

**Vocational Higher Secondary
Education (VHSE)**

Second Year

**BASIC NURSING AND PALLIATIVE
CARE**

Reference Book



**Government of Kerala
Department of Education**

**State Council of Educational Research and Training (SCERT),
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Foreword

Dear Learners,

This book is intended to serve as a ready reference for learners of vocational higher secondary schools. It offers suggested guidelines for the transaction of the concepts highlighted in the course content. It is expected that the learners achieve significant learning outcomes at the end of the course as envisaged in the curriculum if it is followed properly.

In the context of the Right- based approach, quality education has to be ensured for all learners. The learner community of Vocational Higher Secondary Education in Kerala should be empowered by providing them with the best education that strengthens their competences to become innovative entrepreneurs who contribute to the knowledge society. The change of course names, modular approach adopted for the organisation of course content, work-based pedagogy and the outcome focused assessment approach paved the way for achieving the vision of Vocational Higher Secondary Education in Kerala. The revised curriculum helps to equip the learners with multiple skills matching technological advancements and to produce skilled workforce for meeting the demands of the emerging industries and service sectors with national and global orientation. The revised curriculum attempts to enhance knowledge, skills and attitudes by giving higher priority and space for the learners to make discussions in small groups, and activities requiring hands-on experience.

The SCERT appreciates the hard work and sincere co-operation of the contributors of this book that includes subject experts, industrialists and the teachers of Vocational Higher Secondary Schools. The development of this reference book has been a joint venture of the State Council of Educational Research and Training (SCERT) and the Directorate of Vocational Higher Secondary Education.

The SCERT welcomes constructive criticism and creative suggestions for the improvement of the book.

With regards,

Dr. P. A. Fathima
Director
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“Every handicraft has to be taught not merely mechanically as is done today, but scientifically. This is to say, the child should learn the why and wherefore of every process.” -

Gandhi’s Philosophy of Education

ABOUT THE COURSE

Basic nursing and palliative care course is intended to offer training to students at the higher secondary level with knowledge and skills in basic nursing procedures, first aid, geriatric care, palliative care, and community health.

As per world health organisation the average life expectancy at birth of the global population in is 71 years. In Kerala, now the average life expectancy is more than 71 years and the greater longevity of life give rise to more complex health concerns, there is also a paradigm shift in disease pattern from communicable diseases to non communicable diseases and emergence and re-emergence of diseases. In social scenario breaking up of extended families to small nuclear units, less number of children in each family, people going abroad in search of jobs, changes in food habits, changes in work culture, westernisation of our culture, increased incidence of accidents etc had contributed to many physical and psychological health problems. Now the health policies are being framed to reduce hospital stay and focus on promotive and preventive aspects of health.

The Health care industry is facing a severe shortage of skilled manpower. Insufficient knowledge and lack of skill can lead to mistakes that are costly for people's health. This course is designed in such a way that after the successful competition, the students can provide quality promotive, preventive and curative health care at nursing homes, assisted living, hospice, homes, hospitals, schools, industries, community based long-term care, other long-term care settings and health projects.

There is an ample scope and opportunities for nursing professionals all over the world as it is described as one of the most dignified profession. This curriculum helps students to inculcate a positive attitude towards nursing profession and make them eligible to join higher studies in nursing. This course gives a sound foundation for aspiring nurses.

Major skills (sub skills)

Module 3 - Geriatric and Palliative Care

After completion of the module 3 the student will have skill in;

1. Administration of medications
2. Oxygen Administration
3. Wound dressing
4. Provide palliative care
5. Care an elderly client
6. Meet the health needs of unconscious patient
7. Meet the health needs of Client's with special needs

Module 4- Community health

After completion of the module 4 the student will have skill to;

1. Recognize health needs and problems of community
2. Provide promotive, preventive and curative health care at homes, elderly care homes, hospices, rehabilitation centres, schools, work places, public places like markets, shopping malls etc
3. Skill in providing health education

SYLLABUS

Module 3 PALLIATIVE AND GERIATRIC CARE (340 Hrs/Periods)

Unit No. 3.1 Administration of Medication 60 Periods

Meaning of drug, medicine, Nomenclature, Forms of medicines, Classification of medicines, Abbreviations in common use, Medication order, Types of medication order, Effects of drug on the body, Dosage, Weight and measures, Calculation of dosage, Storage of drugs, Drug Delivery systems, Routes of medication administration, Safety measures, Storage of drugs, Administration of Oral Medication, Topical Medication Applications a. Dermatologic (Skin Surface) b. Transdermal Patch c. Ophthalmic - Eye Drops- Eye Ointments, d. Otic (Ear) e. Nasal Instillation - Administer nasal drops- Administer nasal spray, f. Administering Medication by Inhalation- Metered-dose inhalers and Turbo inhalers. Nebulisation, Injections a. Types of injections b. Purpose of injections c. Complications of injections d. Drugs and fluids administered e. Safety measures f. Selection of equipment for injections g. Forms of medications available h. Principles involved in the administration of injections i. Administration of injections- Subcutaneous injection including Insulin pen, Intramuscular injections

Unit No. 3.2 Oxygen Administration 40 Periods

Definition , Indications for oxygen therapy, Methods of Oxygen Administration , Supply of oxygen , Care of oxygen cylinder, Complications of oxygen therapy, General Instructions for oxygen administration, Management of home oxygen therapy , Applying nasal cannula, oxygen mask and nasal catheter , Using Home Oxygen Equipment

Unit No. 3.3 Care of Wound 30 Periods

Concept of wound, Types of wound, Factors affecting wound healing, Wound dressing, Types of wound dressing, Purposes of wound dressing, Dressing materials, Complications of wound healing, Principles involved in care of wounds, General instructions for care of wounds , Applying wound dressing

Unit No. 3.4 Palliative Care 100 Periods

Palliative Care , Introduction to Palliative Care –Definition, Common conditions requiring palliative care, Hospice Care, Pharmacology - common drugs used in palliative care, Pain Management, Symptom Management (Dyspnea, Nausea and Vomiting, Constipation, Fungating wounds, Dysphagia, Diarrhea, Urinary Incontinence, Urinary retention and hesitancy, Halitosis, insomnia, Bedsores, Lymphedema), General care of patient , Spirituality, Care at the End of Life (Active Dying), Carry out last office (death care), Support during grief and bereavement

Unit No. 3.5 Geriatric Care 50 Periods

Concept of old age and related terms, Factors affecting old age, Changes in old age, Health problems of the aged, General care of elderly, Prevention of accidents in elderly , Elderly abuse

Unit No. 3.6 Care of Unconscious Patient 30 Periods

Consciousness, Levels of consciousness, Unconsciousness, Causes of unconsciousness, Assessment of unconscious patient, Care of an unconscious patient, Management of complications

Unit No: 3.7 Care of Client's with Special needs 30 Periods

Care of Client's With Special Needs – Dementia, Challenged Children – Attention Deficit Hyperactivity Disorder(ADHD), Autism, Mentally Challenged, Cerebral Palsy

MODULE 4 - COMMUNITY HEALTH (340 Hrs/Periods)**Unit 4.1 Introduction to Health Periods: 20**

Introduction to health- Concept of Health and disease, Determinants of health, New trends in health care

Unit 4.2 Hygiene Periods:60

Hygiene- Concepts of hygiene, Types a. Personal b. Environmental, Personal Hygiene a. Care of skin and hair b. Care of teeth c. Care of eyes, ears, hands & feet d. Menstrual Hygiene e. Rest and sleep, postures, exercises and recreation, Environmental Hygiene 1. Water - Safe and wholesome water, Uses of water, Sources of water supply, Sanitary well, Water pollution, Water related diseases, Purification of water 2. Air 3. Ventilation 4. Housing 5. Lighting 6. Noise 7. Food hygiene 8. Disposal of waste 9. Control of Mosquitoes, flies, rodents.

Unit 4.3 Nutrition Periods: 20

Nutrition- Relation of nutrition to health, Functions of food, Classification of food, Constituents of food - Protein, fat and carbohydrates, Vitamins, Minerals and water, Balanced diet, Nutritional problems, Community nutritional programmes

Unit 4.4 Communicable and Non Communicable Diseases Periods:80

A.Prevention and Control of Infectious Diseases – Bacterial (Diphtheria, Whooping Cough/Pertussis, Tetanus, Tuberculosis , Typhoid, Leprosy or Hansen’s Diseases, Meningococcal meningitis (cerebro spinal fever) , Leptospirosis (Weil’s disease) and Cholera, Viral { Chicken Pox (Varicella), Measles / Rubeola, German Measles/ Rubella, Mumps (Infectious Parotiditis), Poliomyelitis, Viral Hepatitis, SARS, Dengue fever, Chikungunya and Acquired Immuno Deficiency Syndrome (AIDS)} and protozoan(malaria and filarisis) B. Prevention and Control of Non Communicable Diseases 1. Coronary Artery Disease 2. Hypertension 3. Stroke 4. Cancers 5. Diabetes Mellitus 6. Obesity 7. Blindness 8. Accidents and injuries C. Mental Health D. Alcoholism and drug dependence

Unit 4.5 Maternal and Child Health Periods:40

Maternal and child health – a. Menstruation and Fertility b. Antenatal care, c. Post-Natal Care d. Newborn Care e. Breast feeding f. Complementary feeding g. Immunization h. Family Planning Methods

Unit no: 4.6 Adolescence Periods: 20

Adolescence- Physical and physiological changes in adolescence, Problems of adolescents - physical, physiological and psychosocial, Promoting optimum health during adolescence

Unit 4.7 National Health Programmes Periods: 20

National Health Programmes – 1. Mission Indradhanush 2. National Vector Borne Disease Control Programme 3. Revised National Tuberculosis Eradication Programme 4. National AIDS Control Programme 5. National Programme For Control Of Blindness 6. Universal Immunization Programme 7. Pulse Polio Immunization Programme 8. National Health Mission 9. Reproductive, Maternal, Newborn, Child and Adolescent Health 10. National Cancer Control Programme 11. National Mental Health Programme 12. Janani Shishu Suraksha Karyakram 13. Rashtriya Kishor Swasthya Karyakram 14. National Programme For Prevention And Control Of Diabetes, Cardiovascular Diseases And Stroke 15. National Family Welfare Programme

Unit 4.8 Health Care of the Community Periods:40

Health Care of the Community - Levels of health care, Primary Health care , Millennium development goals, Primary Health care in India – Village level, Sub centre, Primary health centre, Community Health centre - Integrated Child Development Scheme – Anganawadis, Local self government - Panchayati Raj , International health agencies - WHO, UNICEF, RED CROSS, National Health agencies – Bharat Sevak Samaj, Family planning association of India, Professional bodies

Unit 4.9 Health Education Periods:20

Health Education - Concept, Aims and Objectives, Contents of Health education, Principles of health education, Settings for health education, Methods of health education, Audiovisual aids, Steps for health education

Unit no: 4.10 Disaster Management Periods:20

Disaster – Definition, Types of disaster, Phases of disaster, Disaster management.

PART B**OVERVIEW OF MODULE****Module 3 – Geriatric and Palliative Care**

The module is designed to prepare care givers with specialized knowledge skills and attitude in providing quality care in the areas of palliative care, geriatric care and care of client's with special needs at primary, secondary and tertiary levels of care.

The first unit deals with Administration of Medicines. A Medicine may be defined as a substance used to promote health, to prevent illness, to diagnose, to alleviate or

cure disease. This unit deeply discusses the meaning of drug, medicine, types and forms of medicines, abbreviations in common use, weight and measures, forms of medications, storage of drugs, drug delivery systems, routes of medication administration, rules of medication administration, oral administration of medicines and injections.

The second unit is on Oxygen administration. Oxygen therapy is the administration of oxygen as a medical intervention for both acute and chronic patient care. This unit discusses the concept of oxygen therapy, types, parts of an oxygen cylinder, indications for oxygen therapy, precautions for oxygen therapy, procedure of oxygen administration, complications of oxygen therapy and management of home oxygen therapy

Unit three is Care of Wound and a wound is a cut or break in the skin and wound dressing is a process of cleaning and dressing a wound. This unit contains the topics the concept of wound, types of wound, dressing materials, factors affecting wound healing, complications of wound, review of surgical asepsis and wound care.

The fourth unit is Palliative care which defined by WHO as an approach that improves the quality of life of patients and their families facing the problem associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual. Here we discuss the concept of palliative care, hospice care, pharmacology - common drugs used in palliative care, pain management, symptom management (constipation, incontinence, dyspnea, anorexia, nausea and vomiting, diarrhea, lymphedema), review of basic nursing procedures, meeting spiritual needs, care at the end of life (active dying), carry out last office (death care) and support during grief and bereavement

Unit five deals with Geriatric care. Geriatric care management is the process of planning and coordinating care of the elderly and others with physical and/or mental impairments to meet their long term care needs, improve their quality of life, and maintain their independence for as long as possible. Here we discusses the concept of old age and related terms, changes in old age, common health problems specific to old age and its management, general care of elderly, prevention of accidents in elderly and elderly abuse

The unit six is Care of unconscious patient. Unconsciousness is a state which occurs when the ability to maintain an awareness of self and environment is lost. It involves a complete or near-complete lack of responsiveness to people and other

environmental stimuli. This unit contains the concept of consciousness, levels of consciousness, causes of unconsciousness, assessment of unconscious patient, care of an unconscious patient and complications and its management

Unit seven discusses the care of client's with special needs- cognitive disorders - Dementia and Alzheimer's disease. Care of challenged children – attention deficit hyperactivity disorder (ADHD), Autism, Mentally challenged, Cerebral palsy.

UNIT NO: 3.1 Administration of Medication

The administration of medication has become increasingly complex and diversified. Administration of correct medication and dosage by the specified route, using proper technique and taking appropriate precautions were once all that was expected. Today, there is increasing demand for a broader level of knowledge and skills. For safe administration of medication the care giver must be familiar with the sources of medication information, when and how to use them, ability to recognize unsafe and unclear medication orders, knowledge about what to do when such an order is encountered and also various components of safe administration of medication.

Learning outcomes

The learner:

- Defines the selected terms related to administration of medications
- Explains the forms of medications
- Identifies the types of drugs
- Identifies the essential parts of a medication order.
- Explains the types of medication order
- Identifies the abbreviations in common use related to administration of medications
- Describes the effects of drugs on the body
- Explains the dosage and factors affecting dose
- Applies the systems of measurement in the administration of medications
- Calculates the prescribed medication doses
- Describes the various drug delivery systems
- Describes the various routes of medication administration
- States the three checks and seven rights to accurate medication administration.
- Demonstrates the steps used in administering oral medications

- Demonstrate the steps used in
 - ◆ Topical Medication Applications
 - a. Dermatologic (Skin Surface)
 - b. Transdermal Patch
 - c. Ophthalmic

Eye Drops

Eye Ointments

- d. Otic (Ear)
- e. Nasal Instillation
 - Nasal drops
 - Nasal spray
- f. Administering Medication by Inhalation

Metered-dose inhalers and

Turbo inhalers.

- ◆ Nebulisation
- Defines Injection
- Explains the types of injection
- Describes the complications of injections
- Enlists the types of drugs and fluids administered by parenteral route
- Demonstrates skill in:
 - a. Preparing medications from ampoules.
 - b. Preparing medications from vials.
- Identifies the sites used for:
 - a. Intradermal injection.
 - b. Subcutaneous injection.
 - c. Intramuscular injection.
- Demonstrates the steps in administering parenteral medications by subcutaneous and intramuscular route
- Demonstrates appropriate documentation and reporting of medication administration skills.

Meaning of drug, medicine

A drug is a chemical substance that modifies body function when taken into the living organism. Medicine is a substance used to promote health to prevent illness, to diagnose to alleviate or cure disease.

Names of the drugs (Nomenclature)

Medication Names - Some medications have as many as three different names.

Chemical name - The chemical name of a medication provides an exact description of its composition and molecular structure. An example of a chemical name is *N*-acetyl-para-aminophenol, which is commonly known as Paracetamol.

Generic name - The manufacturer who first develops the medication gives the generic or nonproprietary name.

Acetaminophen is an example of a generic name.

Trade name - The trade name, brand name, or proprietary name is the name under which a manufacturer markets a medication. The trade name has the symbol (™) at the upper right of the name, indicating that the manufacturer has trademarked the name of the medication (e.g., Panadol,™ Calpol,™ Crocin,™)

Forms of medicines

A. Medication Forms Commonly Prepared for Administration by Oral Route Solid Forms

1. Capsule - Medication encased in gelatin shell
2. Tablet - Powdered medication compressed into hard disk or cylinder.;
3. Enteric-coated tablet - Coated tablet that does not dissolve in stomach; coatings dissolve in intestine, where medication is absorbed

Liquid Forms

1. Elixir - Clear fluid containing water and/or alcohol; often sweetened
2. Extract - Syrup or dried form of pharmacologically active medication, usually made by evaporating solution
3. Aqueous solution - Substance dissolved in water and syrups
4. Aqueous suspension - Finely divided drug particles dispersed in liquid medium; when suspension is left standing, particles settle to bottom of container
5. Syrup - Medication dissolved in a concentrated sugar solution

Other Oral Forms and Terms Associated with Oral Preparations

1. Troche (lozenge)- Flat, round tablets that dissolve in mouth to release medication; not meant for ingestion
2. Aerosol - Aqueous medication sprayed and absorbed in mouth and upper airway; not meant for ingestion
3. Sustained release - Tablet or capsule that contains small particles of a medication coated with material that requires a varying amount of time to dissolve

B. Medication Forms Commonly Prepared for Administration by Topical Route

1. Ointment (salve or cream) - Semisolid, externally applied preparation, usually containing one or more medications
2. Liniment - Usually contains alcohol, oil, or soapy emollient applied to skin
3. Lotion - Liquid suspension that usually protects, cools, or cleanses skin
4. Transdermal disk or patch Medicated disk or patch absorbed through skin slowly over long period of time (e.g., 24 hours, 1 week)

C. Medication Forms Commonly Prepared for Administration by Parenteral Route

1. Solution - Sterile preparation that contains water with one or more dissolved compounds
2. Powder - Sterile particles of medication that are dissolved in a sterile liquid (e.g., water, normal saline) before administration

D. Medication Forms Commonly Prepared for Instillation into Body Cavities

1. Intraocular disk- Small, flexible oval (similar to contact lens) consisting of two soft, outer layers and a middle layer containing medication; slowly releases medication when moistened by ocular fluid
2. Suppository - Solid dosage form mixed with gelatin and shaped in form of pellet for insertion into body cavity (rectum or vagina)

Classification of Medicines

Drugs may be classified in several ways according to their chemical composition, chemical actions, therapeutic effects on body systems, their purpose and uses, by the symptoms relieved by the drug

Classification of drugs by action

1. Analgesics: Drugs used to relieve pain.
2. Anaesthetics: Causes loss of sensation
3. Anthelmintics: Which destroy and expel worms.
4. Anti-Pyretics: Which reduce fever.
5. Anti-Dotes: Used to counteract the effects of poison.
6. Anti-Inflammatory: Help to reduce inflammation.
7. Anti-Coagulants: Decrease or inhibit the blood clotting process.
8. Anti-Histamines: To prevent or relieve allergies.
9. Antacids: Decrease the activity of gastric secretions.
10. Anti-Convulsants: Prevent or treat Convulsions.
11. Anti-Biotics: Ability to destroy or inhibit the growth of other organisms.
12. Anti-Diarrhetics: To treat Diarrhoea.
13. Anti-Tussives: That inhibits the cough reflex.
14. Anti-Asthmatics: Which relieve asthmatic attacks (Bronchodilators).
15. Anti-Pruritics: Relieves itching.
16. Anti-Septics: That inhibits the growth of bacteria.
17. Anti-Fungal: Prevent the growth of Fungi or destroy it.
18. Anti-Spasmodics: Relieves the spasmodic pains or spasm of the muscles.
19. Anti-Emetics: Relieves or prevents nausea and vomiting.
20. Anti-Hypertensive: Reduces high blood pressure.
21. Anti-Depressants: To treat depression.
22. Cortico-Steroids: Hormonal drugs extracted from the adrenal cortex.
23. Diuretics: Which increase the flow of Urine.
24. Expectorants: Which helps in expulsion of Mucus.
25. Haemostatics: An agent to check haemorrhage.
26. Emollient: That smoothen, soften and protect the skin.

27. Haematinics: Helps to increase the haemoglobin content of the blood.
28. Hypolipidaemics: Helps to decrease cholesterol.
29. Hypoglycaemics: That lower the blood sugar level.
30. Muscle Relaxants: To relax the muscle tensions.
31. Opioids (Narcotics): That produces stupor or complete insensibility.
32. Carminatives: Which helps in expulsion of gas from the stomach and intestines.
33. Laxative: Which helps to move the bowel.

Commonly used abbreviations

Hospitals, nursing homes, assisted living facilities, and all other healthcare settings must now standardize abbreviations, acronyms and symbols that they are using. Commonly used and acceptable abbreviations along with their meaning are below.

Abbreviations used regarding time of administration

Abbreviation	Meaning	Abbreviation	Meaning
a.m.	Before noon	D/C, dc	Discontinue
p.m.	After noon	stat	At once
alt.day	Alternate days	rep	Repeat
o.d.	Daily(once a day)	h	Hour
h.s.	At bed time	q	Every
c.m.	Tomorrow morning	qh	Every hour
p.r.n.	When required	Q4H	Every 4 hours
s.o.s.	If necessary in emergency	Q6H	Every 6 hours
b.d.	Twice a day	Q8H	Every 8 hours
t.i.d, tds	Three times a day	Q12H	Every 12 hours
q.i.d.	Four times a day	Alt h	Alternate hours

Abbreviations used regarding preparation of the drug

Abbreviation	Meaning	Abbreviation	Meaning
S/l	Sublingual	lot.	Lotion
amp	Ampoule	mist.	Mixture
CR	Controlled release	ol.	Oil
dil.	Dilute	pil	Pill
fl.	Fluid	pulve.	Powder
inf.	Infusion	sp.	Spirit
R	Retard	syr.	Syrup
lin.	Liniment	Tr.(tinct.)	Tincture
liq.	Liquid	ung.	Ointment
cap.	Capsule	ing.	Injection
tab.	Tablet	sol.	Solution
gargl.	Gargle	DS.	Strength
dist.	Distilled		

Abbreviations used regarding the amounts

Abbreviation	Meaning	Abbreviation	Meaning
cc.	Cubic Centimeter	cm.	Centimeter
gr.	Grain	g.gm	Gram
kg.	Kilogram	ml.	Milliliter
°	A pint	lb.	Pound
mg.	Milligram	l.	Liter
Rx.	Take thou	tsp.	Tea spoon full
oz.	Ounce	mcg.ug	Microgram
tbsp.	Table spoon	no.	Number
meq.	Milli equivalent	gtt.	A drop
ad.lib.	As much as desired	ss.fs	Half (semi, hemi)
s. (with a line over it)	Without		

Abbreviations used Regarding the Routes

Abbreviation	Meaning	Abbreviation	Meaning
AD	Right ear	AS	Left ear
H	Hypodermic	PO	By mouth
IM	Intramuscular	EC	Enteric coated
INJ	Injection	ext	External or Extract
IV	Intravenous	AU	Each ear
IVP	Intravenous push	OU	Both eyes
Rx	Take, prescription	P or p	Per or After
SQ	Subcutaneous	OS	Mouth
R or PR.	Per rectum		

Medication order

The prescription of a medication conveys an order which has the following components.

1. The person's full name,
2. Room and bed number if there is one,
3. Age,
4. Name of the doctor,
5. Any allergies,
6. Medicine(s) to be taken,
7. The dose for each,
8. The route for each,
9. The form for each,
10. The date and perhaps even the time that the order was written,
11. Date(s) and time(s) that the medicine is to be taken,
12. Start and end dates of the order, and
13. The initials and signatures of all who have helped with the medicine(s).

Types of Medication Orders

Four common medication orders are the stat order, the single order, the standing order, and the prn order.

1. A **stat order** indicates that the medication is to be given immediately and only once (e.g., morphine sulfate 10 milligrams IV stat).
2. The **single order** or *one-time order* is for medication to be given once at a specified time (e.g., Seconal 100 milligrams at bedtime before surgery).
3. The **standing order** may or may not have a termination date. A standing order may be carried out indefinitely (e.g., multiple vitamins daily) until an order is written to cancel it, or it may be carried out for a specified number of days (e.g., KCl twice daily _ 2 days).
4. A **prn order**, or *as-needed order*, permits the nurse to give a medication when, in the nurse's judgment, the client requires it (e.g., Amphojel 15 mL prn).

Effects of drug on body

- i. **Therapeutic Effects.** The therapeutic effect is the expected or predicted physiological response that a medication causes.
- ii. **Side Effects/Adverse Effects.** Every medication has a potential to harm a patient. **Side effects** are predictable and often unavoidable secondary effects produced at a usual therapeutic dose. They are either harmless or cause injury. For example, some antihypertensive medications cause impotence in men.
 - a. **Adverse effects** are unintended, undesirable, and often unpredictable severe responses to medication. Some adverse effects are immediate, whereas others take weeks or months to develop.
 - b. **Toxic Effects.** **Toxic effects** develop after prolonged intake of a medication or when a medication accumulates in the blood because of impaired metabolism or excretion.
 - c. **Idiosyncratic Reactions.** Medications sometimes cause unpredictable effects such as an **idiosyncratic reaction**, in which a patient overreacts or under reacts to a medication or has a reaction different from normal.
 - d. **Allergic Reactions.** Allergic reactions also are unpredictable responses to a medication. Some patients become immunologically sensitized to the initial dose of a medication. With repeated administration the patient develops an allergic response to it, its chemical preservatives, or a metabolite. The medication or chemical acts as an antigen, triggering the release of the antibodies in the body. A patient's **medication allergy** symptoms vary, depending on the individual and the medication. Among the different classes of medications, antibiotics cause a high incidence of allergic reactions.

- a. Severe or **anaphylactic reactions**, which are life threatening, are characterized by sudden constriction of bronchiolar muscles, edema of the pharynx and larynx, and severe wheezing and shortness of breath. Immediate medical attention is required to treat anaphylactic reactions.
- f. **Mild Allergic Reactions**
 - a) Urticaria - Raised, irregularly shaped skin eruptions with varying sizes and shapes; eruptions have reddened margins and pale centers
 - b) Rash - Small, raised vesicles that are usually reddened; often distributed over entire body
 - c) Pruritus - Itching of skin; accompanies most rashes
 - d) Rhinitis- Inflammation of mucous membranes lining nose; causes swelling and clear, watery discharge

Dosage

The dose is the amount of drug administered at one time.

Information about the dosage and route is crucial to protect against medication error.

Factors Affecting Dose

- | | |
|----------------------------------|----------------------------|
| 1. Age | 6. Habituation |
| 2. Sex | 7. Addiction |
| 3. Physical condition | 8. Idiosyncrasy |
| 4. Cumulative action of the drug | 9. Route of administration |
| 5. Tolerance | |

Weights and Measures

Metric System

Basic units of measurement are the meter, the liter, and the gram.

Apothecaries' System

The basic unit of weight in the apothecaries' system is the grain (gr), likened to a grain of wheat, and the basic unit of volume is the minim,

Household System

Household measures may be used when more accurate systems of measure are not

required. Included in household measures are drops, teaspoons, tablespoons, cups, and glasses.

Calculation of dosage

Tablets

Number of tablets

$$= \frac{\text{Required or Prescribed}}{\text{Stock dose}}$$

Liquids

Volume to be administered =

$$\frac{\text{Required or Prescribed strength}}{\text{Stock strength}} \times \text{Stock Volume}$$

Intravenous orders

$$\text{Rate/hour} = \frac{\text{Prescribed / Required Volume}}{\text{Hours}}$$

$$\text{Drops per Minute} = \frac{\text{Prescribed / Required Volume}}{\text{Time (in Minutes)}} \times \text{Drop factor of giving set}$$

Drop factor is drop/ml

The drop factor of standard giving set is 16

Routes of medicine administration

Oral Routes. The oral route is the easiest and the most commonly used route. Medications are given by mouth and swallowed with fluid.

Sublingual Administration. Some medications are readily absorbed after being placed under the tongue to dissolve.

Buccal Administration. Administration of a medication by the **buccal** route involves placing the solid medication in the mouth against the mucous membranes of the cheek until it dissolves.

Parenteral Routes. Parenteral administration involves injecting a medication into body tissues. The following are the four major sites of injection:

1. **Intradermal (ID)** : Injection into the dermis just under the epidermis
2. **Subcutaneous** : Injection into tissues just below the dermis of the skin
3. **Intramuscular (IM)** : Injection into a muscle
4. **Intravenous (IV)** : Injection into a vein

Some medications are administered into body cavities other than the four types listed here. These additional routes include

Epidural. Epidural medications are administered in the epidural space via a catheter, which is placed by a nurse anesthetist or an anesthesiologist. This route is used for the administration of regional analgesia for surgical procedures

- 1) **Intrathecal.** Physicians and specially educated nurses administer intrathecal medications through a catheter placed in the subarachnoid space or one of the ventricles of the brain.
- 2) **Intraosseous.** This method of medication administration involves the infusion of medication directly into the bone marrow.
- 3) **Intraperitoneal.** Medications administered into the peritoneal cavity are absorbed into the circulation.
- 4) **Intrapleural.** A syringe and needle or a chest tube is used to administer intrapleural medications directly into the pleural space.
- 5) **Intraarterial.** Intraarterial medications are administered directly into the arteries.
- 6) **Intracardiac,** an injection of a medication directly into cardiac tissue
- 7) **Intraarticular,** an injection of a medication into a joint.

Topical Administration. Medications applied to the skin and mucous membranes generally have local effects. You apply topical medications to the skin by painting or spreading the medication over an area, applying moist dressings, soaking body parts in a solution, or giving medicated baths.

A **transdermal disk** or patch (e.g., nitroglycerin, scopolamine, and estrogens) has systemic effects. The disk secures the medicated ointment to the skin.

Medications are administered into to mucous membranes in a variety of ways, including the following, by:

1. Directly applying a liquid or ointment (e.g., eyedrops, gargling, or swabbing the throat).

2. Inserting a medication into a body cavity (e.g., placing a suppository in rectum or vagina or inserting medicated packing into vagina).
3. Instilling fluid into a body cavity (e.g., eardrops, nose drops, or bladder and rectal **instillation** [fluid is retained]).
4. Irrigating a body cavity (e.g., flushing eye, ear, vagina, bladder, or rectum with medicated fluid [fluid is not retained]).
5. Spraying a medication into a body cavity (e.g., instillation into nose and throat).

Inhalation Route. The deeper passages of the respiratory tract provide a large surface area for medication absorption. Nurses administer inhaled medications through the nasal and oral passages or endotracheal or tracheostomy tubes.

Intraocular Route. Intraocular medication delivery involves inserting a medication similar to a contact lens into the patient's eye.

Drug delivery systems

Drug delivery is the method or process of administering a pharmaceutical compound to achieve a therapeutic effect in humans.

Types of Drug Delivery Systems

Various types of Drug Delivery Systems are:

1. Conventional Drug Delivery System
2. Novel Drug Delivery System
 - a) Targeted Drug Delivery System.
 - b) Controlled Drug Delivery System.
 - c) Sustained / Modified release Drug delivery System.
 - d) Other Dosage Forms

Conventional Drug Delivery System

Conventional Drug Delivery System or the traditional system is the one that incorporates the classical methods for the delivery of drug into the body. These methods are advantageous over various aspects. The Examples of these systems includes:

1. Oral Delivery
2. Buccal / Sublingual Delivery
3. Rectal Delivery

4. Intravenous Delivery
5. Sub Cutaneous Delivery
6. Intramuscular Delivery

Novel drug delivery systems

There are various types of Novel Drug Delivery Systems that have been developed. A few have been discussed as under:

Aerosols

Aerosol preparations are stable dispersions or suspensions of solid material and liquid droplets in a gaseous medium.

There are three commonly used clinical aerosols:

1. Nebulizers
2. Metered-dose Inhaler (MDI)
3. Dry-powder inhaler (DPI)

Transdermal Drug Delivery System

Transdermal drug delivery system can deliver the drugs through the skin portal to systemic circulation at a predetermined rate and maintain clinically the effective concentrations over a prolonged period of time.

Controlled Drug Delivery System

Time release technology (also known as sustained-release [SR], sustained-action [SA], extended release[ER,], timed-release [TR], controlled-release [CR], modified release [MR], or continuous release) is a mechanism used in pill tablets or capsules to deliver a drug over time with a control over the amount with respect to time so to be released slower and steadier into the bloodstream while having the advantage of being taken at less frequent intervals than Conventional dosage formulations of the same drug.

Safety measures

The nurse observes the **three checks** and the **seven rights** when administering medications.

Three checks

The label on the medication container should be checked three times during medication preparation-

1. When the nurse reaches for the container
2. Immediately before pouring or opening medication, and

3. When replacing the container back

The Seven “Rights”

The seven rights help to ensure accuracy when administering medications.

1. Right medicine
2. Right patient
3. Right time
4. Right dose
5. Right route
6. Right form and
7. Right documentation

1. Right Medicine

Do NOT use any medicine that has a label that you cannot read. Do NOT use any medicine unless it has a complete label.

Read and double check the label against the medicine record at least three times and tell the person the name of the medicine before you help them. If the person says they do not get this medicine,

STOP. Do not help. Report this to your supervisor.

It is an error if a patient takes the wrong medicine. This must be reported.

2. Right Patient

You must check the identity of the person before you help them with their medicines. You will learn more about preventing mistakes and patient identification later in this class.

It is an error when a person takes another person’s medicine. This also must be reported.

3. Right Time

The right time is 30 minutes before and up to 30 minutes after the time on the bottle and the order.

For example, a person can take their medicine anytime between 9:30 am and 10:30 am if the medicine is to be given once a day and your job says in their procedure that once a day medicines are given at 10 am.

It is an error if it is taken at 9 am or at 11 am. This, too, must be reported.

PRN medicines are not taken at a special time of the day. They are taken only when they are needed but not more often than the order states. For example, the doctor may order aspirin q4h and prn for pain.

This aspirin can be given when the person has pain but there must be at least 4 hours between doses.

4. Right Dose

Check and double check the dose. Scored tablets must be cut in half if the label says 1/2 tablet.

It is an error when the person takes more or less than they should. This error must also be reported.

5. Right Route

Check the label to find out the right route. A buccal medication should not be swallowed (oral route).

It is an error when a person takes a medicine with the wrong route. This error must be reported.

6. Right Form

Check the label against the order to make sure that you have the right form. A pill cannot be given if the order says a liquid. It is an error when a person takes the wrong form. This, too, must be reported.

7. Right Documentation

All documentation must be complete and accurate.

Storage of Drugs

Care of Medicine Cabinet and Drugs

1. Each ward should be provided with a medicine cabinet to accommodate all drugs to be stocked for the ward.
2. The medicine cabinet should be kept in a separate room with adequate lighting and washing facilities.
3. There should be separate compartments for different categories of drugs eg. Mixtures, tablets and injections and all drugs should be kept alphabetically.
4. Poisonous drugs should be kept in a separate cupboard which must have separate lock and key.
5. A register should be maintained to keep the account of the poisonous drugs.

6. A daily inventory should be taken to prevent theft of narcotics.
7. All the poisonous drugs should be marked “poison” in red ink.
8. No drug should be stored without labels, even for a day. All the containers should have labels written neatly and legibly.
9. The labels should contain the name of the drug, the ingredients, the strength, the dose etc.
10. All medicine containers should be kept closed always.
11. The drugs that are unusual in colour, odour and consistency should be returned to the pharmacy and replaced with fresh ones.
12. Check the expiry date of every drug and make use of it before its expiry date is over or send it to the dispensary and get it replaced.
13. The drugs which are destroyed in the room temperature such as vaccines, sera, antibiotics etc., should be kept in the refrigerators.
14. Emergency drugs should be kept in a place where they are readily obtainable for emergency use.
15. When indenting for drugs, indent only the required quantity
16. The medicines cabinet should always be kept neat and clean and all equipments should be kept clean and dry after their use.
17. The medicine cabinet should always be kept locked and the key should be kept where only doctors and nurses have access to it.
18. The oily medicines should be kept in a separate tray or on a piece of water-proof paper to prevent soiling the shelf.
19. Special oil cups or spoons are used which are helpful in keeping the oily odours away from medicine glasses.

Practical Activities

1. Administration of Oral Medication
2. Topical Medication Applications
 - A. Dermatologic (Skin Surface)
 - B. Transdermal Patch
 - C. Ophthalmic

- i. Eye Drops
 - ii. Eye Ointments
 - D. Otic (Ear)
 - E. Nasal Instillation
 - i. Administer nasal drops
 - ii. Administer nasal spray
3. Administering Medication by Inhalation
 - a) Metered-dose inhalers and
 - b) Turbo inhalers.
4. Nebulisation

Assessment Activities

1. Collection – drug leaflets, different forms of medications
2. Chart preparation on route of administration
3. Roleplay on safety measures

Injections

It is the forcing of fluid into cavity, a blood vessel or a body tissue through a hollow tube or needle.

TYPES OF INJECTIONS

Hypodermal or subcutaneous injection, Hypospray, Infusions, Intradermal, Intramuscular injection, Intraosseous injection, Intraperitoneal injection, Intraspinal or intrathecal injections, Intravenous and intra-arterial injection, Venesection or cut down, Transfusions

Purpose of injections

- To get a rapid and systematic effect of the drug.
- To provide the needed effect even when the client is unconscious, unable to swallow due to neurological or surgical alterations affecting the throat and mouth or when the client is not cooperative.
- Assures that the total dosage will be administered and the same will be absorbed for the systemic actions of the drug.
- Provides the only means of administration for medications that cannot be given

orally.

