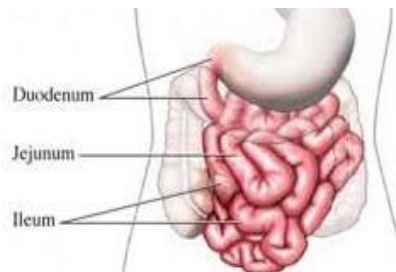


Figure 5.3 Small intestine

Large intestine: It extends from the ileocecal junction to anus. It is about 1.5 meters long. The large intestine has caecum, the ascending colon, transverse colon, descending colon, sigmoid colon, rectum and anal canal. In the angle between sacrum and terminal ileum, there is a narrow diverticulum called the vermiform appendix. The rectum and anal canal are situated in the pelvis, the remaining parts are in the abdomen.

Functions:

- Secretion of mucus
- Absorption of water and electrolytes
- Excretion of heavy metals like mercury.
- Synthesis of vitamin K, B12 and folic acid by colonic flora

- Storage of feces.

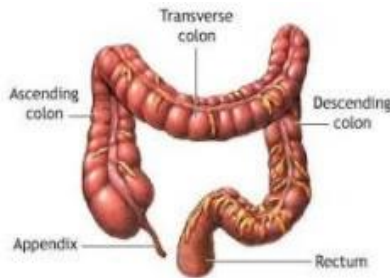


Figure 5.4 Large Intestine

Accessory organs of digestion:

The liver, biliary system and pancreas are the accessory organs of digestion.

Liver: It is the largest gland in the body. It is reddish brown in color, highly vascular and weighs about 1.5 kg. It occupies right hypo-chondrium region.

Functions:

- Destruction of old RBC
- Metabolism of proteins, fats and carbohydrates
- Storage of glycogen, amino acids and vitamins B12, A and E
- Secretion of bile.
- Excretion of cholesterol and bile pigments
- Defense of body

Gall bladder: It is a pear-shaped reservoir of bile. It is situated at the right lobe of the liver. It is about 7 - 10 cm in length and 3 cm broad.

Functions:

- Storage of bile
- Secretion of mucus
- Maintenance of pressure in biliary system

Pancreas: It is a gland that is partly exocrine and partly endocrine. It is situated behind the stomach. Normally about 1500 ml of pancreatic juice is produced every day.

It is divided into numerous lobules. Each lobule is made up of a number of serous acini. The tail of pancreas contain beta, alpha and Delta cells.

- Alpha cells secrete glucagon
- Beta cells secrete insulin
- Delta cells secrete somatostatin

Respiratory system

The organs of respiratory system are

- Nose
- Pharynx
- Larynx
- Trachea
- Bronchi
- Bronchioles
- Lungs

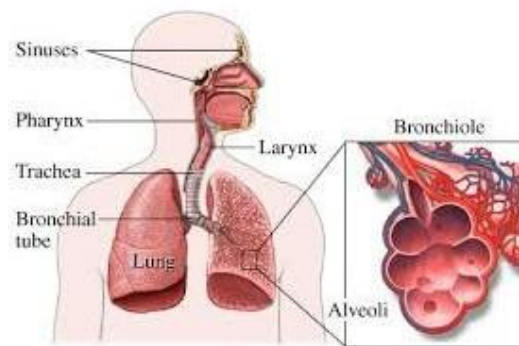


Figure 5.5 Respiratory system

1. Nose: It is a pyramidal projection in the middle of the face. It presents with the following features

1. **Tip** - It is the lower free end of the nose.
2. **Root**- Upper narrow part attached to the forehead.
3. **Dorsum of the nose** - It is formed by rounded border between the tip and route of the nose.
4. **Nostrils** - These are 2 perform shaped apertures present at the broad lower part of the nose.

The nasal cavity is divided into right and left halves by a median septum.

Functions:

- Warms and humidifies the inhaled air
- Adds resonance to the voice
- Mucus traps the dust particles
- Reduces the weight of the skull
- Respiration and sense of smell.

2.Pharynx: It is a wide muscular tube, situated behind the nose, mouth and larynx. It is about 13 cm long.

It is divided into 3 parts

- Naso pharynx
- Oro pharynx
- Laryngo pharynx

Functions:

- Air way
- Middle ear ventilation
- Speech
- Taste

3.Larynx: The Larynx is the organ for thermojunction of voice and air passage. It lies in the anterior midline of the neck. Length is 4.3 cm, diameter is 3.6 cm. Male larynx is larger than the female.

There are 2 wedge-shaped vocal cords present at the angle of the thyroid cartilage. In males, the average length of vocal cords would be 23mm and in females, 17 mm.

4.Trachea: The Trachea or windpipe is a wide, fibro-cartilaginous tube about 11 - 12 cm long. Its upper half is situated in the neck and lower part in the thorax.

5.Bronchi: The main airway - 'Trachea' - branches into 2 bronchi, namely, right and left bronchi. Each bronchi is divided into segmental or tertiary bronchi. The tertiary bronchi are divided into smaller bronchi and bronchioles within the parenchyma of lung. It is totally called as Tracheo-Bronchial tree.

6.Bronchioles: The bronchioles present within the parenchyma of lung. It is having number of alveolus.

7.Lungs: It is the most essential organs of respiration. Their main function is to oxygenate blood. They are present in the thoracic cavity. In healthy people who live in a clean

environment, the lungs are light pink in color, but in people living in polluted areas, lungs are dark in color due to the accumulation of dust or carbon particles.

Each lung is conical in shape and covered by double layer serous membrane called as pleura.

Right lung has 3 lobes while left has 2 lobes.

Functions:

- Exchange of gases.
- Defense function

Pleura: The pleura is a serous membrane lined by a single layer of squamous cells.

Pleural cavity: It is the potential space between the 2 pleura, which contains a thin layer of lubricating serous fluid. It prevents collapse of lung.

Physiology of Respiration:

Respiration: It is the process of exchange of gases in the lung where there is uptake of oxygen in exchange for carbon dioxide. This is called external respiration. The exchange of oxygen and carbon dioxide at tissue level is called internal respiration.

At rest, human being breaths about 12 - 15 times per minute. 500 ml of air is taken in each breath which equals 6 to 8 liters of air in 1 minute.

Composition of air: The inspired air is composed of oxygen 21%, carbon dioxide 0.03%, Nitrogen 78%, other inert gases about 1%.

On breathing out (expiration), the air has 16% oxygen, 4% carbon dioxide.

Respiratory movements: It consists of 2 phases.

Inspiration: It is an active process. There is expansion of intra thoracic volume resulting in expansion of lungs. This creates a negative air pressure in the airway allowing the air to flow in. In normal conditions, inspiration lasts for 2 seconds.

Expiration: It is a passive process in normal breathing. It occurs due to recoil of lungs at the end of inspiration. This pushes out air from lungs.

Pulmonary function tests: These tests are useful in assessing the functional status of the respiratory system. These tests involve measurement of lung volumes and lung capacities.

Lung volume tests:

1. Tidal volume test

2. Inspiratory reserve volume

3. Expiratory reserve volume

4. Residual volume

Lung capacity tests:

1. Vital capacity tests

2. Total lung capacity test

3. Inspiratory capacity test

4. Functional residual capacity test

5. Timed vital capacity test

Genito Urinary**System** The

urinary system

consists of 1 Two

kidneys

2 Two ureters

3 Urinary bladder

4 Urethra

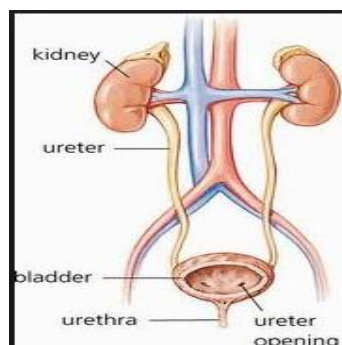


Figure 5.6 Urinary System

The kidneys remove waste products of metabolism, excess water and salts from blood and maintain the pH. The ureters convey urine from the kidneys to the urinary bladder. The urinary bladder is the muscular reservoir of urine and the urethra is the channel in the exterior.

Functions of Urinary System:

The kidneys maintain a stable internal environment by regulating the volume and composition of body fluids as well as by excreting the waste products and excess water for

- Regulation of acid-base balance
- Regulation of arterial blood pressure
- Regulation of body fluid volume
- Regulation of concentration of electrolytes
- Excretion of metabolic waste products and chemicals like urea, uric acid, creatinine and many drugs
- Secretion and production of some hormones
- Metabolism of hormones

Kidneys: Urinary system consists of 2 kidneys, left and right. Left kidney is slightly in higher level than the right kidney. Kidneys are bean shaped and measures 7.5 to 10 cm in length, 5cm in width and 2.5 cm thick and weigh 150 gm. Nephron is the functional unit of kidney.

Functions of Kidney:

- Maintenance of water balance
- Maintenance of electrolyte and acid-base balance
- Secretion of erythro-poietin
- Excretion of waste products

Glomerular filtration rate: GFR is defined as the amount of filtrate formed in all the nephrons of both kidneys in 1 minute. Normal GFR is about 125 ml/minute or 180 L/day. The number of functioning nephrons decreases as the age advances. Hence the GFR decreases in old age.

Tubular Re-absorption: As filtered fluid flows through the renal tubules, the tubules reabsorb 99% of water and solutes. This is called tubular reabsorption. About 180 liters of GFR is formed per day. Only 1% of this volume is lost as urine. More than 99% water, electrolytes and other substances are re-absorbed by the tubular epithelial cells.

Sites of Absorption: The reabsorption of the substances occurs in almost all the segments of tubular portion of nephron.

Urine:

Properties of Urine:

Volume - 1000 to 1500 ml per day.

Reaction - slightly acidic

pH - 4.5 to 6

Specific gravity - 1.010 to 1.025

Color - Straw color

Odor- Fresh urine has light aromatic odor

Ureters:

The ureters are tubular structures which serve to conduct urine from kidneys to the urinary bladder. They are approximately 25 cm in length, 0.6 cm in diameter.

Urinary bladder: The urinary bladder is a hollow muscular organ which functions as a reservoir for the urine. received from the kidneys and to discharge it out periodically.

Urethra: The Urethra is a tubular passage extending from the neck of the bladder to the external urethral meatus or orifice.

Female Urethra: It is 3.75 to 4 cm long, extends downward and forward, closely related to the anterior wall of vagina.

Male Urethra: It is 18 to 20 cm long. In the flaccid state of penis, the urethra is S-shaped. When penis is erect it becomes J-shaped.

Sphincters: There are 2 spinsters in relation to the urethra, namely, Internal and external.

Micturition: It is the process by which the urinary bladder empties when it becomes filled with urine. The urinary bladder fills progressively until the pressure inside rises above a particular threshold level. Then it initiates the micturition reflex as follows:

Several stretch receptors are present in the bladder wall which gets stimulated when it is filled with urine. They send signals to the 'Micturationcenter' in the spinal cord via the pelvic nerves and micturation contractions are initiated in the bladder. This lasts for about few seconds to 1 minute. As the bladder becomes more and more filled, micturation reflexes occur more frequently and more powerfully and urge to urination occur.

Cardiovascular System

Cardiovascular system consists of

1.Heart- The heart is a hollow muscular organ, that pumps blood throughout the circulatory system It is situated in the middle mediastinum.

Layers of the heart wall: Heart is made up of 3 layers of tissues.

1. Outer pericardium
2. Middle myocardium
3. Inner endocardium

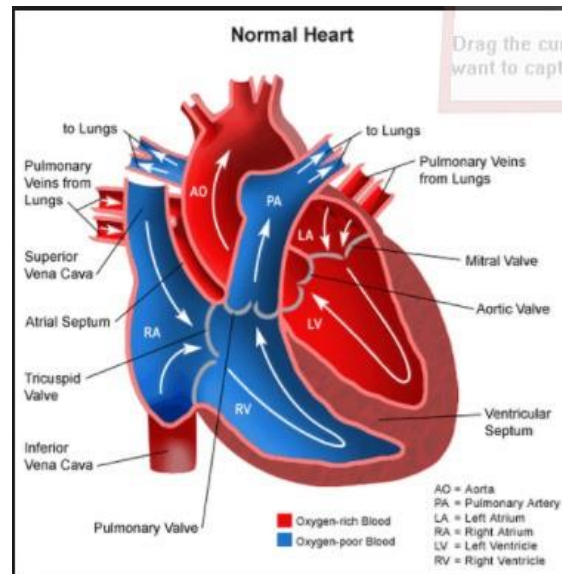


Figure 5.7 Normal Heart

Interior of the Heart:

The interior of heart is divided into right and left side by the septum, which does not allow mixing of blood of the 2 sides. It has 4 valves, 2 of the valves are in between the atria and the ventricles called atrio-ventricular valves. The other 2 are the semi-lunar valves.

Important features of chambers of the heart:

1. Right Atrium: It is the right upper chamber of the heart. It receives venous blood from the whole body and pumps it to the right ventricle through the right atrio-ventricular or tricuspid orifice.

2. Right ventricle: It is a triangular chamber. It receives de-oxygenated blood from the right atrium and pumps it to the lung through the pulmonary arteries.

3. Left Atrium: It is a quadrangular chamber receiving oxygenated blood from the lungs through 4 pulmonary veins and pumps it to the left ventricle through the left atrio-ventricular or bi-cuspid or mitral orifice.

4. Left ventricle: The left ventricle receives oxygenated blood from the left atrium and pumps it into the aorta.

Cardiac Cycle: The cardiac cycle refers to a series of electrical and mechanical events that occur cyclically from the beginning of one heartbeat to the beginning of the next.

This also includes changes in pressure, blood flow and volume in the heart chambers.

Electro Cardiogram (ECG): ECG is defined as the graphical recording of the electrical activities of heart. The electrical changes occurring with each heartbeat are conducted all over the body and can be recorded as ECG by placing electrodes on the surface of the body. The

recording is done on a moving strip of especially graphic paper.

Waves of ECG: The normal ECG has the P, Q, R, S and T waves.

Cardiac output: It is the quantity of blood pumped by each ventricle into the aorta per minute. In adults, the resting cardiac output is 5 L/min.

Normal Heart rate: 72/min in adults

Factors effecting Heart rate:

- Age
- Gender
- Emotions
- Temperature
- Activity etc.

Blood Pressure: It is measured using Sphygmomanometer. The normal Bp is 120/80 MM/Hg.

Nervous System:

The nervous system integrates and coordinates various activities of other organ systems. It controls muscle contraction, secretion of hormones from glands, rate and depth of respiration, cardiac activities and gastro-intestinal activities. It also involves in modulating and regulating a multitude of other physiological processes.

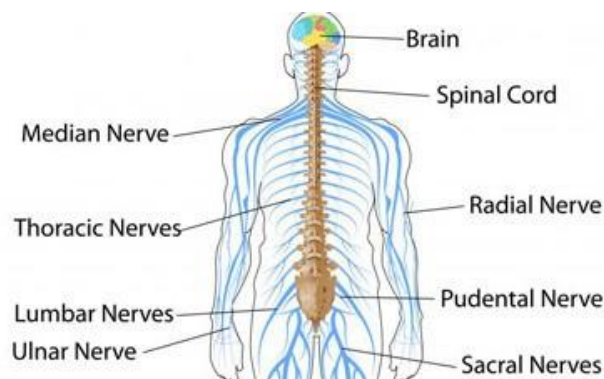


Figure 5.8 Nervous System

It may be divided into

1. Central nervous system (CNS)- Brain and spinal cord
2. Peripheral nervous system (PNS) - Peripheral nerves
3. Autonomic nervous system (ANS) - Sympathetic and para-sympathetic

The brain consists of cerebrum, cerebellum, mid-brain, pons and medulla oblongata.

Peripheral nerves attached to the brain are called cranial nerves and those attached to the spinal cord are called spinal nerves.

Neurons: Neuron is defined as the structural and functional unit of the nervous system. It is otherwise called nerve cell.

Large axons and peripheral nerves are surrounded by a myelin sheath.

Conductivity: It is the ability of nerve fibers to transmit the impulse from the area of stimulation to the other areas. The action potential is transmitted to the nerve fiber as nerve impulse. The action potential is transmitted through the nerve fiber in only one direction.

Degeneration of nerve fibers: When a nerve fiber is injured, various changes occur in the nerve fiber and nerve cell body called the degenerative changes. The injury occurs due to the obstruction of blood flow, local injection of toxic substances, crushing of nerve fiber.

Regeneration of nerve fibers: The term regeneration refers to re-growth of lost or destroyed part of a tissue. The injured and degenerated nerve fiber can re-generate.

Synapse: It is the junction between 2 neurons.

Central nervous system: It consists of brain and spinal cord.

Meninges: The brain and spinal cord are enclosed by 3 membranous coverings. These are

- Dura mater
- Arachnoid mater
- Pia mater

Ventricles of the brain: Brain contains 4 ventricles.

1. Right and left lateral ventricles
2. Third ventricle
3. Fourth ventricle

Lateral ventricles: The lateral ventricles are 2 cavities situated within the cerebral hemisphere. Each ventricle is C-Shaped.

Third ventricle: It is slit-like median cavity situated between the right and left thalami.

Fourth ventricle: It is a diamond-shaped space situated between pons and cerebellum. These ventricles are filled with CSF (cerebro spinal fluid) fluid. The CSF is secreted by choroid plexuses.

Cerebro Spinal fluid (CSF): The fluid present in brain and spinal cord is called CSF.

Characteristics of CSF:

- Total volume is 130 - 150 ml

- Daily rate of production - 600 - 700 ml
- Rate of CSF formation per minute - 0.3 ml/min

Functions of CSF:

- It provides fluid-cushion which protects the brain from injury
- It helps to carry nutrition to the brain
- It removes waste products

Brain: The brain is that part of CNS which lies within the cavity of the skull.

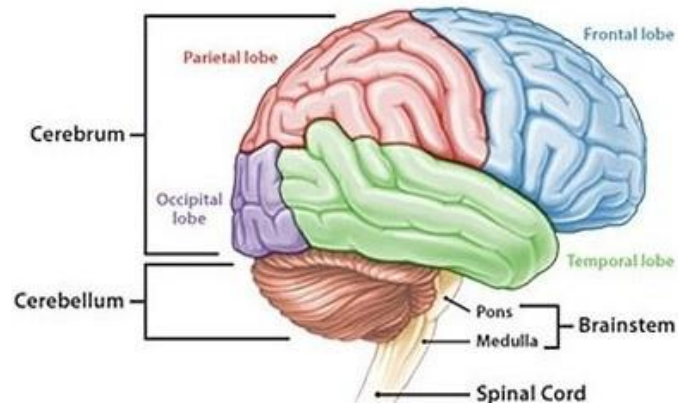


Figure 5.9 Brain

Cerebrum: It is the largest part of the brain. It consists of right and left cerebral hemispheres. There are 4 lobes namely,

1. Frontal
2. Parietal
3. Occipital
4. Temporal

Functions:

- Receives all sensory stimuli and conveys them to consciousness
- Co-relates and retains all impulses
- Controls other parts of nervous system
- Seat of intelligence
- Initiates all voluntary movements

Thalamus: It is a large egg-shaped mass of grey matter, situated one on either side of the lateral wall of the third ventricle.

Functions:

- Relay center for impulses
- It processes the sensory information
- Centre for reflex activity

Hypo-thalamus:

It is a part of the diencephalon. It lies in the floor and lateral wall of the third ventricle.

Functions:

- Regulation of autonomic nervous system
- Regulation of heart rate, temperature and blood pressure
- Regulation of hunger and food intake
- Regulation of sleep and wakefulness
- Regulation of water balance

Brain stem: It consists of 3 parts

1. Mid brain
2. Pons
3. Medulla oblongata

Mid-Brain - It is the shortest segment of the brain stem, connecting the pons and cerebellum with the fore-brain.

Pons: The pons lies between the mid-brain and Medulla Oblongata.

Medulla Oblongata: It is a part of the brain stem, about 3 cm in length and continues above with the pons and below with the spinal cord.

Cerebellum: It is the largest part of the hind-brain. It is situated in the posterior-cranial fossa.

Functions:

- Controls all voluntary motor activities
- Maintenance of muscle tone
- Maintenance of body posture, equilibrium and movements of eye balls

Spinal cord: It is a part of the CNS which lies within the vertebral canal. It is approximately 45 cm in length.

Cranial nerves:

Cranial nerves attached to the brain are bundles of processes of neurons that innervate muscles or glands or carry impulses from sensory areas. There are 12 pairs of cranial nerves

1. All factory nerve
2. Optic nerve
3. Oculomotor nerve
4. Trochlear nerve
5. Trigeminal nerve
6. Abducent nerve
7. Facial nerve
8. Vestibulocochlear nerve
9. Glossopharyngeal nerve
10. Vagus nerve
11. Accessory nerve
12. Hypoglossal nerve

Musculo-Skeletal System**Muscles:**

Muscle tissue is composed of cells that are specialized to shorten in length by contraction. This contraction result in movement.

Muscle is a responsible for most of our functions like locomotion, posture, speech, respiration, pumping of blood, movement of food, expulsion of wastes, storage of energy etc.

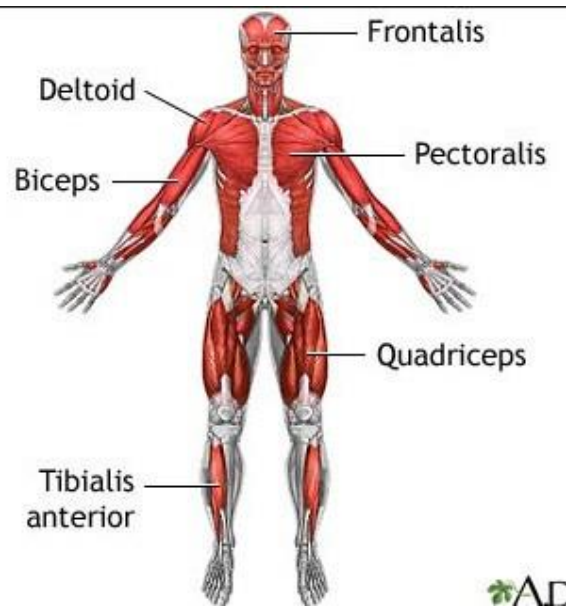


Figure 5.10 Musculo-Skeletal System

Classification of muscles: There are 3 types of muscles.

1. Skeletal muscle
2. Cardiac muscle
3. Smooth muscle

Skeletal Muscle: It is present mainly in the limbs and in relation to the body wall. Because of its close relationship to the bony skeleton, it is called skeletal muscle. It is also otherwise called as striated muscle and voluntary muscle.

Functions:

- Contraction
- Elasticity
- Maintenance of posture

Cardiac muscle: It is present exclusively in the heart. It is involuntary muscle.

Smooth muscle: It is present mainly in relation to viscera. It is also involuntary muscle.

Neuro - Muscular junction: The junction between a motor nerve and a skeletal muscle fiber is called Neuro-Muscular junction.

Neuro - Muscular transmission: It is defined as the transfer of information from motor nerve ending to the muscle fiber through Neuro - Muscular junction. It is the mechanism by which the motor nerve impulses initiate muscle contraction. A series of events takes place in the neuro-muscular junction during this process.

Muscles of the head:

- Cranio facial muscle
- Masticatory muscle

Muscles of the Neck:

- Platysma
- Trapezius
- Sternocleidomastoid

Inter-costal muscles:

- External
- Internal
- Inner most inter-costal muscles

These muscles are elevators of ribs and help in respiration.

Muscles of the abdomen:

- Internal and external oblique
- Transverses abdominis
- Rectus abdominis

Functions:

- Movement of the trunk
- Protection of the abdominal viscera

Muscles of Shoulder girdle and upper limb:

- Rhomboideus Major and Rhomboideus minor
- Trapezius
- Deltoid
- Subscapularis
- Pectoralis major and minor

Muscles of the lower limb:

- Muscles of gluteal region
- Muscles of the thigh

- Muscles of the leg and foot

Bones:

Bones are specialized, highly vascular, constantly changing and mineralized connective tissue. They are hard, resilient and have enormous generative capacity.



Figure 5.11 Bones

Classification of bones:

Based on histology:

1. Compact bones
2. Spongy bones

Based on maturity:

1. Mature bone
2. Immature bone

Based on manner of development:

1. Cartilage bone
2. Membrane bone

Based on shape

1. Long bone Eg: Radius, Ulna, Tibia, Fibula, Humorous, Femur

2. Short bone Eg: Carpal bones, Tarsal bones
3. Flat bone Eg: Parietal bones, frontal bones, ribs, sternum, scapula
4. Irregular bone Eg: Vertebra, hip bone, sphenoid, maxilla
5. Pneumatic bone Eg: Maxilla, sphenoid, Ethmoid

Functions of bones:

- Gives shape and form to the body
- Form the central axis of body
- Transmit weight of the body
- Give attachments to muscles and ligaments
- Protect major organs
- Storage of calcium
- Hemopoietic function

Skeleton: It forms the structural framework of the body. Skeleton includes bones, cartilage and joints. It is bilaterally symmetrical. It is 2 types:

1. Axial skeleton - It includes bones of head (Skull), vertebral column, ribs and sternum

Skull: It is made up of 22 bones and 6 ear ossicles.

Vertebral column: It is made up of 33 vertebrae, namely 7 cervical, 12 thoracic, 5 lumbar, 5 sacral and 4 coccygeal vertebrae.

Thoracic cage: It consists of 12 thoracic vertebrae, 12 pairs of ribs with their costal cartilages, sternum and xiphoid process.

2. Appendicular skeleton - It consists of bones of upper and lower limbs along with shoulder girdle and pelvic girdle

Upper limb:

Clavicle: It is a long bone. It is a part of the pectoral girdle or shoulder girdle which serves to attach the upper limb to the trunk.

Scapula: It is a large, flat, triangular bone

Humerus: This is the long bone of the arm, it has upper end, lower end and shaft.

Radius: Radius is the lateral bone of forearm.

Ulna: It is the medial bone of the fore arm. It corresponds to the fibula of the lower limb. It resembles the shape of a pickaxe.

Bones of the palm: It consists of 8 carpal bones, 5 metacarpal bones and 14 phalanges.

Pelvic girdle and lower limb:

Hip bone: It is a large irregular bone made up of 3 parts.

1. Ilium
2. Pubis
3. Ischium

The 3 parts are fused at a depressed area called the acetabulum.

Femur bone: It is the longest and strongest bone of the body. It is the bone of the thigh.

Patella: It is the largest sesamoid bone ossified in the tendon of quadriceps femoris. It lies in front of the knee joint. It is also called as the knee cap.

Tibia: It lies medial to Fibula. The Tibia is more massive. It articulates with the Femur to form the knee joint and helps in the transmission of body weight.

Fibula: It lies lateral to the Tibia. It provides attachment for most of the muscles of leg.

Bones of the foot: It is divided into 3 groups. 7 tarsal bones, 5 metatarsals, 14 phalanges.

Pelvic Girdle: Pelvis means basin. It is formed by 2 hip bones, Sacrum and Coccyx.

Types of Pelvis: There are 4 types

1. **Gynecoid:** Normal female pelvis
2. **Android:** Normal male pelvis
3. **Anthropoid:** Ape like pelvis
4. **Platypelvic:** Flat, bowl pelvis

The Gynecoid pelvis is the most spacious and most common variety of pelvis. A woman with this type of pelvis can have a normal, vaginal delivery, if other conditions are favorable.

Joints:

A joint is formed where 2 or more bones come together. They may or may not be movement between them. There are 3 types of joints

1. **Fibrous joint** - In this type, the articulating surfaces of bones are connected by fibrous tissue.

2. **Cartilaginous joint** - Bones are united either by Hyaline cartilage or fibro cartilage.

3. **Synovial joints** - These are the most common and important joints in the body. They normally provide free movement.

Types of Synovial joints:

1. Ball and socket joints. Eg. Shoulder joint

2. Hinge joint. Eg: Elbow joint
3. Pivot joint. Eg: Radio ulnar joint
4. Condyloid joint. Eg: Wrist joint
5. Saddle joint. Eg: Carpo- meta carpal joint of the thumb
6. Plane joint. Eg: Joints between the articular processes of the thoracic vertebrae.

Movements of the Synovial joint:

1. Gliding
2. Angular movements (Flexion and extension)
3. Abduction and Adduction
4. Rotation
5. Circumduction

Joints of the upper limb:

1. Sterno clavicular joint
2. Acromion clavicular joint

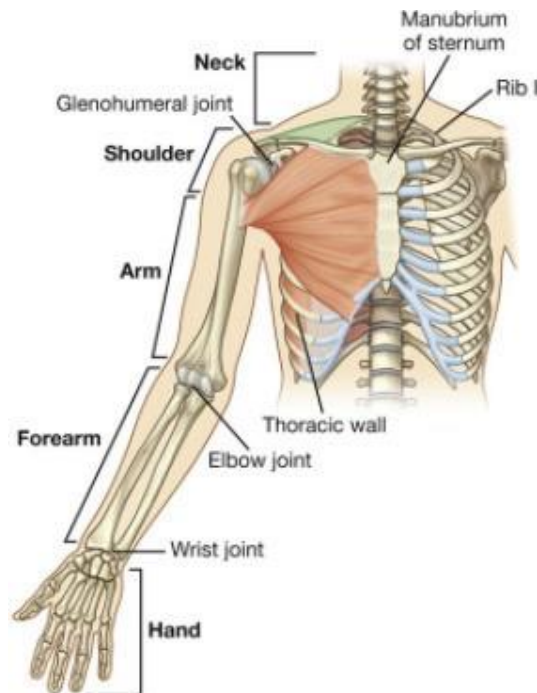


Figure 5.12 Joints of the upper limb

Elbow joints:

1. Humero ulnar joint
2. Humero radial joint

Wrist joints:

1. Radio carpal joint

Joints of hands and fingers:

1. Carpo meta carpal joints - It is a saddle variety of Synovial joint. It has a separate joint cavity from other carpo meta-carpal joint.

2. Meta Carpo Phalangeal joints - These are condylar variety of Synovial joints

Joints of the lower limb:

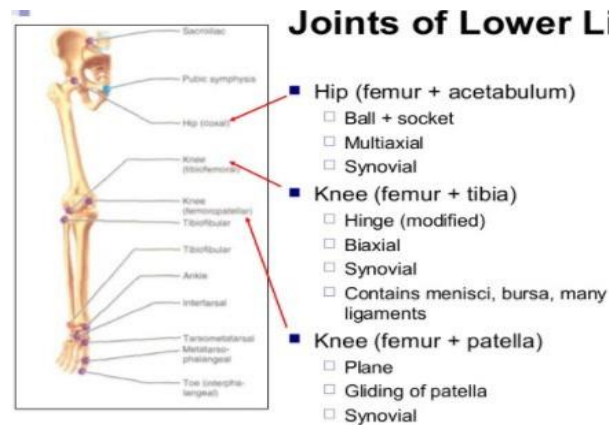


Figure 5.13 Joints of the lower limb

1. Hip joint - It is a synovial joint, ball and socket type.

The movements of hip joint are flexion, extension, abduction, adduction, medial and lateral rotations and circumduction.

2. Knee joint: It is a modified hinge joint. It is the largest and most complex joint of the body. It is called a compound joint because it incorporates 2 condylar joints between the condyles of the femur and tibia and one saddle joint between the femur and patella.

3. Ankle joint: The Ankle joint is a uni-axial, hinge joint. The main movements of this joint are dorsi flexion and plantar flexion.

4. Subtalar joint: It is formed between the lower surface of the body of the talus and upper surface of the middle third of the calcaneus. The Subtalar joint has a major role in the movements of inversion and eversion of the foot.

Endocrine system

The endocrine glands are ductless glands whose secretions are called hormones. Major endocrine glands are:

1. Pituitary gland
2. Thyroid gland
3. Para-thyroid glands
4. Adrenal or supra-renal glands



Figure 5.14 Endocrine System

Groups of endocrine cells may be present in organs that have other functions.

1. The Islets of Langerhans in pancreas
2. Interstitial cells testis
3. Follicle and corpus-luteum of ovary
4. Hormones secreted by placenta

Functions of Endocrine glands:

- Growth and development of body
- Help in digestion and absorption of food
- Help in reproductive function
- Regulation of body fluid volume

Pituitary gland: It is situated in the floor of the third ventricle of brain. The pituitary gland is one of the most important endocrine gland. It produces several hormones.

Hormones secreted by the Pituitary: Growth hormone, Prolactin, ACTH, TSH, FSH, LH,

ICSH, ADH, oxytocin.

Thyroid gland: It is the largest endocrine gland in our body. It occupies the anterior and lateral surfaces of the pharynx, larynx, esophagus and trachea like a shield. It is yellowish-brown in color and highly vascular.

Harmons secreted by the Thyroid gland: Thyroxine, T4, T3, Calcitonin

Functions:

- Increases basal metabolic rate
- Increases protein catabolism
- Decreases circulatory cholesterol
- Regulates body growth and development
- Regulates brain development
- Increase heart rate

Para-thyroid glands: These are 4 in number situated in thyroid gland.

Harmons secreted by Para-Thyroid glands: Para-tharmone

Supra-renal or Adrenal glands: It is situated in the upper pole of the kidney.

Harmons secreted by Supra-renal or Adrenal glands: Mineralocorticoids, glucocorticoids, sex-steroids, adrenalin, nor adrenalin, dopamine.

5.10 Special sensory organs

Special sense organs are

1. Eyes
2. Ears
3. Tongue
4. Nose

EYE: The eye or the organ of sight is situated in the orbital cavity of the skull and it is well protected by its bony walls. Each eye ball is like a camera. It has a lens which produces images of objects that we look at. The images fall on a light sensitive membrane called the Retina. Cells of the retina convert light images into nerve impulses which pass through the optic nerve and other parts of the visual pathway to reach the visual areas of the cerebral cortex.

EAR: Ear is the peripheral sense organ concerned with hearing and equilibrium. It is made up of 3 main parts called external ear, middle ear and internal ear. The external and middle ears are concerned exclusively with hearing. The internal ear has a cochlear part concerned with hearing and a vestibular part which provides information to the brain regarding the position and movement of the head.

TONGUE: The true sense of taste is localized in the tongue. There are 5 basic tastes, bitter, sweet, sour, salty, and umami (pleasantsavory taste). The tongue is covered by a mucus membrane. There are numerous elevations called papillae on the tongue. The end organs for the sense of taste are called taste buds. They are situated most densely at the tips, sides and base of the tongue.

NOSE: The mechanism of smell depends on all factory receptor cells, all factory nerves, all factory bulb and all factory tract which convey the impulses to brain.

Review Questions:

- 1.Explain the structure and function of the Human Body
- 2.Explain briefly about the body systems and their functions
- 3.Explain in brief about the Digestive system
- 4.Explain in brief about Respiratory system
- 5.Explain in brief about Cardiovascular system
- 6.Explain in brief about the Nervous system
- 7.Explain in brief about the Endocrine system
- 8.Explain in brief about the Muscular-Skeletal system
- 9.Explain in brief about the special sensory organs of the Human body

UNIT-VI
MENTAL HEALTH**Mental Health****Concepts of Mental Health****Body - Mind relationship****Relevance of the mind-body relationship to Nursing****Factors influencing mental health****Characteristics of a mentally healthy person.****Developmental tasks of different age groups****Defense Mechanism****Motivation****Learning****Memory****Thinking****Mental Health**

Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. Hence mental health is an integral and essential component of health. It is the foundation for individual well-being and the effective functioning in a community. It is also related to promotion of mental well-being, prevention of mental disorders and treatment, rehabilitation of people affected by mental disorders.

It is a state of balance between the individual and surrounding world, a state of harmony between oneself and others, a co-existence between the realities of the self and that of other people and the environment.

Definition

According to WHO, Mental Health as a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community.

Concepts of Mental Health

Any time during the life of individual the psychiatric disorder plays an important role. In ancient days it was believed that psychiatric disorders are due to evil spirits and devils. Even some of the patients were burnt alive in Europe in the 16th century.

Duccg and Simon 1970 Millen therapy is established. According to this therapy the psychiatric disorders were treated by psychiatric nurses by kindness, music and dance. Even earlier roughly 1400BC our ancient Hindu writing contained in the ayurvedic, mental illness classified and set down functions and qualifications for psychiatric nurses. These are cool headed, pleasant, kind spoken, strong and pay attention to the needs of the sick and follow the physician's order (Krunpliz 1977).

Many studies reported that the genetic predisposition, anatomic and functional alterations and biochemical process of the brain as the major component of mental illness.

Case management is a role component that enables nurses in various clinical settings to support and facilitate the client's level of function. Crisis intervention, problem solving, education and collaboration with various mental health professionals and community resources are the major aspects of psychiatric nursing (ANA 1994).

Psychiatric nurses will provide various types of care. i.e. primary mental health care, it includes continuous and comprehensive services necessary for the promotion of optimal mental health, prevention of mental illness, health maintenance, management and referral of mental and physical health problems, the diagnosis and treatment of mental and behavioral disorders and sequels and rehabilitation.

Today in many countries psychiatric nurses are the only mental health professionals to have 24hr responsibility for patients in the in-patients or institutional settings and therefore the prime care givers and monitors of patient progress. They take active participation in primary, secondary and tertiary prevention.

Looking into the future, psychiatric nurses will focus on concepts of healthy living based on "Humanistic - Holistic caring", as the central core of all their nursing practices. Psychiatric nursing will continue to grow and evolve in the years ahead. Health care reform, patient, family and community needs, scientific developments, economic realities and societal relations will mold and shape the role and functions of psychiatric nurses.

Body - Mind relationship

The Mind

The mind is regarded as a function of the body. It does not exist apart from the body. The mind is the sum-total of various mental processes such as observing, knowing, thinking, reasoning, feeling, wishing, imagining, remembering and judging. Our mind grows just as our body grows. It becomes more complex with advancing years. In other words, our mental processes become richer and more complex day by day. For example, there is a difference between the thinking and reasoning of an adult and that of a child of three years.

The conscious, Preconscious and Unconscious

There are three levels at which the mind functions

- Conscious
- Observing, thinking, reasoning, judging, imagining.
- Preconscious or Subconscious

Lies below the margin of consciousness. It includes matter which can be recollected. It does not allow flow of material from the unconscious to the conscious.

Unconscious (Popularized by Freud)

Includes the processes of which we are totally unaware. It can cause dreams, slips of tongue and even abnormal behavior.

Body - Mind relationship

Philosophers and psychologists have tried to understand the body-mind relationship. Ancient systems of healing had shown that there is a connection between the mind and body in healing. Mental functions and physical states affects each other. Our nervous system and glands (which are an important part of our body) are responsible to a great extent for our ways of thinking, feeling and wishing.

A. Affect of the body on Mental Functioning

A few examples of bodily conditions affecting mental functioning in a normal healthy person.

1. An increase in blood pressure leads to mental over-activity.
2. Fatigue of the body makes concentration difficult and reduces the individual's sense of proportion.
3. Constipation can cause irritability and depression.
4. Excessive thyroid activity leads to mental restlessness and over-excitability, whereas under-secretion of the same glands leads to dullness and lethargy of the mind and body. Overactive adrenal glands may produce aggressive behavior, intense feelings, while interactive adrenal gland may produce depression, nervousness or negativity.
5. Septic tonsils and adenoids often weaken concentration and the power of understanding.
6. Lack of sleep can disturb our cognitive functioning.

B: Effect of the mind on bodily functions.

Our mind affects our bodily functions or physical states.

1. The mind motivates all physical and motor activities.
2. Our emotions and strong feelings (mental states) affect the body inwardly and outwardly. Unpleasant emotions such as fear, anger and worry cause headaches, insomnia, indigestion etc. Emotional conflicts are responsible for various neurotic illness such as hysteria, neurasthenic as well as gastrointestinal troubles like peptic ulcer, ulcerative colitis or flatulence.
3. Suppressing emotions uses up a lot of energy that is needed for vital functions. Denied, suppressed or repressed feelings affect functioning in indirect ways contributing to the nervousness, anxiety, depression and physical disease processes.
4. Deep thinking and concentration can cause physical fatigue.

The mind nor the mental processes are always found connected to a body, but they are more intimately connected with brain or cortical processes.

If our brain is injured or diseased, our mental processes suffer. Many brain-damaged persons cannot think logically or perceive accurately.

Our nerves carry the impulse of the bodily changes to the brain. A pin-prick, our nerves carry the message to the brain and the mental experience of pain is felt.

A psychosomatic disorder is mainly used to refer to a physical disease that is thought to be caused or made worse by mental factors.

The importance of the mind in the treatment of illness can be traced back to more than 2000 years, to the healing approaches used in Ayurveda and in traditional Chinese medicine. Mind-body interventions can be effective in the treatment of coronary artery diseases. These therapies (e.g yoga, meditation, imagery, hypnosis, relaxation) when used before surgery, may reduce recovery time and pain following surgical procedures.

Relevance of the mind-body relationship to Nursing

Nurses have to understand the intimate relationship between the mind and the body, since effective nursing care adopts a holistic approach to treatment. A nurse has to attend the physical needs of the patient by giving due consideration to the patient's feelings and needs. It becomes important to know that some of the patient's behavior can operate from a deeper unconscious level. A nurse has to understand that some of her own fears or dislikes with specific reference activities are based on unexplained fears and insecurities from her own unconscious.

Knowing how patients behave in altered states of consciousness is also important when nurses deal with drug addicts or accident victims, who may be experiencing abnormal states of consciousness. The fact that sleep deprivation can also bring alterations in the state of consciousness will help the nurse understand the importance of having adequate sleep to carry out her duties efficiently

Summary

The mind is a function of the body, it does not exist apart from the body.

- ✓ The mind grows, in the sense that mental processes become richer and more complex as we grow older.
- ✓ Our mind works at three levels - the conscious level (deals with our immediate awareness), preconscious (includes what we can recollect) and unconscious (includes our repressed desires, our fears and immoral urges).
- ✓ An altered state of consciousness is any condition which is significantly different from a normal waking state. It can be caused by many conditions like sensory changes, oxygen, and sleep deprivation, drugs, infections, hypnosis and medication.
- ✓ The mind and body interact with each other. Various bodily conditions affect our mental functioning. Similarly, our feelings or our emotions can cause bodily illness.
- ✓ Psychosomatic disorders emphasize the intimate relationship between the mind and the body.
- ✓ Mind-Body interventions have been found to be useful in the cases of coronary heart diseases, cancer and in pain management.

Factors influencing mental health

Many factors are responsible for the causation of mental illness. These factors may predispose an individual to mental illness, precipitate or perpetuate the mental illness.

Predisposing factors

These factors determine an individual's susceptibility to mental illness. They interact with precipitating factors in mental illness. They are

1. Genetic make up
2. Physical damage of the central nervous system.
3. Adverse psychosocial influence.

Precipitating Factors

These are events that occur shortly before the onset of a disorder and appear to have induced it. They are

1. Physical stress
2. Psychosocial stress

Perpetuating Factors

These factors are responsible for aggravating or prolonging the diseases already existing in an individual. Psychosocial stress is an example. Thus, etiological factors of mental illness can be

1. Biological factors
2. Physiological changes
3. Psychological factors
4. Social factors

Biological Factors**1. Heredity**

Studies have shown that three-fourths of mental defectives and one-third of psychotic individuals owe their condition mainly to unfavorable heredity.

2. Biochemical Factors

Biochemical abnormalities in the brain are considered to be the cause of some psychological disorders. Disturbance in neurotransmitters in the brain is found to play an important role in the etiology of certain psychiatric disorders.

3. Brain damage

Any damage to the structure and functioning of the brain can give rise to mental illness. Damage to the structure of the brain may be due to

Infection: Example - syphilis, encephalitis, HIV infection etc.

Injury: Loss of brain tissue due to head injury.

Intoxication: Damage to brain tissue due to toxins such as alcohol, barbiturates, lead etc.

Vascular: Poor blood supply, bleeding (intracranial hemorrhage, subarachnoid hemorrhage, subdural hemorrhage)

Alteration in brain function: Changes in blood chemistry that interfere with brain functioning such as disturbance in blood glucose levels, hypoxia, anoxia and fluid and electrolyte imbalance.

Tumors: Brain tumors

Vitamin deficiency and malnutrition, in particular deficiency of vitamin B complex.

Degenerative diseases: Dementia

Endocrine disturbances: Hypothyroidism, thyrotoxicosis etc.

Physical defects and physical illness: Acute physical illness as well as chronic illness with all their handicapping conditions may result in loss of mental capacities.

4. Physiological changes

It has been observed that mental disorders are most likely to occur at certain certain critical periods of life namely - puberty, menstruation, pregnancy, delivery, puerperium and climacteric. These periods are marked not only by physiological (endocrine) changes, but also by psychological issues that diminish the adaptive capacity of the individual. Thus, the individual becomes more susceptible to mental illness during this period.

Psychological Factors

- It is observed that some specific personality types are more prone to develop certain psychological disorders. For example, those who are unsocial and reserved (schizoid) are vulnerable to schizophrenia when they face adverse situations and psychological stresses.
- Strained interpersonal relationships at home, place of work, school, or college, bereavement, loss of prestige, loss of job etc.
- Childhood insecurities due to parents with pathological personalities, faulty attitude of parents (over-strictness, over leniency), abnormal parent-child relationship (over protection, rejection, unhealthy comparisons), deprivation of child's essential psychological and social needs etc.
- Social and recreational deprivations resulting in boredom, isolation and alienation.
- Marriage problems like forced bachelorhood, disharmony due to physical, emotional, social, educational or financial incompatibility, childlessness, too many children etc.
- Sexual difficulties arising out of improper sex education, unhealthy attitudes towards sexual functionalities, guilt feelings about masturbation, pre- and extra-marital sex relations, worries about sexual perversions.
- Stress, frustration and seasonal variations are sometimes noted in the occurrence of mental diseases.

Social Factors

- Poverty, unemployment, injustice, insecurity, migration, urbanization, family instability.
- Gambling, alcoholism, prostitution, broken homes, divorce, very big family, religion, traditions, political upheavals and another social crisis.
- These factors may influence mental health.

Characteristics of a mentally healthy person.

- He has an ability to make adjustments.
- He has a sense of personal worth, feels worthwhile and important.
- He solves his problems largely by his own effort and makes his own decisions
- He has a sense of personal security and feels secure in a group, shows understanding of other people's problems and motives.
- He has a sense of responsibility
- He can give and accept love
- He lives in a world of reality rather than fantasy

- He shows emotional maturity in his behavior and develops a capacity to tolerate frustration and disappointments in his daily life.
- He has developed a philosophy of life that gives meaning and purpose to his daily activities
- He has a variety of interests and generally lives a well-balanced life of work, rest and recreation.

Developmental tasks of different age groups

Freud's stages of personality development:

Freud described formation of personality through 5 stages of psychosexual development.

Stage of development	Main characteristics	Examples of unsuccessful task completion
Oral Birth to 18 months	Use mouth and tongue to deal with anxiety (For example sucking feedings)	Smoking, alcoholism, obesity, nail biting, drug addiction, difficulty trusting
Anal 18 months to 3 years	Muscle control in bladder, rectum, anus provides sensual pleasure, toilet training can be a crisis.	Constipation, perfectionism, obsessive compulsive disorder.
Phallic	Learn sexual identity and awareness of genital area as source of pleasure, conflict ends as child represses urge and identifies with same sex parent. The development of extra complex and Oedipus complex occurs during this stage of development. Freud described this as the child's unconscious desire to eliminate the parent of same sex and to possess the parent of the opposite sex.	Homosexuality, trans-sexuality, sexual identity problems in general, difficulty accepting authority.
Latency 6 – 12 years	Quite stage in sexual development, learn to socialize.	Inability to conceptualize, lack of motivation in school or job.
Genital 12 years to adulthood	Sexual maturity and satisfactory relationships with opposite sex.	Frigidity, impotence, premature ejaculation, unsatisfactory relationships.

Table 6.1: Freud's stage of personality development

Theory of Psychosocial Development:

Erik Erikson (1902-1994) was a German-psychoanalyst who extended Freud's work on personality development across life span while focusing on social and psychological development in the life stages. In his view, psychosocial growth occurs in sequential phases, and each stage is dependent on completion of previous stage and life task. For eg: in the infant stage, the infant must learn to develop basic trust (positive outcome) such as that he or she will be fed and taken care of. The formation of trust is essential: mistrust, the negative outcome of this stage, will impair the person's development throughout his or her life.

Table 6.2: Erikson's eight stages of psychosocial development

Stage and approximate ages	Virtue	Task	Consequences of unsuccessful task completion
Infant Trust vs Mistrust Birth to 18 months	Hope	Viewing the world as safe and reliable, relationships as nurturing, stable and dependable.	Suspicious, trouble with personal relationships
Toddler Autonomy vs Shame and doubt 1 to 3 years	Will	Achieving a sense of control and free will	Low self-esteem, dependency
Pre-school Initiative vs Guilt 3 to 6 years	Purpose	Beginning development of a conscience learning to manage conflict and anxiety.	Unmotivated, unreliable
School age Industry vs Role confusion 6 to 12 years	Competence	Emerging confidence in own ability taking pleasure in accomplishments	Rebellion, substance abuse, difficulty keeping personal relationships, May regress to child play behaviors
Young adult intimacy vs isolation 18 to 25 years	Love	Formulating adult, loving relationships and meaningful attachments to others	Emotional immaturity, may deny need for personal relationships
Middle adult Generativity vs Stagnation 21 to 45 years	Care	Being creative and productive focus is on establishing family and guiding the next generation	Inability to show concern for anyone but self
Maturity Ego integrity vs Despair 45 years to death	Wisdom	Accepting responsibility for one's self end life.	Has difficulty dealing with issues of ageing and death, may have feelings of hopelessness



Fig 6.1 schematic Representation of Maslow's Hierarchy of needs

Defense Mechanism:

Defense mechanisms are reactions which protect an individual from psychological distress and protect his feelings of self-worth and are generally unconscious.

Types of Defense mechanism:

1.) Compensation: Over achievement in one area to make up for deficiency in another.

Example: An economically poor student may work hard and may show his abilities in dramatics

2.) Rationalization: Justifying one's ideas or behavior.

Example: If we cannot do a job well or successfully, we could satisfy ourselves by saying "It does not pay to work hard on this job"

There are 2 types of Rationalization:**1. The sour-grapes mechanism:**

Example: A student who has failed in an examination twice or thrice may argue "only crammers can pass such an examination".

2. The sweet-lemon mechanism:

Example: A person who lives in a small house because of financial resources may extol the virtues of small houses and may say that they are much more comfortable.

3.Projection: Attributing one's own undesirable thoughts, impulses or feelings to others.

Example: A student who has cheated in an examination may satisfy himself by saying "Others too have cheated"

4.Displacement: Releasing one's pent-up feelings on a less threatening object.

Example:Man, who gets angry at his boss, but cannot express his anger to him for fear of being fired. He instead comes home and kicks the dog or starts an argument with his wife.

5.Identification: Increasing one's feelings of oath by identifying or modelling oneself on people who are respected or influential.

Example: Boys often identify themselves with their father and girls with their mothers.

6.Sublimation: Channeling of unacceptable impulses, desires and behaviors into socially acceptable behaviors.

Example: A woman who is unable to have children may engage herself in working with children.

7.Repression: Unconscious forgetting of painful ideas, events and conflicts.

Example: Unpleasant and painful ideas to be thrown into unconsciousness.

8.Regression: Reverting to an earlier level of development.

Example: A 5-year-old child may regress when a sibling is born and feel neglected, unloved and repressed.

9.Fantasy or day dreaming: Withdrawing to a make-believe world through day dreaming.

Example: Day dreaming is pleasant because it may help us escape from the disagreeableness of everyday life.

10. Denial: Refusal to accept the reality of a threatening situation in spite of real evidence.

Example: Drug addicts or alcoholics often deny that they have a problem.

11. Withdrawal: Removing oneself from situations that are embracing or painful.

Example: A student who is afraid of achieving success may withdraw from the race.

12. Reaction formation: Behaving in a way that is the very opposite of one's real feelings or motives.

Example: A homo-sexual may join a gay-hate group

13. Intellectualisation: Using logical explanations without feelings.

Example: When a person is told that he has cancer, he asks for details on the probability of survival and the success rates of various drugs, using the word carcinoma instead of cancer.

14. Negativism: Becoming in-cooperative and doing the opposite of what should be done.

Example: Some individuals react to frustrating situations by becoming negative.

Motivation:

Motivation is some sort of encouragement by others. Human behavior is stimulated by motivation.

Definition: According to Rosen, Fox and Gregory (1972), Motivation can be defined as a readiness or disposition to respond in some ways and not others to a variety of situations.

Characteristics of Motivation:

- It is an internal condition which arises from the need of an individual
- It is goal-directed activity.
- If goal changes, our motive also changes.

Types of motivation:

There are 2 types of motivations based on needs.

1. Intrinsic motivation or Primary motivation
2. Extrinsic motivation or Secondary motivation.

intrinsic motivation: It is also called primary motive or physiological motive because they are based on biological needs.

They are 4 types:

1. Hunger: Hypothalamus regulate the Hunger. If it is damaged, variations occur in hunger.
Eg: Brain tumors, head injuries.

2. Thirst: For maintenance of food and electrolyte balance water is very essential. It is

regulated by ADH (Anti-diuretic hormone). During the dehydrated conditions, the water is lost from the cells and reduction of blood volume. This behavior stimulates the individual to drink water and bring back the blood volume to its normal level.

3. Sex: It is more influenced by hormones and physiological response. It is not necessary to maintain a life of individual but necessary for survival of species. Hypothalamus regulates the release of sex hormones.

4. Maternal: Hormones play an important role in activating the maternal drive. Progesterone is important to maintain pregnancy.

Extrinsic motivation: It is not as essential as primary motive but for the psychological development and social need satisfaction, this kind of motives are important.

Social motives are 4 types:

1. Achievement motivation: This can be seen in many areas.

Examples: Job, games etc.

2. Power motivation: It is the ability or capacity of a person to produce intended effects on the behavior or emotions of another person.

Examples: Control, lead etc.

3. Affiliation motivation: It is influenced by many factors such as biological attachments, reduction of fear, self-evaluation.

4. Aggression motivation: Aggression can be defined as a tendency to harm or hurt others either physically or psychologically.

Example: Child abuse, assaults, forcible rapes etc.

Learning: The term learning is very commonly used in our day to day life especially in the field of education. It is the key process to mold an individual's personality. It is continuous process from birth to death.

Definition: According to Gardner Murphy (1968), the term learning covers every modification in behavior to meet environmental requirement.

Nature of learning:

- ✓ Learning is a process and not a product.
- ✓ Learning involves experience.
- ✓ Learning is not only acquiring new behavior but also unlearning.
- ✓ Learning is the process of adoption.
- ✓ Learning is a universal and continuous process.
- ✓ Learning will not cover any modifications in behavior.

Types of Learning:

- ✓ **Verbal learning:** It is learning a language to communicate either orally or in written.
- ✓ **Motor learning:** It is learning of motor skill. Eg: Bike riding, Car driving.

- ✓ **Concept learning:** It is a form of mental image. Eg: When we think of a house, the image we have in our mind is acquired through previous experiences or perception.
- ✓ **Problem solving learning:** This requires cognitive abilities. Eg: Reasoning, thinking.
- ✓ **Serial learning:** Learning in a sequential order. Eg: Child learns alphabets, multiplication, tables, names of months etc.
- ✓ **Paired- associated Learning:** It is learning by reason. Eg: A place name may be remembered by associating with the same familiarity, for instance, Dam of Krishna Raja Sagar may be remembered by associating it with Lord Krishna.

Memory: The term memory derives from Latin word 'Memoria' which means historical account or remembrance.

Definition: According to Baddeley (1996), Memory is an active system that receives information from the senses, organizes and alters it as it stores it away and then retrieves the information from storage.

Process of Memory: It includes 3 steps:

- ✓ **Learning:** The first step in the memory process is to get information
- ✓ **Retention:** Learning process will be encoded as memory trace known as 'Engram'. Encoding is the mental operation that converts sensory impulses into neural impression, which enables the information to store in the brain system.
- ✓ **Recall and Recognition:** The next step is to retrieve the information to consciousness and make use of it. This process is known as recall. The other inter-related process is recognition which helps in identifying the proper information that we need to recall in a specific time and requirement.

Types of Memory: There are several types depending upon time duration.

- ✓ **Sensory memory or Immediate memory:** The retention time is extremely brief from a fraction of second to several seconds, generally one information at a time.
- ✓ **Short-term Memory or Temporary Memory:** In this memory the information is stored for a short term. The retention time lasts for 30 seconds. The span of STM is 5 to 9 items.
- ✓ **Long-term Memory or Permanent Memory:** It is long-lasting nature., stored information is no decay. The memory capacity seems to be unlimited. E.g. Birth place, date of birth etc.
- ✓ **Episodic Memory:** It includes the sequence of events that we experience in our day to day life or life experience. At the time of recall these memory traces are reproduced in the same sequence in which the information was stored or registered.
- ✓ **Semantic Memory:** It is collection of relationships between events or association of ideas. E.g. The ability to make use of learn formula for solving the problem in mathematics.
- ✓ **Photographic Memory:** In this the individual recall or reproduce the information very precisely related to their image, shape, position. E.g. Playing games like chess.
- ✓ **Para-normal Memory:** This is a distinctive and unusual type of memory popularly

known as Re-incarnation. it consists of unusual memory traces concerning one's previous life. It is mostly connected with the phenomenon of rebirth.

Techniques of Memory:

- ✓ The method of Loci: The term Loci means location or place. Eg.: Remembering by location or place.
- ✓ The Peg-Word method: Eg. A stand for Apple, B stands for Ball.
- ✓ The Narrative-Chaining Method: This method consists of making stories to remember the information.
- ✓ Initial letter strategy: The initial letters are the focus for remembering and associating.

Eg. I - Identify the problem

D - Define the problem

E - Explore the possible strategies.

A - Acting on the strategies

L - Looking back

Thinking:

It is one of the most advanced cognitive process. We cannot stop thinking.

Definition: Glimer (1970) stated that, Thinking is a problem-solving process in which we use ideas or symbols in place of over activity.

Characteristics:

- ✓ It is cognitive activity.
- ✓ Problem solving behavior.
- ✓ It involves fine muscle movement in throat and laryngeal region.
- ✓ It is not observable by others
- ✓ It is a mental exploration of solution to the problems.
- ✓ It is a symbolic activity.
- ✓ Thinking can shift over a span of time and space.

Elements of Thinking:

- ✓ **Image:** It is a mental representation of any objects or events that we experience.
- ✓ **Concepts:** These are ideas that represent a class or category of objects, events or activities.
- ✓ **Symbols and Signs:** Traffic lights or traffic signs.
- ✓ **Language:** It is not only a medium of communication but also acts as a tool of thinking.
- ✓ **Muscle activities:** A positive co-relation between thinking and muscular activities of an individual.
- ✓ **Brain function:** Our brain is the major apparatus that carries the process of thinking.

Types of Thinking:

It is majorly 3 types:

1. Concrete thinking: It involves the use of simple memory images and sensory images that are stored in the memory process.

2. Abstract thinking: It is more advanced form of thinking which is not restricted to the concrete phenomenon observed in the external world or in the environment.

3. Non-directed or Associated thinking: This type of thinking does not have any goal or purpose

Abnormal thinking: Deviation from normal thinking is called Abnormal thinking. These are 2 types.

1. Autistic thinking: It refers to the thinking pre-occupied with inner thoughts, day dreams, fantasies, lack of logic and reality. It is one of the developmental disorder. Very young children have this type of thinking. They are completely in the world of fantasy. In adults, it may lead to Schizophrenia.

2. Over-inclusive thinking: This type of thinking reflects a break-down of the logic. is seen in Schizophrenia patients.

Review Questions:

1. Briefly explain the concept of Mental health and body-mind relationship.
2. Explain the factors influencing mental health.
3. What are the characteristics of a mentally healthy person?
4. Explain about the developmental tasks of different age groups.
5. Explain briefly about different defense mechanisms
6. Briefly explain the concept of Motivation
7. Briefly explain the concept of Learning
8. Briefly explain the concept of Memory
9. Briefly explain the concept of Thinking.

UNIT-VII

MAL ADJUSTMENT

Adjustment:**Maladjustment:****Signs and symptoms of Maladjustment in children:**

Some of the signs and symptoms of maladjustment to adults are

Causes of Maladjustment:**Social and Personal Adjustment:****Relevance of Adjustment to Nursing:**

The term adjustment refers to the harmonious relationships between a person and his environment. When we say that an individual is well adjusted, we mean that he has learnt to satisfy his needs and cope with his life situations.

Adjustment:

Definition: Adjustment is the process through which we cope with the challenges of life and maintain a harmonious relationship with the environment.

There are 3 ways of evaluating adjustment as a process:

- ✓ The negative approach in terms of symptoms.
- ✓ The positive approach which will look at the way one is striving and coping.
- ✓ The statistical approach which is to compare one's adjustment with some norms.

Maladjustment:

Definition: It is the ability to adjust to the demands of interpersonal relationships and stresses of daily living.

A failure to meet the demands of society or an inability to cope with problems can lead to maladjustment and is usually reflected in emotional and behavioral problems.

Signs and symptoms of Maladjustment in children:

- ✓ Nervousness shown by nail biting, Lip biting, stammering, blushing, restlessness, frequent urination.
- ✓ Extremely distressed about failure.
- ✓ Absent-minded
- ✓ Day dreaming
- ✓ Evading responsibilities.
- ✓ Concentration difficulties.
- ✓ Teasing or bullying others.
- ✓ Acting funny to attract attention
- ✓ Anti-social behavior

- ✓ Refusal to go to school
- ✓ Unexplained fears.
- ✓ Lack of interest in school work
- ✓ Psychosomatic disturbances

Some of the signs and symptoms of maladjustment to adults are

- Substance abuse
- Social withdrawal
- Absenteeism from work
- Procrastination
- Not engaging in hobbies or interests which the person had earlier
- Fatigue
- Sleep problems
- Loss of weight or over-eating
- Aches and pains.
- Digestion problems
- Psychosomatic problems

When the problems causing Maladjustment are not solved, it can result in mental illness, emotional instability, emotional disorders, personality disorders or behavior disorders.

Causes of Maladjustment:

- Family can contribute to Maladjustment, due to divorce, death, desertion, separation etc.
- Low socio-economic status can sometimes create many frustrating situations leading to maladjustment. If parents are over-possessive, highly authoritative, abusive or hold unrealistic expectations, it can lead to situation where the psychological needs are not met. Children or adolescents in such a family environment can develop problems, phobias, anxiety, nail biting or lack of self-confidence.
- Individuals with physical or mental handicap can develop feelings of inferiority, they may withdraw from others, schools with teachers and peers can also contribute to maladjustment.
- In case of adults, Maladjustment can be seen when the work environment is too demanding, when It does not match one's financial or psychological expectations, role conflict in the case of women worker's or due to interpersonal relationship problems. In the family, factors like lack of compatibility between spouses, clash of values and interference by in-laws can lead to maladjustment. Failing health and diminished importance that an individual may get in the family can lead to maladjustment in old age.

Social and Personal Adjustment:

It can be defined as the adjustment of the person to social environment. Adjustment may take place by adapting the self to environment or by changing the environment. (Campbell, 1996) Social adjustment frequently involves coping with new standards and values. It means an appropriate performance of one's role in life – as a parent, a spouse, an employee and so on.

Personal adjustment deals with emotional security, feeling of personal adequacy, extent of being successful, accepting one's limitations and being able to delay gratifications, whenever necessary.

Relevance of Adjustment to Nursing:

- Effective nursing requires successful and professional adjustments on the part of nurse herself.
- It is important to know her own strengths and use them and to know her own weaknesses and where they can be improved through work and study and where they cannot be improved.
- Adjusting to one's profession: The successful nurse must also adjust well to her profession.
- The nurse must be able to establish and maintain good interpersonal relationships.
- She also needs skills in team-work.
- Her conduct both on and off duty, reflects on the profession as a whole
- A code of ethics has been formulated and accepted by the ICN (International Council of Nurses)
- This code has been accepted by many national associations in many parts of the world.

Review Questions:

1. Briefly explain Mal adjustment and features of Mal adjusted individual.
2. Explain the common causes for Mal adjustment and their treatment

UNIT-VIII

MENTAL ILLNESS

Definition:

Mis-conceptions about mental illness:

Symptoms of poor mental health:

Causes of Mental illness:

Classification of Mental Illness:

Types of Mental Disorders:

Treatment of the Mentally ill:

Abnormal Behavior:

Psychiatric Emergencies:

Mental illness is a maladjusted way of behavior, which produces disharmony in the person's ability to meet human needs comfortably or effectively and function within a culture. The mental illness can be defined by WHO (2001) as mental and behavioral disorders are understood as clinically significant conditions characterized by alteration in thinking, mood or behavior associated with personal distress. Thus, mental illness is a broad term including almost all the disorders of behavior, which are caused by faulty perception, emotion, thinking and attitude. Such individuals have problems in making adjustment with others in the society.

Definition:

It is a condition characterized by impairment of an individual's cognitive, emotional or behavioral functioning caused by social, psychological, bio-chemical, genetic or other factors.

Mis-conceptions about mental illness:

There is lot of misunderstanding and fear surrounding mental illness. Myths about mental illness have in turn led to stigma and discrimination of the mentally ill. Some of such myths are

- ✓ Mentally ill persons are dangerous
- ✓ Mental illness is incurable
- ✓ Mental illness is a disgrace
- ✓ Mental illness does not affect children and adolescents
- ✓ Mental illness is determined by heredity

Symptoms of poor mental health:

- ✓ Disorganized daily life routine
- ✓ Short-tempered and irritating behavior
- ✓ Anger and aggressive behavior

- ✓ Restlessness
- ✓ Increased or poor appetite and indigestion
- ✓ Irregular sleeping pattern such as insomnia, disturbed sleep or narcolepsy (excess sleep)
- ✓ Poor interpersonal relationships
- ✓ Anxiety and worry
- ✓ Negative attitude towards self and others
- ✓ Withdrawing from relationships
- ✓ Irregular and abnormal psychological conditions (Eg: Blood pressure, pulse rate etc.)
- ✓ Excessive use of drugs (Eg: Alcohol)
- ✓ Cigarette smoking and use of tobacco in other forms

Such behaviors or remains in a particular stage for a long period is more likely develop various kinds of mental disorders.

Causes of Mental illness:

Heredity: It is often regarded is a causative factor. Studies have shown that about 3/4th of mental defectives and a third of psychotic individuals owe their condition mainly to heredity.

Organic causes: The principle organic causes, according to Holman are,

1. Loss of brain tissue: Brain tissue can be lost through local injuries such as brain syphilis, encephalitis and atherosclerosis in old people.

2. Damage to brain tissue by toxins: Addiction to alcohol, drugs like bromides, barbituric acid derivatives, sulpha drugs, morphine, cocaine and lead.

3. Interference with brain tissue by changes in blood chemistry: Disturbances of blood chemistry may be a disturbance of the blood-sugar level, disturbances of acid-alkali ratio, insufficiency of oxygen and disturbance of water balance.

4. Endocrine disturbances: These disturbances may lead to changes in general efficiency of bodily functions with resulting feelings of frustration or insecurity.

Other biological causes:

- ✓ Vitamin deficiencies and malnutrition
- ✓ Physical defects and physical illnesses
- ✓ Fatigue
- ✓ Surgical operations and trauma
- ✓ Pregnancy and puerperium

Psychological or Psychogenic factors in Mental illness:

- ✓ Low or very high mental ability
- ✓ Early interpersonal relationships
- ✓ Faulty child rearing methods
- ✓ Parents may have frequent quarrels
- ✓ Early loss of parents or significant others can be traumatic for young children

- ✓ Most vital psychogenic factors in the causation of mental illness is the problem of mental conflicts.

Socio-Cultural and Socio-Economic factors:

- ✓ Socio-cultural factors include, social codes, religious beliefs and attitudes
- ✓ Socio-economic factors include, unemployment, poverty, sudden financial losses, strain of uncongenial jobs.

Classification of Mental Illness:

Mental illness classification based on International Classification of Diseases (ICD-10)

WHO's classification for all the diseases and related health problems.

The main categories of ICD-10

F00 - F09 - Organic, including symptomatic, mental disorders

F10 - F19 - Mental and behavior disorders due to psychoactive substance use

F20 - F29 - Schizophrenia, schizotypal and delusional disorders

F30 - F39 - Mood (affective) disorders

F40 - F49 - Neurotic, stress-related and somatoform disorders

F50 - F59 - Behavioral syndromes associated with psychological disturbances and physical factors

F60 - F69 - Disorders of adult personality and behavior

F70 - F79 - Mental retardation

F80 - F89 - Disorders of psychological development

F90 - F98 Behavioral and emotional disorders with onset usually occurring in childhood and adolescence

F99 - Unspecified mental disorder

Types of Mental Disorders:

Psychoneuroses (also called neuroses): In neuroses, only a part of the personality is affected, although normal and healthy adjustment is not possible. Patients suffering from neurosis are not in so serious state as to require institutionalization.

Symptoms: Vague fatigue, irritational fears, doubts and anxiety, craving for attention, undue attachment to a member of the family, preoccupation with himself, emotional turmoil, fantasy, tendencies to self-pity and self-blame and obsessions.

Anxiety disorders: An anxiety disorder is characterized by excessive worrying, uneasiness, apprehension and fear about future.

A. Generalized anxiety disorder (GAD): it is characterized by exaggerated anxiety and worry about everyday life events.

Symptoms: Excessive ongoing worry and tension, an unrealistic view of problems, muscle tension, headaches, sweating, tiredness, trembling and nausea.

B.Phobias: This is an anxiety disorder marked by an irrational fear and avoidance of a specific object or situation. There are different types of specific phobias.

- Animal phobias which include fear of dogs, snakes or mice.
- Situational phobias involve a fear of specific situations, such as flying, riding in a car or in public transportation.
- Natural environment phobias like fear of storms, heights or water.
- Social phobias cause people to avoid contact with others or to avoid speaking when they are in a social gathering
- Acrophobia is a condition where a person has a fear of crowds, public places and travelling alone from home.

Obsessive-Compulsive Disorder (OCD): This anxiety disorder is characterized by unwanted repetitive thoughts (obsessions) and/or actions (compulsions).

For example, one may need to recheck a locked door over and over again. Other compulsions include eating food in a specified order, repeatedly washing hands or refusing to shake hands.

Post-traumatic stress disorder (PTSD): This is once called shell shock or battle fatigue syndrome. It is a serious condition that can develop after a person has experienced or witnessed a traumatic event in which physical harm occurred or was threatened. Most people who experience a traumatic event will have reactions that may include shock, anger, nervousness, fear and even guilt.

Somatoform disorders:

- Conversion disorder: For example, a soldier wants to run away from the battlefield
- Hypochondriasis: Excessive fear. For example, A severe headache as an indicator of brain tumor
- Body dysmorphic disorder: Preoccupation with an imagined or exaggerated defect in appearance. Patients with body dysmorphic disorder frequently have histories of seeking or obtaining plastic surgery or other procedures to repair or retreat the supposed defect.

Schizophrenia: It is a psychotic disorder characterized by general withdrawal from contact with the environment and disturbance in thought processes leading to social or occupational dysfunction.

Symptoms:

1. Disordered thinking
2. Delusional thinking
3. Hallucinations

4. Disorganised speech
5. Absence of insight or critical evaluation
6. Emotional apathy

Types of Schizophrenia:

1. Simple type of Schizophrenia
2. Hebephrenic type of Schizophrenia
3. Catatonic type of Schizophrenia
4. Paranoid type of Schizophrenia

Mood Disorders: This refers to a category of mental illness that includes depression and bipolar disorder, also called affective disorders.

- a. Major depressive disorder

involuntional melancholia

8.5.6. Personality disorders: These are the mental disorders which cause enduring patterns of thought and behavior that deviate from society's expectations, causing serious problems in almost all aspects of life.

1. Anti-social personality disorders
2. Paranoid personality disorders
3. Schizoid personality disorders
4. Borderline personality disorders
5. Dependent personality disorders

Treatment of the Mentally ill:

Treatment of the mentally ill requires teamwork. The physician, the psychiatrist, the psychoanalyst, the clinical psychologist and the social worker generally work together in the process of therapy. A psychiatrist can look after the patient, both from the physical and psychological angles. A psychoanalyst employs methods such as free association, dream analysis and re-education. The clinical psychologist generally helps in the process of diagnosis. He interviews patients and uses testing techniques. The social worker is a very important member of the team. She takes the history of the patient and works closely with the parents and their relatives. Apart from these four persons, we have the nurse and the occupational therapist, who can help the patient in his or her recovery.

1. Physical treatment: It includes use of tranquillizing drugs or sedatives. Generally, sedatives are given when the behavior of the patient is characterized by hyperactivity and over-excitability.

a. Macro analysis: Here the patient is given drugs such as sodium amytal or sodium phenobarbital and when he is under their influence, he is made to talk and express himself.

Shock therapy: It is also a kind of physical treatment. There are 3 chief types of shocks:

1. Insulin shock
2. Metrazol shock
3. Electro shock

2. Psychological treatment: It is a form of treatment which aims at personality growth and seeks insight into one's problems.

Abnormal Behavior:

Recurrent changes in one's thinking, feeling, memory, perceptions and judgement resulting in abnormalities in talk and behavior.

Behavior is everything that an organism does from conception to death. This involves knowing (cognition), feeling (affection) and doing (conation), knowing consists of primary mental functions such as thinking, recalling, recognition, judgement etc. These functions help one to be aware of and understand the self and the environment. Feeling consists of the emotional component of an individual and includes happiness, sorrow, fear, anger etc. Doing consists of psychomotor activities of the organism.

Traits of a person with "Abnormal" behavior

1. Deviation from Static norms
2. Deviation from social norms
3. Maladjustment
4. Personal distress
5. Personal immaturity

Organic Factors: Organic causes are chromosomal abnormality (Down's syndrome) mutant genes (psychoses) brain infection (encephalitis, etc.) injury (head injury), malnutrition (scurvy, anemia), fatigue (hypoglycemia) and hormonal imbalance (hyperthyroidism).

Psychological Factors: Various factors such as early maternal deprivation, pathogenic family patterns, paternal rejection, over protection, over indulgence, rigid and unrealistic moral standards, sibling rivalry, faulty parental models, marital discord, broken homes, pathological interaction in the family, inadequate preparation for adolescence and old age, lack of physical, social and intellectual competencies all can lead to abnormal behavior.

Sociological Factors: These are social, regional, language and cultural discrimination, wars, changes in the structure of the family and other social institutions.

Nurses need to cultivate qualities of courage, alertness, sympathy and patience in dealing with the mentally ill. They should understand a patient's personality, his likes and dislikes, his interests, the emotional strain he has suffered and his frustrations and conflicts. In understanding and a sincere desire to help him that will help rehabilitate the mentally ill.

Psychiatric Emergencies:

Psychiatric Emergency is a stress induced pathologic response that physically endangers the effected individual or others or that significantly disrupts the functional equilibrium of the individual or his environment and calls for immediate attention.

Objectives:

1. To safeguard the life of patient
2. To bring down the anxiety of family members

Types of Psychiatric emergencies:

- Suicide
- Violence
- Stupor
- Alcohol or drug overdose
- Delirium
- Epilepsy
- Severe depression
- Side effects of psychotropic drugs
- Maniac

Assessment:

- ✓ Immediate assessment of the patient behavior
- ✓ Mental status of the patient needs to be examined
- ✓ History and chief complaint of the patient
- ✓ Physical Examination
- ✓ Laboratory tests

Management: Guidelines for Psychiatric emergency management

- ✓ Provide calm and quiet environment
- ✓ Safeguarding against injury
- ✓ Keep separated from other patients
- ✓ Proper referral system

Review Questions:

- 1.Explain the concepts of Mental illness and its types.
2. What are the causes for Mental illness?
- 3.Explain the classification of Mental illness based on WHO.
- 4.Explain in brief about the treatment of Mentally ill
- 5.Write short note on the concept of Abnormal behavior.
- 6.Write short note on the concept of Psychiatric emergencies.

UNIT-IX

GERIATRIC NURSING

Definition:

Aging process and changes:

Health assessment of Elderly:

National policy on Elderly:

Nurses Responsibilities:

Many people are able to age in good health and remain active participants in society in society throughout their lives. But others experience physical and cognitive limitations and may lose the ability to live independently. Population aging is a phenomenon that occurs when the median age of a country or region rises due to rising life expectancy and/or declining birth rates.

Definition: The aging process is a biological reality, which has its own dynamic, largely beyond human control. Roughly, 150,000 people who die each day across the globe, about two thirds - 100,000 per day die of age-related causes.

Indian Aging Population: India is facing an elderly population, according to a united nations report, which revealed its number of old people will triple by 2050.

Divisions are sometimes made between:

- ✓ The young old (65 - 74)
- ✓ The middle old (75- 84)
- ✓ The oldest old (85+)

Aging process and changes:

There is growing appreciation that everyone does not age in the same way or at the same rate. Many of the changes that occur from aging result from a gradual loss. These losses often begin in early adulthood, but due to the ability of our organs to adjust and maintain health, the actual loss is not experienced until it is fairly extensive. Most organs seem to lose function at about 1% a year, beginning around age 30, but majority of these changes are not seen until after age 70. The biggest changes in the rate of aging and organ efficiency lies in the presence of disease and/or ability of the body to adapt to excess stress.

Changes that occur with aging fall into 3 categories: Physical, Psychological and Social. As changes begin to happen in one area of a person lie most likely the other two will be affected as well. There is a wide variation among individuals in the rate of aging and within the same person. different organ systems age at different rates. Aging also depends on our diet, exercise, personal habits and psychological factors.

Physical changes:

Muscle strength and flexibility decrease with age. A major reason muscles tend to become weaker is that there is less lean muscle mass and they shrink from lack of use. It happens whether a person is young or old. As muscle are not used they do not work as we.

Decline in efficiency of body organs:**Examples:**

The heart becomes a less efficient pump. It requires more oxygen to do the same work it used to with less oxygen. As the age increases, the thickness and hardening of the arteries occurs causing blood pressure rise slightly.

Lungs become less elastic and do not expand well, thus less oxygen. It is worst in case of smokers.

Kidneys take longer time to get rid of waste products during old age. The toxic substances tend to remain in the body for a longer period of time.

Skin, Hair, Nails:

- ✓ Loss of subcutaneous fat
- ✓ Thinning of skin
- ✓ Decreased collagen
- ✓ Nails brittle and flake
- ✓ Hair pigment decreases
- ✓ Hair thins
- ✓ Less sweat glands
- ✓ Temperature regulation difficult

Eyes and vision:

- ✓ Eyelids baggy and wrinkled
- ✓ Eyes deeper in sockets
- ✓ Conjunctiva thinner and yellow
- ✓ Iris fades
- ✓ Pupils smaller. let in less light
- ✓ Lens enlarges
- ✓ Lens become less transparent
- ✓ Results in cataracts
- ✓ Can actually become clouded
- ✓ Quantity of tears decreases
- ✓ Increased pressure on eye
- ✓ Ultimately results in blindness

Ears and hearing loss:

- ✓ Irreversible, sensorineural loss with age
- ✓ Men more affected than women
- ✓ Loss occur in higher range of sound
- ✓ By 60 years, most adults have trouble hearing above 4000 Hz
- ✓ Normal speech 500 - 2000 Hz

Respiratory System:

- ✓ Lungs become more rigid
- ✓ Pulmonary function decreases
- ✓ Number and size of alveoli decreases
- ✓ Vital capacity declines
- ✓ Reduction in respiratory fluid
- ✓ Bony changes in chest activity

Cardiovascular system:

- ✓ Heart smaller and less elastic with age
- ✓ Heart valves become sclerotic
- ✓ Gastrointestinal system:
- ✓ Reduced GI secretions and motility
- ✓ Decreased weight of liver
- ✓ Liver metabolizes less efficiently

Renal system:

- ✓ After 40, renal function decreases by 90, lose 50% of its functioning
- ✓ Size and number of nephrons decreases
- ✓ Bladder muscles weaken

Reproductive System:**Male:**

- ✓ Reduced testosterone level
- ✓ Testes atrophy and soften
- ✓ Erections take more time

Female:

- ✓ Declining estrogen and progesterone levels
- ✓ Ovulation ceases
- ✓ Vagina atrophies - shorter and drier
- ✓ Uterus shrinks
- ✓ Breasts pendulous and lose elasticity

Neurological system:

- ✓ Nerve transmission slows
- ✓ Reduced REM sleep, decreased deep sleep

Musculoskeletal system:

- ✓ Lean body mass decreases
- ✓ Bone mineral content diminished
- ✓ Less resilient connective tissue

Immune system:

- ✓ Decline in immune function

- ✓ Decrease in antibody response
- ✓ Fatty marrow replaces red marrow

Endocrine system:

- ✓ Estrogen levels decreases in women
- ✓ Decreases ability to tolerate stress - best seen in glucose metabolism
- ✓ Psychological changes:

Mental changes occur due to decreased activity of sensory organs

- ✓ Dementia
- ✓ Paranoia
- ✓ Agitation
- ✓ Insomnia
- ✓ Depression

Sociological changes:

There is reduction in income, authority, power respect and importance due to retirement from job. Elders suffer isolation due to loss of friends, spouse, colleagues and associates.

Spiritual changes:

The religious belief tends to increase, through attendance decrease with increasing age as shortage of money, lack of companion, functional disabilities etc. triggers with age.

Morbidity in old age:

Mostly old people have one or more chronic diseases and 40% of them have one or more disability. Common health problems are, hypertension, cataract, diabetes, dyspepsia, ischemic heart disease, osteoarthritis, COPD and constipation

Mortality in old age:

The common causes of death of elderly in India are ischemic heart disease, stroke, lung cancer, tuberculosis etc.

Health assessment of Elderly:

Assessment team: Comprehensive Geriatric Assessment (CGA) relies on a core team consisting of a physician, nurse and social worker and when appropriate, draws upon an extended team of physical and occupational therapists, nutrition's, pharmacists, psychiatrists, psychologists, dentists, audiologists, opticians etc.

Conducting the Assessment: GA involves several processes of care that are shared over several providers in the assessment team. The overall care rendered by teams can be divided into 6 steps:

1. Data gathering
2. Discussion among the team
3. Development of a treatment plan
4. Implementing of the treatment plan
5. Monitoring response to the treatment plan

6. Revising the treatment plan

Assessment tools:

A pre-visit questionnaire is given to the patient or caregiver prior to the initial assessment. These questionnaires can be used to gather information about general history (eg past medical history, medications, social history, review of systems) as well as gather information specific to geriatric assessment such as,

Ability to perform functional tasks and need for assistance

- ✓ Fall history
- ✓ Depressive symptoms
- ✓ Vision or hearing difficulties
- ✓ Major Components:
- ✓ Functional capacity
- ✓ Fall risk
- ✓ Cognition
- ✓ Mood
- ✓ Polypharmacy
- ✓ Social support
- ✓ Financial concerns
- ✓ Additional components may also include evaluation of the following:
- ✓ Nutrition/weight change
- ✓ Sexual function
- ✓ Urinary continence
- ✓ Vision/hearing
- ✓ Detention
- ✓ Living situation
- ✓ Spirituality

Geriatric Care: Following are the areas where Elderly needs extra-attention

- Need for nutritious diet: A good diet with moderate carbohydrate, high protein and low-fat help to maintain an optimal weight.
- Exercise: Regular physical activity
- Economic security
- Need of socialization
- Continuation of respect
- Dignified death

National policy on Elderly:

The national policy on older persons was announced by the government of India in the year 1999. Various policies and plans were established by both central and state governments. Eg: Old age pensions, travelling concessions etc.

Areas of Intervention:**Income security in old age:**

- Indira Gandhi National old age pension scheme - 1000/Month is being paid for senior citizens below poverty line.
- Income tax - Taxation policies
- Micro finance - Loans for reasonable rates of interest to start small business

Health care:

- ✓ Health care needs of senior citizens will be given high priority.
- ✓ The basic structure of public health care would be through primary health care
- ✓ Safety and security
- ✓ **Elderly are well respected in the society**

Housing: Indira Awas Yojana help the elderly in Rural and Urban areas to get a house of their own

Nurses Responsibilities:

The nurse should have fairness, respect, equality, dignity and autonomy while giving nursing care to the elderly people. The nurse provides direct care to the Elderly. She uses every opportunity to educate and train the care giver of the Elderly at home. She provides health education regarding personal hygiene and nutrition. She also maintains correct, precise and compliance record of the elderly as follow-up care.

Review Questions

- 1.Explain the process of aging in an individual.
2. What are the major changes observed in aging in different systems?
- 3.Explain the concepts of Health assessment of Elderly
- 4.What are the roles and responsibilities of Nurses in Elderly care?

UNIT-X

COUNSELLING AND GUIDANCE

Definition of Guidance:**Counselling:****Role of Nurse in Counselling:**

Definition of Guidance: Jones (1963) defines Guidance as, 'The help given by one person to another in making choices and adjustments and involving problems'

Characteristics:

- It is an assistance given to individuals in the process of development
- It is a service meant for all
- It is an integral part of education
- It is positive and preventive rather than curative
- It is fundamental responsibility of parents at home and teachers at school

Types of Guidance:

- Educational guidance
- Vocational guidance
- Personal guidance

Counselling:

Definition: It is a relationship in which one person endeavors to help another to understand and solve his adjustment problems.

Goals of Counselling:

- To change behavior, beliefs and level of emotional distress
- Counselling enhances an individual's ability to cope with life situations

Principles:

- Counselling is a helping relationship between client and counsellor
- It is directed to self-realization and self-direction
- Confidentiality
- Independent decisions must be encouraged
- A counsellor does not have the right to impose his values on the client

Process of Counselling:

- Identification of the problem
- In-depth exploration
- Selecting goals and action plans
- Implementing and evaluating the action plan

Counselling skills:

- Rapport building
- Attending and listening
- It is important to maintain positive eye-contact
- A good counsellor will listen 90% of the time and talk only 10% of the time
- Empathy
- Genuinely

Characteristics of Counsellor:

- Counsellor should have an interest in helping others
- Should be able to build good inter-personal relationships
- Continue self-examination
- Fairly well adjusted
- Tolerance
- Flexibility

Types of Counselling:

- Individual counselling
- Group counselling
- Online counselling

Role of Nurse in Counselling:

1. In the case of patients with dementia, nurses should support the care-givers by listening
2. In the case of illness like AIDS, Nurses must be able to communicate effectively in relation to the patient's emotions and feelings
3. in the case of hospitalized patients, nurses can relieve some of the insecurities of patients and encourage them to become as independent
4. Nurses working in rehabilitation as in cardiac rehabilitation have a strong role to play in counselling and health promotion.

Review Questions:

- 1.Explain the concept and techniques of counselling
- 2.Explain the concept and techniques of guidance
- 3.What is the role of a counsellor in counselling and guidance?
- 4.What is the role of MPHW in counselling and guidance?

MULTI PURPOSE HEALTH WORKER

Paper - III

PRIMARY HEALTH CARE NURSING

INDEX

Unit - 1	Hospital	256
Unit - 2	Preparation Of Patient Unit	267
Unit - 3	Optical Functioning Of Hygiene	277
Unit - 4	Collection Of Specimen	304
Unit - 5	Disinfection And Sterlization	316
Unit - 6	Biomedical Waste Management	326
Unit - 7	Medical Condition	333
Unit - 8	Operation Theatre Nursing	390
Unit - 9	Care Of Physically And Mentally Challenged	403
Unit - 10	Types And Administration Of Drugs	409
Unit - 11	Emergency Drugs In O.T. And Other Areas	424
Unit - 12	First Aid And Referral	431
Unit - 13	Minor Injuries And Ailments	442
Unit - 14	Fracture	454
Unit - 15	Life Threatening Conditions	462

PART-A**UNIT-1 HOSPITAL****Structure**

- 1.0-Introduction
- 1.1-Definition
- 1.2-Functions
- 1.3-Classification
- 1.4-Admission and discharge procedure
- 1.5-Nursing as profession

Objectives

After reading this unit the student is able to –

- Identify the classification of hospital
- Enumerate the functions of the hospitals
- Describe the admission and discharge procedure of the hospital
- Learn about importance of nursing profession.

Introduction:

Hospital is one of the social organization which grew out of necessity of health care needs of the people were to be met.

Definition

The word hospital is derived from Latin word “hospes”, Hospital means, an institution or place offering residential care, investigatory care and treatment to the sick, injured and also health people.

A modern hospital is an institution which provides accommodation to patient and renders curative, restorative and preventive services to the needy people.

Hospital is a place for the diagnosis and treatment of human illness and restoration of health and well-beings of those temporarily deprived of these. Professionally and technically skilled people apply their knowledge and skill with the help of advanced equipment and appliances to provide quality care for the patient.

Functions:

The primary function of a hospital is providing care to the patients, who are hospitalized for the purpose of preventive, curative and restorative.

The functions of the hospitals are

- Clinical function.
- Health promotion and education.
- Administrative functions.

Clinical Function



- The hospital provides quality health and medical services to the people out patient as well as in patient.
- The hospital gives diagnostic care screening of patient for identifying the disease at an early stage. (e.g.) Mammogram, X-ray, CT scan and MRI, Blood test, Urine test, CSE analysis etc.
- Emergencies care services provide in the casualty department of the hospital. (e.g.) Accident, trauma and acute life threatening conditions like heart attack.
- All major and minor ailments are treated in the hospital. (e.g.) minor ailments like cold & cough, fever, etc.; major ailments like cardiac problem, neurological problems, cancer, fracture etc.
- The rehabilitative services provide in the hospital.
 - Physical rehabilitation – (e.g.) artificial limb after amputation, physiotherapy for neurological deficit.
 - Mental rehabilitation – Counseling for individual as well as group.
 - Social rehabilitation – Economical support in form of Government health scheme services, (e.g.) Arogyasree, EHS.
- The hospital provides well planned and organized health services adopted to ensure complete treatment to the patient at regular time.
- It gives report to the patient regarding summary of diagnosis, treatment, procedures and services extended to the patient for further referral.
- Montoux test for early diagnosis of TB. Mammogram for early diagnosis of breast cancer. CT scan for early diagnosis of cerebral hemorrhage after accident.

Health Promotion and Education:

- 1) The hospital renders preventive services in form of vaccination (e.g.) Hepatitis 'B', Meningitis, rabies vaccine for dog bite, and immunization to the child from six killer diseases (TB, Polio, Diphtheria, pertussis, Tetanus).
- 2) The health team members provides health education to the patient as well as family members regarding care of patient with disease and prevention of disease.
- 3) The hospital team conducts medical camps for identification and intervention of different communicable and non-communicable diseases (e.g.) eye camps, blood donation camp, medical camps, family planning camps.
- 4) Rehabilitation and training to the physically and mentally challenged.
- 5) The hospital gives huge learning experiences to the medical, nursing and physiotherapy students.
- 6) The hospital gives chance to the medical and nursing students to conduct research work for further improving of health care services.

Administrative Function:

- Recruitment and selection of employees.
- Promotion to the employees.
- Employees' welfare and benefits.
- Manpower planning to the different shifts of duty.
- Procurement of medicals, equipment and supplies for patient care.
- Budget and financial plan for patient care, hospital program, projects and hospital development.
- Prepares statement of account on service and bill rendered to the patient.
- Maintenance of financial transactions and relevant report on expenditure.
- Monitoring and regular verification of inventory, drugs and supplies.

Departments in the Hospital**1. Medical Department**

The medical department has within it the various clinical services. They are: medicine, surgery, gynaecology, obstetrics, paediatrics, eye, ENT, dental, orthopaedics, neurology, urology, cardiology, psychiatry, skin, -plastic surgery, nuclear medicine, etc. Medical Director is a Doctor who has control over all the medical department.

2. Nursing Department

The nursing department consists of nursing service and nursing education. The primary purpose of the nursing service is to provide comprehensive, safe, effective and well organized nursing care through the personnel of the department. The primary purpose of nursing education is to raise the standard of nursing service by providing in service education to nursing service personnel in the hospital.

3. Paramedical Departments They include:**I Laboratory**

Pathology department-The pathology department is one of the largest departments and has the responsibility for making tests and studies on blood, sputum, faeces, body fluids and tissues. The different laboratories in the hospital are Bacteriology lab, Biochemistry lab, Haematology lab, Parasitological lab, Serology lab and Histopathology lab

Blood bank: It has the responsibility for collecting and processing all blood used in the hospital for transfusions.

II Pharmacy Department

The pharmacy department has the responsibility for selecting, purchasing, compounding, storing and dispensing all drugs and in nursing medications for in-patients and out-patients. The pharmacy should be under the supervision of registered pharmacist.

III: Physical medicine and rehabilitation Department

This department treats patients who have functional disabilities resulting from disease conditions or injuries. It has several specialties such as: Physical therapy, occupational therapy, speech therapy and vocational training.

IV: Radiology Department

This department functions under the control of radiologist and qualified technical staff. It has the following diagnostic and therapeutic services for in-patients and out-patients. e.g.

Radiographic examination and 'X' Ray, Radium, Radio Active Cobalt and other Radio Active therapy.

V Dietary Department

In most hospital, this department is under the direction of a trained dietician. The department is charged with:

1. Ordering and preparation of food.
2. Tray service.
3. Diet teaching.

The dietician is a member of the health team and works closely with nursing service personnel in meeting the patient's nutritional needs and in teaching.

VI Outpatient department

This is a combination of several departments. It is a miniature of the hospital except that the patients are ambulatory. Specialities provide services. Individual may attend this department for the purpose of receiving treatment, or to enable a physician to assess their progress following discharge from hospital.

VII Emergency Department

People who are classified as "emergency admission" are admitted to this department to receive life-saving services immediately needed after thorough examination by the responsible physician.

VIII Operating Theatre (O.T.)

It is a room in a hospital equipped for the performance of surgical Operations; "great care should be taken to keep the operating rooms aseptic.

Non –Professional Health Service Departments

1. Admitting Department

This department has the responsibility for admitting the patient to the hospital. It should maintain good public relations. The patient, family and friends must be treated with utmost respect, courtesy and tact.

2. Personnel Department

The functions of this department are as follow

- | | |
|-------------------------------|-------------------------------|
| a. Recruitment of personnel. | f. Safety. |
| b. Interviewing. | g. Health programs. |
| c. Promotion and transfer. | h. Recreation. |
| d. Termination of employment. | I. Remuneration and Incentive |
| e. In-Service training. | |

3. Purchasing Department: This department has the responsibility for purchasing all supplies and equipment for the hospital.

Classification

Hospitals can be classified in many ways.

According to ownership

- I. Public hospitals: Central/State Government Hospitals, District Hospitals, Area Hospitals, Primary health Centers, Community health centers. It provides treatment for common diseases where as specialized hospital provides treatment for specific diseases (e.g.) ENT, TB hospital, Cancer Hospital.
- II. Charitable hospitals: A Board of Trustees usually manages such hospitals. (e.g.) Christian Mission Hospitals.
- III. Private Hospitals: It is owned by individual or group of people and run on a commercial basis.
- IV. Corporate Hospitals: It is run by limited companies, formed under the Companies Act.

According to clinical specialties

In these hospitals, patients are treated for those diseases for which that hospital has been set up such as tuberculosis, cancer and cardiac disease etc.

According to length of stay

Acute Care Hospital: Short -stay hospitals: These are hospitals where over 90% of all patients admitted stay less than 30 days.

Chronic Care Hospital/ long stay hospitals: These are hospitals where over 90% of all patients admitted stay 30 days or more, i.e. cancer hospital mental hospital

According to teaching & non-teaching

A hospital with medical college is known as Teaching hospital, without medical college is known as Non-Teaching hospital.

Admission and Discharge procedure of the Hospital**Admission**

It is the term used to describe event of entering a hospital and all the procedures related to this event. Patient admitted into the hospital in two ways i.e. from an outpatient department, emergency care department.

Admission Procedure

- (1) Reception – patient is new to the hospital environment. The patient should feel comfortable and someone to look in to his needs. Reception office refers the patient to the concerned O.P.D., ward/department.
- (2) Recording – After receiving the patient in the ward, the patient record of admission should be checked for completeness.
 - Check the diagnosis of the patient, immediate care and treatment to be given.
 - The details required for completion of ward admission registers and patient record.
 - Name of the patient
 - Name of the father/guardian
 - Address and contact number
 - Occupation and income
 - Religion

- Aadhar card No. for Arogyasree scheme treatment/procedure
 - White ration card for economical status of patient.
 - Date, time of admission - Time of receiving in to the ward.
- (3) Orientation - The patient should also be introduced to the staff in ward i.e. nurses, the orderlies and other professionals. Orient the location of the necessities in the ward like the patient – toilets, switches of fans and lights.
- Orient about ward routines: i.e. time of doctors rounds, visiting hours, medication and care of belongings, diet.

Care on Admission

- a) Immediate Care – The nurse should carry out these investigations and treatment on emergency basis even if there is delay in completing the formalities of admission.
- b) Routine care on admission:
 - Check vital sign
 - Check weight
 - Assess general condition of the patient
 - Send message to the appropriate doctor.
- c) Patient unit: It is essential to ensure that there is a clean bed, locker and made comfortable.
- d) Keep ready, the articles required for detailed physical examination.
- e) Make the relatives feel useful in the ward.

Nursing care during hospital stay

This includes the following:

- 1) Hygienic care of the patient.
 - 2) Daily assessment and reporting to the concerned doctor.
 - 3) Accurate charting.
 - 4) Assisting in investigations and treatment.
- 1) Hygienic care:**
- The nurse duty is to ensure –
- a) Daily patient cleanliness – bath.
 - b) Change of linen of patient as required.
 - c) Specific hygienic care for bedridden patients and those susceptible to infection.
- The nurse should make sure that the patient and relatives understand the importance of hygiene, specially when ill in hospital. Invasive procedures make the patient susceptible to infection. Relatives and patients may be taught to provide self care.
- 2) Daily Assessments and reporting**
- As a routine the nurse should take over the patients as soon as she comes on duty and assess their general condition. As the closest to the patient she will be able to observe even minor changes in the condition. Note types of patients and categories into those

who require more intensive care, those who require intermediate care and those who are ambulatory on a day to day basis and plan her work.

3) Accurate charting

The nurse should be accurate with

- a) Temperature, pulse, respiration, blood pressure assessment and recording.
- b) Intake and output.
- c) Drugs administered.
- d) Specific charts if any.

4) Assisting in investigations and treatment of patient:

As a routine it is the nurses duty to assist in carrying out investigations e.g. – collecting and sending samples to different labs, preparing and sending patient for investigations.

She should remember to –

- a) Check the investigations to be done.
- b) Collect correct sample.
- c) Do accurate labeling.
- d) Enter into dispatch register.
- e) Send the sample to the correct lab.
- f) Ensure that the report is received back.
- g) Paste properly in the case sheet.

The nurse should assist in carrying out treatment procedures.

- a) Ensuring indenting and stock of required drugs and treatment material.
- b) Administering the prescribed drugs according to orders.
- c) Getting the required equipment, trays etc. for carrying out treatment.
- d) Assisting in carrying out the therapeutic procedures.

Discharge Procedure

Discharge care is the planned nursing care and teaching carried out before a patient is transferred from hospital to home or from one ward to another.

Aims of Discharge Care

- 1) To prepare with the patient and family physically and psychologically for transfer of the patient to the home.
- 2) To promote the highest possible level of independence for the patient by encouraging self care activities.
- 3) To provide continuity of care between the hospital and home by effective communication and adequate teaching.

Discharge process involves the patient, relative, friends, and the hospital and community health care teams. An individualized assessment and planning for future care is a continuous process which begins on admission.

Discharge care is an integral part of continuity of nursing care for patients throughout their hospital stay. Patients are often discharged before they are completely self reliant. Patient and relatives have to cope with unmet needs and follow treatment after they go home. An effective communication process is vital if the patient's home nursing care is to begin without delay.

Inadequate communication and interpersonal cooperation resulting problems in meeting needs of the patient and inappropriate assistance being engaged by family. The days following discharge can be a period of great vulnerability and anxiety. Poor discharge planning and its consequences may result in physiological and psychological problems.

The decision to discharge a patient from hospital depends on many factors other than medical considerations.

- a) The doctor may consider the treatment completed.
- b) Hospital beds may be required for more critical patients.
- c) The doctor may feel treatment can be carried out in the home.

Collaboration between hospital and community health care professionals is important for continuity in patient care.

Role of nurse during discharge care

The nurse must plan and spend time with patient and family to:

- Prepare the patient and the family feels ready to go home.
- Teach about care at the home. i.e. Treatment to be continued at home; Diet to be taken; Exercises and rest.
- Demonstrate skills required.
- Give necessary information for follow up.

Nursing as a Profession

The Nursing is the word derived from Latin word Nutrix – it means “to Nourish”

“The unique function of the nurse is to assist the individual, sick or well, in the performance of those activities contributing to health or its recovery (or to peaceful death) that he would perform unaided if he had the necessary strength, will or knowledge and to do this in such a way as to help his gain independence as rapidly as possible”

Virgenea Hender Son 1966

Nursing begin as an art in the home, but a science while in practice, by using scientific principles in doing procedures while doing patient care.

A profession should be intellectual, scientific requiring higher education & provide essential services. Nursing is recognized as a profession based on the following criteria.

- It has a well defined body of unique knowledge.
- Strong service orientation and recognized authority by a professional group.
- Code of ethics
- Professional organizations that set standards
- Ongoing research
- Autonomy.

Role of Nurses:

Nurses play several roles. The primary role is to provide care to patients, to enable them to meet their physical, emotional, intellectual, socio-cultural and spiritual needs.

- Communicator: Establishes and maintains helping relationships with patients, family and community in all settings.
- Teacher: Assess the learning needs of patients and family and implements individual and group teaching.
- Counselor: Helps patient to solve problem and decide on the treatments provides necessary information and suggest referrals.
- Leader: A nurse is a team leader, who is assistive and can bring change in the individual and group.
- Researcher: She contributes to research and conducts research to use evidence based practice.
- Advocate: She believes in human rights, legal rights and protects patients.
- Manager: As a manager makes decision, co-ordinate the activities of others.
- Practitioner: The nurse with an advanced degree can do service as individual practitioner in the community (with license from Registered Nursing council concerned state or national authority)

Qualities of a Nurse:

A nurse should cultivate the following qualities.

- | | |
|------------------------|--------------------------|
| - Pleasant appearance. | - Duty mindedness |
| - Honest | - Understanding |
| - Loyal | - Punctuality |
| - Self discipline | - Courteous |
| - Kindness | - Well balanced emotion. |
| - Tolerance | |

Nursing care is an integral part of total health care of patient. Nursing care concerns to promote health, prevent disease, disability and restore health.

Nursing personnel respect the individuality, dignity and right of every person, regardless of race, color, creed, national, origin, social or economical status. Nursing personnel includes –

- Professional nurse
- Auxiliary nurses

- Health visitors
- Midwives

All people need to undergo recognized course of instruction in recognized institutions.

Nursing Educational Programmes in India:

There are several nursing programmes throughout the world that prepares nurses. One who complete the training programmes are called as nurses. In India the Indian Nursing Council regulates nursing education.

- ANM & Multipurpose Health Workers (MPHW) - 2 years.
- General Nursing and Midwifery (GNM) - 3 years
- B.Sc. Nursing - 4 years
- Post B.Sc. Nursing - 2 years after completion of GNM
- M.Sc. Nursing - 2 years after completion of Under Graduate
- M. Phil. - 2 years
- Post Basic specialty Diploma Course - 1 year
- PhD in Nursing - 5 years.

Opportunities in Nursing:

The nurse has so many opportunities to work in the following areas as Staff Nurse, Nursing Supervisor, Nursing superintendent, Director of Nursing and Nurse Educator.

- Hospital – District hospitals, Primary Health Centre
- Public health nurse as in community
- Industry
- Nursing schools and colleges
- Defense – Army, Navy and Air force nursing
- Railway department
- Independent Nurse Practitioner, Nurse Midwives.

Nursing Process:

The nursing process is a method for organizing nursing activities involving both intellectual and physical activities to solve the problem.

The steps of the nursing process are

- Assessment
- Nursing diagnosis
- Planning
- Implementation
- Evaluation

Basic Nursing Principles

Nurse should follow the principles while performing procedures to meet the needs of the patient.

- Individuality
- Safety
- Comfort
- Resourcefulness
- Therapeutic effectiveness
- Workmanship

Nightingale Pledge

“I solemnly pledge myself before God and in the presence of this assembly, to pass my life in purity and to practice my profession faithfully. I will abstain from whatever is deleterious and mischievous, and will not take or knowingly administer any harmful drug. I will do all in my power to maintain and elevate the standard of my profession, and will hold in confidence all personal matters committed to my keeping, and all family affairs coming to my knowledge in the practice of my calling. With loyalty will I Endeavour to aid the physician in his work, and as a 'missioner of health' I will dedicate myself to devoted service to human welfare.”

Conclusion

Hospitals are the institutions established for the services of mankind catering to the health needs to various categories of the populations in the community. Nursing is one of the important parts in giving care to the patient in hospital. The professional nurse is to build qualities to maintain standard of care by using principles.

Essay Questions

- 1) What are functions of the hospital?
- 2) Describe the admission procedure?
- 3) What are role and functions of a nurse?
- 4) Describe the qualities of Nurse?

Short Answer Questions

- 1) Define Nursing
- 2) List any 5 departments in the hospital
- 3) What are the principles of Nursing?
- 4) Define hospital
- 5) What are nursing education programmes in India?
- 6) Define profession.

UNIT – II PREPARATION OF PATIENT UNIT**Structure**

- Introduction
- Definition
- Principles
- Optimum healing environment for patient
- Factors affecting safety of patient
- Patient unit
- Bed making
- Different types of Bed

OBJECTIVES

After completion of the chapter, The student is able to

- Learn the environment required for optimal health of patient
- Describe the factors affecting safety
- Learn and practice bed making
- List the different types of bed.

Introduction

The hospital environment should make the patient stay as comfortable, unthreatening, and pleasant and stress free as possible. The nurse is able to modify and provide safe environment to the patient during hospitalisation.

Definition

The environment is defined as the sum of the external surroundings and influences. Environment is defined as all which is external to the individual. It may be physical environment, biological environment and psychological environment.

A therapeutic environment is an environment which helps a patient to return to health from illness.

– Principles of maintaining optimum therapeutic environment

- Choose proper cleaning method to prevent contamination of the atmosphere. Wet mopping is good for fine dust removal.
- Time for cleaning to minimise disturbance cleaning procedure as well as to carryout ward routine.
- Careful use of cleaning agent with proper concentration helps to control bacterial growth.
- Keep environment neat, dry, order and with effect of beauty.
- Use proper method for disposal of biomedical waste and dirt.
- Do not use wet dusters on bacterial fixtures and polished furniture.
- Furniture must be moved away from walls before dusting.
- Long and firm strokes from far to near place while doing damp dusting
- Friction aids mechanical cleaning
- Simple and correct method of cleaning saves time, material and energy.

Optimum healing environment for patient

The common ward, special ward, special room of the patient to be kept clean free from pathogens / microorganisms, some of the environmental factors influence the healing and maintenance of health of the patient, they are

- Temperature
- Humidity
- Ventilation
- Purity of air
- Lighting
- Noise
- Psycho social environment

Daily care of wards

1. The ward should be well ventilated
2. The room should be well lighted. Sunlight brings warmth and cheer has great healing powers.
3. Prevent noise and unpleasant odour.
4. Avoid loud talking, banging of windows
5. Remove bed pans, urinals and emesis basins immediately after use.
6. Keep patients and their bed clean and tidy
7. Keep furniture in the ward in order.
8. Keep food with well covered and fly proof net.
9. Wash shelves twice / once a week as per hospital policy.
10. After daily dusting put things in orders and keep air continues covered, the labels should be visible.
11. Keep cupboard doors closed.

Care of equipment and linen

The articles / equipments used for patient are made up of the stainless steel, aluminium, enamel and rubber good. The articles to be cleaned properly after the use, which helps to prevent transmission of infection from one patient to another.

Enamel ware: These articles are to be cleared by using a pan of warm soaps water for washing. Rinse in clean warm water and dry well.

Glass ware: Wash with soap and rinse with cool water; clean with dry duster.

Stainless steel: clear the articles after use under running water; use fresh disinfecting solution to disinfect the articles e.g. Instruments like artery forceps, kidney trays.

Rubber goods: e.g. mackintosh, hot water bag, gloves, ice caps, after use the items wash under cool running water and dry under shadows; Apply French chalk power after drying. Store in a dark cool place.

Care of linen

Clean Linen: Keep the linen in the cupboard according to name of stock; Label the stock to prevent confusion and loss of energy.

Soil linen: Soiled linen with urine, blood or stool should be rinsed with cold running water.

Linen of infectious patient should be disinfected first and then send to laundry.

Factors affecting safety of patient

Ensuring safety is one of the important aspects in care of patient during hospital stay. The internal physical facilities of the building should be based on the category of patient i.e. aging eye disorders, fracture, children and mentally disabled person.

Environment will support the optimum health, maintenance, care and rehabilitation. Even though it is impossible to prevent accidents completely. There are ways to control / minimize potential for accidents that may cause injury to the patient / health care members and unnecessary damage to the articles.

Safety measures for patient safety

1. Identify the patients at risk for injury and don't leave alone / assist for their daily activity. (e.g.) impaired vision and hearing of elderly people.
2. Keep side rails to prevent fall from bed.
3. Maintain dry and uncluttered floor.
4. Use restraints to prevent falling or injuries.
5. Adequate lighting at stair ways and corridors.
6. "No smoking" board near the OXYGEN administering patient.
7. Display the telephone numbers of emergency services and know the location of fire exist.

Patient unit

It referred as the area of the hospital in which the patient receives medical and nursing care surgical treatment. Patient care unit must be safe, pleasant and orderly environment for the patient's physical and mental well being.

Furniture and equipment required for the patient basic unit:

Furniture: Bed

Bed side locker / cabinet

Over bed table

Chair / bench / stool

Equipment: Articles necessary for providing basic nursing care.

Components of optimum healing environment

The patient healing is based on the environmental components required in the health organism.

- i. External environment
- ii. Behavioural environment
- iii. Interpersonal environment
- iv. Internal environment

1. External environment

The Physical space of hospital must support healing through lighting, access to nature, ventilation, colour and architecture etc.

The surroundings of the patient environment should

- Eliminate stress among patient
- Improve efficiency in providing care to patient
- Reduce infections and fails
- To promote healing

Health care organisations should consider chemical impact and ecological sustainability of the health care practices. e.g. reduce the volume of drugs and chemical deposited into the environment i.e. Radiation therapy to patient.

2. Behavioural environment

The organisations should promote and provide instruction in healthy behaviours and lifestyle changes for patient and employees. Enhance healthy habits and life style practices.

3. Interpersonal component

The health team members need to maintain co-ordinated, healthy co-operative team work. To establish trust among patients and families. To maintain good interpersonal relationships with colleges, superiors, doctors and patients.

4. Internal environment

- Enhance patient awareness and belief in early recovery from disease.
- Encourage confidence in improvement of well being.
- To maintain natural immunity
- To maintain healthy life style by keeping balance between personal and work area.
- Educate self integration and self-care.

Checklist for physical environment supports optimal healing

- Build private rooms
 - Provide space for females to stay overnight in patient room.
 - Develop recommended noise level standards (WHO)
 - Optimal lighting
 - Minimise unnecessary patient transfer
 - Provide wider doors in patient bathrooms
 - Install optimal air infiltration system.
 - Install technical devices to ease patient light and transfer.
 - Keep music chronic ill patient units
 - Good flooring and architectural features
 - Privacy
 - Install clean way finding system.
- a) Linen – Bed sheet – 2; Towel ; Wash clothes ; Blankets -1;
Draw sheet – 1; Apron / Gown
 - b) Urinal
 - c) Bed Pan
 - d) Kidney tray
 - e) Sputum cup if necessary
 - f) Water jug
 - g) Soap / Hand sanitizer / alcohol based hand gel dispenser
 - h) Wash basin
 - i) Electrical outlet
 - j) Suction and oxygen outlet
 - k) Calling bell to the private room
 - l) Side rails

Hospital bed

Bed is the one of most important equipment for the patient comfort, safety and position changing.

Types of bed

According to the structure

- Immovable / bed – firm iron frame cot with
- Movable bed – it consist of a firm mattress on a metal frame that can be raised and lower the head and foot of the bed. It has wheels with locking system.

According to age

- Adult bed: The length of the bed is 6 feet +/-, iron frame cot and firm mattress with or without side rails.
- Paediatric bed: the length of the bed is 3 feet +/-, with side railing. Iron frame cot with firm mattress.

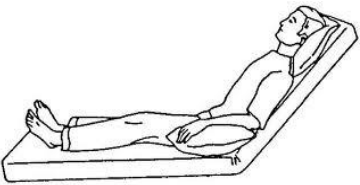

The features of the hospital bed

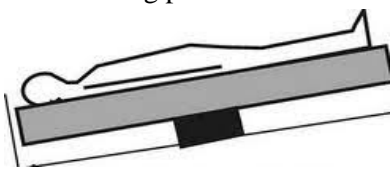
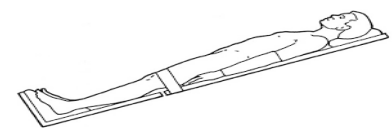
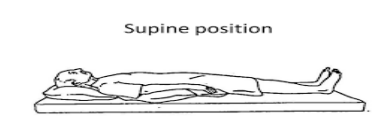
The hospital bed consists of mattress on a metal frame that can be raised or lowered horizontally.

1. Size : 6 feet – Adult
3 feet – children
2. Height of bed : 65cm to 70 cm from the floor
3. Mattress: 6" x 3" coir firm mattress cover with racking sheet.
4. Locks on the wheel: Locks in the wheels is to prevent accidental movement during procedure / patient.
5. Side rails: Located on both sides of cot helps to prevent patient fall and position themselves in the bed.
6. Special head board: it is removable and in emergency situation like cardio pulmonary resuscitation.
7. Electrical controls: it is on the side of the bed. It is aiding to raise or lower sections of bed without using man power / energy.

Now days hospital beds are operated by electrical motor to change the position of bed for patient comfort. Some are operated manually or by hydraulic method common bed positions.

Common bed positions

1)	Fowler's position : 	Head of the bed raised an angle of 45° to 90° It is used for expansion of lungs during dyspnoea. It is preferred for eating and naso gastric tube connection
2	Semi fowler's position : 	Head of the bed raised to an angle of 30° to 45° It promotes lung expansion and relieves strain on abdominal muscles.

3.	Trendlenberg position 	Head end of bed in down It is useful for postural damage; facilitates venous return.
4.	Reverse trendlenbergs position 	Foot end of bed in down; It is rarely used, it prevents oesophageal reflux.
5.	Flat Supine position 	Entire bed from horizontally parallel to the floor. It maintains spine post platen preferred position from sleeping.

Bed making

While doing bed making, the nurse should considers the patients mobility. Over all medical condition and risk for pressure ulcer development. Bed clothes must be made of suitable material size. Shape for the comfort and safety of the patient according to the climate and patients condition.

Purpose of bed making

The purpose of a well made hospital bed is

- To give neat and tidy appearance to the unit
- To provide comfort to patient
- To promote rest and sleep
- To prevent cross infection
- To establish report with patient

Principles of bed making

- Barrier nursing helps to prevent cross infection
- Keep the required equipment before starting the procedure.
- The bed should be free from crumbs, creases and dusts.
- Keep clean and comfortable bed to ensure rest and sleep
- Appropriate body mechanisms to maintain body alignment and prevent fatigue.
- Handle soil linen carefully in order to reduce dust and spread of micro organisms.
- The patients face should never be covered by sheets or blankets.
- When pillows are being shakes, the nurse should touch away from the patient.
- Always wash hands before and after bed making
- Don't place dirty linen on the floor and torch the uniform.
- Stay on one side of the bed until it is completely made then move to the other side and finish the bed. This saves times and steps.

Types of beds

- i. Routine beds
 - a. Simple unoccupied bed
 - b. An occupied bed
- ii. Special beds
 - a. Cardiac bed
 - b. Amputation bed
 - c. Fracture bed
 - d. Post operative bed.

Preparation

The nurse makes the bed in the morning after a patient's bath or when the patient is out of the room for test. Any sheets that become wet or soiled should be changed properly.

Unoccupied bed: 1. Open
 2. Closed

The bed which is not occupied by a patient. This is an empty bed, in which top covers are changed in such a way that all lines beneath the counterpane or bed spread is fully protected from dust and but until the admission of a new patient.

Occupied bed

An occupied bed is one that is made which is occupied by a patient. The patient is unable to move himself or herself but from the bed by their disease condition e.g. unconscious patient.

The patient is rolled to one side where the other side of the bed is made *vies versa*, the other side of bed also completed.

Cardiac Bed

This is prepared for a patient with heart disease to relieve dyspnoea and comfort for the patient.

Bed is provided with extra pillows to be kept on head side of patient in prop up position for better airflow. Special cardiac table provided for cardiac vascular support at night time with proper oxygen masks and nasogastric tubes.

Fractures bed

This is a hard frame bed designed for the patient with fracture particularly of spine, pelvis or femur. These frames are designed to support fractured parts with traction apparatus. Fracture bed aid in immobilising the fracture and prevents unnecessary pain.

The additional articles always required for the fractures bed patient's comforts i.e. back rest extra pillows, air cushion, knee pillow, cardiac table and foot rest. Bed pan should be provided near the bed or if the patient with upper extremity fracture can walk to washroom and toilet.

Amputation bed

This is a bed that is prepared for a patient having amputated limb. Amputation is the surgical removal of the upper or lower limb of the patient due to gangrene diabetic foot, compound fracture and cancer bone. The amputation bed in help to keep the stem in good position and watch the stump for haemorrhage. e.g. for below knee amputation, low end of bed in need to be elevated

The additional things required for amputation bed and extra set of topless, bed cradle, two sand bags pillow water proof cover, hot water bottles -2, two or more blankets.

Post operative bed

This is the bed for receiving the patient from operation theatre after the surgery. The top folding linen / sheet in fan folded from the head and foot of the bed toward the middle third of the bed and then for folded to opposite side of the bed that the patient will enter.

The additional supplies required for post operative bed are kidney tray, paper bag, Intra venous stands steel drainage bag with rubber tubing and a tray containing bowl of gauze of pieces, forceps, tongue depressor, air way, small towel and small protective sheet, bed blocks, arm board, IV fluids and BP apparatus.

The post operative bed will protect bed linen from vomiting, bleeding drainage and discharges, provide warmth and comfort to the patient to prevent shock. Nurse should provide the bell or cordless phone to family and patients to call medical staff for any emergency need.

Bed making procedure of unoccupied bed

1. The procedure below should be followed
2. Place the laundry hamper or basket in a convenient position accessible to all in the ward.
3. Obtain the necessary linen.
4. Place chair or stool at the foot end of the bed or on the side. Place pillows, flat on the chair and put linen across pillows in the order i.e. Bedspread

Towels

Pillow with pillow case

Blanket

- bottom - top sheet
- to - Mackintosh
- Top - Bottom sheet and Mattress cover

Damp dust the bed and brush the mattress

5. Place the mattress straight on the bed. Push the mattress to the head end as far as possible
6. Put the mattress cover on from the foot of the bed, adjusting it smoothly at the corners, and tie it on.
7. Place the bottom sheet right side up on the mattress. The lower edge of the sheet should be in line with the lower edge of the mattress.
8. Tuck the sheet under the mattress at the head end of the bed. Beginning at the centre, make a right-angle corner at the side, and tuck it under the mattress at the side.
9. Place the rubber sheet, 18 inches from the head of the bed, and tuck in the side. Put on the draw sheet so that it extends above and below the rubber sheet
10. Place the top sheet on the bed, ensuring that the centre fold is at the centre of the bed and that the wrong side of the sheet is turned up, wide hem, at the top. The top of the sheet should be in line with the top of the mattress. Tuck the lower end of the sheet. Under the foot of the mattress, make a right angle corner and tuck under the mattress along one half of the side.

11. Likewise, place the blanket 10 inches from the head of the bed. Tuck the blanket under the foot of the mattress and make a right angle corner. Fold the sheet over the blanket.
12. Go to the opposite side of the bed and complete the foundation, making it smooth and tight without wrinkles.
13. Place the bedspread so that the top is in line with head of the mattress. Make an oblique corner and let the sides hang.
14. Put on the pillow case and fix the corners of the pillow to one side of the pillow case and place the open ends away from the door.

Occupied Bed

To make a bed with a patient in it, with full change of linen

Purpose: The purpose is two-fold:

- To provide a clean and comfortable bed for the patient
- to provide for the neat appearance of the ward.
- Equipment
- The following requirement is needed:
- larger sheets, rubber draw sheet, draw sheet, blanket, when weather requires it, spread, if available, pillow case

Procedure

1. Place the laundry hamper or basket in a convenient position in the ward.
2. Obtain the necessary linen. Place it on the bedside chair, or hang over the foot of the bed in the order of use.
3. Screen the bed, place chair conveniently for holding the bedclothes. Loosen the bedclothes on all sides. If the spread is to be used again, fold it carefully to prevent unnecessary creasing and hang over chair.
4. Fan down the blanket, cover the patient with a top sheet. Tuck in well at shoulders.
5. Remove pillows, unless the patient is too uncomfortable in this position. change pillow case.
6. The patient turn with back to the nurse, lying well over on the opposite side of the bed. caution against falling. Have the patient hold on to the side of the bed. If the patient is helpless, another nurse can help.
7. Fan the draw sheet in smooth folds against the back, tucking well under the body; fan the bottom sheet likewise
8. Pull the mattress cover; keep it tight to prevent wrinkles
9. Place the fresh bottom sheet along the length of the bed with a fold in the centre. Tuck in well at the top, do the mitered corner and tuck in the side, when the sheet is long enough. similarly, do the mitered corner at the bottom as well.
10. Pull the rubber draw sheet out and tuck in at the side, over the sheet.
11. Place the fresh draw sheet over the rubber and tuck under, fanning the other half neatly to the centre.

12. Have the patient turn or move to the clean side of the bed.remove soiled linen and place on the chair. draw out the bottom sheet and continue as for a closed bed, drawing sheets tightly to make a smooth,tight bed
13. Have the patient return to the centre of the bed and replace the pillow under the head with a fold under the shoulders
14. Ask the patient to draw up his/her knees while the upper bed clothes are placed to allow room for toes.place the sheet in position, allowing a cuff of about 12inches
15. Remove the bath blanket from the top, with a drawing under sheet.tuck sheet in at the foot, mitered the corner and tuck under the bed.Put on the blanket and spread in the same manner, Enveloping each piece separately.Finish the other side
16. Remove used linen.Place the patient in a comfortable position and leave the unit in order.

Conclusion

The safe and healthy environment always helps to enhance early recovery of the patient. During hospitalization, Patient received comfort from proper bed making and facilities in the environment.

Short answer questions:

1. What are the principles of maintaining therapeutic environment
2. List the safety measures for the patient safety
3. What is amputation bed
4. What are the positions maintained in the bed
5. What is the purpose of bed making?

Essay Questions

1. Describe the preparation unoccupied bed
2. How do you provide optimal healing environment to the patient in the ward?

UNIT –III OPTIMAL FUNCTIONING OF HYGIENE**Structure**

- Introduction
- Definition; Personal hygiene
- Care of mouth
- Care of skin
- Care of hair and nails
- Care of eye
- Care of ear
- Care of bowel and bladder
- sexual hygiene
- Comfort, needs of sick
- Care of pressure points
- Positioning
- Hand washing
- Basic human needs
- Rest and sleep
- Activity exercises and posture
- Habits; food, eating and drinking
- Participation in social activities
- Self actualization and spiritual needs
- Interpersonal and human relations
- Life style and healthy habits

Objectives

After reading this chapter, the students are able to

- Learn the importance of personal hygiene
- Describe the comfort needs of the sick person in the home
- Enumerate the basic needs of the human being
- Explain the spiritual needs and self actualization of the individual
- Describe about life and healthy habits

Introduction

Every individual is healthy in life when they maintain personal hygiene in their day to day activity. Care of self is an art, which keeps the person happy and confident and make them to be self esteemed. When the basic needs are fulfilled, the person is satisfied and is able to achieve their goals. If a person is physically healthy, they are mentally and socially also healthy and they able to maintain optimal body function.

Definition**Personal hygiene**

The word hygiene refers to sanitary practice to health and prevention of disease.

Personal hygiene is the activity of self care, including bathing and grooming. It includes care of skin, hair, nails, mouth, teeth, eyes, ears, nasal cavities and personal and

genital areas. The personal hygiene is influenced by culture socio economic status and personal environment of the individual at different ages.

Purpose of Personal Hygiene

- ☐ To promote sense of well being.
- ☐ To relieve fatigue & induce sleep.
- ☐ To promote individuals safety.
- ☐ To promote active and passive exercises.

Care Of Mouth

It means to keep the mouth clean and free from bad odor (halitosis) by brushing and flossing. The oral hygiene helps to prevent carries (tooth decay) and periodontal disease.

Purpose of mouth care

- ☐ To clean the teeth gums and mouth.
- ☐ To remove offensive odor and food debris.
- ☐ To ensure good taste sense.
- ☐ To promote feeling of well being.
- ☐ To give self confidence.
- ☐ To protect the teeth from decay & other infections.

The common Mouth problems are

Gingivitis: Inflammation of the gums

Glossitis: Inflammation of the tongue.

Stomatitis: Inflammation of the mucous membrane of mouth.

Periodontitis: Inflammation of the mucous membrane of mouth.

Halitosis: Bad breath.

Oral hygiene should be done before breakfast and at bed time (twice a day). Oral hygiene is necessary in the following conditions by family members or healthcare providers. i.e. Unconscious patient (coma). Patient with O₂ therapy, Naso-gastric feeding and NPO (Nil Per Oral).

Brushing

A soft bristled brush should be chosen for brushing the teeth. The shape of brush suits to the ones mouth and allows reaching all the teeth easily.

Tooth paste will help to prevent tooth decay. It is made of fluoride or chloride combination. The other agent used for cleaning teeth/mouth is salt, sodium bicarbonate, and chlorhexidine.