- To obtain a local effect at the site of the injection:
- Local anaesthetics as xylocaine and novacaine.
- Diagnostic purpose as in Shick test, tuberculin test etc.
- To test allergic conditions of the drugs, e.g., penicillin, serums etc.
- To treat local conditions, e.g., hydrocortisone injection into joint cavity.
- To restore blood volume by replacing the fluid, e.g., in shock conditions.
- To give nourishment when it cannot be taken by mouth.

Complications of Injections

- Allergic reactions
- Infections
- Pyrogenic reactions (producing fever)
- Tissue trauma
- Psychic trauma especially in children.
- Pain
- Accidental intravascular injections.
- Foot drop, persistent paralysis of the limbs etc., due to the nerve injury.
- Air embolism due to the introduction of air into the blood vessels.
- Overdose and underdose of the medication.
- Errors in the administration of medicines.
- Circulatory overload
- Serum hepatitis

Drugs and fluids Administered

The following are some drugs given by needle injections classified according to their action.

Preventive action

Antitoxins

Toxoids

Vaccines

Antibiotics

Diagnostic aids

Dyes and histamines

Remedial action

Antibiotics

Specifics e.g., quinine for malaria

Palliative action

Narcotics

Sedatives

Local anaesthetics

General anaesthetics

Substitution

Hormones

Minerals and vitamins

Fluids

The commonly used solutions for intravenous therapy are as follows:

- 5% glucose (Dextrose): Each 100 ml contains 5 grams dextrose.
- 10% glucose: Each 100 ml contains 10 grams dextrose.
- 25% glucose: Each 100 ml contains 25 grams dextrose.
- 50% glucose: Each 100 ml contains 50 grams dextrose.
- 5% glucose saline: Each 100 ml contains 5 grams glucose and 0.9 grams sodium chloride.
- Normal saline: Each 100 ml contains 0.9 gram sodium chloride.
- Pediatric glucose saline: Each 100 ml contains 2.5 grams dextrose and 0.45 grams sodium chloride.
- Sodium lactate solution: Each 100 ml contains 1.866 grams sodium R lactate.
- Ringer's solution
- Hartmann's solution

Safety Measures

Seven Rights of Medicine Administration

- Right client
- Right drug
- Right dosage
- Right time
- Right route
- Right form
- Right documentation

Asepsis

- Sterile syringes and needles
- Freshly distilled and sterile water for injections.
- Drugs used for injection should be sterile.
- Handling the drugs and equipment used for injections with aseptic technique, e.g., washing hands before touching the equipment: not touching and contaminating the syringes and needles etc.
- Cleaning of the injection site with antiseptics to reduce the number of bacteria present in the skin.
- Protecting the injections and the equipment during the transportation of the injections to the client e.g., the needle is covered with a protector.

Selection of Equipment for Injections

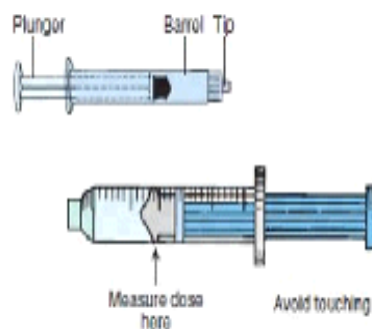
Description of Syringes and Needles

Syringes are of two types – disposable and re-usable. The most usual sizes are 2, 5, 10, 20, 30 and 50 ml. The insulin and tuberculin syringes are special syringes.

All syringes are made of two parts. The *outer part is called barrel* and the *inner part is called piston or plunger*.

The scale on the insulin syringes is marked in units according to the concentration of the insulin being used e.g., U-40, U-80 etc. (There will be 40 or 80 divisions in 1 c.c)

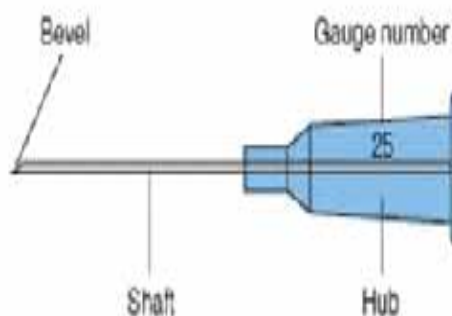
The tuberculin syringe is a long narrow syringe marked in tenths and hundreds of a cubic centimetre.



Needles are made up of steel or other metals and are available in two varieties – disposable and re-usable. These vary in length from 3.8 to 5.8 inches. The outside diameter is measured by *Stubs gauge*.

The diameter sizes of the needles are indicated by numbers 14 to 27. The *higher the gauge number the smaller is the diameter of the needle*.

A needle has two parts – *the hub and the shaft*. The hub of the needle fits tightly into the syringe. The shaft of the needle goes into the tissues during the injection of the medicines. The slanting of the shaft containing the opening is called the *bevel*.



Routes of Administration	Size of Needle	Size of Syringe
Intradermal	1 ml calibrated in 0.01ml Units (tuberculin syringe)	26 or 27 gauge diameter and 3/8 to 5/8 inch length
Subcutaneous	1 ml calibrated in 40 or 80 units (insulin syringe) OR	25 gauge and 1/2 to 5/8 inch
	2, 3 ml syringes calibrated in 0.1 ml	same as above
Intramuscular	2, 5 ml calibrated in 0.2 ml	21, 22, 23 gauge; 1 to 2 inches in Length
Intravenous	Size depends upon the amount of fluids to be injected	18 to 21 gauge; 1 to 2 inches

Needleless System

Needleless systems are also available for intravenous use. For insulin administration also needleless device (Intex) is available, which uses pressure to inject the insulin through the skin into the subcutaneous tissue and is pain free.

Prefilled Cartridges: These provide a single dose of medication. Tubex and carpuject are two types of prefilled cartridges.

Prefilled Syringes: The syringes filled with medication are also available now, e.g., Fraxiparin

Forms of Medications Available

1. Powder

Some drugs are available in powder form in sterile sealed ampoules and vials

2. Solution in Ampoules and Vials

Ampoule

Ampoule is a glass container usually designed to hold a single dose of a drug.

Vial

A vial is small glass bottle with a sealed rubber cap.

Principles involved in the administration of injections

1. The knowledge of the anatomy and Physiology of the body is essential for the Safe administration of the injection
 - a) To avoid injury to the underlying tissues
 - b) To minimize pain
 - c) To aid in absorption of the drug
2. If carelessly given, injections are means of introducing infection into the body
3. Drugs that change the chemical composition of the blood, will endanger the life of the client, If not used cautiously
4. Any unfamiliar situation produces anxiety.
5. Once a drug is injected it is irretrievable. Antidote may be available for particular medications but the best antidote is prevention.
6. Organization and planning results in the economy of time, material and comfort

General Instructions for Injections

- Give injections only on the doctor's written orders.
- Follow strict aseptic techniques
- Syringes and needles used for injections should be kept separate from those used for other purposes.
- Always have the syringes and needles in good order, Syringes should be air-tight and the needles should be sharp and patent.
- Change the needle after withdrawing the drug from a rubber stopped container before giving injection to the client.
- Never use a drug whose expiry date is over.
- Never allow the client to walk soon after the injection as he should be watched for any reaction.

- Always give a test dose in case of penicillin and all types of sera before the first dose is administered to rule out any allergic reaction. After the full dose is given, keep the client under observation for any delayed reaction.
- Expel the air from the syringe before the injection.
- Select the appropriate site for giving injections.
- Rotate the site especially for client getting insulin to prevent Lipodystrophy (wasting of subcutaneous tissue).
- Use correct technique of injection.
- After inserting the needle, always withdraw the piston to make sure that it is not in a blood vessel in case of intramuscular and subcutaneous injections.
- Solutions for injections should be clear, sterile, nearly neutral in reaction, isotonic.
- Injections should be charted immediately after it is administered by the person who has administered and should sign it.

Practical Activities

1. Preparation of drugs from ampoule
2. Preparation of drugs from vial
3. Subcutaneous injection including insulin pen
4. Intramuscular injection

Assessment Activities

1. Preparation of chart on types of injection
2. Collection of different types of syringes and needles

TE Questions

- 1) Mr. Gopal 48 yr old is admitted with nausea and vomiting. Doctor ordered 3 pints of DNS solution over 12 hrs. Calculate the drops per minute.
- 2) An example of aerosol preparation is _____
- 3) Explain the safety precautions to be observed while administering medicines and injections.
- 4) Differentiated between the following:
 - A. Drug and medicine
 - B. The right dose and the right form of medication

UNIT NO: 3.2

OXYGEN ADMINISTRATION

Introduction

Oxygen therapy is the administration of oxygen as a therapeutic modality. It is prescribed by the physician, who specifies the concentration, method of delivery, and litre flow per minute. In an emergency situation e.g. cardiac or respiratory arrest, oxygen may be commenced before a written prescription has been made. Any acutely hypoxic patient should have emergency oxygen administered whilst awaiting the arrival of a doctor. It is very important to ensure the prescribed dose of oxygen is delivered to the patient and this, and the patient's condition, is regularly monitored.

Learning outcomes

The learner:

- Defines oxygen administration
- Enlists the indications for oxygen therapy
- Explains the methods of oxygen administration
- Enlists the ways of supply of oxygen
- Explains the care of oxygen cylinder
- Describes the complications of oxygen therapy
- Describes the general instructions for oxygen administration
- Describes the management of home oxygen therapy
- Demonstrates skill in applying nasal cannula, oxygen mask and nasal catheter
- Demonstrates skill in using home oxygen equipment

Definition

Oxygen therapy is the administration of oxygen as a medical intervention for both acute and chronic patient care.

Indications of Oxygen therapy

- a) Breathlessness or laboured breathing
- b) Cyanosis - bluish discoloration of the skin, nail beds, and mucous membranes due to reduced hemoglobin-oxygen saturation

- c) High altitudes
- d) Shock and circulatory failure
- e) Patients with decreased respiratory capacity as in Partially obstructed airway, Anaemia, poisoning etc
- f) Critically ill patients
- g) Patients under anaesthesia

Methods of Oxygen Administration

1. **Nasal Cannula** - A nasal cannula is a simple, comfortable device used for precise oxygen delivery. The two nasal prongs are slightly curved and inserted in a patient's nostrils. To keep the nasal prongs in place, fit the attached tubing over the patient's ears and secure it under the chin using the sliding connector.
2. **Nasal Catheter**- Nasal catheters are used less frequently these days. It involves inserting an oxygen catheter into the nose upto nasopharynx.
3. **Oxygen Masks** - An oxygen mask is a plastic device that fits snugly over the mouth and nose and is secured in place with a strap. It delivers oxygen as the patient breathes through either the mouth or nose by way of plastic tubing at the base of the mask that is attached to an oxygen source.

There are simple face masks, Partial nonrebreather mask with a reservoir bag, Nonrebreather mask with reservoir bag and venturi mask.

4. **Trans Tracheal Oxygen** – In trans tracheal oxygenation a small size catheter inserted directly into trachea through a surgical tract in the lower neck. Oxygen is delivered directly into trachea.
5. **Oxygen Tent** – an oxygen tent consists of a canopy over patient's bed may cover the patient fully or partially and it is connected to a supply of oxygen.

Supply of Oxygen

Oxygen is supplied in two ways in health care facilities: by portable systems (cylinders or tanks) and from wall outlets.

Clients who require oxygen therapy in the home may use small cylinders of oxygen, oxygen in liquid form, or an oxygen concentrator.



Care of Oxygen Cylinder

1. Always use cylinders with metallic case
2. Oxygen cylinder should be placed at the head end of the bed
3. Any source of fire should be kept away from cylinder
4. It should be stored at a cool temperature
5. The supply of oxygen must always be equipped with a regulator to control the flow of gas
6. Avoid grease on the regulator
7. Every nurse, patient, his family members and visitors should be aware of fire and explosion in an oxygen therapy unit. Warning signals (no smoking sign) should be placed at the unit
8. When cylinders are empty always mark it empty and send for filling
9. Inspect the apparatus at frequent intervals and make sure for good working conditions
10. The nurse should learn the working of oxygen cylinder
11. To test leakage in the regulator, soap lather may be used
12. Turn off oxygen immediately when not in use
13. Keep the oxygen equipment out of reach of children

COMPLICATIONS OF OXYGEN THERAPY

- a) Infection- contaminated equipment may spread infection to the patient
- b) Combustion (fire) - Oxygen promotes combustion. Fire is a potential hazard
- c) Dryness of mucus membrane of the respiratory tract - if humidified oxygen is not given it will cause drying of mucus membrane
- d) Oxygen toxicity - High concentrations of inspired oxygen can cause lung injury
- e) Atelectasis – collapse of alveoli develops as a result of increased oxygen concentration in inspired air
- f) Retrolental fibroplasia - Retinopathy of prematurity (ROP) or Terry syndrome, previously known as retrolental fibroplasia (RLF), is a disease of the eye affecting prematurely-born babies received oxygen therapy

- g) Asphyxia – unexpected and unobserved depletion of oxygen supply may lead to asphyxia
- h) Oxygen induced apnoea – when Carbon Di Oxide is washed off completely respiratory centre will not be stimulated

General Instructions

1. Oxygen should be treated as a drug. It must be prescribed and administered in specific dose and safety precautions must be observed
2. When administering oxygen, use a regulator and humidifier.
Regulator is to reduce the pressure of oxygen in the cylinder to safer level
Humidifier add water vapour to inspired air prevent mucous membranes from drying and becoming irritated and loosen secretions for easier expectoration.
3. Every part of the apparatus should be clean to prevent infection
4. Change nasal catheters atleast every 8 hrs
5. Oxygen therapy should be discontinued gradually
6. Pay attention to conditions that can interfere with the flow of oxygen from source to the patient. This may include tubing, loose connections and faulty humidifying apparatus
7. Always keep a spare oxygen cylinder in close vicinity
8. Watch the patients receiving oxygen therapy to detect the early signs of oxygen toxicity
9. For premature babies administer oxygen for a short period to prevent retrolental fibroplasia
10. Since oxygen supports combustion, fire precautions are to be taken when oxygen is on flow

Management of Home Oxygen Therapy

Home oxygen therapy is administered via nasal cannula or face mask. Patients with permanent tracheostomies use either a T tube or tracheostomy collar.

There are three types of oxygen delivery systems: compressed gas cylinders, liquid oxygen, and oxygen concentrators.

Patients and their family caregivers need extensive teaching to be able to manage oxygen therapy efficiently and safely. Teach the patient and family about home oxygen delivery (i.e., oxygen safety, regulation of the amount of oxygen, and how to use the

prescribed home oxygen-delivery system) to ensure their ability to maintain the oxygen-delivery system.

Practical Activities

- Applying nasal cannula, oxygen mask and nasal catheter
- Using Home Oxygen Equipment

Assessment Activities

- 1 Preparation of chart on indications of oxygen therapy
- 2 Prepare a picture album on methods of oxygen administration

TE Questions

1. Mrs. Samantha 50 yrs, suffering from interstitial lung disease is on home oxygen therapy. Briefly explain the safety precautions to be taken while administering oxygen in home situation.
2. Give Reason.
 - a. Oxygen cylinder is kept at cool temperature
 - b. Oxygen is humidified before administration

UNIT NO.3.3

CARE OF WOUND

Introduction

Wound care is a challenge for a care giver, given the complexity of wound care as well as the many factors affecting wound healing. Appropriate wound care is essential to prevent the complications of wound healing and effectively treat wounds.

Learning outcomes

The Learner:

- Defines wound
- Describes the types of wound
- Describes the factors affecting wound healing
- Defines wound dressing
- Enlists the types of dressing
- Describes the purposes of wound dressing
- Enumerates the complications of wound healing
- Explains the principles involved in wound dressing
- Applies the principles of surgical asepsis in wound care
- Demonstrates skill in wound dressing

Definition of Wound

Wound is a break or disruption in the normal integrity of skin and mucous membrane.

TYPES OF WOUND

There are many ways to classify a wound. Classification of wound based on the status of skin integrity:

1. Open wound

Open wound is one in which there is cut or break in the continuity of skin or mucus membrane.

- a) Incisions: It is a clean cut and has smooth regular edges that can be approximated.
- b) Lacerations: A wound in which tissues are torn apart and have jagged and irregular edges.

- c) Abrasions: It is a superficial wound involving scraping or rubbing of skin surface by friction.
- d) Puncture wound: It is one in which there is injury to deep tissues, but only a small opening on the surface.
- e) Perforating wound: it is one which a foreign object or instrument cuts open the whole thickness of a wall of a cavity or organ. The object enters and exits an internal organ.
- f) Penetrating wound: it is one in which there is break in the epidermal layers of the skin, dermis and deeper tissues or organs.

2. Closed wound

Closed wound is one in which there is no break in the continuity of skin or mucus membrane.

- a) Contusion: In this there is no break in the skin. Externally wound is characterised by swelling, discoloration and pain.
- b) Hematomas: it is a solid swelling of clotted blood within the tissues.
- c) Crush injuries: It is an injury by an object that causes compression of the body.

Factors Affecting Wound Healing

1. Age: in young and healthy individuals the wounds often heal more quickly.
2. Nutrition: Diet rich in proteins, carbohydrates, vitamins A and C and minerals helps in quicker healing of wound.
3. Life style: People who take regular exercise are likely to have good circulation in the affected area, thereby quickening the healing process.
4. Medications: Antinflammatory drugs (eg. Steroid and aspirin), heparin and antineoplastic agents interfere in wound healing.
5. Infections: Any infection in wound slows down healing process. Use of antibiotics prevents infection and improves healing process.
6. Chronic diseases: Chronic diseases like diabetes mellitus, impairs healing process.
7. Smoking: Smoking leads to delay in tissue repair due to reduced oxygenation.
8. Wound stress: Vomiting, Abdominal distension and respiratory efforts may stress

suture line and disrupt wound healing.

9. Extent of wound:-Deeps wounds with more tissue loss heal slowly.

Wound Dressing

It is a sterile protective surgical covering, applied to a wound/incision with aseptic technique, with or without medication.

Types of Dressings

1. Wet dressing: These are preferred in treating wounds that require debridement.
2. Non Adherent Dressing: These dressing have a shiny non adherent surface that does not stick to wound
3. Self Adhesive Dressing: These are for small superficial wounds that do not require debridement
4. Hydrocolloid (HCD) Dressing: A hydrocolloid dressing is an opaque, biodegradable, non-breathable, and adheres to the skin
5. Hydrogel Dressings: Hydrogel dressings consist of 90 percent water in a gel base
6. Pressure Dressings: Pressure dressings helps in promoting hemostatsis

Purposes of wound dressing

1. To promote wound granulation and healing
2. To prevent microorganisms from entering the wound
3. To decrease the presence of purulent wound drainage
4. To absorb fluid and apply medication
5. To prevent haemorrhage
6. To prevent further tissue damage
7. To immobilize and support the wound
8. To assist in removal of necrotic tissue
9. To convert contaminated wound in to clean wound

Dressing Materials

1. Materials used to clean wound

Cotton and gauze piece ,spirit (70%) ,mercurochrome(1-2.5%) , Tincture iodine, savlon (5%) catavlon1% ,normal saline ,hydrogen peroxide

2. Materials used to cover the wound

Gauze dressing, non antiseptic dressing, antiseptic dressing, wet dressing, pressure dressing, non adherent gauze dressing

Complications

- 1) **Haemorrhage:** Haemorrhage is blood escaping from the circulatory system. Haemorrhage from wound site is normal during or immediately after initial trauma. Primary haemorrhage occurs at the time of injury. Reactionary haemorrhage occurs later when the blood pressure rises and ligature slips or a blood vessel open up. Secondary haemorrhage occurs about 7 to 10 days after injury mostly due to sepsis. Haemorrhage can occur internally, where blood leaks from blood vessels inside the body, or externally, either through a natural opening such as the mouth, nose, ear, urethra, vagina or anus, or through a break in the skin.
- 2) **Wound infection:** an infected wound is one in which an active infection process is present
- 3) **Wound dehiscence:** When a wound fails to heal properly, the layers of skin and tissue may separate.
- 4) **Wound evisceration:** It is the protrusion of abdominal organs through the gap formed by separation of wound layers
- 5) **Fistula:** it is an abnormal passage between two organs or between an organ and the outside of the body.
- 6) **Abscess formation:** A localised collection of puss
- 7) **Cellulitis:** Cellulitis is a bacterial infection of the skin and tissues beneath the skin
- 8) **Pain:** Pain accompanies with injury which subsides with immobilisation and initial treatment of injuries
- 9) **Necrosis and Gangrene:** if the blood supply is not restored to the area, the death of the tissues may take place.
- 10) **Keloids:** Huge, ugly, tumour like growth over scar tissues
- 11) **Contractures:** A condition of shortening and hardening of muscles, tendons, or other tissue, often leading to deformity and rigidity of joints.
- 12) **Delayed wound closure**

Principles Involved in Care of Wounds

1. Microorganisms present every where

2. Bacteria travel along with dust particles
3. Cleaning an area from less number of organisms to an area where there is more number of organisms, minimise the spread of organisms to clean area
4. Break in the skin and mucus membrane acts as a portal of entry for the pathogenic organism
5. Adequate blood supply is essential for carrying oxygen and nutrients for wound healing
6. Moisture facilitates growth and movement of microorganisms
7. Fluid move downwards
8. Fluid move through by capillary action
9. Unfamiliar situation produce anxiety

General Instructions

1. Practice strict aseptic techniques
2. All articles should be properly sterilized or disinfected
3. Wash hands thoroughly
4. Create a sterile field around the wound
5. Avoid coughing, talking, and sneezing while doing dressing
6. Dressing are not changed for at least 15 minutes after the room has been cleaned
7. Before doing dressing inspect the wound for any complication
8. Avoid meal timings
9. Give analgesics prior to painful dressing

Practical Activities

1. Application of Wound Dressing

Assessment activities

1. Preparation of poster on types of wound
2. Preparation of chart on factors affecting wound healing
3. Prepare a picture album on dressing materials

TE Questions

1. Differentiate between
 - a. Wound evisceration and wound dehiscence
2. Appropriate wound care is essential to prevent the complications of wound healing. Describe the aseptic precautions to be followed while doing wound care.

UNIT 3.4

PALLIATIVE CARE

Introduction

Palliative care is specialized medical care for people with serious illness. It focuses on providing relief from the symptoms and stress of a serious illness. The goal is to improve quality of life for both the patient and the family. Palliative care is provided by a specially-trained team of doctors, nurses, social workers and other specialists who work together with a patient's doctors to provide an extra layer of support.

Learning out Comes

The Learner:

- Defines palliative care
- Enlists Common conditions requiring palliative care
- Explains Hospice care
- Recognises the common drugs used in palliative care
- Describes the pain management
- Describes the management of Dyspnea, Nausea and Vomiting, Constipation, Fungating wounds, Dysphagia, Diarrhea, Urinary Incontinence, Urinary retention and hesitancy, Halitosis, insomnia, Bedsores, Lymphedema
- Explains the general care of patient requires palliative care
- Explains about meeting the spiritual needs of patient
- Performs palliative care
- Explains care at the end of life
- Demonstrates skill in dead body care
- Describes the support during grief and bereavement

Definition

The word "Palliate" is derived from the Latin word '*pallium*' meaning cloak i.e., an all-encompassing care which "cloaks" or protects the patients from the harshness of the distressful symptoms of the disease, especially when cure is not possible.

Palliative care is an approach that improves the quality of life of patients and their families facing the problem associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable

assessment and treatment of pain and other problems, physical, psychosocial and spiritual.

Common conditions requiring palliative care

1. Cancer
2. HIV / AIDS
3. Dementia
4. Progressive neurological disorders
 - a) Parkinson's disease
 - b) Multiple sclerosis
 - c) Motor neuron disease
 - d) Stroke
5. Progressive systemic diseases
 - a) COPD, ILD
 - b) Heart diseases
 - c) Liver and kidney dysfunctions due to various causes
6. Old age and other degenerative disorders

Hospice Care

Hospice care is end-of-life care. A team of health care professionals and volunteers provides it. They give medical, psychological, and spiritual support. The goal of the care is to help people who are dying have peace, comfort, and dignity. The caregivers try to control pain and other symptoms so a person can remain as alert and comfortable as possible. Hospice programs also provide services to support a patient's family.

Hospice

1. Provides support and care for those in the last phases of life-limiting illness
2. Recognizes dying as part of the normal process of living
3. Affirms life and neither hastens nor postpones death
4. Focuses on quality of life for individuals and their family caregivers

Core Aspects of Hospice

1. Patient/family focused
2. Interdisciplinary
3. Provides a range of services:

a. Interdisciplinary case management	d. Supplies
b. Pharmaceuticals	e. Volunteers

- c. Durable medical equipment
- f. Grief support

Hospice Team Members

- 1. The patient’s personal physician
- 2. Hospice physician (medical director)
- 3. Nurses
- 4. Home health aides
- 5. Social workers
- 6. Clergy or other counselors
- 7. Trained volunteers
- 8. Speech, physical, and occupational therapists

The Hospice Team

- 1. Develops the plan of care
- 2. Manages pain and symptoms
- 3. Attends to the emotional, psychosocial and spiritual aspects of dying and caregiving
- 4. Teaches the family how to provide care
- 5. Advocates for the patient and family
- 6. Provides bereavement care and counseling

Hospice is Provided at

- 1. Home
- 2. Nursing Facility
- 3. Assisted Living Facility
- 4. Hospital
- 5. Hospice residence or unit
- 6. Prison, homeless shelter – where ever the person is

Pharmacology - Common Drugs used in Palliative Care

Some common drugs used in palliative care are ;

Non-Opioids	Opioids	Adjuvant analgesics	Others
1. Paracetamol	1.Codeine	1.Tricyclic antidepressants (Amitriptyline, Imipramine)	Aniemics- Metachlorpromide, Domperidome
2. Ibuprofen	2.Tramadol	2.Anticonvulsants (Carbamazepine, Val-proate)	Antibiotics – Metronidazole
3. Diclofenac	3.Tapentadol	3.Anticholinergic (Hyoscine)	Antacids – Omeprazole
4. Naproxen	4.Morphine	4.Muscle relaxants Diazepam)	Haemostatic - Ethamsylate
5. Indomethacin	5.Fentanyl	5.NMDA receptor blocker (Ketamine)	Bronchodilators – Deriphyllin
6. Ketorolac		6.Bisphosphonates	Laxatives - Bisacodyl
7. Etoricoxib		7.Local Anaesthetics	
		8.Corticosteroids – Dexamthazone	

Pain management

Pain

Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage.

IASP - International Association for Study of Pain

Pain is what the patient says hurts; when she / he says it does...

Believe the patient regarding her / his pain.

Assessment of severity of pain

This may be done using various pain scales available. The commonly used ones are

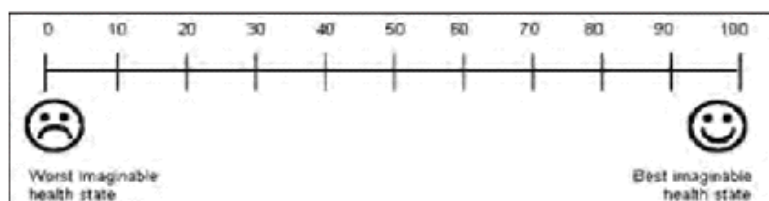
1. Categorical pain scale: Patient is asked to grade his pain as having “no pain, mild pain, moderate pain, severe pain and excruciating pain”.
2. Numerical Rating Scale (NRS):

Patient is explained about this scale as zero meaning “no pain” and 10 representing “worst imaginable pain”. Then the patient is asked to score his pain on this scale according to the severity.



3. Visual Analogue Scale (VAS)

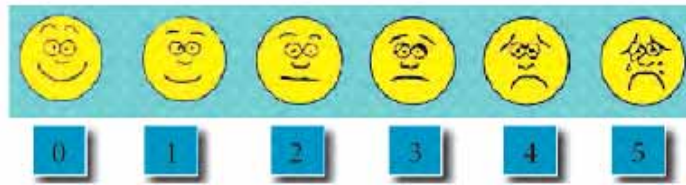
One side of VAS has no markings except the two extreme points. The other side has marks from 0 to 100. The unmarked side is shown to the patient who is asked to mark the pain according to the severity. Then the assessor will view the pain on a 0-100 scale on the reverse side.



4. Non verbal rating scale (Wong-Baker Faces Scale) - usually used to assess pain in children.

Pain scores of 0-3 may be considered MILD PAIN.

Pain score of 4-7 may be considered MODERATE PAIN.

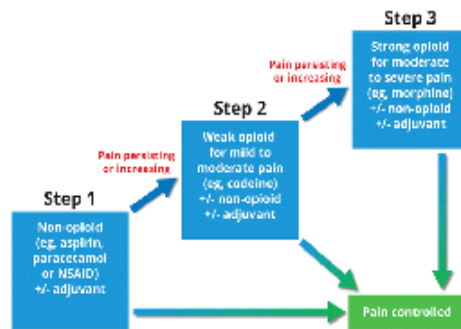


Pain score of 8-10 may be considered SEVERE PAIN.

The aim of pain management is to keep the pain score at a level that the patient considers satisfactory relief.

Management of pain

Up to 71-76% of patients with cancer related pains can have satisfactory relief by following the guidelines of the WHO analgesic ladder



Analgesic Ladder

Drugs in WHO Analgesic ladder

Non-Opioids	Opioids for mild to moderate pain	Opioids for moderate to severe pain	Adjuvant analgesics
1. Paracetamol 2. Ibuprofen 3. Diclofenac 4. Naproxen 5. Indomethacin 6. Ketorolac 7. Etoricoxib	1. Codeine 2. Dextropropoxyphene (currently suspended In India) 3. Tramadol 4. Tapentadol	1. Morphine 2. Fentanyl 3. Methadone (not yet sold in India for pain relief)	1. Tricyclic antidepressants (Amitriptyline, Imipramine) 2. Anticonvulsants (Carbamazepine, Valproate, Gabapentin, Pregabalin) 3. Anticholinergic (Hyoscine) 4. Muscle relaxants (Diazepam) 5. NMDA receptor blocker (Ketamine) 6. Bisphosphonates 7. Local Anaesthetics 8. Corticosteroids

Symptom management

1. Dyspnoea

Breathlessness or dyspnoea is an unpleasant awareness of breathing. It is a common symptom in advanced disease

- a. Place the patient in the position he/she is most comfortable in—usually upright position supported by pillows
- b. Assess treatable causes
- c. Relaxation/breathing techniques
- d. Nebulizers
- e. Drugs—opioids, anxiolytics, steroids, diuretics etc
- f. Oxygen therapy

2. Nausea and vomiting

Nausea is feeling an urge to vomit Vomiting is forcing the contents of the stomach up through the esophagus and out of the mouth.

- a. Encourage small and frequent feeds.
- b. Encourage the patient to choose the menu.
- c. Avoid taking high protein diet when patient has nausea and vomiting.
- d. Make sure patient is taking adequate salt –Normal salt intake 10-12mg/day.
- e. Explain the patient and family about the signs and symptoms of dehydration and hyponatremia.
- f. Avoid sitting near the kitchen while cooking this smell may aggravate the nausea.
- g. Environmental modification – eliminates strong smells and sights.
- h. Maintain good oral hygiene, especially after episodes of vomiting.
- i. Use complimentary therapy to manage nausea and vomiting eg: distraction.
- j. Rule out the cause- if it is due to constipation consider laxative or enemas as necessary.
- k. Educate the patient and family about taking the medication at correct time (Eg: T Omeprazole on empty stomach; T. Metoclopramide [Perinorm] 10mg half an hour before food)

3. Constipation

Constipation is characterized by difficult or painful defecation and is associated with infrequent bowel motions and small hard faeces.

- a. Assess for treatable causes—eg. pain relief, haemorrhoids
- b. Use laxatives when ever indicated
- c. Encourage increased fluid intake
- d. Increase dietary fiber eg. fruits
- e. Encourage mobility as feasible
- f. Listen to anxieties
- g. Assess environment and privacy issues
- h. Adjust medication

4. Fungating Wounds

Fungating cancer wounds develop when cancer that is growing under the skin breaks through the skin.

Cleaning and Dressing

- a. Ensure adequate analgesia
- b. Irrigation with normal saline/water
- c. Syringing to remove slough
- d. Apply bacteriostatic drug
- e. Put a layer of non-adhesive gauze
- f. Apply gamjee pads
- g. Secure with bandage/adhesive tape

Controlling Foul Smell

- a. Clean and Dress the woundr egularly
- b. Local Metronidazole-Crushed and powdered Metronidazole tablets are better and more cost effective than gel
- c. Systemic Metronidazole-may be required in some cases

Controlling Bleeding

- a. Apply local pressure
- b. Sucralfate powder(crushed and powdered tablets) topically

- c. Hemacrynium solution(Hemolok)1:100 topically
- d. Systemic Ethamsylate
- e. Radiotherapy
- f. Surgical procedures

5. Dysphagia

Dysphagia is difficult or painful swallowing.

- a. Treat thrush
- b. Dietary advice
- c. Relieve anxiety
- d. Feed through nasogastric tube if appropriate
- e. Steroids may be of temporary benefit in certain situations
- f. If due to cancer, consider referral for palliative surgery or radiotherapy

6. Diarrhoea

Diarrhoea is a condition in which faeces are discharged from the bowels frequently and in a liquid form

- a. Explain to the patient about the signs and symptoms of dehydration.
- b. Explain about ORS preparation
- c. Acknowledge the carer's burden and sharing the work will minimize the burden
- d. Explain about importance of maintaining skin integrity

7. Urinary Incontinence

It is uncontrolled passing of urine of sufficient magnitude to create a problem

- a. Assess for treatable causes
- b. Reassure
- c. Rapid and regular toileting
- d. Maintain hygiene
- e. Monitor hydration
- f. Catheterization if needed
- g. Drugs—for infection, constipation etc

8. Urinary Retention and Hesitancy

Retention is inability to pass urine. Hesitancy is prolonged delay between attempting and achieving urination.

- a. Assess for treatable cause
- b. Reassure
- c. Ensure privacy
- d. Encourage voiding by–massaging lower abdomen, sound of running water etc
- e. Catheterization if needed

9. **Halitosis**

Halitosis is foul or unpleasant smelling breath

Non-pharmacological-

- a. Meticulous oral hygiene
- b. Clean and soak dentures
- c. Ensure adequate fluid intake
- d. Flavoured sweets e.g.mints

Pharmacological-

- a. Anaerobic infection of gums-oral Metronidazole 400 mg bd
- b. Gastric hypersecretion-Metoclopramide 10mg tds OR Domperidone 10-20 mg qid (orally)
- c. Anaerobic infection of lungs-parenteral Metronidazole
- d. Antiseptic mouth wash-Chlorhexidine Gluconate 1 % 10 ml qid, Hexetidine 0.1 % 10 ml qid, Benzylamine 0.5% mouthwash
- e. Debriding agents if indicated
 - Sodium bicarbonate mouthwash-1 teaspoon in 1 pint warm water and use a tooth brush on the tongue qid OR
 - Ascorbic acid (Vit C)-250mg (1/4 of gram tablet) effervescent on the tongue qid OR
 - Hydrogen peroxide mouthwash 3% -10ml in half a tumbler of water bd/tds

10. **Insomnia**

It is the lack of adequate sleep

- a. Physiological–proper setting to induce sleep–dim light, quiet surroundings
- b. Psychological–allay anxiety by sharing, listening, anxiolytics, sedatives

- c. Treat symptoms—pain, nausea etc
- d. Review and change drugs accordingly

11. **Bedsore**

Prevention and care of bedsores are the most challenging aspects of care.

Prevention of bedsores

- a. Nutritional support
- b. Ensure mobility or change of position at regular interval
- c. Good pain relief
- d. Good skin hygiene
- e. Assess and treat incontinence
- f. Assess the need for pressure relief
- g. Regular observation of pressure points
- h. Review medication

Management of bedsores

- a. Necrotic : Surgical excision
- b. Slough : Deslough; Irrigation with normal saline; Foam dressing
- c. Infected : Topical antiseptic, topical metrogyl; antibiotic odour absorbing dressings
- d. Granulating: Foam dressing

12. **Lymphoedema**

Lymphoedema is defined as swelling of interstitial tissue as a result of failure of lymph drainage when capillary filtration is normal.

Management of lymphoedema

- a) Skincare
 - a. Wash the skin gently; avoid harsh soap
 - b. Dry thoroughly, especially between digits
 - c. Moisturize regularly with bland cream
 - d. Take care to avoid burns, insect bites
- e. Avoid Blood Pressure recording or venepuncture on the affected limb

- f. Treat fungal infections promptly with antifungal
- b) Exercise
 - i. 3-4 times daily
 - ii. Start gently
 - iii. Pause on getting tired
 - iv. Attention on proper posture
- c) External support (bandaging)
- d) Massage
- e) Regular monitoring

General Care of the Patient

Nutrition

Patients with advanced disease generally suffer loss of appetite, wasting and generalized weakness.

- a. Ensuring intake of fluids, and dietary fibre
- b. Eating as much as the patient wants and as frequently as he/she wants
- c. Nutritionally complete foods and dietary supplements as needed
- d. Changing food consistency as needed
- e. Nasogastric feeding when patient is unable to accept oral feeding
- f. Prevention and management of oral thrush, nausea, constipation

Personal hygiene

Oral hygiene

- a. Promote brushing, using a soft tooth brush and rinsing mouth every 12 hours.
- b. Ensure proper fit of dentures, remove dentures at night
- c. Provide mouth wash
- d. Treat oral thrush with nystatin/fluconazole
- e. If medication is causing drymouth-review drugs, provide ice chips and chewing gums to promote salivation

Skincare

- a. Wash body daily–bath/shower, sponge bath; shave daily; wash hair as often as feasible
- b. Ensure cleanliness of nails and mouth
- c. Provide clean clothing and bed linen
- d. Assess skin integrity, if pressure sores seem likely, change position frequently. Pad bony prominences, avoid friction and shearing forces
- e. Pressure sores–encourage healing by proper antiseptic dressing, antibiotics, removal of exudates and necrotic tissue, adequate nutrition

Spirituality

Spirituality is our effort to find answers for life’s fundamental mysteries, of which death is the most painful one.

- a) Assess history of religious affiliation.
- b) Assess spiritual beliefs.
- c) Assess the spiritual meaning of illness and death. “Do you wonder regarding the meaning of your illness?”
- d) “How does the current situation affect your relationship with God, your beliefs, or other sources of strength?”
- e) “Do your illness and grief interfere with expressing your spiritual beliefs?”
- f) Assess whether patients need help with unfinished business.
- g) Provide understanding and acceptance. Support crying by offering caring touch.
- h) Encourage verbalization of feelings of anger or loneliness.
- i) When requested by the patient, arrange for priest, rituals, music, prayers, scriptures or images.
- j) If requested, sit with the patient who wishes to pray, and arrange for priest at time of death as requested by the patient.
- k) Do not provide intellectual solutions for spiritual problems.

Meeting the needs of dying individual

- a. Assessing needs
- b. Explaining the clients condition and treatment
- c. Maintaining good communication

- d. Promoting self care & Self Esteem
- e. Allowing family members to assists in care.
- f. Meeting clients needs.
- g. Physiological needs
- h. Psychological needs
- i. Spiritual needs

STAGES OF DYING (DR.ELIZABETH KUBLER ROSS)

1. Denial (Isolation) 2. Anger 3. Bargaining 4. Depression
5. Acceptance

Grief and Stages of Grief Reaction

Grief is the emotional pain caused by a loss.

Engel (1964) was among the first to define six stages of grief reaction, which includes the following steps.

- Shock And Disbelief
- Developing Awareness: Shows physical and emotional response such as anger, crying why me?
- Restitution: Act of giving back
- Idealization: Acceptance of loss
- Outcome:

Signs of Approaching Death

Facial appearance.

Facial muscle relax, cheek becomes flaccid moving in and out with each breath. Facial structure may change so the dentures cannot be worn, mouth structure may collapse, loss of muscles tone and prominent cheeks, pale, sunken eyes.

Changes in Sight, Speech, and Hearing.

Sight gradually fails. The pupil's fails to react to light. Eyes are sunken and half closed. Speech becomes increasingly difficult, confused. Loss of Hearing.

Respiratory System

Respiration becomes irregular, rapid and shallow breath or very slow & Sertorius due to the presence of secretions.

“DEATH RATTLE”-A rattling sound heard in throat caused by secretions that the patient cannot cough longer.

Circulatory System

Circulatory changes cause alterations in the temperature, pulse and respirations. Radial pulse gradually fails. Once it stops, the apical pulse may continue for some time. Usually the pulsations are seen even after the patient has stopped breathing.

Gastro Intestinal System

Hiccoughs, Nausea, Vomiting, abdominal distensions are seen. The gag reflex disappears; the patient feels the inability to swallow,

Genito Urinary System

Retention of urine, distention of the bladder, incontinence of urine and stool due to loss of sphincter control.

Skin And Musculo Skeletal System

The skin may become pale, cool and sweats lot (cold sweats).Ears and nose are cold to touch. Skin is pale & mottled due to congestion of blood in the veins as a result of circulatory failure.

Central Nervous System

Reflexes and pain are gradually lost. Patient may be restless due to lack of oxygen and due to raised body temperature, although the body surface is cool.

Signs Of Clinical Death

1. Absence of pulse, heart beat and respirations
2. Pupil becoming fixed and not reacting to light
3. Absence of all reflexes.
4. Rigor mortis: Stiffing of the body after death. The arms & legs cannot be bent or straightened while rigor mortis is present unless the tendons are torn.
5. POSTMORTEM HYPOSTASIS-It is a dark red or bluish discoloration due to the settling of the blood.

Care of the dying patient

Psychological support:

The psychological need of a dying person can be summarized as follows:

1. Relief from loneliness, fear and depression.
2. Maintenance of security, self confidence and dignity.

3. Maintenance of hope.
4. Meeting the spiritual needs according to his religious customs.

The dying person may be shifted to private room, or privacy is maintained by putting the screen, so that other patients may not be disturbed by the unpleasant sight, the crises and other disturbances.

Symptomatic Management

Problem associated with breathing:

- a. The dying person who is restless, apprehensive and short of breath may be given-
- b. Oxygen inhalation to remove his discomfort.
- c. Elevation of the patient's head and shoulders may make breathing easier.
- d. Keep the room well ventilated and keep crowd away.
- e. Periodic suctioning is necessary.

Problem associated with eating and drinking:

- a. Anorexia, nausea, and vomiting are commonly seen in dying patient person. They are unable to take any form of food and if they taken, they are unable to retain the food.
- b. The patient is unable to swallow even the sips of water poured in the mouth. Most of them may require I.V fluids.
- c. If they can tolerate the oral fluids, sips of water is given with teaspoon. That will help the patient to keep the mouth moist.
- d. Give frequent oral hygiene.
- e. Apply emollients to the dry lips.
- f. The denture are removed and kept safely.

Problem associated with elimination:

- a. Constipation, retention of urine and incontinence of urine and stool are some of problem faced by the patient.
- b. Catheterization has to be done
- c. Through skin and Perineal care is to be given, to keep the patient clean and to prevent skin breakdown.

Problem associated with immobility:

- a. Frequent skin care should be given with particular attention to the pressure point.
- b. Patient should be comfortably placed and their position frequently changed in the bed.

Problem associated with sense organ:

- a. Since the patient loses sight, before given any care to the patient, the nurse should touch the patient and say what she is going to do.
- b. Since the hearing is retained longer, speak only what is appropriate.
- c. Avoid whispering any think in patient room.
- d. Speak distinctly so that patient may understand what is done for him.
- e. Since the eyes are opened, protect the eyes from corneal ulceration with protective ointment.

Problem associated with rest and sleep:

- a. Patient may distressing symptoms in these patients.
- b. Patient should not be disturbed while sleeping.
- c. The visitors should be instructed not to disturbed the patient during his resting.
- d. Maintain calm and quit environment.

Problem associated with cleanliness and grooming:

- a. Cleanliness and appearance are important until the end.
- b. Cleanliness of the skin, hair, mouth, and cloth has to be maintained.

Caring for the body after death

- a. After the physician has pronounced death legally documented the death in the medical record, care of the body is usually performed by the nurse.
- b. Autopsy consent may be requested & obtained if required.
- c. If the patient is to be an organ donor arrangements will be made immediately.
- d. The family often wishes to view the body before final preparations are made, they may be allowed.
- e. If the patient had any valuables, they are handed over to the relatives

Purposes

- a. Make body look as natural & beautiful as possible.
- b. Perform his last duty tenderly.
- c. Protect other patients from unpleasant sights and sounds which could frighten them

Articles required

1. Articles for bath
2. Extra bandages and cotton swabs
3. Perineal pads
4. Sheets
5. Restraints for jaw, hands and legs.
6. Pair of gloves
7. Thumb forceps
8. Patients own set of clothes.

Procedure

1. Wash hands and put on gloves
2. Soon the death is pronounced, remove the backrest, extra pillows and gently put the patient in a supine position with the head elevated on the pillow. Bandages may be used if necessary
3. Positioning is important after death, because of rigor mortis. Close the patients eyes and mouth.
4. Remove all tubes and other devices from the patient's body.
5. Consult close relatives before preparing the body for removal from the ward to the mortuary where the relatives will receive the body.
6. If the relatives require, the nurse should help them to sponge the patient as necessary. Brush and comb hair.
7. Replace soiled dressing with cleaned ones.
8. Apply perineal pads and plug all orifices with cotton balls.
9. Provide clean cloths (own).
10. Take care of valuables and personal belongings by handing over to members of family.

11. Allow members of family to see the patient & remain in the room & remember that the body is still dear to someone.
12. Close the body from side to side and head to foot with the sheet.
13. Prepare the identification slip and attach it to the patients pack sheet.
14. Attach a special label if the patient had a contagious disease.
15. Transfer the body to the mortuary.
16. Remove contaminated articles from room.

Identification tag should contain

1. Patient name
2. Age
3. Registration number
4. Relatives name (specify)
5. Address
6. Ward number
7. Bed number
8. Date and time of death
9. Cause of death

Practical Activities

1. Preparation of a model/chart of pain scales
2. Preparation of model/chart of pain management
3. Preparation of charts on symptom management
4. Health education on pain management
5. Basic nursing procedures
6. Death body care
7. Care of fungating wound
8. Health education in management of symptoms
9. Visit to Palliative Care centre

ASSESSMENT ACTIVITIES

1. Collection of leaflets of drugs used in palliative care
2. Prepare a chart on analgesic ladder
3. Prepare a brochure on symptom management - Dyspnea, Nausea and Vomiting, Constipation, Fungating wounds, Dysphagia, Diarrhea, Urinary Incontinence, Urinary retention and hesitancy, Halitosis, insomnia, Bedsores, Lymphedema
4. Seminar on symptom management
5. Role play on grief and bereavement

TE Questions

1. Mrs Dole, a 68 year old is referred to Palliative Care from Oncology with Stage III Nasopharyngeal carcinoma. Since initiating chemotherapy, Nausea and vomiting are the key concern. Discuss the management of nausea and vomiting.
2. BJ, a 65 year old woman with known non-small cell lung cancer returns to your clinic for follow-up for her cancer-related pain. Explain briefly the WHO Analgesic Ladder.

UNIT 3.5

GERIATRIC CARE

Introduction

Our population is greying very fast. This increases the demand for caregivers for elderly dramatically in the coming decades. Informal or family care giving cannot be sustained in future and due to the social changes, it will be difficult to find family members for care giving except the living spouse. With families becoming smaller and jobs becoming increasingly demanding, more and more people prefer leaving their ailing parents or relatives to the care of a formal caregiver. Old age homes are spreading throughout India, both in urban and rural areas. This increases the demand for trained care givers in the field of geriatrics in an elder friendly environment.

Learning outcomes

The Learner:

- Describes the concept of old age
- Enlists the factors affecting aging
- Explains the changes in old age
- Enlists the common health problems in old age
- Explains the general care of elderly
- Describes the prevention of accidents in elderly
- Explains the elderly abuse
- Practices geriatric care

Concept of old age and related terms

AGEING

Old age is the result of physical and psychological fatigue caused by continuous functioning.

Gerontology

Gerontology is the study of physical and psychological changes which are incidental to old age. The care of aged is called **geriatrics** or **clinical gerontology**.

Geriatric care

This is related to the disease process of old age and its aims at helping old persons

at a state of self dependence as for as possible and to provide facilities to improve their quality of life.

It is a progressive and generalized impairment of body functions resulting in, loss of adaptive responses to stress and increasing the risk of age-related diseases.

People more than 60 yrs are considered elderly.

Old age is not a disease but a normal and inevitable biological phenomenon.

Factors affecting ageing

- 1) Hereditary factors
- 2) Environmental factors
 - a. Abiotic factors
 - b. Biotic factors
 - c. socio economic factors

Common ageing changes

1. Physiological changes
2. Psychosocial changes

A. Physiological changes

1. Integumentary System: Loss of skin elasticity with fat loss in extremities, pigmentation changes, glandular atrophy (oil, moisture, sweat glands), thinning hair, with hair turning gray-white (facial hair: decreased in men, increased in women), slower nail growth, atrophy of epidermal arterioles
2. Respiratory System: Decreased cough reflex; decreased cilia; increased anterior-posterior chest diameter; increased chest wall rigidity; fewer alveoli, increased airway resistance; increased risk of respiratory infections
3. Cardiovascular System: Thickening of blood vessel walls; narrowing of vessel lumen; loss of vessel elasticity; lower cardiac output; decreased number of heart muscle fibers; decreased elasticity and calcification of heart valves; decreased baroreceptor sensitivity; decreased efficiency of venous valves; increased pulmonary vascular tension; increased systolic blood pressure; decreased peripheral circulation
4. Gastrointestinal System: Periodontal disease; decrease in saliva, gastric secretions, and pancreatic enzymes; smooth muscle changes with decreased esoph-

ageal peristalsis and small intestinal motility; gastric atrophy, decreased production of intrinsic factor, increased stomach pH, loss of smooth muscle in the stomach, hemorrhoids, anal fissures; rectal prolapse and impaired rectal sensation.

5. Musculoskeletal System: Decreased muscle mass and strength, decalcification of bones, degenerative joint changes, dehydration of intervertebral disks
6. Neurological System: Degeneration of nerve cells, decrease in neurotransmitters, decrease in rate of conduction of impulses
7. Sensory

Eyes: Decreased accommodation to near/far vision (presbyopia), difficulty adjusting to changes from light to dark, yellowing of the lens, altered color perception, increased sensitivity to glare, smaller pupils

Ears: Loss of acuity for high-frequency tones (presbycusis), thickening of tympanic membrane, sclerosis of inner ear, buildup of earwax (cerumen)

Taste: Often diminished; often fewer taste buds

Smell: Often diminished

Touch: Decreased skin receptors

Proprioception: Decreased awareness of body positioning in space

8. Genitourinary System: Fewer nephrons, 50% decrease in renal blood flow by age 80, decreased bladder capacity

Male—enlargement of prostate

Female—reduced sphincter tone

9. Reproductive System: Male—sperm count diminishes, smaller testes, erections less firm and slow to develop

Female—decreased estrogen production, degeneration of ovaries, atrophy of vagina, uterus, breasts

10. Endocrine System: General—alterations in hormone production with decreased ability to respond to stress

Thyroid—decreased secretions

Cortisol, glucocorticoids—increased antiinflammatory hormone

Pancreas—increased fibrosis, decreased secretion of enzymes and hormones

11. Immune System: Thymus involution, T-cell function decreases

B. Psychosocial Changes

1. **Retirement.** Many often mistakenly associate retirement with passivity and seclusion. In actuality it is a stage of life characterized by transitions and role changes. This transition requires letting go of certain habits and structure and developing new ones
2. **Social Isolation.** Many older adults experience social isolation. Isolation is sometimes a choice, the result of a desire not to interact with others. It is also a response to conditions that inhibit the ability or the opportunity to interact such as the lack of access to transportation.
3. **Sexuality.** All older adults, whether healthy or frail, need to express their sexual feelings. Sexuality involves love, warmth, sharing, and touching, not just the act of intercourse. Sexuality plays an important role in helping the older adult maintain self-esteem.
4. **Housing and Environment.** The extent of an older adult's ability to live independently influences housing choices. Changes in social roles, family responsibilities, and health status influence their living arrangements.
5. **Death.** Part of one's life history is the experience of loss through the death of relatives and friends. This includes the loss of the older generations of families and sometimes, sadly, the loss of a child. However, death of a spouse is the loss that affects the lives of older people.

Health problems of the aged

Problems Due to Aging Process

Senile cataract, glaucoma, nerve deafness, osteoporosis affecting mobility, emphysema, failure of special senses, changes in mental outlook

Problems Associated With Long Term Illness

Degenerative diseases of heart and blood vessels, cancer, accidents, diabetes, diseases of locomotor system, respiratory illnesses – chronic bronchitis, asthma, emphysema etc, genitourinary system – enlargement of prostate, dysuria, nocturia, frequency and urgency of micturition etc

Psychological Problems

Mental changes, sexual adjustment, emotional disorders

General care of elderly

1. Sensory System

a. Skin

- Protection from injuries
- Monitor for skin infections. Proper personal hygiene
- Emollients moisturizing creams and lotions should be used
- Teaching that over exposure to sun heat other elements as detrimental to skin
- Protection and appropriate wound care if there is a wound
- Special attention to pressure points
- Careful nail care

b. Eyes

- Eye care and frequent washing
- Screening for glaucoma, cataract presbyopia and proper correction
- More light for all activities, avoid glares
- Help in maintaining daily routines

c. Ears

- Identify hearing difficulty
- Hearing aid could be helpful.
- Speak slowly, facing the person with lower pitch of voice.
- Check for wax clean the ear after using dissolving drugs to loosen the cerumen

d. Taste and Smell

- Make food more appealing consider the person's choice of food. Major concern with changes in sensory domain is safety. Older persons are at high risk for burns.

e. Touch, Vestibular and Kinesthetic

- Older persons are instructed to walk using a wide gait to provide a wide base of support. Holding on to someone or holding stable objects such as walkers are also important.

- Avoid climbing on to chairs and stepstools and using ladders.
 - Assisting the persons in ADL.
2. Musculoskeletal system
 - a. Diet rich in calcium and Vitamin D
 - b. interventions to adapt to the changes are required so that activities of daily living are not affected /or affects only as little as possible
 - c. Anticipate the needs of the older persons like adaptations in clothing, modifications in home environment in providing support to avoid falls, periodic rest, avoidance of excessive exercise and weight loss
 - d. Provide safe environment
 - e. Careful while giving ROM exercises, keep the extremities and trunk in proper alignment. Massaging, moist local application to joint.
 - f. Encourage ambulation and assisting while ambulation and provide safety environment.
 3. Urinary System
 - a. Monitoring fluid intake and urine output.
 - b. Dose of drugs adjusted for renal function. Administration of medication of correct dose and at right intervals and monitor Serum Creatinine
 - c. Avoid strenuous exercises if renal function is compromised
 - d. Limit the use of dietary irritants caffeine, carbonated drinks and highly acidic foods.
 - e. Watch for the signs of hyponatremia and prompt replacement. Limitation of fluid intake to day time
 - f. Teaching training by regular voiding at 2 hr interval. Wear loose clothing, so changing clothes is easier
 - g. Maintain good skin care and good hygiene.
 - h. Monitor for urinary tract infection and prompt treatment
 4. Gastrointestinal system
 - a. Offer fluids before drug administration & ample fluids during administration. Unless contraindicated break large tablets to facilitates swallowing.

- b. Smaller volumes of food are given at each meal and the person should remain upright during and approximately 30 mts after meals.
 - c. If Obese reduce weight. Avoid chocolate, coffee, tea and colas and reduce the amount of saturated fat. Walking for a while after eating, avoid eating prior to going bed.
 - d. Small frequent feeds of bland nutritious food.
 - e. If constipation is present, sleeping in semiupright position. Taking antacids for relief of pain. Use laxative judiciously
5. Cardiovascular System
- a. If on IV Fluids Monitor IV fluids closely, observe for signs of circulatory Overload
 - b. Avoid drugs causing orthostatic hypo tension eg; alpha blockers, high dose diuretics etc,
 - c. Careful measuring of BP. Salt free diet. No physical and mental stress
 - d. Drugs dose is half the standard dose for younger patients. Potential side effects of drugs should be taught to older persons and families
 - e. Must be very cautious , about the use of drugs such digitalis, diuretics, and vasodilators because their action is very much affected by age – related changes in the kidney, liver muscle , mass or fat and fluid distribution.
6. Respiratory System
- Avoid strenuous exercise. Teach breathing exercises like pursed lip breathing will help reduce respiratory fatigue by increasing respiratory muscle strength.
 - Monitoring and prompt treatment of respiratory infections.
 - Quit smoking
 - If breathing difficulty present provide fowlers position proper treatment of underlying cause
7. Central Nervous system
- Give clear, legible instructions . Monitor compliance with prescribed medications . frequent reinforcement of instructions .
 - Never leave the client alone
8. Endocrine and reproductive system

Women

- HRT (Hormone replacement therapy) may be advised if on HRT, monitor the woman.

Men

- Emphasize the quality of relationship than focusing on the sexual performance. Describe sexuality in a broader aspect like social participation, holding hand, hugging etc., Screening for presence and monitoring.
- Screen for Hypothyroidism and diabetes mellitus and treatment

9. Immune system

- Avoid exposure to infection
- Immunization
- Monitoring for infections
- Prompt recognition and treatment

Prevention of Accidents in Elderly

1. Prevention of falls

- The floor should not be slippery
- The water should not stagnate either in the living room or in the bath rooms
- Arrange for walkers
- Someone should accompany the client
- Should not allow bath in river or ponds
- Provide adequate lighting over the staircase
- Use low height cots, use restraints or side rails
- Avoid high heeled shoes
- Encourage to use spectacles
- Avoid accidents if on drugs causing orthostatic hypotension
- Never leave the client alone

2. Prevention from burns and scalds

- Check the temperature of the water for bath before allowing the client to take bath

- Take all precautions to prevent scalds and burns during hot application and other interventions
- 3. Prevent poisoning
 - Prevent accidents from poisoning. Keep poisons out of reach of aged
 - Never keep the poisons near to medications or drinks. Keep all poisons with label
 - Prevent accidents from wrong administration of medications.

Elderly abuse

Elder abuse is a form of family violence that is only recently being documented and explore. The elderly are neglected when others failed to provide adequate food, clothing, shelter, and physical care to meet physiological, emotional and safety needs

Indications of potential or actual elder abuse

1. Unexplained or repeated injury
2. Fear of the care giver
3. Untreated sores
4. Over all poor care
5. With drawl and passivity
6. Unsupervised
7. Failure to meet appropriate medical care
8. Unwillingness or inability of care giver to meet the elderly persons needs
9. Unsafe home situations

Types of abuse

1. Physical abuse
2. Psychological abuse
3. Material abuse
 - i. Active neglect
 - ii. Passive neglect
4. Social abuse

Practical Activities

1. Basic Nursing Procedures
2. Visit to Geriatric Care centre
3. Health education on prevention of accidents in elderly, Elderly abuse

Assessment Activities

1. Seminar on changes in old age
2. Preparation of a chart on health problems of ages
3. Report of visit to a old age home
4. Roleplay on elderly abuse
5. Preparation of a care giver's guide

TE Questions

1. Accidents are common problem in elderly. Suggest measures to prevent accidents in old age.
2. The physiological changes of aging make older adults more vulnerable to some common clinical conditions and diseases. Explain the major physiological changes during old age.
3. The study of physical and psychological changes of old age is called

UNIT NO: 3.6

CARE OF UNCONSCIOUS PATIENT

Introduction

Unconsciousness is the state of unresponsiveness, where the patient is unaware of the environment and no purposeful response can be obtained. Unconsciousness is the condition in which cerebral function is depressed ranging from stupor to coma. Unconscious patients have no control over themselves or their environment and thus are dependent on the care giver. Therefore care giver needs to be abreast with appropriate knowledge and right attitude on how to care for the unconscious patient.

Learning outcomes

The Learner:

- Defines consciousness and unconsciousness
- Explains the levels consciousness
- Enlists the causes of unconsciousness
- Assesses the level of consciousness using Glasgow coma scale
- Describes the care of unconscious patient
- Explains the management of complications of unconsciousness
- Provides care to unconscious patient

Consciousness

Consciousness can be defined as a state of awareness of one's self and the environment and the ability to respond to environmental stimuli.

A conscious person is capable of responding to sensory stimuli.

Level of consciousness

- a) Full consciousness: Alert and is well oriented to time, place and person
- b) Confusion: loss of ability to think rapidly and clearly and impairment in judgment and decision making. - General slowness, disturbances of recent memory.
- c) Disorientation: There will be beginning of loss of consciousness, then disorientation to time followed by disorientation to place and person the last state of disorientation is inability to know self.
- d) Stupor: it is a condition of deep sleep or unresponsiveness from which patient may be aroused only with painful stimuli.

- e) Coma: it is a state of complete mental unresponsiveness with no responses to painful stimulation.

Unconsciousness

Unconsciousness is state of complete or near complete lack of responsiveness to people and environmental stimuli.

Causes of unconsciousness

1. Brain lesions – tumour, brain abscess, bleeding into brain
2. Head injury
3. Poisons and drugs
4. Vascular causes – ischemia, post cardiac arrest, acute hypovolemia
5. Infections – sepsis, meningitis
6. Seizures
7. Metabolic disorders – hypoglycaemia,
8. Psychogenic causes – eg. hysteria

Assessment of unconscious patient

Glasgow Coma Scale (GCS) is the most universally accepted tool for assessing levels of consciousness

Glasgow Coma Scale

Best Eye Response (E)	Spontaneous – open with blinking	4
	Opens to verbal command, speech, or shout	3
	Opens to pain, not applied to face	2
	None	1
Best Verbal Response (V)	Oriented	5
	Confused conversation but able to answer questions	4
	Inappropriate responses	3
	Incomprehensible speech	2
	None	1
Best Motor Response (M)	Obeys commands for movement	6
	Purposeful movement to painful stimulus	5
	Withdraws for pain	4
	Abnormal flexion, decorticate posture	3
	Extensor response, decerebrate posture	2
	None	1

The minimum score is 3 and maximum score is 15. A score of 15 indicates fully conscious and responsive state. Score less than 7 needs special attention.

Care of an unconscious patient

An unconscious patient is totally dependent on others.

Emergency care

The unconscious patient will require skilled emergency management. As a patient starts to become unconscious he or she loses control of his or her ability to maintain a safe environment.

Assess central nervous system using the GCS, monitor vital signs, pupillary reaction and limb movements. The C (circulation), A (airway), B (breathing), approach to resuscitation should be adopted, and the maintenance of a clear airway is the first priority.

If the patient is still breathing spontaneously and does not require further resuscitation then appropriate positioning of the patient, using the recovery position. The use of an artificial airway and the removal of secretions through suction will ensure that the airway remains patent. Remove dentures if any

The possible underlying cause will dictate immediate medical management which may include: the administration of oxygen to maintain tissue perfusion; fluids to support cardiovascular function and correct metabolic derangement; and the administration of intravenous (IV) medications, such as phenytoin in the presence of seizures. Take blood for laboratory tests that will ascertain the presence of drugs if overdose is suspected. Keep open the vein

Physical examination can give many clues as to the cause of unconsciousness. For example, a bitten tongue may indicate an epileptic seizure, or needle marks on the lower limbs or abdomen could be because the patient has insulin-dependent diabetes. A patient's medical history is of vital importance and, if not already known, friends and relatives can be of assistance in this endeavor. Many people who have life-threatening conditions that can precipitate unconsciousness, such as epilepsy or allergies to penicillin, may be wearing bracelets that inform medical practitioners.

If the patient does not regain immediate consciousness then his or her ongoing needs will need to be assessed. This may demand that the patient be moved to an intensive care unit (ICU) to allow for critical management.

Neurological status: Regular Glasgow Coma Scale assessment should be recorded, including pupil and limb assessment.

Increase or decrease the frequency of observations as indicated by the patient's condition.

Minimise environmental noise or stimuli

Respiratory function:

Assess rate and type of respiration. Observe for pallor, cyanosis signs of respiratory obstruction. Position the patient in the lateral recumbent position to prevent the occlusion of the airway from the tongue falling back against the pharyngeal wall. Elevate the head of bed to 30 degrees to facilitate the drainage of secretions from the mouth. Avoid feeding orally. Remove excess oral secretions with suction to avoid aspiration. Consider the use of an oral or nasopharyngeal airway, to maintain patency of the airway and to aid removal of secretions. Monitor and record respiratory function, including oxygen saturations, respiratory rate, depth and regularity.

Cardiovascular function:

Monitor heart rate and rhythm, blood pressure and temperature. Be aware of any changes in vital signs that indicate further neurological deterioration. Observe the patient for any changes in colour, for example, pallor or cyanosis, including the peripheries. Observe for signs of infection, including pyrexia, tachycardia and hypotension.

Immobility:

Reposition the patient regularly following assessment of pressure areas and respiratory function. Correct positioning of the patient using comfort devices. Assess Waterlow score/ Braden score and monitor skin integrity. Consider the use of anti-embolism stockings and anticoagulants for venous thromboembolism prophylaxis. Provide range of motion exercise

Pain:

Observe for signs of pain or discomfort. Aim to alleviate, consider repositioning the patient or administering analgesia as prescribed. Monitor the effectiveness of any intervention.

Renal function:

Insert a urinary catheter to avoid urinary stasis. Monitor urine output hourly. Increase fluid intake.

Nutrition and hydration:

Consider enteral feeding to provide nutritional support. Prepare a diet plan. Monitor and record fluid balance and administer intravenous fluids as prescribed.

Gastrointestinal needs:

Monitor and record bowel function, observing for and reporting diarrhea or constipation. Consider the use of laxatives to prevent faecal impaction.

Hygiene needs:

Regular skin care, care of mouth, eyes, ears, perineum, foot and nail care and catheter care, as well as care of any invasive sites. Change patients dress and linen daily. Cut short nails

Psychosocial needs:

Ensure all procedures are explained to the patient. Liaise with family members regarding the patient's condition and encourage appropriate interaction and involvement in care.

Management of complications

If unconscious state prolonged the complications are those of prolonged immobility. They are mainly;

- 1) Respiratory infections
 - a. Suction the airway at regular intervals
 - b. Change position 2 hourly
 - c. Initiate chest physiotherapy and postural drainage unless contraindicated
 - d. Feed the client in head elevated position
 - e. Aspirate ryle's tube before feeding
 - f. Watch for regurgitation and vomiting
 - g. Keep head turned to one side
 - h. Give fluids
- 2) Contractures and joint deformity, Muscle wasting
 - a. Keep the body in the anatomical position
 - b. Give protein rich diet
 - c. Perform range of motion exercises
- 3) Urinary tract infections
 - a. Practice strict aseptic techniques while doing catheterisation
 - b. Maintain proper hygiene of perineum
 - c. Plenty of fluids (ostomy feeding or IV fluids)

- d. Prophylactic antibiotics
- 4) Corneal injury
 - a. Protect eyes with an eye shield
 - b. Inspect the condition of eyes with a flash light at regular intervals
 - c. Irrigate eyes with sterile saline
 - d. Instil prescribed ophthalmic ointment in each eye
- 5) Development of renal calculi
 - a. Increase fluid intake
 - b. Give alkylating agents
- 6) Pathological fracture from osteoporosis
 - a. Careful handling of the patient
 - b. Provide proper comfort devices
 - c. Careful shifting and moving
- 7) Deep Vein Thrombosis
 - a. Elevate lower extremities above the heart level intermittently for 20 minutes
 - b. Perform passive range of motion exercises to extremities 4 hourly
 - c. Use elastic stockings as required
 - d. Monitor and compare the circumference of both legs at regular intervals
 - e. Monitor for presence of redness, swelling and increased temperature of legs
- 8) Pressure sores
 - a. Keep skin clean, dry, free of pressure
 - b. Use pressure relieving devices (air cushion, air/water mattresses, pillows, foam pads etc.)
 - c. Change position 2 hourly
 - d. Avoid dragging and pulling the client while changing position
 - e. Give skin care to pressure prone areas 4 hourly
 - f. Provide high calorie, high protein, vitamin rich diet with more amounts of fluids.

- 9) Faecal impaction
 - a. Provide adequate fluids
 - b. Administer stool softeners and enema as indicated
 - c. Change position two hourly

Practical Activities

1. Basic nursing procedures
2. Basic life support
3. Positions for unconscious patients and position chart

Assessment Activities

1. Preparation of a chart showing levels of consciousness
2. Preparation of a poster on GCS

TE Questions

1. Unconsciousness is assessed using the GCS scale. Enlist the parameters in GCS scale.
2. The unconscious state leads to many complications.
 - a. Enlist the complications of unconsciousness
 - b. Explain measures to prevent pressure sores.

UNIT NO: 3.7

CARE OF CLIENT'S WITH SPECIAL NEEDS

Introduction

Patients with special needs are those who due to physical, medical, developmental or cognitive conditions require special consideration. This can include people with Dementia, autism, Alzheimer's disease, Down syndrome, spinal cord injuries and countless other conditions or injuries that can make standard care more difficult. Caring for a special needs patient takes compassion and understanding. This chapter outlines care of client's with dementia and challenged children

Learning objectives

The Learner:

- Explains the care of patients with Dementia
- Provides care to patients with Dementia
- Explains the care of children with Attention Deficit Hyperactivity Disorder(ADHD), Autism, Mentally Challenged, Cerebral Palsy
- Provides care to children with Attention Deficit Hyperactivity Disorder(ADHD), Autism, Mentally Challenged, Cerebral Palsy

Dementia

Dementia is a general term for a decline in mental ability severe enough to interfere with daily life. Memory loss is an example.

Alzheimer's disease is the most common type of dementia.

Types

Reversible types:

1. Depressive pseudo dementia
2. Due to hypothyroidism
3. Due to brain tumor

Irreversible types:

1. Alzheimer's disease
2. Multi infarct dementia
3. AIDS dementia complex

Causes

1. Neurodegenerative (AD) and vascular diseases
2. Advanced age and family history
3. Bacterial meningitis and viral encephalitis
4. Ischemic or hemorrhagic brain lesions
5. Single stroke or multiple stroke
6. History of smoking, Alcoholism, hypertension, diabetes mellitus etc
7. Medical condition that progressively attack brain cells and connections
8. Medical conditions such as strokes that disrupt oxygen flow and rob the brain of vital nutrients
9. Poor nutrition
10. Dehydration
11. Certain drugs
12. Single trauma or repeated injuries to the brain
13. Infections or illness that affects the central nervous system

Clinical Manifestations

1. Memory loss
2. Impaired judgment
3. Difficulties with abstract thinking
4. Faulty reasoning
5. Inappropriate behavior
6. Loss of communication skills
7. Disorientation to time and place
8. Gait, motor and balance problems
9. Neglect of personal care and safety
10. Hallucinations paranoia, agitation

Care for Dementia Patients

Care giving: general guidelines

Care giving can be difficult in certain situations. Nonetheless, there are ways to handle such situations.

- Arrange daily routine accordingly

Daily routine can be made simple and easy. An order and alignment should be brought to day to day living. Routine gives dementia patients, a sense of security. Proper time and situation for everything should be decided ahead.

- Try to follow the normal way

It is important to maintain the normal way. It is better to arrange daily routine as the same as which was there in pre disease state.

- Easy to do simply

Make things easier for dementia patients. Never give more opportunity for selections. Encourage to follow simpler ways.

- Encourage self doing

Enable the person to do on his own for the maximum period. It will maintain the self respect and will reduce the stress on the caregiver. Encourage him to do whatever he can do on his own. Help him only when he is not able to do on his own.

- Maintain dignity

Always remember that the person you care for is also a human being with emotions. Our words and action can be irritable to them. For e.g., it may irritate them if their situation is being discussed in front of them. Avoid whatever activities which do not go along with their dignity and respect.

- Avoid tension

Tension will cause unwanted stress on you and the dementia affected person. To be under tension will deteriorate the situation further. This is a disease. It is not their fault. Care giving is a difficult thing. We can be wrong. Disease is not anybody's fault. Peace and self control helps care giving.

- Maintain good humor

We should be able to chat (casually) and laugh with the dementia affected person. Sense of humor can give relief from tension. Never forgo opportunities to be happy. Realize that happiness increases on sharing.

- Make security important

Dementia increases chances of getting wounded and accidents. So keep the home

utmost clean and secure. It may not be possible for the patient to understand the situations and avoid it. See those possibilities in advance and obstruct them.

- Encourage good health and well being

Health should be taken care of. It helps in maintaining emotional strength and looking forward towards life. Suitable exercise is good. Contact your doctor for better advice.

Behavioral Problems: Special Guidelines

It is not necessary that everybody has the above stated problems. Many can have one or more of such symptoms also. Given below are some of the behavioral problems commonly seen in dementia affected persons:

1. Personal hygiene

- Try to know how they like bathing (the brand of soap, warm water or cold water, the time of the day etc.)
- While bathing, allow them to do whatever they can do themselves – to shower water, put soap, dry afterwards
- If they have been bathing, using a mug of water, continue the same. Do not put them under shower suddenly
- If they disagree to bath, try to do it only after giving them time and they changed their mind
- If they feel shame, cover their body while bathing
- Encourage them to sit and bath so that it avoids sudden movements and reduce the risk of falling down

2. Dressing

- Use clothes which are easy to handle. Dhotis may be difficult for the patient. So encourage to use small pyjamas or trousers
- It may be difficult for them to use zips. Wearing elastic banded pyjamas would be much more comfortable for them. Some of their dresses may be changed in these ways.
- Buttons will be difficult for them. So, with the help of the tailor, try to use welcrow instead of buttons. It will be easier for both the patient and the caregiver.
- Whenever you get time, try to dress them up well. Clean their hair; make sure that they are in good shape. They will also be happy to be energetic

and well dressed like the others. They will cooperate more with you.

3. Loss of control over bowels
 - Make a timetable, help to take the person to the latrine
 - Paste labels in bright and sparkling colors and large letters, on the latrine door
 - Easy wearable dresses will help not to urinate in the dress
 - Make them sit in chairs which are easy to handle
 - Reduce the amount of solid food before going to bed
 - Keeping a pan for defecation can avoid wandering about at night to find latrine
4. Repeated questioning
 - You reach nowhere when you answer. Stop answering repeatedly. That will only make you more impatient. They will take it up again and feel more tension over it. Instead, divert the attention of the patient to some other thing. Otherwise, show him something or make him hear something.
 - Talk about something that the person loves
5. Constant shadowing with caregivers
 - As far as possible, include other trustable persons also as caregivers, so that the patient can identify them too, and if one person has to be away, then the other can handle the dementia patient.
 - It is better to use a few close nursing/caregivers than a number of people whom the patient seldom knows.
 - Try not to accompany the patient always, from the beginning. Try not to increase the dependency.
 - If you have to be away for long, first try for some time to be away, and increase the time slowly. This is better than to be away for hours.
 - Motivate other family members to take care of the situation for the time being. Take a small interval, if possible. Visit your friends, or go outside and do something for your happiness. Do not think that it is wrong. You will feel better, also, the patient will also feel better to see you energetic, than to see you distressed and exhausted. Remember! It is better for them, and also for you.