Hold the tooth brush with 45° degree angle against gums, and brush back and front in short movements, and brush inner, outer surface of the teeth. Brushing the tongue will help to remove bacteria that can cause bad breath. There should be regular habit of flossing is important for removal of plague that is caught between the teeth.

When flossing, use a generous length of floss (18 inches). Wrap one end of floss securely around one of the middle finger hook other end around the same finger on the opposite hand. Holding the floss tightly between the thumb and forefingers, pull the floss gently between each tooth.

Plague is the main cause of tooth decay or cavities and gum diseases, when people eat especially foods containing starches and sugars. If the persons do not brush their teeth tight away, the plague bacteria in their mouth, produces acids. These acids then attack the enamel on the teeth will lead to tooth decay.

Inflammation of the gum (gingivitis) can weaken the bone around the teeth and lead to falling of teeth. A visit to the dentist can remedy almost any dental ailments. Visiting the dentist every six months can help prevent future dental ailments. Getting regular checkups including diagnostic 'X' rays will help prevent the development of serious dental problems such as gum diseases or abscesses.

Care of the Skin

Skin is the covering layer and largest organ of the body. It has two layers i.e. epidermis and dermis. The epidermis is the thin outer layer is made up of dead skin cells that are constantly shed and replaced by new cells. The thick inner layer is made up of blood vessels, nerves and hair follicles which contain glands. These glands in the hair follicles produce oily substances, called sebum. The sebum keeps the skin and hair from drying out.

Daily washing will keep the skin on the face and other areas of the body clean by removing the dust, oil and dead cells before they can accumulate.

Purpose of Cleaning the Skin

- ☐ It stimulates circulation.
- ☐ Reduces body odor by removing secretions perspiration (sweat) and bacteria from the skin.
- ☐ In hospital bed bath helps the nurse to know about the patient and able to interact therapeutically.

The patient bath in the hospital may be classified as complete bed bath, partial bed bath, tub bath, shower and therapeutic batch. The type of cleaning bath a nurse provides depends on the patient's physical capabilities and degree of hygiene required.

Acne

The common skin problem during adolescent period is acne. The hormonal changes trigger the oil glands in the hair follicles to release more sebum and clog the small opening in the skin eventually. The pores are unable to clear the new sebum due to clogging of sebum in the hair fascicles.

If sebum and dead cells collect in the hair follicles, white colored plug will form in the pore. With the pore plugged, the hair follicles begin to swell and create a white head. If the pore remains open the surface of the pore may darken from a chemical process that occurs in the pores thus creating a black head.

Care of the Hair

Hair appearance reflects the state of individual health and person's feelings of well being. Endocrine changes can affect the pattern of hair growth and color changes may reflect aging. The older person's hair also tends to be drier and scander in contrast to the eyebrows which become bristly and coarse.

Each person has a particular way of caring their hair. Some wash their hair daily, others shampoo once a week or even less often. Oil prevents the hair from breaking and scalp from drying. A wide toothed comb is casually used, because fines combs pull and

break the hair. Some people brush their hair vigorously before retiring to bed, others comb their hair frequently.

Hair on the Head:

Hair comes in a variety of types. Whether hair is curly, wavy or straight depends upon the shape of the hair follicle.

Flat fascicle	-	Wavy hair
Round fascicle-		straight hair
Oval fascicle	-	curly hair

Whatever kind of hair a person has, it is important to keep it clean and free from odor to prevent the scalp problems.

The common hair problems

Dandruff: It is a swelling of the upper layer of skin on the scalp and greasy or dry scaling of the scalp. It causes itching and more often come in the cold weather. Medicated shampoo may be useful to treat dandruff.

Pediculosis: These are tiny grayish white parasitic insects that infest mammals. It is found on the scalp attached to hair and the eggs look like oval particles. Bites or pustules may be seen behind the ears and at the hairlines. These are difficult to remove. It is treated by medicated shampoo for eliminating lice and repeating after 24 hours.

Alopecia: Bald patches appear at the periphery of the hairline. The hair becomes brittle and broken. It causes uneven hair and loss of appearance. Consult a specialist and stop all other hair care.

The purpose of Hair care

- ☐ Make the patient comfortable.
- ☐ Observe the condition of scalp.
- ☐ Give an appearance and affecting of well being.

Body Hair

The growth of body hair takes place at puberty in girls and boys. Hair will appear in the pubic area and hair on the arms, under arms, legs, and face for boys will often grow thicker. Where body hair does protect the skin and body, it is not necessary to a person's well being.

Facial Hair

As facial hair continues to grow, many boys will opt to shave. Shaving depends on person's choice using either a treatment or disposable razor and shaving cream. Girls can shave their legs, under arms and bikini area. Electric razors are also effective, although many electric razors do not provide a very close shave. A new blade is used every shave in the barber shop/commercial shaving areas to prevent transmission of infection. The other way of hair removal from the hands and legs are waxing, sugaring, and electrolysis and laser treatment.

Care of Nail

Nails are epithelial tissues that grow from the root of the nail bed located in the skin at the nail groove. A normal healthy nail is transparent smooth and convex. The color of nail is pink with translucent white tips. Pigment deposits or bands were common in the nail beds of

patients with dark skin. The nail bed angle should measure 160° degrees. The nail surrounded by a cuticle, which slowly grow over the nail must be regularly pushed back.

The problems of the nail

Paronychia: An infection around the edge of a finger nail or toe nail. It begins from a break in the skin due to hang nail vigorous manicuring or chronic imitation from rubbing on picking.

Onychomycosis: Fungal infection of the nail can be contracted by walking bare foot in public places or in conjunction with development of athlete's foot.

Nail ring worm: The newest formed part of the nail is infected by fingers and the nail grooves thick and deformed. This treated with antifungal drugs.

Nail problems often results from

- ☐ Abuse or poor care of feet and hands
- ☐ Biting nails
- ☐ Exposure to harsh chemicals
- ☐ Weaving all fitting shoes.

Nails should be kept clean and neatly trimmed or filed. Special care of nail helps to prevent infection, odor and injury to soft tissues. Long nails may have more dirt and look ugly than short nail, which causes less infection.

Eye Care

Eye is the sensory organ of vision. Eye care begins immediately after birth of a baby.

- Clean the secretions from the eye where it is infected.
- Eye cleaning is to be done from inner canthus to outer canthus of the eye.
- Separate cotton swab is to be used for each eye cleaning.
- Wear protective goggles while exposure to radiation and chance of infections spillage while doing procedure.
- Wear sun glasses while going out during sun light.
- Wash eye with cool water in the morning.
- Treat any infection to eye and surrounding areas, and until eye drops as per doctor prescription.

Care of Ear

Ear is the sensory organ for the auditory function (hearing). It consists of three parts.

- Outer ear - Pinna, ear canal and ear drum.
- Middle ear - bone – Maleus, incus and stapes
- Inner ear - Vestibular and cochlea

The ear canal is self cleaning by secretion of cerumen. The glands in the ear canal secretes brown color creasy fluid adhere the other particles in the air such as dust and dirt forms the wax in the ear.

- ☐ Clean ear after the bath by ear swabs and remove the moisture in and around the skin of ear.
- Don't use ear buds to clean the ear wax because sometimes it is pushed toward ear drum.
- ☐ If wax is hard, consult the ENT specialist for removal of wax.

- ☐ Ear irrigation will be done in case of excessive wax, which affect hearing and person feel uncomfortable.
- ☐ Blunt instrument with loop may used for removal of wax. This is another method but carefully insert the instrument in the ear canal for removal of wax.
- ☐ Ear plugs should be used while swimming otherwise the children may develop itching, pain, swelling and redness in the ear.
- ☐ Healthy hearing habits are essential for good hearing. Avoid excessive use of cell phone for communication.
- ☐ Certain type of noises, which heard nearby an ear, causes loss of hearing or damage to the ear. (e.g.) gun fire, explosion of fire crackers, continuous exposure to vacuum cleaner sound, factory machine sounds, etc. hearing loud music.
- ☐ Observe the children while playing for the chance of parting foreign body in the ear.

Care of Bladder and Bowel

The bladder and bowel is the important structure which helps in elimination of waste from our body. The bladder is the collecting bay of urine. When the bladder is full, the person develop urge to pass urine. The voiding of urine is known as micturation.

If a person is not drunk adequate water, it will decrease the urine out. It is experienced during summer, by excessive sweat, the urine output is diminished.

- ☐ Drink 1.5 to 2 liters of water 1 day.
- ☐ Avoid caffeine based drinks such as coffee and cola variety of soft drinks.
- ☐ The urine output is essential recording to assess the renal function after surgery, hemorrhage, shock and fluid loss. (e.g.) vomiting, diarrhea, excessive sweat.
- ☐ The common problems of bladder are retention of urine and Incontinence of urine due to neurological disorder or obstruction.

Bowel is long tubular structure where digestion, absorption and excretion of waste (stool) take place. Every one regularly empties the bowel as per their habit either morning or evening. Regular habit of bowel function prevents the digestive problems and minimizes the re-absorption of toxin into the circulation.

The stool contains a small amount of undigested roughage, sloughed dead bacteria and epithelial cells, fat protein and dried constituents of digestive juices (bile pigments) and inorganic matter (calcium and Phosphate).The common bowel problems are diarrhea and constipation.

Characteristics of abnormal stool

S.No	Conditions	Color of Stool
1.	Upper Gastro intestinal bleeding	Tarry black color
2.	Lower Gastro Intestinal bleeding	Bright and dark red
3.	Rectal and anal bleeding	Streaking of blood in the stool
4.	Use of iron tablet and charcoal	Black stool
5.	Jaundice	Clay color stool
6.	Mal absorption disorder	Yellow, gravy and fowl smelling stool

Diarrhea: If loose consistency and more frequency of defecation with or without odor.

Steatorrhea: Bulky, greasy foamy and gray color stool.

Cholera: Rice watery stool.

Constipation: A dry hard, stony, difficult defecation or passage of no stool for a period of time.

Defecation is the expulsion of feces from the anus and the rectum. The frequency of defecation is highly individual, varying from several times per day to two or three times per week. The amount of defecation can differ from person to person. The sensory nerves are stimulated and peristaltic waves move the feed matter from the sigmoid colon and the rectum, the undelivered experiences the need to defecate.

The bowel elimination is affected by the following factors.

- ☐ Age and development
- ☐ Daily patterns of defecation
- ☐ Life style
- ☐ Diet
- ☐ Intake of fluid
- ☐ Activity and exercise
- ☐ Medication
- ☐ Physiological factor like anxiety and fear
- ☐ Surgery and anesthesia.

Care

- ☐ Practice regular habit of bowel elimination.
- ☐ Take more fiber rich food.
- ☐ Drink plenty of fluid
- ☐ Develop habit to do exercise/walking
- Don't use medicine for defecation
- ☐ Eat plantain daily at bed time.

Perineal Care

Care of external genitalia is essential to prevent transmission of ascending infection to the pelvic organ from urethra and vagina. The cleaning of vulva and perineum with sterile technique/clean technique is known as perineal care.

Purpose

- ☐ To prevent infection of genital tract.
- ☐ To give comfort to the person after urination and defecation.
- ☐ To help in healing when there are stitches on the perineum.

Sexual Hygiene

Sex is a natural part of life and it happens with or without sex education. Sex is a fundamental part of being human; but less than half of our states require sex and HIV education, and most of what is taught is sub-par. Just because we refuse to talk about sex doesn't mean it's just going to go away.

Menstrual Hygiene Management: Menstruation is a normal biological process and a key sign of reproductive health. But in many cultures it is treated as something negative, shameful or dirty.

Menstruation is a woman's monthly bleeding. Menstrual blood flows from the uterus through the small opening in the cervix and passes out of the body through the vagina. Most menstrual periods last from 3 to 5 days.

Menstrual hygiene management is defined as: 'Women and adolescent girls using a clean menstrual management material to absorb or collect blood that can be changed in privacy as often as necessary for the duration of the menstruation period, using soap and water for washing the body as required

Menstrual Hygiene

1. Change your sanitary napkin every 4-6 hours

It is the cardinal rule to establish vaginal hygiene. Menstrual blood, when released from the body attracts various organisms from our bodies, which multiply in the warmth of the blood, and cause irritation, rashes or urinary tract infections. Changing your sanitary napkin or tampon regularly curbs the growth of these organisms and prevents infections.

2. Wash yourself properly

Washing your vagina regularly is extremely important, because the organisms cling to your body after you have removed your sanitary napkin. Most people wash themselves regularly.

3. Don't use soaps or vagina hygiene products Vagina have their own cleaning mechanism which comes into play during menstrual cycles, and these artificial hygiene products can hamper the natural process leading to infections and growth of bacteria.

4. Discard the sanitary napkin properly

Disposing off your sanitary napkins properly is an important step. Wrap them properly before you throw them away, so the bacteria and infections do not spread. Make sure you don't flush them, since that will block the toilet causing the water to back up, spreading the bacteria all over it. Washing your hands properly is of utmost importance after you have wrapped and discarded the used sanitary napkins.

5. Stick to one method of sanitation-Women tend to use tampons and sanitary napkins, or two sanitary napkins simultaneously during heavy flow which is an efficient technique. It may cause infection

Comfort, needs of sick

Comfort means a pleasant feeling of being relaxed and free from pain

Sickness weakens the body. To gain strength and get well quickly, special care is needed. Sick person requires care frequently is the most important part of his treatment.

Medicines are often not necessary. But good care is always important. The following are the basis of good care.

The quality of care a sick person receives during recovery from an illness is one of the most important steps to getting better. Family member who is suffering from a bad cold, an illness, or an infection. She may be instructed to stay at home, rest up, and get better by doctor. Caring actions ensure that he or she undergoes a speedy recovery. A sick person needs love and constant encouragement.

1. Make sure they rests in a quiet, comfortable spot with access to fresh air. The sick person may have a high temperature and can feel chilled in a room that is too cold or uncomfortable in a room that is too hot. As well, loud noises and a stuffy room can make the sick person feel worse, rather than better. To make the person to feel more comfortable access to warm blankets and lots of pillows, especially if they have a cold or a flu.

2. Give liquids, like water and herbal tea to the sick person. Most ill people suffer from dehydration due to symptoms like diarrhoea or fever. Make sure they stay well hydrated by giving those glasses of water and cups of warm, comforting herbal tea. The average adult needs to drink eight 8 ounce glasses of water or more every day and should urinate at least three to four times a day.

3. Prepare the person's comfort food. Most people will have a go to comfort foods for a sick person as they are warm, filling, and easy to digest. Nourishing foods like soup, porridge, oatmeal, and fruits are all good meal options for a person who is feeling ill and weak.

4. Help the sick person stay clean. Depending on how severe the person's sickness is, she may have a difficult time bathing herself or maintaining a level of cleanliness. The sick person feel better by assisting with the changing of bedding every day and helping to change the positions in bed.

5. Play a game or watch a favourite movie or show. Another simple way to cheer up a sick person is to distract her from her illness by suggesting play a favourite game or watch a favourite movie or show together.

6. Express sympathy and desire to make her feel better while visiting the sick person

7. Be willing to listen- Most sick people tend to feel better when they have someone is willing to listen them and talk with empathy and understanding. Often, the sick person experiences boring and lonely.

Care of pressure points

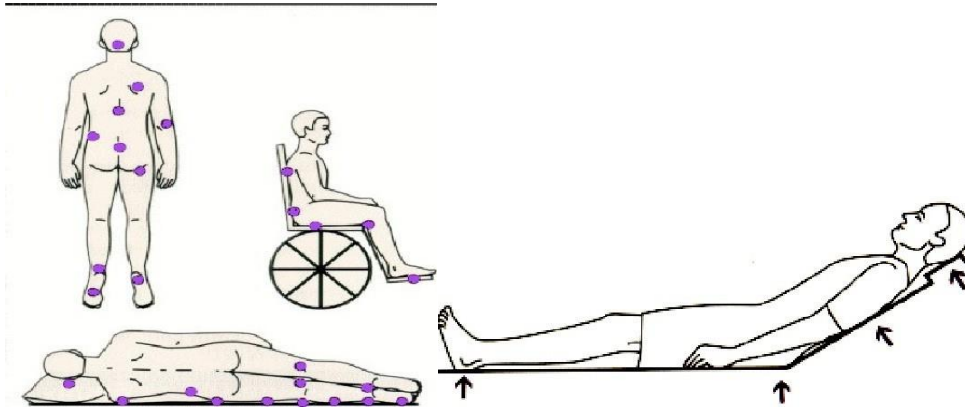
Definition

Decubitus ulcers, also known as pressure sores or decubiti, are ulcerated or sloughed area of tissue subjected to pressure from lying on mattress or sitting on a chair for prolonged period of time resulting in the slowing of circulation and finally death of tissues.

Pressure points

Pressure points are those that bear weight, so that the skin over them is subject to pressure.

- ☐ The pressure points in the supine position are back of the head (occiput), scapula, sacral region, elbow and heels.
- ☐ In a prone position, the pressure points are ears, cheek, acromian process, breasts (in the female), genitalia (in the males), knee and toes.



Purposes

To promote relaxation and comforts.

To relieve muscular tension.

To stimulate circulation.

Clients susceptible to Bed Sores

1. Elderly bedridden clients.
2. Obese clients.
3. Very thin and emaciated clients
4. Paralysed clients with spinal cord injuries.
5. Malnourished clients
6. Agitated clients in restraints.

Signs and Symptoms of Pressure Sores

The early symptoms of pressure sore are redness, tenderness, discomfort and smarting. The area becomes cold to touch and insensitive. There is local oedema. Later the area becomes blue, purple. Due to continued pressure, the circulation is cut off, the gangrene develops and the affected area is sloughed off.

Prevention of Pressure Sores:

1. Identification of clients who are particularly prone to the development of Pressure Sores.
2. Daily examination of client's pressure areas for redness, discoloration or blisters on the skin and they should be reported and treated immediately.
3. Keep the clients clean and dry.
4. Change the positions of the clients every 2 hours so that another body surface bears weight.
5. Keep the clients skin well lubricated to prevent cracking by using powder.
6. Protect the damaged skin. Damaged skin can be further irritated and macerated by urine, faeces, sweat etc.
7. Provide the client with adequate fluids and with a nourishing diet that is high in protein and vitamins.

8. Attend and massage the pressure points as often as necessary to stimulate circulation.
9. Call assistance and lift the clients before giving and taking bedpans.
10. Whenever possible, placing the client on pillows or foam cushions or changes the position of the client.
11. A cleaning agent is used to clean the ulcerated area for preventing infection. e.g. Normal saline.
12. Apply the possible measures for the healing of the wound. If slough is present, clean the area thoroughly twice a day with hydrogen peroxide diluted with distilled water.

Positioning

Positioning a patient in bed is important for maintaining alignment and for preventing bed sores, foot drop, and contractures. Proper positioning is also vital for providing comfort for patients who are bedridden or have decreased mobility related to a medical condition or treatment.

When positioning a patient in bed, supportive devices such as pillows, rolls, and blankets, along with repositioning, can aid in providing comfort and safety.

Patient Positions in Bed




Positioning a patient in bed is a common procedure in the hospital. There are various positions possible for patients in bed, which may be determined by their condition, preference, or treatment related to an illness.




Supine position -Patient lies flat on back. Additional supportive devices may be added for comfort.
Prone position -Patient lies on stomach with head turned to the side.
Lateral position -Patient lies on the side of the body with the top leg over the -bottom leg. This position helps relieve pressure on the coccyx.
Sims position -Patient lies between supine and prone with legs flexed in front of the patient. Arms should be comfortably placed beside the patient, not underneath.
Fowler's position -Patient's head of bed is placed at a 45-degree angle. Hips may or may not be flexed. This is a common position to provide patient comfort and care.
Semi-Fowler's position -Patient's head of bed is placed at a 30-degree angle. This position is used for patients who have cardiac or respiratory conditions, and for patients with a naso gastric tube.
Trendelenburg position - Place the head of the bed lower than the feet. This position is used in situations such as hypotension and medical emergencies. It helps promote venous return to major organs such as the head and heart.

Changing of patient position

Prior to ambulating, repositioning, or transferring a patient from one surface to another e.g., a stretcher to a bed), it may be necessary to move the patient to the side of the bed to avoid straining or excessive reaching by the health care provider. Positioning the patient to the side

of the bed also allows the health care provider to have the patient as close as possible to the health care provider's centre of gravity for optimal balance during patient handling.

Steps of procedure	Rationale
1. Make sure you have as many additional health care providers as needed to help with the move.	The procedure works best with two or more health care providers, depending on the size of the patient and the size of the health care professional.
2. Explain to the patient what will happen and how the patient can help.	This provides the patient with an opportunity to ask questions and help with the positioning.
3. Raise bed to safe working height and ensure that brakes are applied. Lay patient supine.	Principles of proper body mechanics help prevent MSI. Safe working height is at waist level for the shortest health care provider.
4. Stand on the side of the bed the patient is moving toward. One person stands at the shoulder area and the other person stands near the hip area, with feet shoulder width apart.	This step keeps the heaviest part of the patient closest to the centre of gravity of the health care providers.  Keep heaviest part of the patient closest to your center of gravity
5. Fan-fold the draw sheet toward the patient with palms facing up.	Fold sheet with fingers facing upward
6. Have the health care provider at the head of the bed grasp the pillow with one hand and the draw sheet with the other hand.	This prevents injury to patient.  Grasp the pillow with one hand and the draw sheet with the other
7. Have patient place arms across chest.	This step prevents injury to patient.  Chin tucked in and arms across chest
8. Tighten your gluteal and abdominal muscles, bend your knees, and keep back straight and neutral. Place one foot in front of the other. The weight will shift from the	Use of proper body mechanics helps prevent injury when handling patients.

front foot to the back during the move.	
9. On the count of three by the lead person, with arms tight and shoulders down, shift your weight from the front foot to the back foot. Use your large leg muscles to move the patient. Do not lift, but gently slide the patient.	 <p>Start move with weight on front foot</p>  <p>Shift weight to back foot. If the patient is bariatric, the move should be repeated to correctly position the patient, or use a mechanical lift.</p>
10. Once patient is positioned toward the side of the bed, ensure pillow is comfortable under the head, and straighten sheets. Complete all other procedures related to safe patient handling.	<p>This step promotes comfort and prevents harm to patient.</p>  <p>Raise side rails</p>
11. Lower bed, raise side rails as required, and ensure call bell is within reach. Perform hand hygiene.	<p>Placing bed and side rails in safe positions reduces the likelihood of injury to patient. Bed in lowest position, side rail up, call bell within reach</p> <p>Hand hygiene reduces the spread of microorganisms.</p>

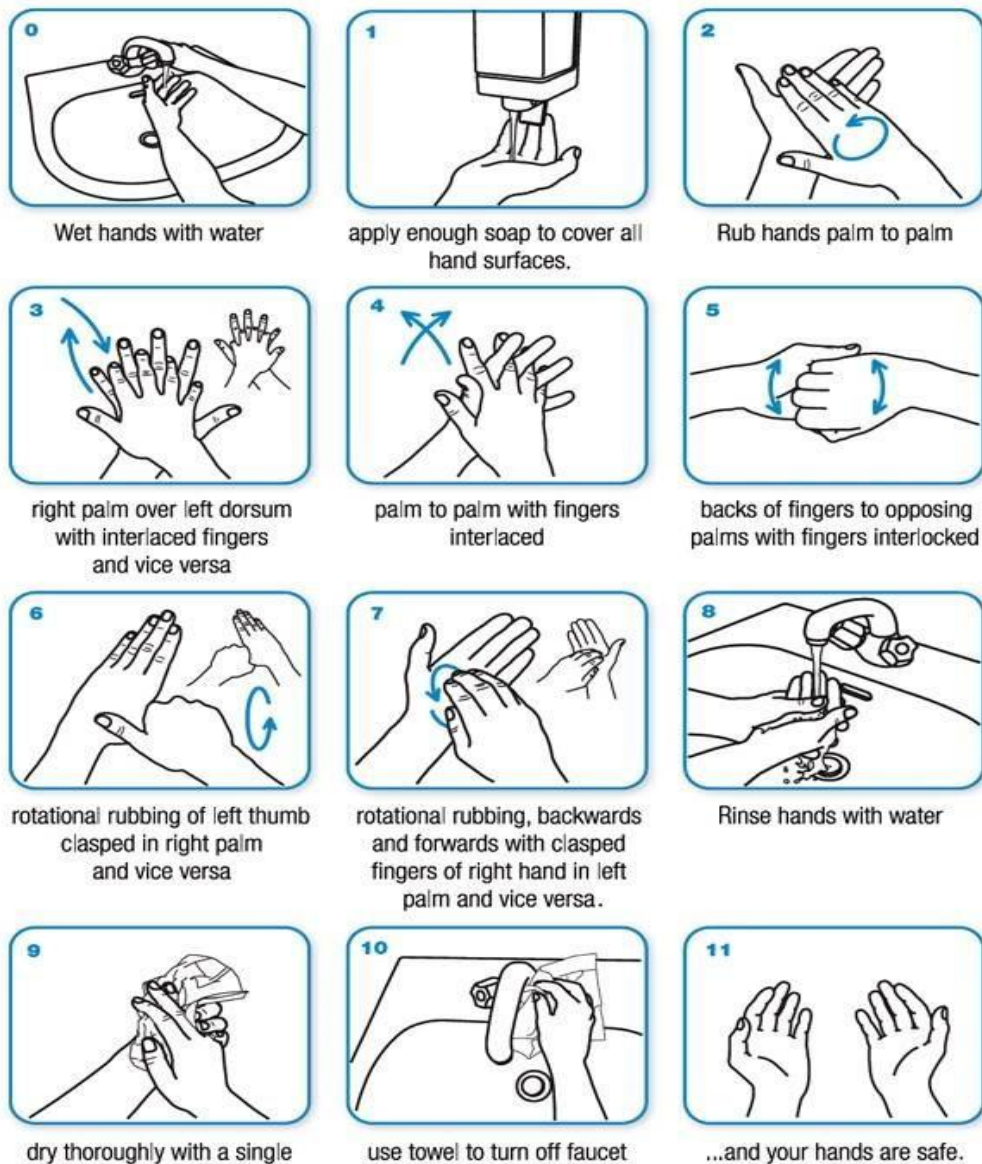
–Hand washing

Hand Wash:

The most important and basic technique in preventing and controlling transmission of pathogens is by hand washing.

Hand Washing Steps

Hand washing is the single most important procedure for preventing nosocomial infection as hand have been shown to be an important route of transmission of infection



Procedure

- ☐ Wet hands with clean and warm running water.
- ☐ Apply a small amount of soap.
- ☐ Rub your palms together, away from the water.
- ☐ Rub your fingers and thumbs and the skin in between them.
- ☐ Scour your palms with your nails.
- ☐ Rub the back of each hand.
- ☐ Rinse with clean running water.
- ☐ Dry with a clean towel or paper towel.

Make a habit to wash your hands

- ☐ before and after eating
- ☐ after playing outdoors
- ☐ after using toilets
- ☐ after sneezing or coughing
- ☐ Before and after being around with someone who is ill.

Basic human needs

Maslow's theory of basic human needs was used to understand the motivational factors, and a qualitative methodology was used applying quantitative techniques. The theory indicates that the basic needs of the nursing care compromised, especially safety and physiological needs, which are the most primary.

Characteristics of Basic Human Needs

1. Needs are universal.
2. Needs may be met in different ways
3. Needs may be stimulated by external and internal factor
4. Priorities may be deferred
5. Needs are interrelated

Definition

- ☐ Each individual has unique characteristics, but certain needs are common to all people.
- ☐ A need is something that is desirable, useful or necessary. Human needs are physiologic and psychological conditions that an individual must meet to achieve a state of health or well-being.

Physiologic

1. Oxygen
2. Fluids
3. Nutrition
4. Body temperature
5. Elimination
6. Rest and sleep
7. Sex

Safety and Security

1. Physical safety
2. Psychological safety
3. The need for shelter and freedom from harm and danger

Love and belonging

1. The need to love and be loved
2. The need to care and to be cared for.
3. The need for affection: to associate or to belong
4. The need to establish fruitful and meaningful relationships with people, institution, or organization

Self-Esteem Needs

1. Self-worth
2. Self-identity
3. Self-respect
4. Body image

Self-Actualization Needs

1. The need to learn, create and understand or comprehend
2. The need for harmonious relationships
3. The need for beauty or aesthetics
4. The need for spiritual fulfillment



Maslow's hierarchy of needs

Rest and sleep

Rest: when we give our body a period for relaxation. We relaxes our muscles, sometimes close our eyes for comfort. But, our brain can running its functions actively during resting phase too. We have our full consciousness about the surrounding during resting time.

Sleep: In this condition our brain does not work actively. We don't have our full consciousness about the surroundings. Our brain here takes rest as well as our body muscles do.

Sleep is one thing that is universal to people. It is a human need and in fact, humans spend a one third of their lives sleeping. It is vital for optimal psychological and physiological functioning. Sleep is essential to conserve energy, prevent fatigue, and to restore the mind and the body.

Sleep cycle

The sleep cycle consists of both non REM sleep and REM sleep.

Non REM sleep is sleep that is not accompanied with rapid eye movements (REM).

Non REM sleep has four phases which include 1.the stage of very light sleep, 2. The stage of very light sleep with the non movement of the eyes,3. the stage of deep sleep with delta waves and 4.deep sleep and increased delta brain waves.

Sleep problems

Insomnia, simply defined, is the absence of sleep. The two basic types of insomnia are inducement insomnia and maintenance insomnia. Insomnia causes day time sleepiness, irritability and decreased levels of mental concentration.

Narcolepsy is defined as excessive day time sleepiness that a person can be affected with secondary to the opacity of hypo cretin within the area of the central nervous system that controls sleep.

Hypersomnia is defined as the client's failure to stay awake during day time hours even when they have had enough sleep the night before .e.g. hypothyroidism, central nervous system dysfunction

Parasomnia is defined as a sleep disorder that interferes with sleep. e.g. sleep walking, sleep talking

Sleep apnoea is absence of breathing that occurs during sleep. CNS disorder and obstruction of respiratory tract

Nocturnal Enuresis: Nocturnal enuresis can be treated with a bed wetting alarm, positive reinforcement and medications such as imipramine and desmopressin.

The **amount of sleep** that is needed also varies among the age groups. Below are some guidelines that you can use to determine whether or not a client is getting enough sleep and rest for physiological and psychological health.

Stage of growth	Hours of sleep /day
Neonates through 3 months	14 to 17 hours
Infants from 4 months of age to 11 months	12 to 15 hours
toddlers up to 3 years	11 to 14 hours
Preschool children from 3 to 5 years of age	10 to 13 hours
School age children from 6 to 12 years of age	9 to 11 hours
Adolescents from 13 to 17 years of age	8 to 10 hours
Young adults and middle aged adults	7 to 9 hours
Older adults over 65 years of age	7 to 8 hours

- ☐ Adolescents from 13 to 17 years of age should sleep about 8 to 10 hours of sleep
- ☐ Young adults and middle aged adults need about 7 to 9 hours of sleep
- ☐ Older adults over 65 years of age tend to require slightly less sleep than the middle age adults and only 7 to 8 hours of sleep per night

Factors that impact on sleep

- ☐ Illnesses
- ☐ Medications
- ☐ Environment

- Emotional and Psychological Distress and Stress
- Lifestyle Choices: Consumption patterns such as cigarette smoking and alcohol use interfere with sleep and other life style choices such as those related to exercise also impact on sleep.
- Work Schedules: Long work hours and working night time hours interfere with sleep.

Interventions for promotion of Sleep

- Establishing and adhering to a regular sleep time and wake time for the client based on their patterns and needs
- Limiting the duration and frequency of day time naps
- The promotion of daily exercise
- The avoidance of alcohol, caffeine, heavy meals and exercise at least a couple of hours before bedtime
- The promotion of comfort using techniques such as white noise, dim lighting, pain management, stress reduction techniques, massage and the elimination of environmental noise

Activity and exercises and posture

Activity

Mobility is defined as ability to the joints and body part in all direction freely and purposefully. The activity of an individual indicates optimal functioning of the body and makes the person to feel sense of independence.

The body requires motion and Regular exercise for keeping physical fitness. Whereas immobility has a negative effect .The adverse effect of immobility are venous stasis, thrombus and embolism formation, ortho static hypotension, pneumonia, muscle atrophy and contracture.

Purpose of exercise for the person

To improve muscle strength and maintain joint mobility

To enhance digestion

To improve circulation

To minimise cardiac risk problems

To gain diversion and promote physical and mental well being

To increase tolerance for more activity

Types of exercise

Active exercise- These exercise are performed by the patient without assistance. e.g. Deep breathing exercise, coughing exercise, foot exercise, Range of motion exercise and pelvic floor exercise

Passive exercise- These exercise are performed by the patient with assistance. The nurse/physiotherapist assists for doing exercise in the bed.

Resistive exercise-The active movement performed by the patient is by pulling or pushing against an opposing force.

Isometric exercise-The patient performs the exercise by contracting and relaxing the muscles, while keeping part in affixed position.

Body mechanic the proper use of correct muscle to complete a task safely, without causing strain to the muscle and joints

Gaits

All **natural** gaits are designed to propel a person forward, but can also be adapted for lateral movement. (The walk, jog, skip, run, and sprint). As natural gaits all have the same purpose, they are mostly distinguished by when the leg muscles are used during the gait cycle.

Abnormal gaits

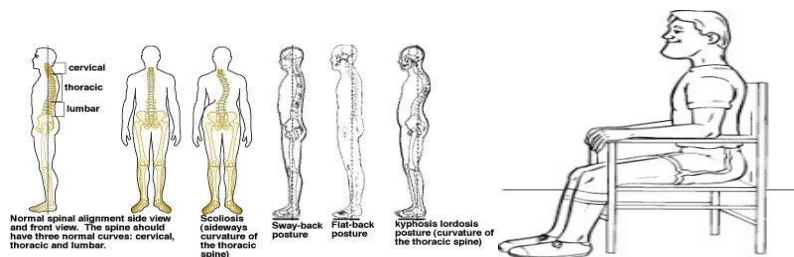
Abnormal gait is a result of one or more of these tracts being disturbed. This can happen developmentally as the result of neuro degeneration. Some of this is associated with decreased muscle tone (hypotonia), and neuro degeneration is Parkinson's. some of the abnormal gaits are below

- | | |
|------------------------|----------------------|
| ✓ Antalgic gait | ✓ High stepping gait |
| ✓ Charlie Chaplin gait | ✓ Scissor gait |
| ✓ Circumduction gait | ✓ Stiff hip gait |
| ✓ Waddling gait: | ✓ Trendelenburg gait |

Posture

Posture is the position in which you hold your body upright against gravity while standing, sitting or lying down. Good posture involves training the body to stand, walk, sit and lie in positions where the least strain is placed on supporting muscles and ligaments during movement or weight-bearing activities. Proper posture:

- Keeps bones and joints in the correct alignment so that muscles are being used properly.
- Helps decrease the abnormal wearing of joint surfaces that could result in arthritis.
- Decreases the stress on the ligaments holding the joints of the spine together.
- Prevents the spine from becoming fixed in abnormal positions.
- Prevents fatigue because muscles are being used more efficiently, allowing the body to use less energy.
- Prevents strain or overuse problems.
- Prevents backache and muscular pain.
- Contributes to a good appearance.



Proper posture requirements

Correct sitting position

- Sit up with back straight and shoulders back; buttocks should touch the back of chair.
- All 3 normal back curves should be present while sitting. A small, rolled-up towel or a lumbar roll can be used to help you maintain the normal curves in your back.

- Sit at the end of your chair and slouch completely.
- Draw yourself up and accentuate the curve of your back as far as possible. Hold for a few seconds.
- Release the position slightly (about 10 degrees). This is a good sitting posture.
- Distribute body weight evenly on both hips.
- Bend your knees at a right angle. Keep your knees even with or slightly higher than your hips. (Use a foot rest or stool if necessary).
- Keep your feet flat on the floor.
- Try to avoid sitting in the same position for more than 30 minutes.
- At work, adjust chair height, so that you can sit up close to your work and tilt it up at you. Rest your elbows and arms on your chair or desk, keeping your shoulders relaxed.
- When sitting in a chair that rolls and pivots, don't twist at the waist while sitting. Instead, turn your whole body.
- When standing up from the sitting position, move to the front of the seat of your chair. Stand up by straightening your legs. Avoid bending forward at your waist.

Examples of different faulty postures

- Lordotic posture.
- Sway back posture.
- Flat back posture.
- Round back (increased kyphosis) with forward head.
- Flat upper back and neck posture.
- Scoliosis(postural)

Principles of good body mechanism

1. Maintain a stable centre of gravity
2. Maintain wide base of support
3. Maintain line of gravity
4. Maintain proper body alignment
5. Face the direction of movement
6. Use large muscle groups of the legs, arms and shoulders
7. Push, pull, slide or roll a heavy object on surface to avoid unnecessary lifting

Habits: food, eating and drinking

Good habit: A behaviour that is beneficial to one's physical or mental health, often linked to a high level of discipline and self-control. Examples good habits Regular exercise, balanced diet, and monogamy, etc.

Food is the basic need of an individual and essential for life. is a substance consumed to provide nutritional support to the body. It is usually of plant or animal origin and contains essential nutrients, such as carbohydrates, fats, proteins, vitamins or minerals.

The main function of food is

- ☐ To build /repair the tissue
- ☐ To regulate metabolic process

- To provide energy

A balanced diet is essential for maintenance of good health. The essential nutrients are carbohydrates, protein and fat. The food consumption and habits are affected by many factors. They are

- Customs and belief
- Religious belief
- Food likes and dislikes
- Food related superstitious belief
- Socioeconomic factor
- Cooking practices

Along with the right type of food, everyone must also learn how to eat it right way. **General idea of do's and don'ts as a part of healthy food habits.**

1. Observe daily diet for having too many calories in diet and don't have enough time to burn them. Consider eat something with less fat and easy to digest.
2. Make sure to add green leafy vegetables in the diet. They are a rich source of proteins, iron, calcium and fiber. Green leafy vegetables are easy to prepare and quite appetizing too.
3. Drinking plenty of water helps detoxify the body as well as gives you a glowing skin. Although, we should avoid drinking water during meals as it slows down the digestion process. It is advisable to have water 30 minutes before or after having your food.
4. Proteins are vital for the body and should definitely be included in the diet. Broccoli, soybeans, lentils, asparagus and spinach are some commonly found protein rich foods. Low-fat dairy products are also a rich source of proteins. Insure that your body receives the required amount of proteins daily.
5. One of the easiest and obvious ways to digest food is to chew it. Most people often eat their food in a hurry and tend to skip chewing their food properly.
6. Keep away from fast-food and soft-drinks

Carbonated soft drinks have a high sugar content which may lead to obesity, diabetes and dental caries. Instead of these harmful drinks, choose to refresh yourself with a glass of buttermilk or lemonade.

7. Cook at home-Instead of ordering pizza from the joint around the corner, use your kitchen and make that dish you've been planning on having.

9. Never skip your breakfast-Make sure you eat a wholesome and rich breakfast before you step out of the house.

10. Digest your food better-it always helps if you can boost the process of digestion.

A good food habit helps shape your personality. And this is why ancient sages always preferred consuming sathvic food. So choose wisely and eat better.

Developing healthy eating habits isn't as confusing or as restrictive as many people imagine. The essential steps are to eat mostly foods derived from plants—vegetables, fruits, whole grains and legumes (beans, peas, lentils)—and limit highly processed foods.

Drinking

Water plays an important role in our life. Water is not only thirst-quenching but has many health benefits for our body and vital organs. They are:

- Prevents dehydration
- Regulates body temperature
- Carries nutrients and oxygen to the cells
- Provides moisture to the skin and other tissues
- Helps prevent constipation
- Cushions joints
- Helps strengthen muscle

Water requirement per day

An average healthy adult needs to consume at least 8 glasses of water on a daily basis and this quantity should be increased during the summer and when exercising.

Tips for drinking more water

- Drink a glass of water as soon as you get up every day.
- Add slices of lemon, lime or orange to your water for a hint of flavor if you do not like to drink plain water.
- Enjoy water breaks at work.
- Replace other drinks with water at meal times.
- Take water bottles with you to work or college.
- Always have cold water on hand ready to drink.
- Keep a cup of water on your desk to sip on while you work.
- Drink water before, during and after physical activity.
- Do not wait until you are thirsty to drink water; stay hydrated all day long.

Drinking is tolerated in many cultures around the world. It is accepted as a legitimate way to celebrate special occasions or just to relax after a hard day at work. Drinking alcohol in moderation tends to be viewed as a harmless activity.

Lot of people the words 'social drinker' just means not exhibiting the classic signs of alcoholism.

A definition could be based on the amount the individual drinks or their relationship to alcohol. One way to describe a social drinker would be to say that these are individuals who:

- *Only drink occasionally.
- * Do not feel the need to drink alcohol in order to have a good time.
- * Never get into trouble because of alcohol.
- * Don't do or say things they regret while drinking.
- * Do not spend a lot of time thinking about alcohol.

–Participation in social activities

Social participation is engagement in variety of role with others. Social roles include domestic roles of home maintainer and care giver, inter personal roles of friend and family members. Participating in social activity and inter acting with others people in a friendly, supportive environment contributes positively to an individual's sense of wellbeing. It helps to build social networks and contributes to a sense of belonging.

Maintain and build new relationships

The human brain requires social stimulation on a regular basis, and wants interact with the same people every day. Social activities stimulate the brain and keep those neurons firing, whether it is joining a book or chatting with a friend. As we age, it is important to meet new people, build new relationships, and enjoy the benefits of a wide-ranging social network.

Types of social activity

- ☐ Participation in family ,friend and cultural events
- ☐ Participation in sports
- ☐ Participation in needs of others

•

Benefits of social participation

Acquire new skills

Socially engaging activities are a great way for seniors to learn new skills and sharpen existing talents. It can be studying a new language, learning how to use an iPod, painting, picking up Tai Chi, or taking exercise classes. No matter the biological age, there is always an opportunity to learn something new.

Stimulate the mind

All social activities, such as taking up gardening or playing cards with friends, provide some degree of mental stimulation. Each activity keeps the brain and body actively engaged. social activities are not only enjoyable, but they also keep the minds of seniors sharp and healthy.

Improve health & well-being

Individuals who engaged in regular social activities reported higher self-perception and lower levels of loneliness and life dissatisfaction. The health benefits including the reduced risk of cardiovascular problems, arthritis, Alzheimer's disease, and mental health issues such as depression when they are socially active.

Increase motivation

Encouragement from fellow seniors and staff make the people to learn a new skill or craft and remaining socially active. With increased motivation, seniors will feel more inspired to experience new things and enhance their mental stimulation and self-confidence.

Retain integrity

People don't want to feel old and nor do they have to. With active socialization and participation in various activities as opposed to sitting in front of the television, they'll feel more energized. They're able to maintain their integrity, self-assurance, and independence while interacting with other seniors who are also energized and active, making for a more wholesome and healthier life.

–Self actualization and spiritual needs

Self actualization is defined as the full use and exploitation of talents, capacities and potentialities.

It is the ongoing process in which the person abilities are completely utilized. Most commonly self actualised people see life clearly, less emotional, more objective, less likely to allow hopes, fears or ego defences to distort their observations.

The characteristics of self actualising people are Creativity, spontaneity, courage and hard work; more efficient perception and comfortable relationship with others.

Spiritual needs

Nurses need to consider psychological, emotional, social, cultural and spiritual aspects of care to help patients understand the meaning of their experience. In practice spiritual needs should be given equal and sometimes greater precedence than physical needs.

Spirituality refers that the person seeks meaningfulness through inter and transpersonal connection. Spirituality generally involves a belief in a relationship with some higher power, creative force, divine being or immeasurable source of energy. Spirituality includes-meaning, value, transcendence, connecting and becoming (know about him what he is).

The expression person's spiritual energy to others is manifested in loving relationships with and service to others, joy and laughter, participation religious activities. The spiritual belief person shows compassion, empathy, forgiveness and hope in their life.

Nurses should follow some guideline while giving care to the patient in relation to spiritual need i.e.

- Understand the patient belief, resources and preferences in spiritual need
- Give spiritual care according to the patient wish
- Don't force to follow/adopt certain spiritual belief
- The spiritual care on par with belief of an individual

Spiritual care attends to a person's spiritual or religious needs as he or she copes with illness, loss, grief or pain and can help him or her heal emotionally as well as physically, rebuild relationships and regain a sense of spiritual wellbeing.

Interpersonal and human relations

Interpersonal relationship is social associations between two or more people. They vary in differing levels of intimacy and sharing, implying the discovery or establishment of common goal, and may be something shared in common.

A therapeutic **nurse-patient relationship** is defined as a helping relationship that's based on mutual trust and respect, the nurturing of faith and hope, being sensitive to self and others, and assisting with the gratification of your patient's physical, emotional, and spiritual needs through your knowledge and skill.

- The nurse-patient relationship enables nurses to spend more time, to connect, to interact with their patients as well as to understand their patient's needs.
- It assists nurses to establish a unique perspective regarding the meaning of the patient's illness, beliefs, and preferences of patients/families.
- Thus, the patients/families feel that they are being cared for and they feel more motivated to open up to the nurses as well as working together to achieve better outcomes/satisfaction

There are five **components** to the **nurse-client relationship**:

- ☐ Trust
- ☐ Respect
- ☐ Professional intimacy
- ☐ Empathy
- ☐ Power.

Regardless of the context, length of interaction and whether a nurse is the primary or secondary care provider, these components are always present.

Life style and healthy habits

Health is multi-factorial and complex. It is influenced by a number of things including our age, family history of illness, employment, education and living conditions. A variety of lifestyle or health related habits (behavioural factors) can have a major impact on a person's health. Behavioural and social issues that impact on health include smoking, alcohol, poor diet leading to obesity or malnutrition, lack of physical exercise, sexual behaviour and problems resulting from drug taking.

Lifestyle that influences on health. They are as follows:

1. **Diet and Body Mass Index (BMI):** Diet is the greatest factor in lifestyle and has a direct and positive relation with health. Poor diet and its consequences like obesity is the common healthy problem in urban societies. Unhealthy lifestyle can be measured by BMI. Urban lifestyle leads to the nutrition problems like using fast foods and poor foods, increasing problems like cardiovascular disorder.
2. **Exercise:** The regular and continuous doing of exercise along with a healthy diet increases the health.
3. **Sleep:.** Adequate sleep is necessary to prevent several social, psychological, economical and health problems and its consequences. Lifestyle may effect on sleep and sleep has a clear influence on mental and physical health.
4. **Sexual behavior:** Normal sex relation is necessary in healthy life. Dysfunction of sex relation is the problem of most of societies and it has a significant effect on mental

and physical health. It can be said that dysfunctional sex relation may result in various family problems or sex related illnesses like; AIDS

5. **Substance abuse:** Addiction is considered as an unhealthy life style. Smoking and using other substance may result in various problems; cardiovascular disease, asthma, cancer, brain injury.
6. **Medication abuse:** Unhealthy behaviors in using medication are as followed: self-treatment, sharing medication, using medications without prescription, prescribing too many drugs, disregard to harmful effects of drugs, not explaining the effects of drugs.
7. **Sleep early and wake up early**
8. **Application of modern technologies:** Advanced technology facilitates the life of human beings. Misuse of technology may result in unpleasant consequences. For example, using of computer and other devices up to midnight, may effect on the pattern of sleep and it may disturb sleep. Addiction to use mobile phone is related to depression symptoms.
9. **Recreation:** Leisure pass time is a sub factor of life style. Neglecting leisure can bring negative consequences. With disorganized planning and unhealthy leisure, people endanger their health.
10. **Study:** Study is the exercise of soul. Placing study as a factor in lifestyle may lead to more physical and mental health. For example, prevalence of dementia, such as Alzheimer's disease is lower in educated people. Study could slow process of dementia.

Lifestyle modification involves altering long-term habits, typically of eating or physical activity, and maintaining the new behaviour for months or years. Lifestyle modification can be used to treat a range of diseases, including obesity.

Conclusion

Personal care and hygiene make one to maintain their physical and mental health and wellbeing. eating and drinking habits helps for growth and repair of body. The lifestyle plays major role in standards of individual life

Essay questions

1. Describe the procedure of changing position
2. What is the health related habits /life style influence on health
3. What is the importance of self actualization and spiritual needs?
4. Describe about the personal hygiene
5. Write the pressure points and preventive measures of pressure ulcer

Short answer questions

1. List the steps of hand washing technique
2. List the different positions used for patient
3. What is rest?
4. What are the types of sleep cycles?
5. What is MASLOW'S HIERACHY of need?
6. List the types of exercises
7. What is comfort?
8. What are five components of nurse patient relationship?
9. What are the principles of body mechanism?

10. What is gait?
11. What are the purposes of personal hygiene?
12. What is the purpose of exercise?
13. What are the factors affecting sleep?

UNIT-IV COLLECTION OF SPECIMEN**Structure**

- 4.0-Introduction
- 4.1-Definition and Principles of collection of specimen
- 4.2-Methods of collection and handling body discharges
- 4.3-Collection of specimen of blood
- 4.4-Collection of specimen of sputum
- 4.5-Collection of specimen of urine
- 4.6-Collection of specimen of stool
- 4.7-Labelling of specimen
- 4.8- Collection of other specimen

Objectives

- After completion of this chapter, the students are able to
- List the types of specimen collection
- Describe the procedure of specimen collection
- Enhance knowledge and skill in handling body discharges
- Role of nurse in Collection of specimen and transportation of specimen

4.0 Introduction

The physical assessment is done through observation of body structure and parts, where as physiological, nutritional and metabolic state is assessed through the body secretions like blood, urine, vomiting, sputum and stool in the laboratory. Observation of the secretion is also included in the route health assessment to diagnose the disease of a patient. The body secretions investigated in the lab for confirmation of the diagnosis of the disease e.g. Typhoid fever. Universal precautions are to be followed while handling the body secretions for preventing transmission of infections or disease. It is one of the major responsibilities of the nurse to collect the specimen and transport the specimen to the laboratory for getting the accurate and reliable result.

Definition and Principles of collection of specimen**Definition**

A specimen is small sample or part taken to show the nature of the whole, as a small quantity of body secretions or a small piece of tissue for microscopic study.

Specimen collection is the process of obtaining tissue or fluids for laboratory analysis or near-patient testing. It is often a first step in determining diagnosis and treatment (Dougherty and Lister, 2004).

Purpose

The purpose of collection of specimen is

- To know the normal functions of the body
- To make diagnosis and prescribe treatment
- To assess the progress of the disease
- To identify the specific organism for the effective drug treatment
- The cytology test is to identify the origin ,structure ,function and pathology of cells

Principles of collection of specimen**1. Preparation of Patient**

Give adequate explanations regarding the collection of specimens. Explain to the client. When to collect, what to collect. How to collect and the quantity to be collected. e.g. Ask the client to wash the external genital area with soap and water and then rinse with water alone before collecting urine specimens.

2. Patient identification

Label each specimen as soon as it is received with the necessary data such as

- | | |
|---------------------|----------------------------|
| -Name of the client | -Name of Specimen |
| -Age | -Nature of test to be done |
| -Bed No | -Date of Collection |
| -Ward | |

- Send the specimens with the requisition form duly filled and signed.
- Specimens are not to be misplaced. Send them to the proper place.
- Record the reports immediately and correctly on the client's charts.

3. Precaution while collection of specimen

Specimen to be collected at right time. E.g. fasting blood is collected for blood sugar, cholesterol and blood proteins before breakfast etc.

Specimens serve as a media for transmission of disease producing organisms to the personnel who handle them carelessly.

4. Minimize contamination during collection of specimen

If a culture specimen is required – use sterile containers, get midstream specimen or catheterized specimen in case of urine specimen. Avoid collecting specimen during menstruation.

The inside of the container should not be contaminated with the fingers of the nurses or clients before or after collecting the specimens.

The lid of the container should be removed and placed in such a way that the inner surface should not be contaminated.

Open the container just before collecting the specimen and close it immediately after collecting the specimen.

5. Precaution during collection of specimen

Insist the client and the personnel to wash hands thoroughly after handling the specimen bottles. Containers of the proper sizes are used according to the nature of specimen. E.g. a large jar is used when collecting 24 hours of urine specimen.

The containers once used are cleaned and autoclaved before they are reused. All specimens should be considered as potentially infectious and wear the gloves and masks while collecting the specimen

6. Appropriate storage and transport of specimen collection

Contaminated and improperly collected specimens will produce false results which will adversely affect in the diagnosis and treatment of clients. Specimens allowed to stand at the room temperature for a long time will give a false result due to destruction of pathogenic bacteria.

Specimens should be always fresh for the laboratory examination. Send the specimens to the laboratory as soon as they are collected. if not possible to test immediately keep the specimen in the refrigerator, because cold temperature inhibits the growth of bacteria.

The accuracy and reliability of findings depend upon the correct method of collection, transportation of the specimens to the laboratory and recording of reports. Inaccurate results may mislead the physician in the diagnosis and treatment of clients.

Methods of collection and handling body discharges

The disposal of potentiality infectious fluid is obviously of significant one, which requires a multi-disciplinary team approach. The fluids consisting of blood or potentially infectious material are placed in properly sealed containers.

At the end of the lab procedure all containers with body fluids are placed in soiled-case carts which are then sent for decontamination sub division of sterile processing department

Staff should wear all types of personnel protection and efficiently dispose the fluids using a state of art drainage system. And it is later safely dispose with the municipal system

Standard safety precaution will minimize the risk of infectious exposure from splashing, spattering, spraying or aerosalization ultimately

The content of all vessels that contain more than a few mm of blood remaining after laboratory procedure, suction fluids or milk blood can either be inactivated in accordance with state approved treatment techniques.

Many blood borne pathogens particularly viruses are not stable in the environment for longer periods of time.

The Following ways will inactivate the blood borne pathogens in the disposal process, i.e.

- a) Dilution of the discharge materials with water
- b) Inactivation of pathogens resulting from exposure to cleaning chemicals, disinfectants and other chemicals in raw sewage

Collection of specimen of blood

Blood samples are collected for measurement of complete blood picture, blood lipids, glucose and electrolyte levels

specimen	Type of examination
serum	lipid profile, electrolytes Hormone test
plasma	Plasma glucose
whole blood	Total Count, Differential count, Erythrocyte Sedimentation Rate, Haemoglobin, Grouping, blood glucose, culture and sensitivity

Preparation of patient

Explain the procedure to ease his/her anxiety and promote cooperation.

All blood samples should be drawn in a sitting position. Patient has to wait for 15 minutes before withdrawing the blood, it will allow equilibration of the concentrations of blood components.

Blood should not be collected from the arm that is used for blood pressure measurement, i.e. blood should usually be drawn from the left arm.

Preparation for Blood Collection

1. When using multi-draw vacutainer system, draw tubes in the following order:
 1. All draws required to be sterile (i.e. blood cultures)
 2. Citrate containing tubes (blue top)
 3. Plain non-additive tubes (plain red top, SST red top, plain royal blue)
 4. Heparin containing tubes (green top)
 5. EDTA containing tubes (lavender top, EDTA royal blue top)
 6. Oxalate/fluoride containing tubes (gray top)
2. Tubes with powdered anticoagulants should be tapped near the stopper to dislodge any anticoagulant that may be lodged between the stopper and the wall of the tube.
3. To ensure proper ratio of anticoagulant to blood.
4. All tubes with anticoagulant should be mixed thoroughly by gentle inversion 5-10 times. **DO NOT SHAKE.**
5. EDTA capillary tubes should be filled to 250 mg.
6. Blue tubes **MUST** be as full as the vacuum allows. An uncomplicated direct veni puncture may be performed using only a needle and vacuum collection tube to obtain a single specimen for coagulation. (a serum tube without additives may be drawn first instead of a waste tube).
7. Collection of coagulation specimens through intravenous lines that have been flushed with heparin should be avoided. If coagulation specimens must be drawn through indwelling catheters, the line should be flushed with 5 ml of saline, and the first 5 ml of blood drawn from the indwelling catheter should be discarded before drawing coagulation specimens.

Preparation of articles

A tray containing the following articles according to the specimen to be collected

- Needles (preferably vacutainer needles), size 20G to 22G
- Tubes
- Vacutainer holder
- Tourniquet
- Disinfection swabs
- Micropore tape
- Adhesive dressing
- Rubber gloves
- Pillow or other support
- Separate stoppers for opened vacuum tubes and non-vacuum tubes
- Needle disposal box

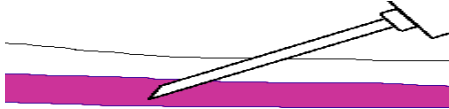
NOTE: Always use the appropriate personal protective equipment when collecting patient specimens.

Site of blood withdrawal for specimen

- antecubital area of the arm
- Back of hand or side of wrist
- Back of hand or side of wrist **below** a lock
- Antecubital area of arm **above** a lock
- Back of hand or side of wrist **below** an I.V. line. I.V. must be turned off by physician/nurse for a minimum of three minutes prior to collection.
- Foot or ankle **only** with written permission of physician/nurse.

Procedure of collection of blood specimen (Venipuncture)

1. Properly identify and reassure the patient.
2. Assemble all materials and equipment necessary for venipuncture.
3. Apply tourniquet around the 3-4 inches above the venipuncture site. Ask patient to form a tight fist and select vein for venipuncture.
4. Cleanse vein puncture site with 70% alcohol. Allow area to dry to prevent burning sensation or hemolysis. Do not touch the area with anything that is not sterile.
5. Do not allow the tourniquet to remain tied for more than one minute. If the cleansing and vein search takes longer, remove the tourniquet and reapply as needed.
6. Anchor the vein firmly, both above and below the puncture site with thumb and index finger. Ensure that the arm is in a downward position so that blood cannot flow back from the tube.
7. Perform venipuncture with needle at 15-degree angle, bevel of the needle up, and following the vein with the needle.



8. When good blood flow is established and collection is nearly complete, ask patient to relax hand and release tourniquet. Do not allow patient to pump their hand. The tourniquet should be released after no more than one minute tied on the arm. Longer application may result in localized stasis, hemo concentration, or hematoma.
9. When collection is complete, withdraw needle and apply cotton/gauze to puncture site with pressure to stop bleeding. Bandage over the cotton/gauze.
10. Gently invert specimen 5-10 times to mix thoroughly.
11. Check the patient's condition and that the bleeding is under control.
12. Label specimens clearly with the patient's name, the specimen collection date and time, and the initials of the phlebotomist (person performing the blood collection.)
13. Dispose of contaminated material appropriately.

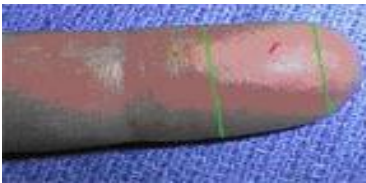
Serum and serum separator

1. A serum separator tube contains a silicone barrier gel with a specific gravity intermediate to serum and cell clot. After drawing, gently invert the tube 5-10 times to assure adequate distribution of the glass powder, which activates the clotting mechanism. This tube is inappropriate for some tests and a plain red top tube should be used when indicated.

2. Allow the sample to clot in a vertical position for 20-30 minutes or until a firm clot is established to prevent fibrin formation.
 3. Centrifuge within one hour for 10-15 minutes or until good separation of serum from cells is obtained. Separate the serum into a plastic transport vial as soon as possible.
 4. Label specimens clearly with the patient's name, registration number, the specimen collection date and time, and the initials of the phlebotomist (person performing the blood collection.)
 5. Store serum at designated temperature for transport to the laboratory.
- (If it is **plasma specimen** - Gently mix the blood collection tube by inverting six to ten times immediately after collection. Label the transport tube as "PLASMA". and Store specimen at designated temperature for transport to the laboratory.)

Blood Smear Preparation

When requested, properly prepared and submitted smears are essential to accurately assess the patient's status. EDTA anti coagulated blood may be used if the smear is made within one hour of collection.



1. Put a small drop of blood on one end of slide.
2. Draw spreader slide toward the drop at a 30-degree angle until it touches the drop of blood. The blood will spread behind the spreader slide by capillary action and should be allowed to spread the full width of the spreader slide.
3. Push spreader slide smoothly and quickly down the slide producing a feathered edge.
4. Allow the slide to air dry. With a lead pencil, label the slides with patient's name on the thick end of smear (opposite the feathered edge).

Collection of specimen of sputum

Mucus membranes line the respiratory tract and *sputum* helps protect this tract from infection. It is material from mucus lining of trachea and bronchi, which is coughed and spit out through mouth.

specimen	Type of examination
Sputum	<ul style="list-style-type: none"> • microscopic acid fast bacilli • culture

Preparation of patient

Explain the procedure to ease his/her anxiety and promote cooperation.

Tell the patient to collect a specimen of sputum (not saliva)

collect the specimen early in the morning, before breakfast, to obtain an overnight accumulation of secretions.

Sputum specimens are usually collected on three consecutive mornings. Give a separate specimen container and laboratory order requisition for each specimen the doctor has ordered.

Preparation of articles:

A kidney tray
 A glass OF water
 Sputum cup/Specimen container

Collection of sputum by expectoration (coughing)

1. Ask patient to rinse his/her mouth with water to reduce specimen contamination by bacteria or food particles. (Avoid mouthwash or toothpaste). For a patient with dentures, remove the dentures first.
2. Instruct the patient to sit on a chair or at the edge of the bed.
3. Ask patient to hold his/her breath a few seconds - then cough directly into the specimen container.
4. Carefully and tightly replace the cap to prevent leakage. Check the top to ensure that it is secure.
5. Label the specimen with the patient's name, doctor's name, specimen type, and the date and time collected.
6. Send the specimen to the laboratory immediately.
7. Refrigerate the specimen if a delay of greater than one to two hours is anticipated.