6. Violent nature
 - Be calm, do not display your emotion
 - Try to find out what causes the violent nature. Try to avoid such situations in the future.
 - Whatever the situation is, do not become violent yourself. If you lose control, then be away from the patient until you calm down.
 - Do not push or pull, grab or object physically. Do such things only, if necessary, for the security of the patient.
 - If the patient becomes violent, frequently and if all other ways fail, then his doctor can make him calm through giving medicine. Please consult the doctor.
7. The wandering nature
 - Put mild control. It is not proper to bind the patient down to the chair or lock him in a room.
 - Try to put precautions signs like 'NO EXIT' or danger in the main door.
 - Use obstructions in the door so that they cannot go out.
 - Allow them to go in the garden or yard. Give them their desirable things to see and touch. Allow them to wander over there, and give necessary arrangements.
8. Loss of interest and vitality
 - Make sure that they can see and hear properly. (For e.g., spectacles may have to be replaced, a hearing aid may not be working properly.)
 - Before talking to them, make sure that they are attentive.
 - Talk to them face to face, in a level lower than their eyes. Talk in a slow and clear manner.
 - Show them love and care, through hugs, if they do not get irritated.
 - Be attentive to their body language – those who have trouble with the language, try to communicate through other modes of communication.
 - Be careful of your own body language.
 - Find out the proper words, guidelines, symbols, actions, which are needed to communicate effectively with them.

- Coordinate activities and interests.
- Planned activities can increase the person's dignity and self respect by giving a meaning and aim to the life.
- Remember, their likes and dislikes and abilities vary, as the condition of the patient deteriorates. There is no meaning in making the patient do things which do not like, or things which are above their capacity to do.
- A person who was once a servant, gardener, shopkeeper or a business representative, can get satisfaction from using any of his capabilities related to the work he had been doing. These capabilities, even though they cannot do much with those, will be preserved with them.
- Consider how to stimulate the senses using simple techniques, during the advanced disease state
- Hearing — music, radio programs, read aloud poetry or books, singing
- Touch — it is better to use things which are soft to take by hand and use
- Vision — bright colors, clearly drawn pictures of family members, old photos
- Smell — include them in cooking, familiar smell of food, spices and perfumes (remember to make things safe every time)

Attention Deficit Hyperactivity Disorder (ADHD)

Attention-deficit/hyperactivity disorder (ADHD) is a brain disorder marked by an ongoing pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development

Risk Factors

Scientists are not sure what causes ADHD, although many studies suggest that ADHD probably results from a combination of factors.

- Genetic factor
- Difficulties during pregnancy
- Prenatal exposure to alcohol and tobacco
- Premature delivery
- Significantly low birth weight
- Excessively high body lead levels

- Postnatal injury to the prefrontal regions of the brain
- Decreased brain volume.
- Decreased levels of neuro transmitters (Nor adrenaline, serotonin).
- Depression, family conflict may precipitate hyper activity.
- Visual and hearing impairment.
- Excessive consumption of sugar, chocolate.
- Preservatives and artificial colors in food.

Signs and Symptoms

Inattention, hyperactivity, and impulsivity are the key behaviors of ADHD. It is normal for all children to be inattentive, hyperactive, or impulsive sometimes, but for children with ADHD, these behaviors are more severe and occur more often. To be diagnosed with the disorder, a child must have symptoms for 6 or more months and to a degree that is greater than other children of the same age.

Diagnosis

The children with these symptoms must be evaluated by a Child Psychiatrist or Pediatrician. Usually parents seek help from primary health care to providers. In order to make a diagnosis of ADHD, detailed evaluation of the child is necessary.

Treatment

Effective treatment of ADHD in children and teens requires a comprehensive approach that professionals call multimodal. This means that the best outcomes are achieved when multiple interventions work together as part of a comprehensive treatment plan. The elements of a multimodal approach include:

1. Behavioral intervention strategies
2. Pharmacological treatment
3. School-based interventions
4. Family therapy
5. Social skills training
6. Parent training and education.

Management of Child with ADHD

Management of school problems

- Classroom rules and expectations are clearly defined; the environment is organized; and routines are structured.

- A child with ADHD should not be isolated in the classroom but seating should be preferential with the child located front and center near the teacher.
- A study area with reduced stimuli and traffic should be placed in the room and available for use by all the students.

Close attention to schedules and routines should be given so that the fluctuation in energy presented by the child can be accommodated..

How Parents Can Support Success at School

<p>Communicating with teachers</p>	<ul style="list-style-type: none"> • Tell your child’s teacher’s the child’s ADHD issues and possible interventions as the school year begins. • Be available for regular conferences in person or on the phone. • Educate yourself about how ADHD affects school performance. • Check your child’s notebook every day for homework assignments, communiquéés from the school, and items that need your signature.
<p>Homework</p>	<ul style="list-style-type: none"> • Make sure your child has a quiet, uncluttered place to do homework • Help your child with homework, breaking down assignments into smaller tasks and keeping the child focused. Have a regular time for homework and allow for frequent breaks. • Reinforce study skills such as highlighting, note taking, and reading out loud. · • Praise your child for work done well — and remember, “good” is not necessarily the same as “perfect.” • Check that completed homework and other materials are where they’re supposed to be when your child leaves for school.

Family therapy in ADHD

When there is an ADHD person in the family, whether child or adult, the entire family system is affected. Because the entire family system is affected, the entire family system requires restructuring. Structure, routine, consistency and accountability help each family member to participate in an environment where everyone knows the rules and the consequences.

Social skill training in children with ADHD

Social skills training target a person's interactions with other people. It often involves role-playing as a way to teach the child what behaviours are appropriate in a social setting. For example, social skills training will teach the ADHD child how to wait in line, share toys, respond to teasing, and read other people's expressions.

The following are some areas where the child with ADHD may need help in social skills training:

- Watch a group of peers. Learn how to observe their behaviour and evaluate if a group is appropriate.
- Monitor personal behaviour. Be friendly and approachable. Keep a calm demeanour and low tone of voice.
- Wait for a break in the conversation before speaking. Try to let others finish what they're saying before you speak.
- Think about the feelings of other people. Be careful about teasing, bragging, criticizing, or making jokes at the expense of other people.
- Learn about personal space. Strangers and casual acquaintances might feel uncomfortable with someone else standing too close or touching their possessions.

Home Management of child with ADHD

The home environment can also be structured to provide optimum support to the child with ADHD. Family and household rules should be clear and well defined as well as consistently applied. Set times and routines should be established for study and review of work by the parent.

1. Read Books Together
2. Spend Special Time Together
3. Control Yourself

Realize that we cannot control our kids, nor should we want to. Our primary job as parents is to control ourselves and model proper behavior.

4. Make a Conscious Choice to Remain Calm
5. Have Self Respect

We are not responsible for our children's behavior, attitudes and actions. Choose not to give in to or join his pity party. Walk away calmly, go about your business and let your child know that when he's ready to talk and be polite.

6. Assume a Calm Posture
7. Take Care of Yourself
8. Be the Calm in the Storm
9. Make sure your child is getting plenty of sleep

Emotional Support for Children with ADHD:

Children with ADHD will also need emotional and social support. Some ideas for providing emotional support include:

- Identify the child's strengths and talents.
- Offer sincere praise for accomplishments.
- Help the student envision a positive future and a career in which their talents and abilities will be needed and desired.
- Encourage participation and cooperative groupings instead of a focus on winning or losing.
- Help the child to understand their learning differences and the affect of ADHD on their lives.
- Arrange for formal counseling as needed by individual children.
- Insure a coordinated "team effort" of support by all adults in the child's life, including parents, educators, medical personnel and other key people.

Anger management in ADHD

1. Find Positive Outlets for Anger

Strenuous outdoor play and exercise can be very powerful releases for children with ADHD.

2. Limit Television and Video Games
3. Set Up Clear Rules and Enforce Rules Consistently
4. Understand Triggers

Be aware of what triggers your child's angry meltdowns. There may be triggers that set him off like when he is experiencing frustration with a task.

5. Intervene Early

As you become more aware of the triggers, you can begin to intervene before the anger comes to a full blown head. Be a calming presence. Encourage him to take a deep breath and count to 10. Do this along with him to help demonstrate this calming technique.

Improving Communication with ADHD Child

a. Use Time Out

Time out is a great way for your child to remove himself from the negative situation to take some time to cool down.

b. Label Feelings

If you got an update from the teacher that your child had a rough time with peers that day, spend time talking with him about how it felt. Help him to express his feelings to you by using words.

c. Offer Choices

Offering choices to your child gives him a sense of control. Too many choices can make a child feel overwhelmed or over-stimulated.

Give clear, specific directions.

Try to break tasks into one or two steps so the child does not get overwhelmed.

Ask questions instead of making statements. This forces a child to stop and think about the alternatives.

d. Positive Parenting Strategies

Changing our perspective can make a world of difference. Reframe your role as that of a coach.

e. Be the Coach

“Coaching simply means that before you start using consequences, you work with your child to build skills, “Just like a coach helps a player learn to shoot hoops through skill building and practice, you assume you have to help your child build skills rather than assume he or she is just trying to make you mad.”

f. Connect with Your Child

Connect with your child by listening. Listen to what he has to say. Ask your child how he sees the problem behavior. Listen to his response. Show you understand his point of view.

g. Help Your Child to Understand His Emotions

Help the child to build a child's emotional intelligence by validating his emotions and reflecting back to him that it is okay to be mad, sad, or afraid. Let him know this is a normal and healthy part of life.

h. Catch Your Child Being Good

When you give your child positive feedback for positive actions, those behaviors will increase. Catch your child being good. "You really worked hard on your homework tonight and I noticed you put your homework folder right in your book bag when you were finished."

i. Give Your Child Plenty of Positive Attention

Try to nip this in the bud by setting aside special one on one time with your child each day. During this time be entirely present with your child. Look them in the eyes, touch them lovingly and listen closely to your child.

j. Consequences

Discuss these rules and expectations with your child and come up with specific consequences. If your child breaks these rules, enforce the consequences immediately.

k. Stay in Good Communication with Your Child's Teachers

Be an advocate for your child. Connect with your child's teacher. Respect your child's teacher and try to form a positive alliance with him or her.

Autism

Autism is a pervasive developmental disorder which is characterized by impairments in communication and social interaction and restricted, repetitive and stereotypic patterns of behaviour.

Autism is rightly called 'Autism Spectrum Disorders' because the presentation and outcome can vary from an independent almost normal looking and high functioning child to a totally dependent child with multiple disabilities.

Causes

There is no known cause of autism although there are many theories about potential causes.

Early Detection

Deviation in developmental milestones is the characteristics of autism.

Parents may notice that their child is somehow different from other babies from the very beginning. There may not be any delay in the first year of life, but difficulties in communication, social interaction, along with unusual behaviour and interests may be noticed in the second or third year of life. The common symptoms are: 1. Poor eye contact. 2. Does not point out interesting objects. 3. Poor communication. 4. No emotional reciprocity. 5. Hyperactive behaviour. 6. Poor peer interaction. 7. Lack of pretend play. 8. Stereotype repetitive movements. 9. Echolalia. 10. Preoccupation with objects. 11. Adherence to sameness/tactile hyper sensitivity.

Diagnosis

The most commonly used screening tool is the Checklist for Autism in Toddlers (CHAT) and Modified Checklist for Autism in Toddlers (MCHAT).

The most commonly used diagnosis test is Childhood Autism Rating Scale (CARS).

Home Management

There is no scientifically proved treatment for autism, yet medical and behavioural treatments are given for associated conditions like seizures, aggression, self-injurious behaviour, sleep problems, pica and sensory problems.

Activities for improving social interaction skills

1. Respond to own name- Periodically throughout the day call the child's name in a loud even noise.
2. Improve eye contact
3. Develop vocal imitation – whenever the child spontaneously makes a sound, immediately imitate the sound your child just made and see if the child will respond to you by making the same sound again.
4. Imitate banging with spoon.
5. Clap hands in imitation
6. Imitate actions with objects
7. Scribble for 2 -3 seconds on a large piece of paper
8. Finger tracing
9. Improve enjoyment of limited physical interaction
10. React approximately to physical contact.

11. Engage in simple social interaction game
12. Roll a toy truck back and forth with another person

Suggested activities for improving communication

1. Always talk to the child.
2. Always look at the child's eye while talking to him and encourage child to look at your eyes
3. Train the child to use gestures
4. Train the child to communicate his needs with the help of pictures.
5. Before giving any instruction to the child gently touch the child
6. Teach him simple nouns
7. Talk more slowly or pause between words
8. Teach new vocabulary in variety of contexts
9. For the child with limited expression accept restricted verbal and non verbal behaviour as communication
10. Set up communication environment to encourage expression

Dealing with stereotyped and ritualistic behaviours

Prevention is better than late intervention, so stop stereotypic behaviour right from beginning

Remain vigilant and sensitive to the emergence of new or potential problems

Never allow or encourage behaviours in your child that will be unacceptable in later life.

Graded Change approach

A graded change approach is the most effective way to deal with ritualistic and stereotypic behaviours.

Problem	Graded Change
Collecting Objects (coins, Pebbles etc)	<ol style="list-style-type: none"> 1. Reductions in number of rooms where objects are allowed. 2. Access to the enjoyed activities (TV, eating etc.) contingent on objects being removed from rooms 3. Reduction of number of objects collected in any one place 4. Objects only allowed in bed rooms

Lining up of objects 10,etc.)	<ol style="list-style-type: none"> 1. Gradual reduction in number of objects (from 20- 2. Further reduction in length of lines to five only 3. Lining of objects allowed in house only 4. Lining of objects allowed in specific rooms only
Motor mannerisms	<ol style="list-style-type: none"> 1. Flapping restricted to certain times only (Tv or meal time. 2. Increase the number of situations where flapping is restricted 3. Further reduction to certain times only 4. Flapping allowed only in one room
Resistance to environmental change	<ol style="list-style-type: none"> 1. Minor changes in angle of single chair 2. Chair gradually moved away from usual position 3. Other chairs moved to different angles 4. Gradual changes in other house hold items

Playing with the child

1. Find time to play with the child
2. Engage the child in turn taking games and gradually train him for his turn
3. Always engage or play with the child as he likes
4. Ask all the family members to play with the child
5. Parent child activities should be started as early as possible as the child will have ample opportunity to practice communication by interacting with a trusted adult.
6. Parents can bond with their child and encourage two way communication by actively participating in these activities rather than allowing the child to play alone
7. Parents must regularly plan cooperative activities which help to increase a child's confidence level and to foster the communication skills
8. Use manipulative play to show autistic children how to interact with objects and the environment around them such as
 - Putting together puzzles
 - Stacking blocs
 - Dropping a ball into hole

9. Encourage children tumbling as physical activities which will help to develop motor skills
10. Many children with autism enjoy and excel in musical activities and hence sing with child and encourage the child to sing with songs
11. Engage the child in movement and dance
12. Ask the child to move his legs and hands rhythmically (for this activity music can be used)
13. Choose toys that integrates the senses

Activities for reducing associated behavioural problem

Many behaviours such as jumping, repetitive running, head banging, chewing of non food objects, biting or hitting self or others or hand flapping are common in autistic children. The following activities can reduce such behaviours.

1. Provide firm hugs and snuggling
2. Wrap your child in a blanket and provide deep pressure to most of the body. Wrapping arms in ace bandage may help decrease self biting or scratching.
3. Vibration provides a strong proprioception input. Children often enjoy holding a massager or sitting in a vibrating cushion
4. To help a child who is over sensitive to smell, use unscented detergents and shampoos
5. For the child who seeks out repetitive visual stimulation (finger flicking) try redirecting to activities that are interactive while combining vision and movement such as blowing bubbles
6. Prepare your child for sudden noises. Use vacuum cleaner and other noisy appliances while he is out

In Schools

The teachers can make many modifications to manage a child with autism in the class room environment

1. Use visual methods of teaching
2. Provide a structured predictable class environment
3. Provide a customized visual daily schedule

4. Provide positive praise
5. Use meaningful reinforcements
6. Note tasks and activities that create frustration
7. Have a relaxation area
8. Avoid long strings of verbal communication
9. Introduce unfamiliar tasks in familiar environment
10. Provide opportunities for meaningful contact with peers

Specialised interventions at tertiary centres

The following techniques are widely used to manage children with autism

1. Applied behaviour analysis
2. Speech and language therapy
3. Sensory integration
4. Auditory interventions
5. Medications

MENTALLY CHALLENGED CHILD

Mental retardation refers to a significantly sub-average general intellectual functioning resulting in or associated with concurrent impairments in adaptive behavior and manifested during the developmental period

Classification of mental retardation

1. Mild Mental Retardation

Mildly retarded people achieve full independence in self-care (eating, washing, dressing, bowel and bladder control) and in practical and domestic skills, even if the rate of development is considerably slower than normal. Mildly retarded people acquire language with some delay but most achieve the ability to use speech for everyday purposes and to hold conversations. The main difficulties are usually seen in academic school work, and many have particular problems in reading and writing. However, mildly retarded people can be greatly helped by education designed to develop their skills and compensate for their handicaps. IQ is 50-69

2. Moderate Mental Retardation

Individuals in this category are slow in developing comprehension and use of language. Achievement of self-care and motor skills is also retarded, and some need supervision

throughout life. Progress in school work is limited, but a proportion of these individuals learn the basic skills needed for reading, writing, and counting. Educational programmes can provide opportunities for them to develop their limited potential and to acquire some basic skills. Completely independent living in adult life is rarely achieved. Generally, however, such people are fully mobile and physically active. IQ is 35-49

3. Severe Mental Retardation

Most people in this category suffer from a marked degree of motor impairment or other associated deficits, indicating the presence of clinically significant damage to or mal development of the central nervous system. This category is broadly similar to that of moderate mental retardation. IQ is 20-34

4. Profound Mental Retardation

The IQ in this category is estimated to be under 20, which means in practice that affected individuals are severely limited in their ability to understand or comply with requests or instructions. Most such individuals are immobile or severely restricted in mobility, incontinent, and capable at most of only very rudimentary forms of nonverbal communication. They possess little or no ability to care for their own basic needs, and require constant help and supervision.

5. Other Mental Retardation

This category should be used only when assessment of the degree of intellectual retardation by means of the usual procedures is rendered particularly difficult or impossible by associated sensory or physical impairments, as in blind, deaf-mute, and severely behaviourally disturbed or physically disabled people.

6. Unspecified Mental Retardation.

There is evidence of mental retardation, but insufficient information is available to assign the patient to one of the above categories.

Care of Mentally Challenged children

Mental retardation is a lifelong condition. Mentally retarded children often look and behave differently than their non handicapped peers. This is very painful for families and carefully planned management is required.

The care goal for families of mentally retarded children is to maximize the children's ability to function as independently as possible. Teach the family members on the following self care skills

Feeding

Factors complicate the feeding of children with mental retardation is difficulty in sucking swallowing and tongue thrusting. Feeding should be a pleasant time and depending upon the developmental ability of the individual children. Positive reinforcement in the form of hug kisses and clapping can reinforce expected behavior.

Toileting

Assist the family in determining the child's ability to understand verbal language and readiness skills for toileting. It is important to instruct the family to couple toileting with positive reinforcement. The time sequence for toilet training a child with mental retardation is much longer than that for the normal child. The task requires a great deal of patience.

Dressing and grooming

Helping the children to acquire dressing and grooming skills can be initiated when they cooperate in dressing. The goal is to enhance their independence and to encourage them to do as much as possible for themselves. Dressing skills can be worked on as a part of normal daily activities. Encourage families to be patient with their disabled child who may need a longer period than a normal child to accomplish the same task.

Discipline

The phrase do not handicap the handicapped is one that kept in mind when dealing with the issue of discipline. Families are often reluctant to discipline mentally retarded children because of their handicap. Although these children may have limited abilities they still need to learn acceptable behavior. Assure families that the goal of discipline is to help children learn acceptable behavior through their loving but firm actions.

CEREBRAL PALSY

Cerebral palsy (CP) is a heterogeneous group of movement disorders with various etiologies. The primary functional difficulty is in movement and posture. CP is associated with a permanent, non-progressive pathology that formed *in utero* or early infancy (before 2-3 years of age). CP is often accompanied by disturbances of sensation, perception, cognition, communication, behaviour, epilepsy, and secondary musculoskeletal problems.

Prematurity is the main risk factor for cerebral palsy

Risk factors for development of cerebral palsy

Antenatal	Perinatal	Postnatal
Prematurity and low birth weight Intrauterine infections Multiple gestation Pregnancy complications	Birth Asphyxia Complicated labour and delivery	Non accidental injury Head trauma/ Meningitis/Encephalitis Cardiopulmonary arrest
70-80% of CP		

Prudent obstetrical care, with management of preeclampsia (magnesium), infections (antibiotics), and preterm labour (corticosteroids) can help reduce the risk of CP.

Clinical Features

Early signs

- Asymmetric movements
- Restlessness
- Difficulty in feeding and swallowing with tongue thrust
- Irritability
- Excessive high pitched or feeble cry
- Poor head control
- Poor weight gain

Late signs

- Delayed gross motor development
- Persistent infantile reflex
- Weakness
- Abnormal posture
- Drooling
- Recurrent infections
- Constipation or incontinence of stool
- Malocclusion of teeth, dental caries
- Delayed or defective speech

CP is essentially a clinical diagnosis – there are no pathognomonic signs or diagnostic tests.

General assessment

- Suspicions of CP are commonly based on a positive history of adverse perinatal or antenatal events.
- If no positive history, suspicions are often raised by parental or family observations of developmental delays.
- Observations of the child while being held by their caregiver include: movements, posture, dysmorphic features, etc.
- Growth curves: crossing major percentile lines raises concerns for growth and developmental disorder
- CP is non-progressive but can change its clinical manifestations throughout childhood. Therefore, such changes are important to discuss with parents.
- Examine and rule out the possibility of degenerative diseases, metabolic disorders, spinal cord lesions/tumours, muscular dystrophy, and anomalies of the cervical spinal cord and skull.

Characteristic features of CP based on age

Age	Characteristics that may indicate CP
< 6 months	Head lags when infant is picked up from supine position Feels stiff or floppy in your arms Scissoring of legs when picked up
> 6 months	Asymmetric tonic neck reflex: reaches with one hand while the other is in a fist
> 10 months	Mobilizes/crawls not using all limbs (e.g., <i>commando crawl</i> of spastic diplegia)

Management

Children with CP often have multiple developmental issues that are best managed by a multidisciplinary team of health care professionals such as developmental paediatricians, occupational therapist, speech therapist, physiotherapist, nutritionist and orthopaedic surgeon.

Promoting physical and psychosocial health can be done by

1. Regular health maintenance- by physical assessment and administration of immunizations

2. Providing nutritional needs- teach the parents the importance of providing a balanced age appropriate diet for the child
3. Encourage rest and relaxation-A daily schedule should be planned that includes time for periods of rest and sleep, since fatigue tend to increase the symptoms of CP
4. Preventing infection and injury- infection can be prevented by good skin care, cleanliness of the child's food and utensils, and avoiding contact with persons having infections

As child's movements may not be controlled.

Implement following protective measures

- Padding the furniture
 - Keeping the siderails of bed up position
 - Guard on the chair in place
 - Use furniture that will not slip or fall over when used by the child
 - Avoid slippery surfaces for an ambulatory child
 - Appropriate restraining devices in vehicle
 - Feeding utensils and toys should be appropriate to the age and motor abilities
5. Promoting positive self image
 - Realistic goals should be established for the individual achievements
 - Enhance physical appearance by improving personal and dental hygiene, grooming, clothing and make up
 - Encourage interaction with their peer groups
 6. Bathing
 - Use warm water to prevent muscle spasm
 - If able to walk attach grab bar to bath room
 7. Dressing
 - Place the child in lateral position on the floor or on the bed to dress and undress the child
 - Sitting in the corner of the room can also help the child to balance in dressing

8. Dental care

- More risk for dental caries
- Clean the child's mouth after each meal
- Use a brush with soft bristles
- Nutritious diet
- Dental checkup every 6 months

9. Feeding management

Many children with CP have feeding difficulties that require modified feeding techniques

- Keep dining room atmosphere pleasant
- Have child in good anatomic position place small amount of food on spoon
- Put food on one side of the mouth
- Make child use lip to remove food
- Tell child to chew and if necessary manipulate the jaw in an up and down motion
- Do not hurry them
- Praise them when they succeed
- Three finger jaw control method can be used

10. Toilet training

Children with CP may not gain bowel and bladder control at the same as normal children because of their physical limitations

- Observe change in child's behaviour indicating need to defecate or urinate
- Toilet training programme can be implemented
- To prevent constipation high fibre diet and increase fluid intake

11. Assisting with speech therapy

- Pictures or articles (Eg:- spoon) can be used to reinforce speech
- The use of correct feeding technique can help the child to use the lips tongue and teeth as much as speech can be improved
- Non verbal communication can be employed for children who have severe communication problems

12. Counselling for educational and vocational pursuits

Practical Activities

1. Preparation of memory aids for dementia patients
2. Health education on behavioural disorders in children
3. Preparation of care giver's guide

Assessment Activities

1. Role play
2. Report of visit
3. Care giver's guide

TE Questions

1. As part of the Alzheimer's Day celebrations of your school you are entrusted with the responsibility of presenting the topic care of clients with Dementia. Prepare a draft for the presentation.
2. A brain disorder marked by an ongoing pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development is

Extended Activities of Module _ 3

1. Field visit
2. Health exhibition
3. First aid – wound dressing
4. Help desk for palliative care
5. Help desk for geriatric care
6. Help desk for dementia care
7. Help desk for care of children with Attention Deficit Hyperactivity Disorder(ADHD), Autism, Mentally Challenged, Cerebral Palsy
8. Publishing of health care guide

OVERVIEW OF MODULE 4

MODULE 4 - COMMUNITY HEALTH (340 Hrs/Periods)

The community health encompasses the entire gamut of community organised efforts for maintaining, protecting and improving health of the people. It involves motivating individuals and groups to change patterns of behaviour and to take such action, including seeking of medical care, as would enable them to achieve optimum health. Health care and its delivery systems are changing rapidly in order to meet the needs and problems of the changing society. Health problems have been and still are the basis for planning and for providing health services. Mortality and morbidity rates associated with preventable conditions are high due to lack of adequate environmental sanitation such as safe drinking water supply, safe disposal of human excreta and refuse, control of flies, mosquitoes and other disease vectors and adequate housing. Nutrition a basic requirement for health is inadequate in respect to quality and quantity for million of the people. Health facilities, particularly like preventive health facilities are inadequate and totally lacking in many areas. In spite of achievements and progress made in the field of health and welfare, India still has to go a long way in improving the standard of health and reducing health related problems.

This module is intended to equip the students to provide promotive, preventive and curative health care at homes, elderly care homes, hospices, rehabilitation centres, schools, work places, public places like markets, shopping malls etc.

The first unit is Introduction to health. According to WHO Health is a state of complete physical, mental, social well-being and not merely the absence of disease or infirmity. This unit deals with concept of Health and disease, Determinants of health and new trends in health care.

The second unit deals with hygiene. Hygiene refers to conditions and practices that help to maintain health and prevent the spread of diseases. This unit contains the topics on personal and environmental hygiene.

Nutrition may be defined as the science of food and its relationship to health. In the third unit the various aspects of nutrition such as relation of nutrition to health, Functions of food, Classification of food, Constituents of food - Protein, fat and carbohydrates, Vitamins, Minerals and water, Balanced diet, Nutritional problem and Community nutritional programmes

The incidence of emerging infectious diseases in humans has increased within the recent past or threatens to increase in the near future. Also there is re-emergence of diseases which was once endemic but had since been eradicated or controlled. The number of people living with non-communicable diseases (NCDs) is also increasing. Urbanisation, an ageing population, and the adoption of unhealthy lifestyles that

include poor diets, lack of exercise and excessive alcohol consumption are leading to a growing prevalence of conditions including diabetes, cancer and cardiovascular disease. The fourth unit discusses some major communicable and non communicable diseases.

Most maternal and newborn deaths can be prevented using existing, proven, cost-effective interventions. But the care providers at periphery level must have adequate knowledge skill and attitude in providing maternal child health interventions. Unit five discusses about various aspects of maternal and child health.

Adolescence is a transitional stage of physical and psychological human development that generally occurs during the period from puberty to legal adulthood. Unit six deals with the concept of Adolescence, Physical and physiological changes in adolescence, Problems of adolescents and Promoting optimum health during adolescence.

National Health Programmes have been launched by the Central Government for the control/eradication of the communicable diseases, improvement of environmental sanitation, raising the standard of nutrition, control of population and improving rural health. The unit seven focuses on some the important national health programmes launched by the central government.

The unit eight concentrates on health and social services in India. The main points discussed in this unit are Levels of health care, Primary Health care, Millennium development goals, Primary Health care in India, Integrated Child Development Scheme, Panchayati Raj and some national and international health agencies.

Health Education is an essential tool of community health. The unit nine deals in detail about health education and envisages preparing the students to provide health education on various topics at different settings

Disaster management is the creation of plans through which communities reduce vulnerability to hazards and cope with *disasters*. The final unit provides an introduction to disaster management.

UNIT NO: 4.1

INTRODUCTION TO HEALTH

Introduction

Health is a common theme in most culture. In fact all communities have their concepts of health as part of their culture. An understanding of health is the basis of all health care. The first session of this unit explains the concept of health and disease. In the next session determinants of health is discussed. The last session ‘New trends in health care’ discusses about the latest changes in health care sector (must be updated each year)

Learning Outcomes

The Learner:

- Differentiates between health and disease
- Explains determinants of health
- Describes new trends in health care

Concept of Health

Health is evolved over the centuries as a concept from individual concern to worldwide social goal and encompasses the whole quality of life. Changing concepts of health till now are:

Biomedical concept

Traditionally, health has been viewed as an “absence of disease”, and if one was free from disease, then the person was considered healthy.

This concept has the basis in the “germ theory of disease”.

The medical profession viewed the human body as a machine, disease as a consequence of the breakdown of the machine and one of the doctor’s tasks as repair of the machine.

Ecological concept

Form ecological point of view; health is viewed as a dynamic equilibrium between human being and environment, and disease maladjustment of the human organism to environment.

According to Dubos “Health implies the relative absence of pain and discomfort and a continuous adaptation and adjustment to the environment to ensure optimal function.”

The ecological concept raises two issues, viz. imperfect man and imperfect environment.

Psychosocial Concept

According to psychosocial concept “health is not only biomedical phenomenon, but is influenced by social, psychological, cultural, economic and political factors of the people concerned.”

Holistic concept

This concept is the synthesis of all the above concepts.

It recognizes the strength of social, economic, political and environmental influences on health.

It described health as a unified or multi dimensional process involving the wellbeing of whole person in context of his environment.

Definitions of Health

“The condition of being sound in body, mind or spirit especially freedom from physical disease or pain.” - Webster

“Soundness of body or mind that condition in which its functions are duly and efficiently discharged.” - Oxford English Dictionary

“Health is a state of complete physical, mental, social well-being and not merely the absence of disease or infirmity.” - World Health Organization

New philosophy of health

1. Health is a fundamental human right.
2. Health is essence of productive life.
3. Health is inter- sectoral.
4. Health is integral part of development.
5. Health is central to quality of life.
6. Health involves individuals, state and international responsibility.
7. Health and its maintenance is major social investment.
8. Health is world-wide social goal.

Dimensions of health

Health is multidimensional.

World Health Organization explained health in three dimensional perspectives: physical, mental, social and spiritual.

Besides these many more may be cited, e.g. emotional, vocational, political, philosophical, cultural, socioeconomic, environmental, educational, nutritional, curative and preventive.

Concept of Disease

Webster defines disease as “a condition in which body health is impaired, a departure from a state of health, an alteration of the human body interrupting the performance of vital functions”.

Ecological point of view disease is defined as maladjustment of the human organism to the environment.”

The simplest definition is that disease is just the opposite of health: i.e. any deviation from normal functioning or state of complete physical or mental well-being.

Distinction between disease, illness and sickness

The term disease literally means “without ease” (uneasiness), when something is wrong with bodily function.

Illness refers to the presence of a specific disease, and also to the individual’s perceptions and behavior in response to the disease, as well as the impact of that disease on the psychosocial environment.

Sickness refers to a state of social dysfunction.

Disease is a physiological/psychological dysfunction.

Illness is a subjective state of the person who feels aware of not being well.

Sickness is a state of social dysfunction i.e. a role that the individual assumes when ill (sickness role).

Determinants of health

Health is multifactorial.

- a. Biological determinants: The physical and mental characteristics of every human being are to some extent determined by his genes. The genetic makeup cannot be altered after conception.eg. Chromosomal anomalies, mental retardation etc.

- b. Behavioural and socio cultural conditions: The lifestyle or the way the people live reflects the whole range of social values attitudes and activities. Health requires promotion of healthy lifestyle.
- c. Environment: it has a direct impact on the physical mental and social wellbeing of those living in it.
- d. Socioeconomic conditions : Health status of the people is determined primarily by their level of socio economic development (economic status, education, occupation, political system)
- e. Health services: the purpose of health service is to improve the health status of the population (eg. Immunization, provision of safe water supply)
- f. Aging of the population: a major concern of rapid population aging is the increased prevalence of chronic diseases and disabilities which needs special attention.
- g. Gender: more importance to women's health issues in policy making (eg. nutrition, reproductive health etc.)
- h. Other factors: the intersectoral contribution to the health of communities is increasingly recognised (eg. Food & agriculture, education, social welfare etc.)

New trends in health care

1. Emergence and re-emergence of diseases
2. Life style diseases
3. Genetic diseases and other inborn errors
4. Poor diet and physical inactivity
5. Accidents
6. Environmental issues
7. Waste management
8. Population growth
9. Aging population
10. Maternal and child health
11. Emergency preparedness
12. Non judicial drug use
13. Medical care system

Assessment Activities

1. Preparation of a picture album on healthy and diseased people
2. Preparation of questionnaire for Face to face interaction with a doctor on new trends in health care
3. Report of interactive session

TE Questions

1. Health is multifactorial. Explain the major determinants of health.
2. Health is evolved over the centuries as a concept from individual concern.
 - a. Define health.
 - b. Enlist the major concepts of health

UNIT NO: 4.2

HYGIENE

Introduction

Hygiene is the science of health, which includes all the factors contributing to the healthful living. The main areas of hygiene are personal hygiene and environmental hygiene.

Good personal hygiene is one of the most effective ways to protect ourselves and others from many illnesses. The aim of personal hygiene is to promote standards of personal cleanliness within the setting of the condition where people live. Personal hygiene includes bathing, clothing, washing hands and toilet; care of nails, feet and teeth; spitting coughing, sneezing, personal appearance and inculcation of clean habits in young.

Environmental hygiene has two aspects – domestic and community. Domestic hygiene comprises that of the home, use of soap, need for fresh air, light and ventilation; hygienic storage of foods; hygienic disposal of waste, need to avoid pests rats, mice and insects. In community improvement of basic sanitary services consisting of water supply, disposal of human excreta, other solid and liquid wastes, vector control, food sanitation and housing.

From the Greek word “hygies”(Hygieia- Goddess of Health) Meaning - healthy, sound

Learning outcomes

The Learner:

- Defines Hygiene
- Describes the types of hygiene
- Explains the different aspects of personal Hygiene- Care of skin and hair, Care of teeth, Care of eyes, ears, hands & feet, Menstrual Hygiene, Rest and sleep, postures, exercises and recreation
- Defines safe and whole some water
- Enlists the uses of water
- Enlists the sources of water supply
- Explains the criteria for construction of sanitary well
- Enlists the water related diseases

- Explains purification of water
- Explains air pollution
- Explains the types of ventilation
- Explains the standards of housing
- Explains the requirements of good lighting
- Enlists sources of noise
- Describes the control of noise
- Enlists the food borne diseases
- Explains the sanitation of eating places
- Explains the methods of refuse disposal
- Explains the methods of excreta disposal
- Describes the control of mosquitoes, flies and rodents

HYGIENE

Hygiene refers to conditions and practices that help to maintain health and prevent the spread of diseases. Medical hygiene therefore includes a specific set of practices associated with this preservation of health, for example environmental cleaning, sterilization of equipment, hand hygiene, water and sanitation and safe disposal of medical waste.

Types

- a) Personal
- b) Environmental

PERSONAL HYGIENE

Personal hygiene may be described as the principle of maintaining cleanliness and grooming of the external body. Failure to keep up a standard of hygiene can have many implications. Not only is there an increased risk of getting an infection or illness, but there are many social and psychological aspects that can be affected.

- a) Care of skin and hair
- b) Care of oral cavity
- c) Care of eyes, ears, hands & feet
- d) Menstrual Hygiene
- e) Rest and sleep, postures, exercises and recreation

HAIR

1. Hair is made of dead cells.
2. Hair is important because it brings oil to the surface of the skin.
3. Hair helps warm the body by trapping a layer of air next to the scalp.
4. Hair Care Tips
5. Wash regularly with shampoo. Rinse hair thoroughly with clear water after shampooing to remove all the soap
6. Don't scrub or rub too hard . It may irritate your scalp or damage your hair.
7. Massage your scalp well. It will remove dead skin cells, excess oil and dirt
8. Brush hair daily
9. Wash combs and brushes frequently
10. Don't share combs, brushes etc.

Why Brush Your Hair?

1. Brushing helps keep the scalp clean by loosening and removing dust and dead cells.
2. It also adds shine

Hair & Scalp problems

1. Dandruff
2. Head lice
3. Splitting and breaking

Dandruff

A flaking of the outer layer of dead skin cells on the scalp. This condition is usually caused by dry skin. There is no cure for dandruff, but it can be controlled with special shampoos.

Head Lice

Parasitic insects that live on the hair shaft and cause itching.

Lice can't fly or jump from person to person, but they are easy to catch from other people.

Avoiding and Treating Head Lice

Don't share:

1. Combs, brushes, hats ,barrettes or other hair things, headphones
2. Use special shampoo and wash your hair immediately.
3. Any linens and clothes you have used should be washed in hot water or dry-cleaned.

Splitting & Breaking

1. Too much heat can cause the layered cells of your hair to split apart and even break off.
2. Wind, chlorine, chemical treatments, and permanent hair dye can weaken hair in the same way.
3. If you put your hair in a ponytail, use a coated rubber band or soft cloth hair band.
4. Non cushioned or uncovered elastic bands can cause severe breakage.

SKIN

The **human skin** is the outer covering of the body.

Functions of Skin

- | | |
|------------------------|---------------------------|
| 1. Protection. | 5. Water resistance |
| 2. Vitamin D formation | 6. Control of evaporation |
| 3. Temperature control | 7. Excretion |
| 4. Sensation | 8. Absorption |

Three layers of skin

1. Epidermis- Outer most layer of skin. Cells in the epidermis make melanin
2. Dermis- Inner layer of skin which contains blood vessels, nerve endings, hair follicles, sweat glands, and oil glands
3. Layer of fat cells

Common Skin problems

1. Bad odour
2. Acne

Body odor

Perspiration itself doesn't smell. However, during sweating, another liquid called apocrine is also secreted. When apocrine combines with the bacteria naturally present on the skin, odor results

Bad odor is caused by

- a. Poor hygiene
- b. Foods such as onions and garlic

Bad odor can be controlled by

- a. Daily baths or showers using soap and scrubbing the entire body with a wash-cloth.
- b. The use antiperspirants decreases perspiration and cover odor with a manly smell

Acne

Acne is created when oil from the oil glands mix with the dead cells and plug up the hair follicles in the skin it creates a "whitehead."

A "blackhead" is when the air touches the plug, the plug turns black

What makes acne worse?

- Oil-based makeup, suntan oil, hair jells and spray.
- For girls, menstruation
- For Boys it may get worse because they have more skin oil.
- Squeezing or picking at blemishes
- Hard scrubbing of the skin

Measure to control Acne

- Wash the face with cold water at regular intervals
- Avoid fatty foods and sweets
- Drink plenty of water
- Don't squeeze or pick pimple with nail
- Consult a doctor if acne is uncontrollable

Skin Care Tips

- a. Bath or shower regularly using soap - cold bath, warm bath, hot bath, oil bath
- b. Do not scrub violently
- c. If possible, bath or shower after exercise - especially after sweating
- d. Use antiperspirants decreases perspiration and cover odor with a manly smell
- e. Wear clean clothes

- f. Reduce stress levels
- g. Maintain a healthy diet - balanced diet
- h. Judicial use of cosmetics
- i. Keep hands clean by washing them often.
- j. Protect yourself from the sun
 - Wear sunscreen and reapply it every hour.
 - Wear a hat, T-shirt, and sunglasses.
 - Drink plenty of fluids.
 - Protect yourself from UV Rays

TEETH

Healthy teeth and gums enable you to:

1. Chew food thoroughly
2. Speak clearly
3. Give shape and structure to your mouth

Dental problems

Dental problems are caused by the activity of certain types of oral bacteria

Other causes:

- a. Tongue not cleaned
- b. Food stuck in teeth
- c. Sinus problems
- d. Stomach problems

The main problems are Halitosis, Dental caries, Plaque, Tartar, Periodontal Disease

How to avoid Dental problems-

- a. Daily dental hygiene routine that consist of brushing for 2-4 minutes and flossing
- b. If possible, brush after every meal or rinse your mouth with warm water.
- c. Use a soft-bristled brush.
- d. Replace your toothbrush every 2-3 months or after an illness.
- e. Use toothpaste that contains fluoride.

- f. Flossing removes food trapped between your teeth and gum lines that rinsing and brushing miss.

Dental care

- a. Brush two times daily
- b. Eat at least 5 servings of fruits and vegetables each day.
- c. Include foods that contain calcium, such as milk and yogurt.
- d. Limit intake of sugar.
- e. See a dentist every 6 months

EYES

“Eyes are the windows of learning” Good eye sight is essential for the proper development of all the faculties of the individual

Conditions affects eye are

- 1) Infections (conjunctivitis, trachoma ,stye)
- 2) Injuries (corneal ulcers)
- 3) malnutrition (night blindness, xerophthalmia)
- 4) errors of refraction (short sightedness, long sightedness)
- 5) others (cataract, glaucoma)

Care of eyes consists

1. Prevention and control of infection – any discharge, redness or pain in the eye should be taken seriously

Common infections are conjunctivitis and trachoma

Preventive measures

- a) Early diagnosis and treatment until cure is achieved
 - b) Health education emphasizing the importance of using clean towels and linen, fly control and preventing flies sitting on faces of infants and children
 - c) Personal hygiene
- 2) Injuries - eyes exposed to injuries while at work and play
 - The workers must wear protective glasses.

- Children avoid playing with crackers, fireworks, gulli danda, bow and arrow
 - Foreign bodies should be washed out immediately, if doesn't come out consult doctor. Do not rub the eyes.
- 3) Eye strain
- Reading must be done in good light, light coming from left and behind
 - Hold book about a foot and half away from the eyes and at an angle of 45 – 70 degrees from horizontal
 - Avoid reading in moving train, buses or in lying down position
 - Avoid reading books or magazines with fine print
 - While doing close work give rest to the eyes frequently
 - Eyes must be protected from direct sunlight, glare and excessive brightness
- 4) Good diet - some diseases are due to malnutrition
- Vit A deficiency leads to night blindness, so ensure well balanced diet
 - Protective foods such as green leafy vegetables, milk and butter should be included in daily diet
 - Mass prophylaxis programmes
- 5) Squint – crossed eye
- Consult eye specialist
 - Can be corrected with glasses exercise or both
 - Should be treated early in life
- 6) Regular check Up - watery discharge, collection of pus, soreness of eyes or lids, swelling of eyelids, blurred vision, spots before eyes, headache, eye fatigue, seeing coloured halos around lights
- 7) Hygiene of eyes
- a) Skin around the eye kept clean with soap and water
 - b) Washing at bed time
 - c) Don't use common towels
 - d) Should not touch eye with dirty fingers

- e) Should not be exposed to dust very bright light or direct sun light
- f) Exercise is good (blinking eyes, circling eye balls)
- 8) Care of eyes in new born - natural body defenses are lacking
 - a) Sterile wet swabs should be used to clean the lid margins
 - b) At the time of bath, water should not be enter into eyes
 - c) Freshly prepared silver nitrate (1%) solution or freshly prepared penicillin drops should be instilled into eyes
 - d) Any discharge from eyes it is pathological
- 9) Harmful practices
 - a) Applying kajal or black soot mixed in oil
 - b) Methods prescribed by quacks are harmful
 - c) Basic social causes of ignorance, poverty, low standards of personal hygiene and inadequate medical services to be remedied

EARS

- a. Wash ears daily with a wash cloth don't forget behind the ears
- b. Ear wax is usually removed when you chew food or gum
- c. Prevent water from entering ear while bathing
- d. Protect ear from exposure to loud noise
- e. Prevent and Treat all nose and throat infections
- f. Good habits - Do not put pencils, matches foreign bodies sticks or buds in ears
- g. Treat ear infections promptly

HANDS

HAND HYGIENE

1. First, wet hands and apply liquid or clean bar of soap.
2. Next, rub your hands together and scrub all surfaces (palms, fingers, and in between).
3. Continue for 10-15 seconds. Soap combined with the scrubbing action that helps remove germs.
4. Rinse well and dry your hands.

5. Cut short nails
6. Discourage habits of nail biting and putting finger in nose

NAILS AND CUTICLES

The part of the nail that can be seen and touched is composed of dead cells. Thin skin-like layer at the base of each nail is called cuticle .A non-living band of tissue.

Nails protect the sensitive tip of our fingers and toes.

Without proper care they can become weak, ingrown or infected.

NAIL CARE

1. Keep nails trim but do not cut nails shorter than skin level.
2. Keep nails clean.
3. Round your fingernails slightly when trimming them.
4. Cut toe nails straight across.
5. Smooth rough nail edges with a file or emery board.

CUTICLES CARE

1. Clean and soften your hands in warm water.
2. To keep your cuticles neat, push them back after soaking your hands, while they are soft.
3. You may also use cuticle remover , a chemical that dissolves the cuticle

FEET CARE

Large collection of sweat glands live in our feet

1. Wash your feet well at least once a day.
2. Dry them carefully, especially between the toes.
3. Keep feet and skin clean and dry
4. Change socks daily
5. Avoid walking barefoot in public areas
6. Use foot wears of proper size

Branch of medicine deals with care of feet is called “Podiatric Medicine”

MENSTRUAL HYGIENE

Menstruation is a normal physiological process. It is a manifestation of womanhood. There is no harm in bathing, washing the hair and in doing anything to which one is accustomed.

1. Take a bath at least once a day
2. Use clean undergarments and change them regularly
3. Use absorbent sanitary pad which must be changed frequently
4. Always wrap the used product in waste paper and discard it in a dustbin meant for this purpose.
5. Never flush it down the toilet.
6. Wash the genital area with plain water(no soap) after urination and defecation from vagina to anus.
7. Wash hands after changing the sanitary pad.
8. Keep the area between the legs dry.
9. Avoid strenuous activity during this period
10. Drink plenty of water and take a balanced diet

REST & SLEEP

Rest and sleep is essential for Maintenance of health. During sleep the body and mind are relaxed, repair & growth take place, fatigue disappears.

For a sound sleep

Use a flat bed, use one pillow, face should not be covered, room should be dark and well ventilated, have regular sleeping pattern, early to bed and early to rise keeps one healthy and wealthy.

Exercise

Exercise is the basis of physical fitness. It

1. Tones up the muscles
2. Improves blood and lymph circulation
3. Improves the strength of the heart
4. Ventilates lungs
5. Stimulates appetite
6. Promotes excretion of wastes through kidney and skin

7. Speeds up burning of glucose in the body
8. Sharpens muscular and mental coordination
9. Promotes relaxation and sleep
10. Provides an outlet for emotional tension

Exercise; Active (Strength eg. weight lifting, Speed eg. Running, Dexterity eg. boxing, Endurance (yoga and recreational eg. walking, swimming, games) & Passive (eg. Massage)

Posture

Posture has been defined as position or bearing of the body. A good posture give the impression of a vigorous and dynamic personality.

1. Back should be straight while sitting or standing
2. While standing body should be erect
3. Use properly constructed school seats, desks and office chairs
4. Correct bad postures in early childhood

Recreation

Recreation means relaxation and amusing oneself which relieves mental tension. It may be active (physical exercise) or passive (listening to music, reading)

POSTURE – it is defined as position/bearing of the body. Posture reflects personality. Back should be straight while standing/sitting, the body should be erect while standing. Defects of posture leads to curvatures of spine (kyphosis or hump back, lordosis or hollow back, scoliosis or lateral curvature), flat chest, pot belly, stiff neck, stoop shoulders, knock knees, head to one side etc. Use of properly constructed school seats and desks, home and office chairs is helpful for prevention of postural defects.

Practical Activities

1. Preparation of Charts on Personal Hygiene
2. Health talk on personal Hygiene

Assessment Activities

- 1 Seminar - Divide the class into 5 group Topics - Care of skin and hair, Care of oral cavity, Care of eyes, ears, hands & feet, Menstrual Hygiene, Rest and sleep, postures, exercises and recreation
- 2 Poster presentation on personal hygiene

ENVIRONMENTAL HYGIENE

WATER

Safe and sufficient drinking-water, along with adequate sanitation and hygiene have implications across all Millennium Development Goals (MDGs) – from eradicating poverty and hunger, reducing child mortality, improving maternal health, combating infectious diseases, to ensuring environmental sustainability. Much progress has been achieved over the past decade.

Safe and wholesome water

Water intended should be for both human safe and Water consumption has been defined as wholesome. This water that is

- a. free from pathogenic agents
- b. free from harmful chemical substances pleasant to the taste, i.e., free from colour and odour; and
- c. potable, or. usable for domestic purposes

Water is said to be polluted or contaminated when it does not fulfill the above criteria. Water pollution is a growing hazard in many developing countries owing to human activity. Without ample and safe drinking water, we cannot provide health care to the community.

Uses of water

The following are some of the uses of water:

1. **Domestic uses:** i.e., drinking, cooking, washing, bathing, etc.
2. **Public uses:** i.e., street washing, fire fighting, maintenance of public gardens.
3. **Industrial uses:** Some industries like the iron and steel industry and paper industry need enormous quantities of water.
4. **Agricultural uses:** Without water, the food and raw materials required by the world cannot be raised.

Sources of water supply

There are 3 main sources of water:

1. Rain
2. Surface water
 - i. Artificial lakes

- ii. Rivers, streams
 - iii. Ponds, and tanks
3. Ground Water
 - i. Shallow wells
 - ii. Deep wells
 - iii. Springs

Sanitary well

A sanitary well may be defined as a well which is

1. Properly located
2. Well constructed and
3. Protected against contamination. It is intended to supply safe and wholesome water.

The following criteria have been laid down for the construction of sanitary wells.

1. Location

In selecting a site for well construction, two points need particular attention.

- a. There should be no source of pollution or contamination within a radius of at least 50 feet (15 metres), and
- b. The well should be located at a higher level with respect to a nearby source of pollution such as a latrine.

2. Lining

The sides of the well should be built of bricks or stones up to a depth of at least 6 metres (20 feet) and lined with cement to prevent seepage of sub-soil water from the sides of the well.

3. Parapet wall

There should be a parapet wall up to a height of at least 70 to 75 cms (28 inches) from the ground level. The parapet wall also should be lined with cement both inside and outside. The parapet wall prevents entry of surface washings into the well.

4. Platform

There should be a cement-concrete platform round the well extending at least 1 metre (3 feet) in all directions, The platform should have a gentle slope outwards towards a drain built along its edges.

5. Drain

There should be a pucca drain to carry off spilled water to a soakage pit or a public drain. Such spilled or waste water should be carried well beyond the “cone of filtration” (area of drainage) of the well.

6. Covering

The well should be covered by a cement concrete cover or by some other means. This prevents pollution from outside being introduced directly into the well through the open top. Open wells are insanitary.

7. Handpump

The well should be fitted with a hand pump for lifting the water in a sanitary manner. The use of rope and bucket should be discouraged, as it tends to introduce pollution into the well.

8. Quality

The quality of water should be tested in a laboratory to ensure that the water is fit for drinking. The tests are of 3 kinds – physical chemical and bacteriological.

9. Health education

People should be permitted to bathe or wash clothes near the well. This requires health education in the proper use of the well.

Water Pollution

One of the problems of the modern-day is pollution of water supplies by man himself. The sources of pollution are: -

1. Sewage: This is a serious source of water pollution. Sewage contains decomposable organic matter and pathogenic agents.
2. Industrial wastes: Pollution by industrial wastes is a growing problem in many countries. Toxic agents from industries, if permitted to enter water supplies kill not only fish, but also harm men.
3. Agriculture: Drinking water sources may be polluted by fertilizers or pesticides used in agricultural practice.

Water-related diseases

Water related diseases may be classified as follows:

- A. Biological Water-borne Diseases

1. Those caused by the presence of an infective agent:

a. Viral

- Viral hepatitis A
- Hepatitis E
- Poliomyelitis
- Rotavirus diarrhoea - in infants

b. Bacterial

- Typhoid and
- Paratyphoid fever
- bacillary
- dysentery Esch.
- coli diarrhoea,
- cholera

a. Protozoal

1. Amoebiasis
2. Giardiasis

b. Helminthic

1. Roundworm
2. Threadworm
3. Hydatid disease

c. Leptospiral

- v Weils disease

2. Those due to aquatic host:

- a. Snail : Schistosomiasis
- b. Cyclops : Guineaworm, Fish tape worm.

B. Chemical

Chemical pollutants include detergent solvents, cyanides heavy metals,

minerals and organic acids, nitrogenous substances, bleaching agents, dyes, pigments, sulphides, ammonia, toxic and biocidal organic compounds of great variety. Chemical pollutants may affect man's health not only directly, but also indirectly by accumulating in aquatic life (e.g. fish) used as human food. The present concern about chemical pollutants in water relates not so much as to their acute toxic effects on human health as to the possible long-term effects of low level exposure, which are often non-specific and difficult to detect. Further, some of the new pollutants are not easily removed by conventional water treatment or purification processes. In many developed countries where water-borne communicable diseases have virtually disappeared, more attention is now being paid to chemical pollution.

In addition to the above, associated with the following:

- a. Dental health: The presence of fluoride at about 1mg/litre in drinking water is known to protect against dental caries, but high levels of fluoride cause mottling of the dental enamel;
- b. Cyanosis in content infant: High nitrate content of water is associated with methaemoglobinaemia. This is a rare occurrence but may occur when surface water from farmland, treated with a fertilizer, gain access to the water supply.
- c. Cardiovascular disease: Hardness of water appears to have a beneficial effect against cardiovascular disease.
- d. Some diseases are transmitted because of inadequate use of wafer like shigellosis, trachoma and conjunctivitis, ascariasis, scabies.
- e. Some diseases are related to the disease carrying insects breeding in or near water like: malaria, filaria, arboviruses, onchocerciasis, African trypanosomiasis.

PURIFICATION OF WATER

Purification of water is of the greatest importance in community health. It may be considered under the following headings:

1. Purification of water on a large scale.
2. Purification of water on a small scale:
 - a. Household methods of purification
 - b. Disinfection of wells.
1. Purification of water on a large scale

The purpose of water treatment is to produce water that is safe and wholesome. The components of a typical water purification system comprise one or more of the following measures:

- I. Storage
- II. Filtration
- III. Disinfection

I. STORAGE

Water is drawn out from the source and impounded in natural or artificial reservoirs. As a result of storage, a very considerable amount of purification takes place. This is natural purification, and we may look at it from three points of view:

- a. **Physical:** By mere storage, the quality of water improves. About 90 per cent of the suspended impurities settle down in 24 hours by gravity. The water becomes clearer. This allows penetration of light and reduces the work of the filters.
- b. **Chemical:** Certain chemical changes also take place during storage. The aerobic bacteria oxidize the organic matter present in the water with the aid of dissolved oxygen. As a result, the content of free ammonia is reduced and a rise in nitrates occurs.
- c. **Biological:** A tremendous drop takes place in bacterial count during storage. The pathogenic organisms gradually die out. It is found that when river water is stored the total bacterial count drops by as much as 90 per cent in the first 5-7 days. The optimum period of storage of river water is considered to be about 10-14 days.

II. FILTRATION

Filtration is the second stage in the purification of water, and quite an important stage because 98 - 99 per cent of the bacteria are removed by filtration, apart from other impurities. Two types of filters which are commonly used are:

1. Slow sand or biological filter
2. Rapid sand or mechanical filter

Slow sand or Biological filter

The clarified water from the storage tanks is now admitted into the slow sand filters. The filter bed consists of from top to bottom.

1. 1.4 metres of standing water
2. 1.2 metres of graded sand
3. 0.4 metres of graded gravel

Sand is the main filtering medium. The sand bed has thickness 1.2 metres. The sand is “graded”, which means, the finer sand at the top and the coarser sand at the bottom. Similarly, the layer of gravel gives support to the sand bed is also graded. At the bottom of the bed are perforated pipes which collect the filtered water.

Several mechanisms are involved in the purification of water by the sand filter; these are (1) mechanical straining (2) sedimentation (3) absorption (4) oxidation of impurities and (5) bacterial action all playing their part simultaneously. But the greatest part in water purification is played by the zoogeal layer or vital layer, which forms at the top of the sand bed. This is a slimy or gelatinous layer and consists of numerous forms of plant and animal life -, i.e., algae, plankton, diatoms, protozoa and bacteria. It takes 2 to 3 days for this layer to form on a new sand bed and when fully formed it even extends 2 to 3 cms into the top layer of sand bed. The layer is called the “heart” of the slow sand filter-. It removes bacteria, and purifies water to an extent of over” 98 per cent. Therefore, till the vital layer is formed, the water filtered by a new sand bed is rejected

The rate of filtration in slow sand filter, is about 96 liters per sq. metres per hour. As the vital layer increases in thickness, the rate of filtration slows down because of the resistance” offered by the vital layer. This loss of efficiency over a period of days and weeks is called “loss of head”. When the loss of head reaches 4 feet, it is uneconomical to continue further filtration. At this stage, the vital layer is peeled off along with the top 2 to 3 cms of sand. This process is called “scraping the filter” or cleaning the filter, which is carried out periodically whenever the loss of head is more than 4 feet (1.25 metres) (When the thickness of the sand bed is reduced to about 30 to 40 cms due to repeated scraping, the plant is closed down, and a new bed is constructed. This is a drawback with the slow sand filter, that the bed needs reconstruction periodically.

Rapid sand or Mechanical filter

Rapid sand filters are of 2 kinds - (1) the gravity type’ (e.g. Faterson’s filter) and (2) the pressure type (e.g. Candy’s filter).

The following steps are involved in the purification of water by rapid sand filters:

1. **Coagulation:** The raw water is first treated with a chemical coagulant such as alum for the removal of turbidity and colour. The dose of alum added varies from 5 to 40 mg. per litre, depending upon the amount of turbidity in the water.
2. **Mixing:** After the addition of alum, the water is subjected to violent agitation in a mixing chamber for a few minutes. This helps in the thorough mixing of alum with the water.
3. **Flocculation:** The water is then passed into the flocculation chamber, where it is slowly agitated for about 30 minutes. This results in the formation of copious thick precipitate of aluminium hydroxide.
4. **Sedimentation:** The coagulated water is now led into sedimentation tanks, where it is kept for 2 to 6 hours. The precipitate of aluminium hydroxide along with impurities settles down, and the water now looks much clearer in appearance.
5. **Filtration:** The clarified water is subjected to rapid sand filtration, which purifies water to an extent of over 99 percent.

In the rapid sand filter, just as in the slow sand filter, the filtering medium is sand, which rests on a bed of gravel. The filtered water is collected by perforated pipes. As filtration proceeds, a slimy layer forms on the sand bed, comparable to the zoogeal or vital layer in the slow sand filter. As a result of filtration the filter bed becomes dirty due to accumulation of suspended impurities. At this stage, the filters are subjected to a washing process called "back washing." This is done by reversing the flow of water when the impurities are dislodged and removed with wash water. The entire process of washing takes about 15 minutes, and the filters are ready for use, again. This is quite unlike as in the case of slow sand filter, where the entire bed needs reconstruction.

III. Disinfection

In water works practice, the term disinfection is synonymous with chlorination.

Chlorination

Chlorination is the final step in the purification of water. It kills the harmful bacteria. Being an oxidizing agent, it oxidizes iron, manganese and hydrogen sulphide and destroys taste and odour producing compounds.

Ortho-toluidine Test

This is a very useful test to find out the amount of free residual chlorine present in water.

Household purification of water

The methods employed for purification of water on a small scale such as for domestic purpose are as follows:

1. Boiling

Boiling is a satisfactory method of purifying water for household purposes. Boiling for 5 to 10 minutes kills bacteria, spores, cysts and ova of intestinal parasites. Boiling also removes temporary hardness by driving off carbon dioxide and precipitating the calcium carbonate.

2. Chemicals

(a) **Bleaching powder:** For disinfecting water, bleaching powder (good quality) should be used in a dosage of 6.8 gm per 1.000 Litre of water. This amount gives a concentration of 1 mg per litre (1 ppm), which at the end of 1/2 hour of contact may reduce to 0.2 mg. per litre.

(b) **Alum:** Alum is not a germicide. It removes only turbidity.

(c) **Potassium permanganate:** It is not recommended for water disinfection any longer,

(d) **Chlorine tablets:** These are sold in the market under various trade names, e.g. "halazone" tablets. These tablets are good for disinfecting small quantities of water.

3. Domestic filters

Water, for drinking purposes, can be purified by domestic filters. One such filter is the Berkefeld filter.

Disinfection of wells

Wells are best disinfected by bleaching powder, not by potassium permanganate. During epidemics of cholera and gastroenteritis, the need arises for mass disinfection of wells. The following are the steps in well disinfection.

Steps of Well disinfection

1. **Measurement of well:** The first step in well disinfection is measurement of the diameter of the well, and the depth of the water in metres. This is done with the help of a rope and tape.
2. **Amount of water:** The next step is to calculate the amount of water in the well by applying the formula:

- a. Measure the depth of water column - (h) metre.
- b. Measure the diameter of well (d) metre.

Take the average of several readings of the above measurements.

- c. Substitute h and d in :
$$\text{Volume (litres)} = \frac{3.14 \times d^2 \times h}{4} \times 1000$$

- d. Remember-one cubic metre = 1000 litres of water.
3. Amount of bleaching powder: 2.5 gm of good quality bleaching powder would be needed for disinfecting 1,000 litres of water. This gives roughly a chlorine concentration of 0.7 mg. per litre. This is known in as “direct chlorination”. Another method of finding out the amount of bleaching powder required for chlorination is by the use of “Horrock’s Apparatus”.
4. Mixing of bleaching powder: The bleaching powder to be added is first placed in a bucket, and made into a thin paste by mixing with a little quantity of water. Then, more water is added with constant stirring, till the bucket is nearly three-fourths full of water. The contents are stirred well, and allowed to sediment for 5 to 10 minutes. During this short period, the lime settles down. The supernatant clear fluid, which contains chlorine, is transferred to another bucket, and the lime is thrown away. (Note: the lime should not be poured into the well, as it increases the hardness of well water).
5. Addition of bleaching powder solution: The bucket containing the chlorine solution is lowered into the well, and the well water is agitated by lowering and drawing up the bucket several times, and at the same time going round the well. During this process the chlorine solution is delivered into the well, and gets mixed with the well water.
6. Contact period: A contact period of 60 minutes should be allowed after chlorination to ensure destruction of pathogens.
7. Ortho-toludine test; At the end of one hour, the ortho-toludine test is done to detect the presence of free residual chlorine.

Wells are best disinfected at night after the day’s draw-off. During epidemics of cholera, wells must be disinfected every day.

Examination of water

A complete examination of water consists of the following steps:

1. Sanitary Survey
2. Sampling
3. Laboratory Examination

AIR

Air is the basis of all forms of life. Air supplies life saving oxygen, human body is cooled by air contact, special sense of hearing and smell are mediated by air, diseases are transmitted through air. Air composition is maintained by wind, sunlight, and rain & plant life.

Air pollution: It occurs when excessive concentration of foreign matter in the atmosphere which is harmful to human life. Main sources are domestic, industrial, automobiles etc. Main health effects are chronic bronchitis, lung cancer, destruction of plants and animals, corrosion of metals, damage to buildings etc. control of air pollutants at the point of origin, replacement of coal by electricity growing vegetation and plants in industrial area, strict legislation can minimize the effects of air pollution.

HOUSING

Housing means not merely the physical structure providing shelter but also necessary facilities, services, equipments and devices needed for the physical and mental health and social wellbeing of the individual and family. A house must meet the physical, psychological, protective and health needs of the individual and family. The adverse effects of poor housing are respiratory infections (TB, common cold, and bronchitis), skin infections (scabies, leprosy), home accidents etc. Standards of housing are 1) must be located in a healthy locality, away from nuisance such as dust, smoke, smell and noise and in pleasing surrounding 2) For proper lighting and ventilation there should be open space all around the house 3) The walls of the house should be reasonably strong and unsuitable for harbourage of rats and vermin. The floor of the house must have a hard surface and can be easily washed and kept clean and dry

VENTILATION

Ventilation may be defined as exchange of air between outdoors and indoors. It also implies control of air temperature, humidity, velocity and purity; this is what we mean by air conditioning

Types

1. Natural ventilation
2. Mechanical or artificial ventilation
 1. Natural ventilation

This is brought about by certain forces which operate in nature like wind, diffusion and inequality of temperature. It is brought about in tropics chiefly through doors and windows (cross ventilation)

2. Artificial ventilation

This may be the following types

1. Exhaust ventilation: In this system air is extracted to the outside by exhaust fans driven by electricity which is generally provided in large halls and auditoria for removal of vitiated air. As air is exhausted, a vacuum is created which induces fresh air to enter the room through windows, doors and other inlets.
2. Plenum ventilation: In this system, fresh air is blown into the room by centrifugal fans so as to create a positive pressure, and displace the vitiated air. This is of limited utility.

Balanced ventilation: This is a combination of exhaust and plenum systems of ventilation. The blowing fan must balance the exhaust fan.

3. Air conditioning: Air conditioning is defined as “the simultaneous control of all, or atleast the first three of those factors (temperature, humidity, air movement, distribution, dust, bacteria and toxic gases) affecting both the physical and chemical conditions of the atmosphere within any confined space or room. Excess humidity is removed and the air is circulated back into the room after heating or cooling it, to bring room temperature to required comfort zone.

NOISE

Noise may be defined as “wrong sound in wrong place at the wrong time”. The unit of noise is decibel. The recommended maximum noise level is 85 decibel.

Sources of noise

1. Domestic sources eg. TV sets, Transistors
2. Automobile centres and railways
3. Factories and industries

4. Air craft
5. Recreational noise of loudspeakers with full volume during festivities particularly at night.

Effects of noise

- | | |
|-----------------------------|--|
| 1. Deafness | 4. Disturbance to sleep |
| 2. Interference with speech | 5. Accidents in industries |
| 3. Inability to concentrate | 6. physiological changes in body (rise in BP) |

Control of Noise

1. Careful planning of cities eg. House fronts should lie not less than 15 meters from the road and the intervening space should be thickly planted with trees and bushes
2. Control of vehicles eg. Heavy vehicles should not be routed into narrow street, indiscriminate blowing of the horn and use of pressure horn should be prohibited.
3. Control of transmission eg. use of sound absorbing materials in buildings
4. Control at source eg. enclosure of noise source
5. Protection of exposed persons eg. use of ear plugs , ear mask etc ,periodic audiogram check up
6. Legislation eg. In most countries there are laws dealing with noise control.
7. Public education to highlight the importance of noise as a community hazard.

Lighting

Good lighting is essential for proper vision. The requirements of good lighting are sufficiency (sufficient to do intended work without eye strain) distribution (must be uniform over the whole field) absence of glare (glare is excessive brightness. It is an important cause of road accidents) absence of sharp shadows (shadows interfere with vision) steadiness (source of light should be constant) and colour (if intensity is adequate colour is not important).

Lighting measured in terms of foot candle. It is the intensity of light we drive at a point placed at a distance one foot from a light source of a standard candle power.

Natural lighting: is mainly derived from the sky, and partly by reflection. In planning for natural lighting following factors must be considered

1. The building must face north and south for uniform lighting
2. Obstructions near the building should be removed
3. The windows should be properly planned
4. Interior of the room should receive attention (avoid too many curtains, for better reflection of light the ceiling should be white).

Artificial lighting: it is derived from two main sources.

1. Electric bulbs
2. Tube lights

FOOD HYGIENE

Food is a potential source of infection. Food hygiene means hygiene in the production, handling, distribution and serving of all types of food.

Milk Hygiene

Milk is an important vehicle for the transmission of disease agent. Milk born diseases are transmit directly (bovine tuberculosis, anthrax, streptococcal infection etc) or indirectly (typhoid, dysentery, cholera, diphtheria viral hepatitis)

Boiling of milk

Ancient method. Disadvantages are boiling kills useful lactic acid bacteria, destroys vitamin B and C and enzymes, proteins are coagulated

Pasteurization : It is the simplest, safest and the cheapest method of rendering milk safe

The heating of milk to such temperatures and for such periods of times as are required to destroy any pathogens that may be present by causing minimal changes in the composition, flavour and nutritive value (WHO).

Advantages

1. It destroys only the harmful pathogenic bacteria
2. Vitamins are not destroyed
3. It causes only minimal changes in the protein and sugar

Methods

- a) Holder method
- b) HTST method

- c) UHT method

Phosphatase test

This test is used to find out if the milk has been properly pasteurized or not

Meat Hygiene

Meat can be a source of infection if it is bad or unwholesome. Signs of good meat are - it should not be pale pink or deep purple, it should be firm and elastic to touch and order should be agreeable. Meat born diseases are Tinea solium, anthrax, tuberculosis, food poisoning, actinomycosis.

Meat inspection

The animals to be slaughtered are first examined by qualified veterinary surgeon. (antemortum examination) to exclude disease and sick animal . A second examination is carried out soon after slaughter (postmortum examination) to exclude disease like infection of liver and lungs, hydatidosis, cysticercus bovis, tuberculosis etc

Fish

Signs of fresh fish are it must be in a state of stiffness, the gills must be bright, the eyes must be clear and prominent

Eggs

Freshness of eggs may be tested by

- A) Candling - When a strong light is projected the egg must appear transparent
- B) Floating in saline water - fresh egg sink in 10% salt solution

Food born diseases

A disease, common usually either infectious or toxic in nature, caused by agents that enter the body through the ingestion of food.

- a) Food born intoxication
 - 1) Due to naturally occurring toxin : eg: Lathyrism
 - 2) Due to toxin produced by certain bacteria : eg : Botulism
 - 3) Due to toxin produced by certain fungi : eg : Aflatoxim
 - 4) Food born chemical poisoning : eg : Heavy metals (mercury usually in fish)
- b) Food born infectious
 - 1) Bacterial disease : eg : Typhoid

- 2) Viral disease : eg : Viral hepatitis , gastro enteritis
- 3) Parasite : eg: Amoebiasis

Sanitation of eating places

The following minimum standards have been suggested for restaurant and eating houses in India under the model public health act

- 1) Location : It shall not be near any accumulation of filth , open drain , manual pits and other sources of nuisance
- 2) Floor : It should be higher than the adjoining land made with impervious material and easy to keep clean
- 3) Room : Shall not be less than 100sq.feet and provide accommodation for a maximum of 10 persons
- 4) Kitchen : Floor to be impervious smooth non slippery and easy to keep clean , doors and windows should be rat proof , fly proof and self closing type
- 5) Separate room should be provided for cooked food
- 6) Perishable and non perishable article should be kept separately in rat proof and vermin proof space
- 7) Furniture should be reasonably strong and easy to keep clean and dry
- 8) Refuse should be collected in covered , impervious bins and disposed off twice a day
- 9) There should be an independent , adequate , continuous and safe water supply
- 10) Washing facility : cleaning of utensils and crockery to be done in hot water and followed by disinfect

DISPOSAL OF WASTE

Refuse disposal

Refuse is discarded waste matter. Accumulation of refuse in man's environment is a health hazard because 1) refuse decomposes and favours fly breeding 2) it attracts rat and vermin 3) possibility of water and soil pollution 4) pathogenic organisms may transmit from refuse to man's food through flies and dust 5) Presence unsightly appearance and are a nuisance from bad odour

Methods of refuse disposal

- a) Incineration or Burning: it is the method of choice where suitable land is not available. Hospital refuse is best disposed of by incineration

- b) **Dumping:** Refuse dump in low line area mainly as an easy method of disposal of dry method. Due to bacterial action refuse decreases considerably in volume and is converted gradually in to humus.
- c) **Controlled tipping or sanitary land fill:** It is the most satisfactory method of refuse disposal where suitable land is available. It differs from ordinary dumping in that material is placed in a trench or other prepared area adequately compact and covered earth at the end of the working day. In modified sanitary land fill the compaction and covering are accomplish once or twice in a week.
- d) **Composting:** It is a process of nature where by organic matter breaks down under bacterial action resulting in the formation of humus like material called compost.
- e) **Manure pits:** The problem of refuse disposal in rural areas can be solved by digging, manure pits by the individual house holders and covered with earth after each waste dumping. Two such pits will be needed, when one is closed other one will be use. This method is effective and relatively simple in rural areas.
- f) **Burial:** This method is suitable for small camps . At the end of each day the refuse is covered with earth.

Excreta disposal

Human excreta are a source of infection. So it must be properly removed and disposed in a hygienic manner. The main health hazards are soil pollution, water pollution, contamination of food and fly breeding. The disease associated with improper excreta disposal are typhoid and paratyphoid fever, diarrhoea and dysentery, worm infestation, cholera, viral hepatitis etc

Methods of excreta disposal

- 1) Rural areas
 - a) Service type of latrine (bucket latrine)
 - b) Non service type (sanitary latrine eg : bore hole latrine, dug well, water seal type of latrine, septic tank, shallow trench latrine , deep trench latrine)
- 2) Sewered areas (water carriage systems and sewage treatment)

Sanitary latrine

Sanitary latrine is one in which excreta should not pollute the ground or surface

water, soil, faeces should not be exposed to flies, rodents and animals and excreta should not create public nuisance

Water seal latrine (PRAI type and RCA type)

Septic Tank

Septic tank is a sanitary installation for purification of human excreta

Control of mosquitoes, flies, rodents.

Of the numerous arthropods some of them cause diseases. Medical entomology is the study of arthropods. Arthropods of medical importance are mosquitoes, housefly, human louse, rat fleas, ticks, mites and cyclops.