4.5-Collection of specimen of urine

The kidney removes the waste products from the blood and it is excreted in the form of urine. The urine specimen helps to diagnose the renal function disorders.

specimen	Type of examination
Urine	<ul style="list-style-type: none"> • Collection of mid-stream urine • Routine microscopic culture • 24hours urine • pregnancy test • double voided specimen

Collection of urine specimen

Preparation of patient

- Explain the patient and relatives the need of collection of specimens
- Explain the steps of procedure if the patient has to collect the specimen for himself or herself
- Provide privacy if the patient is bedridden

Preparation of articles

A tray containing the following articles according to the specimen to be collected

Articles	Rationale
Specimen container	
A sterile test tube	For culture and sensitivity
A clean container	For routine examination
A big container	For 24hours urine collection
A bed pan/urinal	For the bed-ridden patient
Disposable gloves	To protect the hands of the nurse
Spatula	To lift the faeces from bed pan

Labs forms and Label	To send the specimen to the accurate place and avoid its misplacement
A kidney tray and a paper bag	To discard the waste
Wash down the tray with soapy swabs, wet swabs and jug of water	To clean perineum
Screen	To provide privacy

Collection of mid-stream urine for culture and routine examination

1. Assess client's mobility and explain the patient how and what specimen to be collected
2. Provide privacy to the client e.g. by screen or curtain
3. Wash hands and wear gloves
4. Give a bed pan to the bed-ridden patient
5. Assist or allow the client to wash the perineum and collect specimen
 - Male: Hold penis and retract the fore skin and using a circular motion clean the penis moving from centre to peripheral with soapy and wet swab
 - Female: Separate labia minora with thumb and forefinger and clean the area from top to bottom, centre to periphery with soapy and wet swabs three times, using separate swab each time.
6. After initiating urine stream, pass the urine to the specimen bottle and collect 30-60ml of urine
7. Remove the specimen container before the client empties the bladder
8. Remove the bed pan and make the patient comfortable
9. Replace the cap on the specimen container and remove the gloves
10. Label it with name, age, sex, bed no. /ward no., diagnosis nature of examination.
11. Transport the specimen to the laboratory within 15 minutes or immediately refrigerate
12. Record date and time of collection of specimen in the nurse's record

Urine specimen from an indwelling catheter

The urine specimen from a patient with an indwelling catheter should be collected from the catheter itself

Procedure

- Wear sterile gloves. Clamp catheter and disconnect the urine bag
- Wipe the end of the catheter with an antiseptic swab.
- Hold the sterile specimen container near the end of the catheter, unclamp the catheter and let urine fall into the sterile container
- After collecting the required amount connect the catheter with the urine bag
- Label the container and despatch it to the laboratory

24-hours urine specimen

For a 24-hour specimen, all urine voided in a 24-hour period is collected

- The collection is initiated at a specific at a specific time, which is noted and the client is asked to empty his bladder at that time. This urine is discarded. After this all the urine voided is collected receptacle for the next 24 hours. Usually, it is done from 6 am to 6 am of the next day
- After 24hours at the same time the client is asked to void again and is taken as the last collection. The time of ending the collection is also noted. Preservatives are added as per the institutional routine. A variety of preservatives used are boric acid, conc.Hcl, formalin, chloroform, etc to prevent decomposition and multiplication of bacteria.
- The specimen is labelled with the type of specimen, time of collection and time of ending, the amount, the name of the patient, bed no., ward no., doctor's unit and date
- The collection container is labelled before the start of the collection

Urine for pregnancy test

Urine is collected after 14days of missed period preferable morning sample. The urine is tested for Human Chorionic Gonodotropin(HCG)

4.6-Collection of specimen of stool

The waste product of gastrointestinal tract is excreted out through faeces /stool helps in diagnosis of G.I tract problems and infestations

specimen	Type of examination
Stool	<ul style="list-style-type: none"> • routine microscopic and culture • occult blood • ova and cyst

Steps of procedure

1. Explain the procedure to the client, what specimen is requires and the reason
2. Ask the client to pass urine
3. Ask the patient to defecate into the clean bed pan
4. Do not collect the specimen from the toilet bowl
5. Wear gloves
6. With a clean wooden spatula lift up a portion of the stool 15-30ml from the centre of the mass and place it directly into the appropriately labelled specimen container
7. If portion of the stool include visible blood, mucus or pus include these with the specimen sent
8. The specimen is sent to the laboratory immediately

Stool for Ova and Parasites

Stool for ova & parasites is collected to detect intestinal infections caused by parasites and their ova (eggs)

Preparation of patient

- The client should be instructed to avoid drugs as castor oil, mineral oil, or anti-diarrhoeal compounds as it may alter the faeces.
- The client should be informed that the test usually requires 3 stool specimens, one taken every other day or every third day

Procedure

As per the steps for collection of stool given above

Stool Culture

- Stool cultures are performed to identify pathogenic organisms in the GI tract. If the stool culture shows no pathogens, detection of viruses can be performed by immunoassay or electron microscopy, which may help in the diagnosis of non-bacterial gastro-enteritis
- If the client has been taking any antibiotics recently it has to be reported

Procedure:

Stool should be collected using sterile technique and a sterile stool container. It may be collected for 3 consecutive days.

Stool for Occult Blood

Stool examinations for occult blood help to detect GI bleeding and early diagnosis of colloidal cancer. The guaiac or orthotoluidene test is commonly used.

Instructions to patient

If the orthotoluidene test is used the client may be instructed to eat a high-fibre diet for 48 to 72 hours before the collection of the stool specimen. Red meat, poultry, fish, turnips and horse radish should be avoided. This may create a false positive result. The following medications should be withheld for 48-72 hours before the test like iron preparations, bromides, rauwalfia derivatives', steroids indomethacin and colchicines and vit C, which can produce a negative results. Other tests for occult blood do not require any dietary restrictions.

Procedure

Usually, a total of 3 stool specimens over consecutive days is collected. A blue coloration indicates a positive result.

1. Route has a different influence on drug absorption depending on the physical structure of the tissue. Skin relatively slow in the absorption, whereas the mucus membrane and respiratory airways allow quick drug absorption because of high vascularity of the area
2. Oral route of administration of medicine causes slower absorption, where as I/V injection produces most rapid absorption
3. Solutions and suspensions already in a liquid state are absorbed more rapidly than capsules and tablets
4. After the drug is absorbed it is distributed within the body to tissues and organs and ultimately to its specific site of action
5. When a drug reaches its site of action, it is metabolised into an inactive form that is more easily excreted. This bio-transformation occurs under the influence of enzymes that detoxify, degrade and remove the biological active chemicals. Most bio-transformation occurs within the liver. Lungs, kidney, blood and intestines also metabolise drugs
6. Excretion: After drugs are metabolised they exit the body through kidney, liver, bowels, lungs and exocrine glands. The exocrine glands excrete liquid soluble drugs

4.8 Collection of other specimen

Bone marrow aspiration-Bone marrow aspiration is a small incision, and then inserts a hollow needle through the bone and into the bone marrow. Using a syringe attached to the needle, withdraws a sample of the liquid portion of the bone marrow. Bone marrow biopsy will determine the cause of abnormalities of blood, i.e. anaemia, bone marrow diseases, leucopenia, thrombocytopenia, or polycythemia, leukaemia or lymphomas and infection or fever of unknown origin

Amniotic fluid aspiration

Amniocentesis is an invasive, diagnostic antenatal test. It involves taking a sample of amniotic fluid in order to examine foetal cells found in this fluid

Pap smear

A Pap smear is a screening test for cervical cancer. The test itself involves collection of a sample of cells from a woman's cervix.

Throat swab

The sterile Hydra Flock flocked swab to swab the posterior nasopharynx and the tonsillar arches. Insert swab into sterile liquid amines transport system vial. Break the swab handle at scored breakpoint line.

A throat culture or strep test is performed by using a throat swab to detect the presence of group A streptococcus bacteria, the most common cause of strep throat. These bacteria also can cause other infections, including scarlet fever, abscesses, and pneumonia.

Nasal swab- This test identifies disease-causing organisms that live in the secretions at the back of your nose and throat. And it is collected from the nose.

Wound swab-Obtain a wound culture when clinical signs and symptoms of infection are present.

Technique

1. Use sterile cotton-tipped swab and culture medium in a pre-packaged collection and transport system.
2. Community nurses should not allow transport medium to freeze or become overheated in the car before using it.
3. Thoroughly rinse wound with normal saline.
4. Do not swab pus, exudates, hard Eschar or necrotic tissue.
5. Rotate the swab tip in a 1cm 2 area of clean granulation tissue for a period of 5 seconds, using enough pressure to release tissue exudates. This may be painful so warn the patient of the possibility of pain and pre-medicate with analgesia if possible.
6. Remove protective cap from culture medium and insert cotton-tipped applicator into the culture medium without contaminating the applicator.
7. Transport to the laboratory at room temperature within 24 hours.

Role of MPH in collection of specimens

1. Preparation of Client
2. Working knowledge of diagnostic test
3. Nurse need to explain the test with clarity and compassion.
4. Nurse need to explain the purpose of the test.
5. While assisting the physician with a test, talk to the client throughout the test, to comfort and encourage patient.

6. After test is over, observe the client for any untoward reactions or complications and be prepared to implement appropriate care.
7. On the previous day, explain the procedure to the client. Explain what specimen to collect, when to collect, how to collect and the amount to be collected.
8. Provide an appropriate container and demonstrate to the client how to use it.
9. Instruct the client not to contaminate the outside of the bottle.

Conclusion

Specimen collection is essential for diagnosis and treatment of patient during hospitalization. The main aim of health team work is error free diagnostic report, which is based on the proper collection of specimen and transportation to the lab at right time.

Essay question

1. Describe the principles of collection of specimen
2. How do you collect the 24 hours urine specimen.
3. Describe procedure of blood specimen

Short answer questions

1. What is the purpose of specimen collection?
2. List the site of blood specimen collection
3. List colour of test tube topper in blood specimen collection
4. What are the points to remember in collection sputum specimen?
5. What are the measures helps to prevent contamination while collecting specimen?
6. What is the instruction to be given in stool specimen collection?

UNIT-V DISINFECTION AND STERILIZATION

5.0-Introduction

5.1-Definition

5.2-Principles

5.3-Methods of disinfection and sterilization

5.4-Methods of disinfecting different equipment

5.5-Methods of sterilizing different equipment

Objectives

After completion of this chapter, the students are able to

- Learn the principles used for disinfection and sterilization
- Describe the different methods of disinfection
- Explain the different types of sterilization techniques
- Identify the appropriate methods of sterilization of equipment

Introduction

The environment is fresh and colourful when it maintains its cleanliness. It will be polluted and contaminated by industrial waste, house hold waste, improper drainage of sewage and sullage. It consists of many microorganism i.e. bacteria, virus, fungi and other microbial. These micro organisms are causative agents of different infections and diseases, which is obviously high in hospital environment due to more human waste, infectious body discharges and air borne infections by coughing and sneezing. These contaminated particles may deposit on the surface and contaminate the equipment and articles while using. These micro organisms removed by using the sterilization and disinfection techniques.

Definitions of terms related to sterilization

1. Disinfection- It is defined as destroy all pathogenic micro organisms, but it chance to produce infection, due to the spores are not destroyed.
 2. Sterilization- It is the process by which an article, surface or medium is freed of all micro organisms either in vegetative or spore form (bacteria, virus and fungi spore form)
 3. Antiseptic- It means the substance that prevents the growth or inhibit the action of micro organism. E.g. Povidone iodine scrub solution used for cleaning the skin before surgery.
 4. Sanitizer- Agent that reduce the no of bacterial contaminants to safe levels e.g. Hand wash gel
 5. Detergent- It is the surface cleaning agent which acts by lowering surface tension e.g. soap
 6. Bactericide - An agent that kills bacteria.
 7. Bacteriostat - An agent that arrests or retards the growth of bacteria.
 8. Germicides - A substance that kills disease microorganisms (i.e. pathogens / germs) but not necessarily bacterial spores.
 9. Sterility - The absence of viable organisms.
 10. Viable - Live and growing bacteria (or microorganisms) + spores
- Vegetative microorganisms: Growing organisms.

Purpose of sterilization

- To provide a safe environment and sterile equipment for the care of the patient.

- To prevent cross infection.
- To destroy the causative microorganisms of the disease

5.2-Principles

The basic principle of sterilization is to control/alter condition of growth of infectious microbial in the equipments /instruments. They are

1. Temperature of the environment (either hot or cold) The vital constituents of cells such as proteins (enzymes) and nucleic acids are denatured by Dry heat/moist heat.
The radiation creates free hydrogen radicals, hydroxyl radicals and some peroxides which cause different kinds of intracellular damage.
2. PH of the environment (acidic or alkaline) e.g. Phenol and phenolic compounds produces a variety of effects on the microorganisms. Based on their concentration they exert various effects like disruption of cells, precipitation of cell protein, inactivation of enzymes and leakage of amino acids from the cells
3. Accessibility to light (Dark or well light) Well light prevent the growth of bacteria
4. Availability of nutrition (oxygen, nitrogen, cellulose, etc) The bacteria grows well in blood due availability of nutrients and oxygen.
5. Availability of the medium (water, chemical, gas, etc) The water is the best source of bacteria (e.g. E.coli) because it consists of moist, oxygen and nutrients

5.3-Methods of disinfection and sterilization

There are various substances used for sterilization which can be classified as

Agents	Methods
Natural agents	<ul style="list-style-type: none"> • Sun light • Air
Physical agents	<ol style="list-style-type: none"> 1. Dry heat <ul style="list-style-type: none"> • Flaming • Hot air oven • Infra red 2. Moist heat <ul style="list-style-type: none"> • Boiling • Autoclave • Pasteurization 3. Radiation
Chemical agents	<ul style="list-style-type: none"> • Alcohol • Aldehyde • Dyes • Halogens • Phenols • Surface Active Agents • Heavy Metals • Gases

Natural agents

Sun light - Ultra violet and enormous heat is present in the Sun light. It kill the micro organism in the atmosphere as well as in objects like mattress, furniture used by the patient.

Air- The Open air environment keep the objects dry and evaporate the moisture. It is lethal to most bacteria

Physical agents

1. Dry heat- Dry heat is the simplest and most economical method of sterilization

Flaming: The instruments, articles, inoculating loops, spatulas, scalpel are keep in the flame of Bunsen lamp for few minutes till they turn into red hot. This method is not applicable for all instruments and no guarantee of destroying the spores of microbes.

Hot air oven: The articles are sterilised by dry heat with high temperature (160 degree) for one hour exposure in the electrical oven. The hot air is distributed in the chamber by a fan. It is used for sterilizing the following articles i.e. glass ware, forceps, scalpel, scissors, delicate and fine instruments, glass syringes and medical products like liquid paraffin, dusting powder

Note: avoid over loading

Dry the glass ware before placing in the hot air oven

Pack the glass ware in the metal containers.

Allow the oven to cool slowly for about 2 hours before the door is opened

Conditions to achieve complete sterilization by dry heat sterilization are as follows:

Cycles recommended as per BP 1988 are:

- * A minimum of 180⁰ C for not less than 30 minutes.
- * A minimum of 170⁰ C for not less than 1 hour.
- * A minimum of 160⁰ C for not less than 2 hours.

Infrared

The articles placed in a moving conveyer belt and passed through a tunnel that is heated by infrared radiators to a temperature of 180° C and exposed for 7 minutes.

Infrared sterilizer used for fast and efficient sterilizing of inoculation loops and micro-instruments without gas flame and directly usable in the safety cabinet without affecting their safety function. Special focused infrared light generates an IR hot spot where objects are sterilized in 5-10 seconds at 750-1000 ° C.

2. Moist heat

Heat in the form of saturated steam under pressure is the most practical and dependable agent for sterilization. Bacterial death by moist heat sterilization is due to denaturation and coagulation of essential protein molecules (enzymes) and cell constituents

Boiling: This method kills the bacteria at 90⁰-100⁰ for 30 minutes .Boiling method is not recommended for surgical procedures. Spores are killed by autoclaving at higher pressures. Hard water should not be used for sterilization. Boiling water (100⁰) kills bacteria viruses immediately. Some bacterial spores and entero-toxins are also heat resistant e.g. Staphylococcal entero-toxins

Autoclave

An autoclave is a steriliser which utilizes saturated steam under pressure. Steams enter the steriliser by means of pipes. Autoclave consists of two chambers with a safety steam lock door. In outer chamber pressure is generated and maintained and temperature is raised. This in turn heats the

inner chamber. Pre packed load is placed in the inner chambers. Due to pressure air is forced

ward and air is forced out through an outlet at the bottom and in front of the autoclave through the thermostat valve. The thermostat valve closes when steam hits it.

Types of autoclave

1. Laboratory autoclave (simple pressure cooker type)
2. Steam jacketed downward displacement laboratory autoclave
3. High pressure prevacuum autoclave
4. Rapid cooling steriliser

Autoclaving at a temperature of 121°C (250°F), at 15 to 20 psi is one of the most convenient and effective means of sterilization available. The time is measured after the temperature of the material being sterilized reaches 121°C (250°F). Care must be taken to ensure that the steam can circulate around articles in order to provide even heat distribution.

The success of the sterilization is very time-dependent in liquid media, with large volumes requiring longer periods of time to reach the effective temperature within the media itself. In dry loads small amounts of water should be included inside the autoclave bag to ensure sufficient moisture content within the load to allow for heat transference and distribution.

Autoclave tape can be used for routine runs where glassware or sterile media are prepared before use

Note:

- Use fresh washed linen.
- Limit size of bundles
- Use sterilization indicators to assure sterile goods
- The optimum temperature should be 250° F and pressure 15-17 lbs (Pressure: 15 lb / square inch (psi), Temperature: 121°C, Time: 15 minutes)

Pasteurization

- Pasteurization is heat-treatment process that destroys pathogenic microorganisms in certain foods and beverages.
- Pasteurization of milk, requires temperatures of about 63° C (145° F) maintained for 30 minutes or, alternatively, heating to a higher temperature, 72° C (162° F), and holding for 15 seconds (and yet higher temperatures for shorter periods of time).
- The times and temperatures are those determined to be necessary to destroy the Mycobacterium tuberculosis and other more heat-resistant of the non-spore-forming, disease-causing microorganisms found in milk.
- The treatment also destroys most of the microorganisms that cause spoilage and so prolongs the storage time of food.

3. Radiation

The radiation employed for the sterilization may be ionizing or non ionizing radiation. Gamma and X-rays, having energies more than about 10eV, are called ionizing radiations. In hospitals, UV radiation is used to control the spread of infection during or after surgical procedures.

Chemical agents

The chemical disinfectants are divided into groups according to their chemical characteristics or action. There are many chemical compounds that have a disinfectant or antiseptic action. The most commonly used chemical disinfectant in the hospital are mentioned as follows

- Alcohol
- Aldehyde
- Dyes
- Halogens
- Phenols
- Surface Active Agents
- Heavy Metals
- Gases

Alcohol

Alcohols disrupt the cellular membranes, solubilise the lipids, and denaturise the proteins by acting directly on S-H functional groups.

e.g. Ethyl alcohol and isopropyl alcohol (spirit)

- Bactericidal activity.
- They evaporate rapidly.
- Disinfect the body surfaces.(before giving intra muscular injection, injection site is disinfect with spirit cotton swab). Absolute alcohol is also not very effective. They are used to clean instruments and wipe down interior of Biological Safety Cabinets and bottles, etc. Alcohols are generally regarded as being non-corrosive.

Aldehyde

It damages the nucleic acid by alkylation of amino acids or carboxyl group. The name of the chemicals is formaldehyde and gluteraldehyde.40% formaldehyde is used for fumigation of the rooms, chambers, O.T. and surface disinfection.2% gluteraldehyde is used to sterilise the laparoscopic instruments and anaesthetic equipments.

The main drawback of the aldehyde is

- ✓ Irritants of eye and mucus membrane
- ✓ Poor penetration
- ✓ Leaves non-volatile residue

Dyes

Acridine dyes are bactericidal which interact with bacterial nucleic acids. 1. Aniline dyes- e.g. crystal violet, malachite green and brilliant green. Acridine dyes –e.g. acriflavin and aminacrine.

Euflavine has effective antimicrobial properties. They are more effective against gram positive bacteria and gram negative bacteria and are more bacteriostatic in action. It is used in 1:1000 solution for treating wounds and for irrigation of bladder

It is used for mild burns as topical antiseptics.

They are used as paint on the skin to treat bacterial skin infections.

2% Gentian violet is a dye safe for mucus membrane infection e.g. oral thrush is a fungal infection. But it causes stain to the cloth and difficult to remove

Halogens

The halogens are chemical elements that have ability to form salts. Chlorine and iodine are two halogens that are useful as disinfectant

They are oxidizing agents and cause damage by oxidation of essential sulfhydryl groups of enzymes.

Chlorine reacts with water to form hypochloric acid, which is microbicidal.

1. Chlorine compounds- chlorine, bleach, hypochlorite
2. Iodine compounds- tincture iodine, and iodophores

Tincture of iodine (2% iodine in 70% alcohol) is an antiseptic. Iodophores are diluted in 50% alcohol for effective hand washing. 10% Povidone Iodine is used in pre and postoperative skin disinfection.

Purification of water is done by Chlorine gas. Household bleach (dilution of 1:10) can be used to disinfect floors and swimming pools with high concentration. 1% sodium hypochlorite solution is used for decontamination of in serology, virology and spillage of infectious material. The disadvantages are the presence of organic matter inactivates the halogens rapidly. Iodine is corrosive and staining. Bleach solution is corrosive and will corrode stainless steel surfaces.

Heavy Metals

The compounds are made of mercury and used as a disinfectant. It's acted by precipitation of proteins and oxidation of sulfhydryl groups. They are bacteriostatic

- ✓ e.g. Mercuric chloride, silver nitrate, copper sulfate, organic mercury salts mercurochrome, merthiolate
- 1% silver nitrate solution can be applied on eyes as treatment for ophthalmic neonatorum
- ✓ Copper sulphate is used for umbilical infection and fungicide.
- ✓ Mercurials are active against viruses and bacteria
- ✓ At dilution of 1:1000 to 1:5000 for instruments.
- ✓ At dilution of 1:500 to 1:5000 for skin.
- ✓ At dilution of 1:5000 to 1:10000 for eye and urethral irrigation.

Hydrogen Peroxide (H₂O₂)

It is the oxidising agents. It kills the microorganisms by easy release of oxygen. Hydrogen peroxide produces hydroxyl-free radical that damages proteins and DNA.

It is used at 6% concentration to decontaminate the instruments, equipments such as ventilators. 3% Hydrogen Peroxide Solution is used for skin disinfection and deodorising wounds and ulcers. Strong solutions kill the spores.

It loses its power when exposed to light, heat and air. It should store in dark bottle and cool place. It is broken down by catalyse, proteinaceous organic matter drastically reduces its activity.

Surface active agents

Mode of actions: They have the property of concentrating at interfaces between lipid containing membrane of bacterial cell and surrounding aqueous medium. These compounds have long chain hydrocarbons that are fat soluble and charged ions that are water-soluble. Since they contain both of these, they concentrate on the surface of membranes. They disrupt membrane resulting in leakage of cell constituents.

soaps or detergents.

Detergents can be anionic or cationic. Detergents containing negatively charged long chain hydrocarbon are called anionic detergents. These include soaps and bile salts.

If the fat-soluble part is made to have a positive charge by combining with a quaternary nitrogen atom, it is called cationic detergents. Cationic detergents are known as quaternary ammonium compounds (or quat). Cetrimide and benzalkonium chloride act as cationic detergents.

They are active against vegetative cells, Mycobacteria and enveloped viruses. They are widely used as disinfectants at dilution of 1-2% for domestic use and in hospitals.

Disadvantages: Their activity is reduced by hard water, anionic detergents and organic matter. Pseudomonas can metabolise cetrimide, using them as a carbon, nitrogen and energy source.

Phenols

- ✓ It is commonly called as carbolic acid. It is the compound, which Joseph Lister used first for anti septic in 1865. It is a white crystalline compound and dissolved in water. It disrupts membranes, precipitates the proteins and enzymes are inactivated.
 - ✓ They are bactericidal, fungicidal, mycobactericidal but are inactive against spores and most viruses. They are not readily inactivated by organic matter. e.g. 5% phenol, 1-5% Cresol, 5% Lysol, hexachlorophene, chlorhexidine, chloroxylenol (Dettol)
 - ✓ 5% **phenol** is useful for disinfecting sputum and faeces or any organic matter. will inhibit action. Phenol can cause severe burns to the skin and can cause toxic effects by being absorbed through skin. The corrosive phenolics are used for disinfection of ward floors, in discarding jars in laboratories and disinfection of bedpans.
 - ✓ **Lysol** is the derivative of phenol that is mixed up with soap. It has a greater bacteriocidal action and is less poisonous than phenol. It is useful for articles contaminated with gram negative and acid fast bacilli. It is caustic and to be carefully handled
 - ✓ **Chlorhexidine (isopropanol)** solution used for skin disinfection, or as an aqueous solution for wound irrigation and an antiseptic hand wash.
 - ✓ **20% Chlorhexidine gluconate** (Savlon) solution is used for pre-operative hand and skin preparation and for general skin disinfection.
 - ✓ Chlorhexidine gluconate is also mixed with quaternary ammonium compounds such as cetrimide to get stronger and broader antimicrobial effects.
 - ✓ **Chloroxylenols** (Dettol) are less irritant and can be used for topical purposes and are more effective against gram positive bacteria than gram negative bacteria. **Hexachlorophene** is chlorinated diphenyl and is much less irritant. It has marked effect over gram positive bacteria but poor effect over gram negative bacteria, mycobacteria, fungi and viruses.
- Disadvantages:** It is toxic, corrosive and skin irritant. Chlorhexidine is inactivated by anionic soaps. Chloroxylenol is inactivated by hard water.

Gases

Formaldehyde is a liquid and it is vaporized as gas is used for fumigating operation theatre, neonatal intensive care units, Intensive care units. These sterilants are used in hospitals and commercial facilities where closed systems controlling temperature, humidity, and concentration are required to achieve sterilization using these agents. 280 ml of formalin for every 100 cu ft of room volume. Doors

and windows should be sealed for 48 hours. The disadvantage is highly irritants of eye and cause burning sensation of mucus membrane

Ethylene Oxide (ETO) has wide use as an alkyl acting agent with very broad biocide activity including spores and viruses. The oxide ring reacts with free amino, sulfhydryl and hydroxyl groups on proteins. It is a cyclic molecule, which is a colorless liquid at room temperature. It has a sweet ethereal odor, readily polymerizes and is flammable.

It is used to sterilize heat labile articles such as bedding, textiles, rubber, plastics, syringes, disposable Petri dishes, and complex apparatus like heart - lung machine, respiratory and dental equipments

ETO is highly flammable and needs an inert agent when used in a sterilizer. The disadvantage is highly inflammable, explosive, toxic, irritating to eyes, skin and carcinogenic.

Beta-Propiolactone (Bpl)

It is an alkalisng agent and acts through alkylation of carboxyl- and hydroxyl- groups. It is a colourless liquid with pungent to slightly sweetish smell. It is a condensation product of ketone with formaldehyde.

It is an effective sporicidal agent, and has broad-spectrum activity. 0.2% is used to sterilize biological products. It is more efficient in fumigation than formaldehyde. It is used to sterilize vaccines, tissue grafts, surgical instruments and enzymes. It has poor penetrating power and is a carcinogen.

Methods of disinfecting different equipment

Disinfectants are the chemical that destroy pathogenic bacteria from inanimate surfaces and discharges from the body.

Types of disinfection

(a) **Concurrent disinfection** : It is application of disinfective measures as soon as possible after the discharge of infectious material from the body of an infected person, or after the soiling of articles with infectious discharge. It consists of usually disinfection of urine, faeces, vomit, contaminated linen, clothes, hands, dressing, apron, gloves, etc throughout the course of illness.

(b) **Terminal disinfection**: It is applied after the patient has been removed by death or to a hospital or has ceased to be a source of infection. Terminal cleaning is considered adequate, along with airing and sunning of rooms, furniture and bedding.

(c) **Prophylactic disinfection**: Disinfection of water by chlorine, pasteurization of milk and hand washing may be cited as examples of prophylactic disinfection.

Properties

- ✓ Have broad spectrum activity
- ✓ Destroy microbes
- ✓ Stable and active in any pH
- ✓ Fast acting
- ✓ Non toxic
- ✓ Good cleansing property
- ✓ Not have a strong odour (pungent)

Articles	Chemical method	Time
Needles	2% Gluteraldehyde /cidex/10% Dettol/detergent	30minutes
Blades	Formaldehyde /10% dettol/detergent	30minutes

Catheters and tubes	2% Gluteraldehyde/cidex/10% Dettol	2hours
Operation theatre instruments	10% chlorhexidine	10minutes
Operation theatre instruments (in emergency)	Isopropyl alcohol/detergent	10minutes
Linen and Drapes	2% hypochlorus solution /savlon if it is infectious ,disinfect before sent to laundry	30minutes
Incubators , Cabinets	Formalydehyde savlon1:40(carbolization)	1 hours
Clinical thermometer	Isoprpyl alcohol savlon1:40 dettol1:20	10minutes
Anatomic specimens preserved	Formalydehyde	it is changed every six months
Metal instruments	Gluteraldehyde /formaline containing half percent sodium tetraborate	30minutes

Points to remember:

- The disinfectant chosen should be efficient to destroy the pathogens
- They should be used in correct strength
- The articles should be fully submerged in it Adequate time should be taken for disinfection
- clean and dry the article before keep in the antiseptic solution/disinfectant

Methods of sterilizing different equipment

S.No	Methods and Articles	Degree of Heat	Time
	Hot air oven		
a	ophthalmic instruments	150 ° c	One Hour
b	oil, glycerol, dusting powder	150 ° c	Two Hour
c	Syringes	160 ° c	One Hour
	Moist heat		
a	Milk Holder method Milk Flash process	63 ° c 72° c	30minutes 15-30seconds
b	Vaccines	60 ° c	One Hour
c	Serum, Body fluids	56° c	One Hour
d	Mesophillic bacteria (destroyed) Staphylococcus aureas (destroyed) Bacteria, East moulds (destroyed) Clostridium, botulism (destroyed) Poliomyelitis virus (destroyed)	60 ° c 60 ° c 80 ° c 120 ° c 60 ° c	30minutes 30minutes 10-15 minutes 4minutes 10 Hour
e	Clothing, bedding, eating utensils	70° -80 ° c	several minutes
f	Cystoscope, specula, apparatus	75° c	10minutes
g	Vegetative bacteria (destroyed)	90° -100 ° c	10-30 minutes

	Steam under Pressure		
a	Dressing instruments	108 °c	10-30 minutes
	Laboratory ware, Pharmaceutical products.	121 °c	12 minutes
	Aqueous solution		
	Sharp instruments	108 °c -121 °c	12 minutes
	Catheter and tubes	121 °c	12 minutes
	Glass ware	132 °c	2 minutes
		160°c	30-60 minutes
b	Autoclave	121 °c	20 minutes
c	Metal and Stainless Steel wave	121 °c	30-60 minutes
d	Glassware, Syringes	160 °c	20 minutes
e	Gloves	121 °c	12 minutes

Conclusion

Disinfection and sterilization are vital one delivery of quality health care to the patient. It prevents the transmission of infection to the patient as well as to the health team members

Essay questions

1. What are the chemicals methods of sterilization? Describe any two in detail.
2. Describe the hot air oven and autoclave
3. Describe the principles of sterilization

Short answer questions

1. What is infra red radiation?
2. Define disinfection
3. List four products of phenol group disinfectant
4. What are the physical methods of sterilization?

UNIT-VI BIOMEDICAL WASTE MANAGEMENT**Structure**

- 6.0-Introduction
- 6.1-Definition
- 6.2-Categories of biomedical waste
- 6.3-Principles
- 6.4-Methods of waste disposal
- 6.5-Hazards of hospital waste
- 6.6-Dos and Don'ts of waste management in the Hospital

Objectives

After reading of this unit, the students are able to

- Identify and classify the biomedical waste in the hospital
- Describe the different methods used for disposal of biomedical waste
- Describe the important points to practice in hospital waste management

Introduction

In our day to day activities, home waste is produced from kitchen and by our paper work. Likewise hospital is also one of the place to generate waste by health care activities, that waste may be infectious or non infectious. Healthcare waste (HCW) is a by-product of healthcare that includes sharps, non-sharps, blood, body parts, chemicals, pharmaceuticals, medical devices and radioactive materials. Poor management of HCW exposes healthcare workers, waste handlers and the community to infections, toxic effects and injuries. Proper Disposal of hospital waste is vital part to protect the environmental health and management of quality health care services

Definition

Hospital waste is “Any waste which is generated in the diagnosis, treatment or immunization of human beings or animals or in research” in a hospital.

According to Biomedical Waste (Management and Handling) Rules, 1998 of India “Any waste which is generated during the diagnosis, treatment or immunization of human beings or animals or in research activities pertaining there to or in the production or testing of biological.

- Human anatomical waste like tissues, organs and body parts.
- Animal wastes generated during research from veterinary hospitals.
- Microbiology and biotechnology wastes.
- Waste sharps like hypodermic needles, syringes, scalpels and broken glass.
- Discarded medicines and cyto-toxic drugs.

WHO estimates BMW from hospital is

- 85% of hospital waste is non-hazardous
- 10% is infectious

- 5% is non-infectious but consists of hazardous chemicals like methyl chloride and formaldehyde

In general, there are two recommended ways to handle medical waste fluids:

1. Collect fluids in a leak proof container, and solidified for autoclave treatment.
2. Thermally (autoclave) fluids then they be disposed into the sanitary sewer system

Waste segregation means dividing waste into dry and wet. Dry waste includes wood and related products, metals and glass. Wet waste, typically refers to organic waste usually generated by eating establishments and are heavy in weight due to dampness

Categories of Bio Medical Waste (BMW)

Biomedical waste (management and handling) Rule 1998 ,prescribed by the ministry of Environment and forests ,Government of India, came into force on 28th July 1998.This rule applies to those who generate, collect, receive store, dispose ,treat or handle biomedical waste in any manner

OPTION	WASTE CATEGORY	TREATMENT & DISPOSAL
Category no1	Human anatomical waste (tissues, organs and body parts)	Incineration/Deep burial
Category no2	Animal waste(tissues, organs and body parts bleeding parts, fluids, waste generated by veterinary hospitals)	Incineration/Deep burial
Category no3	Microbiology and biotechnology waste(waste from laboratory cultures, stocks or specimens of micro organisms, live or attenuated vaccine and animal cell culture used in research	Local autoclaving /microwaving/incineration
Category no4	waste sharps(needles ,syringes, scalpels, blades, glass, etc. that may cause puncture and cuts	disinfection (chemical treatment/ autoclaving /microwaving and mutilation shredding
Category no5	Discarded medicines and cytotoxic drugs (wastes comprising out dated, contaminated and discarded medicine	Incineration, destruction and drugs disposal in secured landfills
Category no6	Solid waste (contaminated with blood and fluids including cotton , dressings, soiled plaster cast, linen, beddings	Incineration/ autoclaving/ microwaving
Category no7	Solid waste(waste generated from disposal items other than the waste sharps such as tubings catheters intravenous sets etc)	Disinfection by chemical treatment , autoclaving/microwaving,

		mutilation and shredding
Category no8	Liquid waste (waste generated from laboratory and washing ,cleaning house keeping and disinfecting activities)	Disinfection by chemical treatment and discharge into drains
Category no9	Incineration ash (ash from incineration of any biomedical waste)	Disposal in municipal landfill
Category no10	Chemicals used in production of biological ,chemicals used in insecticides	chemical treatment and discharge into drains for liquids and secured landfill for solids

Disposal of Bio Medical Waste(BMW) rules 2016

Colour coding and type of container for disposal of biomedical waste

COLOR CODING	TYPE OF CONTAINER	WASTE CATEGORY
Yellow	Plastic Bag	Human waste, Animal anatomical waste, soiled waste, expired medicines, chemical waste, body fluids and clinical waste (1,2,3,6)
Red	Disinfected container/Plastic bag	contaminated waste (recyclable like plastic bag, pipes, bottle or container(3,6,7)
Blue/White Translucent	Plastic Bag / punch proof containers	scalpel, blades, needles, syringes including sharp metals (4,7)
Black	Plastic Bag	Broken glass ware or metallic body implant (5,9,10)

Different labels for bio medical waste colour coded containers and bags shall be required for identification and safe handling of this waste .These labels needed for storage, transportation of bio medical waste. The symbols are as follows

BIOHAZARD SYMBOL



CYTO TOXIC HAZARD SYMBOL



Note: As per guidelines of Bhabha Atomic Research Centre (BARC), Mumbai. Standard PPE (approved by BARC) for protection against radioactive wastes. Lead containers used for collecting radioactive wastes. The health care person should wear disposal gloves, protective glass, masks and aprons. Cytotoxic drugs should be stored in sturdy card board boxes and later can be incinerated.

Principles

In determining waste disposal options, national policies are to be given first priority. At each district and each health care facility, identify sustainable resources for safe and practical medical waste collection, handling, and transport. Prepare medical waste management plans that include:

1. Minimization of waste: Reduce unnecessary injection to protect health care providers and the public from unnecessary health risks.

2. Segregation of waste: Separate waste at its source into 1) sharps waste; 2) infectious waste; 3) non-infectious waste.

3. Safe handling of sharps: Use puncture-proof safety boxes or needle removal for disposal of all needles and plastic syringes. Dispose of all medical sharps safely.

4. Safe collection of medical waste: Apply waste segregation and handling procedures to all health care delivery areas. Waste handlers must use personal protection equipment and maintain a routine collection and transport schedule.

5. Safe final disposal: Use best available destruction option for final disposal.

a. Non-incineration destruction—

i. Disinfect (autoclave/microwave/chemical), compact (shred/melt), then landfill or recycle.

ii. Bury in protected pit (if the water table permits).

b. Incineration—where incineration is the best locally-available option, maximize safety and acceptability:

i. Incinerate only sharps and infectious waste.

ii. Optimize incinerator performance through repair, maintenance, and proper operation.

iii. Do not incinerate materials that produce toxic emissions (PVC, batteries, thermometers, etc.).

iv. Install only medium- or high-temperature incinerators (small or large scale).

v. Ensure funds for proper training, operation, and maintenance.

vi. Build local support. Locate incinerators away from people and crops.

Methods of waste disposal

The primary methods of treatment and disposal of medical waste are:

- Incineration.
- Autoclaves.
- Chemical Disinfection.
- Microwave.
- Irradiation.
- Vitrification.

Incineration

- Incineration is an old technology and was widely used in the past for all sorts of waste. Incineration is high temperature oxidation process and controlled burning of waste. It can eliminate pathogens - even hard-to-kill bacterial spores - and can reduce the volume and mass of waste.
- Incineration can break down and render harmless hazardous organic chemicals. With proper technology, little acid gas is released to the atmosphere.

Types of incinerators

- Double chamber pyrolytic incinerator which may be especially designed to burn infectious health care waste
- Single chamber furnaces with static grate
- Rotary kilns operating at high temperatures, capable of genotoxic substances and heat resistant chemicals

Guidelines for using incinerators

- Chlorine-containing materials should be removed from the feed, if feasible. This includes polyvinyl chloride (PVC) plastic. Chlorine burns to hydrochloric acid, and although a pollution control system on the tail pipe should be able to reduce emission to acceptable levels.
- Incinerators should be located in areas away from high population areas and where food is grown.
- In addition to the engineering design and construction, thoughtful development of operating procedures
- Temperature should be monitored at several places in the incinerator and the system should shut down if the temperature falls too low.

Autoclave

Autoclaves are closed chambers that apply both heat and pressure, and sometimes steam. Autoclaves have been used for a century to sterilize medical instruments for re-use. Surgical knives and clamps, are put in autoclaves for sterilization.

For medical waste that will be disposed of, autoclaves are a heat treatment are used to destroy microorganisms that may be present in medical waste before disposal in a traditional landfill.

Chemical disinfection

Chemical disinfection, primarily through the use of chlorine compounds, kills microorganisms in medical waste and can sometimes oxidize hazardous chemical constituents. Chlorine bleach has been used for many disinfecting processes.

1% Hypochlorous solution used for sharps and instruments disinfection Ethylene oxide treatment is used to disinfect materials and is sometimes used in treatment of medical waste. It is the most suitable for disinfecting the liquid waste such as blood, urine, stools or hospital sewage

Microwave

Microwave radiation is used to treat wastewater sludge and as a heat source to treat medical waste. The microwave treatment helps to reduce the volume of the end waste for disposal. If the waste is dry, water is introduced and the wet waste is introduced to the microwave chamber. The micro organisms are destroyed by the action of microwave of about 2450 MHz and a wave length of 12.24nm

Irradiation

Irradiation attempts to sterilize waste (or anything) by exposing it to gamma rays that are fatal to bacteria. A radioactive isotope of cobalt is employed.

Vitrification

It is rarely used for an effective treatment for medical waste. The solid waste is mixed in, when glass is formed (vitrification means produce glass). The high temperatures kill pathogens and some combustible material may burn, resulting in an off-gas.

Land disposal

There are two types of disposal of land –open dumps and sanitary landfills. Health care waste should not be deposited on or around open dumps. The risk of either people or animals coming into contact with infectious pathogenic microorganisms is high.

6.5-Hazards of hospital waste

Health risks associated with waste and by-products also include:

- radiation burns;
- sharps-inflicted injuries; A person who experiences one needle stick injury from a needle used on an infected source patient has risks of getting Hepatitis ‘B’ Virus, Hepatitis ‘C’ Virus and Human Immuno deficiency Virus infection.
- Poisoning and pollution through the release of pharmaceutical products, in particular, antibiotics and cytotoxic drugs; and.
- Landfills can contaminate drinking-water
- Inadequate incineration or the incineration of unsuitable materials results in the release of pollutants into the air

6.6 Dos and Don'ts of waste management in the Hospital

The health care personnel should keep certain points in remembrance of BMW and its disposal for maintaining health and prevent risk of infection.

DO'S	DON'TS
Segregate the waste	Do not mix infectious waste with non-infectious
collect waste in colour coded containers	Do not allow unauthorised person access o waste collection /storage areas
cover waste collection containers	Do not use open container for infectious waste
provide protective wear to the waste handlers(gloves, masks, aprons)	Do not recap needles
Immunize all waste handlers	Do not incinerate plastic waste
Decontaminate all sharps and plastics by chemical	Do not throw sharps into non puncture proof containers

Conclusion

Biomedical waste management is mandatory now days due to more generation waste by use of disposal items. Medical waste management helps to prevent risk of occupational health hazards to the hospital employees as well as to maintain hygienic hospital environment.

Essay questions

1. Describe the different methods of waste disposal
2. Describe the principles of biomedical waste management
3. Classify the biomedical waste categories according to the colour coding

Short answer questions

1. Define biomedical waste.
2. What is the health risk for the waste handlers?
3. List four don'ts in BMW
4. Write the types of incinerators
5. What is the type of waste collected in red colour container?

PART-B**UNIT-VII MEDICAL CONDITIONS****Structure**

- Introducti
on 7.1-
Vital
signs
- 7.2-Fever, Malaria, Typhoid and nursing management of patient with fever
- 7.3-Respiratory conditions
- 7.4-Gastro intestinal conditions
- 7.5-Urinary problems
- 7.6-Cardio vascular problems
- 7.7-Disease of the nervous system
- 7.8-Metabolic diseases

OBJECTIVES

After completion of this chapter, the students are able to

- Describe vital signs and its importance in assessing the patient
- List the types of fever and explain the management of fever
- Enlist the respiratory problems and describe the nursing management of respiratory problems
- Learn about digestive problems and its management
- Describe the common urinary problems and its management
- Understand the common cardiovascular problems and its management
- Enumerate the disease of the nervous system and its management
- Describe about diabetes mellitus and its management

– Introduction

When an individual's vital functions are normal, it indicates their physiological function and homeostasis maintained normal according to the changes occur in the body. Health is maintained by balanced diet, good elimination and proper environmental hygiene and good personal hygiene. Early identification of disease is essential for timely right treatment and early recovery. The main Objective of the medical treatment is early recovery and to prevent recurrent of attacks of the disease. Learning some important medical conditions and its treatment are necessary to the MPHWS (F) to educate the people in the community as well as to refer the patient to higher health care centre by proper identifying the signs and symptoms of medical conditions.

Vital signs

The measurement of temperature, pulse, respiration, and blood pressure (BP) is called as vital signs recording. Monitoring vital signs is the one of the eradicator to assess the vital organ problem of the patient.

Vital signs are a quick way of monitoring a patient's condition or identifying problems and evaluating the patient's response to intervention.

Vital signs should be assessed at the following times.

- At the time of admission
- Before and after surgery or an invasive procedure
- As per nursing or medical order.

Body Temperature

Definition: Body temperature reflects the balance between the heat produced by the body and the heat lost from the body. There are two kinds of body temperature.

Core temperature:- It is the temperature of the interior body tissue below the skin and subcutaneous tissue. It is constant one and it is measured from rectum, tympanic membrane and oesophagus.

Surface temperature:- It refers to the body temperature at the surface that is of the skin and subcutaneous tissue. It is elevated or decreased as per the changes in environmental factors affecting body temperature.

Body temperature altered as these changes in heat production and heat loss.

- 1) Age: The temperature regulation system is not well developed until adolescence. Elders are sensitive to extremes in the environmental temperature.
- 2) Diurnal variation: Body temperature varying as 1.0°C between early morning and late afternoon.
- 3) Exercise: Hard work or exercise can increase body temperature.
- 4) Hormones: Female may have more hormone fluctuations than men.
- 5) Stress: Stimulation of the sympathetic nervous system can increase the production of epinephrine and nor epinephrine.
- 6) Environment: Extremes in environmental temperature can affect a person's temperature regulatory system.

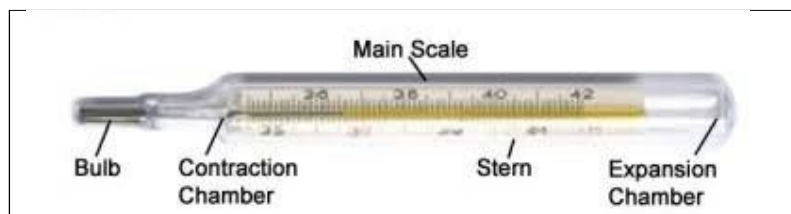
Assessment of Body Temperature:

The common steps of measuring body temperature are –

- Oral, rectal, auxiliary, tympanic membrane and temporal artery.

Types of thermometer:

- 1) Clinical Thermometer – Body temperature were measured using Mercury in glass.



- 2) Electronic Thermometer – Can display the temperature in 2 to 60 seconds.
- 3) Chemical disposable Thermometer
- 4) Infrared Thermometer – sense body temperature from the infrared energy gives off by a heat source.
- 5) Temporal artery Thermometer.



Temperature Scales:

The body temperature is measured in degrees on two scales.

(1) Celsius (C), (2) Fahrenheit (F). The body temperature scales sometimes need to convert from Celsius to Fahrenheit.

Formula

$$C = (F - 32) \times 5/9$$

$$F = (C \times 9/5) + 32$$

Example: 100° F convert it to Celsius.

$$C = (100 - 32) \times 5/9 = 68 \times 5/9 = 37.8^{\circ} C$$

Example: 40° C

$$F = (40 \times 9/5) + 32 = 72 + 32 = 104^{\circ} F$$

Temperature classification:

Normal - 36.5°C

Hypothermia - < 35°C (95.0°F)

Fever - > 37.5°C - 38.3°C (99.5° – 100.9°F)

Hyperthermia - > 40.0° – 41.5°C (104 – 106.7°F)

General points to remember while measuring body temperature

- The patient must be relaxed
- No hot or cold drink should be given 15 minutes prior to checking oral temperature
- Avoid checking temperature immediately after a bath
- Keep oral and rectal thermometer separately
- Use discretion and decide the frequency of temperature taking.
- Note contraindication for routes of checking temperature.

Pulse

The pulse is jerky movement of blood created by the contraction of the left ventricle of the heart. The pulse wave represents the stroke volume output or the amount of blood that enters the arteries with each ventricular contraction.

Compliance: The ability of the artery to contract and expand

Cardiac output: The volume of blood pumped by the heart each minute is 5 litres.

Stroke volume x Heart rate = Cardiac output

70ml/beat x 72/min = 5040 ml

Peripheral pulse: It is located away from the heart.

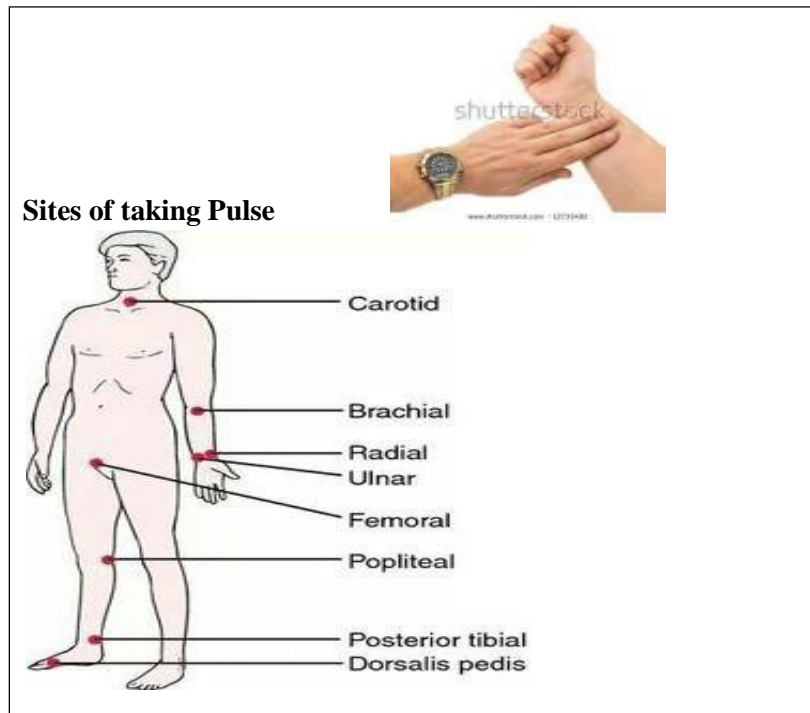
Apical pulse: It is located at the apex of the heart.

The pulse rate is affected by the following factors

E.g. Age, Sex, Exercise, Fever, Medication, Haemorrhage, stress, and position change.

Sites of taking Pulse:

- | | | |
|------------|------------|--------------------|
| - Temporal | - Brachial | - Posterior tibial |
| - Carotid | - Radial | - Dorsalis Pedis |
| - Apical | - Femoral | |



Variation in pulse according to age

Age	Pulse/minute
Newborn	-140 – 160
Infants (0 – 1 year)	- 120 – 140
Toddler (1 – 3 years)	- 100 – 120
Preschooler (3 – 6 years)	- 75 - 120
School age (6 – 12 years)	- 70 – 110
Adolescent (12 – 19 years)	- 60 – 90
Adult (above 20 years)	- 70 – 80

Alterations in Pulse

Tachycardia - Elevated heart rate above 100 beats/min

Bradycardia – Heart rate below 60/min

Pulse deficit – Heart is inefficient to transmit the pulse wave from central to periphery.

Dysrhythmia – Inadequate cardiac output causes an abnormal rhythm and missed heart beat.

Pattern of pulse according to pulse volume

- Regular pulse
- Absent pulse
- Bounding pulse
- Thready pulse

Respiration

Respiration is the act of breathing i.e. inspiration + expiration + pulse = Respiration.
 Inspiration is breath in; air enter into the lungs; Expiration is breathing out; the movement of gases from the lungs to the atmosphere;

Ventilation - refers to the movement of air in and out of lungs.

External Respiration: Exchange of oxygen and carbon dioxide between the alveoli of the lungs and the pulmonary blood.

Internal Respiration: Exchange of oxygen and CO₂ between the blood and body tissue. It is also known as tissue respiration.

Mechanism of Respiration

Inhalation: The diaphragm contracts, the ribs move upward and outward and sternum moves outward thus enlarging the thorax and permitting the lungs to expand.

Exhalation: The diaphragm relaxes the ribs move downward and inward and the sternum moves inward thus decreasing the size of the thorax as the lungs are compressed.

Inspiration lasts for 1 – 1.5 seconds and expiration lasts for 2 – 3 seconds.

Respiration rate is affected by the following factors.

- Age, disease condition, pain, toxin, fever, exercise, stress, increased environmental temperature, high altitude and medication.



Variations of Respiration according to age

Age	Respiration Rate/Minute
Newborn	40
1 year	30
1 – 3 years	25
3 – 6 years	19
6 – 12 years	17
12 – 18 years	16
Above 19 years	18

Altered Respiration

- Apnoea - Absence of breathing
- Dyspnoea - Difficulty in breathing

Tachypnea	-	Regular breathing pattern but more than 24 /min
Bradypnea	-	Regular breathing pattern but less than 12/min
Orthopnea	-	Ability to breath only in upright position
Hypernea	-	The rate and depth of respiration increase. There is an increase in the volume of air in the lungs. (e.g.) exercise & anxiety
Hypoventilation	-	The rate and depth of respiration are decreased, reducing the volume of air in the lungs.
Stridor	-	A 'gur' high sound caused by a laryngeal spasm
Wheezing	-	Noisy breathing accompanied by a whistle sound due to air passing through narrow bronchioles (eg) Asthma.
Kussmauls respiration	-	Increase in the rate and depth of the breath pattern. e.g. diabetic ketoacidosis.

Blood Pressure

Blood pressure is the force of the blood exerted against the blood vessels as it flows through the arteries.

Systolic Pressure: It is the pressure of the blood as a result of contraction of the ventricles.

Diastolic Pressure: It is the pressure when the ventricles are dilated.

Pulse Pressure: The difference between the systolic and diastolic pressure is called as pulse pressure.

The blood pressure is affected by the following facts.

- Age
- Exercise
- Stress
- Intracranial pressure, blood volume
- Obesity
- Sex
- diurnal variations
- Body build
- Pain
- Medications

Variations in BP according to age

Age		Mean Blood Pressure mm/Hg
Newborn	-	73/55
1 year	-	90/55
6 years	-	95/57
10 years	-	102/62
14 years	-	120/80
Adult	-	120/80

Device used for measuring Blood Pressure

Sphygmomanometer (B.P. apparatus)-Comprises a blood pressure cuff, air pumping bladder and graded mercury column

Aneroid monitor: It is less expensive and easy to manage. The cuff is inflated by hand by squeezing a rubber bulb.

Digital monitor: It is automatic; the measurement appears on a small screen.

Finger or Wrist Blood Pressure: The finger or wrist blood pressure devices are not as accurate in measuring blood pressure as other types of monitors.

Recording of Blood pressure



Points to Remember:

- ✓ Before checking the BP, ask the person to take rest for 3 to 5 minutes.
- ✓ Sit in a comfortable chair with proper support.
- ✓ Don't apply cuff on over the injured hand and atrio-ventricular shunt arm.
- ✓ **Rest** Rest is a state of relaxation. It is one of the elements of stress management and can decrease muscle tension, decrease the blood pressure and regulate the heart and lung function.

Fever, Malaria, Typhoid and nursing management of patient with fever

Alteration in Body Temperatures

Pyrexia/Fever/Hyperthermia:

An elevation of body temperature than normal body temperature (98.4°F or 36.7°C) is known as pyrexia or fever.

A very high body temperature i.e. 41°C (105.8°F) is called as Hyperthermia.

Types of Fever:

Intermittent fever: The body temperature altered at regular intervals between periods of fever and periods of normal or subnormal temperatures.

Remittent fever: The body temperature elevated more than 2°C over the 24 hours period cold, influenza.

Relapsing fever: The fever presents for short period and interspersed with periods of 1 or 2 days of normal fever.

Constant fever: The body temperature fluctuates minimally but always remains above normal. e.g. Typhoid fever.

Heat exhaustion: It is a result of excessive heat and a dehydration sign of heat exhaustion includes paleness, dizziness, nausea, vomiting feeling and moderately increased temperature (101°F to 102°F).

Heat stroke: When a person exposed to hot weather, have a sign of warm, flushed skin and no sweating with 106°F and person lead on sudden unconsciousness and seizures.

Signs and Symptoms of Fever

Onset: Complaints of feeling cold

Shivering
Gooseflesh appearance of skin.
Course: Skin that feels warm
Photo sensitivity
Classy eye appearance
↑ pulse, ↑ Respiration, ↑ thirst
Mild to severe dehydration
Drowsiness, restlessness
Delirium and confusion
Herpic lesions of mouth
Loss of appetite
Malaise & aching muscles
Weakness
Defervescence (flush phase)
Skin that appears flushed & feels warm.
Sweating
Decreased shivering

Course of fever

Onset invasion: The onset in sudden or insidious.
Fastgium: fever remains constant.
Decline: Fever may subside suddenly by 4⁰ F to 5⁰ F and reach normal or below normal within a few hours.
Crisis: There are two types of crisis.
True crisis – The fever come down rapidly and stays constant
False crisis – The fever comes down rapidly and again goes up.
Lysis: Fever comes down gradually and stays constant

Treatment of Hyperthermia

- Give tablet tynolol/paracetamol for reducing the fever.

Nursing Interventions in Clients with Fever

1. Monitor vital signs
2. Assess skin colour and temperature.
3. Monitor WBC, Hct and other pertinent laboratory records.
 - a. Elevated WBC levels indicate presence of infection.
 - b. Elevated Hct indicates dehydration.
4. Remove excess blankets when the client feels warm; provide extra warmth when the client feels chilled.
5. Provide adequate foods and fluids to provide additional calories and to prevent dehydration.
6. Measure Intake and Output.
7. Maintain prescribed IV fluids as ordered by the physician.
8. Promote rest to reduce body heat production.

9. Provide good oral hygiene to prevent herpetic lesions of the mouth.
10. Provide cool, circulating air using a fan to dissipate heat by convection.
11. Provide dry clothing and bed linens to ensure comfort.
12. Provide TSB (Temperature of water 80-98°F) to enhance heat loss by evaporation and conduction.
13. Provide cool environment
14. Apply cold compress and ice bag application
15. Give more oral fluid
16. Cold Sponging
17. Administer antipyretics as ordered. Temperature of 38.5°C and above usually requires administration of antipyretic.

Hypothermia

It is a core body temperature below the lower limit of normal. There are 3 main physiological actions cause for hypothermia

- i) Excessive heat loss
- ii) Inadequate heat production
- iii) Impaired hypothermic thermo regulation

If the skin and underlying tissues are damaged by freezing cold, this results in frostbite.

Signs and symptoms of Hypothermia

Decreased body temperature, pulse and respirations

Severe shivering

Feeling of cold and chills

Pale, cold and waxy skin

Hypotension

Decrease urine output

Frostbite nose, fingers and toes

Disorientation and coma

Management

- Provide a warm environment
- Provide dry clothing
- Apply warm blankets
- Keep limbs close to body
- Apply woollen cap/turban to cover the head of the patient.
- Apply warm pads.

Respiratory conditions**Acute respiratory infections**

Respiratory diseases are most common in tropical countries, in a developing country like India, with a majority of low socioeconomic status, the atmospheric conditions favour the growth of the pathogens.

Cold

The inflammation of the mucosal lining of the nose, throat which is caused by 200 different viruses'. Among all rhinovirus is mainly caused for cold.

The increased incidence of cold during the cold season may be attributed to the fact that more people indoor and close to each other.

Causes

- Changes in the temperature/humidity
- Odour
- Infection
- Age
- Systemic disease
- Use of over the counter medication
- Exposure to allergens
- Medications e.g. sulfa drugs

Signs and symptoms

- Stuffy nose
- Scratchy tickly throat
- Watery eyes
- Low grade fever
- Sore throat
- Mild hacking cough
- Body pain and headache
- Mild fatigue chills
- Watery discharge from nose

Common cold is highly contagious. It is spread through airborne droplets that are coughed or sneezed into the air by the contagious person and then inhaled by another person. It is also spread by hand to hand or hand to infected surface contact after which a person touches his /her faces

Medical management

The management of common cold is depend on cause

Viral Rhinitis-Tab Amantadine and Remantidine

- ✓ Symptomatic treatment includes fluid intake, rest, and prevention chilling and expectorates as needed.
- ✓ Warm salt water gargling
- ✓ Antihistamines used to relieve sneezing, rhinnorea and nasal congestion.
- ✓ Mucinex is an expectorant used to promote removal of secretions

Sinusitis

It is the inflammation of the mucosa of one or more sinuses. It can be either acute or chronic sinusitis.

Causes

- Unresponsive cold/rhinitis may lead to sinusitis.
- Bacterial infection
- Allergic reaction
- Damage in obstructed by a deviated nasal septum.
- Hypertrophied turbinate's

Signs and Symptoms

- Purulent nasal drainage

- Nasal obstruction
- Facial pain, pressure or sense of fullness
- Stiffness as well as localized diffused head ache

Management

- Antibiotics prescribed for 5 – 7 days course (Augmentin, vibramycin, penicillin)
- Intra nasal saline lavage is an effective adjuvant therapy.
- Administer decongestants spray for improving drainage of the nasal sinuses.
- Intra nasal corticosteroids used to improve acute symptoms of either bacterial or viral rhino sinusitis.

Complications

- ❖ Severe orbital cellulites
- ❖ Sub periosteal abscess
- ❖ Cavernous sinus thrombosis
- ❖ Meningitis
- ❖ Encephalitis
- ❖ Ischemic infection

Pharyngitis

It is a sudden painful inflammation of the pharynx, the back portion of the throat that includes the posterior third of the tongue, soft palate and tonsils.

Causes

- ❖ Bacteria- Beta haemolytic streptococcus
- ❖ virus – Epstein-barr virus, herpes simplex, adenovirus, influenza virus

Clinical manifestations

Fever	Headache
Malaise	Myalgia
Sore throat	Nausea
Vomiting	painful cervical adenopathy
Anorexia	fiery red pharyngeal membrane
Urticaria	swollen & flecked with white-purple exudates
	Enlarged cervical lymph nodes

Management

- Penicillin V, Potassium given for 5 days is the regimen of choice.
- Erythromycin given to the patient if they are allergic to penicillin
- Administer analgesic to reduce pain (e.g.) acetaminophen
- Provide liquid or soft diet depending on the patient's appetite and degree of discomfort that occurs with swallowing.
- Apply ice collar to relieve severe sore throat

Preventive Measures

- ✓ Do not share eating utensils, glasses, napkins
- ✓ Clean the telephone after use
- ✓ Dispose used tissue paper appropriately
- ✓ Avoid exposure second hand smoking
- ✓ Replace the new tooth brush for brushing

- ✓ Avoid to eat stored cool item from the refrigerator

Tonsillitis

The tonsils are composed of lymphatic tissue and are situated on each side of the oropharynx. These tissues contain cells that are useful integrating against infection. Inflammation of the tonsils is known as tonsillitis; Adenoiditis is inflammation of the lymphoid tissue at the back of the roof of the mouth.

Causes

Bacteria – β haemolytic streptococcal bacteria, virus: adenovirus, influenza virus, Epstein-Barr virus and herpes simplex.

Signs and Symptoms

- Sudden onset of sore throat
- Painful swallowing and fever
- Headache, loss of appetite, chills malaise & swollen lymph nodes in the neck and jaw area

Adenoiditis

- Acute pus like nasal discharge
- Mouth breathing
- Painful swallowing
- Snoring, sleep disturbance
- Ear infections

Diagnostic test

- Throat swab
- Rhinoscopy (visualization of the nose with speculum)

Treatment

Supportive measures

- Increased fluid intake
- Salt water gargling
- Adequate rest
- Analgesics for relieving pain
- Antibiotic therapy for 10 days – Penicillin, amoxicillin, ampicillin

Surgical Treatment

Tonsillectomy and adenoidectomy

Indication for surgery: Recurrence of tonsillitis

Hypertrophy tonsils and adenoids

Obstructive sleep apnoea

Repeated otitis media

Post operative education

- Educate the family members & patient regarding bleeding may occur up to 8 days after surgery.
- Take regular antibiotics without missing dose or discontinuing the course (i.e. for 5 days)
- Gargle the mouth with warm saline solution/alkaline mouth wash.

- Educate the patient about the following symptoms which may occur in the first 24 hours after surgery –Sore throat, Stiff neck, Minor ear pain and Vomiting
- Eat soft food which is easy to swallow than hard food
- Avoid spicy hot acidic and rough foods.
- Restrict the intake of milk and milk products
- Avoid vigorous tooth brushing and gargling

Laryngitis

It is referred as inflammation of the larynx as a result of voice abuse, exposure to dust, chemicals, smoke and other pollutions and Upper Respiratory Infections(URI).

Pneumonia

It is an inflammation of the lung parenchyma caused by various micro organisms including bacteria, mycobacterium, fungi and viruses.

Causes

Bacteria:

- | | |
|------------------|-------------------------|
| ➤ Streptococcus | ➤ Mycoplasma |
| ➤ Staphylococcus | ➤ Haemophilus influenza |
| ➤ Pseudomonas | ➤ Fungal pneumonia |
| ➤ Chlamydia | ➤ Klebsiella pneumonia |
| ➤ Viral | |

Types

- | | |
|-------------------------------|--|
| ➤ Bacterial pneumonia | ➤ Ventilator associated pneumonia |
| ➤ Viral pneumonia | ➤ Pneumonia in immune compromised host |
| ➤ Fungal pneumonia | ➤ Aspiration pneumonia |
| ➤ Parasitic pneumonia | |
| ➤ Hospital acquired pneumonia | |

Hospital Acquired Pneumonia

It develops 48 hours or more after admission and does not appear to be incubating at the time of admission. It may predispose patients to HAP because of impaired host defences.

Ventilator Associated Pneumonia

It occurs to the patient with ventilators care in Intensive Care units after 48 hours.

Pneumonia in Immune Compromised Host

Patient who has developed compromised immunity due to HIV, long term corticosteroid therapy and decreased protein intake.

Aspiration Pneumonia

It refers to the pulmonary consequences resulting from entry of endogenous or exogenous substances into the lower respiratory tract (e.g.) aspiration of stomach content into respiratory tract.

Risk factors of Pneumonia

- ❖ Smoking
- ❖ Prolonged immobility

- ❖ Depressed cough reflex due to medication
- ❖ Alcohol intoxication
- ❖ Advanced age
- ❖ Respiratory therapy with improperly cleaned equipment

Signs and Symptoms

- ❖ Fever (101°F to 105°F)
- ❖ Sudden onset of chills
- ❖ Pleuritic chest pain
- ❖ Tachypnea
- ❖ Rapid and bounding pulse
- ❖ Rusty blood tinged sputum – in pneumococcal
 - Staphylococcal
 - Klebsiella and streptococcal
- ❖ Viscous sputum – Klebsiella pneumonia
- ❖ Lobe consolidation, including increased tactile fremitus, dullness, bronchovesicular sounds
- ❖ Egophony (change of patient's 'ee' to 'ay' sound on auscultation)

Diagnosis

- Physical examination
- Chest 'X' ray
- Blood culture & sputum examination

Management

- Antibiotic Therapy: Penicillin G, Erythromycin, Clindamycin, Cephalosporins, Trimethoprim and sulfamethoxazole
- Administer oxygen
- Perform ABG analysis to determine the need for oxygen
- Endotracheal intubation for respiratory support
- Place the patient on bed rest until the infection is subsided

Complications

- ❖ Lung abscess
- ❖ Emphysema
- ❖ Respiratory failure
- ❖ Septic shock
- ❖ Age: Elderly are at greatest risk of death with any form of pneumonia

Prevention

There are a number of steps for preventing pneumonia.

- ☐ Stop smoking.
- ☐ Avoid contacting with people who have infections that sometimes lead to pneumonia.
- ☐ Stay away from people who have colds, the flu, or other respiratory tract infections.
- ☐ Simple Hand hygiene often helps to prevent the spread of viruses and bacteria that may cause pneumonia.
- ☐ Pneumococcal Vaccinations recommended for people ages 65 and older
- ☐ Children get the pneumococcal conjugate vaccine.

Tuberculosis

Tuberculosis is an infectious disease that usually affects the lungs. Compared with other diseases caused by a single infectious agent, globally tuberculosis is the second biggest killer disease.

In the 18th and 19th centuries, a tuberculosis epidemic rampaged throughout Europe and North America, before the German microbiologist Robert Koch discovered the microbial causes of tuberculosis in 1882.

Following Koch's discovery, the development of vaccines and effective drug treatment led to the belief that the disease was almost defeated. However, in the mid-1980s, TB cases began to rise worldwide, so much so, that in 1993, the World Health Organization (WHO) declared that TB was a global emergency.

Causes The *Mycobacterium tuberculosis* bacterium causes TB. It is spread through the air when a person with TB (whose lungs are affected) coughs, sneezes, spits, laughs, or talks.

Risk factors

People with compromised immune systems are most at risk of developing active tuberculosis.

HIV

- Using tobacco
- diabetes
- certain cancers
- malnutrition
- kidney disease
- people who are undergoing cancer therapy,
- Travel to certain countries where TB is more common

Symptoms of tuberculosis

While latent TB is symptomless, the symptoms of active TB include the following:

- Coughing, sometimes mucus with blood (Haemoptysis)
- Productive sputum
- Chills
- Fatigue and malaise
- TB symptoms may be mild for many months, and people ill with TB can infect up to 10-15 other people through close contact over the course of a year
- Fever
- Loss of weight
- Loss of appetite
- Night sweats

TB usually affects the lungs, although it can spread to other organs around the body.

There are two kinds of tuberculosis infection: latent and active.

Latent TB - the bacteria remain in the body in an inactive state. They cause no symptoms and are not contagious, but they can become active.

Active TB - the bacteria do cause symptoms and can be transmitted to others.

About one-third of the world's population is believed to have latent TB. There is a 10 percent chance of latent TB becoming active, but this risk is much higher in people who have compromised immune systems, i.e., people living with HIV or malnutrition, or people who smoke.

Diagnosis of tuberculosis



- ✓ History collection: Ask about symptoms and medical history as well as assessing the individual's risk of exposure to TB.
- ✓ The most common diagnostic test for TB is a skin test where a small injection of Purified Protein Derivative (PPD) tuberculin, an extract of the TB bacterium, is injected below the inside forearm. The injection site should be checked after 2-3 days. If the site of skin is developing a hard, red bump has swollen up to a specific size, then it is confirmed as TB positive. If there is no change it is considered as negative.
- ✓ Blood tests,
- ✓ Chest X-rays, and sputum tests can all be used to test for the presence of TB bacteria and may be used alongside a skin test.
- ✓ MDR-TB is more difficult to diagnose than regular TB.

Treatments for tuberculosis

The majority of TB cases can be cured when the right medication is available and administered correctly. The precise type and length of antibiotic treatment depend on a person's age, overall health, potential resistance to drugs, whether the TB is latent or active, and the location of infection (i.e., the lungs, brain, kidneys). The five basic or first line TB drugs are Isoniazid (INH), Rifampicin, Pyrazinamide, Ethambutol and Streptomycin.

People with latent TB may need just one kind of TB antibiotics, whereas people with active TB (particularly MDR-TB) will often require a prescription of multiple drugs.

Antibiotics are usually required to be taken for a relatively long time. The standard length of time for a course of TB antibiotics is about 6 months.

TB medication can be toxic to the liver, and although side effects are uncommon, when they do occur, they can be quite serious. Potential side effects should be reported to a doctor and include:

- Dark urine
- Loss of appetite
- Fever
- Nausea and vomiting
- Jaundice

It is important for any course of treatment to be completed fully, even if the TB symptoms have gone away. Any bacteria that have survived the treatment could become resistant to the medication that has been prescribed and could lead to developing MDR-TB in the future.

Directly observed therapy (DOT) may be recommended. This involves a healthcare worker administering the TB medication to ensure that the course of treatment is completed.

Prevention of tuberculosis

- ✓ If you have active TB, Wearing face mask can help to lower the risk of the disease spreading to other people.
- ✓ Avoiding other people by not going to school or work, or sleeping in the same room as someone, will help to minimize the risk of germs from reaching anyone else.

- ✓ Wearing a mask, covering the mouth, and ventilating rooms can also limit the spread of bacteria.
- ✓ **TB vaccination**-BCG injections are given to children to vaccinate them against tuberculosis.

Complications

If left untreated, TB can be fatal. Although it mostly affects the lungs, it can also spread through the blood, causing complications, such as:

- Meningitis: swelling of the membranes that cover the brain.
- Spinal pain.
- Joint damage.
- Damage to the liver or kidneys or heart.

7.4-Gastro intestinal conditions

People often suffer with digestive problems when they consume food excess or inadequate/irregular diet in the gastro intestinal system. They are constipation, indigestion, peptic ulcer, gastro enteritis, colitis, appendicitis and hernia,

Indigestion

Indigestion is the food which consumed is not digested and emptied from the stomach for long duration.

Dyspepsia, it is defined as a persistent or recurrent pain or discomfort in the upper abdomen.

Causes of Indigestion

Indigestion has many causes, including

- Ulcers
- Stomach cancer
- Gastro paresis (a condition where the stomach doesn't empty properly; Stomach infections)
- Irritable bowel syndrome
- Pregnancy
- Use of drugs like Aspirin and other painkillers, oral contraceptives, antibiotics
- Eating too much, eating too fast, eating high-fat foods, or eating during stressful situations
- Drinking too much alcohol
- Cigarette smoking
- Stress and fatigue

Indigestion is not caused by excess stomach acid.

Swallowing excessive air when eating may increase the symptoms of belching and bloating, which are often associated with indigestion.

Signs and symptoms

- Burning in the stomach or upper abdomen
- Abdominal pain

- Bloating (full feeling)
- Belching and gas
- Nausea and vomiting
- Acidic taste
- Growling stomach

These symptoms may increase in times of stress.

Diagnostic evaluation

X-rays of the stomach or small intestine.

An upper endoscopy to look closely at the inside of the stomach.

Treatment

The drugs relieve the symptoms of indigestion pain include:

- Antacids
- Acid blockers - Ranitidine, Omeprazole

Other indigestion remedies to alleviate symptoms include:

- Avoid laying down flat, as this may worsen symptoms
- Drink milk or water to ease the acid in the stomach

Preventive measures of Indigestion

Most episodes of indigestion go away within hours without medical attention. If indigestion symptoms worsen, consult the doctor.

- Do not chew with your mouth open, talk while chewing, or eat quickly. This causes you to swallow air, which can aggravate indigestion.
- Chew food completely and eat slowly.
- Drink fluids after meals, rather than during.
- Avoid late-night eating.
- Avoid spicy, greasy foods.
- Quit smoking.
- Avoid alcoholic beverages.
- Avoid caffeine.
- Wait at least one hour after eating to exercise.
- Always take aspirin and NSAIDs with food.
- If you are lactose intolerant or allergic to a food, avoid the aggravating foods.
- Meditation may help if indigestion is caused by stress or anxiety.

Vomiting

Vomiting, or throwing up, is a forceful discharge of stomach contents. It can be a one-time event linked to something that doesn't settle right in the stomach. Recurrent vomiting may be caused by underlying medical conditions. Frequent vomiting may also lead to dehydration, which can be deadly if left untreated.

Causes of vomiting

Vomiting is common. Eating too much food or drinking too much alcohol can make a person throw up. This generally isn't a cause for concern. Vomiting itself is not a condition. It's a symptom of other conditions. Some of these conditions include:

- food poisoning
- indigestion
- infections (associated with bacterial and viral illnesses)
- motion sickness
- pregnancy-related morning sickness
- headaches
- prescription medications
- anaesthesia
- chemotherapy
- Regional enteritis

Frequent vomiting not related to any of these causes may be a symptom of cyclic vomiting syndrome. This condition is characterized by vomiting for up to 10 days. It is usually coupled with nausea and extreme lack of energy. It mainly occurs during childhood.

This condition can cause vomiting episodes several times throughout the year when left untreated. It can also have serious complications that include:

- Dehydration
- Oesophagitis
- Tooth decay
- A tear in the oesophagus

Vomiting emergencies

Vomiting is a common symptom but it can sometimes warrant emergency medical attention.

If a person:

- ☐ vomits for more than one day
- ☐ suspects food poisoning
- ☐ has a severe headache accompanied by a stiff neck
- ☐ has severe abdominal pain
- ☐ Blood in the vomit (haematemesis)

Complications of vomiting

Dehydration is the most common complication related to vomiting. Dehydration can cause: dry mouth, fatigue, dark urine, decreased urination, headache and confusion

Vomiting treatments

- ✓ Treatment for nausea and vomiting depends on the underlying cause.
- ✓ Drinking clear liquids is recommended. Clear liquids containing electrolytes can help provide essential nutrients lost through vomiting.
- ✓ Avoid solid foods until clear liquids are tolerated to rest the stomach
- ✓ Antiemetic drugs for frequent vomiting. These medications help to reduce episodes of throwing up.
- ✓ Alternative remedies like ingesting products that contain ginger, bergamot, and lemongrass oil may also help.

- ✓ Severe dehydration caused by vomiting may require treatment with intravenous fluids.

Dietary changes can also help recurrent vomiting. These are especially helpful for morning sickness. Foods that help to alleviate vomiting include:

- ☐ non greasy foods
- ☐ saltine crackers
- ☐ ginger products like ginger ale

Preventing vomiting

Adopting better lifestyle habits can help prevent vomiting episodes. It's difficult to entirely avoid viruses that cause vomiting, but you can reduce your chances of getting a virus by exercising good hygiene, like regular hand washing. Knowing how to treat recurrent vomiting can help you avoid further complications. They are

- ☐ Avoid excessive alcohol consumption
- ☐ Avoid eating too much food
- ☐ Avoid causative factors of migraines
- ☐ Avoid exercising after eating
- ☐ Avoid stress
- ☐ Avoid hot or spicy foods
- ☐ Avoid lack of sleep

Constipation

Constipation refers to bowel movements that are infrequent or hard to pass the stool is often hard and dry

Causes

- ✓ Common causes include slow movement of stool within the colon, age, irregular defecation habits, inappropriate diet, insufficient fluid, insufficient exercise, increased psychological stress
- ✓ Underlying associated diseases include
 - ☐ Hypothyroidism,
 - ☐ Diabetes,
 - ☐ Celiac disease, non-celiac gluten sensitivity,
 - ☐ Colon cancer,
 - ☐ Diverticulitis and inflammatory bowel disease.
- ✓ Medications associated with constipation include opioids, certain antacids, calcium channel blockers, and anticholinergics.

Symptoms

The symptoms of constipation are

- ☐ Infrequent or hard to pass bowel movements

- ☐ Straining with bowel movements
- ☐ Excessive time needed to pass a bowel movement
- ☐ Hard stools
- ☐ Pain with bowel movements secondary to straining
- ☐ Abdominal pain
- ☐ Abdominal bloating.
- ☐ the sensation of incomplete bowel evacuation.

Treatment

A limited number of causes that require urgent medical intervention or result in severe consequences.

The treatment of constipation should focus on the underlying cause if known.

In chronic constipation of unknown cause, the main treatment involves the increased intake of water and fiber (either dietary or as supplements). The routine use of laxatives is discouraged, as having bowel movements may come to be dependent upon their use.

Enemas can be used to provide a form of mechanical stimulation. Enemas are particularly useful when there is impaction, when stool hardens in the rectum. In order to be effective, the instructions that come with the enema must be followed. This requires full application of the enema, appropriate positioning after the enema is instilled, and retention of the enema until cramps are felt. Defecation usually occurs between a few minutes and one hour after the enema is inserted.

Fiber supplements-Soluble fiber supplements such as psyllium are generally considered first-line treatment for chronic constipation, compared to insoluble fibers such as wheat bran.

Laxatives If laxatives are used, milk of magnesia or polyethylene glycol are recommended as first-line agents due to their low cost and safety.

Physical intervention

Constipation that resists the above measures may require physical intervention such as manual dis-impaction (the physical removal of impacted stool using the hands).

Regular exercise can help improve chronic constipation.

Haemorrhoids

Haemorrhoids (HEM-uh-roids), also called piles, are swollen veins in anus and lower rectum, similar to varicose veins.

Causes

Unknown. They may result from Straining during bowel movements or from the increased pressure on these veins during pregnancy.

The veins around your anus tend to stretch under pressure and may bulge or swell. Swollen veins (haemorrhoids) can develop from increased pressure in the lower rectum due to:

- | | |
|---|--------------------|
| <input type="checkbox"/> Straining during bowel movements | • Obesity |
| <input type="checkbox"/> Sitting for long periods of time on the toilet | • Pregnancy |
| <input type="checkbox"/> Chronic diarrhoea or constipation | • Anal intercourse |
| | • Low-fibre diet |

Types

- **Internal haemorrhoids:** These lie inside the rectum. But straining or irritation when passing stool can damage a haemorrhoid's surface and cause it to bleed.
- **External haemorrhoids.** These are under the skin around your anus. When irritated, external haemorrhoids can itch or bleed.
- **Thrombosed haemorrhoids:** Sometimes blood may pool in an external haemorrhoid and form a clot (thrombus) that can result in severe pain, swelling, inflammation and a hard lump near your anus.

Symptoms

Signs and symptoms of haemorrhoids may include:

- Painless bleeding during bowel movements
- Itching of anal region
- Pain or discomfort
- Swelling around anus
- A lump near anus

Complications

Complications of haemorrhoids are very rare but include: **Anaemia and Strangulated haemorrhoid.** If the blood supply to an internal haemorrhoid is cut off, the haemorrhoid may be "strangulated," which cause extreme pain.

Treatment

- ✓ Apply an over-the-counter haemorrhoid cream or suppository containing hydrocortisone.
- ✓ Soak anal area in plain warm water 10 to 15 minutes two to three times a day. A sitz bath fits over the toilet.
- ✓ Bathe (preferably) or shower daily to cleanse the skin around your anus gently with warm water.
- ✓ Apply ice packs or cold compresses on your anus to relieve swelling.
- ✓ Use acetaminophen (Tylenol, others), aspirin or ibuprofen, temporarily to relieve discomfort.

Minimally invasive procedures

- **Rubber band ligation.** placing of one or two tiny rubber bands around the base of an internal haemorrhoid to cut off its circulation.
- **Sclero therapy** In this procedure, injects a chemical solution into the haemorrhoid tissue to shrink it. While the injection causes little or no pain
- **Coagulation (infrared, laser or bipolar).** Coagulation techniques use laser or infrared light or heat.
- **Haemorrhoidectomy** is the surgical removal of excessive tissue that causes bleeding in the anus with a local anaesthetic combined with sedation/a spinal anaesthesia or a general anaesthesia.
- **Haemorrhoid stapling:** This procedure is called stapled haemorrhoidectomy and blocks blood flow to haemorrhoidal tissue. It is typically used only for internal haemorrhoids.

Prevention

The best way to prevent haemorrhoids is to keep your stools soft and reduce symptoms of haemorrhoids, follow these tips:

- ☐ **Eat high-fibre foods.** Eat more fruits, vegetables and whole grains. Doing so softens the stool and increases its bulk, which will help you avoid the straining that can cause haemorrhoids.
- ☐ Drink plenty of fluids.
- ☐ **Don't strain.** Straining and holding your breath when trying to pass a stool creates greater pressure in the veins in the lower rectum.
- ☐ Go to toilet as soon as you feel the urge.
- ☐ **Exercise** helps to prevent constipation and to reduce pressure on veins, which can occur with long periods of standing or sitting.

Peptic ulcers

Peptic ulcers are sores that develop in the lining of the stomach, lower oesophagus, or small intestine. They're usually formed as a result of inflammation caused by the bacteria *H. pylori*, as well as from erosion from stomach acids. Peptic ulcers are a fairly common health problem.

There are three types of peptic ulcers:

- ☐ **gastric ulcers:** ulcers that develop inside the stomach
- ☐ **oesophageal ulcers:** ulcers that develop inside the oesophagus
- ☐ **duodenal ulcers:** ulcers that develop in the upper section of the small intestines, called the duodenum

Causes

Different factors can cause the lining of the stomach, the oesophagus, and the small intestine to break down. These include:

- ☐ *Helicobacter pylori* (*H. pylori*),
- ☐ frequent use of aspirin, ibuprofen, and other anti-inflammatory drugs
- ☐ smoking
- ☐ drinking too much alcohol
- ☐ radiation therapy
- ☐ stomach cancer

Symptoms of peptic ulcers

The most common symptom of a peptic ulcer is burning abdominal pain that extends from the navel to the chest, which can range from mild to severe.

Other common signs of a peptic ulcer include

- ☐ changes in appetite
- ☐ nausea
- ☐ bloody or dark stools
- ☐ unexplained weight loss
- indigestion
- vomiting
- chest pain

Tests and exams for peptic ulcers

Two types of tests are available to diagnose a peptic ulcer. They are called upper endoscopy and upper gastrointestinal (GI) series.

Upper endoscopy-In this procedure, your doctor inserts a long tube with a camera down your throat and into your stomach and small intestine to examine the area for ulcers. This instrument also allows removing tissue samples for examination.

Upper GI- For this procedure, patient drinks a thick liquid called barium (barium swallow). Then a technician will take an X-ray of your stomach, oesophagus, and small intestine

Treatment

Treatment will depend on the underlying cause of ulcer.

If tests show that you have an *H. pylori* infection, the medications include antibiotics to help kill infections and proton pump inhibitors (PPIs) to help reduce stomach acid.

Acid blockers like ranitidine (Zantac) or famotidine can also reduce stomach acid and ulcer pain

sucralfate which will coat stomach and reduce symptoms of peptic ulcers.

Complications of a peptic ulcer

Untreated ulcers can lead to other more serious health complications such as:

- ☐ **Perforation:** A hole develops in the lining of the stomach or small intestine and causes an infection.
- ☐ **Internal bleeding:** Signs of a bleeding ulcer include light-headedness, dizziness, and black stools.
- ☐ **Scar tissue:** This is thick tissue that develops after an injury.

Urinary problems

The kidney is one of the vital organs which eliminate waste from our body and maintain homeostasis and PH level of our body. If urine is not excreted it causes lot of inconvenience, It leads to either retention or incontinence.

Urinary retention

Urinary retention is the inability to empty the bladder. With chronic urinary retention, patient may be able to urinate, but may have trouble starting a stream or emptying the bladder completely.

Causes of urinary retention

Urinary retention can be caused by an obstruction in the urinary tract or by nerve problems that interfere with signals between the brain and the bladder. If the nerves aren't working properly, the brain may not get the message that the bladder is full. A weak bladder muscle can also cause retention. Some of the most common causes are:

- ✓ Urinary tract infection (UTI) may cause retention if the urethra becomes inflamed and swells.
- ✓ Anaesthesia is often administered to block pain signals during Surgery and Consequently, many patients have urinary retention after surgery.
- ✓ Medication The drugs that may cause urinary retention include:
 1. Antihistamine to treat allergies Anticholinergic/antispasmodic to treat stomach cramps, muscle spasms and urinary incontinence, e.g. hyoscyamine, propantheline
 2. Tricyclic antidepressants to treat anxiety and depression as imipramine or amitriptyline.

- ✓ Bladder stone
- ✓ Cystocele and rectocele

A cystocele occurs when the wall between a woman's bladder and her vagina weakens and allows the bladder to drop into the vagina. The abnormal position of the bladder may cause urine to remain trapped.

In a rectocele, the rectum droops into the back wall of the vagina. Cystocele and rectocele are often the results of a dropping of the pelvic support floor for the bladder. This sagging can pull the bladder out of position and cause urinary problems such as incontinence of urinary retention.

- ✓ Constipation: A hard stool in the rectum may push against the bladder and urethra, causing the urethra to be pinched shut, especially if a rectocele is present.
- ✓ Urethral stricture-A stricture is a narrowing or closure of a tube. Men may have a narrowing of the urethra, usually caused by scarring after a trauma to the penis.

Diagnostic evaluation

- ✓ The history of the patient is collected and the symptoms experience by the patient. Physical examination is also performed of lower abdomen to confirm the diagnosis.
- ✓ Bladder scan: A bladder scan uses a portable ultrasound device that can determine how much urine is present in bladder. Patient is asked to urinate and then bladder scan is used to determine residual urine
- ✓ Cystoscopy: It is used to see inside the bladder and urethra.
- ✓ X-ray and Computerized tomography (CT) Scan

Treatment of urinary retention

Catheterization: With acute urinary retention, treatment begins with the insertion of a catheter through the urethra to drain the bladder. This initial treatment relieves the immediate distress on a full bladder and prevents permanent bladder damage. Long term treatment for any case of urinary retention depends on the cause

Treatment to relieve prostate enlargement: The treatment for prostate enlargement range from medication to surgery

Surgery for women with cystocele or rectocele: Women may need surgery to lift a fallen bladder or rectum. The surgeon places sutures in the fascia to close up the defect, and then closes the incision in the vaginal wall with more stitches, removing any excess tissue and creating more support for the pelvic organs.

Treatment for men with urethral stricture: If a man is diagnosed with urethral stricture, perform dilation a procedure, in which increasingly wider tubes are inserted into the urethra to widen the stricture.

Complications of urinary retention

- ☐ Urinary tract infection.

- ☐ Bladder damage
- ☐ Chronic kidney disease-If urine backs up into the kidney, permanent kidney damage can lead to reduced kidney function and chronic kidney disease.

Nursing care

1. Evaluate time interval between voiding and record the amount voided each time. Carefully monitor the patient's vital signs and intake and output, initially saving any urine for inspection
2. Restrict foods and juices high in potassium and sodium and make sure that the patient maintains a balanced diet with controlled protein levels.
3. Encourage the patient to increase his fluid intake
4. Explain the importance of frequent urination
5. Record fluid intake and output weigh the patient daily
6. Provide emotional support
7. If the patient doesn't require immediate urinary catheterization, provide privacy and suggest that a normal voiding position be assumed.
8. Teach valsalva's manoeuvre or gently perform creed's manoeuvre
10. Stimulate voiding by the following measures . For example
 - a. Run water in the sink
 - b. Pour warm water over his perineum
 - c. Place his hands in warm water
 - d. Stroke the inner thigh with light pressure
 - e. Apply ice to the inner thigh
 - f. Gentle massage on lower abdomen
 - g. Play tapes of aquatic sounds.Offer a bed pan or urinal that is warm.
11. Provide enough time for voiding
12. Encourage the importance of physical activity and regular exercise

Urinary incontinence

It referred as the loss of bladder control and is a common embarrassing problem.

Causes and Risk factors

Urinary incontinence can also be a persistent condition caused by underlying physical problems or changes, including:

- ☐ Pregnancy
- ☐ Childbirth
- ☐ Aging cause decrease the bladder's capacity to store urine
- ☐ Menopause
- ☐ Hysterectomy
- ☐ Enlarged prostate gland

- **Obstruction.** A tumour Urinary stones — hard, stone-like masses that form in the bladder — sometimes cause urine leakage.
- **Neurological disorders.** Multiple sclerosis, Parkinson's disease, a stroke, a brain tumour or a spinal injury
- **Overweight**
- **Family history**

Types of urinary incontinence include:

- **Stress incontinence.** Urine leaks when exert pressure on the bladder by coughing, sneezing, laughing, exercising or lifting something heavy.
- **Urge incontinence.** A sudden, intense urge to urinate followed by an involuntary loss of urine. Urge incontinence may be caused by a minor condition, such as infection, or a more-severe condition such as a neurologic disorder or diabetes.
- **Overflow incontinence** is frequent or constant dribbling of urine due to a bladder that doesn't empty completely.
- **Functional incontinence.** A physical or mental impairment keeps the person from making it to the toilet in time.

Urinary incontinence isn't a disease, it's a symptom. It can be caused by everyday habits, underlying medical conditions or physical problems.

Complications

Complications of chronic urinary incontinence include:

- **Skin problems.** Rashes, skin infections and sores can develop from constantly wet skin.
- **Urinary tract infections.** Incontinence increases your risk of repeated urinary tract infections.
- **Impacts on your personal life.** Urinary incontinence can affect your social, work and personal relationships.

Prevention

Urinary incontinence isn't always preventable. However, to help decrease your risk:

- **Maintain a healthy weight**
- **Practice pelvic floor exercises**
- **Avoid bladder irritants, such as caffeine, alcohol and acidic foods**
- **Eat more fibre, which can prevent constipation, a cause of urinary incontinence**
- **Don't smoke, or seek help to quit smoking**

Cardiovascular problems

Anaemia

Anaemia is a condition that develops when blood has lack of red blood cells or haemoglobin. Women, young children, and people with chronic diseases are at increased risk of anaemia. Important factors to remember are:

- Certain forms of anaemia are hereditary and infants may be affected from the time of birth.
- Women in the childbearing years are particularly susceptible to iron-deficiency anaemia because of the blood loss from menstruation and the increased blood supply demands during pregnancy.
- Older adults also may have a greater risk of developing anaemia because of poor diet and other medical conditions.

Causes - The types of anaemia are divided into three groups:

- Anaemia caused by blood loss
- Anaemia caused by decreased or faulty red blood cell production
- Anaemia caused by destruction of red blood cells

Anaemia Caused by Blood Loss

Red blood cells can be lost through bleeding, which often can occur slowly over a long period of time, and can go undetected. This kind of chronic bleeding commonly results from the following:

- Gastrointestinal conditions such as ulcers, haemorrhoids, gastritis (inflammation of the stomach, and cancer
- Use of non-steroidal anti-inflammatory drugs (NSAIDs) such as aspirin or ibuprofen, which can cause ulcers and gastritis
- Menstruation and childbirth in women, especially if menstrual bleeding is excessive and if there are multiple pregnancies

Anaemia Caused by Decreased or Faulty Red Blood Cell Production

With this type of anaemia, the body may produce too few blood cells or the blood cells may not function correctly. Conditions associated with these causes of anaemia include the following:

- Sickle cell anaemia
- Iron-deficiency anaemia
- Vitamin deficiency
- Bone marrow and stem cell problems
- Other health conditions

Sickle cell anaemia is an inherited disorder that, in the U.S. affects mainly African-Americans and Hispanic Americans. Red blood cells become crescent-shaped because of a genetic defect. They break down rapidly, so oxygen does not get to the body's organs, causing anaemia. The crescent-shaped red blood cells can also get stuck in tiny blood vessels, causing pain.

Iron-deficiency anaemia occurs because of a lack of the mineral iron in the body. Bone marrow in the centre of the bone needs iron to make haemoglobin, the part of the red blood cell that transports oxygen to the body's organs. Without adequate iron, the body cannot produce enough haemoglobin for red blood cells. The result is iron-deficiency anaemia. This type of anaemia can be caused by:

- An iron-poor diet, especially in infants, children, teens, vegans, and vegetarians
- The metabolic demands of pregnancy and breastfeeding that deplete a woman's iron stores
- Menstruation
- Frequent blood donation
- Endurance training
- Digestive conditions such as Cohn's disease or surgical removal of part of the stomach or small intestine
- Certain drugs, foods, and caffeinated drinks

Vitamin-deficiency anaemia may occur when vitamin B12 and folate are deficient. These two vitamins are needed to make red blood cells. Conditions leading to anaemia caused by vitamin deficiency include:

- **Megaloblastic anaemia:** Vitamin B12 or folate or both are deficient
- **Pernicious anaemia:** Poor vitamin B12 absorption caused by conditions such as Crohn's disease, an intestinal parasite infection, surgical removal of part of the stomach or intestine, or infection with HIV
- **Dietary deficiency:** Eating little or no meat may cause a lack of vitamin B12, while overcooking or eating too few vegetables may cause a folate deficiency.
- **Other causes of vitamin deficiency:** pregnancy, certain medications, alcohol abuse, intestinal diseases
- **Treatment:** Anaemia treatment depends on the cause.
 - **Iron deficiency anaemia.** Treatment for this form of anaemia usually involves taking iron supplements and making changes of your diet.
If the underlying cause of iron deficiency is loss of blood — other than from menstruation — the source of the bleeding must be located and stopped. This may involve surgery.
 - **Vitamin deficiency anaemia:** Treatment for folic acid and B-12 deficiency involves dietary supplements and increasing these nutrients in diet. The patient may need to get vitamin B-12 injection when trouble absorbing.
Anaemia of chronic disease: There's no specific treatment for this type of anaemia. Doctors focus on treating the underlying disease. If symptoms become severe, a blood transfusion or injections of synthetic erythropoietin.
Aplastic anaemia. Treatment for this anaemia may include blood transfusions to boost levels of red blood cells and bone marrow transplant.
 - **Anaemia associated with bone marrow disease.** Treatment of these various diseases can include medication, chemotherapy or bone marrow transplantation.
- **Haemolytic anaemia's.** Managing haemolytic anaemia's includes avoiding suspect medications, treating related infections and taking drugs that suppress the immune system, and affecting red blood cells.
Depending on the severity of anaemia, a blood transfusion or plasmapheresis may be necessary. Plasmapheresis is a type of blood-filtering procedure. In certain cases, removal of the spleen can be helpful.

- **Sickle cell anaemia.** Treatment for this anaemia may include the administration of oxygen, pain-relieving drugs, and oral and intravenous fluids to reduce pain and prevent complications. Doctors also may recommend blood transfusions, folic acid supplements and antibiotics.
A bone marrow transplant may be an effective treatment in some circumstances. A cancer drug called hydroxyurea (Droxia, Hydrea) also is used to treat sickle cell anaemia.
- **Thalassemia:** This anaemia may be treated with blood transfusions, folic acid supplements, medication, removal of the spleen (splenectomy), or a blood and bone marrow stem cell transplant.

LEUKEMIA

There is increased number of premature white blood cells in the blood stream is called leukaemia. It is also known as blood cancer.

Types of Leukaemia

- Acute lympho cytic leukaemia
- Chronic lympho cytic leukaemia
- Acute myelo cytic leukaemia
- Chronic myelo cytic leukaemia

Causes

Radiation – ‘X’ ray, nuclear industry
Exposure to chemicals at work (benzene)
Smoke and Genetic problem

Clinical Feature

Fever, night sweats, headache, bruising, bone or joint pain, enlarged spleen, swelling of lymph nodes prone to get infection, feeling tired and loss of weight and appetite.

Treatment

- 1) Chemotherapy: Adenosine, Vincristine, L-asparaginase. These drugs kill the cancer cells.
- 2) Radiation therapy:
- 3) Stem cell transplant:- Stem cells can rebuild the supply of normal blood cells and boost immune system.

Hypertension

Hypertension is constant high blood pressure that results from regulatory mechanism abnormality or disturbance. It is defined a systolic pressure above 140 mmHg and diastolic pressure above 90mmHg at multiple recording of BP at regular interval.

Types

- 1) Primary Hypertension – There is no cause for the elevation of blood pressure.

- 2) Secondary Hypertension – It is caused by renal, endocrine or central nervous system disorders and from drugs.

Causes/High risk factor of high blood pressure

- Obesity
- Stress and anxiety
- Alcohol consumption
- Excessive intake of salt
- Smoking
- Medical conditions like kidney disease, renal gland disorder, pregnancy, birth control pills, hyper parathyroidism

Signs and Symptoms

- ✓ Fatigue, reduced activity tolerance
- ✓ Dizziness, palpitation, angina and dyspnoea, decreased urine output
- ✓ Severe headache, changes in vision, nosebleed, cerebral haemorrhage in severe hypertension.[

Diagnostic evaluation

- Blood pressure monitoring;
- serum BUN – evaluated
- serum creatinine elevated;
- urinalysis;
- eye examination with ophthalmoscope;
- ECG – Electro Cardio Gram.

Management

The goal of the treatment is to reduce the blood pressure, and prevent the risk of complications.

I Medications

- 1) Diuretics : (eg) Lasix, spironolactone - The action of the drug is to reduce plasma volume and cardiac output and also decrease the peripheral vascular resistance.
- 2) Beta adrenergic blockers (eg) Propranolol, atenolol. The action of this drugs are
 - Reduce peripheral vascular resistance
 - Decrease plasma renin activity and resetting of baro receptor
 - Release of vasodilator prostaglandins
- 3) Calcium Channel blockers – (eg) Nifedipine decrease in the concentration of free intracellular calcium ions results decreased contraction and vasodilatation.
- 4) Angiotensin converting enzyme inhibitors – (e.g.) enalapril, captopril

The action of drug is inhibition of circulating and tissue angiotensin converting enzyme – Increased formation of bradykinin and vasodilatory prostaglandins.

II Education

Educate patients about the Hypertension and its complication and involve their family in the treatment.

- Stress that the treatment to be continued life long
- Encourage them to come to health care centre for regular measurement of blood pressure.
- Insists them follow up visits at interval of 3 months.
- Encourage life style modification.
- Weight Reduction – It has significant affect on lowering B.P. in many people
- DASH - Dietary Approach for Stop Hypertension diet: This diet involves eating several serving of fish week, eating plenty of fruits and vegetables. Increase fiber intake and drink lot of water.
- Restrict the dietary sodium intake – The adult average intake of salt is 15g/day and the restricted intake of salt per day is less than 6 grams.
- Limit their alcohol intake, not more 2 drinks per day
- Exercise regularly at least 30 minutes of aerobic exercise a day.
- Reduce stress, try to avoid things that cause your stress we can do meditation & yoga.

Complication

When blood pressure is not well controlled it will lead to the following complications.

- Bleeding (e.g.) cerebral haemorrhage
- Chronic kidney disease
- Heart attack and heart's failure
- Poor blood supply to the legs
- Stroke

Portal Hypertension

The blood pressure is elevated in the Portal vein and its tributaries. The features of portal hypertension are: ascetics, peritonitis, enlargement of spleen, hepatic coma. It is caused by cirrhosis of liver and hepatic fibrosis.

Pulmonary Hypertension:

The elevated blood pressure in the pulmonary blood vessels due to narrowing of the lumen, which supplied to right ventricle of heart. The pulmonary hypertension leads to right heart failure.

The feature of pulmonary hypertension is shortness of breath, fatigue, dizziness and fainting, swelling in the leg and abdomen, cyanosis. It is caused by drug "fen-phen", liver disease, lung disease, heart disease and thromboembolism.

Heart Attack

The decreased blood flow to the myocardium due to partial or complete block of one of the coronary artery may cause myocardial ischemia. It is known as myocardial infarction (Heart attack).

Causes

Hereditary, post menopausal women, smoking, hypertension, elevated serum triglycerides and cholesterol, DL, obesity excessive intake of saturated fats, sedentary life style, aging (35 to 40 years male), stress and type A personality, use of cocaine and amphetamine drugs.

Clinical manifestations

- Chest pain, palpitation, new onset of murmur, elevated blood pressure,
- Dyspnoea, tachypnoea, pulmonary oedema, nausea and vomiting
- Decreased urinary output, cool, clammy and diaphoretic skin,
- Anxiety, restlessness and altered speech
- Fear with feeling of something wrong with him

Management

- Assessment of patient with chest pain in emergency room as easily as possible start the treatment (within one hour of the onset of symptoms)
- Administer O₂ for 2 – 3 hours for increasing oxygenation of the blood.
- Administer the tab nitro-glycerine sublingually; it cause vasodilatation and relieves chest pain;
- Give tab Aspirin 320 mg stat on the day of acute myocardial infarction. Then 160 mg daily to inhibit platelet aggregation.
- Start thrombolytic therapy within first 6 hours after onset of symptoms. (e.g.) inj. Streptokinase, inj. Heparin
- The action is to dissolve and lysis the thrombus in a coronary artery and allowing blood flow through the coronary artery again.
- Start beta blockers within 12 hours post acute myocardial infarction, if no contraindication of concomitant thrombolytic. The action is to decrease myocardial oxygen demand by reducing heart rate and reduce the size of infarction.

Surgical Management

- Percutaneous transluminal coronary angioplasty (PTCA)
- Coronary artery bypass grafting surgery
- Transmyocardial laser revascularization

Complications: Arrhythmias, heart failure, pericarditis, cardiogenic shock, and rupture of atrium or ventricular septum.

Diseases of nervous system**Nervous system**

Headache is the symptom of pain anywhere in the region of the head or neck. It occurs in migraines (sharp, or throbbing pains), tension-type headaches, and cluster headaches. Frequent headaches can affect relationships and employment.

Primary headaches

Primary headaches are stand-alone illnesses caused directly by the over activity of, or problems with, structures in the head that are pain-sensitive. This includes the blood vessels, muscles, and nerves of the head and neck. They may also result from changes in chemical activity in the brain.

Secondary headaches

Secondary headaches are symptoms that happen when another condition stimulates the pain-sensitive nerves of the head.

Factors can cause secondary headaches. These include:

- alcohol-induced hangover
- brain tumour
- blood clots
- bleeding in or around the brain
- "brain freeze," or ice-cream headaches
- carbon monoxide poisoning
- concussion
- dehydration
- glaucoma
- teeth-grinding at night
- influenza
- overuse of pain medication,
- panic attacks
- stroke

Types

There are different types of headache.

Tension headaches

Tension headaches are the most common form of primary headache. Such headaches normally begin slowly and gradually in the middle of the day. Episodic attacks are usually a few hours in duration, but it can last for several days. The person can feel:

- ☐ as if they have a tight band around the head
- ☐ a constant, dull ache on both sides
- ☐ pain spread to or from the neck

Migraines

A migraine headache may cause a pulsating, throbbing pain usually only on one side of the head. There may be nausea and vomiting, and the person may feel especially sensitive to light or noise. The aching may be accompanied by:

- ☐ blurred vision
- ☐ light-headedness
- ☐ nausea
- ☐ sensory disturbances known as auras

Rebound headaches

Rebound or medication-overuse headaches stem from an excessive use of medication to treat headache symptoms. They are the most common cause of secondary headaches. They usually begin early in the day and persist throughout the day. Rebound headaches can cause:

- ☐ neck pain
- ☐ restlessness
- ☐ a feeling of nasal congestion
- ☐ reduced sleep quality

Cluster headaches

Cluster headaches usually last between 15 minutes and 3 hours, and they occur suddenly once per day up to eight times per day for a period of weeks to months. In between clusters, there may be no headache symptoms, and this headache-free period can last months to years.

The pain caused by cluster headaches is:

- ☐ one-sided
- ☐ severe
- ☐ often described as sharp or burning
- ☐ typically located in or around one eye

The affected area may become red and swollen, the eyelid may droop, and the nasal passage on the affected side may become stuffy and runny.

Thunderclap headaches

A thunderclap headache is often secondary to life-threatening conditions, such as intracerebral haemorrhage, cerebral venous thrombosis, ruptured or unruptured aneurysms, reversible cerebral vasoconstriction syndrome (RVS), meningitis, and pituitary apoplexy. People need to seek medical evaluation immediately.

Diagnosis

- ☐ History collection and physical examination
- ☐ blood tests
- ☐ X-rays
- ☐ brain scans, such as CT and MRI

Treatment

The most common ways of treating headaches are rest and pain relief medication.

Generic pain relief medication is available over the counter (OTC), or doctors can prescribe preventative medication, such as tricyclic antidepressants, serotonin receptor agonists, anti-epileptic drugs, and beta-blockers.

Treatment may include:

- ☐ Rest in a quiet, dark room
- ☐ Hot or cold compresses to your head or neck
- ☐ Massage and small amounts of caffeine
- ☐ Over-the-counter medications such as ibuprofen (Advil, Motrin IB, others), acetaminophen (Tylenol, others), and aspirin
- ☐ Prescription medications including triptans, such as sumatriptan
- ☐ Preventive medications, such as metoprolol, propranolol, amitriptyline,
- ☐ Transcranial magnetic stimulation (therapy using electrical currents to stimulate nerve cells in the brain) for migraine with aura
- ☐ It is important to follow the doctor's advice because overusing pain relief medication can lead to rebound headaches

Alternative treatments

Several alternative forms of treatment for headaches are available, but consult a doctor before beginning any alternative forms of treatment.

Alternative approaches include:

- ☐ acupuncture
- ☐ cognitive behaviour therapy
- ☐ herbal and nutritional health products
- ☐ hypnosis
- ☐ meditation



Acupuncture is an alternative therapy that may help relieve headaches.

Home remedies

A number of steps can be taken to reduce the risk of headaches and to ease the pain if they do occur:

1. Apply a heat pack or ice pack to your head or neck, but avoid extreme temperatures.
2. Avoid stressors, where possible, and develop healthy coping strategies for unavoidable stress.
3. Eat regular meals, taking care to maintain stable blood sugar.

A hot shower can help, although in one rare condition hot water exposure can trigger headaches. Exercising regularly and getting enough rest and regular sleep contributes to overall health and stress reduction.

Back pain

The human back is composed of a complex structure of muscles, ligaments, tendons, disks and bones - the segments of our spine are cushioned with cartilage-like pads called disks. Problems with any of these components can lead to back pain. In some cases of back pain, its cause is never found.



Problems with the spine such as osteoporosis can lead to back pain.

Causes

Strain - the most common causes of back pain are: Strained muscles Strained ligaments and muscle spasm

Things that can lead to strains or spasms include:

- ☐ Lifting something improperly
- ☐ Lifting something that is too heavy
- ☐ The result of an abrupt and awkward movement

Structural problems - the following structural problems may also result in back pain:

- ☐ **Ruptured disks** - each vertebra in our spine is cushioned by disks. If the disk ruptures there will be more pressure on a nerve, resulting in back pain.
- ☐ **Bulging disks** - in much the same way as ruptured disks, a bulging disk can result in more pressure on a nerve.
- ☐ **Sciatica** - a sharp and shooting pain that travels through the buttock and down the back of the leg, caused by a bulging or herniated disk pressing on a nerve.
- ☐ **Arthritis** - patients with osteoarthritis commonly experience problems with the joints in the hips, lower back, knees and hands
- ☐ **Abnormal curvature of the spine**
- ☐ **Osteoporosis.**
- ☐ **Sleep disorders**
- ☐ **Bad mattress** - if a mattress does not support specific parts of the body and keep the spine straight, there is a greater risk of developing back pain.

High risk of developing low back pain:

- ☐ A mentally stressful job
- ☐ Pregnancy - pregnant women are much more likely to get back pain
- ☐ A sedentary lifestyle
- ☐ Age - older adults are more susceptible than young adults or children
- ☐ Anxiety
- ☐ Depression
- ☐ Gender - back pain is more common among females than males
- ☐ Obesity and overweight
- ☐ Smoking
- ☐ Strenuous physical exercise (especially if not done properly)
- ☐ Strenuous physical work.

Signs and symptoms

The main symptom of back pain is an ache or pain anywhere on the back, and sometimes all the way down to the buttocks and legs.

If any of the following signs or symptoms accompanies a back pain, see the doctor immediately. i.e.

- | | |
|--|---|
| <input type="checkbox"/> Weight loss | <input type="checkbox"/> Inflammation (swelling) on the |
| <input type="checkbox"/> Elevated body temperature | back |

- ☐ Persistent back pain
- ☐ Pain down the legs
- ☐ A recent injury, blow or trauma to your back
- ☐ Urinary incontinence
- ☐ Difficulty urinating
- Faecal incontinence –
- ☐ Numbness around the genitals
- ☐ Numbness around the anus
- ☐ Numbness around the buttocks

Diagnosis

- ☐ **X-rays** can show the alignment of the bones and whether the patient has arthritis or broken bones.
- ☐ **MRI or CT scans** - these are good for revealing herniated disks or problems with tissue, tendons, nerves, ligaments, blood vessels, muscles and bones.
- ☐ **Bone scan** - a bone scan may be used for detecting bone tumors or compression fractures caused by brittle bones (osteoporosis). **Electromyography or EMG** - the electrical impulses produced by nerves in response to muscles is measured. This study can confirm nerve compression which may occur with a herniated disk or spinal stenosis (narrowing of the spinal canal).

Treatments

In the vast majority of cases back pain resolves itself without medical help - just with careful attention and home treatment.

Usually back pain is categorized into two types:

- ☐ **Acute** - back pain comes on suddenly and persists for a maximum of three months.
- ☐ **Chronic** - the pain gradually develops over a longer period, lasts for over three months, and causes long-term problems.

Medication - back pain that does not respond well to OTC painkillers may require a prescription NSAID (non-steroidal anti-inflammatory drug). Codeine or hydrocodone - narcotics - may also be prescribed for short periods; they require close monitoring by the doctor.

Physical therapy - the application of heat, ice, ultrasound and electrical stimulation, as well as some muscle-release techniques to the back muscles and soft tissues may help alleviate pain. As the pain subsides the physical therapist may introduce some flexibility and strength exercises for the back and abdominal muscles. Techniques on improving posture may also help.

Cortisone injections - Cortisone is an anti-inflammatory drug; it helps reduce inflammation around the nerve roots. Injections may also be used to numb areas thought to be causing the pain.

Complementary therapies

A large number of patients opt for complementary therapies, as well as conventional treatments. According to the NHS, chiropractic, osteopathy, shiatsu, and acupuncture may help relieve back pain, as well as encouraging the patient to feel relaxed.

- ☐ An osteopath specializes in treating the skeleton and muscles.

- A chiropractor treats joint, muscle and bone problems - the main focus being the spine.
- Shiatsu, also known as finger pressure therapy, is a type of massage where pressure is applied along energy lines in the body. The shiatsu therapist applies pressure with his/her fingers, thumbs and elbows.
- Acupuncture, which originates from China, consists of inserting fine needles and specific points in the body. Acupuncture can help the body release its natural painkillers - endorphins - as well as stimulating nerve and muscle tissue.
- Yoga is a practice that involves specific poses, movements, and breathing exercises. Some forms of yoga may help strengthen the back muscles and improve posture. Care must be taken that exercises do not make back pain worse.
- TENS (Transcutaneous electrical nerve stimulation) - The TENS machine delivers small electric pulses into the body through electrodes that are placed on the skin and it encourages the body to produce endorphins, and may possibly block pain signals returning to the brain.
- **Surgery** - If a patient has a herniated disk surgery may be an option, especially if there is persistent pain and nerve compression which can lead to muscle weakness. Examples of surgical procedures include:
 - **Fusion** - two vertebrae are joined together, with a bone graft inserted between them. The vertebrae are splinted together with metal plates, screws or cages. There is a significantly greater risk for arthritis to subsequently develop in the adjoining vertebrae.
 - **Artificial disk** - an artificial disk is inserted; it replaces the cushion between two vertebrae.
 - **Discectomy** - a portion of a disk may be removed if it is irritating or pressing against a nerve.
 - **Partially removing a vertebra** - a small section of a vertebra may be removed if it is pinching the spinal cord or nerves.

Preventive measures of back pain

- Regular exercise helps build strength as well as keeping your body weight down.
- There are two main types of exercise that people can do to reduce the risk of back pain: **Core-strengthening exercises**- exercises that work the abdominal and back muscles, helping to strengthen muscles that protect the back.
- **Posture when standing** - make sure you have a neutral pelvic position. Stand upright, head facing forward, back straight, and balance your weight evenly on both feet
- **Posture when sitting** - a good seat should have good back support and arm rests for working to keep the spine straight.
- **When Lifting things** keep your back as straight as you can, keeping your feet apart with one leg slightly forward so you can maintain balance. Bend only at the knees, hold the weight close to your body, and straighten the legs while changing the position of your back as little as possible.
- Do not lift and twist at the same time.
- While moving the object, it is good for the back to push things across the floor, by using leg strength, rather than pulling them.

- ☐ Wear flat shoes place less of a strain on the back than heels shoes.
- ☐ Give proper support to the back while driving.
- ☐ Use the firm mattress that keeps your spine straight, while at the same time supporting the weight of the shoulders and buttocks.

Convulsions:

A seizure is an abnormal electrical impulse in the brain that interrupts normal function

Cause

Birth trauma, Anoxia, meningitis, encephalitis, ingestion of toxins, brain tumours, head injury, Hypoglycaemia, Hyperparathyroidism, cardio vascular accident.

Stages of Seizures:

- Prodromal phase: Activity/signs which provide a seizures
- Aural phase: With sensory warning, preliminary symptoms of fits.
- Ictal phase: Tonic and clonic contractions of voluntary muscles – seizures presents.
- Post Ictal Phase: Period of recovery after seizures.

Clinical Manifestations

Partial Seizures: It is a seizures that involves a small region of the brain. versive head or eye movement are of the head or eyes to one side during a partial seizure.

Generalized Seizure: A generalized seizure involves large bilateral cortical areas. It is non-specific origin and affect the entire brain simultaneously.

Complex Partial Seizures: The person either remains motionless or moves automatically but inappropriately for time and place or irritability, fear, angry and elation experienced by the patient.

- ☐ There may be intensive rigidity of the entire body followed by jerky alterations of muscle relaxation and contraction.
- ☐ Tongue is chewed
- ☐ Incontinent of urine and stool
- Convulsive movement for 1 – 2 minutes
- ☐ Confused and hard to arouse
- ☐ Headache or sore muscles
- ☐ Sleep many hours.

Post Ictal State: It is a period of somnolence and confusion that occurs after a complex partial or generalized convulsive seizures.

Post Ictal focal neurological abnormalities are transient neurological abnormalities that occur after focal seizures and are related to the site of seizures onset. (e.g.) Post ictal hemiparesis, aphasia, and unilateral extensor plantar reflex.

Management:

- ☐ Phenytoin, carbamazepine, phenobarbital and primidone for generalized tonic clonic seizures and complex partial seizures.
- ☐ IV fosophenytoin is an alternative to phenytoin. It is effective with a long half life and minimal CNS depression.
- ☐ IV diazepam, lorazepam for status epileptics administration of dextrose, when it is caused by hypoglycemia.

- ☐ Administer thiamine if a chronic alcoholism or withdrawal.

Patient Education

- ☐ Wear ID card while going outside alone.
- ☐ The person should be advised to not operate a motor vehicle, dangerous machinery or participate in activity where he may chance to get injury.
- ☐ The person should know the dose, name and side effects of all his anticonvulsant medications.

Cerebro vascular Accident

A sudden loss of brain function resulting from a disruption of the blood supply to a part of the brain.

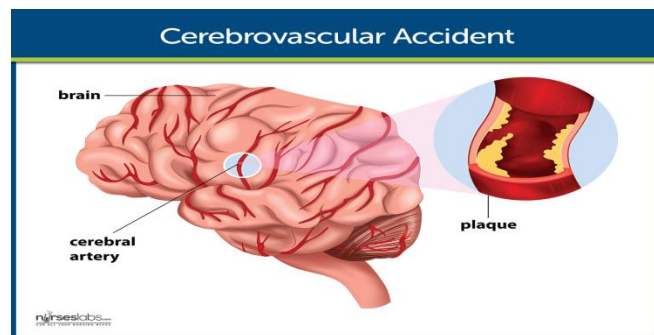
Causes

Cerebral Thrombosis – a blood clot within a blood vessel of the brain or neck

Cerebral Embolism – a blood clot or other material carried to the brain from another part of the body.

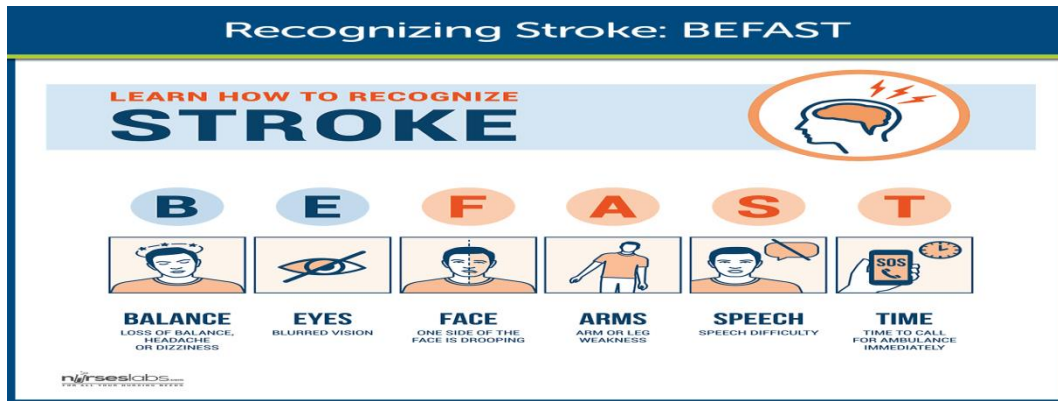
Cerebral Ischemia – decrease of blood flow to an area of the brain

Cerebral haemorrhage - rupture of a cerebral blood vessel with bleeding into the brain tissue or spaces surrounding the brain.



Clinical Manifestation

Stroke can cause a wide variety of neurologic deficits, depending on the location of the lesion, the size of the area of inadequate perfusion, and the amount of the collateral blood flow.



Motor Loss

- ☐ Hemiplegia, hemiparesis
- ☐ Flaccid paralysis and loss of or decrease in the deep tendon reflexes (initial clinical feature) followed by (after 48 hours) reappearance of deep reflexes and abnormally increased muscle tone (spasticity)
- ☐ Limb weakness (unilateral)
- ☐ Speech difficulty
- ☐ Ptosis
- ☐ Altered level of consciousness
- ☐ Hemiparesis
- ☐ Aphasia
- ☐ Amnesia
- ☐ Ataxia

Communication Loss

- ☐ Dysarthria (difficulty speaking)
- ☐ Dysphasia (impaired speech) or aphasia (loss of speech)
- ☐ Apraxia (inability to perform a previously learned action)

Perceptual Disturbances and Sensory Loss

- ☐ Visual-perceptual dysfunctions (homonymous hemianopia [loss of half of the visual field])
- ☐ Disturbances in visual-spatial relations (perceiving the relation of two or more objects in spatial areas), frequently seen in patients with right hemispheric damage
- ☐ Sensory losses: slight impairment of touch or more severe with loss of proprioception; difficulty in interrupting visual, tactile, and auditory stimuli

Impaired Cognitive and Psychological Effects

- ☐ **Frontal lobe damage:** Learning capacity, memory, or other higher cortical intellectual functions may be impaired. Such dysfunction may be reflected in a limited attention span, difficulties in comprehension, forgetfulness, and lack of motivation.
- ☐ Depression, other psychological problems: emotional stability, hostility, frustration, resentment, and lack of cooperation.

Bladder Dysfunction: After stroke the patient may have transient urinary incontinence due to confusion, inability to communicate his needs and inability to use bedpan/urinal due to impaired motor loss.

Management:

- ☐ Healthy diet
- ☐ Weight control
- ☐ Regular exercise
- ☐ Cessation of smoking
- ☐ Avoiding risk factors

Drug Therapy:

- ☐ Control of Hypertension
- ☐ Treating hypoglycaemia

Thrombolytic therapy - Urokinase or streptokinase within the first 3 hours after onset of symptoms to dissolve the clot, remove occlusion and restore blood flow, thus minimizing cerebral damage.

Anticoagulant therapy - to maintain vessel patency and prevent further clot formation.

Anti-platelet agents - aspects to reduce risk of platelet aggregation and subsequent clot formation

Anticonvulsant drugs – Phenytoin for prophylaxis for seizures

Administering crystalloids or colloids -IV fluids for treating Haemorrhage type of stroke for treating hypovolemia

- ☐ Mannitol is given to control/decrease intracranial pressure.
- ☐ Corticosteroid helps to reduce cerebral inflammation.
- ☐ A patent airway and circulation to the brain are maintained.
- ☐ Adequate oxygenation of blood to the brain is necessary to minimize cerebral damage.
- ☐ The patient is placed in a lateral or semi prone position with the head of the bed slightly elevated to lower cerebral venous pressure.
- ☐ Endotracheal intubation and mechanical ventilations are necessary for the patient with massive stroke, because respiratory arrest is usually a life-threatening situation.
- ☐ Monitor the patient for pulmonary complication.
- ☐ Assist the patient in maintaining good body alignment and prevent compressive neuropathies especially of the ulnar and peroneal nerves.
- ☐ Wear high-top sneakers. Care should be employed to prevent pressure areas on the heels, ankles and back.
- ☐ Flexor muscles are stronger than extensor muscles, it may be necessary to apply a posterior splint at night to prevent flexion of the affected extremity.
- ☐ Apply trochanter roll to prevent external rotation at the hip joint.
- ☐ Change the position every second hourly.

- ☐ The affected extremities are exercised passively and put through a full range of motion four or five times a day to maintain joint mobility, to regain motor control, to prevent development of a contracture in the paralyzed extremity to prevent further deterioration of the neuro muscular system.
- ☐ Assist the patient to get out of bed. To develop sitting balance, the head of the bed is raised to an upright position and the patient is instructed to hold the bed rails, with the unaffected hand.
- The patient is assisted to a standing position by the nurse supporting his lower back with her hands and positioning her knees on the outside of the patient's knees. This gives the patient maximum support in the standing position and prevents his knees from backing. The patient should be reminded to lean forward when he comes from a sitting to a standing position. The patient's arms must be left free for balance and support.
- ☐ The patient is usually ready to walk as soon as standing balance is achieved. Parallel bars are useful when the patient first starts for walk.
- ☐ A flaccid shoulder joint may be overstretched by the use of excessive force in turning the patient or from over strenuous arm and shoulder movement, to prevent shoulder pain.
- ☐ As soon as the patient is able to sit up, he is encouraged to assist his personal hygiene and activities of daily living.
- ☐ Encourage the patient to overcome the cognitive problems, by giving positive feedback and conveys an attitude of confidence and hopefulness.
- To improve communication by – give written copy of schedule of speech exercise.
- ☐ Keep surrounding the patient with familiar objects and reassure by caring the patient
- ☐ Use of gestures may enhance comprehension of communication
- Family coping is facilitated by involving others in the patient's care, stress management techniques and maintenance of personal health.
- ☐ The family is advised that the patient will tire easily, will become irritable and upset by small events and is likely to show less interest in things.
- ☐ Depression is a common and serious problem in the post stroke patient. Counsel the patient and family members for overcome the depressive mood during rehabilitation program.

Care of unconscious

Definition

Unconsciousness A State of the mind in which The individuals Not Able To respond to express his needs. Unconsciousness is a lack of awareness of one's environment and inability to respond to external stimuli,

Causes of unconsciousness:-

- ☐ Shock, Renal failure, Liver failure, Heat stroke, Head injury, Cerebro vascular accident (CVA), infections e.g: meningitis, encephalitis,
- ☐ Diabetes mellitus e.g.: hyperglycaemia, hypoglycaemia,
- ☐ Anaesthesia, Poisons, e.g. Endosulphon, organo phosphorus, Drugs,

- ☐ Asphyxia, Alcohols, Carbon monoxide gas,
- ☐ Epilepsy, Brain tumours,
- ☐ Cardiovascular problems e.g. Heart attack,

Nursing Management of unconsciousness patient:-

Assess for Glasgow coma scale to know the patient's level of consciousness, before doing the following measures

- a. Loosen clothing at Neck, Chest and Waist.
 - b. If the weather is cold wrap the blankets around the patient body.
 - c. If breathing has stopped or about to stop, turn casualty into the required posture and start CPR (artificial respiration).
 - d. Breathing may be noisy or quiet, if not noisy, let the casualty lie on his back. Raise the shoulders slightly by a pad and turn the head to one side.
 - e. Watch for some time. If breathing becomes difficult, or gets obstructed, change the posture to easy breathing.
 - f. If breathing is noisy (i.e. the lungs are filled with secretions and the air passing through makes a bubbling noise) turn casualty to three-quarter-prone position and support in this position with pads, (in a stretcher case, raise the foot of stretcher so that lung secretions drain easily).
 - g. See that there is a free supply of fresh air and that the air passages are free.
 - h. Take the casualty away from harmful gases, if any; if inside a room, open doors and windows.
- Remove false teeth.
- i. Apply specific treatment for the cause of unconsciousness.
 - j. Watch continuously for any changes in the condition, do not leave the casualty until he is passed on to medical hands.
 - k. No food or drinks should be given in this condition.
 - l. It is best to send the casualty to a healthier place on a stretcher.
 - m. On return to consciousness, wet the lips with water.
 - n. If there are no thoracic or abdominal injuries, sips of water also can be given.