Mosquitoes

Main types of Mosquitoes are Anopheles (malaria), Culex (filaria, encephalitis, Aedes (yellow fever, dengue fever, haemorrhagic fever) and Mansonods (filaria)

Control of mosquitoes

- a) Antilarval measures (elimination of breeding places , application of oil , paries green , use of synthetic insecticide and biological control)
- b) Anti adult measures (use of residual insecticides)
- c) Use of personal protective measures (use of mosquito net, bat, application of oil over the body, environmental hygiene)

House fly

House fly is the commonest and most familiar of all insects and is regarded as an index of insanitation. House fly mainly transmit diseases through vomitus, defecation and mechanically. Main fly born diseases are diarrhoea, dysentery, cholera, typhoid, conjunctivitis, trachoma and amoebiasis

Fly control measures

- a) Improvement of environmental sanitation(stop open air defecation, disposal of human and animal excreta in sanitary manner, proper storage of garbage and kitchen waste and its safe disposal ,general improvement of sanitation)
- b) Use of insecticides, fly papers
- c) Protection against flies (screening of house, hospital, fish and meat market)
- d) Health education to the public

Itch mite

Itch mite (*Sarcoptes scabiei*) Itch mite is a small arthropod which breeds in the human skin and causes scabies. Scabies is a familiar disease; it's characterized by terrible itching which is worse at night. Scabies is best controlled by treating all members by treating all members of the family

RODENTS

Rodents transmit disease directly through rat bites (rat bite fever), contamination of food or water (leptospirosis salmonellosis) and some through rat fleas (plague, typhus)

Rodent control measures

- a) Trapping
- b) Use of rat poison
- c) Fumigation
- d) Improvement of environmental sanitation (proper storage of food stuffs, proper collection and disposal of garbage, construction of rat proof building, elimination of rat burrows by blocking them with concrete)

Practical Activities

1. Preparation of chart on Environmental Hygiene
2. Health talk on Environmental Hygiene
3. Preparation of Model of Sanitary Well
4. Chlorination of well
5. Health talk on food hygiene
6. Field Visit to water purification plant
7. Field visit to restaurant
8. Field visit to milk processing plant

Assessment Activities

- 1 Report of visit to water treatment plant
- 2 Preparation of flowchart on purification of water
- 3 Preparation of a poster on food hygiene

- 4 Report of visit to a restaurant
- 5 Report of visit to milk processing plant
- 6 Preparation a booklet on waste disposal
- 7 Assignment on control of mosquitoes, flies and rodents

TE Questions

1. Eyes are the windows of learning. Explain the care of eyes.
2. An example of a Common dental problem is _____
3. Science of health, which includes all the factors contributing to the healthful living is called _____
4. A sanitary well is intended to supply safe and wholesome water. Describe the criteria for the construction of sanitary wells.
5. The purpose of water treatment is to produce water that is safe and wholesome. Explain the steps involved in the purification of water by rapid sand filter

UNIT NO: 4.3 : NUTRITION

Introduction

Food provides the energy and nutrients you need to be healthy. Nutrients include proteins, carbohydrates, fats, vitamins, minerals, and water. Healthy eating is not hard. The key is to eat a variety of foods, including vegetables, fruits, and whole-grain products, eat lean meats, poultry, fish, beans, and low-fat dairy products, drink lots of water and limit salt, sugar, alcohol, saturated fat, and trans fat in your diet. Nutrition is concerned primarily with the part played by nutrients in body growth, development and maintenance.

Learning Outcomes

The Learner:

- Define nutrition
- Relates nutrition and health
- Explains the functions of food
- Enlist the food types
- Describes about the constituents of food
- Explains the balanced diet
- Describe the nutritional problems
- Describes the community nutritional programmes

Nutrition

Nutrition may be defined as the science of food and its relationship to health.

The word nutrient or food factor is used for specific dietary constituents such as proteins, vitamins and minerals.

Dietetics the practical application of the principles of nutrition; it includes the planning of meals for the well and the sick.

Good nutrition means maintaining a nutritional status that enables us to grow well and enjoy good health.

Relation of nutrition to health

Good nutrition is a basic component of health. The relation of nutrition to health may be seen from the following view points:

1. Growth and development

Good nutrition is essential for the attainment of normal growth and development. Not only physical growth and development, but also the intellectual development, learning and behaviour are affected by malnutrition.

2. Specific deficiency

Malnutrition is directly responsible for certain specific nutritional deficiency diseases. The commonly reported ones in India are kwashiorkor, marasmus, blindness due to vitamin A deficiency, anaemia, beriberi, goitre, etc. Good nutrition therefore is essential for the prevention of specific nutritional deficiency diseases and promotion of health.

3. Resistance to infection

Malnutrition predisposes to infections like tuberculosis. It also influences the course and out-come of many a clinical disorder. Infection, in turn, may aggravate malnutrition by affecting the food intake, absorption and metabolism.

4. Mortality and morbidity

The indirect effects of malnutrition on the community are even more striking - a high general death rate, high infant mortality rate, high sickness rate and a lower Expectation of life. Over-nutrition, which is another form of malnutrition, is responsible for obesity, diabetes, hypertension, cardiovascular and renal disease, disorders of the liver and gall bladder.

Functions of food

The main functions of food are:-

1. Provision of energy
2. Body building and repair
3. Maintenance and regulation of tissue functions.

Classification of foods

There are many ways of classifying foods:

1. Classification by origin
 1. Foods of animal origin
 2. Foods of vegetable origin
2. Classification by chemical composition

1. Proteins
2. Fats
3. Carbohydrates
4. Vitamins
5. Minerals
3. Classification by predominant function
 1. Body-building foods, e.g., milk, meat, poultry, fish, eggs, pulses, ground-nuts, etc.
 2. Energy-giving foods, e.g., cereals, sugars, roots and tubers, fats and oils.
 3. Protective foods, e.g., vegetables, fruits, milk.
 4. Classification by nutritive value
 1. Cereals and millets
 2. Pulses (legumes)
 3. Vegetables
 4. Nuts and oilseeds
 5. Fruits
 6. Animal goods
 7. Fats and oils
 8. Sugar and jiggery
 9. Condiments and spices
 10. Miscellaneous foods

Constituents of Food

Constituents of food are Proteins, fat, carbohydrates, Vitamins, Minerals and water

Proteins

Proteins are composed of carbon, hydrogen, oxygen, nitrogen and sulphur in varying amounts. Proteins are made up of simpler substances, called amino acids. These are the building blocks of protein.

Some 22 amino acids are stated to be needed by the human body, out of which eight are called “essential”. The essential amino acids are: (1) Isoleucine (2) leucine (3) lysine (4) methionine (5) phenylalanine (6) threonine (7) tryptophane; and (8)

valine. These are called “essential” because the body cannot synthesize them in sufficient quantity, and therefore they must be obtained from the food we eat.

Functions

Proteins are needed by the body: -

1. For growth and development: They furnish the building material, i.e the amino acids from which the body proteins are synthesized.
2. For repair of body tissues and their maintenance: It has been shown that the body proteins are constantly being broken down; they have to be replaced for which fresh protein intake is required.
3. For synthesis of antibodies, enzymes and hormones: Antibodies, enzymes and hormones contain protein. The body requires protein to produce them.

Proteins can also furnish energy to the body, but generally the body depends for its energy on carbohydrates and fats rather than proteins.

Sources

There are two main dietary sources of protein: -

- (1) Animal sources: milk, eggs, meat, fish, etc.
- (2) Plant sources: Pulses, cereals, nuts, etc.

Effects of protein deficiency

The effects of protein deficiency may be summarized as below

During pregnancy: still birth, low birth weight, anaemia.

Infancy and early childhood: Marasmus, kwashiorkor, mental retardation, stunted growth and development

Adults : Loss of weight, underweight, poor musculature, anaemia, increased susceptibility to infection, frequent loose stools, general lethargy, incapacity to sustained work, delay in wound healing,

Cirrhosis of liver, oedema ascitis etc.

FATS

Fats are composed of carbon hydrogen, and oxygen. They are composed of smaller units, called fatty acids. Some fats such as groundnut oil, gingery oil are liquid at room temperature; some fats such- as ghee and butter are solid at room temperature. Fats are again classified into saturated and unsaturated fats. In general, animal fats are “saturated” fats; vegetable oils and fats- are “unsaturated” fats. Current researches indicate that excessive intake of saturated fats (i.e., animal fats) is harmful to the

body.

Functions

Fats serve the following functions

1. Dietary fat is a concentrated source of energy. One gram of fat supplies 9 calories of energy.
2. Fats are carriers of fat-soluble vitamins, e.g., vitamins A, D, E and K
3. Dietary fat supplies “essential fatty acids”.
4. The fat layer below the skin plays an important role in maintaining our body temperature.
5. Fats provide support for many organs in the body such as heart, kidney, intestine etc.
6. Foods containing fats are tasty.

Sources

Dietary fats are derived from two main sources - animal and vegetable sources.

1. Animal sources: These are ghee, butter, fat of meat, fish oils, etc.
2. Vegetable sources: These are various vegetable oils such as groundnut, gingely, mustard, cottonseed safflower (kardi) and coconut oil.

Fat requirements

In developed countries, dietary fats provide 30 to 40 per cent of total energy intake. The WHO Expert committee on Prevention of Coronary Heart Disease has recommended only 20 to 30 per cent of total dietary energy to be provided by fats. At least 50 per cent of fat intake should consist of vegetable oils rich in essential fatty acids. The Indian Council of Medical Research (1981) has recommended a daily intake of not more than 20 per cent of total energy intake to be provided by fats.

Fats and disease:

Excessive consumption of fats results in obesity, and diseases of blood vessels (atherosclerosis). There is high blood cholesterol which is deposited as plaques in the arterial walls; this predisposes to coronary artery disease. Deficiency of essential fatty acids is associated with, rough and dry skin or toad skin phrenoderma. The skin is lustreless, and is studded with horny follicles.

Carbohydrates

Carbohydrates are composed of carbon, hydrogen and oxygen. They are the cheapest

sources of energy. Indian diets are characterised by excessive amounts of carbohydrate, providing as much as 90 per cent of the required calories. In balanced diets, carbohydrates provide not more than 50 to 60 per cent of total calories.

Sources

There are three main sources of carbohydrate:

Starches: These are present in cereals (rice, wheat); roots and tubers (potatoes).

Sugars: (a) Monosaccharides: glucose, fructose, galactose. (b) Disaccharides: Sucrose, lactose, maltose.

Cellulose: This is the tough fibrous lining found in vegetables, fruits, cereal, etc. It is hard to digest and has no nutritive value. However, cellulose acts as roughage and prevents constipation.

VITAMINS

Vitamins are complex chemical substances. They are required by the body in very small amounts. They do not yield energy like fats or carbohydrates. They are vital for the very survival of man because they take part as catalysts in various body processes. They protect the body against ill health, infection and disease.

Some 13 vitamins are stated to be needed by the body. Since the body cannot manufacture vitamins (at least in sufficient quantity), they must be supplied through the diet. A well-balanced diet, in most instances, meets the daily requirement of vitamins needed by the body.

Classification

Vitamins are classified into two broad groups as below:

- (1) *Fat Soluble Vitamins:*
 - A) Vitamin A or retinol
 - B) Vitamin D
 - C) Vitamin E
 - D) Vitamin K
- (2) *Water Soluble Vitamins:*
 - a) Thiamine (Vitamin B₁)
 - b) Riboflavin (Vitamin B₂)
 - c) Nicotinic acid

- d) Pyridoxine (Vitamin B₆)
- e) Pantothenic acid
- f) Folic acid
- g) Vitamin B₁₂
- h) Ascorbic acid (Vitamin C)

MINERALS

The body contains about 24 minerals, all of which must be obtained from the foods we eat. Many of these are widely distributed in foodstuffs so that a well-balanced diet will supply them in the amounts needed by the body. Minerals may be classified into 2 broad groups:

Major minerals: These are calcium, phosphorus, sodium, etc.

Trace-elements: These are required in micro quantities, e.g. iodine, fluorine, zinc, cobalt, etc.

Functions

Formation of hard structures: Certain minerals, such as calcium, phosphorus and magnesium are required for the formation of hard structures, e.g., bones and teeth.

Physiological role: Some minerals are found in body fluids and play a physiological role and maintain osmotic pressure.

Specification: Some are required for a specific purpose, for example, iron is required for blood formation.

WATER

Water is a basic human requirement. More than 60 per cent of the human body weight is due to water.

Distribution

Water is distributed in 3 compartments:

1. Intercellular fluid – this account for about 50 per cent of body weight.
2. Interstitial fluid - this accounts for about 15 per cent of body weight, and
3. Blood - this accounts for about 5 per cent.

Sources

The human body derives water from two main sources - drinking water and food.

A small quantity of water (about 800 ml) is formed in the tissue as a result of metabolism.

Functions

1. Water is an essential constituent of many vital body fluids, e.g., blood, lymph, CSF.
2. It assists in the regulation of body temperature.
3. It helps in the transport of nutrients within the body.
4. It is important in building and repair of body tissues.
5. It is utilized in many body processes, e.g., digestion, absorption and elimination of body wastes. Besides these, water is needed for bathing, washing and various other activities.

Balanced diet

A good or adequate diet is known as balanced diet. A balanced diet yields daily nutrients in proper amount and proportion required by the body. A balanced diet must supply enough nutrients to the body for deriving energy and must supply protein for building up tissue in various parts of the body.

A balanced diet means getting the right types and amounts of foods and drinks to supply nutrition and energy for maintaining body cells, tissues, and organs, and for supporting normal growth and development.

A balanced diet provided quantitatively as well as qualitatively adequate amount of all the nutrients for maintenance of good health and efficiency. In a balanced diet, nearly 60 – 70% of the total calories is derived from carbohydrates, 15-20% from lipids and 10-15% from proteins. A balanced diet should be rich in Poly Unsaturated Fatty Acid (PUFA) and low in cholesterol. The diet should have variety of items from different sources: green leafy vegetables, fruits and fresh foods should be included liberally to meet the requirements of vitamins and minerals.

Nutritional problems

1. Low birth weight
2. Protein energy malnutrition
3. Xerophthalmia
4. Nutritional Anemia
5. Iodine deficiency disorders

6. Endemic fluorosis
7. Lathyrism

Community nutrition programmes

1. Vitamin A Prophylaxis programme

Under the programme for prophylaxis against blindness in children caused due to vitamin a deficiency every child has been provided prophylaxis against vitamin A deficiency in the form of oral 9 doses starting at 9 months with measles as first dose (1lac IU), then at 15 months a second dose (2lac IU), then every six months (2lac IU) till the age of 5 years. These doses are administered by Anganawadi workers under the supervision of ANM. The program has been implemented through RCH program.

2. Prophylaxis against nutritional anaemia

The programme was launched in 1970 to prevent nutritional anaemia in mothers and children. Under this programme, the expected and nursing mothers as well as acceptors of family planning are given one tablet of iron and folic acid containing 60 mg elementary iron which was raised to 100 mg elementary iron, however folic acid content remained same (0.5 mg of folic acid) and children in the age group of 1-5 years are given one tablet of iron containing 20 mg elementary iron (60 mg of ferrous sulphate and 0.1 mg of folic acid) daily for a period of 100 days.

3. Control of iodine deficiency disorders

The national goitre control programme was launched by the government of India in 1962 in conventional goitre belt in the Himalayan region with the objective of identification of the goitre endemic areas to supply iodized salt in the place of common salt and to assess the impact of goitre control measures over a period of time.

Later a major national programme the iodine deficiency disease control programme was launched in 1986 with the objective to replace the entire edible salt by iodide salt.

4. Special nutrition programme

The programme was launched in the country in 1970-71. It provides supplementary feeding of about 300 calories and 10 grams of protein to preschool children and about 500 calories and 25 grams of protein to expectant and nursing mothers for six days a week. This programme was operated under Minimum Need Programme. The programme was taken up in rural areas inhibited predominantly by lower socio-

economic groups in tribal and urban slums. Fund for nutrition component of ICDS programme is taken from the SNP budget.

5. Balwadi nutrition programmes

Fund for the supplementary feeding of Balwadi Nutrition programme is given by the Central Government which was launched in 1970-71 through voluntary organisations. It provides 300 calories and 10 grams of protein per child (3-5 years) per day for 270 days a year

6. ICDS programme

The Integrated Child Development Services (ICDS) Scheme was conceived in 1975 with an integrated delivery package of early childhood services so that their synergistic effect can be taken full advantage of. The Scheme aims to improve the nutritional and health status of vulnerable groups including pre-school children, pregnant women and nursing mothers through providing a package of services including supplementary nutrition, pre-school education, immunization, health check-up, referral services and nutrition & health education. In addition, the Scheme envisages effective convergence of inter-sectoral services in the anganwadi centres.

7. Mid day meal programme

The mid day meal programme (MDMP) is also known as School lunch programme. This programme is operational since 1961 throughout the country. The major objective of the programme is to attract more children for admission to schools and retain them so that literacy improvement of children could be brought about.

8. Mid day meal scheme

With a view to enhancing enrollment, retention and attendance and simultaneously improving nutritional levels among children, the National Programme of Nutritional Support to Primary Education (NP-NSPE) was launched as a Centrally Sponsored Scheme on 15th August 1995, initially in 2408 blocks in the country. By the year 1997-98 the NP-NSPE was introduced in all blocks of the country. It was further extended in 2002 to cover not only children in classes I-V of government, government aided and local body schools, but also children studying in EGS and AIE centres (Education Guarantee Scheme and Alternative and Innovative Education). Central Assistance under the scheme consisted of free supply of food grains @ 100 grams per child per school day, and subsidy for transportation of food grains up to a maximum of Rs.50 per quintal.

In September 2004 the scheme was revised to provide cooked mid day meal with

300 calories and 8-12 grams of protein to all children studying in classes I-V in Government and aided schools and EGS/AIE centers.

Practicals Activities

1. Preparation of model of nutrition plate
2. Preparation of model of Food Pyramid
3. Health talk on balanced diet
4. Preparation of poster on nutritional problems

Assessment Activities

- 1) Exhibition on different types of food
- 2) Picture album on constituents of food and its sources
- 3) Preparation of a food pyramid/food plate
- 4) Health talk on balanced diet
- 5) Poster preparation of nutritional problems
- 6) Seminar on community nutritional programmes

TE Questions

1. Vitamins are complex chemical substances by the body in very small amounts.
 - a. Enlist fat soluble vitamins
 - b. Disease caused by deficiency of Vitamin A
2. Good nutrition is a basic component of health.
 - a. Define nutrition
 - b. Explain the relation between nutrition and health.
3. Deficiency of Vitamin C causes _____

UNIT : 4.4

COMMUNICABLE AND NON COMMUNICABLE DISEASES

Introduction

A **disease** is any abnormal condition that causes a disruption in the functions of a body tissue, organ, or entire organism. Diseases are recognized by a specific set of symptoms. Think about the diseases you know: a cold, the flu, measles, cancer, stroke, or diabetes, just to name a few. These diseases all disrupt the body in very characteristic ways. Now think about what **causes** these conditions: viruses, bacteria, fungi, smoking, genetic defects, etc. There are countless diseases, each with its own unique and characteristic cause. But why can you **'catch'** some diseases but not others? This is due to the two different types of disease: communicable and non communicable. **Communicable diseases** are spread from person to person or from animal to person. The spread or transfer can happen through the air, through contact with contaminated surfaces, or through direct contact with blood, faeces, or other bodily fluids. Non communicable diseases are medical conditions that are not infectious and cannot be passed from one person or animal to another.

Learning out comes

The Learner:

- Describes the prevention and control of infectious diseases
- Describe the prevention and control of non communicable diseases
- Describes the mental health
- Describes the various aspects of alcoholism and drug dependence
- pence

Communicable Diseases

a) Bacterial

1. Diphtheria

Diphtheria is a highly infectious disease. This is produced by *Corynebacterium diphtheriae*. These bacteria remain in throat and produce powerful exotoxins which affect heart and nervous system. Disease usually attacks nose, throat and tonsils.

Epidemiological Factors

- Carrier of this disease may be old or new patient. Disease is transmitted through the secretions of patient's nose and throat and infected materials.

- Disease commonly occurs in children of 1 - 5 years.
- Disease spreads easily due to housing problems, dirt, cold weather and over-crowding.
- At present, diphtheria spreads as an epidemic in underdeveloped and developing countries where vaccination against diphtheria is not done properly.

Incubation Period: 7-14 days

Clinical Manifestations

Diphtheria affects tonsils, nose and throat. It is characterised by throat pain, difficulty in swallowing, restlessness and fever. A patch is found on the tonsil. It is white in the beginning but turns purple later and it becomes difficult to remove it. Lymph glands around neck are enlarged. Breathing difficulty, hoarseness of voice and severe irritating cough (croupy cough) can occur. Infection may spread into the respiratory tract and produce serious conditions.

Diagnostic Tests

Diphtheria can be diagnosed by signs and symptoms, observation of nose and throat and laboratory examination of nose and throat secretions. Resistance or non-resistance to the disease can be detected by Schick Test.

Management

- The disease should be detected as early as possible and 10,000 to 80,000 IU diphtherium antitoxin should be administered. This can be given intramuscularly or intravenously.
- The patient should be immediately isolated.
- Keep special watch on contacts.

Active vaccination is needed for protection against disease; hence children can be protected by vaccination.

Control of Diphtheria

1. Cases and control
 - a. Early detection
 - b. Isolation
2. Contacts – a. primary immunisation or booster dose was received within 2 years, no further action needed b. primary immunisation or booster dose was received before 2 years, only a booster dose of diphtheria toxoid need to be given c. non immunised close contact should receive prophylactic penicillin or

erythromycin.

3. Community - Active immunisation with diphtheria toxoid.

2. Whooping Cough/Pertussis

This is highly infectious disease found among children. It produces attack of a special type of cough, which ends in a special voice (whoop) and associated with long noisy inspiration. This disease is caused by *Bordetella pertussis* bacilli.

Epidemiological Factors

1. This disease spreads like an endemic in the world.
2. Disease commonly occurs in infants and small children. More than half of the patients are children (Non - vaccinated) of two years age.
3. One attack of the disease produces sufficient resistance.
4. This disease occurs due to direct droplet infections. Clothes or other materials polluted by respiratory secretions transmit the disease indirectly.
5. This disease spreads in winter and more common in lower economic group.
6. Because of vaccination, the attack of this disease has reduced remarkably and mortality also has come down.

Incubation Period: 7 to 14 days

Clinical Manifestations

Whooping cough has three successive stages, each of which is nearly of 2 weeks. Their signs are as following:

First or catarrhal stage: Sneezing, watering from eyes and nose, mild fever, loss of appetite, hacking and nocturnal cough are found in this stage.

Second or paroxysmal stage: In this stage, bouts (attacks) of cough occur and each bout ends in a specific inspirational noise resembling *kho-kho*. Because of mucous blockage vomiting might occur. With cough the child's face turns red.

Tertiary or convalescent stage: Bouts of cough and vomiting becomes less during this period. But for months, even ordinary respiratory infection can bring about bouts of cough.

Diagnostic Test

The disease can be identified with the typical types of cough and by examining nose or throat swabs. Sputum culture can show the growth of organism *B pertussis*.

Management

- Admit the patient in the hospital. Provide antibiotics, medicines for cough, oxygen treatment, plenty of fluids and nourishment.
- Provide isolation (Respiratory type)
- Provide quiet environment that will not accelerate cough.

Provide active protection by vaccination according to the Immunization schedule.

Control of Whooping Cough

1. Case and contacts
 - i) Cases – early diagnosis, isolation and treatment
 - ii) Contacts –a. infants and children kept away from cases. b. Prophylactic antibiotic for known contacts
2. Active immunisation

The vaccine is usually administered in the national childhood immunisation programme as combined DPT or pentavalent vaccine.

3. Tetanus

Tetanus is an acute and serious infectious disease which is caused by *Clostridium tetani*. This disease is more common in developing countries. Because of the hardness of muscles of neck and face and difficulty in opening the mouth, it is also called Lockjaw. Tetanus occurring in newborn is called tetanus neonatorum.

Epidemiological Factors

When tetanus occurs in unvaccinated persons, 60% of patients die. Similarly newborn infants attacked by tetanus have higher mortality rate.

- a. The disease is transmitted when cuts, wounds, surgical incision, delivery, menstrual flow, running ears, burns etc. come in contact with contaminated materials (clothes, dressing, instruments etc.) and through them clostridium tetani enters the body.
- b. Soil, dust, cow dung and dirt are shelters for the bacteria and these are important sources of infection.
- c. Clostridium tetani is an anaerobic, spore forming bacteria and produces external toxins. Their toxins enter the blood circulation and lymphatic system and affects central nervous system.

- d. Infection spreads more in unhygienic environment, dirt and where aseptic precautions are not taken during the delivery.
- e. Rural population is more affected than urban dwellers.
- f. With increasing rate of vaccination, the attack of the disease is decreasing day by day.

Incubation Period: 3 to 21 days but this may vary from 1 day to month also. In severe type of tetanus, it may be only two days.

Clinical Manifestations

According to the cause of the diseases tetanus may be · traumatic · puerperal · octogenic or · idiopathic.

If tetanus is localised, muscles surrounding the wound show spasm and increased tone. If tetanus is generalised; in the beginning stages, there will be fever, tachycardia, sweating all over the body, restlessness, irritability and severe spasm in the muscles. Patient gets repeated convulsions. Because of the involuntary contractions of the muscles, severe pain, difficulty in operating the mouth (Lockjaw), particular type of facial appearance and bowing of the back (opisthotonos, a typical characteristic of tetanus appear. During convulsions, patient may suffer from breathing difficulty and cyanosis and even immediate death may occur. Tetanus neonatorum is highly fatal for newborns.

Diagnostic Tests

The disease can be diagnosed by signs and symptoms and by identifying injury or other source of infection.

Management

As soon as the disease is diagnosed, tetanus immunoglobulin or tetanus antitoxin should be administered. In addition to this, the patient should be given muscle relaxants, antibiotics sedatives and anticonvulsant drugs. In addition to general and symptomatic nursing the respiratory tract should be kept clean and unobstructed. Patient should be isolated in a quiet place.

Prevention and control:

- children should be provided active immunity through pentavalent vaccination according to immunization schedule.
- pregnant women should be given two injections to tetanus toxoid (continuously in two successive months after the detection of pregnancy).

- in unvaccinated persons, if there are wounds or open injuries, tetanus immunoglobulin should be given within 72 hours.
- those people who are not given tetanus toxoid for five years a booster dose of tetanus toxoid should be given. this dose should be repeated every ten years.
- any open wound should be washed with 3% hydrogen peroxide (h₂o₂) and dressed with clean dressing.
- aseptic technique should be used in surgical procedures and delivery. personal hygiene also should be taken care of.

4. Tuberculosis

Tuberculosis is a disease occurs due to a bacterium called Mycobacterium tuberculosis. Tuberculosis affects lungs mainly (80%) but it can affect other parts of the body also.

Epidemiological Factors

- Tuberculosis is an infectious disease. Hence it can affect persons of all ages and both sexes, rich, or, poor, rural or urban. Any part of the body may be affected by the disease.
- TB spreads by droplet infection. Bacteria spreads in the atmosphere from the cough, sputum and sneezing of the patient and enters into the body of a healthy person through respiration.
- Tuberculosis which affects the animals is called Bovine tuberculosis.
- According to an estimate a serious TB patient infects 10-15 healthy people annually.
- TB spreads more in the lower social and economic class due to illiteracy, crowded environment, unhygienic habits, etc.
- India accounts for nearly one-third of the Global TB burden. .

Incubation Period: 4 to 8 weeks, in some cases it may be more.

Clinical Manifestations

Pulmonary Tuberculosis

- Cough for 3 weeks or more
- Fever, increase in evening temperature, sweating in the night
- Weight loss, loss of appetite

- Fatigue, chest pain, breathing difficulty
- Blood with sputum (haemoptysis)

TB of Other Organs

TB can affect intestines, brain, bones, joints, skin, lymph glands or other tissues of the body. Some general signs & symptoms of this stage are:

Weight loss, fever, night sweating, specific signs in the affected organs like gland enlargement, swelling in the joints, pain in the affected organ etc.

Diagnostic Test

- Signs and symptoms of the patient and physical examination.
- Microscopic examination of sputum (for acid fast bacilli), chest X-ray.
- Tuberculin test or Mantoux test.
- Tissue Biopsy

Management

The basic treatment of TB are (i) Drug (ii) Diet and (iii) Proper rest

Proper use of antitubercular drugs finishes off the infectiousness of the disease within few weeks and the patient can be alright quickly. TB can be controlled to a great extent through chemotherapy.

Protection and control of TB:

- Identify the disease as early as possible. This includes sputum examination of all suspected cases for the presence of acid base bacilli (AFB) and chest X-ray.
- Follow up treatment: TB patients often neglect medicines when they feel little better. Hence community health nurse and the health workers should pay special attention to those patients undergoing TB treatment.
- In order to control the disease through chemotherapy, patient and his family's co-operation is necessary.
- BCG Vaccination: According to the National Immunisation schedule, infants are vaccinated against TB by BCG vaccine. The vaccination can be given immediately after birth
- During contagious period, the patient should be kept in clean airy room. Outside the room, patient should use mask.

- Patient 'sputum, sneeze and such secretions should be properly disposed off immediately.
- Proper rest and diet are important in recovery. Hence along with chemotherapy, these should also be taken care of. Symptomatic treatment should be given for fever, cough, bodyache etc.
- Assistance of involuntary organisations is important in TB control. Also ensure proper implementation of national programme. Special programme should be made for patients suffering from multidrug resistant tuberculosis (MDRTB). The treatment and management of MDRTB is very difficult.
- Regular follow up of the patient's rehabilitation programme should also be made.
- Extensive health education is necessary to save people from TB.

Medicines for TB

- Bacteriological Drugs
- Streptomycin
- Rifampicin (RMP)
- INH
- Pyrazinamide
- Bacteriostatic Drugs
- Ethambutol
- Thiocetazone

Tuberculosis and DOTS

In order to control the spread of tuberculosis and deaths due to TB and also to avoid the development of multidrug resistance, WHO has developed DOTS or Directly Observed Treatment Shortcourse.

Under DOTS, TB patients are given short course chemotherapy for a definite term under the supervision of medical persons or social workers.

World TB Day - 24th March

5. Typhoid

Typhoid is a highly infectious disease found mainly in developing countries. This is caused by bacillus *Salmonella Typhi*. This disease is also called enteric fever, in which typhoid and paratyphoid both types of fever are included.

Epidemiological Factors

- This disease is found in almost all the countries of the world; but its intensity is more in underdeveloped and developing countries.
- A person suffering from disease is the carrier. Polluted water, water, food, fingers and flies play an important part in spreading the disease. Hence, the transmission of disease is by faecal-oral and urinary-oral contamination.
- Disease is found more among males as compared to females. Similarly 5-20 years age group is affected more often.
- On time attack, produce resistance to the disease, yet recurrence may be found.
- Contaminated water, vegetables irrigated by sewage or polluted water, lack of personal hygiene, crowded Kacha houses, urination and defecation in open places and unhealthy habits regarding food etc. are mainly responsible for spread of the disease.

Incubation Period: May be from 3 days to 3 weeks

Clinical Manifestations

Most important sign of the disease is fever of long duration and of a special nature and relative lower pulse rate (relative bradycardia). Along with fever; headache, restlessness, loss of appetite, sleeplessness, abdominal pain, constipation or diarrhoea may be found. Pink rashes may be found on chest. Along with this, swelling occurs in the lymph glands of small intestine. Fever may continue for 3 weeks. If not treated in the early stages, symptoms of toxicity develop. Because of complications and delirium, the patient may even die.

Diagnostic Tests

- Case history, physical examination and symptoms
- Widal test of blood to find out the presence of typhoid bacillus

Management

Typhoid is usually treated with chloromycetin or chloromphenicol. Along with this, antipyretic and other symptomatic treatment is given. At present, instead of chloromycetin, co-trimoxazole and ciprofloxacin are used in the treatment of typhoid. Along with this, nursing care is very important.

It has been observed that typhoid patients are developing resistant against the traditional drugs.

Prevention and control

- a. Early diagnosis
- b. Enteric isolation
- c. Find out carriers and treat them properly
- d. Purify water and ensure safe water supply
- e. Proper disposal of urine and stools
- f. Proper protection and preservation of food and other edibles.
- g. Take antityphoid vaccine for protection

6. Leprosy or Hansen's Disease

Leprosy is the oldest known disease. This is a worldwide long term infection. Leprosy is produced by *Mycobacterium lepara*. This disease affects peripheral nervous system, skin muscles, eyes, bones, testes and internal organs. Loss of fingers and toes or permanent handicaps produce a difficult situation of physical and mental disability.

Epidemiological Factors

- Leprosy is identified mainly through signs and symptoms. Hence many latent or less affected persons are not counted.
- This disease is more prevalent in underdeveloped or developing nations.
- As compared to women, more men suffer from the disease. The probability of attack is more in children.
- The transmission of the disease is mainly through indirect contact. Droplet infection is an important source of spreading the disease.
- Patients other than open or positive are not infective. Bacteria come out of the skin, nose, throat and wounds of an open case, which directly or indirectly (by coming in contact with infected material) spreads the disease.
- Humidity, housing problem, overcrowding lack of air and ventilation and neglect of personal hygiene are responsible for spread of the disease.
- Because of the infectious nature of the disease and also due to the feeling of incurability, people hide the disease in the beginning. Due to this, the control of

the disease is delayed whereas with timely and continuous treatment, leprosy can be cured.

Incubation Period: 3-5 years

Clinical Manifestations

The disease begins with unspecified symptoms (like headache, restlessness, mental tension etc.)

- Main diagnostic signs of leprosy are the following.
- Marks or hypopigmented patches on skin.
- Total or partial loss of sensation in leprosy affected parts.
- The eyebrow become thick and prominent and their hair start falling.
- Nerves become thick.
- Acid fast bacilli are found in skin and nasal smears.
- Characteristics of severe conditions are: tumours on the skin of face and ears, nasal depression, loss of fingers and toes, or other loss or deformities etc.

Classification of Leprosy

Leprosy can be placed in 5 grades:

1. Indeterminate
2. Tuberculoid
3. Borderline
4. Lepromatous
5. Pure neuritic

Diagnostic Tests

- Complete physical examination of the patient and case history.
- Laboratory test of secretions of nose, throat and skin of the patient (for the presence of mycobacterium leprae)
- Histamine test
- Serum examination
- Biopsy examination

Management

- Detect the disease in the initial stage and keep watch over other suscep-

tible patients.

- Treat the patients with Multi-Drug Therapy (MDT). Pay special attention to the regularity and continuity of the treatment.
- Take care of localised wounds.
- Rehabilitation of cured person
- Provide health education
- Provide shelter and social support provide moral support
- Provide follow-up service to the patients. Break the mode of transmission Proper disposals of infected materials providing general care, educate the community, etc.

Control of Leprosy

1. Case detection

The first step in a leprosy control programme is early detection of all cases in the community. This may be done by contact survey, group survey or mass survey.

2. Chemotherapy

There has been a change in the strategy of leprosy control from dapsone (DDS) monotherapy to multi-drug therapy due to widespread emergence of DDS-resistant strains of *M. leprae*.

3. Chemoprophylaxis

DDS prophylaxis may be tried in individual cases, especially healthy children living in contact with leprosy patients. The protective value has been reported to be between 35 and 40 per cent. The WHO has not recommended mass chemoprophylaxis in leprosy.

4. BCG vaccination

The value of BCG vaccination in leprosy control continues to be unclear.

5. Rehabilitation

Rehabilitation is restoration of all treated cases physically, mentally and socially. This is an important aspect of leprosy control.

6. Health education

No antileprosy campaign is complete without health education. The patient, the family and the community should be educated on the need for regular treatment, protection of children and family planning.

7. **Meningococcal meningitis (cerebro spinal fever)**

It is an acute communicable disease caused by *Neisseria meningitidis* . It usually begins with intense head ache, vomiting and stiff neck and progress to coma within a few hours

Epidemiological factors

Causative agent is *N. Meningitidis*. The organism is found in the nasopharynx of cases and carriers .This is predominantly a disease of the children and young adults of both sexes. Disease out breaks occurs more frequently in the dry and cold months of the year

Disease spread mainly by droplet infection. The portal of entry is the nasopharynx .Incubation period is usually 3-4 days

Prevention and control

- a. Treatment with antibiotics (penicillin is the drug of choice)
- b. More powerful antibiotics (Rifampicin) are needed to eradicate the carrier stage
- c. Chemoprophylaxis has been suggested for close contacts.
- d. Immunization: Effective vaccines are available
- e. Improved housing and prevention of overcrowding are long term measures

8. **Leptospirosis (Weil's disease)**

It is a disease transmissible from animal to man. It is caused by serotype of leptospira (*Spirocheates*) and its severity ranges from mild febrile illness to severe , and sometimes fatal .

Epidemiological factors

- a) Agent: caused by leptospira (*spirocheates*)
- b) Source of infection: *Leptospira* are excreted in the urine of infected animal.
- c) It affects all age groups
- d) Occupation: Human infections usually due to occupational exposure to the urine of infected animal. eg: Agricultural and live stock farmers , workers in the rice field , sugar cane field , meat and animal handlers , veterinarians.

Mode of transmission: Direct contact: *Leptospira* can enter the body through skin abrasions or through intact mucus membrane by direct contact with urine or tissue of infected animal.