Nursing care includes**Air way:-**

Check for airway; an adequate airway must be maintained all the time,
Clothes must be loosened to allow easy movements of abdomen and chest
Sometimes frequent suction may be required for removing any secretion in the pharynx.

Position of the patient:-

Patient must be nursed in the left lateral position or Sims position, or prone position

Observation and charting,

Observe airway; any secretions, if present, remove secretions,

Monitor vitals e.g. Temperature, pulse, respiration will be recorded every 4-6 hours,

Monitor input and output

Urine analysis chart will be maintained for who are suffering with renal failure, Diabetic mellitus,

Hygiene:- It includes Oral care, Bed bath, Skin care and Protect from flies and mosquitoes,

Care of pressure sore:-

The bed linen must keep clean and dry,
Use safety devices like water bed, air bed, pillows, side rails,

Nutrition:

Maintain electrolyte balance and water balance

Give parenteral line fluids and nutrition e.g. : TPN (Total parenteral nutrition), Or Naso gastric tube feeding e.g. : high protein liquid diet, fruit juices, water,

Elimination:-

Monitor Foley's catheter e.g.: urine colour and 24 hours volume,

Check for abdominal distension,

Check for urinary retention,

If the patient is constipated a glycerine suppository may be ordered by the physician,

Note:-

Do not live unconsciousness patient,

Do not give food and drinks.

Diabetes Mellitus

Diabetes mellitus is heterogeneous group of disorders characterized by elevation in the level of glucose in the blood.

In diabetes mellitus is occurred due to decrease or absence of insulin production by the pancreas; decrease in the body's ability to respond to insulin. The action of insulin are promotes glucose uptake by target cells, prevents fat and glycogen breakdown; inhibits gluconeogenesis and increases protein synthesis. The insulin is produced by the pancreatic beta cells in the islets of Langerhans.

Types of Diabetes

The major classifications of diabetes are –

Type I: Insulin dependent diabetes mellitus (IDDM). In this type of diabetes, inadequate amount of insulin are produced by pancreas, resulting in the need for insulin injections to control the blood glucose.

Type II: Non Insulin Dependent Diabetes Mellitus (NIDDM). In this type of diabetes, the insulin secretion is adequate but it is not utilized properly by the cells. The elevated blood glucose is controlled by diet and supplemented with oral hypoglycaemic agents.

Gestational Diabetes: The elevation of blood glucose during second and third trimester of pregnancy is known as gestational diabetes mellitus.

Causes

- Genetic factor – people with HLA (Human Leukocyte Antigens)
- Immunologic factor – auto immune antibodies against islets cells.
- Environmental factors – viruses or toxins may precipitate autoimmune process.
- Insulin resistance tends to occur with age over 65 years
- Obesity

- Family history
- Ethnic group

Signs and Symptoms:

- 3 'P' - Polyuria, Polydipsia, Polyphagia,
- ☐ Sudden weight loss, nausea, vomiting and abnormal pain in type I diabetes.
- ☐ Fatigue, weaken,
- ☐ Recurrent infection, recurrent vaginal itching/infection
- ☐ Prolonged wound healing,
- ☐ Visual changes
- ☐ Tingling or numbness in hand.

Difference between Type-I diabetes and Type-II diabetes:

Type – I DM	Type – II DM
Insulin dependent diabetes mellitus	Non insulin dependent diabetes mellitus
Onset at young age	Onset age above 40 years
Little or no endogenous insulin	Decrease in endogenous insulin
Need insulin to preserve life	Oral hypoglycemic agents may improve blood glucose
Ketosis prone when insulin is absent	Ketosis rare, hyperosmolar nonketotic syndrome

Diagnostic evaluation

- History collection and physical examination
- Fasting blood glucose level
- Random blood glucose level
- Glucose tolerance test
- Urine analysis
- Fundoscopic examination
- HbA1c
- ECG & Doppler scan

Management

The main goal of the treatment in diabetes is to try to normalize insulin activity and blood glucose levels in an attempt to reduce vascular and neuropathic complications. There are five components of management of diabetes.

- Diet
- Exercise
- Monitoring
- Medication and

- Education

Diet:

- ✓ In weight maintenance diet is to multiply ideal weight by 28 cal/kg for weight reduction a 15-20 cal/kg of patient ideal weight.
- ✓ If a patient is obese, control weight/losing weight and recommended a dietitian or a weight modification program to help the patient reach goal.
- ✓ Eat consistent, well balanced diet that is high in fiber, low in saturated fat and low in concentrated sweets.
- ✓ A healthy diet also helps to keep blood sugar at a relatively even level and avoids excessively low or high blood sugar levels which can be dangerous and even life threatening.

Exercise:

- ✓ Regular exercise in any form can help to reduce the risk of developing diabetes.
- ✓ 20 minutes of walking three times/week.
- ✓ If patient has complication of diabetes (such as age, kidney or neuro problem) they may be limited both in type of exercise and amount of exercise they can safely do without worsening their condition.
- ✓ In obese persons with type-II diabetes exercise in addition to dietary management both improves glucose metabolism and enhances loss of body fat.
- ✓ Persons with diabetes should be taught to exercise at the same time and in the same amount each day.
- ✓ Regular daily exercise is good for controlling blood glucose.
- ✓ Encourage slow, gradual exercise in the length of the exercise.

Self monitoring of blood glucose:

Check blood glucose level frequent at least before meals and at bed time and record the result in book.

The recording book should also include insulin or oral medication doses and times, when and what the patient ate, when and for how long they exercised and any significant events of the day such as high or low blood glucose levels and how they treated the problem.

People require SMBG: Unstable diabetes, a tendency for severe ketosis or hypoglycaemia, abnormal renal threshold.

A glucometer could use for the one prick testing of blood glucose of the patient with minimal injury and less blood requirement

**Urine testing for glucose:**

This procedure involves applying urine to a reagent strip or tablet and matching colors on the strip with a color chart. The results are expressed as on a scale of 1+ to 4+.

Traditional method of urine testing



Neg.		+/-	+	++	+++	++++
0	g/L	Traces	Faible	Moyen	10	Fort
0		1.0	2.5	5		≥ 20
0	mmol/L	1/10%	1/4%	1/2%	1%	≥ 2%
	mg/dL	5.5	14	28	56	≥ 111
		100	250	500	1000	≥ 2000

Uristic Method Of Urine Testing

Medication

Insulin therapy:

Type	Onset	Peak	Duration
Rapid acting insulin	5-15 min	45-60 min	3-4 hour
Short acting insulin regular humulin N	½-1 hour	2-3 hours	3-6 hours
Intermediate acting insulin NPH humulin N	2-4 hours	4-10 hours	10-16 hours
Long acting insulin	1-2 hours	No pronounced peak	24 hours

Self administration of Insulin

Insulin syringe:

The classic injection device is an insulin syringe. The plastic, disposable syringes currently are available in three sizes i.e. 30, 50 or 100 units of insulin. The needles are fine (up to 31 gauge) with lengths ranging from 3/16th of an inch for infants, to ½ inch or more for adults. The insulin is injected into the subcutaneous tissue just under the skin.

Wash hands with soap and warm water and dry them with a clean towel.

Prepare the Insulin and Syringe

- ☐ Remove the plastic cap from the insulin bottle.
- ☐ Roll the bottle of insulin between your hands two to three times to mix the insulin. Do not shake the bottle, as air bubbles can form and affect the amount of insulin withdrawn.
- ☐ Wipe off the rubber part on the top of the insulin bottle with an alcohol pad or cotton ball dampened with alcohol.
- ☐ Set the insulin bottle nearby on a flat surface.
- ☐ Remove the cap from the needle.
- ☐ Draw the required number of units of air into the syringe by pulling the plunger back.
- ☐ Insert the needle into the rubber stopper of the insulin bottle. Push the plunger down to inject air into the bottle
- ☐ Turn the bottle and syringe upside-down. Be sure the insulin covers the needle.
- ☐ Pull back on the plunger to the required number of units
- ☐ Recheck the dose and add more insulin to the syringe if necessary.
- ☐ Remove the needle from the insulin bottle. Carefully replace the cap on the needle.

Site of Insulin injection: The four main areas for injection of insulin are the abdomen, arms, thighs and legs.



Insulin administered to the patient subcutaneously – The technique used for holding the skin and inserting the needle must ensure that the insulin is injected in to the subcutaneous tissue.

- ☐ Injecting insulin at room temperature.
- ☐ Making sure no air bubbles remain in the syringe before injection.
- ☐ Waiting until topical alcohol (if used) has evaporated completely before injection.
- ☐ Keeping muscles in the injection area relaxed, not tense, when injecting.
- ☐ Penetrating the skin quickly.
- ☐ Not changing direction of the needle during insertion or withdrawal.
- ☐ Not reusing needles.

Adverse effect of Insulin:

- Local allergic reaction
- Generalized urticaria
- Insulin lipodystrophy
- Insulin resistance

Oral hypoglycaemic agents

Sulfonylureas e.g. glipizide

- It stimulates release of insulin from pancreatic islets.
- Decrease glycogenesis and glyconeogenesis
- It enhance cellular sensitivity to insulin

Meglitinides e.g. repaglinide

- It stimulates a rapid and short level release of insulin from the pancreas.

Biguanides e.g. metformin

- It decrease the rate of hepatic glucose production
 - It augments glucose uptake by tissues.
- ∞ Glycosidase inhibitors e.g. acarbose
- It delays absorption of glucose from GII tract.

Education:

It is a chronic illness requiring a lifetime of special self management behaviours.

Because diet, physical activity, physical and emotional stress can affect diabetic control.

Teach the patient during the hospitalization, may be the only opportunity, the patient has for learning skills of self management and avoidance of diabetic complications.

Care of Foot

There are many things you can do to keep your feet healthy.

- ☐ Take care of your diabetes by maintaining normal glucose level
- ☐ Check your feet every day. Look at your bare feet for red spots, cuts, swelling, and blisters. If you cannot see the bottoms of your feet, use a mirror or ask someone for help.
- ☐ Plan daily physical activity as program without getting exertion
- ☐ Wash your feet every day. Dry them carefully, especially between the toes.
- ☐ Keep the skin soft and smooth by rubbing a skin lotion over the tops and bottoms of feet.

- ☐ Trim the toenails straight across and file the edges with nail file.
- ☐ Never walk barefoot. Wear comfortable shoes that fit well and protect your feet. Check inside your shoes before wearing them.
- ☐ Protect your feet from hot and cold. Wear shoes at the beach or on hot pavement. Don't put your feet into hot water.
- ☐ Enhance the blood flow to feet i.e. Put your feet up when sitting. Don't cross your legs for long periods of time. Don't smoke.

Care of skin

- ☐ Wash with a mild soap, rinse and dry thoroughly in every part of body. Use a moisturizer, but not between your toes.
- ☐ Avoid very hot baths and showers, which can dry the skin.
- ☐ Extended exposure to water softens the feet and makes your skin more prone to being pierced.
- ☐ Inspect your body for red spots, blisters and sores that could lead to infection.
- ☐ Treat cuts right away. Wash minor cuts with soap and water.
- ☐ Keep your blood glucose levels as close to normal as possible.
- ☐ Drink plenty of fluids, like water and caffeine-free, sugar-free drinks, to keep your skin hydrated.
- ☐ Eat foods rich in omega-3 fatty acids, which nourish the skin.

Complications of Diabetes Mellitus

Acute complications:

- ❖ Diabetic ketoacidosis
- ❖ Non ketotic hyperosmolar syndrome
- ❖ Hypoglycaemia

Chronic complications:

- ❖ Retinopathy
- ❖ Nephropathy
- ❖ Neuropathy

Diabetic ketoacidosis (DKA)

DKA occurs when the body has insufficient insulin to allow enough glucose to enter cells, and so the body starts to burn fat from the store and producing acidic ketone bodies. A high level of ketone bodies in the blood can cause diabetic ketoacidosis.

Causes and risk factors

DKA is caused by the body having too little insulin to allow cells to take in glucose for energy.

Risk factors for diabetic ketoacidosis

- ☐ Having blood glucose levels consistently over 15 Mmol/L
- ☐ Missing insulin injections
- ☐ Faulty insulin pen or insulin pump function
- ☐ As a result of illness or infections
- ☐ High or prolonged levels of stress
- ☐ Excessive alcohol consumption

- ☐ Illegal drug use

Signs and Symptoms

Specific symptoms of diabetic ketoacidosis include:

- ☐ Vomiting
- ☐ Dehydration
- ☐ Fruity smell on the breath
- ☐ Deep laboured breathing (Kussmaul breathing) or hyperventilation
- ☐ Rapid heartbeat
- ☐ Confusion and disorientation
- ☐ Coma

Symptoms of diabetic ketoacidosis usually evolve over a 24 hour period if blood glucose levels become and remain too high (hyperglycaemia).

Treatment

- ✓ The primary treatment of DKA is with intravenous fluids and insulin.
- ✓ Depending on the severity, insulin may be given intravenously or by injection under the skin.
- ✓ Usually potassium is also needed to prevent the development of low blood potassium.
- ✓ Check the blood sugar and potassium levels till the recovery
- ✓ Antibiotics may be required in those with an underlying infection.

Thyroid disorders

Thyroid disorders are conditions that affect the thyroid gland, a butterfly-shaped gland in the front of the neck. The thyroid has important roles to regulate numerous metabolic processes throughout the body. Different types of thyroid disorders affect either its structure or function.

There are specific kinds of thyroid disorders that includes:

- Hypothyroidism
- Hyperthyroidism
- Goiter
- Thyroid nodules
- Thyroid cancer

Hypothyroidism

Hypothyroidism results from the thyroid gland producing an insufficient amount of thyroid hormone. It can develop from problems within the thyroid gland, pituitary gland, or hypothalamus. **Causes** of hypothyroidism include: Hashimoto's thyroiditis: In this autoimmune **disorder**, the body attacks **thyroid** tissue.

Common causes of hypothyroidism

- ☐ Hashimoto's thyroiditis (an autoimmune condition that causes inflammation of the thyroid gland)
- ☐ Thyroid hormone resistance
- ☐ Other types of thyroiditis (inflammation of the thyroid), such as acute thyroiditis and postpartum thyroiditis

Signs and symptoms

- ☐ Fatigue
- ☐ Poor concentration or feeling mentally "foggy"
- ☐ Dry skin
- ☐ Constipation
- ☐ Feeling cold
- ☐ Fluid retention
- ☐ Muscle and joint aches
- ☐ Depression
- ☐ Prolonged or excessive menstrual bleeding in women

Treatment

Treatment for hypothyroidism is daily use of the synthetic thyroid hormone levothyroxine (Thyronorm, eltroxin). This oral medication restores adequate hormone levels, reversing the signs and symptoms of hypothyroidism.

Hyperthyroidism

Hyperthyroidism describes excessive production of thyroid hormone, a less common condition than hypothyroidism. Graves' disease is an auto-immune condition and is the commonest cause of an **overactive** thyroid gland.

Some of the most common causes of hyperthyroidism are:

- ☐ Graves' disease
- ☐ Toxic multi nodular goitre
- ☐ Thyroid nodules that over express thyroid hormone (known as "hot" nodules)
- ☐ Excessive iodine consumption

Signs and symptoms

Symptoms of hyperthyroidism usually relate to increased metabolism.

- ☐ Tremor
- ☐ Nervousness
- ☐ Fast heart rate
- ☐ Fatigue
- ☐ Intolerance for heat
- ☐ Increase in bowel movements
- ☐ Increased sweating
- ☐ Concentration problems
- ☐ Unintentional weight loss

Treatment

The treatment depends on your age, physical condition, the underlying cause of the hyperthyroidism, personal preference and the severity of the disorder:

Radioactive iodine. Taken by mouth, radioactive iodine is absorbed by thyroid gland, where it causes the gland to shrink and symptoms to subside, usually within three to six months. Because this treatment causes thyroid activity to slow considerably, causing the thyroid gland to be underactive.

Anti-thyroid medications. These medications gradually reduce symptoms of hyperthyroidism by preventing your thyroid gland from producing excess amounts of hormones. They include propylthiouracil and methimazole (Tapazole). Symptoms usually begin to improve in six to 12 weeks, but treatment with anti-thyroid medications typically continues at least a year and often longer

Beta blockers: These drugs won't reduce thyroid levels, but they can reduce a rapid heart rate, prevent palpitations and treat high blood pressure.

Surgery: Surgical removal of thyroid gland either partially or totally is known as thyroidectomy. The main complication of this surgery is damage to vocal cords and parathyroid glands.

Conclusion

All people are susceptible for disease based on their immunity status, dietary pattern and lifestyle. The common respiratory problems like flu occur in the winter season and mostly they are seasonal diseases. If indigestion and vomiting is not treated at early, it will lead to dehydration. Elimination problem identification is essential to prevent renal failure and maintain the PH level of our body. Early diagnosis and correction of Anaemia helps in preventing heart failure. Every person need to practice regular exercise good eating habits regulate the blood pressure and also prevent bad cholesterol formation in the blood vessel as well as heart attack. Neurological disorders are complex one, which require skill in caring patient to recover the patient neurological deficit and provide the rehabilitation measure. The current problem of the adult today is diabetes mellitus which should be managed by exercise, diet, self monitoring of glucose level, drugs and patient education. Over the entire multipurpose health worker female need to aware about disease sign and symptoms and its management. The knowledge of managing and caring the patient with different health problems helps to prevent complications and impart knowledge to the people by proving health education in community

Essay questions

1. Explain about tuberculosis and its preventive measures
2. What pneumonia and write the types and management of pneumonia
3. Describe management of back ache
4. Explain causes ,management and prevention of vomiting
5. Describe in detail about hyper tension and its management
6. Explain the care of unconscious patient
7. Write the types of diabetes mellitus and explain about self administration of insulin administration
8. What are the nursing measures help to prevent urinary retention

Short answer questions

1. What is Graves's disease?
2. What are the sign and symptoms of diabetes mellitus?
3. What are causes of diabetic keto acidosis?
4. Enlist any four points of foot care in diabetic patient
5. List the types of head ache
6. Write the causes of back ache
7. What are the signs and symptoms of stroke?

8. What are the types of cerebral vascular accident?
9. What is convulsion?
10. What are the stages of convulsions?
11. What are the drugs used in convulsion
12. What are the clinical features of the hypothyroidism?
13. What is urge incontinence?
14. List the types of anaemia
15. What are the causes of constipation?
16. What is sinusitis?
17. What is tonsillitis?
18. What are the complications of tonsillectomy?
19. What are the signs and symptoms of cold?
20. Define fever
21. List the types of fever
22. What are factors affecting respiration
23. List the sites checking pulse
24. Write the conversion formula of centigrade to Fahrenheit
25. List the types of thermometer

UNIT-VIII OPERATION THEATRE NURSING

Structure

- Introduction
- Structure of O.T
- Supplies and equipment of the O.T
- Functions of scrub nurse and circulatory nurse
- Pre and post operative care of a patient posted for surgery

Objectives

After completion of the unit, the students are able to

- Lay out the physical structure of the operation theatre
- List the supplies and equipment of the operation theatre
- Describe the functions of the scrub nurse and circulatory nurse
- Explain the pre and post operative care of patient with surgery

Introduction

The hospital has different wards and departments to treat the patient ailments. The minor health problems are treated in the outpatient department itself. The medical problems treated in the medical wards, acute medical intensive care units depend upon the severity of patient conditions. But some of the patient problems are not able to treat with medicine only; it requires surgery and other kind of therapy also. The surgical procedure need to done under special zone with the team health care members, i.e. surgeon, anesthetist, staff nurse, O.T. technician, nursing orderly and stretcher boy. This area maintained with highly sterile by following policy of the operation theatre

Structure of Operation theatre

Operation theatre is the place in which surgical operations and diagnostic procedures are carried out. It consists of one, two or more operating rooms depending upon the number and type of operation done in the hospital

I. The design of operation theatre

The design of operation theatre must provide maximum facilities, control of infection and provide safe environment for the patient and the staff. It is advisable to have a planning team for the theatre consisting of Hospital Superintendent, Nursing Superintendent, Architect and Engineer. While planning for the operation theatre following aspects should be kept in mind.

1. Scope of service to be provided and estimated work load
2. Specialties to be included
3. The theatre usually has **four main zones**. They are :-
 - ❖ **Entrance zone:** This area includes entrance, reception, patient transfer area, staff changing room, departmental room, waste-bin area and offices

- ❖ **Limited access zone:** This area includes post anesthesia recovery area, staff rest rooms, some offices, special storage room and the exit area to each operation room
- ❖ **Restricted access zone:** It is limited to the persons working in the operating room, and includes anesthesia room, scrub room, preparation and supply room. Only those who are working inside the theatre are allowed to be in this area.
- ❖ **Operating zone:** Minimum persons are allowed in the operating zone to decrease infection.

Construction of the theatre walls, ceilings and floors

The walls, ceiling and floors are made up of materials which should withstand wet cleaning and chemical treatment. It should be made up of light color, pale blue or green is suitable. There should not be any cracks. Floors should not have any drains and gulleys. There should be no shelves. There should be provision for fire escape.

Lighting

Normal light is providing by high level windows, black out the windows. If the main light fails provision should be made for emergency light. Provide florescent light in general area. Provide ceiling mounted light which should be easy to move in all directions. Dome light should be provided with removable sterilized handle. There should be earth line to electrical points.

Ventilation

The main function of ventilation in operation theatre is as follows:

- a) To control the temperature and humidity of the operating room.
- b) To reduce contamination by air borne micro organism and expired anesthetic gases
- c) To provide air movement within the operation room to minimize transfer of air borne micro organism from less clean to clean area.
- d) The air conditioning should be able to maintain internal temperature. The control of adjusting of temperatures should be in the operation theatre itself.

Disposal of waste

Soiled dressing and linen is disposed in a bag. Disposal bag is sent out of theatre after instruments are checked. Disposal of operated organ or parts is done as per the policy of the hospital.

Post anesthesia recovery room

Immediately after surgery the patient shifted here for observation for one hour before shifting to the intensive care unit or post operative ward, to assess the patient's vital functions and complications of patients with recovery /any bleeding from surgical site.

Before returning to the ward patients are sent to this room. It should be closed to reception and transfer area. There should be two beds for each operation room. Room should contain oxygen supply, electrical sockets, anesthesia trolley and emergency equipment. There should be space at the head end for the anesthetist to work.

Design operation theatre in such a way that entry is at one end and exit at other. Staff should have access to changing area from outside. Patient enters through reception area. Lounges, stock room and linen room are located outside the operation theatre.

Supplies and equipment of the O.T

Furniture, equipment and linen needed in the theatre

Changing room and dressing room require cupboards or racks to keep the personal belongings of male and female staff. There should be tables and chairs to sit and relax. It is provided with bins containing theatre gowns, caps, rubber slippers and masks.

Anesthetic room

It is provided with bed, anesthesia trolley, emergency drug trolley, suction and oxygen.

Scrub room

It contains small steam sterilizer to meet the needs of the operation room. This unit contains refrigerator for blood and medication. Hot plate for saline is located in scrub room. Requisition forms, stationery and records are kept here. Separate space is located in scrub room for hand washing where hand brush, soaps and towels are provided for the scrub.

Storage room It is provided with cupboards and racks to keep equipment, linen and extra tables.

Utility room It is provided with washer, sterilizer, sinks, cupboards and all necessary aids for cleaning.

Instruments and supply room

This room contains instruments sets, basin sets, trays and other supplies. Packing and wrapping of equipment and linen is done in this room. The room contains cupboards in which all clean instruments not needed for wrapping are stored. It keeps stock of supplies.

Sterile supply room

It is provided with shelves and cupboards. All sterile supplies such as gauze, gloves and dressing material are kept here.

Recovery room

It is provided with beds, patient lockers and trolley with I.V. sets, solutions, emergency drugs, suction apparatus, oxygen. A tracheotomy tray, CPR tray, bronchoscope tray, pace maker, mechanical ventilators, monitors and defibrillators are also available here. One bed per operating room is provided plus one bed for each four operating room.

Recovery room is provided with all suction and oxygen outlets, electrical sockets and outlets for machines, call system and telephones, refrigerator for blood, private rooms for patient on the danger list. Office with sink and running water, cupboards, storage space utility room and air conditioning are provided.

Operation room

It is provided with operation table stool for surgeon and anesthetist to sit. Instrument trolley, emergency drug trolley and anesthesia trolley, I.V. stands, sterile gowns and glove table are present. The room has table with sterile equipment, gauze, cotton, bins, B.P apparatus stand, suction apparatus, defibrillator and ventilators.

Instruments

Content of mayo stand

Towel clips, sponges, straight and curved scissors, BP handle, skin towel, needle holder, Allis clamps, toothed and non toothed thumb dissecting forceps, kellys clamps, curved artery forceps and needle holder hemostat material.

Emergency Drug Trolley

Emergency drug trolley is replenished everyday and kept in important areas for use, content of the emergency drug trolley is

- Airways
- Intubation tray- endo-tracheal tube with different size, laryngo scope, 10ml syringe, ambu bag, Oxygen connections and mask
- Suction tube, catheters and pump
- Gastric tubes
- Tongue depressors
- Defibrillators with electrodes
- Intra cath, I.V sets, I.V. fluids (5% dextrose, normal saline, Ringer lactate and haemocoal), three way cannula.
- Monitors
- Sterile gloves
- Disposal syringes (2ml, 5ml, 10ml, 20ml)
- Disposal needles
- Tourniquet
- Antiseptic solution
- Surgical spirit swabs
- Scalpel
- Sterile towel and small surgical drape
- Suture needles /A traumatic sterile suture material
- Sponges (4" x 4")
- Equipment required for drawing blood samples
- Adhesive tape and scissors

Preparing basic anaesthetic equipment:

- Monitors - ensure that your monitors are working, configured correctly and with appropriate alarms and volume limits set.
- Airway equipment - ensure you have a full range of the required equipment including spares. This includes:
 - Bacterial filters, connectors and catheter mounts – these should be checked for patency
 - Tracheal tubes and laryngeal mask airways
 - Appropriately sized face masks and Guedel airways
 - Laryngoscopes with appropriately sized blades
 - Equipment for the management of the anticipated or unexpected difficult airway must be available and checked regularly in accordance with departmental policies
 - **resuscitation equipment:**
 - Check that the patient's trolley, bed or operating table can be tilted head down rapidly
 - A resuscitation trolley and defibrillator must be available in all locations where anaesthesia is given and checked regularly in accordance with local policies



List of operation packs

General set (It consists of BP handle, curved scissors, straight scissors, toothed dissecting forceps, non toothed dissecting forceps, fine dissecting scissors, towel clips, Gilles's dissecting forceps, artery forceps -small, medium and long, sponge holder, Lanes tissue forceps, Babcock tissue forceps, Allis tissue forceps Probe, sinus forceps, Needle holders, Morris's retractors, Suction cannula, Lange beck retractor)

- Minor set
- Laprotomy
- Appendectomy
- Herniorraphy
- Prostatectomy
- Mastectomy

- Supra pubic cystostomy
- Hysterectomy
- Caesarean section
- Tonsillectomy
- Nasal polypectomy
- P.O.P and open reduction
- Hydrocele repair
- Implant fixation
- Thyroidectomy

Linen

- White sheet
- White draw sheet
- Fenestrated towel
- Thyroidectomy towel
- White drape sheet for main stock table
- Green towel
- Surgical apron
- O.T. gown
- cap and mask
- Sterile bin cover
- Shoe cover
- Hand wash towel
- Stone towel for keeping suture material
- Glove bags
- Special instrument bag
- Surgeons vest and pyzama

Functions of scrub nurse and**circulatory nurse Duties of nursing staff****Senior Manager**

1. Maintenance of a high standard of patient care
2. Planning and ordering
3. Welfare and professional development of staff.
4. Liaison with other department, e.g. surgery, anesthesiology, nursing, administration, personnel, pharmacy and laundry.

Theatre Sister

1. Daily management of the theatre

2. The safety and welfare of patients.
3. Ordering stock
4. Continuing education of staff.
5. Liaison with surgeons and anesthetists regarding operation lists and equipment orders. surgery, anesthesiology, nursing, administration, personnel, pharmacy and laundry
6. Discussion of problems with the senior theatre sister .

Senior staff nurse/Scrub nurse

After adequate training, the senior staff nurse assists and relieves the theatre sister. A scrub nurse is a person who arranges the table and assists the surgeon throughout the procedure in the operation room.

Scrub nurse

- I. Before the operation
 1. Collection of equipment and linen for the operation planned.
 2. Gowning and gloving
 3. Draping trolley and bowl stand with sterile drapes.
 4. Collecting suture material, needles, blades, mops, gauze and cotton.
 5. Draping Mayo table and preparing initially required instruments.
 6. Checking patient's identity with the name band, case paper and operation list.
 7. Ensuring safe positioning of the patient.
- II. At the commencement of the operation
 1. Handing skin preparation agents and swabs on holder to the surgeon
 2. Assisting in draping
 3. Positioning Mayo table.
 4. Arranging diathermy and suction.
 5. Passing instruments, swabs and sutures to the surgeon
 6. Keeping an accurate count of extra instruments and swabs collected during the operation, and ensuring that they are charted by the circulator
 7. Anticipating the needs of the surgeon
 8. Ensuring adequate discipline and minimum disturbance within the theatre.
- III. At the end of the operation
 1. Confirming that all instruments, swabs and mops are accounted for
 2. Removing instruments from Mayo table
 3. Collecting dressing from the circulator
 4. Disposing of blades and needles into appropriate containers
 5. Removing drapes
 6. Ensuring that the peri operative area is clean
 7. Ensuring that the patients gown is clear and dry
 8. Covering the patient with a clean sheet
 9. Returning instruments for washing and sterilization

10. Completing entries in the operation register

Circulatory nurse

A circulatory nurse is a person who helps the scrubbed nurse and is available throughout the procedure in the operation room.

I. Before the operation

1. Checking that the theatre has been cleaned.
2. Confirmation that lights, suction and diathermy equipment is in working condition.
3. Ensure and set that the temperature and humidity are correct in O.T.
4. Collecting the necessary equipment and stocks, e.g. swabs, specimen jars, sterile water, fiber-optic light source
5. Preparing sterilized gowns and gloves
6. Tying gowns
7. Opening instrument packs, bowl packs, and other equipment for the scrub nurse for arranging the table.
8. Assist with counts and records of patient.

II. During the operation

1. Being available in the theatre
2. Connecting diathermy and suction leads.
3. Replenishing and recording swabs and mops as requested
4. Disposing of used swabs.
5. Filling bowls with sterile water.
6. Placing swab-collecting bowls conveniently for the scrubbed assistant
7. Anticipating the requirements of the team
8. Ensuring that all the doors of the theatre remain closed.
9. Assisting with the count and records before the end of the operation
10. Preparing the wound dressing

III. After the operation

1. Assist the scrub nurse for dressing the patient.
2. Helping with the removal of the drapes
3. Helping with the preparation of the patient for shifting to the recovery ward.
4. Removing the instrument trolley and other equipment to the sluice room.
5. Ensuring that the theatre is cleaned and prepared for the next operation.

Pre and post operative care of a patient posted for surgery

Pre operative care

General Pre-operative Nursing Care

This is preparing a patient for a surgical procedure. The pre-operative period is the time from which person is admitted in the ward and prepared for surgery to hand over the patient to

the theatre sister. This period varies in length and depends on the patient's condition. Surgery is a traumatic event for most patients. The better the patient is prepared and instructed for surgical procedure the easier in his post-operative period and the shorter his duration of convalescence.

Psychological Consideration: Surgery is viewed as a crisis in life. Emotional responses to surgery may be manifested in various ways. Some patients may be talkative, some may be withdrawn and some other may show non-adaptive responses. After assessing the patient carefully, nurse should provide adequate psychological support.

A complete assessment of health status is a part of preparation for surgery:

- a. The patient's age the young and old are less able to cope with stress.
- b. Nutritional, water and electrolyte status – Surgical risk is increased when the patient is malnourished and dehydrated.
- c. The presence of previous pathological condition – The nurse should observe the signs of disease.
- d. Special conditions affecting the surgical risk:
 - ❖ Obesity: The surgical risk is higher than the patient with normal weight.
 - ❖ Acute infection: An acute infection anywhere in the body requires a delay in surgery in most instances to help prevent post-operative complications.
 - ❖ Drug therapy: The drugs which have profound effect are hypoglycemic, hypertensive, psychic, anticoagulant, steroids etc. Continued use of anticoagulants may cause serious hemorrhage.
 - ❖ Addiction: Post-operative pulmonary complications are more in patients who smoke.
 - ❖ Wasting disease: In diabetes mellitus the stress accompanying surgery may increase the need for insulin.
 - ❖ Skin disease at the operation site should be treated prior to operation.

1. Patient Teaching

The most important part in pre-operative management is health teaching. Teaching should include sharing information about purpose of various types of care the patient receives pre-operatively and post-operatively.

Diaphragmatic breathing

This causes deep breathing and helps the patient ventilation. It is carried out as follows:

- ❖ The patient lies on low Fowler's position, flexing knees and placing his hands over his lower rib cage and on sides of abdomen.
- ❖ The patient exhales thoroughly, his ribs move downward with exhalation.
- ❖ Then he takes deepest breath.
- ❖ The patient holds the breath for 3-5 seconds after inhaling deeply.

- ❖ Then he exhales through pursed lips holding in a manner as though he will whistle taking double the time to inhale action. The patient is helped to practice this breathing twice a day for at least 15 times in each sitting.

Coughing

- ❖ The patient lies in low Fowler's position or a side-lying position.
- ❖ The patient's hands are placed on the incision area to splint the surgical wound.
- ❖ The patient takes a deep diaphragmatic breath.
- ❖ After inhalation the patient is asked to make two strong coughs while keeping the mouth open, tongue extended and hands in position.
- ❖ The patient then takes another deep breath and gives two more strong coughs.
- ❖ The patient practices coughing at least two or three times a day.

Moving in bed

- ❖ The patient is placed on back and is asked to flex the knees to about 45^0 to 90^0 and holding this position for a few seconds, to extend the leg. This is done alternately. These exercises are repeated four to five times every 3-4 hours.

2. Legal Considerations

- ❖ The patient must be told about the operative procedures, risk, possible complications and what disfigurement can occur.
- ❖ He should be informed what to expect during post-operative period.
- ❖ Operative consent is to be taken from the patient, in the presence of witness. Parents or guardian must sign for minor.

3. Psychological preparation of the patient and family

Most of the patients fear surgery. Common fears include fear of death, unfavorable prognosis, disablement which may bring disruption in family life etc. There is worry about anesthesia, loss of self control and financial and employment limitations.

- ❖ The nurse should have knowledge of the type of surgery the patient is to undergo to guide for preparing the patient both psychologically and physically.
- ❖ The patient is to be given opportunity to discuss his fear and concern. It also includes listening to what is being said as well as non-verbal communication. Touch, when used appropriately conveys the message of showing an interest in what the patient is experiencing.
- ❖ Each will respond emotionally to a surgical experience in his own way.

4. Preparing the patient for operation

The nurse should also prepare family members for the surgical equipment needed in the case of the patient. She should offer emotional support to family members.

1. Regular bath with soap or cleaning after admission.
2. Maintenance of oral and general hygiene.
3. Any infective fever should be treated.
4. Bowel should move regularly.
5. Fluid intake should be plenty. When necessary glucose drinks in large amount e.g. in jaundice should be given.
6. Adequate diet followed by light diet in evening before operation and nothing by mouth on the day of operation is standard protocol unless ordered specially.
7. Tranquillizer on the night before operation.
8. Infants, children and old-aged require special care. Infants and children are susceptible to infection; they tolerate fluid and electrolyte imbalance badly and they may have congenital disorders. The elderly are prone to have pulmonary, cardiovascular, urinary and liver disorders which should be taken care of.

5. Preparation of the patient immediate pre-operatively

- a) Prepare Skin at the site of surgery and around the areas to reduce the chance of infection. Shaved area may be applied with sterile dressing.
- b) Administration of a cleaning enema as ordered the patient may have an involuntary bowel movement while he is being anaesthetized if the lower intestinal tract is not emptied.
- c) Checking of the vital signs is important. Any abnormality of vital signs should be reported promptly. Surgery may need to be cancelled if abnormalities are present.
- d) Removing of patient's valuables such as rings and wrist watch should be carried out. Remove dentures, contact lenses, artificial limbs and eyes, wigs, hair pins, clips and colored nail polish. Branding the long hair and putting on the hospital's clothes are important.
- e) The patient should void urine before going to operation theatre.
- f) The pre-operative medication should be administered at the time ordered.
- g) The patient's record must be completed.
- h) Help to move the patient on stretcher after checking the patient's identity.
- i) Accompany the patient to the operating room and handover the patient and records to the operation room nurses.
- j) Special preparations are given as ordered for some surgical conditions like cardiothoracic surgery, uro-surgery etc.

General Post-operative Nursing Care

The post-operative period is the time from the patient is transferred from recovery room of the theatre to received in the ward and until discharge from the post operative ward.

- **Preparation of patient's room:** Recovery room should be in the same floor as operation theatre. The furniture should be so arranged that stretcher on which patient is transported can be moved near the patient's bed.
- **Maintenance of pulmonary ventilation:** The patient should be in a position so that he can breathe normally with full use of all portions of his lungs; the head turn on side position is preferred after the airway has been removed to facilitate drainage from mouth and nose. so that he will not be aspirated..
- **Maintenance of circulation and prevention of shock:** As soon as the nurse is certain that the patient's airway is clear, she should check the blood pressure and pulse. The blood pressure, pulse and respiration are usually taken every 15 minutes for first 2 hours and eventually every 4 hours until further orders. The rate, volume and rhythm of the pulse should be carefully observed and character and rate of respiration noted. A rapid thready pulse with sudden drop of blood pressure may indicate hemorrhage or circulatory failure. The surgeon should be notified immediately. Oxygen may be given to increase its concentration in the available circulating blood.
- **Protection from injury:** Following anesthesia, side rails are usually placed on the bed and are left until the patient is fully awake.
When infusions are given, the patient's arm should be secured on an arm board so that the needle is not dislodged.
The patient should be turned frequently and placed in good body alignment to prevent i) nerve damage from pressure and ii) muscle and joint strain due to lying in the same position for a long period of time.
- **Bleeding and drainage:** The nurse must check for soakage or bleeding. She should also look for tubes of any kind and connect them to drainage system as ordered.
- **Maintenance of fluid and electrolyte balance:** An adult requires about 2.5 liters of fluid. This should be maintained by I.V. infusion. There should complete and accurate intake / output charting in the post-operative period. All fluids, medications and treatments that the patient receives during this time must be recorded.
- **Checking for consciousness:** The nurse can ascertain as the return of reflexes and consciousness of the patient by asking him his name.
- **Care of bladder:** Retention of urine is a usual complaint after perineal rectal or hernia operation. An indwelling catheter is introduced pre-operatively.
- **Vomiting:** This may occur after general anesthesia. In additional operation presence of Ryle's tube and gastric suction prevent vomiting. Antiemetic may be necessary if vomiting does not subside.
- **Oral hygiene:** This is important to prevent parotitis, gingivitis, bad odor etc.
- **Diet:** It is advised depending on abdominal or extra-abdominal operations. Fluids are administered after return of peristaltic movements usually after six hours.

- **Bowel:** No purgative is advised in abdominal operations. Suppositories in some cases like appendicectomy and enema in selected cases e.g. cholecystectomy are advised after 4th or 5th day.
- **Ambulation:** Nowadays, early ambulation is advised for improving circulation. This helps psychological, physical and physiological improvement.
- **Wound care:** Usually dressing is changed when a drain has been left or there is wound infection. Otherwise it is changed during suture removal.

Conclusion

The operation theatre nursing is skillful and technical to handle the patient during and after surgery by the nurse and other health team members. The maintenance of supplies and equipment is always keep ready to the next surgical procedure as well as maintain the sterilization for preventing transmission of infection.

Essay questions

1. Describe responsibilities of the scrub nurse
2. Describe the physical structure of the operation theatre
3. Explain the post operative patient care of patient with surgery

Short answer questions

1. What is pre operative period?
2. List the names of equipment in mayo stand
3. Write any four surgical set used for surgery
4. What are exercises to be taught before surgery?
5. List any four points to be carried out by the nurse before surgery

UNIT-IX CARE OF PHYSICALLY AND MENTALLY CHALLENGED**Structure**

9-0-Introduction

9-1-Types of physically challenged

9-2-Understanding of mentally challenged

9-3-Counselling for challenged

9-4-Helping family to ensure need based care

Objectives

After completion of the chapter, the students are able to

- Define physically challenged and mentally challenged
- Illustrate the different types of physically and mentally challenged
- Describe the importance of counselling for challenged people
- Explain the family responsibility to ensure need based care

9-0-Introduction

Everyone in our day to day life faces variety of stress and strain (biological, psychological and social) and problems from time to time at various stages of life. Every phase of life, person needs to adjust and adapt to situation what he is exposed. It causes challenges to the people when the situation is tough and difficult. Whereas physically and mentally disabled people need extra support and care and also faces the challenges for their successful life. The family responsibility is 100 % essential for the challenged person's quality of life.

9-1-Types of physically challenged**Definition**

A condition or function of the organ as a whole person's behavioural function is significantly impaired and not able to maintain the normal function as like the usual standard of an individual is called Disability/Handicapped/physically and mentally challenged

An impairment is defined as "any loss or abnormality of psychological, physiological or anatomical structure or function" e.g. Loss of limb, loss of organ, defects of mental function.

A disability is defined as "any restriction or lack of ability to perform an activity in a manner or within the range considered normal for a human being.

A handicap (challenged person) is defined as a disadvantage for a given individual, resulting from an impairment or a disability that limits or prevents the fulfilment of a role that is normal for that individual. It reflects interaction with and adaptation to the individual's surroundings

TYPES

- Physically challenged
- Mentally challenged
- Socially challenged

1. Physically challenged

This is classified based on the structure and functional disability of an individual.

The physical impairment is caused by

- Birth defects- deaf and dumb, blindness, clubfoot
- Infections- poliomyelitis

- Accidents-loss of limb, loss of hearing, loss of vision, spinal cord injury

Disability in mobility: The person restricted with day to day activities and depend on others for self care skills e.g. spinal cord injury, poliomyelitis and amputation of hand or leg

Visual impairment may be congenital or accidental or infections. It may be partial or complete loss of vision and lead to sensory functional limitation like blurring of vision, double vision and unable to see the object. It may be caused by vitamin 'A' deficiency, injury to the eye, diabetes mellitus and cataract.

Hearing impairment

The person unable to receive the sounds through the ear is known as hearing loss or hearing impairment.

Types

1. Conductive hearing loss – Impairment of external middle ear
2. Sensory Hearing Neural loss – Impairment of inner ear / auditory nerve

People who are partial deaf can often use hearing aids to assist the hearing; deaf people use sign language for the way of communication

2. Mentally challenged – Mental health is defined as a state of well being in which every individual realizes their own potential, cope with normal stresses of life, can work productively and work for the community welfare.

4. Mental sub normality refers the delay in overall development and require special education and systematic training for maintaining their life.

Mental retardation is the old term which has been replaced by mentally challenged/ mental sub normality/ intellectual disability

Mentally challenged are intellectual disability may present with or without physical problem

1 It originates in developmental period – the child has impairment in adaptive behaviour in different stage of life

2 Based on IQ level the child's capacity of adjust and perform activities of daily living

3 Intelligent quotients is Ratio between Mental Age (MA) and Chronological Age (CA)

4 Chronological age is determined from the date of birth; Mental age is determined by IQ test.

$$5 \text{ IQ} = (\text{Mental age} / \text{Chronological age}) * 100$$

Levels of Sub normality	IQ Range	Activity
Mild	50-70	Able to educate
Moderate	35-49	Able to train
Severe	20-34	Dependable
Profound	below 20	Custodial care

Mental sub normality or mentally challenged condition is not curable but could be managed with correct treatment and support of family. It is not a mental disorder because it is a delayed developmental problem e.g. The age of child is 6 years but the child behaviour is like 2 years old

Causes of Mental Sub normality

- Genetic Condition – Down Syndrome, phenyl Ketonuria, Galactosomia, Congenital Hypo thyroidism etc

- Antenatal factors – Neural tube defect, RH incompatibility, Maternal infections(Rubella , Herpes simplex)
- Perinatal factors – Hypoxia, Birth injuries, cerebral palsy
- Post natal factors – Encephalitis, Head injuries and accidents
- Others – Maternal malnutrition, consanguineous marriage, late pregnancy.

Features of mental sub normality children

1. Flat Face
2. Short nose
3. Slanting eyes
4. Flat back of head
5. Abnormal ear
6. Special Skin Ridge Pattern
7. Decreased muscle tone
8. Small arched palate and big tongue
9. Big tooth with wide space
10. Congenital anomalies in the organ structure e.g. umbilical hernia
11. Delay in motor skills, self care, language skills

3. Socially challenged – The child unable to develop healthy personality and full unfolding of potentialities is obstructed by certain element in his social environment is known as socially handicapped. The elements are parental inadequacy; environment is not suitable for learning process and emotional disturbances

9-3-Counselling for challenged**Counselling**

Counselling is a talking therapy which can be life enhancing, promoting positive change to the people who need guidance in health problems.

Emotional Disability Counselling Service offers person-centred counselling delivered by a counsellor with a physical disability. It offers those affected by disabilities a unique opportunity to work with a physically disabled counsellor who has the professional knowledge and personal insight to offer a deep understanding of disability issues.

Aims of parent counselling for challenged children

- Understand the medical facts about their child's condition
- Understand whether child's parent/ancestors/maternal relationship of family passed on genetic changes to the child
 - ☐ Learn more about what the risk is, and how to deal with it if you have more children
 - ☐ Plan realistically for the future
 - ☐ Adjust in the most positive ways to the condition
 - ☐ Person-centred counselling aims to achieve personal growth and change within the individual by providing a confidential space of acceptance, genuineness, understanding and empathy.

Preparing for counselling

Before starting of counselling session, it's a good enough to find out as much as about family's medical history This might include:

- ☐ Your relation to each family member, including whether family members are adopted or half-relatives
- ☐ Any major health conditions that affect each family member and any relevant pregnancy history such as miscarriage
- ☐ Age of onset of each condition
- ☐ The cause and age of death of family members (if relevant).

It's a good idea to write down your questions before going into a session so you don't forget to ask.

During counselling session, The counsellor might:

- ☐ Ask about family history
- Make or confirm a diagnosis, or there's no genetic condition present
- ☐ Work out the risk of other family members getting the condition
- ☐ Talk about how the condition will affect your child, and how you might handle this problem
- ☐ Provide information about support agencies or other medical services available in local area or any places.
- ☐ Give verbal/ written information about the condition.

Health suggestions

Counselling helps for prevention of inborn error metabolism, congenital abnormalities and birth defects.

- ☐ Screen and identify the individual with defective gene
- ☐ Counsel the antenatal mother, avoid exposure to radiation during pregnancy
- Don't take drugs without doctor's prescription especially first trimester of pregnancy
- ☐ Regular antenatal check up
- ☐ Avoid late pregnancy i.e. age above 35 years
- ☐ Encourage the parents for neonatal screening for early treatment to new born
- ☐ Explain the mother regarding adverse effects of smoking, alcohol and substance abuse
- ☐ Avoid consanguineous marriage, encourage heterosanguineous marriage which can be prevented /reduce the birth defect to the child e.g. Sickle cell anaemia, micro cephal, mental sub normality

9-4-Helping family to ensure need based care

Most of the handicapped conditions are preventable/ manageable at initial stages. Usually people who become physically disabled are not able to agree themselves regarding their problems, feels inferior and may be depressed in mood as well as not involving in activities of daily living.

For some people, the thought of having a disabled child is nothing more than 'well it's just one of those things'. But for a lot of people, it is the beginning of a life of never ending trauma, anxiety, depression, isolation, guilt, anger, frustration, sleep deprivation, denial, dread, grief, overwhelming hopelessness, helplessness and ongoing stress.

These parents have to learn how to cope in a world of changing attitudes towards the child as well as society's attitude to disability

Facing up to reality: Parents just the mere fact of facing up the reality, coming to terms with the diagnosis and prognosis and accepting the term ‘disabled child’ can be too much for them.

Parent’s knowledge and understanding helps to guide themselves and rearing their disabled child

Positive outcomes: The parents should have will power, self-belief and encouragement *the impossible is possible*. It is essential that parents who have a disabled child seek therapy in order to explore in a therapeutic setting. The negative impact may be not only affecting the child health but also on the health of those living within the family – i.e. siblings and other close family members – and find positive ways forward.

Most people who get genetic counselling want information about genetic conditions in their families, and counselling can give this before or at the same time as genetic testing.

Genetic counselling can help when:

- a condition seems to run in the family and there’s concern that you or your children might develop it
- a child in the family has a serious problem that affects growth, development or health, possibly linked with a genetic cause
- two people who are closely related are thinking of having a child together
- prenatal testing has detected a foetal abnormality or a risk of a foetal abnormality

Family therapy

Family therapy, also referred to as systemic therapy, is an approach that works with families and those who are in close relationships to foster change. These changes are viewed in terms of the systems of interaction between each person in the family or relationship.

Essentially, by evaluating the issues and providing support, family therapy can help families and individuals to:

- Better to understand their family functions
- Identify strengths and weaknesses within the family system
- Set goals and devise strategies to resolve problems
- Develop their communication skills
- Make the entire family unit stronger.

Families who have children with behavioural issues may also find family therapy particularly valuable.

To help a client overcome the challenged effect of physical disability a counsellor should have a rudimentary knowledge of the behavioural manifestation of the medical condition and be skilful at implementing counselling strategies which are compatible with the intra and inter personal dynamics characteristics of each stage to overcome the problem with disabled child in the family.

Conclusion

The challenged children are the gifted child of the society .They need to train them in a way by their family members. It requires special education to the parents to cope up with child and caring the child as per different stage of growth and development. Family and genetic counselling helps the parents to understand state of challenged children and their needs.

Essay questions:

1. Describe about the importance of counselling to the parents regarding challenged child

2. Write about mentally challenged children

Short answer questions

1. What is impairment?
2. What is intelligent quotient?
3. List the types of hearing loss?
4. List the features of mentally retarded children?

UNIT-X

TYPES AND ADMINISTRATION OF DRUGS

Structure

- 10.0- Introduction
- 10.1- Different systems of medicine
- 10.2- Classification of drug forms
- 10.3- Characteristics of drugs
- 10.4- Abbreviations used in medication
- 10.5- Administration of drugs-policies and regulations as per protocol
- 10.6- Classification of drugs
- 10.7- Routes of administration
- 10.8- Rights of drug administration
- 10.9- Principles of safety measures
- 10.10- Role of MPH (F) in the administration of drugs

OBJECTIVES

After completion of the chapter, the students are able to

- Understand about different systems of medicine
- Illustrate the types of drug forms and its characteristics
- Describe the policies and regulations of drug administration
- Explain the different routes of drug administration and the role of MPH (F) in drug administration
- Describe the safety measures while administering the drug administration

10.0- Introduction

In olden days the medications are called as 'avushath' and the name of the treatment is called based on the origin of the place or country. e.g. Chinese medicine, ayurvedic medicine and western medicine etc. Whatever the systems, ultimately the medicines are used to treat the people who are suffering with disease. The drug administration is the crucial role to every MPH (F) personnel in the community as well as in the hospital setting. They should have clear understanding about types of drugs and its route of administration.

10.1- Different systems of medicine

The Ministry of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy, abbreviated as **AYUSH**, is a governmental body in India purposed with developing, education and research in ayurveda (Indian traditional medicine), yoga, naturopathy, unani, siddha, and homoeopathy,

Alternative system of medicine(ASM) use elements from the domain of traditional medicine Ayurveda and siddha are actually originated and developed in India.

Ayurveda

The meaning of ayurveda is "Knowledge of life" .It is derived from Sanskrit word. AYU- life ; veda-Knowledge; In AYURVEDA, the cause of disease is mainly three.

They are 1.Asatmyedryia samyoga- indiscriminate use of sense organs and their objects.

2. Prayana Parthia- error or intellect resulting in a loss of discrimination between and unwholesome.

3. Parinama - seasonal variations

Health is defined as the state of equilibrium of Dosha, Agni, Dhatu and Mala, patency of stotras and a healthy state of the Agni.

Ayurveda also focus on diet, hygiene, exercise, yoga and meditation. Vajikarana and Rasayana measures are also prescribed for removing toxins accumulated in the body, maintaining equilibrium and preventing senility and related problems.

Unani

The word Unani / Yunani is derived from Greek word-Ionia. It means” Greek medicine” and is widely practiced in south Asia. It is tradition of Greco-Arabic medicine, which is based on the technology of Greek physician.

Unani medicine is based on the concept of four humours, they are

1. Phlegm (Balgham)
2. Blood (Dam)
3. Yellow bile (safra)
4. Black bile (sauda)

Any cause of disease is countered by the power of body responsible to maintain health, the failing of which may lead to derangement of the normal equilibrium, which contribute to the disease. Unani medicine is very close to ayurveda theory of the presence of elements, i.e. fire, water, earth and air in the human body.

Yoga

The word Yoga is derived from Sanskrit word “YUJ”. It means to join together i.e. to join the mind, body and spirit. The aim of yoga is to bring a balance into the body and spirit. The aim of yoga is to bring a balance into the body physically, mentally, emotionally and spiritually. Yoga is considered an antidote to stress and potentially powerful tool for living healthy balanced life.

The physiological benefits of Yoga based on regular practice of traditional yoga poses breathing exercises and meditation.

- Attains equilibrium in autonomic nervous system
- Increases cardio vascular efficiency
- Increases respiratory volume and vital capacity
- Normalises the gastro intestinal function
- Normalizes the endocrine function

Naturopathy

An individual is healthy when he/she is in perfect harmony with nature. The primary cause of disease is accumulations of waste matter in the body except for the traumatic and environmental conditions; pathogens enter and survive in the body, when a favourable atmosphere for their growth is established in the body after the accumulation of morbid matter. Acute diseases are self healing efforts of the body. The treatment of all diseases is elimination of morbid matter from the body.

Allopathy

The term Allopathy was coined in 1842 by C.F.S. Hahnemann to designate the system of medical science /practice which treats disease by the use of remedies /drugs which produce

effects different from those produced by the disease under treatment. Focused on eliminating the disease or alleviating the symptoms

Homeopathy

Homeopathy is form of alternative medicine originated by Samuel Hahnemann (1755-1843) based on the hypothesis that a substance that causes the symptoms of a disease in healthy people and will cure that disease in sick people. Homeopathic remedies are prepared by serial dilution in alcohol or distilled water, followed by forceful striking on an elastic body, called "succussion". Each dilution followed by succussion is assumed to increase the remedy's potency.

10.2- Classification of drug forms

Drug

A drug is defined as any substance used for the purpose off diagnosis, prevention, relief or cure of a disease

Pharmacology: It is the branch of science which deals with the study of drugs, their origin, nature, properties and effects

Drug nomenclature: Drugs are identified according to their chemical name, generic name and trade name to prevent confusion of drugs.

1. Chemical name: the name which reflects the chemical structure or composition of a drug
2. Generic name: It is the original name that the drug is given when the drug company applies for the approval process.
3. Brand name/ Trade name: It is the name given by the company which developed the drug and trades the drug
4. Examples of chemical, generic and brand name of drug

Chemical name	I-thyrocine, T4	Acetyl salicylic acid
Generic name	Levothyroxine sodium	Aspirin
Trade name	Eltroxin, Synthroid, Levothyroid, etc	Disprin, Aspro, Wimprin, etc.

The drugs are prepared manufactured in different forms. They are

Solid form

Caplet: Shaped like a capsule and coated for easy swallowing

Capsule: Powdered, liquid or oily drugs enclosed in a gelatine shell

Pills: Tablets containing one or more drugs shaped into ovoid or oblong form.

Tablet: Powdered dosage compressed into hard disc.

Lozenges: Flat, round form containing drug, flavouring sugar and mucilage. It dissolves in mouth.

Suppository: Solid dosage form mixed with gelatine for insertion in the body cavity, melts at body temperature, releasing the drug for absorption.

Liquid form

Injections: Liquid drugs in the ampoule or vial for IM, IV, SC, ID use

Drops: Liquid drugs for instillation in eye, ear, nose

Elixir: Clear fluid containing water or alcohol, usually has sweetener for easy swallowing

Syrup: Drug dissolved in concentrated sugar solution

Suspension: finely divided drug particles in a liquid medium

Lotion: Drug in liquid suspension used externally onto the skin

Tincture: Water or alcohol drug solution

Emulsion: Mixture of two liquids uniformly dispersed throughout each other

Semi solid form

Ointment: Preparation made for external use usually containing one or more drugs

Paste: Thick and stiff preparation absorbed through skin more slowly than ointment

Cream: A non greasy semi solid preparation used onto the skin

10.3- Characteristics of drugs

Dosage

A dose is the amount of drug administered at one time. The minimum dose is the least quantity of the drug that will produce an effect in the body. The maximum dose is the highest quantity of the drug that can be administered at one time without producing harm to the body. Lethal dose is larger than the maximum dose which will have poisonous effect on the patient.

Factors influencing drug dosage:

1. Age: Infants, Children and the old require smaller dosage of a drug
2. Weight: A person of overweight requires a larger dose than the usual one. A person with underweight requires a smaller dose.
3. Sex: Male require large dose than females.
4. Physical condition
5. Cumulative action of the drugs: The frequency and dose of a drug administration depends upon the rate of excretion from the body .
6. Tolerance of the patient
7. Habituation to a drug, lead to physical craving and definite organic symptoms. e.g. use of sleeping pills
8. Route of administration: drugs given by IV route have a very quick and immediate action than oral and rectal route

Effects of drugs administration

Therapeutic effects:

It is the effect which is desired for the reason a drug is prescribed. The drugs are administered for the following purposes:

1. To promote health: drugs are given to the individuals to increase the resistance against disease e.g. vitamins
2. To prevent disease: e.g. vaccines, antitoxins
3. To diagnose disease: e.g. barium is used in the x-ray studies
4. To alleviate disease: certain drugs are given for the palliative effect or for the temporary relief of distressing symptoms, but does not remove the cause or cure the disease, e.g. analgesic
5. To treat or cure a disease:

Local and systemic effects:

Local effects of a drug are expected when they are applied topically to the skin or mucus membrane. A drug used for systemic effect must be absorbed into the blood stream to produce the desired effect in the various systems and parts of the body.

Toxic effects

High levels of the drugs in the blood stream produce toxic effects. Cumulative effect occurs when a person is unable to metabolize the previous dose of the drug. Some of the toxic effects are fatal for the patient.

Synergistic effect

Synergistic effect occurs when a combination of medications is given. In synergistic effect, the combined effect of two or more drugs is different from the effect of each drug when taken alone. e.g. alcohol and barbiturates are potentially lethal

Effects on the blood dyscrasias

Aplastic anaemia: Failure Bone marrow functions .Thrombocytopenia: it is characterized by purpura, petechiae, melena, epistaxis, haematuria Granulocytosis, leukopenia: it is characterized by chills, fever, sore, throat, cough, malaise and lesions in the mouth.

Effects on the nervous system

1. Abnormal involuntary movements: tremor, chorea, dystonia,.
2. Stimulations of the central nervous system: these are characterized by anxiety, nervousness, insomnia, headache, double vision and convulsions etc.
3. Depression of the central nervous system: it is characterized by dizziness, vertigo, drowsiness, fatigue and ataxia.

Effects on the gastro-intestinal system

Irritation of the gastric mucosa: this is characterized by nausea, vomiting, anorexia. This can be prevented to some extent by not giving the drug in an empty stomach. Give the drug with or after the meals or it should be given along with one glass of milk or an antacid. These drugs are contraindicated if the patient has a history of peptic ulcer.

Side effects of drug administration

The various side effects observed due to the administration of drugs, their signs and symptoms:

Allergic reactions: A patient can react to a drug as a foreign body and thus develop symptoms of allergic reaction. Allergic reaction can be either mild or severe. A severe allergic reaction usually occurs immediately after the administration of the drug, it is called anaphylactic reaction. A mild reaction has a variety of symptoms from skin rashes to diarrhoea.

1. Skin rashes : oedematous pinkish elevations (rash) with itching may occur due to the reaction of a drug
2. Angio oedema: oedema due to increased permeability of the blood capillaries.
3. Rhinitis: excessive watery discharge from the nose
4. Lachrymal tearing: excessive tears from the eyes
5. Nausea and vomiting: due to stimulation of the centres in the brain
6. Diarrhoea: irritation of the mucosa of the intestines.
7. Shortness of breath and wheezing due to laryngeal oedema.

10.4- Abbreviations used in medication

The MPHWH (F) is able to understand the abbreviation and symbols meaning while administering medicine to a patient

ABREVIATIONS –used for time of drug administration		ABREVIATIONS –used for amount of drug administration	
Abbreviation	Meaning	Abbreviation	Meaning
a.c.	before meals	c	with
p.c.	after meals	cc	cubic centimeter
a.m.	before noon	gr	grain
p.m.	afternoon	gtt	a drop
o.m.	every morning	M	Minim
o.d.	once a day	kg	Kilogram
s.o.s	if there is needed	O	a pint
b.i.d	twice a day	mg	milligram
t.i.d	three times a day	OZ	Ounce
q.i.d	four times a day	Cm	centimeter
stat	immediately	g	gram
h	hour	ml	milliliter
Q4H	Every four hours	lb	Pound
Q6H	Every six hours	gal	gallon
Q8H	Every eight hours	tsp	teaspoon
H.S	At bed time	dr	dram

Weight and measures

unit	approximate values	unit	approximate values
1Dram	60 Minims 60grains 4grams 4ml1teaspoonful	1pound	480grams 12ounces
1 Ounce	30 grams 8teaspoonful 450 grains 25ml	1kg	1000 grams 2.2 lbs
1Liter	1000ml 40ounzes 2pints	1tsp	4-5ml 60drops
1 grain	60mgm	1Tablespoon	4drams 3tsp 15ml
1cc	1ml 15minims	1teacupful	6ounces 150ml
1minim	1drop	1glassful	8ounces

			200ml
1ml	15drops	1meter	100cm 1000mm 1.1yard 39.4 inches
5ml	1tsp	1cm	10mm
15ml	1tbsp	1Km	1000meter 0.6mile
1pint	16 ounces 500ml	1mile	1.6km

10.5- Administration of drugs-policies and regulations as per protocol

There are three agencies to regulate drug administration

Advisory agency –It includes drug technical advisory board (DTAB) and Drug consultative committee. DTAB modifies rules regarding drugs

Analytical agency: It includes Central drug Laboratory (Kolkata) and drug laboratories in respective states. These laboratories test and analyse the samples of drugs and cosmetics.

Executive agency: Authorities, which grant licence to various organizations for manufacturing, storing, recapping, selling, importing and exporting drugs.

Indian Pharmacopeia (IP)

Manufacturing, sale, import, and export are controlled by the Government. The central drug authority, Indian Pharmacopeia (IP) is based in Nirman Bhawan, New Delhi. The drug authorities of state are mostly in their capitals. Central drug authorities formulate the policy and peripheral authorities implement these policies.

Drugs are essential for health of human beings. The well qualified person with specialized knowledge and skill required for dealing and handling the drugs. There are certain drug laws for abiding rules and regulations.