Indirect contact: Through the contact of the broken skin with soil, water or vegetables contaminated by urine of infected animals or through ingestion of food or water contaminated with leptospira

Droplet infection: Infection may also occur through inhalation as when milking infected cows or goats by breathing air polluted with droplets of urine

Incubation period is usually 10 days

Control

- a) Antibiotics : Penicillin is the drug of choice
- b) Environmental measures: This includes preventing exposure to potentially contaminated water, reducing contamination by rodent control and protection of workers in hazardous occupation. Measures to be taken to control rodents, proper disposal of waste and health education.

9. Cholera

Cholera is a very highly infectious disease. This is produced by consumption of food and water infected by the bacilli *Vibrio cholerae*. This disease causes excessive diarrhoea, abdominal cramps, vomiting, dehydration, severe fatigue and retention of urine. If dehydration is not treated in time the probability of patient's death increases due to shock.

Epidemiological Factors

- This disease is worldwide. The disease commonly spreads as an endemic and the epidemic is influenced by environmental conditions.
- This disease is commonly caused by ElTor bio types of vibrio cholera group.
- The person affected by disease acts as carrier. His stool and vomitus contaminate the water and food through different media and by consuming them cholera spreads. Carrier may be incubative, treated, healthy or chronic.
- The chances of cholera are more in community foods as in marriages, conferences, functions, etc., because the conditions for spreading the infection exist more on these occasions.
- The disease spreads more in lower social class and in environment of poverty and unhygienic conditions.
- Like other diarrhoeal diseases, contamination of food and drinking water, vomitus, flies and faecal - oral contamination play important role in the spread of cholera.

Incubation Period: A few hours to 5 days

Clinical Manifestations

The initial symptoms of cholera are like other diarrhoeal diseases, but the seriousness of the disease depends upon the intensity and duration of dehydration. The specific stages of cholera are the following:

Diarrhoeal stage: The patient passes many loose motions which are almost painless, watery (rice water stool) and patient vomits too.

Dehydration stage: Because of dehydration the patient may become unconscious and go into shock. Sunken eyes, sunken cheeks, dry skin, sub normal temperature, feeble or absence of pulse, restlessness, spasm, acidosis, fast and superficial breathing, low blood pressure, absence of urine, are the characteristics of this stage. If dehydration is not treated, patient can die.

Convalescence stage: If patient is treated for dehydration, or if he escapes, within 3-4 days he becomes alright.

Diagnostic Test

- Stool Test
- Rectal swab examination
- Get sample of contaminated food or water and test it immediately
- Serum examination
- Signs and symptoms of the patient
- Physical examination

Management

As soon as the disease is detected, patient is to be isolated and treatment should be started for dehydration, along with diarrhoea and vomiting. The patient should be saved from dehydration either by oral rehydration or by intravenous fluids. Other symptoms are also to be treated timely.

Control and prevention

- Detect cholera early by examining all cases of diarrhoea.
- Notification: Inform all concerning levels immediately about the disease.
- Establish treatment centres.
- Arrange for mobile treatment team.

- Provide Oral Rehydration Therapy.
- Send serious patients to the hospital.
- Investigate the cause of the disease.
- Improve cleanliness and personal hygiene. Mainly arrange for safe drinking water and cleanliness of food.
- Dispose of urine, stool and vomitus properly and safely.
- Cholera vaccine
- Adopt health education

B) VIRAL

1. Chicken Pox (Varicella)

This is an acute infectious disease. It is found in both endemic and epidemic forms. This disease is caused by Varicella zoster virus which is also called human (alpha) herpes virus.

Epidemiological Factors

- The source of infection of this disease is person infected by chickenpox.
- This disease is more commonly found in winter season and occurs more in children than in adults.
- One attack of the disease produces sufficient resistance power for long period.
- Disease is spread mostly through personal contact or droplet infection.

Incubation Period: 7-21 days

Clinical Manifestations

At the onset of the disease, low or moderate fever, feeling cold, restlessness, backache etc. are complained. This is the pre-eruptive stage. After this, rashes are found on the body which are less on face and hands and more on the body. Different stages of rashes (macular, papular, vesicular and scab) found together; is a special characteristic of the diseases. Eruptive phase remains for 4-7 days. After that the scales come out and the wound is healed.

Diagnostic Tests

Signs and symptoms, the typical spread of rashes and the appearance of different stages of rashes together are helpful in making diagnosis.

Complications

Usually chickenpox does not produce many complications but in certain cases, it may cause pneumonia, bleeding, encephalitis and serious diseases of foetus in case of pregnancy.

Management

- Provide symptomatic treatment.
- Disinfect materials contaminated by nasal and throat secretions and wound properly.

Control

- Notification and isolation of cases
- Antiviral compounds like acyclovir

Prevention

- Provide Varizella Zoster immunoglobulin (VZIG) for susceptible patients.
- Vaccine - live attenuated varicella virus vaccine is recommended

2. Measles / Rubeola

This is a childhood infectious disease. Rubeola is produced by a virus spreading in the air.

The disease is known as rubeola which means; red spots. This disease can be identified by cold, cough and skin rashes.

Epidemiological Factors

- This disease is found in the entire world, but deaths due to this are more in developing and underdeveloped countries.
- This disease is found more among children. Malnourished children become more victim.
- Paramyxovirus is responsible for this disease. This can survive for long periods by making human body a shelter/reservoir.
- Infected persons are the important links in spreading the disease. Secretions of nose, throat and respiratory system of such people, spread the disease. Portal of entry of the infection is also respiratory tract.
- An attack of measles, produce resistance for a long time.
- This disease can occur in any season but in India, it spreads more between January to April.

- The best practical protection against the disease is vaccination.

Incubation Period: 10-14 days

Clinical Manifestations

In the beginning stage, the patient complains of fever, cough, sneezing and watering from eyes and nose. The eyes may become red and sensitive to light; photophobia occurs. Before rashes appear the body Koplik's spots appear on the mucous membrane of mouth. After this the eruptive phase starts in which special types of maculopapular rashes appear on face, neck and other parts of the body. If there are no complications, the patient becomes alright within a week. Fever disappears and the marks of the rashes completely disappear within two months.

Diagnostic Tests

By observing the signs and symptoms and Koplik's spots the diseases can be diagnosed.

Prevention

- Vaccination against measles.
- During incubation period, immunoglobulin may be administered to protect the patient from disease.
- If rashes appear, isolate the patient for some time.
- Before it becomes an epidemic, massive vaccination should be done immediately.

3. German Measles/Rubella

This is a short term severe infection of childhood. It can be identified by low fever and maculopapular rashes on the skin.

Epidemiological Factors

- This disease is produced by rubella virus in which the source of infection is a patient suffering from the disease. The disease spreads through personal contact.
- Rubella is less infectious than measles.
- This disease is more commonly found among children 3-10 age group.
- There is less probability of recurrence after one attack.
- Infection in pregnant mothers may result in abnormal or deformed children.
- Disease spreads more during winter.

Incubation Period: 14 to 21 days

Clinical Manifestation

This infection starts with low fever, throat pain and cough. Swelling occurs in the lymph glands, conjunctivitis also may occur. On the first or second day of the fever, small pinkish rashes appear on the skin. Rashes may be in the macular or papular stage and may get gradually dried up and disappear after 2-3 days.

Diagnostic Test

The disease is diagnosed either by signs and symptoms or by serum examination. Throat secretion may be also tested.

Prevention

Rubella vaccine - This vaccine is available along with measles and mumps vaccine (MMR) also.

4. Mumps (Infectious Parotiditis)

Mumps is a highly infectious disease. This occurs due to the infection of Myxovirus parotiditis virus of Paramyxo virus group. This disease is also called as infective parotiditis because parotic gland inflammation and pain are found in this disease.

Epidemiological Factors

- This disease spreads through infected person. Nonsymptomatic or sub-clinical patient is the main source of infection.
- This disease spreads more during winter and spring.
- Infection spreads through physical contact and droplet infection.
- One time infection produces lifelong resistance.
- This disease is more common among children of 6 - 10 age groups. Because of the immunity acquired from the mother, this does not occur in infants below 6 months.

Incubation Period: 14-21 days

Clinical Manifestations

The disease starts with fever, restlessness, headache and pain in opening the mouth and mastication. Swelling of the parotid gland is special feature of this disease. This swelling remains for a week or two. Other symptoms also disappear. in some cases

orchitis, ovaritis pancreatitis, myocarditis, otitis media, encephalitis, etc, may develop. Sometimes this disease may be the cause for childhood diabetes (IDDM-Type I).

Diagnostic Test

The disease is diagnosed by signs and symptoms.

Prevention and Control

- Give mumps vaccination
- Use immunoglobulin
- Isolate children during infected period and watch over persons who had come in contact.
- Provide symptomatic treatment

5. Poliomyelitis

Poliomyelitis is a highly infectious disease caused by polio virus. This is a disease of digestive tract but since it affects brain, spinal cord and other nervous tissues it can cause paralysis and deformity.

Disease is caused by Polio virus strains I, II and III.

Epidemiological Factors

- This disease usually attacks children below 5 years.
- Probability of the infection increases in dirty, overcrowded place and where personal health is neglected.
- Polio virus remains in the stools of the infected persons a few week to 3 months. Similarly it is found in the throat secretions in the first week of the disease and can infect water, milk, food and other substances, the consumption of which results in entry of the infection to digestive tract. Spread of the disease is mainly through faecal - oral contamination or in some instances droplet infection. Flies play an important role in spreading the disease.
- Polio may occur more during rainy season. Virus can survive longer during winter.
- In an already infected case wounds, intramuscular injection, operation of tonsils, etc can result in paralytic polio.

Incubation Period: 7-14 days

Clinical Manifestations

In the beginning stage, complaints of fever headache, fatigue, restlessness, vomiting diarrhoea etc. are found. Symptoms of cough and cold are also common. Muscular weakness, stiffness and pain in neck and back are the warning signs of paralysis. Paralysis may occur in legs, face, larynx, oesophagus, etc. The seriousness of the disease increases because it affects the nervous system. Many polio patients suffer from paralysis of the lower part of the body. They become permanent handicapped.

Diagnostic Tests

Disease can be detected by signs and symptoms, physical examination and study of the virus. Surveillance system plays an important role in the diagnosis of the polio cases.

Prevention

A. Vaccines – Two types of vaccines are used

1. Inactive (Salk Polio Vaccine) (IPV)
2. Oral (Sabin) Polio Vaccine (OPV)

B. Pulse Polio immunisation programme

With the success of pulse polio programme, India is moving towards polio eradication.

6. Viral Hepatitis

Hepatitis is the inflammation of liver which may be acute or chronic. Liver is affected in this disease. Apart from viral or bacterial infections, use of liver damaging drugs for long time, toxins and alcohol consumption also may cause hepatitis. Hepatitis may be classified into viral hepatitis and non-viral hepatitis.

Epidemiological Factors

- This is a worldwide infectious disease. In India it is a major health problem.
- Disease can affect the all age groups and both sexes.
- Environmental pollution lack of personal hygiene, overcrowding, slum dwelling, faecal contamination of water etc. are some reasons due to which the disease spreads quickly. Disease spreads mainly through faeco oral route.
- Infected person transmits the disease to other people.
- Non-viral hepatitis is mainly found among poisonous drug addicts and alcohol addicts.

Clinical Manifestations

The characteristics of hepatitis of different types may be similar that it may be difficult to differentiate them. General signs and symptoms of hepatitis of various types are given below.

Preicteric Phase

This phase includes restlessness, nausea, vomiting, lack of appetite, headache, increase in the size of spleen, liver and lymph nodes, weight loss, urticaria etc.

Icteric Phase

This phase includes jaundice, pruritis, clay colour stools, dark coloured urine, restlessness, fatigue while the signs and symptoms of the first phase continue.

Post Icteric Phase

Even after other symptoms subside, fatigue, restlessness and liver enlargement may be found.

It is to be mentioned that in all patients, all the above signs and symptoms may not be present. In some cases, some serious signs may appear whereas in some patients without jaundice, hepatitis may be present.

Diagnostic Tests

- Signs and symptoms of the disease.
- Serum examination.
- Testing of serum bilirubin and liver enzymes (ALT, AST) or liver function test (LFT).
- Urine examination for bile pigments.
- Liver biopsy.

Complications

Liver enlargement, liver damage and disorders, liver cirrhosis, liver cancer etc are some of the major complications of hepatitis. In serious cases, the patient may die.

Various Types of Viral Hepatitis

Management

Since the disease has no specific treatment, special attention is to be paid to symptomatic treatment. This includes rest, balanced diet, plenty of fluids, IV fluids,

Name of Hepatitis	Virus	Mode of Transmission	Incubation Period	Related facts
Hepatitis A	HAV	Water, milk, food etc. polluted by faeces, saliva, etc, of the infected persons enters the body by mouth (faecal oral contamination) Sometimes infection can spread outside the intestinal tract also.	3-5 weeks	Earlier it was called infective hepatitis. Virus is present in the infected person
Hepatitis B	HBV	Disease spreads through infected blood, plasma, needle, syringe, surgical or dental instruments. Disease can be transmitted through sexual contact also.	2-5 months	Earlier it was called serum hepatitis. This is considered as an important cause of liver cancer.
Hepatitis C	HCV	Polluted blood, blood products and sexual contact can transmit the disease.	2-20 weeks	Earlier it was called Non A and Non B hepatitis. Its signs are light but can result in chronic hepatitis.
Hepatitis D	HDV	Infection spreads like hepatitis B	2-5 months	This is called Delta hepatitis also. Its symptoms are serious.
Hepatitis E	HEV	Infection spreads like hepatitis A	More than hepatitis A but less than hepatitis AC	Occurs more due to lack of hygiene and impure drinking water. More commonly found in under developed or developing countries.

vitamin supplements and antimetic drugs etc.

Measures for protection of Different Hepatitis and their Control

Measures for Protection and Control of Hepatitis A

- Administer immunoglobulin (IG) before the infection occurs or before foreign tour.

- Provide protection from infection of oral secretion or faeces of the infected person. Observe the rules of enteric isolation.
- Keep watch over persons who manage food.
- Avoid using cut fruits or food which was kept open. Protect the food from droplets of sneeze.
- In public restaurants, hotels, sulabh latrines, bathrooms etc, use liquid soap and paper towels or driers, instead of ordinary soap and cloth towels.
- Leave the habit of putting things (key bunch, pen, handkerchief, glasses etc) Kept in hand, into mouth.
- Prohibit the community or shared use of cigarette, beedi, hukka etc and also utensils used by others.
- Do not use fruits or vegetables, irrigated by polluted water.
- Note: For protection from hepatitis E also, the same measures may be used.)

Measures for Protection and Control of Hepatitis B

- Immunisation against hepatitis B of such persons who may be coming in contact with patients.
- Observe universal precautions with regard to blood and body fluids.
- Take care in the disposal of needles and disposable syringes.
- Keep hygiene in sexual contacts. Use condom for safe sex.
- Be extremely careful in blood transfusion.
- Communal or shared use of razors should be avoided.
- Within 24 hours to 7 days of contact, with the blood of infected person, administer Hepatitis B immunoglobulin (HBIG) (If HBV vaccine is not already taken.)

(Note: For protection against Hepatitis C and D also, the above measures are taken.)

7. SARS

severe acute respiratory syndrome is a communicable viral disease caused by a new strain of corona virus.

SARS is a contagious respiratory infection. Close contact with an infected person through droplet infection or by bodily secretion are important in transmitting the disease.

Epidemiological Factors

- The virus was detected not only in respiratory droplets but also in faeces and urine of the infected person.
- SARS infection was found responsible to produce a spectrum of very severe illness.
- Mode of transmission appears to be through direct or indirect contact of mucous membranes of eyes, nose, or mouth with respiratory droplets or fomites.

Incubation Period

Symptoms of SARS start in most cases 2 to 7 days after exposure, but sometimes it seems to take as long as 10-14 days.

Clinical Manifestations

The major symptoms of SARS are high fever (more than 38.50C), dry cough, and shortness of breath or dyspnoea. Other associate symptoms are headache, muscular stiffness, loss of appetite, malaise, rashes, diarrhoea, confusion etc.

Management and Prevention

- Patient should be placed in an isolation unit. Strict respiratory isolation and barrier nursing is recommended.
- There is no particular medicine for the treatment of prophylaxis of SARS. So symptomatic treatment and supportive care is needed. Antiviral medicine ribavirin and high dose of corticosteroids may be helpful in some cases.
- Health care workers and visitors should wear efficient filter masks, goggles, aprons, head covers and gloves, when in close contact with the patient. Proper hand washing must be practised
- Comprehensive identification and isolation of suspected SARS case
- WHO recommends for continuous global surveillance and proper reporting of SARS infection.

8. Dengue fever

Dengue is an infection caused by Dengue virus which is spread in human beings by *Aedes albopictus* mosquitoes. The fever caused by dengue is called dengue fever. It is called as break bone fever. Dengue syndrome is a worldwide health problem. In India, dengue infection has occurred several times.

Epidemiological Factors

- Dengue infection can affect any age group or sex.

- Dengue infection is more in hot regions. Here endemics and epidemics both may occur.
- Dengue infection spreads more due to increase in population, lack of housing, overcrowding and lack of sanitation.
- Presence of waste paper, waste materials, furniture, cooler or other solid wastes help in the spread of dengue infection.
- Single attack of dengue produces resistance.

Incubation Period: Generally 4 to 6 days

Clinical Manifestations

Dengue infection may be in the form of (i) dengue fever (ii) dengue haemorrhagic fever and (iii) dengue shock syndrome. Chief characteristics of these stages are as following:

1. Dengue Fever
 - Sudden high fever
 - Weakness, fatigue, depression
 - Pain at the back of eye
 - Severe pain in forehead
 - Pain in muscles and joints
 - Loss of taste and appetite
 - Nausea and vomiting
 - Small rashes like that of measles appear on chest and arms.
2. Dengue Haemorrhagic Fever (DHF)
 - High and continuous fever may continue from 2 to 7 days.
 - Signs and symptoms of haemorrhage:-It includes purpura, epistaxis, haematemesis and melaena.
 - Thrombocytopenia - platelet count becomes 50,000 per cubic mm or less.
 - Haemoconcentration: Increase of 20% or more in haematocrit. On the basis of signs, haemorrhagic dengue fever may be of 4 grades; I, II, III and IV.
3. Dengue Shock Syndrome (DDS)
 - All signs of dengue fever and dengue haemorrhage.
 - Low pulse, fall in BP by 20 mm Hg or more.

- Cold skin, imbalanced mind.

Diagnostic Tests

By symptoms, physical examination and serological tests, doubtful cases of dengue are determined. By virus culture the type of dengue virus (DEN - I, DEN - 2, DEN - 3, DEN - 4) can be determined.

Management

In the absence of any specific treatment or effective antibiotic, symptomatic and supportive treatment is the main part in dengue management. This includes complete rest, anti-pyretic drugs, cold sponge, plenty of fluids orally or intravenously and blood transfusion according to need. Special attention should be paid to the treatment of shock. This is to be remembered that early diagnosis and immediate treatment are the only measures by which deaths due to dengue can be avoided.

Prevention and control

- Immediate notification of dengue fever, dengue haemorrhagic fever or dengue shock syndrome to authorities.
- Control of carrier mosquitoes - Aedes. (This includes all measures of insect control).
- Protect people from coming in contact with mosquitoes (use of mosquito net or mosquito repellent).
- So far no satisfactory vaccination is developed against dengue; hence protection from disease carrier mosquito is the only means of prevention.
- In case of epidemics: Identify the area of epidemic, control of epidemic, patient management, vector control, information, education, communication, monitoring are some of the preventive measures.

9. Chikungunya

Manifest with Crippling Arthritic disease of sudden onset.

Name is derived from Swahili – Chikungunya meaning that which bends up

Virus isolated in 1953 from serum and Aedes mosquitoes and Culex spp

Epidemiology

- **Causative organism : Chikungunya Virus**, Family – Togaviridae , Genus Alpha virus
- Chikungunya viral infection manifests with febrile illness
- Out breaks occur during rainy season with increasing densities of Aedes aegypti mosquito

- Mosquitos bites infect the Humans
- Laboratory acquired infection can also occur
- Incubation period: 3 – 12 days

Clinical manifestations

Fever, Crippling Joint pains, Lymphadenopathy, Conjunctivitis

A Maculopapular rash

May lead to hemorrhagic manifestations,

Fever is biphasic with remission after 1 - 6 days of fever. Patients may be presented with Inguinal lymphadenopathy and red swollen ears, and are observed as part of clinical picture.

Diagnosis

Chikungunya manifest with Myalgia rather than Arthritis.

Isolation of Virus from blood of febrile patients

Routine Diagnosis with serology

Detection of IgM antibody provides a specific and reliable means for early diagnosis

ELISA and Dot blotting methods are used

Treatment

Chikungunya fever is not a life threatening infection. Symptomatic treatment for mitigating pain and fever using anti-inflammatory drugs along with rest usually suffices. While recovery from Chikungunya is the expected outcome, convalescence can be prolonged (up to a year or more), and persistent joint pain may require analgesic (pain medication) and long-term anti-inflammatory therapy

Vaccines for Chikungunya

An experimental – live attenuated vaccine (TSI – GSD – 218) at present used in some laboratory workers who can be protected.

Prevention

There is neither Chikungunya virus vaccine nor drugs are available to cure the infection. Prevention, therefore, centers on avoiding mosquito bites. Eliminating mosquito breeding sites is another key prevention measure. To prevent mosquito bites, do the following:

Use mosquito repellents on skin and clothing

When indoors, stay in well-screened areas. Use bed nets if sleeping in areas that are not screened or air-conditioned.

When working outdoors during day times, wear long-sleeved shirts and long pants to avoid mosquito bite.

Control of breeding of Aedes Mosquitos

Source reduction Method

By elimination of all potential vector breeding places near the domestic or peri-domestic areas.

Not allowing the storage of water for more than a week. This could be achieved by emptying and drying the water containers once in a week.

Straining of the stored water by using a clean cloth once a week to remove the mosquito larvae from the water and the water can be reused. The sieved cloth should be dried in the sun to kill immature stages of mosquitoes.

Use of larvicides

Where the water cannot be removed but used for cattle or other purposes, Temephos can be used once a week at a dose of 1 ppm (parts per million).

Pyrethrum extract (0.1% ready-to-use emulsion) can be sprayed in rooms (not outside) to kill the adult mosquitoes hiding in the house.

10. Acquired Immuno Deficiency Syndrome (AIDS)

AIDS (Acquired immuno-deficiency syndrome) is a fatal illness.

It is caused by a virus known as human immunodeficiency virus (HIV). Once infected, it is probable that a person will be infected for life. AIDS breaks down the body's immune system exposing the individual to numerous life-threatening infections, neurological disorders and malignancies.

Epidemiological factors

1. **Agent:** Human immuno- deficiency virus (HIV)
2. **Source of infection:** HIV cases and carriers
3. **Infective material:** Blood and semen of infected persons
4. **Age:** Sexually active persons (20 – 49 years)
5. **High-risk groups:** Prostitutes, homosexuals, intravenous drug users, etc
6. **Immunity:** Man has no natural immunity.

- 7. Mode of transmission:** AIDS is transmission transmitted by:
- (i) Sexual transmission: This is the usual method of transmission
 - (ii) Transmission through blood :e.g., blood transfusion, using unsterilized injectionequipment, etc
 - (iii) Perinatal transmission : Mother-to-foetus before or during birth
8. Incubation period: 6 years or more

CONTROL OF AIDS

There are four basic approaches to the control of AIDS :

1. Education

Until a vaccine or cure or AIDS is found, the only means at present available is health education to enable people to make life-saving choices (e.g., avoiding indiscriminate sex, using condoms) One should also avoid the use of shared razors and toothbrushes.

Intravenous drug users should be informed that the sharing of needles and syringes involves special risk.

Women suffering from AIDS or who are at high risk or infection should avoid becoming pregnant since infection can be transmitted to the unborn or newborn.

Educational material and guidelines for prevention should be made widely available. All mass media channels should be involved in educating the people on AIDS, its nature, transmission and prevention; this includes international travelers.

2. Prevention of blood borne HIV transmission

People in high-risk groups should be urged to refrain from donating blood, body organs, sperm or other tissues. All blood should be screened for HIV 1 & HIV 2 before transfusion. Transmission of infection to haemophiliacs can be reduced by introducing heat treatment of factors VIII and IX. Strict sterilization practices should be ensured in hospitals and clinics. Presterilized disposable syringes and needles should be used as far as possible. One should avoid injections unless they are absolutely necessary.

3. Specific prophylaxis

At present there is no vaccine or cure for treatment of HIV infection/AIDS. However, several researchers are working on drugs to interfere with HIV's production cycle at one stage or the other.

Antiviral chemotherapy with the chemical compound zidovudine (AZT) while not a cure, has proved to be useful in prolonging the life of severely ill patients. The AZT however, neither restores the immune system, nor does it destroy the HIV virus already installed in cells.

4. Primary health care

Because of its wide-ranging health implications, AIDS touches all aspects of primary health care, including mother and child health, family planning and education. It is important therefore that AIDS control programmes are not developed in isolation. Integration into countries' primary health care system is essential.

C. Protozoa

1. Malaria

Malaria is a febrile condition produced by infection of Plasmodium parasite. Female anopheles mosquito transmits the disease to human beings. Malarial fever can be identified by its specific stages. At present malaria is a major problem of public health.

Epidemiological Factors

Four Types of malarial parasites are responsible for malarial infection among human beings. They are:

1. Plasmodium Vivax.
 2. Plasmodium Falciparum : This parasite causes brain fever.
 3. Plasmodium Malariae:
 4. Plasmodium Ovale
- There are two cycles in the development of malarial parasite. Its life cycle in human beings is called asexual cycle, whereas, the cycle in mosquitoes is called sexual cycle. Mosquito is the adult or definitive host whereas man is the non-productive or intermediate host. A healthy person is infected through mosquito bite.
 - Malaria affects all age groups yet in infants there is resistance against infection. Men are more attacked by malaria as compared to women (because of dress and nature of work).
 - Malaria is more found in undeveloped., overcrowded, low class areas.
 - People who sleep in open spaces are more prone to the attack of malaria.

- Malaria spreads more in rainy season and in places with high humidity and near the sources of water. Humidity, darkness dirt, pool, places of stagnant water, kitchen, jungle place etc are the breeding places of mosquito and such places increase malaria.
- In India, 9 species of anopheles mosquitoes are responsible for spreading malaria.

Incubation Period: Generally 10 to 12 days.

Clinical Manifestations

Generally malarial fever has 3 stages:

Cold stage: In this stage, the patient feels headache, shivering and severe cold. Fever rises, teeth start chattering. This stage may continue from 15 minutes to one hour.

Hot stage: Fever rises very high; face and eyes become red; skin hot dry and red, pulse rate becomes high, patient feels hot. He complains of severe headache. This stage may continue for 2 to 4 hours.

Sweating or Wet Stage: With profuse sweating all over the body, fever reduces and patient feels alright in 2 to 4 hours. But he feels very weak.

Diagnostic Tests

Patient's general symptoms, blood examination for malarial parasite. (Blood for Malarial Parasite)

Management

For the treatment of malaria, chloroquine is generally used. Because of increasing resistance, in addition to chloroquine, other drugs are also used. Apart from antipyretics, other symptomatic treatment is necessary.

Prevention and control

- Safeguard against mosquito bite: Do not sleep in the open. Cover most of the body, use mosquito net, use net in doors, windows etc.
- Kill adult mosquitoes, for this different types of sprays can be used.
- Anti larvae measures
- Keep the surrounding areas of the house clean.
- Use larvicides in stagnant water.

- Control the sources of mosquitoes.
- Fill pits
- Encourage environmental cleanliness
- Control human reservoirs
- Adopt measures to destroy malarial parasites.
- Give preventive treatment.
- Radical treatment and distribution of antimalarial drugs on large scale.
- Teach general public about malaria control and protection by means of health information, education and communication.
- Ensure effective implementation of national anti malaria programme.
- Examine the blood of all people suffering from fever for the presence of malaria parasite.

2. Filariasis

Filaria is a worldwide problem. Filarial parasite is responsible for this disease. This spreads due to bite of Culex mosquito. Primarily Filariasis is a disease caused by bad management of environment. In India, filariasis is a main public health problem which is found in two types of filarial infection-W. Bancrofti and B.Malayi. Disease spread as an epidemic.

Epidemiological Factors

- Disease affects all age group.
- Main causes of lymphatic filariasis are urbanisation, industrialisation, migration, extreme poverty. Illiteracy, improper water and sewage disposal etc.
- In blood examination, filarial parasite is found only at night, during day time it is not found. They remain in lymphatic system.
- The carrier of this disease culex mosquito is found in dirt, pits of water, wet places, stagnant water and drainage. Culex mosquito spreads Bancrofti filaria, where as monsonoides mosquito spreads Malayi filaria.

Incubation Period: 8-16 months

Clinical Manifestations

In the beginning stage of the disease, infection or inflammation occurs repeatedly in lymph glands and lymph vessels. Symptoms of lymphangitis, lymphadenitis and

lymphodema appear. In male, epididymitis and inflammation of testes and in females salpingitis and enlargement of sex organs can be seen. In chronic cases, signs like hydrocele chyluria and elephantiasis are seen. Elephantiasis can affect legs, scrotum, arms, clitoris, vulva and breasts. Because the legs look like elephant's legs, this is called elephantiasis. Pulmonary eosinophilia also may result which is called occult filariasis.

Diagnostic Tests

On the basis of observation of the patient's signs and symptoms and blood test (blood slide prepared in the night) filarial parasite is identified and the disease is diagnosed.

Management

The treatment of filariasis is Diethylcarbamazine (DEC) or by hetragen. It is necessary to treat complications also.

Prevention and control

- Mass Blood Survey: In filaria affected areas, all doubtful people's blood slides should be prepared between 9 to 12 p.m.in the night, preferably midnight. By the examination of these slides, identify infected people.
- Destroy carrier mosquitoes by doing pyrethrum spray.
- By different antimosquito measures, minimise the opportunities for contact between persons and mosquitoes.
- Destroy the breeding places of mosquito.
- Pay attention to cleanliness of house and surrounding areas.

Prevention and control of non communicable diseases

With rapid urbanization, industrialization and increasing level of affluence (the so called "modernization"), the price that the society is paying is a tremendous load of "Non - Communicable" diseases.

Global phenomena -not simply restricted to the developed, rich countries.

Synonyms: "Chronic" diseases", "Lifestyle Diseases"

Non communicable diseases (NCDs), also known as chronic diseases, are not passed from person to person. They are of long duration and generally slow progression.

In the context of our country, too, the problem of lifestyle and its consequent diseases is assuming the position of a new "EPIDEMIC".

Coronary Heart Disease

- Problem Statement: 30% of deaths in men; 25% of death in female in Western Countries.
- INDIAN SCENARIO: Leading cause of death and disability in our country, by the year 2025.
- Presentations:
 - Angina Pectoris
 - Myocardial Infarction
 - Arrhythmia
 - Cardiac Failure
 - Sudden Death

Risk Factors

1. Smoking
2. Hypertension
3. Serum cholesterol
4. Other risk factors
 - a) Diabetes
 - b) Genetic factors
 - c) Physical activity
 - d) Hormones
 - e) Type A personality
 - f) Alcohol
 - g) Oral contraceptives
 - h) Miscellaneous – dietary fibre, sucrose and soft water – dyspnoea on exertion and low vital capacity

Prevention of CHD

WHO expert committee on the prevention of CHD recommended the following strategies

- a. Population strategy

- i. Prevention in whole population – Dietary changes – reduction in fat intake, limiting consumption of saturated fats, reduction in dietary cholesterol, increase in complex carbohydrate consumption - Anti smoking, control of hypertension, regular physical activity
 - ii. Primordial prevention in whole population – preventing the emergence and spread of CHD risk factors and lifestyles that have not yet appeared or become endemic.
- b. High Risk strategy –
Identifying individuals at high risk
Specific advice to individual regarding positive action against identified risk
- c. Secondary prevention
To prevent recurrence and progression of CHD

Hypertension

Hypertension also known as **high blood pressure**, is a long term medical condition in which the blood pressure in the arteries is persistently elevated.

High blood pressure usually does not cause symptoms. Long term high blood pressure; however, is a major risk factor for coronary artery disease, stroke, heart failure, peripheral vascular disease, vision loss, and chronic kidney disease.

Classification:

Category	Systolic BP (mm Hg)	Diastolic BP (mm Hg)
Normal	<130	<85
High Normal	130-139	85-90
Hypertension		
Stage 1(Mild)	140-159	90-99
Stage 2(Moderate)	160-179	100-109
Stage 3(Severe)	>180	>110

GLOBAL BURDEN: About 10% to 20% population.

Indian scenario:

	<u>Male</u>	<u>Female</u>
Urban	6%	7%
Rural	3.5%	3.6%

Risk factors for Hypertension**Non-modifiable**

- Age
- Sex
- Genetic Factors
- Ethnicity

Modifiable

- Obesity
- Salt intake
- Saturated fat
- Dietary fibre
- Alcohol
- Physical activity
- Environmental stress
- Socioeconomic status
- Other factors – oral contraception, noise, vibration, temperature and humidity

Prevention of hypertension

1. Primary prevention
 - i. Population strategy
 - a. Nutrition – reduction of salt intake, moderate fat intake, avoidance of high alcohol intake, restriction of energy intake appropriate to body needs.
 - b. Weight reduction – control over weight or obesity
 - c. Exercise promotion – regular physical activity
 - d. Behavioural changes – reduction of stress, smoking, modification of personal life style, yoga and meditation

- e. Health education – preventive advice for general public
- f. Self care – self monitoring blood pressure
- ii. High risk strategy
- 2. Secondary prevention
 - a. Early detection
 - b. Treatment
 - c. Patient compliance

Stroke

The term stroke is applied to acute severe manifestations of cerebrovascular disease WHO defined stroke as rapidly developed clinical signs of focal disturbance of cerebral functions: lasting more than 24 hours or leading to death, with no apparent cause other than vascular origin.

- Problem Statement: 10% to 12% of all deaths in Developed Countries.
- In India: Over all prevalence of stroke appears to be comparatively less (1.54/1000 against 0.2-2.5/1000 world-wide)

The proportion of stroke among young age-group is significantly more.

- Etiopathological types:
 - Hemorrhagic
 - Thrombotic
 - Embolic

Transient ischemic attacks (TIA)

- Sudden onset
- Focal
- Reversible neurological deficit
- Duration < 24 hours
- Cause: Micro-emboli
- Significance: **warning sign of stroke!!!**

Host Factors

Age - stroke can occur at any age

Sex- higher in males than in females

Personal history – nearly three quarters of all registered stroke patients had associated diseases (WHO)

Stroke control programme

1. Aim is to apply at community level effective measures to prevention of stroke.
2. Control of arterial hypertension
3. Early detection and treatment of TIA
4. Control of diabetes, elimination of smoking, prevention and management of other risk factors
5. Facilities for long term follow up of patients
6. Education and training of health personnel

Cancer

Disturbance of cellular growth characterized primarily by an abnormally excessive proliferation of cells without apparent relation to the physiological demands of the organ involved

Warning Signs of Cancer

1. Change in bowel or bladder habits
2. A sore that does not heal
3. Unusual bleeding or discharge
4. Thickening or lump in the breast or elsewhere
5. Indigestion or difficulty in swallowing
6. Obvious change in wart or mole
7. Nagging cough or hoarseness
8. Unexplained anemia
9. Sudden unexplained weight loss

Cancer Risk Factors

1. Age – incidence increases with age
2. Sex – significant differences among sexes, e.g. breast cancer
3. Race – skin color, diet, custom

4. Occupational – petrochemical workers with higher rates of bladder cancer
5. Health habits – those who do not smoke, protect themselves from the sun and have a sensible diet have lower incidence of cancer
6. Family history – those with family history of breast cancer and colorectal cancer have increased risk of developing these
7. Socio – economic status
8. Lifestyle – smoking, excessive alcohol drinking, betel nut chewing, diet, sexual activity and sun exposure are associated with cancer

Three Major Forms of Cancer Treatment

1. Surgery
 - a. Oldest mode of treatment;
 - b. Removes principal deposit of cancer
 - c. Involved the removal of healthy tissues surrounding the tumor and possibly the adjacent lymph nodes
2. Radiation Therapy

Localizes treatment where a beam of high – energy electromagnetic radiation destroys cancer cells

3. Chemotherapy
 - a. Use of drugs in an attempt to destroy tumor cells by interfering with cellular functions, including replication
 - b. Drugs may be taken orally, parenterally or by topical application
 - c. Those taken orally or parenterally produce side effects

Palliative Care or Supportive Care

Active, holistic care of patients and their families given by a multidisciplinary team of physicians, nurses, nutritionists, social workers, psychologists, rehabilitation medicine, religious persons, relatives and friends.

This covers physical, psychological, social and spiritual needs

Management is towards the patient's symptom – free existence, with spiritual and psychological support

Cancer Control

1. Primary prevention
 - a. Control of tobacco and alcohol consumption
 - b. Personal hygiene
 - c. Radiation control
 - d. Occupational exposures
 - e. Immunization
 - f. Foods drugs and cosmetics
 - g. Air pollution
 - h. Treatment of precancerous lesions
 - i. Legislations
 - j. Cancer education
2. Secondary prevention
 - a. Cancer registration
 - i. Hospital based registries
 - ii. Population based registries
 - b. Early detection of cases
 - c. Treatment

Cancer screening

1. Screening of cancer cervix
2. Screening of breast cancer
3. Screening of lung cancer

Diabetes Mellitus

A group of metabolic diseases characterized by hyperglycemia resulting from defects of insulin secretion, insulin action or both of these.