The Opium act-1878 it deals with manufacture, possession, transport, import and export and sale of opium.

The Poisonous act-1919 it controls the possession, import and sale of poisons.

The Dangerous drug act-1930 It is to control operations related allopathic drugs only.

The Pharmacy act-1948 It is passed for better regulation of the pharmacy profession

The medicinal and Toilet preparation act-1955 the manufacturer of spirit containing preparations required needs special licence.

The narcotic drugs and psychotropic substance act-1985 The act totally prohibits the cultivation, manufacture, sale, purchase, use or transport of all narcotic and psychotropic drugs.

Drug order (Price control)- 1995 Under the essential commodities act, this order was passed so that the Government may control over the price of bulk drugs and drug formulations.

10.6- Classification of drugs

Classification of drugs by action

- Analgesic: These drugs are used to relieve pain
- Anaesthetics: These drugs are used to cause loss of sensation
- Antacids: These drugs are used to reduce gastric acidity
- Anti-anxiety: These drugs are used to treat anxiety disorders.
- Anti-emetics: These drugs are used to control vomiting
- Anticoagulants: These drugs are used to prevent blood clotting
- Anticonvulsants: These drugs are used to control convulsions or seizures
- Antidepressants: These drugs are used to treat depressive disorders.
- Antidiarrheals: These drugs are used to control diarrhoea
- Anthelmintics: These drugs are used to destroy and expel intestinal worms
- Antihistamines: These drugs are used to compete with histamines for its receptors site and to overcome allergic reactions
- Antihypertensive: These drugs are used to control hypertension.
- Antimicrobial: These drugs are used to treat infections diseases
- Anti neoplastics: These drugs are used to interfere with cell reproduction or replication at some point in cell cycle to reduce the production of tumour cells.
- Antipyretics: These drugs are used to relieve or reduce fever
- Antispasmodics: These drugs are used to relieve spasm of involuntary muscle.
- Antiseptics: These are chemicals used to destroy bacteria.
- Anti tussive: These drugs are used to suppress cough.
- Carminatives: These drugs are used to cause expulsion of gas from the stomach and intestines.
- Diaphoretics: These drugs are used to induce perspiration
- Diuretics: these drugs are used to increase the flow and frequency of urination
- Expectorants: These drugs are used to increase bronchial secretions and their expulsion
- Laxatives: These drugs are used to stimulate bowel movement but not accompanied by cramping
- Mucolytics: Mucolytics are respiratory drugs that dissolve mucus in the respiratory tract.
- Muscle relaxants: A skeletal muscle relaxant may be defined as an agent that reduces skeletal muscle tone
- Mydriatics: These drugs are used to dilate the pupils of the eyes.
- Myotics: These drugs are used to contract the pupils of the eyes.
- Oxytocics: These drugs are used to stimulate uterine contractions
- Purgatives: These drugs are used to stimulate bowel movement but accompanied by cramping.
- Sedatives: These drugs are used to lessen the body activity.
- Tonics: These drugs are used to increase appetite and promote digestion.
-

10.7- Routes of administration

There are various routes through which a drug can be administered. There are two factors determine the choice of routes of administration i.e. drug form and patient desire

Classification of routes of drug administration

1. Enteral
2. Parenteral
3. Local

Enteral/Oral route

This route involves the oral ingestion of the drug and act as the safest route of drug administration.

Advantages

- Safest and non-invasive consumption of medicine
- Convenient and efficient route
- Able to take medicine self

Disadvantages

- Slower onset of action
- Irritant and unpleasant drugs cannot be administered
- Certain drugs may not be absorbed effectively
- Can cause nausea and vomiting
- Gastric juice may destroy some drug e.g. Insulin
- Not used in case of uncooperative person and unconscious person
- drugs which are coated with substances e.g. Cellulose acetate are not digested by gastric juice but break down in alkaline juice of the intestine. It helps to prevent gastric irritation and provide maximum level of the drug in the small intestine for the treatment.

Parenteral Route

The drugs are administered other than oral route is known as parenteral route. The drug is administered to the muscle, mucosa, blood or skin. Sum of the parenteral route drug administration are:

1. Injection
2. Trans Mucosal
3. Trans Dermal
4. Inhalation.

Advantages

1. Rapid and predictable action
2. It can be used for unconscious and un-cooperative patient
3. It prevents gastric irritation
4. Highly beneficial in emergencies

Disadvantages

1. It requires a septic technique for administration
2. It cause pain
3. It is expensive & inconvenient
4. It cause injury to nerves and other tissues

Injection

The medicine is given through syringe into the muscle, vein or artery are known as injectables. It is classified as

1. Intra muscular injection- The solution is administered into the large muscle. The common sites of IM Injection is : Deltoid muscle, Gluteus muscle, vastus lateralis muscle.
2. Intra Venous- The drug is injected into the vein of the body and the drug reaches the circulation directly. It is useful for giving bolus amount of solution. The infusion should be given very slow as per requirement.
3. Subcutaneous- The medicine is administered into the subcutaneous tissue are areola tissue i.e; below the dermis layer. The absorption of drug is slow as well as largely uniform which makes it long acting. E.g. Insulin Injection
4. Intra Dermal- The drug is administered into the dermis layer. The route is commonly used for BCG vaccination and test dose for hyper sensitivity.
5. Intra Arterial – The drug is directly injected into the arteries and use in the treatment of peripheral vascular disease and diagnostic studies like angiography
6. Intra- thecal (Intra Spinal)- The drug is administered into the sub arachnoid space of the spinal cord for the action the central nervous system. E.g.: Spinal anaesthesia.
7. Intra Osseous – The drug is directly injected into the joint for the treatment of arthritis.
8. Intra Peritoneal- The drug is directly injected into the peritoneum. The peritoneum has the large surface area for absorption. It is used for peritoneal dialysis
9. Intra Medullary- The drug is injected into the bone marrow
10. Transfusion- Administration of whole blood or plasma into the vein or artery to supply actual volume of blood or to introduce constituents as clotting factors which is less in the patient due to loss. Transfusion is done according to the requirement of the patient

Trans mucosal

The drug is absorbed through the mucus membrane. Trans mucosal administration includes

1. sublingual
2. rectal
3. nasal

Sublingual

The drug contained by a tablet is placed under the tongue. The drug is dissolved and absorbed across the sublingual mucosa. Eg: Nitro glycerine. It can cause buccal ulceration

Advantage

1. Rapid absorption
2. Reaches circulation within minutes
3. Helps in avoiding first pass metabolism

Rectal route

Rectum has a rich blood supply. The drugs get absorbed and produce local and systemic effect. E.g. Indomethacin, paracetamol, Diazepam & suppositories used as laxatives. Gastric irritation can be avoided. It is beneficial for patient with vomiting and swallowing difficulty.

Nasal Route

The drug administration can be used for systemic as well as local effect e.g. : Decongestant nasal drop for reducing nasal congestion.

Trans dermal

The drugs which are high lipid soluble can be applied to the skin for slow and prolonged absorption to achieve systemic effect. E.g. Nitro glycerine ointment in angina pectoris.

Inunctions applying Vicks or pain balms on the skin for pain relief

Adhesive unit- Trans dermal patches used for systemic effect to reduce pain or for vasodilatation E.g. Hyosine, nitro glycerine, fentanyl, estrogens. The patches usually applied on chest, abdomen, upper arm, back or mastoid region.

Jet Injection- It causes absorption of drug occurs the layers of skin

Implantation- Putting the solid drug under the skin to achieve the systemic effect E.g.: Nor plant used for birth spacing .

Inhalation- The volatile liquids and gases given through the special mask or apparatus into the nose in the form of vaporization and it causes general anaesthesia. The solution of the drug particles and the fine droplets are inhaled in the form of aerosol. E.g. Salbutamol Drug inhalation for wheezing.

Advantage

1. Rapid absorption
2. More effective and less harmful in case of pulmonary disease
3. hepatic first pass metabolism is avoided
4. Conveniently controlled blood level of volatile anaesthesia. As their absorption and excretion is through the lungs are governed by the law of gases

Disadvantage

1. The irritant gas may enhance the production of pulmonary secretion
2. It requires technical skill for administration

10.8- Rights of drug administration

The rights of drug administration ensures safety while giving medicines to the patient

Right patient-Read and check the name on the patient case sheet and medicine card

Right drug- Perform a three times check of the medication's label

- ✓ When retrieving the medication.
- ✓ When preparing the medication.
- ✓ Before administering medication to patient.
- ✓ Always check the medication label with the physician's orders.
- ✓ Never administer medication prepared by another person
- ✓ Never administer medication that is not labelled

Right dose Check the medication sheet and the doctor's order before medicating. Be aware of the difference of an adult and a paediatric dose.

- ✓ Check label for medication concentration.
- ✓ Compare prepared dose with medication order.
- ✓ Triple all medication calculations.
- ✓ Check all medication calculations with another nurse.
- ✓ Verify that dosage is within appropriate dose range for patient and medication.

Right time- Check the order for when it would be given and when was the last time it was given.

- ✓ Verify schedule of medication with order.
- ✓ Date
- ✓ Time
- ✓ Specified period of time
- ✓ Administer medication within 30 minutes of schedule.

Right route- Verify medication route with medication order before administering. Check the order if it's oral, IV, SQ, IM, etc.

Right documentation- Check the order for when it would be given and when was the last time it was given. Never document before medication is administered

Right to educate the patient: Provide enough knowledge to the patient of what drug he/she would be taking and what are the expected therapeutic and side effects.

Right assessment- Properly assesses patient and tests to determine if medication is safe and appropriate.

- ✓ If deemed unsafe or inappropriate, notify ordering physician and document notification.
- ✓ Document that medication was not administered and the reason that dose was skipped.

Right evaluation- Review any medications previously given or the diet of the patient that can yield a bad interaction to the drug to be given. Check also the expiry date of the medication being given.

- ✓ Assess patient for any adverse side effects.
- ✓ Assess patient for effectiveness of medication.
- ✓ Compare patient's prior status with post medication status.
- ✓ Document patient's response to medication

Right reason Know why the medication is being ordered. Know patient's history and why are he/she taking this medication?

Right to refuse- Give the client enough autonomy to refuse to the medication after thoroughly explaining the effects.

- ✓ The legally responsible party (patient, parent, family member, guardian, etc.) for patient's care has the right to refuse any medication.
- ✓ Document refusal of medication and that responsible party understands consequences.

Right principle of care-All safety measures should carry out while administering the medication.

Right prescription: Check correct drug prescribed to the patient by the physician or not.

Right nurse clinician Be sure to document your monitoring of the patient and any other nursing interventions that are correctly carried out by the nurse at right time.

10.9- Principles of safety measures

There are some Principles of safety measures helps the nursing personnel to protect themselves from legal issues as well as to maintain the patient safety. They are

- ✓ Be vigilant when preparing medications.
- ✓ Check for allergies.
- ✓ Use two patient identifiers at all times.
- ✓ Assessment comes before medication administration.
- ✓ Be diligent in all medication calculations.
- ✓ Avoid reliance on memory; use checklists .
- ✓ Communicate with your patient before and after administration.
- ✓ Avoid workarounds.
- ✓ Ensure medication has not expired.
- ✓ Always clarify an order or procedure that is unclear.
- ✓ Use available technology to administer medications.
- ✓ Report all near misses, errors, and adverse reactions.
- ✓ Be alert to error-prone situations and high-alert medications.
- ✓ If a patient questions or expresses concern about a medication, stop and do not administer it.

10.10- Role of MPHW (F) in the administration of drug

The multipurpose health worker should follow the principles and the very much care to be taken to prevent medication error. Some of the steps for safe medication administration as follow.

- Plan medication administration to avoid disruption:
 - Dispense medication in a quiet area.
 - Avoid conversation with others.
- Prepare medications for ONE patient at a time.
- Follow the SEVEN RIGHTS of medication preparation
- Check that the medication has not expired.
- Perform hand hygiene.
- Confirm patient ID using two patient identifiers (e.g., name and date of birth)
- Check against MAR.
- Check allergy band for any allergies, and ask patient about type and severity of reaction.
- Complete necessary focused assessments, lab values, and/or vital signs, and document on MAR.
- Provide patient education as necessary.
- If a patient questions or expresses concern regarding a medication, stop and do not administer.

Procedure of drug administration

1. Check Medication chart against doctor's orders and with patient wristband. Check that Medication chart and doctor's . Orders are consistent

2. Perform the SEVENRIGHTS

- The right patient
- The right medication (drug)
- The right dose
- The right route
- The right time
- The right reason
- The right documentation

3. The label on the medication must be checked for name, dose, and route, and compared with the Medical Administration Record at three different times:

- When the medication is taken out of the drawer
- When the medication is being poured
- When the medication is being put away/or at bedside

If taking the drug to the bedside (e.g., eye drops), do a third check at the bedside.

4. Circle medication when poured. NEVER document that you have given a medication until you have actually administered it.

5. Positioning:

- Position patient appropriately for medication administration.
- Ensure proper body mechanics for health care provider.
- Position patient safely and appropriately once medication is administered

6. Post-medication safety check:

- Complete post assessment and check vital signs
- Sign Medication chart; place in the appropriate chart.
- Perform hand hygiene, This step prevents the transfer of microorganisms

Conclusion

From olden days to till now illness is common among the human being, which needs to cure by drugs. The drugs are used based on the system of medicine according to the condition of the patient. The drugs may be administered oral, injection form or through nasal. The drug handler should have the knowledge of use and its side effects. Using medication without proper knowledge is harmful to the patient. So the MPHWH (F) should have adequate knowledge of drug and its route of administration. It helps the patient to feel comfort and enhance early recovery.

Essay Question

1. Describe the different systems of medicine
2. What are the medical regulations and describe it
3. Describe about the rights of medication
4. What are the principles of safe administration of medication

Short Answer Question

1. Write abbreviation for AYUSH
2. Write the advantage of oral drug administration

3. List the forms of drug classification
4. What is antihelmentics?
5. What is antipyretic?
6. List the types of parenteral route of drug administration

UNIT-XI EMERGENCY DRUGS IN O.T.AND OTHER AREAS**Structure**

- Introduction
- Drugs used in O.T.
- I.V fluids, injections
- Ante rabies vaccine
- Ante snake venom

OBJECTIVES

After completion of this chapter , the students are able to

- List the drugs used in the operation theatre
- Describe the I.V. fluids and its uses
- Learn the some emergency drugs functions and its uses
- Describe vaccine and ante snake venom for animal bites

Introduction

Emergency care requires the finest skills to handle the patient and save his life. From the initial management to making the quick diagnosis, everything is done carefully to achieve the best outcomes. However, one must know the drugs used in emergency to treat and stabilize the patient as early as possible. Following is the list of commonly used emergency medicines in Casualty in India.

Emergency drugs used in O.T and other critical care units.

Emergency drugs are those chemical entities used in— patients during life threatening conditions so that the symptoms can be controlled and life can be saved.

The concept of GOLDEN HOUR In emergency medicine, the golden hour (also- known as golden time) refers to a time period lasting for one hour, or less, following traumatic injury being sustained by a casualty or medical emergency, during which there is the highest likelihood that prompt medical treatment will prevent death

Purpose

To provide initial treatment for broad spectrum of— illness and injuries, most of which are life threatening.

- ✓ To save life of patient.
- ✓ To control symptoms of patient.
- ✓ To reach the site of action as soon as possible
- ✓ To normalize he vital body functions.
- ✓ To diverge the patient from possible risk.

The drug which is used for life saving is called emergency drugs. They are Atropine, Adrenaline, Deriphilline, Decadran, Lasix, Sodium Bi Carbonate, Potassium Chloride, Calcium Gluconate, Nitro Glycerine, Avil, Aminophilline and 2% Xylocord.

OXYGEN: Without O₂ brain death occurs within 6 minutes.— O₂ saturation is measured using pulse oximeter. O₂ is required in emergency condition like severe physiological stress, Shock, Traumatic injury, Acute myocardial infarction, Cardiac arrest.

CARDIAC ARREST: Cardiac arrest is a sudden stop in effective blood flow due to the failure of the heart to contract effectively. Defibrillation is the most prompt treatment.

Adrenaline Dose: 1 mg i.v. bolus (1 ml of 1:1000) Adrenaline concentrates the blood around the vital organs, specifically the brain and the heart, by peripheral vasoconstriction. Adrenaline also strengthens cardiac contractions as it stimulates the cardiac muscle. Amiodarone and Lidocaine are given to control arrhythmias.

ASTHMA: Asthma is chronic inflammatory disease of the airways of the lungs Status Asthmatics is an emergency condition where asthma attack is not relieved by relievers (Bronchodilators)

Salbutamol is beta-2 agonist and causes bronchial smooth muscle relaxation. 100 – 200 microgram/puff. Such 2 puffs are inhaled through meter dose inhaler in case of breathlessness with the help of spacer.

Hydrocortison hemisuccinate Dose: 200 mg given i.v immediately. Steroids improve airway, reduce asthma exacerbation. They also improve response of airway smooth muscle to beta2 agonist and reduce refractoriness to them.

Aminophylline 250mg/10ml ampoule to be dissolved in 20 ml of 5% → glucose and is given i.v. slowly. It causes smooth muscle relaxation.

Anticonvulsants: Midazolam Injection 1 mg/ml; administered into the buccal cavity between the gum and cheeks by syringe or intravenous for controlling the convulsions

Diazepam 5 mg intravenous bolus and repeat every 2 minutes to a maximum dose of 20 mg for convulsions

Injection Phenytoin 15 mg/kg via intravenous infusion over 20 minutes followed by maintenance dose for seizures.

Atropine: It is a alkaloid and antagonist of acetylcholine. It is used in pre anaesthetic medication to inhibit the body secretions like trachea bronchial secretions. It is an antidote for insecticide poisoning

Dose: 0.5 mg IM

Side effect: dry mouth, flushing, dry skin, constipation, difficulty in swallowing, headache

Adrenaline: This medication is used in emergencies to treat very serious allergic reactions to insect stings/bites, foods, drugs, or other substances. Epinephrine acts quickly to improve breathing, stimulate the heart, raise a dropping blood pressure, reverse hives, and reduce swelling of the face, lips, and throat.

Side effect: Fast/pounding heart beat, nervousness, sweating, nausea, vomiting, trouble breathing, headache, dizziness, anxiety, shakiness, or pale skin may occur.

Decadran: It is selective glucocorticoid. It is used in acute conditions like shock, adrenal crisis, acute asthma and cerebral oedema

Dose: 4-10 mg

Side effect: Prolonged usage lead to Cushing syndrome, i.e. obesity, moon face, narrow mouth, supra clavicular hump, fragile skin.

Deriphilline: It is the xanthenes derivative and smooth muscle relaxants and increases the force of diaphragmatic contraction and improving asthmatic conditions and copd

Dose: 15-20 mg /kg /day

Side effects: cardiac arrhythmias, anorexia, nausea, tremors and CNS excitation

Avil / Chlorphenaramine: It is an anti histamine and inhibit the enzyme activity of histidine decarboxylase catalysing the transformation of histidine into histamine. It is commonly used for relief of allergies a running nose and watery eyes, swelling and vaso dilation

Side effects: Drowsiness, blurred vision, constipation, dry mouth, dizziness, confusion and difficulty in passing urine.

Xylocard 2 % Injection : It is an effective numbing medicine used before surgical procedures. It blocks nerve signals from a specific part of the body and is categorized as a local anaesthetic medicine. It is also used to treat arrhythmia characterized by an improper beating of the heart.

Side effect: Flushing or redness of skin, Injection site bruising and red coloration, Nausea or Vomiting, Cracked or scaly skin, Fast heartbeat, Difficulty in breathing, Joint pain and swelling

FUROSEMIDE

It is the loop diuretic used for acute pulmonary edema due to left ventricular dysfunction or hypertensive crisis. The action of diuresis may start within 20 minutes

Side effects: hypotension, dehydration and electrolyte imbalances and allergic reaction

Calcium chloride: It Increases cardiac contractile state. It is used for Hypocalcemia, hyperkalemia, and hypermagnesemia; Side effect: Syncope, cardiac arrest, dysrhythmia, bradycardia

Calcium gluconate: It Counteracts the toxicity of hyperkalemia It is for Hyperkalemia, hypocalcemia; Side effects: Syncope, cardiac arrest, dysarrhythmia, bradycardia

Magnesium sulphate: It reduces striated muscle contractions. It is used for Seizures of eclampsia, torsades de pointes, hypomagnesaemia ; Side effect: Drowsiness, CNS depression, respiratory depression

Nitro glycerine: It is the Smooth muscle relaxant, acting on vasculature, bronchial, uterine, intestinal smooth muscle. It is used in Acute angina pectoris, ischemic chest pain; Side effect: Headache, dizziness, weakness, reflex tachycardia

Sodium bi carbonate: It Buffers metabolic acidosis and lactic acid buildup. It is used for metabolic acidosis during cardiac arrest, tricyclic antidepressant, aspirin; Side effect: Hyponatremia, metabolic alkalosis, tissue sloughing and cellulites

Drugs used in operation theatre/ Anaesthetic drugs

Halothane: It is used for general anaesthesia for doing surgery; Dose 2-4% in air, oxygen/nitrous oxide, maintain at 0.5-1.5%

Theopentone sodium

It is used for induction of anaesthesia and rapid control of convulsions like status epilepticus

Dose: 100-150 mg for adult and 3- 7 mg/kg body weight for children.

Side effect: cardiac arrhythmias, prolonged somnolence, sneezing, coughing and laryngeal spasm

Ketamine: It produces feeling of dissociation from one's own body and surroundings (analgesia, immobility, amnesia with light sleep)

Dose: 2mg/kg body weight

Side effect: illusion, hallucination and nystagmus, nausea, vomiting, hypotension and tachycardia

Pancuronium

It is a synthetic steroidal compound with little ganglionic blockade and good cardiovascular stability. It is used for skeletal muscle relaxation in general anaesthesia. Dose: 40-10 mcg per kg body weight

Side effect: flushing, broncho spasm and arrhythmias

Atracurium:

The main action of this drug is inactivation in plasma by spontaneous non-enzymatic degradation; in addition to that by cholinesterase. The duration of action is 30-60 mins. It is also the muscle relaxant used during general anaesthesia. Dose: 0.4-0.5 mg/kg body weight

Side effect: Hypersensitivity, broncho spasm, hypotension and flushing

Succinylcholine: It is an ultra short acting depolarising agent. It induces rapid complete and predictable paralysis within 1 minute and has spontaneous recovery in 5 minutes. It is also skeletal muscle relaxants used during general anaesthesia.

Dose: 0.3-1.1 mg/ kg

Side effect: Prolonged apnoea, nausea, nervousness, respiratory depression, increased intracranial pressure, tachycardia hypertension, hyperkalemia

I.V fluids, injections

Injections

An injection is an infusion method of putting fluid into the body, usually with a hollow needle and syringe, which is pierced through the skin to a sufficient depth for the material to be forced into the body. An injection follows a parenteral route of administration that is, administered through other than digestive tract. (see the unit 10)

fluids

The aim of infusing the fluid in the body is to correct or prevent fluid and electrolyte imbalance and to deliver medication and blood products.

Equipments required for I.V. infusion

- ☐ Intra venous catheter
- ☐ I.V. set
- ☐ Hanger
- ☐ Adhesive tape

- ☐ Micro drip set
- ☐ Infusion pump

Substances that may be infused intravenously include volume expanders, blood products medications and nutrients. Volume expanders has mainly classified into Two types i.e. crystalloids and colloids.

Colloids are intravenous solutions that contain large form of protein or similarly other form of molecules. e.g. Plasma Protein Fraction , Dextran and Hestastarch.

Crystalloids solutions are the primary fluid used for pre hospital Intra venous fluid therapy. It contains electrolytes e.g. sodium, potassium, calcium, chloride .crystalloids come in many preparations and are classified according to their tonicity .They are Isotonic, hypotonic and hypertonic

Isotonic fluids

Isotonic: Equal concentration of a solution

The cell has the same concentration in normal conditions the cell's intracellular and extracellular is both isotonic. Isotonic solutions are used to increase the extracellular fluid volume due to blood loss, surgery and dehydration.

Isotonic fluids

- ☐ 0.9% Saline
- ☐ 5% Dextrose in 0.225% saline (D5W1/4NS)
- Lactated Ringer's

Hypotonic fluids

Hypo Tonic: under concentration of a solution

The cell has a low amount of solute in extracellular and it wants to shift inside the cell to get everything back to normal via osmosis. This will cause **cell swelling** which can cause the cell to lyses. Hypotonic solutions are used when the cell is dehydrated and fluids need to be put back intracellular chamber. e.g. diabetic ketoacidosis (DKA) or hyperosmolar, hyper glycaemia.

Hypotonic fluids

- ☐ 0.45% Saline (1/2 NS)
- ☐ 0.225% Saline (1/4 NS)
- ☐ 0.33% saline (1/3 NS)

Hypertonic fluids

Hyper Tonic: excessive concentration of a solution

The cell has an excessive amount of solute extracellular and osmosis is causing water to rush out of the cell i.e. intracellular to the extracellular area which will cause the **cell to shrink**.

- ☐ 3% Saline
- ☐ 5% Saline
- ☐ 10% Dextrose in Water (D10W)
- ☐ 5% Dextrose in 0.9% Saline
- ☐ 5% Dextrose in 0.45% saline
- 5% Dextrose in Lactated Ringer's

Ante rabies vaccine

Rabies is a serious disease caused by a virus. Rabies occurs mainly in animals, but a human can get rabies after being bitten by an infected animal. There may be no symptoms at first, but weeks or even months later rabies can cause pain, headaches, tiredness, irritability, fever, hallucinations, seizures, and paralysis.

Rabies human diploid cell vaccine is used to protect people who have been bitten by animals (post-exposure) or otherwise may be exposed to the rabies virus (pre-exposure).

This vaccine works by exposing a small dose of the virus, which causes the body to develop immunity to the disease. Assess the following before giving Anti rabies vaccine

- ✓ a weak immune system
- ✓ any type of infection or severe illness; or
- ✓ an allergy to neomycin.

Vaccine-Anti rabies vaccine; Dose- 1ml; Route-Intra muscular**Pre-Exposure Prophylaxis:**

Primary vaccination: 3 doses, 1 ml each, IM, on days 0(first shot), 7 days after the first, followed by a third shot 21 or 28days (i.e. 2 or 3 weeks later).

Booster vaccination: 1 dose, 1 ml, IM

Post-Exposure:

Previously unvaccinated: 5 doses, 1 ml each, IM, on days 0, 3, 7, 14, and 28

Previously vaccinated, known antibodies: 2 doses, 1 mL each, IM, on days 0 and 3

Common side effects of vaccine:

- pain, swelling, itching, or redness where the shot was given;
- headache;
- dizziness;
- muscle pain
- nausea, stomach pain
- Serious side effects are a very high fever; vomiting, skin rash, joint pain, general ill feeling; problems with balance or eye movement, trouble in speaking or swallowing..

Note:

- ✓ Do not interrupt or discontinue because of local or mild systemic reactions; these can usually be managed with anti-inflammatory, antihistamines, and anti-pyretic drugs.
- ✓ In people at high risk of exposure, periodically check titres to determine the need for a booster dose.
- ✓ For lab workers/vaccine makers who work with live virus, check titres every 6 months; for other high exposure patients (veterinarians, animal control, cavers, etc.) check every 2 years.
- ✓ Administer post-exposure doses immediately after exposure.
- ✓ Rabies immune globulin may be given on day zero with the first post-exposure dose

Ante snakevenom**Anti-Snake Venom**

Snake ant-venom is a kind of therapeutic serum which constitutes A purified fraction of

immunoglobulin or immunoglobulin fragments fractionated from the plasma of animals that have been immunized against a snake venom or a snake venom mixture.

Anti snake venom acts to neutralize the poisonous venom. Thus, the receptor sites that were previously blocked by venom are now free to interact with the acetylcholine molecule and normal respiration resumes.

Indication As per WHO guideline ASV should be administered in the following conditions

- ✓ evidence of coagulopathy
- ✓ systemic bleeding
- ✓ Neuro toxicity like ptosis and ophthalmoplegia

1 ml of ASV neutralises

- ✓ cobra-0.6mg
 - ✓ commonkrait-0.45mg
 - ✓ Russel viper-0.6mg
 - ✓ saw scaled viper-0.45mg
 - Initial dose of 100ml of normal saline and given over one hour;
 - ASV should introduce 2ml/min rate as slow intravenous (IV) injection.
 - ASV should introduce continuous 1 hour in same rate
- Patient should be kept in monitoring for 2 hours after ASV injection.
- ASV should not be administered locally at the biting site.

side-effects : Rash ,Itching ,Wheezing , Rapid heart rate ,Fever , Body aches

Contraindications- Hypersensitivity

Conclusion

The MPHWS (F) are required to know the names, mechanism of action, and side effects, routes of administration, dose, and specific administration considerations for many emergency medications and intravenous fluids. When administering certain medications would be harmful to the patient, it is critically important they develop a solid understanding of the information in this chapter and stay up to date on the latest pharmacologic information.

Essay questions

1. Explain about anti rabies vaccine
2. Describe about I.V. fluids

Short answer questions

1. List name of the emergency drugs
2. List the name of drugs used in operation theatre
3. What is the action of Avil?
4. What is the action of salbutamol?
5. What is action of atropine?

PART – D**UNIT-12 FIRST AID AND REFERRAL****Structure**

- Introduction
- Principles of first aid
- First aid kit and supplies
- Bandages and types
- Principles and methods of Bandaging

Objectives

All the end of this chapter reading the students are able to

- Follow the principles of first aid
- Prepare first aid kit
- Learn and improve skill of bandaging
- List the principles of Bandages

Introduction

A sudden or unexpected illness or injury is initially caused by individual is known as first aid. It is commonly required during accidents in the road, fire accidents and medical problems like shock and heart attack according to the seriousness of the causality, the person is transferred to the hospital through ambulance. (e.g. 108 services, ambulance services).

Definition

First aid is the immediate care providing to the victim by non expert of an accident or sudden illness.

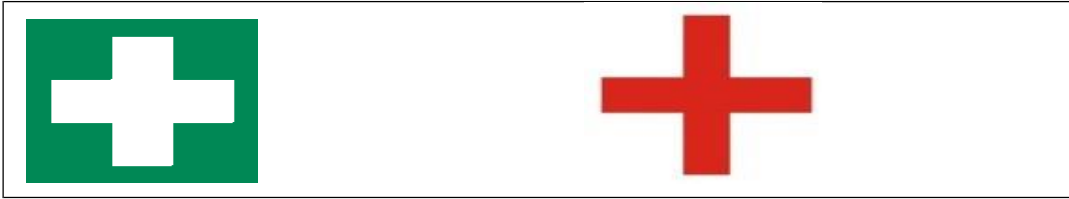
Aims of first aid

- To preserve life
- To promote recovery
- To prevent further injury / harm

Principles of first aid

The general principles of first aid are to

- Remove the causality immediately from the accident area.
- Rescue the victim of early as possible
- Without aggravating existing health situation.
- Confirmed to necessary people only
- Control bleeding immediately
- Restore respiration and circulation of causality
- Give immediate treatment to shock and prevent impending shock.
- Immovable fracture part of casualty
- Give reassurance
- Do first things first
- Don't allow crowd around the causality
- Call ambulance to shift the victim to the referral centre / hospital.

Symbol**It is the ISO first aid symbol****It is the symbol of red cross****12.3-First aid Kit**

A kit which consists of supplies and equipment for giving initial care to the victim is called as first aid kit.

First aid kit consist of

The medicine chest or first-aid kit should be kept well stocked and should be restocked every 6 months. The following basic supplies are useful to have on hand:

- ☐ Activated charcoal (call the poison control centre before using)
- ☐ Adhesive tape
- ☐ Antihistamine for allergic reactions
- ☐ Antibiotic ointment (such as bacitracin)
- ☐ Antiseptic solution or towelettes
- ☐ Acetaminophen or ibuprofen
- ☐ Bandage adhesive strips in various sizes and shapes
- Bandages – with all sizes
- ☐ Gause pad
- ☐ Sterile dressings
- ☐ Sterile eye pad
- ☐ Anti septic ointment, neomycin and polymyxin is
- ☐ Beta dine solution
- ☐ Gloves, surgical mastic, apron
- ☐ Syringe with needle
- ☐ Splints
- ☐ Cold pack or ice bag
- ☐ Compression (elastic) bandage for sprains and strains
- ☐ Cotton balls and cotton-tipped swabs
- ☐ Eye wash (sterile)
- ☐ First-aid manual
- ☐ Gauze bandages in a roll, 2 or 3 inches (5 or 7 centimetres) wide
- ☐ Gauze pads in various sizes to stop bleeding and cover wounds
- ☐ Gloves (latex or nitrile)
- ☐ Hand sanitizer
- ☐ Hydrocortisone cream for insect bites and stings
- ☐ Loperamide in case of diarrhoea (call a doctor before taking)
- ☐ Pen light or flashlight with extra batteries
- ☐ Petroleum jelly
- ☐ Plastic bags for the disposal of potentially contaminated material
- ☐ Rehydration solution (call a doctor before taking)

- ☐ Sharp scissors
- ☐ Soap
- ☐ Thermometer
- ☐ Tissues
- ☐ Tweezers

General rules

When ever, we come cross the emergency situation like accidents, burns etc. We need to

- use our common sense to save the life of victim
- know our limitations
- do not attempt to do too much

1. Assess the situation :-

As soon as enter into the incident place, make execute assessment of the situation and decide on priorities of action.

- Assess whether causality are in any danger and any source helps in surroundings

2. Safety: The first aider must minimize the risk of danger to him against any further causalities arising for example road accidents and petrol spillage – switch off the ignition of the vehicles concerned.

3. Determine the priorities i.e. air way clearance breathing pattern and circulation – check anyway is open and check pulse for circulation.

4. Getting help from others in emergency.

By standards can be extremely useful and may be able to assist with treatment. i.e. supporting badly injured part; control traffic crowds.

5. Calling for emergency service for assistance :e.g. Ambulance ,Police and Fire brigade .

The following information to be passed by the first aider or by bystanders.

- Telephone numbers of the informer
- Location of the incident
- Type and seriousness of the
- Name of causality, sex and approximate age of casualty.
- Request for special help if the emergencies like heart attack and child birth.

Qualities of a first aider

- Good observation skill
- Able to act quickly
- Be stable (without panic)
- Self confidence
- Able to judge injuries
- Sympathy
- Good counselling skill
- Strong enough to control the situation
- Good communication skill
- Able to get help from others.

But the first aider should keep in mind that he is not a doctor and don't examine the wound by opening which have already been bandaged by somebody else.

Bandages and types

Bandages are made of cotton, calico, elastic net, special paper or other materials and are used to maintain direct pressure over a wound, that dressing is known as bandages.

Purpose:

- To control bleeding
- To hold dressing or splint in position
- To provides support for lumbar joint
- To restrict movement
- To assist in lifting and carrying patients
- To reduce swelling.

Types of bandages:

- Roller
- Triangular
- Special (e.g.) many failed bandage.

General rules in Bandage application.

- The victim should be in lying or sitting position while applying bandage.
- Give well support to the injured part.
- Use sterile or clear materials
- Cover the entire wound
- Do not bandage too tightly or too loosely
- Expose the finger / nails for checking the circulation.
- While applying the bandage, to immobilize the a limb part of the body the knots in front of the uninjured side of the body.
- Pay special alteration to natural hollows by keeping extra padding.

Principles and methods of Bandaging Roller

Bandages

Roller bandages are made of cotton, gauze and are supplied in 5 meters roles.

Bandaging part	Width
Fingers, toes	- 25 cm (1 inch)
Hand, Head	- 5 cm (2 inch)
Arm	- 5 or 6 cm (2 or 2 ½ inch)
Leg	- 7.5 – 9 cm (3 or 3 inch)
Trunk	- 10 or 15 cm (4 or 6 inch)

Parts of roller bandage:

Rolled part is called head

Unrolled part is called tail

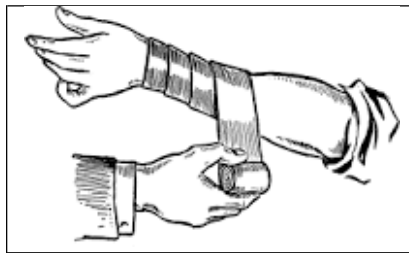
Rules for roller bandage application

- Face the patient

- When bandaging left limb hold the head of the bandage to right hand and vice versa.
- Apply the outer side of the bandage over the pad and wind it round the injury twice so that it becomes firm.
- Apply bandage from the inner side to the outer side.
- Apply bandage from lower part to upwards.
- Neither the bandage is too loose or too tight
- Each layer of bandage covered 2/3 of the earlier layer.
- Fix the bandage with pain or adhesive plaster.

Patterns used in Roller bandage

1. **Simple spiral:** it is used on the trunk fingers and other uniform services with circular turns.



2. **Reverse spiral:** It is modified spiral in which router in reversed downwards on itself at each round. It must be used where the thickness of the part varies like the leg or fore arm.

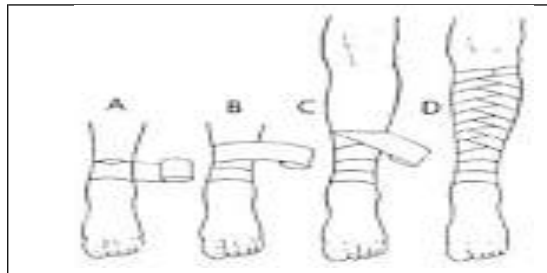


Figure of '8'

The bandage is applied obliquely alternatively up and down. So that the loops appear like the figure of 8. It is used for points like elbow knee etc.



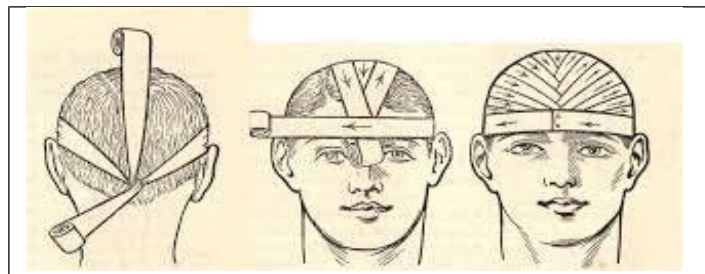
Spica

This is modified figure of '8' and is useful for bandaging the leg, shoulder, groin and thumb.



Head Bandaging

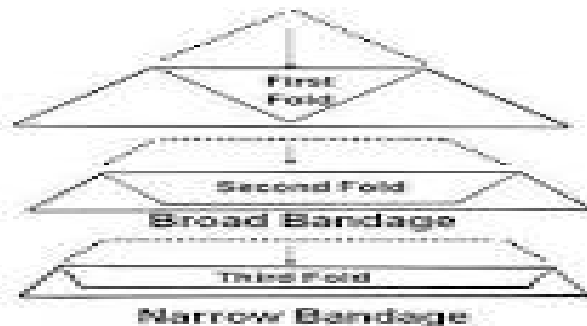
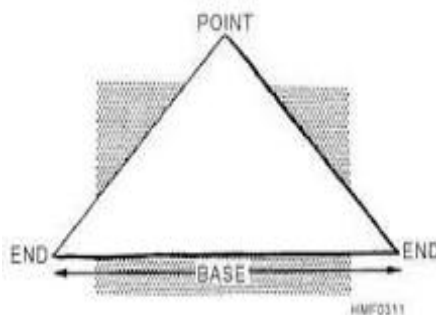
Vertical bandage carried twice forwards and once backwards. Continue to pass the vertical bandage backwards and forwards, each time a little to the left and right alternately, locking it with horizontal bandage. Finally pass horizontal bandage twice around the head and pin in front.



Triangular bandage

(100 cm²) 1 meter calico cloth has been cutting from corner to corner, which gives two triangular bandage. It has 3 borders. The longest is called as the base and the other the two sides there are 3 corners the one opposite the base is called the “point” the other two are called the “ends”.

Terminate the bandage above the joint with two circular turns, and secure the end appropriately



Triangular Bandage to the head

1. Turn the base (longest side) of the bandage up and center its base on center of the forehead, letting the point(apex) fall on the back of the neck.
2. Take the ends behind the head and cross the ends over the apex.
3. Take them over the fore head and tie them.
4. Tuck the apex behind the crosses part of the bandage and/or secure it with a safety pin, if available.

Apply a Triangular Bandage Sling

A triangular bandage sling is usually made from a muslin bandage, but any material that does not stretch (such as fatigue shirt, trousers, poncho, blanket or shelter-half) can be used. Fold, cut, or tear the material into a triangular shape.

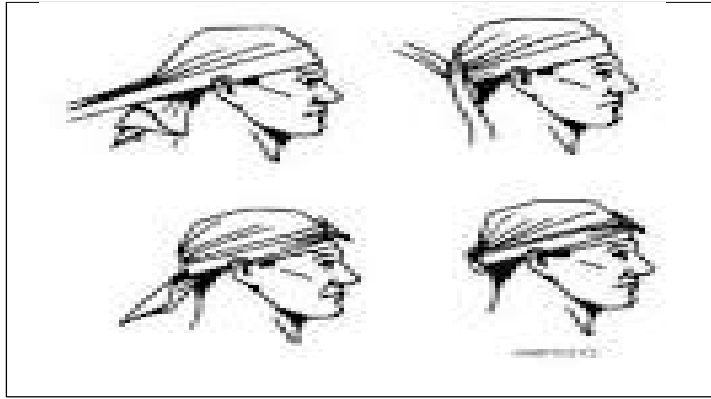


1. Insert the material under the injured arm so that the arm is in the center, the apex of the sling is beyond the elbow, and the top corner of the material is over the shoulder of the injured side
2. Position the forearm so that the hand is lightly higher than the elbow (about a 10 degree angle)
3. Bring the lower portion of the material over the injured arm so that the bottom cover goes over the shoulder of the uninjured side.
4. Bring the top corner behind the casualty's neck
5. Tie the row corners together so that the knot should slip into the "hallow" at side of the neck of the uninjured side.

Triangular bandage to the head

1. Turn the base (longest side) of the bandage up and center its base on center of forehead, letting the point (apex) fall on the back of the neck.
2. Take the ends behind the head and cross the ends over the apex.
3. Take them over the forehead and tie them.
4. Tuck the apex behind the crossed part of the bandage and / secure it with a safety pin, if available.

Triangular bandage to the head



Ear bandage

1. Lay the outer surface of the bandage on forehead and carry the bandage round head in one circular turn, bandaging away from injured ear.
2. Turn the sound side carry the bandage round the back of the head, lowdown in nape of the neck again, repeat these.
3. Each turn being slightly higher than the previous one as it covers the dressing, but slightly over as it covers the hair.
4. Continue still the hole is covered and complete the bandage by one straight turn around the forehead, pinning where all the turns cross one another.

Ear bandage



Figure 3-25 Applying ear bandage to ear (Illustrated A thru C)

Jaw injuries and bandaging

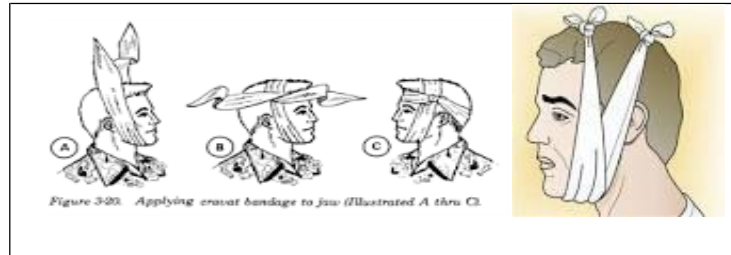
1. Before applying a bandage to a casualty's jaw, remove all foreign material from the casualty's mouth. If the casualty is unconscious, check for obstructions in the airway.
2. The dressing and bandaging procedure outlined for the jaw serves a twofold purpose. In addition to stopping the bleeding and protecting the wound, it also immobilizes a fractured jaw.
3. When applying the bandage, allow the jaw enough freedom to permit passage of air and drainage from the mouth.

Bandaging

1. Place the bandage under the chin and carry its end upward. Adjust the bandage to make one end longer than the other.
2. Take the longer end over the top of the head to meet the short end at the temple and cross the end over.

3. Take the longer end in opposite direction to the other side the head and tie them over the part of the bandage that was applied first.

Jaw bandage



Securing bandage

To secure the bandage apply the following

- A. Tape
- B. Metal
- C. Safety
- D. Binders
 - i. Binders used to secure a dressing in the rectum and perineal areas.
 - ii. Abdominal binder (sculetetus).

Ensure that there are no wrinkles creases in the binder.

Slings are used to provide support and protection for injured arms, wrists and hands or for immobilizing an upper limb when there are chest injuries.

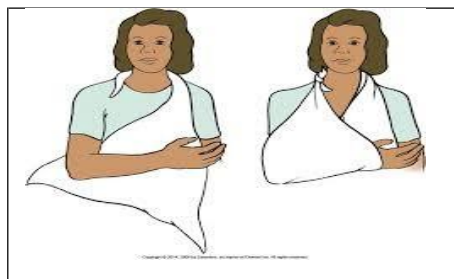
Types of slings

1. Arm sling
2. Elevation sling
3. Improvised sling

1. Arm sling

This is used when there are injuries to the upper limb and for some chest injuries. This is used in treating a fracture of the collarbone. It helps to keep the hand raised high up giving relief from pain due to the fracture.

- It holds the forearm across the chest but it is only effective if the casualty sits or stands.



- When an arm sling is in the correct position the casualty's hand will be slightly higher than the elbow. Place the forearm across the chest with the fingers pointing towards the opposite shoulder and the palm over the breastbone.
- The base of the bandage should lie at the root of the little finger leaving all the finger nails exposed.

2. Elevation sling

This sling is used to support the hand and forearm in a well raised position.

- If the hand is bleeding
- There are complicated chest injuries.
- There are shoulder injuries.

A. Collar and Cuff sling

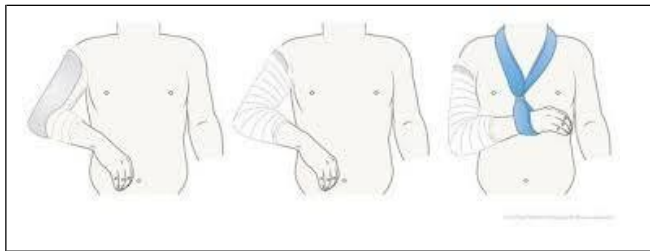
This is used to support the wrist only.

1. The elbow is bent, the forearm is placed across the chest in such a way that the fingers touch the opposite shoulder. Now the sling is applied.



Collar and cuff sling

B. A clove-hitch is passed round the wrist and the ends tied in the hollow above the collarbone on the injured side. Clove-hitch is made with a narrow bandage. Two loops are made and laid one on top of the other.



1. Improvised sling



If no triangular bandage is available slings may be improvised in several ways to provide support.

- a) Turn the free end of a coat and pin it to the clothing.
- b) Pass the hand inside the buttoned coat or shirt.
- c) Pin the sleeve of the injured limb to clothing

Use mufflers, scarf, belt, tie or soft cloth

Conclusion

First aid is essential for preserving the life of the victim in during emergencies learning & practicing bandages well help to restore the life by controlling bleeding.

Conclusion

Knowing first aid is very important to every medical person and to extend the services to needy and sufferers are the key principle of this unit.

Essay question

1. Describe the general rules of first aid
2. What are the types of bandages and write any two types in detail.

Short answer questions

1. What are the purposes of first aid?
2. What are the qualities required for first order?
3. What are the principles of roller bandages
4. What is the use of triangular bandage?

UNIT –XIII MINOR INJURIES AND AILMENTS**Structure**

- Introduction
- Cuts and wounds
- First aid for foreign bodies
- Burns and scalds
- Snake bite
- Dog bite
- Health education

Objective

- At the end of this chapter, the students are able to
- Define cuts and wounds
- List the type of wounds
- Learn the first aid for foreign body removal
- Understand and acquire knowledge regarding first aid measures for animal bite
- Describe the first and management for burns and scalds learn the principle of health education

Introduction

The skin is the largest surface layer which covers and provides structure and shape of the body. Intact skin protects over body from entry of infection and initial ailment of minor injuries will prevent entry of micro organisms and promote healing. Burns has classified into superficial burns, partial thickness burns and deep and full thickness burns. It is minor, it could be managed at home and severe burns require hospitalization. Creating awareness in the community requires effective health education on need basis by the multipurpose health worker

Cuts and wounds

The intact skin is cut or tear with sharp instrument/ blunt instrument unexpectedly or accidentally by force is known as wound. It may be superficial or deep wound.

Cut is just tear of skin, it involves epidermis and partial dermis. The tear is caused by blade or knife while doing work eg: cutting vegetable

Types of wound

Abrasions- It is scraping away of superficial layer of skin



Punctured wound-A stab from needle, nail or bullet causes tear deep small skin area is known as punctured wound



Contused wound-A blow with blunt object which splits the skin and bruises the surrounding tissues e.g. fall on floor, falling of objects on the body. It is closed wound with small blood vessels are broken under the skin which forms ecchymosis



Chest wound-A wound in front or back of thoracic cavity due to blunt force, stabbing and punctured sharp instrument. The chest injury affects the lung ventilation and sometimes heart function also. The amount of oxygen reaching blood stream may be insufficient and asphyxia may result

Abdominal wound-The injury to abdominal wall underlying organ due to sharp or blunt instrument lead to bleeding and protrusion of intestinal structure from the wound is known as abdominal wound

Signs and symptoms

- ✓ Superficial scrapping of skin
- ✓ Wound edges irregular
- ✓ Bleeding is present to a varying extent
- ✓ Pain and swelling of the affected area
- ✓ Bluish discolourization of lip, tongue, nails bud, skin in chest injury due to asphyxia

Chest injury- Difficulty in breathing, blood stained liquid bubbling

Abdominal wound- Vomiting, abdominal pain, bleeding and exposure intestinal structure / organ from the injured side

Treatment

- ✓ Wash the site with clean boiled cool water and soap if its abrasion
- ✓ Handle the injured part as gentle as possible
- ✓ Sit or lay down the victim and elevate the affected limb
- ✓ Stop bleeding by using direct pressure
- ✓ Always clean away from the wound , don't clean towards the wound, remove the foreign matter
- ✓ Apply a cold compress to the injured part to control bleeding and reduce swelling
- ✓ If the wound is small, apply antibiotic ointment and cover with a clean dry dressing

Chest injury

- ✓ Place the victim in half sitting position with the head and shoulder supported , turn the body towards the affected side of injury
- ✓ Cover the wound with sterile dressing and sir tight seal with plastic sheet or adhesive tape
- ✓ Support the arm on injured side in an elevation sling and make the causality as comfortable as possible
- ✓ Check the breathing rate, pulses and level of responsiveness at 10 minute interval

Abdominal wound

- ✓ Place the causality in their back with knee bent and orevent wound gaping
- ✓ Apply sterile dressing cover the abdominal wound
- ✓ Check respiration and pulse for every ten minutes for evidence of shock and internal bleeding
- ✓ If necessary applu tourniquet
- ✓ Preserve the avulsed part, turn of parts should be saved and flaps of skin may be folded back to their normal position before bandaging

Wounds that need special care

Call 108 ambulance

1. Control any bleeding

- Use a bulky pad and apply it firmly to the bleeding area. Rise if possible

2. Recover the injured part

- ✓ If possible, gently place it into plastic bag. Seal the bag with a little air inside to protect the severed part with a cushion of air
- ✓ Place the inflated bag into a container or bucket of cold water to which several ice cubes have been added
- ✓ Ensure the severed part is transferred to hospital with the patient

**Crush injury**

A crush injury occurs from compression of large muscle groups and soft tissues by heavy weight. The most serious sites for crush injury to occur are the head, neck, chest, abdomen and thigh

Call 108 for an ambulance**1. Remove the crushing by force**

- ❖ Remove the crushing by force if possible because permanent tissue damage may occur with severe crushing force
- ❖ If crushing force has been in place for some time, be prepared to give prompt first aid, because removal of crushing force may cause a sudden collapse or deterioration in patient's condition

2. Treat the patient's injuries

- ❖ Assess and treat any injuries in order of their importance
- ❖ Control any bleeding with a sterile pad applied firmly to injured area
- ❖ Assist the patient into the position of greatest comfort and use soft padding to provide support for the injured part
- ❖ If a limb is involved, support and immobilize the injured area

Dust, insect, tiny air borne particle may lodge in the eyes unexpectedly of an individual. It produces irritation of eyes redness, difficulty to blink, pain, watery eyes

- ❖ Don't rub eyes

- ❖ Retract eye lids and assess the size of foreign bodies
- ❖ Wash the eye with sterile water/ clean water
- ❖ Gently mop the eye and support the eye with napkin
- ❖ If foreign body is glass or wooden particle, remove with instrument under the supervision of doctor / ophthalmologist

Burns and scalds

Definition: Burns are the tissue injury caused by contact with heat, flame, chemicals, electricity and radiation

Scalds: Skin injury which is caused by hot liquids is known as scalds (hot food, hot water, tea, coffee, milk. Burn categories based on the following the extent of tissue damage

1st -degree burn

A first degree burn is the least serious type, involving only the out layer of skin. It may cause : Redness, swelling and pain. First-degree burn as a minor burn. If it involves much of the hands, feet, face, groin, buttocks or a major joint, seek emergency medical attention.

2nd-degree burn

A second-degree. Burn is more serious. The, second-degree burn is no larger than 3inches(7.6 centimeters) in diameter, treat it as a minor burn. Of the burned area is larger or covers the hands, feet, face, groin, buttocks or a major joint, treat it as major burn and get medical help immediately. It may cause

- | | |
|-------------------------------|------------|
| · Red, white or splotchy skin | · pain |
| · Swelling | · Blisters |

3rd-degree burns

The most serious burns involve all layers of the skin and underlying fat. Muscle and even bone may be affected. Burned areas may be charred black or white. The person may experience : Difficulty breathing, Carbon monoxide poisoning, Other toxic effects, if smoke inhalation also occurred

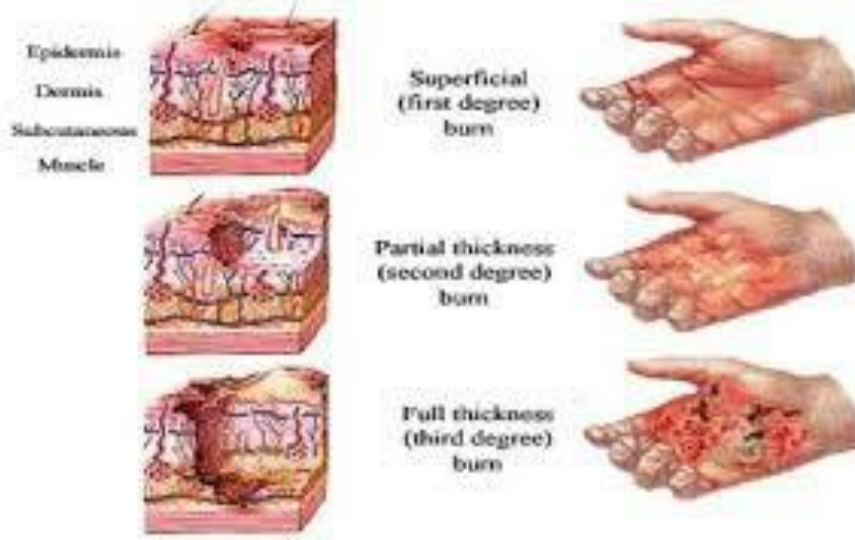
First aid for minor burns

Minor burns

- while waiting for the ambulance to arrive, observe the patient closely for any change in condition.
- Cool the burn to help soothe the pain. Hold the burned area under cool (not cold) running water for 10 to 15 minutes or until the pain decreases. Or apply a clean towel dampened with cool tap water.
- Remove rings or other tight items from the burned area. Try to do this quickly and gently, before the area swells.

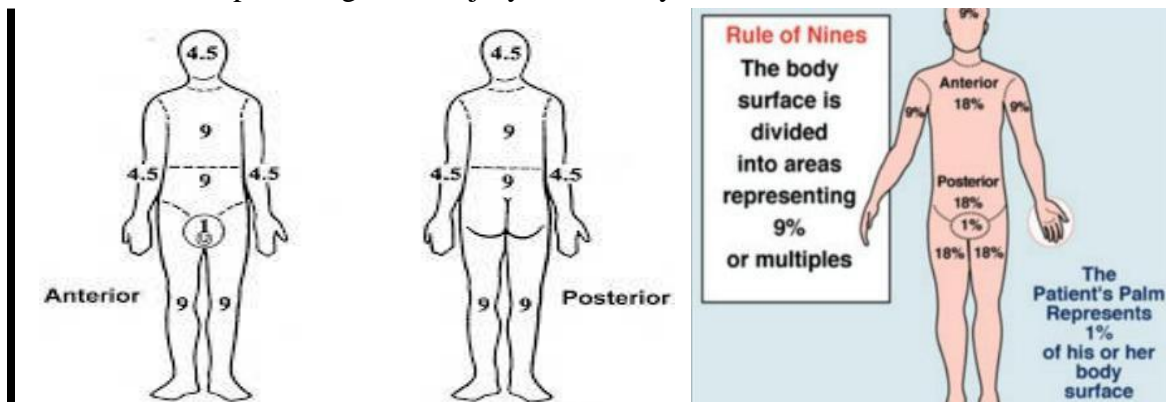
- Don't break small blisters (no bigger than your little fingernail). If blisters break, gently clean the area with mild soap and water, apply an antibiotic ointment, and cover it with a non-stick gauze bandage.
- Apply moisturizer or aloe Vera lotion or gel, which may provide relief in some cases.
- Do not put any butter, other remedies on the burn

Note : (See your doctor if you develop large blisters. Large blisters are best removed, as they rarely will remain intact on their own. Also seek medical help if the burn covers a large area of the body or if you notice signs of infection, such as oozing from the wound and increased pain, redness and swelling.)



Rule of nine for assessing the Burns area

To determine the percentage burn injury in the body i.e. total burns surface area of the body



Major Burns

Call 108 or emergency medical help for major burns. Until the ambulance unit arrives, do these actions

- ❖ Immediate removal from heat source
- ❖ Do not allow the person to run about. This only fans the fire and makes the flames spread.

- ❖ Hold a fire, blanket, coat, in front of victim
- ❖ In case of open flame, the victim should help to flat on the ground and roll on the floor.
- ❖ Protect the burned person from further harm. Ensure, the person you're helping is not in contact with smoldering materials or exposed to smoke or heat.
- ❖ Avoid pouring of water over the burnt area, once the fire has been extinguished, because it may be dangerous and lead to hypothermia, hyponatremia, convulsions and brain edema. The child should be wrapped in clean sheet to prevent heat loss.
- ❖ Check for signs of circulation. Look for breathing, coughing or movement. Begin CPR if needed.
- ❖ Remove jewels, belts and other restrictive items, especially from around burned areas and the neck. Burned areas swell rapidly.
- ❖ Oro-pharyngeal secretion to be removed and airways to be kept patents. The victim should be turned to one side and respiration to be checked. If necessary mouth-to-mouth breathing may be given.
- ❖ Shift patient to hospital immediately
- ❖ Take killed snake to hospital.

13. 2 First aid for foreign bodies

Foreign Body:

Any tiny particle that causes irritation abstraction to the body is known as foreign body. A foreign body is an object entered into the body from outside e.g. Young children put tiny objects in their body orifices i.e. ear, eyes, nose, and mouth. The tiny objects are: Button, coin, chalk piece, slate chalk, peas, marbles etc.

Foreign body can be inert or irritating. If it is irritable it will cause inflammation and scaring. They can obstruct passages either by size or by the scaring some cm be toxic.

one of the most common locations for foreign body is the alimentary tract. It is possible for the foreign bodies enter into the tract from mouth and come out from the rectum.

Skin

A small or big foreign body enters into the skin by force or pressure while walking falling or by accident that penetrates into the body

e. g. wood piece, thorn of the plant, sharp iron tiny particles, glass pieces etc

- If the foreign body is superficially present rinse with cold water and wiped off easily with swap
- If possible remove foreign body by fingers or hooks
- If the large foreign body embedded in the skin never attempt to remove it. It may be plugging the wound therefore restricting the bleeding.
- Control bleeding by applying direct pressure
- Squeeze the edge of the wound together along the side of foreign

- place the ring pad and build up the padding until it is high enough to prevent pressure on object
- Secure with diagonally applied bandage
- Don't apply bandage all over the foreign body then transfer the victim to the hospital immediately

Airways

Children commonly put peanuts, grapes, dhal, seeds, into the nose or mouth cause choking. It causes obstruction in the airway. Heimlich Manures used for removal of food particles from the throat which is caused for choking. Based on the site of obstructed particle, the foreign body removal takes place at the hospital the hospital/operation theatre.

Eyes

- cover the area of the burn. use a cool, moist, bandage or a clean cloth
- Transfer to hospital to be arranged promptly.

STOP

S-Strip-hot clothes and jewelry if possible

T-Turn on cold tap-(never use ice)-Run the Burn under cool water for 10-20min keep the rest of the person warm

O-Organise-Medical assistance

rotect-Burn with cling film or clean cloth (no dressing, cloth, creams / lotions.

- Put sterile dressing
- Shift the patient to hospital

13. 4 Snake Bite

Snakes are cold-blooded. Thus, they are unable to increase their body temperature and stay active when it is cold outside. They are most active at 25-32 C (77-90 F).

The Bite

- Poisonous snakes inject venom using modified salivary glands.
- During envenomation (the bite that injects venom or poison), the venom passes from the venom gland through a duct into the snake's fangs, and finally into its prey.
- Not all bites lead to envenomation. Snakes can regulate whether to release venom and how much to release."Dry Bites"(a bite where no venom is injected) occur in between 25%-50% of snake bites.
- This variation is species specific with approximately 25% of pit-viper bites being "dry" and up to 50% of coral snake bites. Snake venom is a combination of numerous substances with varying effects.
- In simple terms, these proteins can be divided into 4 categories

1. Cytotoxins cause local tissue damage,
2. Hemotoxins cause internal bleeding

3. Neurotoxins affect the nervous system

4. Cardiotoxins act directly on the heart.

All snakes are not fatal. Only small quantity of venom may be fatal. Most people die from fear and venom is not point of consideration.

Signs and symptoms

- Pain and numbness at the site of bite
- Drowsiness
- Burning pain at bite
- swelling
- Dimness of vision
- Difficulty in breath and speech
- Area become bluish purple after bite in 12 hours
- Dribbling of saliva, paralysis
- Convulsions

Diagnosis

- linear laceration with more punctures and abrasion
- local swelling for poisonous snakes bite
- respiratory symptoms
- paralysis

1. Poisonous snake bite

2. Non poisonous snake bite



Treatment

- Give him complete rest by laying down in calm
- Don't make him walk
- Apply a tourniquet immediately between bite and heart loose it for few seconds for every 10 minutes.
- Immobilize the affected limb
- Gently wash wound with normal saline
- Ice packs can be applied.
- Don't suck poison from site of wound.

- Treat shock
- Resuscitation (if necessary)

DOG BITE

When a dog bites, the front teeth are used to grasp the victim, while the other teeth pull at the surrounding skin as they bite. The result can be a deep hole in the skin causing a puncture wound, made by the front teeth, and a jagged wound or laceration (cut) with a scraped section of skin, or abrasion.

- Causes hydrophobia
- Watch dog for 10 days

Symptoms: History of bite, open wound, Discomfort, pain and bleeding

Rabies

- Headache, nausea, vomiting
- Agitation, confusion, hallucination
- Difficulty in swallowing
- Foaming at mouth
- Respiratory paralysis
- Difficulty in drinking water

Treatment

- Wash the wound with soap and water
- Clean the wound immediately run it under warm water for a few minutes to ensure it is thoroughly cleaned.
- Encourage bleeding from the wound : if it is not already bleeding ,gently squeeze the wound to encourage it to bleed, which will help prevent bacteria entering the wound.

Health education

Health education is as informal way of education to an individual, family and public by the health authorities by the local and other agencies regarding development of healthy habits and creating awareness about the health and disease

Health education is normally considered as a changing attitude and behavioral patterns of people towards attaining better status. Health education is a part of health care that is concerned with promoting healthy behavior. The Alma Ata declaration (1978) emphasizes the need for individual and community participation in the process of health education.1. It emphasize has shifted from prevention of disease from promotion of healthy life style. 2. Modification of individual behavior to modification of social environment. Community participation to community involvement

Aims

- To encourage-people to adopt and sustain health promoting life style and practices.
- To promote proper use of health care services available to them

- To create interest in gaining new knowledge and skill and change attitudes in making rational decision to solve their own problem
- To stimulate individual and community self reliance and participation to achieve health development at every step from identifying problems to solving them

Role of different agents in health education

Health education is provided to the society by different ways or agent, they are education institution, press, film, radio and television

Educational Institution

Health education is indeed an inter disciplinary approach which draws content and initiatives from physical, biological, medical and behavioral sciences. Health instruction component is encouraged today in the curriculum of the student from primary school to higher education. Even though health instruction is limited due to lack of awareness by the resource person in the educational. Healthy habits to be insisted to be students from the school age onwards, so that healthy nation could be developed

Mass Media

It may facilitate the health for all by passing information through magazines, newspaper and poster. e. g. Family welfare activities

The press and print media have its own limitation in promoting health consciousness among people. Once in a while reports, articles features profiles and other health centered contents appear in the press

Films

Film is a powerful medium of communication. Feature films which focus on health management are hardly produced in the country and it focus the attention of the audience on health, nutrition, family welfare, environmental protection

Radio

Radio is the only mass media which is accessible to the rural and urban people in plenty. It provides special programmes on variety of subject including health management.

Television

TV is the biggest mass media in India. The Doordarshan which is managed by the prasar Bharathi Corporation provides information, education and communication (IEC). support to health and family welfare through telecast during different time slots all over the country

Contents of Health Education

It covers every aspect of family and community health, the content of health education may be divided in the following division for the sake of simplicity

1. Human Biology-structure and function of Body need for exercise and rest ; effect of alcohol and smoking
2. Nutrition-Guide the people to maintain health by balanced diet remove Prejudices and improve food habits ; prevention of malnutrition ; obesity in children prevention of cardiovascular disorder; dietary plan for diabetes mellitus

3. Hygiene-To promote standard of personal cleanliness in the setting of the condition where people live ; education about fresh air, light, ventilation, storage of food, hygienic disposal of waste and prevention of pest
4. Family health-Health education to improve family responsibility in childbearing, child rearing self care and influencing their children to adopt healthy lifestyle
5. Disease Prevention and control-prevention of local endemic or communicable disease like typhoid, malaria, TB.
6. Mental Health-The health education is for keeping the people mentally healthy and prevent break down of mental health
7. Prevention of accidents-Educate the parents regarding accidents in children
8. Use of health services-Educate the people about the health services available in the community
9. Occupation Health-Safety measures in the working environment. Awareness of occupational hazards
10. Sex Education-Education about the pubertal changes, menstrual hygiene, health communication

Ethical Issues in Health Education- Health education is a complex activity in which different individuals and, organization play a part. They are parents, teachers, friends, physician, nurses, health workers and various organizations, governmental and nongovernmental.

Conclusions

Wound care is essential in any form of injury like open, closed, bite of animal and burns. The MPHWH (F) may play role as first aider in the community during emergencies. In such times she needs to care the injuries and other animal bites. She should be cleaned the injured skin properly and seek medical help on priority basis is necessary.

Essay questions

- 1, How do you give first aid to the major burns victim?
2. Describe the different types of wounds?
3. Describe the first aid management of the person with snake bite?
4. Write about the management of the foreign body removal?

Short answer questions

1. Write sign and symptoms of rabies
2. List the types of burns
3. What are the aims of health education?
4. What is scald?
5. What is STOP?
6. What are the sign and symptoms of wound?

UNIT-14 FRACTURE

Structure

–Introduction

14.1- Skeletal
system

14.2- Different types of bone fracture

14.3-causes and signs and symptoms

14.4-first aid for fracture

14.5- Methods of immobilization and transportation

Objectives

After completion of this chapter, the students are able to

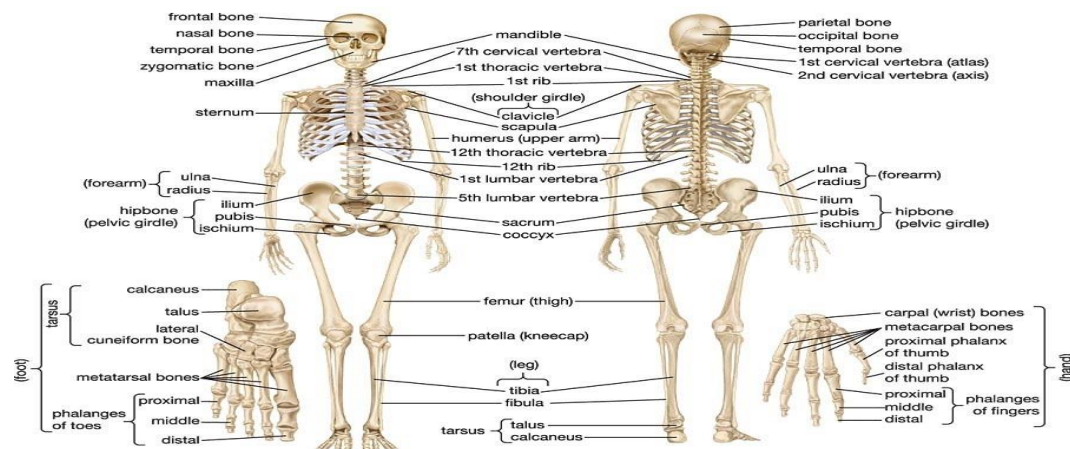
- Review the skeletal system
- Describe the types of fracture
- Explain the first aid management of fracture
- Describe the care while mobilisation of victim

Introduction

Motor vehicles accidents are high today, people may suffer with fracture and internal injuries. Fracture near vital structure is critical, because it affects vital function also e.g. skull bone fracture. First aid management of bone injury victim requires systemic treatment followed by accident.

Skeletal system

Human skeletal system, the internal skeleton that serves as a framework for the body. This framework consists of many individual bones and cartilages. There also are bands of fibrous connective tissue—the ligaments and the tendons—in intimate relationship with the parts of the skeleton. This article is concerned primarily with the gross structure and the function of the skeleton of the normal human adult.



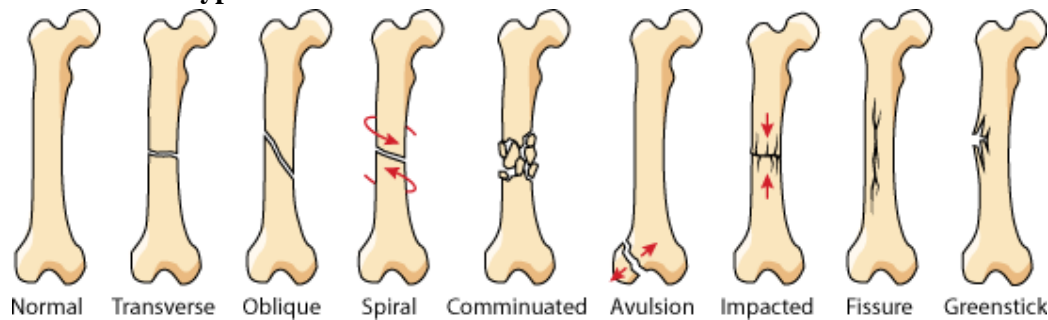
The skeletal system is the body system composed of bones and cartilage and performs the following critical functions for the human body:

- supports the body.
- facilitates movement.
- protects internal organs.
- produces blood cells.
- stores and releases minerals and fat.

Definition

A fracture is the partial or complete breakage of bone

Different types of bone fracture



- Transverse fracture-Fractured at a right angle.
- Oblique fracture - Fractured at any angle other than 90 degrees.
- Spiral fracture -Twisted Fracture.
- Comminuted fracture - the bone is shattered into many pieces.
- Avulsion fracture-a muscle or ligament pulls on the bone, fracturing it.
- Impacted fracture-when the bone is fractured, one fragment of bone goes into another.
- Fissured fracture - Down the long axes.
- Green Stick fracture - Incomplete fracture like a GREEN STICK.
- Simple Fracture. Fracture that doesn't penetrate the skin
- Hairline fracture - a partial fracture of the bone. Sometimes this type of fracture is harder to detect with routine 'X'rays.

Causes and signs and symptoms

Fractures are usually caused by a fall, blow or other traumatic event. Pathological fractures are those caused by disease that weakens the bones - they can occur with little or no trauma.

Signs and symptoms of a fracture include:

- pain
- swelling
- bruising

- discoloured skin around the affected area
- angulations - the affected area may be bent at an unusual angle
- the patient is unable to put weight on the injured area
- the patient cannot move the affected area
- the affected bone or joint may have a grating sensation
- if it is an open fracture, there may be bleeding

First aid for fracture

First aid management of fractures victim

- **Assessment**-Check for fractures – open, closed or complicated.
- Ask patient to remain as still as possible
- Examine the injured area for swelling and / or deformities, lacerations and puncture wounds.
- Gently feel along the length of the bone for tenderness, swelling and deformities.
- **Stop any bleeding:** Control any bleeding by , elevate and apply pressure to the wound. Cover wounds by using a sterile bandage, a clean cloth, or a clean piece of clothing.
- **Immobilize the injured area:** If you suspect they've broken a bone in their neck or back, help them stay as still as possible. If you suspect they've broken a bone in one of their limbs, immobilize the area using a splint or sling.
- Use broad bandages to prevent movement at joints above and below the fracture.
- Support the limb, carefully passing bandages under the natural hollows of the body.
- Place a padded splint along the injured limb
- Place padding between the splint and the natural contours of the body and secure firmly.
- For leg fracture immobilise foot and ankle.
- Check that bandages are not too tight or too loose every 15 minutes.
- Don't try to straighten or reposition the fractured limb.
- Splint the limb in the position you find it move the limb as little as possible while applying and securing the splint.
- Ensure that splints are long enough to immobilise the joint above and below the suspected fracture.
- **Apply cold to the area:** Wrap an ice pack or bag of ice cubes in a piece of cloth and apply it to the injured area for up to 10 minutes at a time. It helps to limit swelling and relieve pain.
- Check for a pulse and sensation below the fracture area.
- **Treat them for shock:** Help them get into a comfortable position, encourage them to rest, and reassure them. Cover them with a blanket or clothing to keep them warm. : if the person feels faint or is breathing in short, rapid breaths, lay the person down with the head slightly lower then the trunk and if possible, elevate the legs.
- **Get professional help:** Call 108 for help them get to the emergency department for professional care.

Methods of immobilization and transportation**TRANSPORT OF ACCIDENT VICTIMS**

When dealing with a wounded or unconscious person, it is crucial to examine in the same place where he was found, without moving or transporting the victim until first aid care has been provided since, otherwise, there is a risk of aggravating the situation and causing new wounds.

When transporting the patient or the accident victim take into account that the body should be moved as little as possible.

TRANSPORT WITHOUT STRETCHER

This is required when the accident victim must be moved quickly away from the place where he is, or when it is not possible to reach the scene with a stretcher.

1. **Transport of an accident victim with a single lifeguard**
Creeping method. For the initial transport (unless other resources are available) turn the victim backwards, tying his wrists together with a handkerchief or cloth. The first aider should kneel astride the victim, and place his head under the tied wrists. He should then creep forward, sliding the accident victim across the floor (see picture).



Fireman method. The evacuation may also be done on the back of the life saving person or carrying the victim on his shoulders (see pictures)



2. **Transport of an accident victim with several lifeguards**

Two hand settee/ Three hand settee - When there are two or more life saving persons, they should make a settee with two hands, carrying the victim on it. Each lifeguard holds the accident victim with an arm under the thighs, holding each other's wrists; the other pair of hands will provide support for the back (see picture).



Two hand settee.



Three hand settee

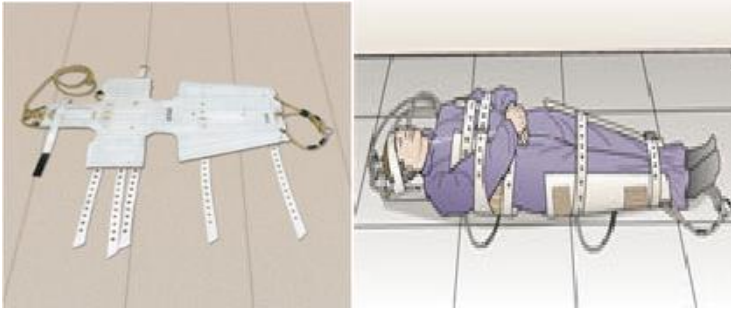
Transport with chair A chair may be used as a stretcher in case of emergency (see picture). The victim may also be transported in a similar position without the chair.



All these methods will be used only when there is no suspicion of a lesion in the spinal column (unless there is a life threatening situation). In such case, immobilise as indicated in **SPINAL COLUMN IMMOBILISATION**

TRANSPORT WITH STRETCHER

The ideal procedure for carrying injured patients is the stretcher. The Neil-Robertson stretcher (OTHER MATERIAL OUTSIDE THE DRAWERS,) is the most recommended for use onboard, since in it the subject is held in place and may be lifted, making it ideal for vertical transport.

**Neil-Robertson stretcher.**

The vacuum shaped mattress adapts itself to the patient and complete horizontal immobilisation is guaranteed during transport.

**Vacuum shaped mattress.**

Improvised stretchers may be used when other resources are not available, using a door, ironing board or a wide wooden board; a hand ladder; two paddles held together with ropes, blankets or clothes with long sleeves, etc.

For the transport of an injured patient in a stretcher the following rules must be taken into account:

Bridge method Carry the stretcher to the place where the accident victim is, and not vice versa.

1. Place the injured victim with paramount care, always respecting the block head-neck-trunk-legs:
Place the stretcher on the floor. Lift the victim as smoothly as possible until he is placed on it. The "bridge method" may be used (see picture).



If there is suspicion of spinal column fracture, immobilise as indicated in **spinal column immobilisation**.

Sideways placing of an immobilised spinal column

When the accident victim is conscious, lay him on his back unless there is a thorax wound; in such case place in a semi sitting position. If unconscious, place in lateral recumbent position, unless there is suspicion of column fracture. In this case, whether conscious or not, if there is vomit, place sideways (see picture).

2. Cover up as required, since the cold seriously harms the shock patient just the same as it would an injured person. Immobility, haemorrhage and trauma reduce cold tolerance.



Stretcher transport

3. Hold to prevent him from falling. The subject must be held with straps or bands, since any sudden movement may displace the patient out of the stretcher, whether conscious or not, and in such case the patient's own movements may cause him to fall.
4. Lift the stretcher with care. For the transport of the patient, both carriers must kneel at each end of the stretcher. The one situated at the feet of the patient gives the order for both to stand up together. During the transport both carriers must alternate their step, always keeping the stretcher horizontal (see pictures).

**Conclusion**

The right time of first aid management of fractured victim is essential for saving the victim's life, which is compulsory for MPHWS student to manage fracture patient at emergency department.

Essay questions

Describe the first aid management of fractured victim

Explain the methods of transportation

Short answer question

1. List the signs and symptoms of fracture
2. What is compound fracture?
3. What are the causes of fracture?

UNIT -15 LIFE THREATENING CONDITIONS

- Introduction
- 15.1- Bleeding
- 15.2- Drowning
- 15.3- Strangulation
- 15.4- suffocation and asphyxia
- 15.5- Loss of consciousness
- 15.6- Cardio respiratory arrest
- 15.7- Convulsions
- 15.8- Chest injuries
- 15.9- Shock and allergic conditions
- 15.10- Poisoning
- 15.11- Bites and stings
- 15.12- Stroke
- 15.13- Heat stroke
- 15.14- Burns and scalds

Objectives

After completion of this chapter, the students are able to

- Learn the control measures of Bleeding
- Describe the first aid treatment for Drowning
- Gain knowledge regarding Strangulation, suffocation and asphyxia
- Explain and acquaint information regarding Loss of consciousness, Stroke and Cardio respiratory arrest
- Describe the first aid management victim with Convulsions
- Develop practical knowledge in first measures of Chest injuries conditions
- Describe the first aid management victim with Shock and allergy, Bites and stings
- Learn about Poisoning and its first aid measures
- Learn the control measures of Heat stroke
- Describe the first aid management victim with Severe burns

Introduction

During accident and other emergencies, individual sometimes may land on life threatening problems. In such condition the people in the home or working place need to give primary care to prevent severe complications arise out from the critical illness. Right decision at right time requires in emergencies. Then the causality shift to the specialised care unit for systematic treatment with the life saving equipment

Bleeding

The term haemorrhage refers to a large amount of bleeding in a short time. It is mainly classified as **external bleeding and internal bleeding**

1. External bleeding: The blood is coming out from the body and visible to identify the site of injury is known as external bleeding

According to the type of blood vessel damage It can be classified into **three** types: 1. Artery

2. Vein **3.** Capillary.

In arterial bleeding, blood spurts and bright in colour (up to several feet) from the wound. Arterial bleeding is the most serious type of bleeding because a large amount of blood can be lost in a very short period of time and blood can clot only when it is flowing slowly or not at all

In venous bleeding, blood from a vein flows steadily or gushes and dark in colour. Venous bleeding is easier to control than arterial bleeding. Most veins collapse when cut. Bleeding from deep veins, however, can be as massive and as hard to control as arterial bleeding.

In capillary bleeding, the most common type of bleeding, blood oozes from capillaries. It usually is not serious and can be controlled easily.

Causes

Minor bleeding caused by small cuts, grazes, etc.

Some wounds are associated with other injuries beneath the skin – e.g. an organ injured by a stabbing; broken bones which have pierced the skin.

Severe bleeding may be life threatening if a large vein or artery has been injured – e.g. the jugular vein in the neck.

Symptoms and signs

- a wound with, or without, an embedded foreign object
- pain from skin surface wounds
- bruising or discolouration of the skin
- loss of normal function in the injured area
- pale, cold, sweaty skin



External bleeding management

1. Apply direct pressure to the bleeding wound

- Apply firm pressure over the wound by clean bulky pad.. Apply a bandage to keep the dressing in place.
- Apply direct pressure to the bleeding wound
- If bleeding is severe, DO NOT waste time looking for suitable padding, but be prepared to use the patient's hand or your hand to hold the wound together if the patient is unable to do this unaided.

**Apply direct pressure****Raise the injured area****2. Raise the injured area**

- If the wound is on a limb, raise it in a supported position to reduce blood flow to the injured area. Apply elevation sling

Try to avoid any direct contact with the patient's blood or other body fluids. Use disposable gloves if possible. If gloves are not available, place your hands inside a plastic bag.

- If there has been any contact with blood or any other body fluids, wash your hands or any blood splashed on the skin thoroughly with soap and water as soon as possible after the incident.

3. If a foreign body is embedded in the wound

- DO NOT remove foreign object but apply padding on either side of the object and build it up to avoid pressure on the foreign body.
- Hold the padding firmly in place with a roller bandage or folded triangular bandage applied in a criss-cross method to avoid pressure on the object.

**4. Keep the patient at total rest**

- Even if the injury involves the arm or upper part of the body, the patient should rest in a position of greatest comfort for at least 10 minutes to help control the bleeding.

5. Seek medical assistance

- If the wound appears to be minor and the patient is able to travel by car, arrange an urgent appointment with a local doctor to assess and treat the injury.

If the injury is severe or the patient is very unwell – call 108 for an ambulance as soon as possible.

While waiting for an ambulance to arrive, observe the patient closely for any change in condition.

6. If blood leaks through the pressure pad and bandage

- Apply a second pad over the first. Use a tea towel or similar bulky fabric and apply maximum pressure to the area.
- For major uncontrolled bleeding quickly remove the blood-soaked pad and bandage and replace with a fresh bulky pad and bandage. The continuing bleeding may be due to the pad slipping out of position when the first bandage was applied.

Nose bleed

A blow to the nose, flying at high altitude, or diving may all cause a bleeding nose (epitaxis).

For a child, always check whether there is a foreign body present – e.g. a bead or coin. If this has occurred, seek prompt medical advice. If bleeding is due to a head injury – e.g. a fractured skull – call 108 for an ambulance urgently.

**Apply firm pressure, elevation and rest**

- The patient needs to hold the head well forward and breathe through the mouth
- Pinching the entire soft part of the nose for 10 to 20 minutes.
- The patient must be sitting down and at total rest until the bleeding stops.
- A cold compress can be used.
- Instruct the victim, do not blow the nose for a few hours

Internal bleeding

Internal bleeding is referred as blood from injured part is not visible and accumulated inside of the body.

Internal bleeding occurs when blood vessels within the body are ruptured and blood escapes out of the circulatory system. It may follow such incidents as a blow to the head, chest, or abdomen due to a fall or being struck by a vehicle. Internal bleeding should be suspected **when blood is seen in vomit, urine, sputum or faeces.**

This type of bleeding can occur without an obvious wound and can be very serious as it is difficult to stop without surgical intervention.

Symptoms and signs – Not all may be present

- rapid and ‘gasping’ breaths
- increasing thirst
- frothy red blood coughed up from the lungs, blood-stained vomit like ‘coffee grounds’, red or rust-coloured urine, or dark faeces like tar
- pale, cold, sweaty skin

First aid management

1. **Place the patient at total rest**

- Assist the patient into the position of greatest comfort.
- Cover the patient with a blanket to maintain body heat.
- Place protective fabric underneath the patient if the surface is rough, cold or hot – e.g. a coat if the patient is lying on a road.

Call 108 for an ambulance.

1. While waiting for the ambulance
 - Manage any other injuries.
 - Ensure that all restrictive clothing has been loosened, especially at the neck and waist.
 - Keep any bystanders clear.
 - Reassure the patient.
 - DO NOT allow the patient to eat, drink or smoke.

Drowning

Drowning cause's asphyxia by water entering the lungs (or) by causing the throat to go into spasm, so constricting the air passage (known as dry drowning).

- a) Drowning is a major source of accidental death and can be a result of cold, fatigue, injury, disorientation, intoxication etc (or) the victims own limited swimming ability.
- b) The drowning victim struggles to inhale air as long as possible but eventually the victim goes under the water where he must exhale air and inhale water.

Effects of drowning

- Airway obstruction
- Asphyxia
- Congestion of lungs
- Injury to head and neck
- Broken bones
- Soft tissue injuries
- Internal bleeding
- Hypothermia

General symptoms and signs of asphyxia is Froth around the causality's lips, mouth, nostrils and difficulty in breathing or noisy breathing, which may ultimately lead to cessation, rapid pulse, high blood pressure (hypertension), cyanosis of the face.

Treatment

- i) Reaching the victim
 - a. Pull the patient from the water using rope, branch, fishing pole, stick, towel, shirt, lie down flat on your stomach extend your hand or leg.
 - b. Throw him an object that will float with live i.e. tyre, foam, cushions, logs, boards, plastic toys.
 - c. Make sure that your position is safe.
 - d. Use boat and life jacket, if available
 - e. Plan to bring victim to the shore

f. Do not –swim to the patient

ii) Stabilization of the victim in the water :-

- a. Keeping the victims head and body aligned place one of your hands in the middle of his / her back. Your arm directly over the victim's head
- b. Place your other hand under the victim's upper arm near the shoulder.
- c. Slowly and carefully, rotate the victim over in the water by lifting the shoulder up limit rotating it over.
- d. Support the victim in neutral position in water short mouth to mouth ventilation.

iii) Resuscitation :

Quickly remove any obstructions such as sea – weed, mud, from nose and mouth start artificial ventilation immediately. It is possible to begin ventilation even in water.

- a. If with, in your depth use one arm to support the casualty body use the other hand to support the head and seal nose while you perform mouth to mouth ventilation.
- b. If in deeper water give the occasional breath of air while to bring the casualty a shore.
 - Turn the victim face down with head to one side and arms stretched beyond his head.
 - Use postural drainage to clear water aspiration.

CHILD: Child and infant can be held upside down for a short period. Raise the middle part of the body with your hand round the belly. This will cause water to drain out of lungs.

ADULT: Raise the middle part of the body as in children press chest and costal margin to press the lungs to remove water from the lungs.

- Check breathing – heart beat and continue resuscitation, if necessary.
- As soon as breathing begins. Keep casualty in recovery position.
- Remove wet cloth, keep the body warm, cover with blankets, and give hot drinks, coffee and tea.
- Do not allow him to spit up
- Shift him to hospital in recovery position.

Things to remember

- The chance for survival in warm water is much less than in cold water.
- In fresh water drowning, water passes through the lungs into the circulation and may cause dilution of blood, this interferes with oxygen exchange.
- In salt water drowning, salt from the aspirated water causes the loss of large amounts of fluid from the circulation into the lungs. This causes water accumulation in the lungs or death.

STRANGULATION

Definition

It involves cutting off the air supply by a tight constriction around the neck.

Symptoms and signs :-

- i. Symptoms and signs of asphyxia
 - Difficulty and/ or noisy breathing, which may ultimately lead to cessation

- Rapid pulse
 - High blood pressure (hypertension)
 - Cyanosis of the face
 - Swollen veins on the head and neck
 - Slowly losing consciousness
- ii. Congestion of face and neck with prominent vein.
- iii. Visible marks of constriction around neck
- iv. Body may still be suspended.

Treatment

- Remove the constriction from around the neck immediately, supporting the weight of the body. If it is changing always cut below the knot.
- Place in recovery position casualty, if casualty is unconscious but breathing normally.
- If breathing is difficult start CPR
- Shift the casualty to hospital.

15.3-Suffocation and Asphyxia**Suffocation**

This occurs when

- a. Air is prevented from reaching the air passages by an external obstruction such as plastic bag, soft pillow or fall of mud.
- b. A person is kept in a confined space then all the available oxygen is used up.

Signs and symptoms

- Sign & symptoms of asphyxia like difficulty in breathing, confusion, froth from mouth etc,
- Air tight seal over the mouth and nose
- Presence of stale air in a confined space.

Treatment:-

1. Immediately remove any obstruction or take the casualty to fresh air.
2. If the casualty is conscious and breathing normally, reassure and observe.
3. If he is unconscious but breathing normally place in the recovery position.
4. If breathing is difficult or stopped, begin artificial ventilation immediately.
5. Shift the casualty to hospital immediately.

Asphyxia

It is a condition in which the lungs do not get sufficient supply of air for breathing.

If blockage of air ways continues for some minutes, breathing and heart action stop and death occurs.

Causes

- Conditions affecting the air passage are
- Food going into respiratory passage
- Drowning
- Instant gases like coal gas, smoke, motor exhaust fumes getting into air passages.
- Foreign body, vomit, artificial teeth in air passage.
- Tongue falling back in unconscious patient
- Swelling of tissues in throat as a result of injury, infection, burns.

- Neck strangulation.
- Chest injury
- Epilepsy,
- Electrical injury
- Poisoning
- Paralysis caused by a stroke
- Morphine, barbiturates
- Air containing insufficient oxygen
- Carbon monoxide poisoning
- Cyanide poisoning

Signs and symptoms

- Difficulty in breathing: the rate & depth of breathing increases.
- Noisy breathing
- Veins of the neck become swollen
- Face, lips, nails, fingers & toes turn blue
- Pulse gets faster and feebler
- Froth may appear at mouth & nostrils
- Confusion
- Unconsciousness
- Fits may occur
- Breathing may stop.

Treatment

1. Call the ambulance emergency medical services immediately.
2. Remove the cause of asphyxia and open the airway
 - **Choking:** Perform Heimlich Manoeuvre (which will vary in adults, children, and pregnant women) to remove the object
 - **Drowning:** Safely remove the victim from the water.
 - **Gas poisoning:** Get the victim into fresh air only if it is safe to go in the place. Evacuate anyone else in the same establishment.
 - **Suffocation:** Remove anything blocking the airway, such as plastic bags immediately
 - **Strangulation:** Remove the object used to strangle immediately
 - **Asthma attack:** Assist the victim to sit upright and assist to medication.
3. The resuscitation measures for all victims of asphyxiation are,
 - Loosen any tight clothing, especially around the neck.
 - Check for airway, breathing and circulation
 - If the victim is unconscious and not breathing with no pulse, perform CPR.
 - If the victim has pulse but not breathing, give rescue breaths.
 - Do not leave victims of asphyxia alone at all times, even if consciousness is regained.
 - When breathing and pulse return, place the casualty in recovery position.
 - Check breathing rate, pulse & level of consciousness at 10 min intervals.

- Send casualty to hospital.

Loss of consciousness**Unconsciousness**

Unconsciousness is when a person suddenly becomes unable to respond to stimuli and appears to be asleep. A person may be unconscious for a few seconds — as in fainting — or for longer periods of time.

People who become unconscious don't respond to loud sounds or shaking. They may even stop breathing or their pulse may become faint. This calls for immediate emergency attention. The sooner the person receives emergency first aid, the better their outlook will be.

Causes

Unconsciousness can be brought on by a major illness or injury, or complications from drug use or alcohol misuse.

Common causes of unconsciousness include:

- ☐ a car accident
- ☐ severe blood loss
- ☐ a blow to the chest or head
- ☐ a drug overdose
- ☐ alcohol poisoning

A person may become temporarily unconscious, or faint, when sudden changes occur within the body. Common causes of temporary unconsciousness include:

- ☐ low blood sugar
- ☐ low blood pressure
- ☐ syncope, or the loss of consciousness due to lack of blood flow to the brain
- ☐ neurologic syncope, or the loss of consciousness caused by a seizure, stroke, or transient ischemic attack (TIA)
- ☐ dehydration
- problems with the heart's rhythm
- ☐ straining
- ☐ hyperventilating

Signs

Symptoms that may indicate that unconsciousness is about to occur include:

- ☐ sudden inability to respond
- ☐ slurred speech
- ☐ a rapid heartbeat
- ☐ confusion
- ☐ dizziness or light-headedness

If you see a person who has become unconscious, take these steps:

- ☐ Check whether the person is breathing.

- Check again to see if they're breathing, coughing, or moving. These are signs of positive circulation. If these signs are absent, perform CPR until emergency personnel arrive.
- If they're not breathing, have someone call 108 or your local emergency services immediately and prepare to begin CPR.
 - Raise their legs at least 12 inches above the ground.
 - Loosen any restrictive clothing or belts.
 - Check their airway to make sure there is no obstruction.
- If there's major bleeding occurring, place direct pressure on the bleeding area or apply a tourniquet above the bleeding area until expert help arrives.

CPR

CPR is a way to treat someone when they stop breathing or their heart stops beating.

If a person stops breathing, call your local emergency services or ask someone else to. Before beginning CPR, ask loudly, "Are you OK?" If the person doesn't respond, begin CPR.

1. Lay the person on their back on a firm surface.
2. Kneel next to their neck and shoulders.
3. Place the heel of your hand over the center of their chest. Put your other hand directly over the first one and interlace your fingers. Make sure that your elbows are straight and move your shoulders up above your hands.
4. Using your upper body weight, push straight down on their chest at least 1.5 inches for children or 2 inches for adults. Then release the pressure.
5. Repeat this procedure again up to 100 times per minute. These are called chest compressions.

To minimize potential injuries, only those trained in CPR should perform rescue breathing. If you haven't been trained, perform chest compressions until medical help arrives.

If you're trained in CPR, tilt the person's head back and lift the chin to open up the airway.

1. Pinch the person's nose closed and cover their mouth with yours, creating an airtight seal.
2. Give two one-second breaths and watch for their chest to rise.
3. Continue alternating between compressions and breaths — 30 compressions and two breaths — until help arrives or there are signs of movement.

Treatment

If unconsciousness is due to low blood pressure, a doctor will administer medication by injection to increase blood pressure. If low blood sugar level is the cause, the unconscious person may need something sweet to eat or a glucose injection.

Medical staff should treat any injuries that caused the person to become unconscious.

Complications: coma and brain damage.

A person who received CPR while unconscious may have broken or fractured ribs from the chest compressions..

Choking can also occur during unconsciousness. Food or liquid may have blocked the airway.

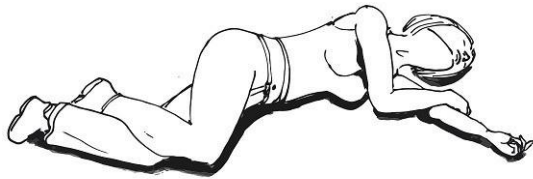
Cardio respiratory arrest

Cardiac Arrest

Sudden cardiac arrest occurs when the heart stops beating suddenly commonly due to some electrical malfunction. The victim becomes unresponsive, unconscious with no signs of breathing or movement. Death can occur within minutes as blood stops flowing to the lungs, brain and other organs. This can be reversed with prompt emergency intervention.

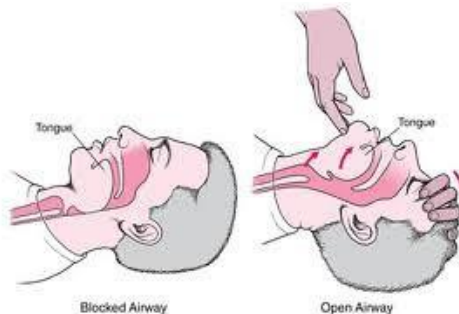
The first 60 minutes are considered the most crucial and draw the line between life and death. it is called the **Golden Hour**.

1. Check for danger to the person of any kind such as safety, hazards or injury due to the fall etc.
2. **Response** – Speak to them to see if they respond, if not pinch them hard on their ears.
3. **If you get a response – they are alive!!**
4. If there is very little response then they are not sufficiently conscious to keep their Airway open .Put the patient in a recovery position (see image below).



Call emergency helpline number for medical help.

If there is no response you will need to: Check to see if the airway is open. Put 2 fingers under the chin and other hand on the forehead; tilt the chin up so the tongue is not blocking the airway.



Now check for **Breathing** –Look along the body; Listen for breaths; Feel their breath on your cheek to see if they are breathing

If you are not sure whether or not they are breathing, you will need to phone the Emergency Services and start **CPR** (Cardio Pulmonary Resuscitation)



Push hard and fast on the centre of their chest – right between the nipples

Push down 5-6 cms

At a rate of 120 beats per minute

After about 30 compression

To give someone the best chance, you will need to: **tilt the head and lift the chin** to take the tongue off the back of the airway then give **2 breaths** – sealing your mouth around their mouth and blowing into them like a balloon.

Do not expect them to come back to life until the paramedics are there to help.

If there is an Automatic Electronic Defibrillator machine – **USE IT!**

First Aid for life provides this information for guidance and it is not in any way a substitute for medical advice. First Aid for Life is not responsible or liable for any diagnosis made, or actions taken based on this information.

1. Check for breathing by watching the chest, nostrils and listening.
 - If person is breathing, open the mouth to ensure easy breathing.
 - If person is not breathing, start CPR*. CPR (Cardiopulmonary resuscitation) should be 2 compressions per second followed by 2 breaths. Continue CPR till person becomes responsive or breathing returns.
2. If there is a Defibrillator (AED) nearby, attach it and follow the voice instructions.

**If you don't know CPR, please do not attempt it, wait for medical help.*

Convulsions

A seizure or convulsion can occur at any age and is due to abnormal electrical activity in the brain resulting in uncontrollable muscular activity and loss of consciousness. There are many types of seizure, with some being relatively mild and others severe and prolonged.

A full-scale epileptic seizure involves violent jerking of the limbs, facial twitching, and foaming at the mouth due to saliva being blown through clenched teeth. The seizure may last for a few minutes and the patient may need several hours in which to recover.

Symptoms and signs – Not all may be present

- ☐ jerking or twitching of the face and limbs
- ☐ foaming at the mouth
- ☐ loss of consciousness
- ☐ loss of control of bladder and/or bowel
- ☐ blue/purple skin colour and blue lips
- ☐ flushed and dry skin in a child having a feverish convulsion

Seizures or Convulsions first aid treatment**1. Protect the patient from injury**

- ☐ Check the immediate area for hazards and remove them if possible. Move furniture away from the person, but take special care with electrical appliances or cooking utensils to avoid a burn or scald.
- ☐ If the patient is close to a wall or hard furniture, pad the area with clothing or a pillow to avoid further injury.
- DO NOT move or try to restrain the patient's movements because this may result in a broken bone or soft tissue injury.
- DO NOT try to pad between the patient's teeth because this may damage the tissues in the mouth.

2. Manage the seizure or convulsion

- ☐ Stay with the patient until the seizure ends.
- ☐ If in a public place, keep bystanders clear and reassure them that the seizure will end soon.
- If the seizure does not stop after 5 minutes – call for an ambulance.

3. After the seizure

- ☐ As soon as the seizure ends, quickly roll the unconscious patient onto their side and open and clear the airway.
- ☐ Cover the patient lightly with a coat or blanket. Check that normal breathing has resumed.
- ☐ Allow the patient to sleep until fully recovered, but check for a response every few minutes.
- If the patient does not wake up within 10 minutes, is not breathing well, or it is their first seizure – call for an ambulance.

4. After care

- ☐ Check for a identity card stating that the wearer suffers from epilepsy.
- ☐ Check for any injuries and apply necessary first aid.

- Reassure the patient as full consciousness is restored.
- Advise the patient not to drive. Try to arrange for someone to be with the patient until safely home.
- Advise the patient to contact their doctor to report the seizure and check that any prescribed medication is adequate.
- If the patient is known to have epilepsy, there is no need for medical aid or an ambulance unless the seizure lasted more than 5 minutes or a second seizure followed. If it is the first known seizure, medical advice is vital to avoid any future complications.

Feverish Convulsions

Convulsions in infants and young children may occur following a sudden rise in body temperature. This is commonly associated with infections. Such convulsions without complications from the underlying illness do not cause damage or result in epilepsy.

1. Ensure the child's safety from any hazards
2. Remove all clothing
 - Cool the child slowly by uncovering them down to a nappy or pants.

Avoid giving anything to drink until the child is fully conscious.

3. Wait until the convulsion ends
 - Before rolling the child or baby onto their side in a supported position.
4. Open and clear the airway
 - Check that normal breathing has returned.
5. Reassure parents

If not breathing normally after the seizure – call for an ambulance.

Chest injuries

Injury to the thoracic cavity by sudden force or fall or penetration of sharp instruments is known as chest injury. Chest injuries can be classified as open or closed.

An open chest injury occurs when the integrity of the skin has been broken and the chest wall is penetrated by objects commonly by knife or bullet.

A closed chest wound on the other hand is a wound sustained on the chest without any object penetrating the skin's surface and is usually blunt in nature.

A responsive chest injury victim can be assisted to sit up or if the injury is on either side can be positioned on the injured side down. This position normally would prevent blood inside the chest cavity from pooling into the uninjured side and more importantly allow the uninjured side to have enough space to expand when breathing.

Rib Fractures identifying signs

Rib fractures are basically closed chest injuries and the most common type of rib fracture are the ones caused by a hard blow or a fall. The care for isolated rib fractures and flail chest are the same. The signs of a rib fracture are:

1. Shallow breathing.

2. Sharp pain especially when victim takes a deep breath, coughs and moves.
3. Victim constantly holds his/her chest in trying to alleviate pain.

Care for Rib Fractures

To care for a victim with a suspected rib fracture, do the following:

1. Assist the victim in finding the most comfortable resting position to make breathing much more comfortable as easier.
2. Instruct the victim to stay still as possible to prevent possible puncture of rib shrapnel to the lung cavity.
3. Stabilize the ribs by splinting the chest with a soft object against the injured area or use bandages to hold the pillow in place.
4. Contact emergency medical services for further care and management.

Impacted Object to the Chest

Impacted chest wounds are life threatening injuries mainly because of the close proximity of the area to the lungs and heart; two vital organs that when injured can lead to death within a matter of minutes.

Care for an impacted object to the chest

1. Do not attempt to remove the embedded object. Removing the impacted object might cause more damage and profuse bleeding.
2. When moving the victim, carefully assist the victim to a comfortable position slowly without dislodging the impaled object.
3. Use bulky dressings (clean cloth sterile packs) to wrap around the object for stability.
4. Immediately call emergency medical services for further medical management.

Shock and allergy

Shock is a syndrome that results from decrease in effective circulating blood volume (or) fluid in the body is result of injury (or) illness.

It can vary from – faintness to complete collapse.

Causes

- | | |
|---------------------------------------|-----------------------------------|
| 1. Severe (or) extensive injuries | 8. Bites of poisonous snakes (or) |
| 2. Severe pain, heart attack | insects |
| 3. Loss of blood | 9. Gas poisoning |
| 4. Severe burns | 10. Poison taken internally |
| 5. Electric shock | 11. Emotional stress |
| 6. Exposures to extreme heat and cold | 12. Certain illness |
| 7. Allergic reactions | |

Types of shock

- Neurogenic
- Hypovolemic shock
- Psychogenic

- Cardiac
- Septic
- Anaphylactic

Signs

- ☐ Causality is anxious and restricts
- ☐ Weakness, fainting (or) giddiness and disorientation
- ☐ Shallow, rapid (or) gasping breathing
- ☐ Nausea, vomiting (or) excessive thirst.
- ☐ Skin becomes pale, cold, clammy and sweating may develop.

Symptoms

- ☐ Pulse rate becomes weaker
- ☐ Blood pressure falls
- ☐ Pupils are dilated
- ☐ Lustres eyes
- ☐ Snaking and trembling of arms and legs
- ☐ Unconsciousness may develop
- ☐ Evidence of associated external (or) internal injury.

First aid on shock

- If you suspect a person on shock call 108 (or) your local emergency number. Then immediately take the following steps.
- Lay the persons down and elevate the legs and feet slightly, unless you think this may cause pain /further injury.
- Normally the lower extremities should be elevated by gravity, this will reduce the blood in the extremities and may improve the blood supply to the heart.

If the victim has leg fractures, the leg should not be elevated unless they are well splinted.

If the victim has any head injuries the head could be raised slightly to reduce pressure on brain; the feet may also be elevated.

If there are breathing difficulties, the victims be more comfortable with in head and shoulders raised i.e.in semi sitting position.

Keep the person still and don't move him (or) her unless necessary.

- Begin CPR if person shows no signs of life such as breathing, coughing (or) movement.
- Loose tight clothing and if needed cover the parson with a blanket to prevent chilling.
- Don't let the person eat (or) drink anything.
- If you suspect that the person is having an allergic reaction and you have access to an epinephrine auto injector, according to its instructions.
- If the person is bleeding, hold pressure over the bleeding area, using a towel (or) sheet.
- If the person vomits (or) begins bleeding from the mouth, turn him (or) her into a side to prevent choking.
- Check breathing rate pulse and level of consciousness.
- If breathing and heart beat stop then
 - Establish an airways

- Begin resuscitation immediately
- Keep patient in recovery position
- Shift to hospital immediately.

Allergic reactions

Allergic reactions may be triggered by foods, medications, insect stings pollen (or) other substances. All allergic reactions aren't serious.

Severe reactions will lead to life threatening and require immediate medical attention.

Signs and symptoms**Mild**

- Itchiness
- Skin redness
- Slight swelling
- Stuffy running nose
- Sneezing
- Itchy watery eyes
- Red bumps anywhere on the body.

Severe

- Swelling as the mouth (or) tongue
- Difficulty in swallowing (or) speaking
- Wheezing (or) difficulty in breathing
- Abdominal pain, nausea, vomiting.

First aid for allergic reactions

- Immediately call local emergency number
- Maintain the person in open airway
- Place the person in recovery position
- Begin CPR to resuscitate the person if the victim with cessation of heart beat and breathing
- Shift the patient to hospital immediately.
-

15.9-Poisoning**Poisoning**

Poisons are harmful substances and when sufficient doses are taken may kill a person.

Definition: Poison is a substance that causes injury, illness (or) death if it enters the body.

Poisons may enter the body in the form of liquids, solids (or) gas and vapour fumes.

First aid management of poisoning

1. Call emergency
2. Clear the person's airway:-

If the person swallowed a household product, a pill, (or) another substance, its important to make sure none remains in the mouth (or) air passage.

- Wrap a clean towel around your hand
- Open the persons mouth and remove traces of substances used by him

- If the person vomits, continue monitor the airway and keeping the mouth area clean.
 - If you are not sure what the person swallowed, keep the soiled towel to bring with you to hospital for testing.
3. Check the person breathing and pulse:
- If you don't feel breath (or) a pulse, administer CPR immediately.
4. Keep the person comfortable
- Poison in the system can lead to seizures, so its important to take measures to prevent injuries.
 - lie down the victim on side on a comfortable surface
 - Loosen tight clothing
 - Make sure the person doesn't lie down on his / her back, if vomiting occurs this could lead to choking.
 - Continue monitoring the persons breathing and pulse, performing CPR as necessary, until medical help arrives.

DRSABCD action plan	
D – Danger	Ensure the area is safe for yourself, other, and patient
R – Response	Ask name and squeeze shoulders No response - Response Send for help make comfortable Check for injury
S – Send for help	Call 108 for an ambulance
A – Airway	Open mouth if foreign material is present Open airway – by lifting head with chin lift
B – Breathing	Not normal breathing - Normal breathing - Start CPR -Place recovery position -Treat for shock - Manage injury
C – CPR CARDIO PULMONARY RESUSCITATION	30 chest compressions : 2 breaths
D – Defibrillation	Apply defibrillators if available and follow voice prompts

Take the following actions until help arrives:

- **Swallowed poison-** Remove anything remaining in the person's mouth. If the suspected poison is a household cleaner or other chemical, read the container's label and follow instructions for accidental poisoning.
- **Poison on the skin-** Remove any contaminated clothing using gloves. Rinse the skin for 15 to 20 minutes in a shower or under running tap water.
- **Poison in the eye-** Gently flush the eye with cool or lukewarm water for 20 minutes or until help arrives.
- **Inhaled poison-** Take victim into fresh air as soon as possible.

- If the person vomits, turn his or her head to the side to prevent choking.
- Begin CPR if the person shows no signs of life, such as moving, breathing or coughing.
- Call the ambulance service for medical services.
- Ask somebody to collect and send pill bottles, packages or containers with labels, and any other information about the poison along with the ambulance team.

Bites and stings

Mostly insect bites and stings are mild, reactions causing little more than redness, itching, stinging or minor swelling. Rarely, insect bites and stings, such as from a bee, a wasp, a hornet, a fire ant or a scorpion, can result in severe reactions.

For mild reactions- To take care of an insect bite or sting that causes a mild reaction:

- Move to a safe area to avoid more bites or stings.
- If needed, remove the stinger.
- Wash the area with soap and water.
- Apply a cool compress. Use a cloth dampened with cold water or filled with ice. This helps reduce pain and swelling. If the injury is on an arm or leg, elevate it.
- Apply a cream, gel or lotion to the injured area. Use products containing ingredients such as hydrocortisone, pramoxine or lidocaine to help control pain. Use creams such as calamine lotion or those containing colloidal oatmeal or baking soda to help soothe itchy skin.
- Use over-the-counter medications. Try a pain reliever, such as acetaminophen or ibuprofen.

Usually, the signs and symptoms of a bite or sting disappear in a day or two. If necessary, call your doctor.

When to seek emergency care Call your local emergency number if the injured person experiences:

- Difficulty breathing
- Swelling of the lips, eyelids or throat
- Dizziness, faintness or confusion
- Rapid heartbeat
- Hives
- Nausea, cramps or vomiting
- A scorpion sting and is a child

Take these actions immediately while waiting for medical help:

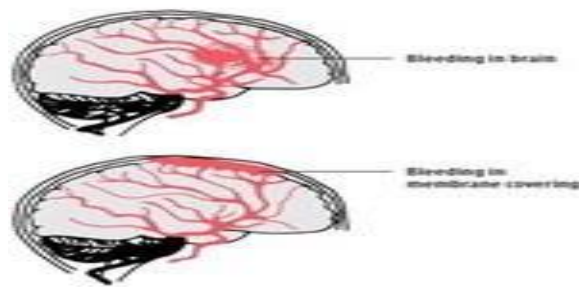
- Ask the person if he or she is carrying an epinephrine auto injector others to treat an allergic attack.

- If the person says he or she needs to use an auto injector, ask whether you should help inject the medication. This is usually done by pressing the auto injector against the person's thigh and holding it in place for several seconds.
- Loosen tight clothing and cover the person with a blanket. Don't give him or her anything to drink.
- Turn the person on a side to prevent choking if he or she is vomiting or bleeding from the mouth.
- Begin CPR if the person shows no signs of circulation, such as breathing, coughing or movement.

Stroke

A stroke is a condition in which part of the brain is affected by an interruption to the normal blood supply. This can result from a clot in a blood vessel that stops blood passing through to brain tissue. If this condition is recognised at an early stage and hospital care is readily available, drug treatment is able to dissolve the clot, resulting in a full recovery.

Stroke is caused by a burst blood vessel when the internal bleeding in the skull causes pressure on brain tissue. At first, the patient may have a severe headache, but it can lead to paralysis down one side of the body and even the loss of the ability to speak.



Causes of stroke

Symptoms and signs – Not all may be present

Signs of a stroke include:

- weakness, paralysis (inability to move) or numbness of the face or limbs, particularly on one side of the body;
- vision suddenly becoming blurred or decreased, double vision especially in one eye;
- difficulty talking or understanding speech;
- sudden difficulty swallowing;
- an unexplained fall, dizziness or loss of balance — someone suffering from stroke may resemble a drunk person;
- sudden severe headache or a new type of headache with no known cause; and
- Drowsiness, confusion or loss of consciousness.

1. Assess the patient's level of consciousness

- If unconscious and breathing normally, or if not fully alert, place the patient on their side in a supported position.

Call 108 for an ambulance.

It is important for the patient to be assessed as soon as possible because treatment must be started within 1 to 2 hours if a clot is present in the brain.

2. Care for a conscious patient

- Assist a conscious patient into the position of greatest comfort
- Cover the patient to reduce heat loss.

3. Observe the patient

- While waiting for the ambulance to arrive, observe the patient closely for any change in condition.
- If there is any deterioration in the patient's conscious state, turn the patient on their side in a supported position.

Although the experience of suffering a stroke is very frightening for the patient, if prompt medical treatment is given followed by rehabilitation therapy over a period of time, improvement is achievable for many.

Heat stroke

When a person exposed to excessive high temperatures, there will be failure of body's temperature-regulating mechanism occurred. This condition is marked by fever and often by unconsciousness,

Symptoms of Heat Stroke

The prime symptom of heat stroke is a core body temperature above 104 degrees Fahrenheit. The first sign may be fainting.

Other symptoms may include

- Throbbing headache
- Dizziness and light-headedness
- Lack of sweating despite the heat
- Red, hot, and dry skin
- Muscle weakness or cramps
- Nausea and vomiting
- Rapid heartbeat, which may be either strong or weak
- Rapid, shallow breathing
- Behavioural changes such as confusion, disorientation, or staggering
- Seizures
- Unconsciousness

First Aid for Heat Stroke

If you suspect that someone has a heat stroke, immediately call ambulance for transporting the person to a hospital. Any delay seeking medical help can be fatal. The immediate first aid measures are

Move the person to an air-conditioned environment -- or at least a cool, shady area -- and remove any unnecessary clothing.

If possible, take the person's core body temperature and initiate first aid to cool it to 101 to 102 degrees Fahrenheit. Try these cooling strategies:

- Fan air over the patient while wetting his or her skin with water from a sponge or garden hose.
- Apply ice packs to the patient's armpits, groin, neck, and back. Because these areas are rich with blood vessels close to the skin, cooling them may reduce body temperature.
- Immerse the patient in a shower or tub of cool water.
- For young and healthy victim who suffered with heat stroke exertion- an ice bath may help to cool the body.
- Do not use ice for older patients, young children, patients with chronic illness, or anyone whose heat stroke occurred without vigorous exercise. Doing so can be dangerous.

Burns and scalds

The second degree burns larger than the person's abdomen or the area of their hand spread out or Full thickness burns. Full thickness burns are called third degree and at times fourth degree. These extend into the deeper tissue and involve all layers of the skin and possibly all the way through to the bone. Areas may appear dry, white or charred black. These may be numb or painless because the nerves in these areas have been damaged.

First Aid for Burns (Major/severe)

1. If person is on fire get them to drop and roll to help extinguish the flames.
2. Call emergency services.
3. If the person is not breathing start the CPR process.
4. Cover the burn area with a cool, moist (if possible sterile) dressing. A sheet will do if the area is large.
5. Remove any jewellery on or near the burn area. Do not remove jewellery if it is stuck
6. Elevate the burnt areas above the heart where possible. If injuries allow.
7. To help prevent shock lay the person down with legs elevated. This really can only be done if it is the extremities that have been affected.
8. Continue to monitor the person's breathing and pulse until medical help arrives.
9. Call emergency services
10. If the person is not breathing start the CPR process.
11. Cover the burn area with a cool, moist (if possible sterile) dressing. A sheet will do if the area is large. Preferably do not use a material that fluff can enter the wound and cause infection.

NOTE: Do not run; Don't pour cold water over the burn as this can lead to shock.

- An Exception were you need to use flowing water is when the injury has been caused by a Chemical. It is vital to remove the cause of the burning just like you would remove the person from flames
- **The water must not be cold** but tepid (body temperature) so no noticeable change in temperature when you put your hand in the water and definitely **not hot** to touch. If possible run water over chemical burn area for 20 minutes.

5. Remove any jewellery on or near the burn area as swelling can follow shortly after a burn. If swelling occurs jewellery can become tight and restrict circulation.

6. Elevate the burnt areas above the heart where possible. This can help to reduce possible swelling.

7. To prevent shock- lay the person down with legs elevated. Also cover the person with a blanket or jacket etc.

8. Continue to monitor the person's breathing and pulse until medical help arrives.

There are some Don'ts that need to be followed when giving First Aid for Burns:

- **Do not** removes burnt clothing that is stuck as this can damage the area further.
- **Do not** immerses large severe burns in cold water as this may cause shock. This is mentioned above.
- **Do not** applies burn ointments as these will need to be removed by the medical team so an assessment can be done. This can delay appropriate treatment and also cause further damage to the area.
- **Do not** gives food or water to a person who has a severe burn as they may require surgery. If surgery is needed it is best that the person not consume anything for a minimum of 6 hours prior to having anaesthetic.
- **Do not** position the person where their airway may be restricted e.g. no pillow under their head as they may have inhaled smoke and therefore may have airway burns.

Conclusion

FIRST AID at right time will help to restore the life and survival of the victim, even if he is in critical life threatening condition. The multipurpose health worker must practice first aid and implement in the community services.

Essay questions

1. Describe the first aid management of causality with convulsions
2. How do you give first aid management for the victim with cardiac arrest
3. How do you control internal and external bleeding

Short answer questions

1. What is asphyxia?
2. List four point of first aid care for stings with minor problem
3. Enumerate four don'ts of severe burns conditions
4. What are the causes of heat stroke?
5. What are the signs and symptoms of stroke?

SYLLABUS
MULTIPURPOSE HEALTH WORKER (F)
COMMUNITY HEALTH
NURSING
BLUE PRINT
I YEAR
THEORY PAPER-I

PERIODS/WEEK : 04

ALLOTTED PERIODS : 135

TIME SCHEDULE, WEIGHTAGE & BLUE PRINT

S, No.	Name of the Unit	No. of allotted hours	Weightage in marks	Short answer questions	Problem questions
1	Concept of health	10	8	1	1
2	Structure & Organisation of community	05	2	1	
3	Community Based Assessment	05	2	1	
4	Home Visit	10	8	1	1
5	Health problems & Policies	10	8	1	1
6	Communication and Health Education	10	8	1	1
7	Concept of disease	05	2	1	
8	Infection	05	2	1	
9	Immunity and body defence mechanisms	10	8	1	1
10.	Immunization	05	8	1	1
11.	Environmental Sanitation	10	8	1	1
12.	Safe water	10	8	1	1
13.	Disposal of excreta and waste	10	8	1	1
14.	Introduction to communicable diseases	15	8	1	1
15.	Occupational Health	10	8	1	1
16.	Disaster Management	05	8	1	1
		135			

Note : The question paper contains two sections i.e. A&B

Section – A contains ten (10) questions carries 2 marks each. The student has to answer all questions.

Section – B contains eight (8) questions carries six (6) marks each. The student has to answer any five (5) questions

SYLLABUS

**MULTIPURPOSE HEALTH WORKER (F)
HEALTH PROMOTION
BLUE PRINT
I YEAR
THEORY PAPER-II**

PERIODS/WEEK : 04**ALLOTTED PERIODS: 135****TIME SCHEDULE, WEIGHTAGE & BLUE PRINT**

S. No.	Name of the Unit	No. of allotted hours	Weightage in marks	Short answer questions	Problem questions
1.	Essential Nutrients	15	8	1	1
2.	Nutritional problems	15	8	1	1
3.	Nutritional assessment	15	8	1	1
4.	Promotion of Nutrition	10	8	2	1
5.	The Human body	20	16	2	2
6.	Mental Health	10	8	2	1
7.	Mal adjustment	10	8	1	1
8.	Mental Illness	15	8	1	1
9.	Geriatric Nursing	10	8	1	1
10.	Guidance and Counselling	15	8	1	1

135

Note: The question paper contains two sections i.e. A&B

Section – A contains ten (10) questions carries 2 marks each. The student has to answer all questions.

Section – B contains eight (8) questions carries six (6) marks each. The student has to answer any five (5) questions

SYLLABUS MULTIPURPOSE
HEALTH WORKER (F) PRIMARY
HEALTH CARE NURSING BLUE PRINT
I YEAR THEORY
PAPER-III

PERIODS/WEEK : 04

ALLOTTED PERIODS : 135

TIME SCHEDULE, WEIGHTAGE & BLUE PRINT

S. No.	Name of the Unit	No. of allotted hours	Weightage in marks	Short answer questions	Problem questions
1.	The Hospital	10	8	1	1
2.	Preparation of patient unit	10	2	1	
3.	Optimal functioning and hygiene of the body	05	2	1	
4.	Collection of specimen	05	8	1	1
5.	Disinfection and sterilization	10	8	1	1
6.	Bio Medical waste Management	10	8	1	1
7.	Medical Conditions in Different Systems	25	8	1	1
8.	Operation theatre nursing	10	8	1	1
9.	Care of Physically and Mentally Challenged	10	2	1	
10.	Types and Administration of drugs	10	8	1	1
11.	Emergency drugs in O.T and other areas	05	2	1	
12.	First aid	05	8	1	1
13.	Minor injuries and ailments	05	2	1	
14.	Fractures	05	8	1	1
15.	Life threatening conditions	10	8	1	1

135

Note : The question paper contains two sections i.e. A&B

Section – A contains ten (10) questions carries 2 marks each.
 The student has to answer all questions.

MODEL QUESTION PAPER- THEORY PAPER-I
MULTIPURPOSE HEALTH WORKER (FEMALE)- I YEAR
COMMUNITY HEALTH NURSING

Time : 3 Hours.

Max.Marks 50

SECTION-A

Note:

- A. Answer all questions
- B. Each question carries 2 marks
- 1. Define Community?
- 2. Define Community Based Assessment
- 3. Write the Principles of Home Visit
- 4. Write the methods of communication
- 5. Define Disease
- 6. Define Incubation Period?
- 7. Write the precautions while giving Vaccines?
- 8. Define and Classify Disasters?
- 9. List out the Occupational Diseases?
- 10. Define Immunity?

10 x 2 = 20

SECTION-B

Note:

Answer five questions 5 x 6 = 30
Each question carries six marks

- 11. Define Health and Explain Dimensions of Health?
- 12. List out the National Health Programmes in India and Explain in detail about National AIDS Control Programme.
- 13. Role of MPHW(F) in maintaining inter personal relation ship?
- 14. Write the classification and differences between Active and Passive Immunity?
- 15. What are the sources of Water and explain about Large scale purification of water?
- 16. Explain indetail about methods of waste disposal?
- 17. Write in detail about Immunization Schedule?
- 18. What is meant by Environmental Sanitation and write indetail about artificial ventilation?

MODEL QUESTION PAPER- THEORY PAPER-II
MULTIPURPOSE HEALTH WORKER (FEMALE) -I YEAR

HEALTH PROMOTION

Time : 3 Hours.

Max.Marks : 50

SECTION-A

Note:

- A. Answer all questions $10 \times 2 = 20$
- B. Each question carries 2 marks

1. Define vitamins and mentions the types of vitamins?
2. List out the parts of Respiratory System?
3. What is Anaemia?
4. Define Motivation?
5. Define Guidance and Counselling?
6. Write the functions of food?
7. Define Learning?
8. Uses of promotion of kitchen gardens?
9. Features of Mal-adjusted individual?
10. List the problems of old age?

SECTION-B

Note:

Answer five questions
Each question carries six marks

$5 \times 6 = 30$

11. Explain physical and psychological changes during and care of old age people at home.
12. List out the Endocrine Glands in the body and write in detail about Pituitary Gland?
13. Write in detail about classification of foods?
14. Explain in detail about food fads, taboos, customs and their influences on health?
15. Describe the components of counselling and write role of counsellor?
16. How will you assess malnutrition in an individual?
17. Write the various types treatment for mental illness?
18. Draw a neat labelled diagram of Heart and write the functions of Heart?

MODEL QUESTION PAPER - THEORY PAPER-III
MULTIPURPOSE HEALTH WORKER (FEMALE) -I YEAR
PRIMARY HEALTH NURSING

Time : 3 Hours.

Max.Marks: 50

SECTION-A

Note:

- A. Answer all questions $10 \times 2 = 20$
- B. Each question carries 2 marks

1. Define Hospital and types of Hospitals?
2. What are the seven steps in Patient Safety?
3. What are steps in Hand washing?
4. Basic needs of the Humans?
5. Basic principles while collecting principles?
6. Define sterilization?
7. What are the colours of the containers used in waste disposal?
8. Define Constipation?
9. Signs and symptoms of Diabetes?
10. Mention the routes of drug administration?

SECTION-B

Note:

Answer five questions

$5 \times 6 = 30$

Each question carries six marks

11. Write about causes of convulsions and how will you manage the Heat stroke patient?
12. What are the functions of scrub and circulatory nurse?
13. Write in detail about diabetes mellitus?
14. Describe the signs and symptoms of cardiac arrest and write about emergency management of patient with heart attack?
15. Classify the types of headache and explain in detail?
16. Explain in detail about Tuberculosis?
17. Write about physical methods of sterilization in detail?
18. Write the procedure of urine test?