- Around 150 million Diabetic World-wide. Predicted to DOUBLE by 2025.
- 20% of them in SEAR. (South East Asian Region)
- Screening Methods:

Venous Blood Sugar testing

Random

Fasting

Post-prandial

Urine Glucose Examination

Two Major Classifications of DM

Type 1 – previously referred to as IDDM

Develops during childhood or adolescence and affects about 10% of all diabetic patients.

Sufferer require a lifetime of insulin injection for survival since their pancreas cannot produce insulin

Type II – referred as NIDDM

Comprises about 90% of all diabetic patients who are mostly overweight or obese.

They usually have insulin resistance

Frequently undiagnosed for many years because hyperglycemia develop gradually, thus making the symptoms go unnoticed

Risk Factors for DM

1. Family history of diabetes
2. Obesity
3. Age >45 years old
4. Previously identified impaired fasting glucose or impaired glucose tolerance
5. Hypertension >140/90mmHg
6. HDL cholesterol level <35mg/dl and/or triglyceride level >250mg/dl
7. History of gestational diabetes or delivery of babies over 9 lbs.

Management of Diabetes Mellitus

Nutritional Management

1. Avoid simple sugar like cakes and chocolates. Instead have complex carbohydrates like rice, pasta, cereals and fresh fruits
2. Do not skip or delay meals. It causes fluctuations in blood sugar levels
3. Eat more fiber – rich foods like vegetables

4. Cut down on salt
5. Avoid alcohol. Dietary guidelines recommend no more than 2 drinks for men and no more than one drink per day for women

Exercise

1. Lowers blood glucose by increasing the uptake of glucose by body muscles and by improving insulin utilization
2. Improves circulation and muscle tone
3. Resistance training increases lean muscle mass, thereby increasing the resting metabolic rate
4. Exercise should be done 5 times a week for at least 30 minutes each session
5. General Precautions for Exercise in Diabetics
 - a. Always carry quick sugar sources like candy or soft drink to avoid hypoglycemia during and after exercise
 - b. Use proper footwear and other protective devices
 - c. Avoid exercise in extreme heat or cold
 - d. Inspect feet daily after exercise
 - e. Avoid exercise during periods of poor metabolic control

Monitoring

Self – monitoring of blood glucose enables the diabetic to adjust the treatment regimen to obtain optimal blood glucose control

Pharmacologic Therapy

1. Exogenous insulin must be administered on a long – term basis to Type 1 diabetes because in Type 1, the body loses its ability to produce insulin.
2. If diet and oral agents have failed in Type 2 diabetes, insulin may also be necessary on a long – term basis.
3. Type 2 diabetic patients may temporarily require insulin during illness, infection, pregnancy, surgery or some other stressful event

Education

Education on nutrition, medication effects and side effects, exercise, disease progression, prevention strategies, monitoring techniques and medication adjustment as part of their self – management behavior.

Obesity

Obesity may be defined as abnormal growth of adipose tissue due to an enlargement of fat cell size (Hypertrophic obesity) or an increase in fat cell number (Hyperplastic Obesity).

Assessment of Obesity:

Body Mass Index (BMI)

Skin fold Thickness

Waist Circumference & Weight to height ratio

Others

- Total body Water
- Total body Potassium
- Body density
- Measuring fat cells

Complications of Being an Obese:

- Hypertension
- Dyslipidemia
- Glucose intolerance
- Coronary heart disease
- Arthritis
- Breast, colon carcinoma
- Gall stone diseases
- Depression and Withdrawal into self

Prevention and control

1. Dietary changes
2. Increased physical activity
3. Others – appetite suppressing drugs, surgical treatment etc

Accidents and Injuries

Accident is an unpremeditated event resulting in recognizable damage. Or an unexpected unplanned occurrence which may result in injury.

A significant cause of morbidity, mortality, disability among the productive age group population of a country.

- Etiological factors:
 1. Irresponsible usage of machines
 2. Risk-taking behavior
 3. Weak legislation
 4. Driving vehicles under influence of alcohol
 5. Poor maintenance of machines/vehicles
 6. Over-crowding, poor illumination, inadequate layout in the road
 7. Low driving standards
 8. Not using protective measures
 9. Lack of concentration while operating machines/vehicles.

Types of Accidents

1. Road traffic accidents
2. Domestic accidents – drowning, burns, poisoning, falls, injuries from sharp and pointed instruments, bites and other injuries from animals
3. Industrial accidents
4. Railway accidents
5. Violence

Prevention

1. Data Collection - there should be a basic reporting system for all accidents
2. Safety Education – safety education must begin from school children. Drivers need to be trained in maintenance of vehicles and safe driving. Young people need to be educated in risk factors, traffic rules, and safety precautions. They should also be trained in first aid.
3. Promotion of safety measures –
 - a. Seat belts,
 - b. Safety helmets,
 - c. Leather clothing and boots
 - d. Children – ensure that children remain seated in vehicle.

- e. Others – use of door locks, proper vehicle design etc
4. Alcohol and Drugs - They should be avoided totally
5. Primary care – planning organizing and management of trauma treatment and emergency care services
6. Elimination of causative factors – improvement of roads, imposition of speed limits, marking of danger points, reduction of electric voltage, provision of fire guards, use of safety equipment in industries, safe storage of drugs, poisons and weapons etc.
7. Enforcement of laws
8. Rehabilitation services – medical rehabilitation, social rehabilitation, occupational rehabilitation etc.
9. Accident research - to find out the cause and prevent accidents

Blindness

WHO defines Blindness as:

“Visual Acuity of less than 3/60 (Snellen) or its equivalent in the better eye”.

Low Vision- Visual acuity poorer than 6/18 but better than 3/60.

In India 0.7% people are blind. Among them, 62.6% are due to *Cataract*.

Other important causes (in decreasing order of prevalence):

1. Refractive error
2. Glaucoma
3. Posterior segmental pathology
4. Corneal opacity
5. Miscellaneous - congenital disorder, retinal detachment, tumours, diabetes, hypertension etc.

Prevention

1. Initial Assessment

The first step is to assess the magnitude, geographic distribution and causes of blindness

2. Methods of intervention
 - a. Primary eye care

A wide range of eye conditions (conjunctivitis, trachoma, xerophthalmia etc.) can be treated or prevented by locally trained primary health workers. For this purpose they are provided with drugs. They are also trained to refer difficult cases.

b. Secondary care

Definitive management of common blinding conditions such as cataract, glaucoma etc.

c. Tertiary care

Provided in centres like medical colleges. They provide sophisticated eye care like corneal grafting

d. Specific programmes

Trachoma control, school eye health services, Vitamin A prophylaxis, Occupational eye health services.

3. Long Term Measures

These measures are aimed at improving the quality of life and modifying the factors responsible for eye health problems like poor sanitation, lack of adequate water supply, little intake food rich in Vitamin A, lack of personal hygiene etc.

Vision 2020 : The right to sight

VISION 2020: The Right to Sight is the global initiative for the elimination of avoidable blindness, a joint programme of the World Health Organization (WHO) and the International Agency for the Prevention of Blindness (IAPB). VISION 2020: The Right to Sight was launched in 1999. It sought to promote:

“A world in which nobody is needlessly visually impaired, where those with unavoidable vision loss can achieve their full potential.”

Mental health

Characteristics of a mentally healthy person

Main characteristics of a mentally healthy person are

He feels comfortable about himself. He has self respect. He feels reasonably secure and adequate. He has friendships that are satisfying and lasting. He has decision making ability and able to meet the demands of life. He accepts his limitations. He lives in a world of reality.

Types of mental illness

- 1) Major Disorders : a)schizophrenia b) manic depressive psychosis
c) paranoia
- 2) Minor Disorders : a) Neurosis b) Personality disorders

Causes of mental illness

Mental illness like physical illness is due to multiple causes. Main known factors are following

- 1) Organic conditions : Mental illness may have its origin in organic condition such as cerebral arterio sclerosis , neoplasm , metabolic diseases , neurological diseases , endocrine diseases , chronic diseases such as TB, leprosy etc
- 2) Heredity : It may be an important factor in some case
- 3) Social pathological causes: It produce any disease, there must be a combination of genetic and environmental factors. The social and environmental factors associated with mental ill health are worries , anxiety , broken home , poverty unhappy marriage , industrialization , urbanization , economic insecurity , cruelty, rejection , neglect and the like

Crucial points in the life cycle of human being

There are certain key points in the development of human being which are important from the point of mental health are

- 1) Prenatal period: As pregnancy is a stressful period woman needs physical and psychological support during this period.
- 2) First 5 year of life: The infant and young child experiences a warm intimate and continuous relation with his mother and father as the roots of mental health are in early childhood.
- 3) School child: Everything that happens in the school affects the mental health of the child. From the stand point of child's mental health and his effectiveness in learning, proper teacher pupil relationship and climate of the classroom are important
- 4) Adolescence: Risk of mental illness is high during adolescence as it is a transitional period. The failure to recognise and understand the basic needs (a) the need to be needed by others b) the need for increasing independence c) the need to achieve adequate adjustment to the opposite sex d) the need to rethink the cherished beliefs of one's elders) may prevent sound mental development

- 5) Old age : The causes of mental illness in the old age are organic condition of the brain , economic insecurity , lack of a home and poor health

Preventive aspects

Three levels of prevention

- 1) Primary prevention operates on a community basis which consists of improving the social environment and promotion of the social , emotional and physical wellbeing of all people
- 2) Secondary : This consist of early diagnosis of mental illness and of social and emotional disturbances through screening programmes in schools , university , industry etc and provision of treatment facility and effective community resources In this aspect counselling play an important role to help families with marital conflict , disturbed parent child relationship and strained interpersonal relationship.
- 3) Tertiary prevention seeks to reduce the duration of mental illness and thus reduce the stresses they create for the family and community.

Alcoholism and drug dependence

Definition

The non medical use of alcohol and other psychoactive drug has become a matter of serious concern in many countries. “Drug dependence “ is described as “a state , psychic and sometimes also physical , resulting from the interaction between a living organism and a drug , characterized by behavioural and other responses that always include a compulsion to take the drug on a continuous or periodic bases in order to experience its psychic effects , and sometimes to avoid the discomfort of its absence.

Dependence producing drugs

The dependence producing drug is one that has the capacity to produce dependence. Main psychoactive drugs are

- | | |
|---------------------------|--|
| 1) Alcohol | 6) Other stimulants including caffeine |
| 2) Opioids | 7) Hallucinogens |
| 3) Cannabinoids | 8) Tobacco |
| 4) Sedatives or hypnotics | 9) Volatile solvents |
| 5) Cocaine | 10) Other psychoactive substances |

Drugs which are in common use today

- 1) Amphetamines and cocaines: Amphetamines are synthetic drugs which act on central nervous system because they give a tremendous boost to self confidence and energy.
- 2) Barbiturates : They are sedatives and addiction to barbiturates is one of the worst form of suffering (physical and psychic dependence)
- 3) Cannabis: It is a very ancient drug which produces a dreamy state of altered consciousness. Chance of psychic dependency is high.
- 4) Heroin: Heroin, morphine, codeine, methadone, pethidine are narcotic analgesics. Addiction to narcotics cause craving , psychic dependence and tolerance
- 5) LSD : (Lysergic acid diethyl amide) It is a potent psychotogenic agent which alters normal perception
- 6) Alcohol: Alcohol is a drug and may be classified as a sedative, tranquillizer, hypnotic or anaesthetic, depending upon the quantity consumed. It is the only drug whose self induced intoxication is socially acceptable. It is not a stimulant, but a primary and continuous depressant. According to current concept alcoholism is considered a disease and alcohol a “disease agent” which causes acute and chronic intoxication , cirrhosis of liver , toxic psychosis , gastritis , pancreatitis , cardiomyopathy , cancer of mouth , pharynx, larynx and oesophagus. Further alcohol is an important etiological factor in suicide, automobile and other accidents, crime and loss of productivity, family disorganization etc.
- 7) Tobacco: Tobacco is a responsible for above 30% of all cancer death in developed countries.
- 8) Volatile solvents: The sniffing of substances such as glue, petrol, paint thinner, cleaning fluids etc is causing increasing concern as it can result in death, even on the first occasion.

Prevention

- 1) Legal approach: Legislation may be directed at controlling the manufacture, distribution, prescription, and price, time of sale or consumption of a substance.

Antismoking measures suggested are a) Prohibition of the sale of tobacco products to minors b) restriction on the sale of cigarettes, c) prohibition of smoking in schools and public d) prohibition of cigarette’s advertising at times, and in places and ways, calculated to ensure its maximum impact on adolescence e) establishment of mandatory public health education on health consequences of smoking f) insisting

on the placing of mandatory health warning on cigarette packets.

- 2) Educational approach: Common approaches have included educational programmes for school children and public information campaigns on electronic media.
- 3) Community approach: There should be a strong emphasis or action at the community level to prevent drug abuse. A popular approach is provision of alternative activities which may help to prevent drug abuse. eg. teen centres

Treatment

Though drug addiction may be considered as a social problem the first step in its management is medical care which includes,

- 1) Identification of drug addicts and their motivation for detoxication
- 2) Detoxication
- 3) Post detoxication counselling and follow up
- 4) Rehabilitation

Rehabilitation

It's a long and difficult process. Facilities for vocational training and sometime the provision of sheltered work opportunities are useful in rehabilitation and help to prevent relapse.

Practical Activities

1. Survey of Infectious diseases
2. Source reduction
3. Health talk on infectious diseases
4. Visit to a PHC
5. Survey on Life style diseases
6. Health talk on Life style diseases
7. Chart preparation on healthy life style
8. Breast self examination
9. Oral self examination
10. Assisting in PAP smear collection
11. Exhibition

12. Visit to a Life style disease clinic
13. Home Visit
14. Health awareness programme in alcoholism and drug dependence

Assessment Activities

1. Notice preparation for public on communicable diseases
2. Seminar on life style diseases
3. Poster preparation on prevention of life style diseases
4. Roleplay and video show on substance abuse

TE Questions

1. During rainy season incidence of dengue fever is very high.
 - a. Causative organism of dengue fever.
 - b. Enlist the Symptoms of dengue fever.
 - c. Describe the measures to prevention and control Dengue fever.
2. The number of persons with Non communicable diseases is rising in an alarming rate.
 - a. Enlist five non communicable diseases
 - b. Briefly discuss the general preventive strategies of life style diseases.
3. Complete the following

Disease	Causative organism
1. Diphtheria	
2. AIDS	
3. Tuberculosis	
4. Chickun Guinea	
5. Malaria	

UNIT 4.5

MATERNAL AND CHILD HEALTH

Introduction

Maternal and child health services are the foremost priorities of community health programmes. The term maternal and child health services refers to the package of integrated health services designed to promote the health and nutritional status of mothers and children and ensure the birth of a healthy infant to every expectant mother.

Their aim is to increase the health and nutrition level of mothers and children and ensure the birth of the healthy child. For the promotion of family and community health, it is essential that mothers and children should be healthy. In Indian culture mother is the foundation of the family and children are the future of the country. Therefore in all health programmes mother and child health services are given highest priority. This unit discusses about various mother and child health services.

Learning Outcomes

The Learner:

- Reviews the concept of menstruation and fertility
- Describes the antenatal care
- Describes the postnatal care
- Describes the newborn care
- Explains the importance of breast feeding
- Describes the Complementary feeding
- Explains the immunization schedule
- Explains the family planning methods
- Provides antenatal, postnatal and newborn care

Menstruation and fertility

It is very important for women to know about how their body functions especially in relation to reproductive health because they are uniquely gifted with the capacity to birth to a baby. You know that by the time a girl reaches the age of 10-13 years, a number of changes occur in her body preparing her to meet the complex child birth process. The normal menstrual cycle has the following characteristics:

Duration of bleeding: three-five days

Bleeding recurs after: 25-35 days

Flow: without clots

In a regular 28-day menstrual cycle the mid 10 days (10th-20th day) of the cycle are fertile period during which pregnancy can occur, the first day being the day when the bleeding starts.

A woman can become pregnant from the age of 13-16 (when her periods begin - Menarche), up to 45-55 years, (when they ultimately stops). When they stop it is called menopause.

All females produce “egg” and males produce “sperms” which unite inside the womb of the woman and produce a foetus. This grows into a baby.

The sex of the baby is determined by sex chromosomes, through which we inherit our parents’ traits. A woman’s egg has X chromosome and a man’s sperm has either X or Y chromosome (which we may call girl sperm or boy sperm respectively). At the time of fertilization, the X male chromosome of female egg meets either a girl sperm (XX) resulting in a baby girl or a boy sperm (XY) results in baby boy. Neither the man nor the woman can do anything to make sure that either a boy or girl is born – this happens completely by chance inside the woman’s body depending on whether a boy-sperm (XY) or girl-sperm (XX) meet with the egg. Hence it is wrong to blame a woman for not giving birth to a baby boy, as is generally done.

Maternity Cycle

The stages in maternity cycle are

- 1) Fertilization
- 2) Antenatal or prenatal period
- 3) Intranatal period
- 4) Postnatal period

Health care and supervision is required in all stages to reach the goal of safe motherhood

- 1) Fertilization : The ovum is released from the ovary by about the 14th day of menstrual cycle which is caught by the fimbrial end of the fallopian tube. (Life span of ovum is 24 hours after release unless it is fertilized by the sperm , the sperm retain their capacity for about 48-72 hours after intercourse) The spermatazoa million of them, by vibrating their tails , swim up the cervical canal

and uterine cavity and reach the fallopian tube probably within a few hours of coitus . Fertilization is the union of sperm with a mature ovum (head of the sperm pierces the ovum and its nucleus fuses with that of the egg) which takes place in the outer part of the fallopian tube. Once fertilization is taken place, the ovum become impenetrable to other sperms.

Growth of embryo and foetus : The Fertilized ovum reaches uterus in 8-10 days and burrows it in to the uterine endometrium . By a process of cell division and differentiation all the organs and tissues of the body are formed. The periods of growth are as follows

- 1) Prenatal period
 - A) Ovum- 0-14 days
 - B) Embryo – 14 days to 9 weeks
 - C) Foetus – 9th week to birth
- 2) Premature infant -from 28 to 37 weeks
- 3) Birth (full term)- Average 280 days

Signs and symptoms of pregnancy : divided in to 3 groups

- 1) **Presumptive signs**
 - a. Amenorrhoea (missed period) :It is the first clinical evidence of pregnancy in a regularly menstruating women.
 - b. Morning sickness (After the missed period most women suffer from nausea and vomiting which is severe between 6 and 10 weeks)
 - c. Breast signs : (fullness and tingling, pigmentation of nipples and areola, Montgomery's follicle in areola , water secretion from the nipple.)
 - d. Bladder irritation (Increased frequency micturition during 1st and 3rd trimester.
 - e. Quickening (Mother begins to appreciate foetal movements in utero from about 18th to 20th week)
- 2) Probable sign
 - a. Pelvic signs (Bluish discolouration of vagina,cervix become soft ,positive Hegar's sign)

Abdominal enlargement : 12 weeks - uterine fundus palpable per abdomen, 20-weeks fundus at lower border of umbilicus, 36- weeks fundus at the level of

xiphisternum)

- 3) Positive sign
 - a. Foetal heart sound (rate ranges from 120 to 140 per minute
 - b. Foetal movements
 - c. Foetal parts (it can be felt about the 22nd week

Pregnancy test: The most widely used pregnancy test is immunological test, based on the detection of the human chorionic gonadotropin (HCG) produced by the placenta which can be detected in blood and urine samples of pregnant woman.

Maternal health services

Main maternal health services are 1) Antenatal care 2) Intranatal care 3) Postnatal care 4) Care of the newborn 5) Family planning services

Antenatal care

Antenatal care refers to the care that is given to an expected mother from time of conception is confirmed until the beginning of labor. Ideally it should begin long before pregnancy and continue throughout pregnancy

Goals of ANC Goals:

1. To improve the physical and mental health of women and children.
2. To reduce maternal mortality and morbidity rates.
3. To prevent, identify, and maternal and fetal abnormality that can affect pregnancy outcome.
4. To ensure a safe delivery and the birth of a live , mature and healthy baby
5. To educate the mother how to look after herself and her new born baby.
6. To decrease financial recourses for care of mothers.

Schedule of ANC

1. Check up every four weeks up to 28 weeks gestation.
2. Every 2 weeks until 36 weeks of gestation.
3. Visit each week until delivery.
4. More frequent visits may be required if there are abnormalities or complications or if danger signs arise during pregnancy.

Assessment & physical Exam

Assessment 1. The initial assessment interview can establish the trusting relationship

between the healthcare staff and the pregnant woman.2. Getting information about the woman's physical and psychological health.3. Obtaining a basis for anticipatory guidance for pregnancy.

During the first visit, assessment and physical examination must be completed including: ØHistory. Physical examination,obstetric examination, Laboratory data and health education about antenatal care .

History: Welcome the woman, and ensure a quite place where she can express concerns and anxiety without being overheard by other people. Current problems with Menstrual history, Personal and social history, Family history, Medical and surgical history, Obstetrical history, pregnancy history

Physical Examination is important to:

Detect previously undiagnosed physical problems that may affect the pregnancy and establish baseline levels that will guide the treatment of the expectant mother and fetus throughout pregnancy.

Laboratory Investigations - Routine tests and Specific tests

Ultrasound - Ultrasound is performed to: estimate the gestational age, check amniotic fluid volume, check the position of the placenta,detect the multiple pregnancy and congenital malformations,and the position of the baby.

Calculation of expected date of delivery (EDD /EDC)

While taking history of expectant mother during her first visit, it is important to ascertain the first day of the last menstrual period (LMP), length of the menstrual cycle and duration of a normal period. It is customary to count 280 days (or 9 months and 7 days) forward from the first day of LMP.

Antenatal clinic

Antenatal care is provided by the antenatal clinic. The clinics are held usually once a week at all PHC s/sub centres / MCH centres

Functions

- 1) Registration of antenatal cases
- 2) Preparation of antenatal cards
- 3) Antenatal examination
- 4) Antenatal advice
- 5) Mental preparation

- 6) Reference service
- 7) Home visit
- 8) Maintenance of records

High risk pregnancy

- 1) Elderly primi (30 years and over)
- 2) Antepartum haemorrhage , threttend abortion
- 3) Eclampsia and pre eclampsia
- 4) Twins , hydramnios
- 5) Previous still birth , intra uteine death
- 6) Elderly grand multipara
- 7) Pregnancy associated with general disease

Antenatal advice

A major component of antenatal care is antenatal advice. Major areas are

- 1) **Diet:** Adequate diet is important during pregnancy as it helps to maintain maternal health, to meet the demands of growing foetus , to provide physical strength during labor and for successful lactation. Healthy well nourished expectant mother put on 10-12 kg of weight during pregnancy . A pregnant woman needs to have daily 300 kcals of energy and 15 gm of protein over and above the normal requirement for the growth of the foetus . It should provide the following nutrients
 - A) Calories – 3300 kcal
 - B) Protein – 65 gm
 - C) Iron – 40 mg
 - D) Calcium – 1gm, besides vitamin

Diet should be adequate and balanced .Daily intake of fresh green leafy vegetables, seasonal fruits ,eggs and meat should be promoted .Encourage to take plenty of water and daily intake of 2 glasses of milk is essential.

- 2) **Personal hygiene :**
 - a. Personal cleanliness (need to bathe every day , to wear clean loose cotton clothes)
 - b. Rest and sleep (The pregnant woman should lie down to relax or sleep for 1 or 2 hours during the afternoon and at least 8 hours sleep during every night because the highest level of growth hormone secretion occurs at

sleep. Advise woman to use natural sedatives such as: warm bath & glass of warm milk.).

- c. Bowels (constipation should be avoided by regular intake of green leafy vegetables, fruits and extra fluid .
 - d. Exercise(Exercise should be simple; light house hold work is advised , avoid lifting heavy weights and long period of standing. She should avoid sitting with legs crossed because it will impede circulation)
 - e. Quit smoking and alcoholism
 - f. Dental care (The teeth should be brushed carefully in the morning and after every meal.)
 - g. Sexual activity(should be restricted especially during the last trimester
- 3) **Care of nipples:** Wash breasts with clean tap water daily. Retracted, inverted and flat nipples make breast feeding difficult which can be prevented during antenatal period by advising antenatal mothers to massage the breasts from the ribs towards the front and bring out the nipple
 - 4) **Immunization:** Two doses of tetanus toxoid should be given to pregnant woman-the first dose is at 16-20 weeks and the second dose at 20-24 weeks of pregnancy and the minimum interval between the two doses should be one month.
 5. **Others:** The pregnant women should not unnecessarily expose herself to X rays of the abdomen and also great caution should be taken in drug intake especially during the first trimester of pregnancy as they may cause foetal malformations.
 6. **Family planning:** Exposure to family planning advice and motivation should begin during the antenatal period as the mother is psychologically more receptive during pregnancy
 7. **Danger signs of pregnancy:** Mother should be given clear cut instructions she should report immediately in case of the following warning signals;
Vaginal bleeding including spotting, Persistent abdominal pain, Severe & persistent vomiting, Sudden gush of fluid from vagina, Absence or decrease fetal movement, Severe headache, edema of hands, face and leg, Dizziness, blurred vision, double vision.

- 8. Mental preparation:** It is important as physical preparation. Sufficient time must be given to the expectant mother to have a free and frank discussion and clarify her doubts.

Postnatal care

The puerperium (postnatal period) commences after the delivery of the placenta and membranes and includes the first 6 weeks after delivery. During this period, the woman's reproductive organs gradually return to normal size and shape, and prominent among these changes is involution of uterus. The uterine discharge during the first 3-4 weeks of puerperium is called lochia. It is bright red in colour (lochia rubra) during the first 3-4 days after delivery. From the fourth day or so, the colour of the lochia gets paler, and then it becomes brown or yellow (lochia serosa) and finally it becomes whitish (lochia alba) Objectives of postnatal care are

1. To prevent complications
2. To provide care for rapid restoration of mother's health
3. To facilitate breast feeding
4. To provide family planning services
5. To provide basic health education

Care during puerperium

Pulse: During the first 2 hours after delivery, the record of pulse rate should be kept 1½ hourly and thereafter twice daily (pulse rate returns to normal in 24-48 hours.)

Temperature: It should be recorded twice daily (temperature may rise to 100 degree Celsius after delivery and may returns within 24 hours.)

Fundal height: The uterus is palpated and the height of fundus above the symphysis is measured at a fixed time daily, and it should be carried out after emptying the bladder and bowel. During the first 24 hours, there is no descent of the fundus. From the second day onwards, the fundus descends by about 1 cm (1/2 inch) per 24 hours on average.

Lochia: The colour of the lochia should be recorded and if it has foul smell/retained parts which should be reported

Perineal care: The perineum should be cleansed daily with swabs soaked in antiseptic solution. The mother should be taught how to clean the area after urination and to use sterile pads. The wound should be inspected daily for signs of inflammation.

Breasts: The nipples should be cleansed with sterile water and a cotton swab before and after each feed. Hand washing should be done before each feeding.

Bladder: The mother should be encouraged to empty the bladder every 7-8 hours.

Constipation: Due to lax abdominal wall constipation is a problem.

Ambulation: Encourage the mother for early ambulation

Blood examination: If the mother is anemic she should be treated.

Advice to the mother: 1) Diet During the first 24 hours give liquid diet and she should resume her normal diet as soon as possible (550 kcal extra (first 6 months), 400 kcal extra (next 6 months) **2) Postnatal exercise.** This helps to tone up abdominal and pelvic muscles.(deep breathing, contracting and relaxing of pelvic and abdominal muscles). Gradual resumption of normal household duties is enough in case of working class women. **3) Family planning:** To those who are already having two children tubectomy/copper IUD should be advised and for a lactating woman use of copper IUD/other conventional should be advocated. Give awareness about lactational amenorrhoea

Psychological support: Give adequate support and clarify her doubts.

Registration of birth: It should be done within 21 days after birth.

Health education: Give health education about breast feeding, personal hygiene, health check up etc.

Complications in postpartum period

Infection: Genital tract (Puerperal sepsis), UTI, Mastitis, Thrombo-phlebitis of legs, Haemorrhage, incontinence and retention of urine, Mental disorders

Danger Signs

- a. Excessive vaginal bleeding
- b. i.e. soaking more than 2-3 pads in 20-30 minutes after delivery
- c. Convulsions
- d. Fast or difficult breathing
- e. Fever and weakness so that she cannot get out of bed
- f. Severe abdominal pain

NEONATAL CARE

First 28 days of life is called neonatal period

Early neonatal care

The main causes of neonatal death include a) low birth weight b) infections c) sequelae of birth injuries

Immediate care: The immediate care of the baby consists of following elements

1. Clearing the airway .As soon as the head is born; liquor and vaginal materials should be wiped gently away from the mouth and nose. Gently suction the mouth and nose. Soon after birth a baby must cry to inflate his lungs. A normal newborn may held upside down by his feet to clear the airway

If natural breathing fails:

- a. Resuscitation and active intervention. Resuscitation becomes necessary if natural breathing fails to establish within a minute. In these cases active measures include repeated suction, application of mask, intubation and assisted respiration are required
2. Apgar score. This is a simple method to evaluate the physical condition of the newborn. It requires immediate and careful observation of 5 clinical signs which is taken at 1 minute and 5 minutes after birth.

A perfect score should be 9 or 10;0-3 indicates that the baby is severely depressed; score below 5 indicates baby needs prompt action.

Signs	0	1	2
1. Heart rate	Absent	Less than 100/mt	More than 100/mt
2. Respiratory effort	Absent	Weak cry cry	Good strong
3. Muscle tone	Limp	Some flexion of extremities	Well flexed
4. Reflex irritability	No response	Some movement	Cry
5. Colour	Blue/pale	Body pink, extremities blue	Pink
Total score = 10	Severe depression 0-3	Mild depression 4-7	No depression 7-10

1. Care of the cord; Clamp the cord/tie the cord twice about 6 cm and 9 cm from the umbilicus, using a reef knot and cut the cord in between the clamps. Use properly sterilized instruments and cord ties. The cord should be kept as dry as possible. It dries and shrivels up and separates by aseptic necrosis in 5-8 days.

2. Care of the eyes: Before the eyes are open, the lid margins of the newborn should be cleaned with sterile wet swabs, one for each eye. Any discharge from the eye of an infant is pathological and calls for immediate treatment.
3. Care of the skin: The first bath is given with soap and water to remove the vernix, meconium and blood clots. Whenever the napkin/cloth is changed, the mother must clean up the baby's bottom herself and the baby should be wrapped in clean clothes.
4. Maintenance of body temperature
Little thermal control in babies especially in preterm and LBW babies. Baby should be dried immediately and well covered in order to prevent heat loss and given to the mother for breast feeding. Practice rooming in and bedding in "*Kangaroo care method*" (*strategy for LBW babies in IMNCI*)
5. Breast feeding: It should be initiated within the first half hour after birth. Feed the baby on demand. Avoid supplementary feeds and bottle feeding.

Neonatal examination

First examination: Note the general condition, colour, any congenital malformations, temperature and to rule out injury.

Second examination: It should be done within 24 hours preferably by a pediatrician and is examined from head to foot

Measuring the baby

1. Birth weight is one of the health indicators which reflect the intrauterine growth. In India birth weight ranges from 2.5-3.5 kg. It should be taken within the first hour of life before significant postnatal losses have occurred
Babies with birth weight less than 2.5 kg are called low birth weight babies. By the end of 5 months the baby doubles its birth weight: by the end of one year, the baby trebles its birth weight
2. Length (height)
For infants and children less than 2 years of age, recumbent length (crown-heel length) is measured which can be usually carried out accurately with an infantometer. (Length ranges from 45-55 cm at birth)
3. Head circumference is taken with a tape measure at the maximum circumference of the head in the occipito-frontal diameter.(ranges form 32-35 cm)

Breast feeding

Preparation of mother

- i) Nutrition: The mother should be encouraged to eat an adequate and balanced diet during pregnancy and child bearing period to be able to store fat in the body.
- ii) Less heavy work: This helps to conserve energy.
- iii) Traditional customs (eg. fasting) should be avoided.
- iv) Antenatal care of nipples. If the nipples are small encourage the mother to stretch them as much as possible
- v) Rooming in. Mother and baby should be kept together as soon as possible after birth helps to establish bonding and stimulate milk production.
- vi) Privacy .it helps them to relax and the milk will flow more easily.
- vii) Worries interfere with normal flow of milk

Importance of breast feeding

Breast milk is the best and most appropriate food until a child is 18-24 months of age. Advantages of breast milk are

- ◆ It is the best natural food for the baby.
- ◆ It fully meets the nutritional requirements of the infant and promotes optimal growth.
- ◆ It protects the baby from infection
- ◆ It is always clean and sterile
- ◆ It is available 24 hours
- ◆ It requires no preparation.
- ◆ It does not cost anything.
- ◆ It is available to the baby at correct temperature and easily digested.
- ◆ It creates bonding between mother and baby.
- ◆ Sucking is good for the baby.
- ◆ It reduces infant mortality.
- ◆ It has a natural contraceptive effect.

Principles of breast feeding

1. Breast feeding should be initiated within the first half hour after birth
2. Colostrum, the first breast milk is most suitable for the baby after birth as it

contains a high concentration of nutrients and anti-infective substances.

3. The baby should be allowed to suckle from both the breasts during each feeding.
4. It is desirable to feed the baby “on demand.”
5. The intervals between feeds vary between 1-4 hours.
6. An interval of 6 hours during night should be encouraged to ensure rest for the mother and the baby.
7. When the baby is 4 to 6 months old, breast milk alone will not be sufficient to sustain growth, so additional foods should be given.
8. Weigh the child every month and plot the weight on a growth chart

Problems in breast feeding

1. Emotional. Emotional upset may interfere with milk production
2. Flat nipples. Teach mother to squeeze her nipples and pull them gently several minutes a day
3. Swollen breasts. Prevent and treat this condition by emptying the breast regularly.
4. Sore /cracked nipples. To prevent soreness, keep the skin soft by rubbing the areola and nipple with an antiseptic cream.
5. Painful tender breasts may be due to infection which can be treated with antibiotics.
6. The baby may be having respiratory infection/congenital defects/may be premature

Complementary Feeding

When breast milk is no longer enough to meet the nutritional needs of the infant, complementary foods should be added to the diet of the child. The transition from exclusive breastfeeding to family foods, referred to as complementary feeding, typically covers the period from 6 to 18-24 months of age, and is a very vulnerable period. It is the time when malnutrition starts in many infants, contributing significantly to the high prevalence of malnutrition in children under five years of age world-wide.

Complementary feeding should be *timely*, meaning that all infants should start receiving foods in addition to breast milk from 6 months onwards. It should be *adequate*, meaning that the complementary foods should be given in amounts, frequency, consistency and using a variety of foods to cover the nutritional needs of the growing

child while maintaining breastfeeding.

Foods should be prepared and given in a safe manner, meaning that measures are taken to minimize the risk of contamination with pathogens. And they should be given in a way that is *appropriate*, meaning that foods are of appropriate texture for the age of the child and applying responsive feeding following the principles of psycho-social care.

The adequacy of complementary feeding (adequacy in short for timely, adequate, safe and appropriate) not only depends on the availability of a variety of foods in the household, but also on the feeding practices of caregivers. Feeding young infants requires active care and stimulation, where the caregiver is responsive to the child clues for hunger and also encourages the child to eat. This is also referred to as active or responsive feeding.

WHO recommends that infants start receiving complementary foods at 6 months of age in addition to breast milk, initially 2-3 times a day between 6-8 months, increasing to 3-4 times daily between 9-11 months and 12-24 months with additional nutritious snacks offered 1-2 times per day, as desired.

Immunization

Immunization is one of the most well-known and cost effective methods of preventing diseases. Though most of the Vaccine Preventable Diseases (VPDs) are controlled by now, immunization has to be sustained, not only to prevent VPDs, but also

- a) To eliminate Tetanus,
- b) Reduce the incidence of Measles and
- c) Eradicate Poliomyelitis.

Diseases Protected by Vaccination under Universal Immunisation Programme are:

- Diphtheria
- Pertussis (whooping cough)
- Tetanus
- Poliomyelitis
- Tuberculosis
- Measles
- Hepatitis B
- Japanese Encephalitis
- Meningitis and Pneumonia caused by Haemophilus influenzae type b

The vaccines must be given at the right age, right dose, right interval and the full course must be completed to ensure the best possible protection to the child against

these diseases. The schedule that tells us when and how many doses of each vaccine are to be given is called immunization schedule

Immunization Schedule*

*Update the schedule as per government notifications

If a child is not given the right vaccines in time, it is necessary to get them started whenever possible and complete the primary immunization before the child reaches its first birthday.

Sl. No.	Vaccine	Protection	Route	No. of doses	Vaccination Schedule
1	BCG(Bacillus Calmette and Guerin)	Tuberculosis	Intradermal	1	At birth
2	OPV (Oral Polio Vaccine)	Poliomyelitis	Oral	5	Birth dose for institutional deliveries, primary 3 doses at 6, 10, and 14 week and one booster dose at 16-24 month of age
3	Hepatitis B	Hepatitis B	Intramuscular	4	Birth dose for institutional deliveries
4	Pentavalent Vaccine containing(Hib + DPT+ Hepatitis B)	Diphtheria, Pertussis and Tetanus, Hib pneumonia and Hib Meningitis Hepatitis B	Intramuscular	3	Three doses at 6, 10, and 14 week
5	DPT Diphtheria, Pertussis and Tetanus)	Diphtheria, Pertussis and Tetanus	Intramuscular	2	Two booster doses at 16-24 month of age and 5-6 years of age
6	Measles	Measles	Subcutaneous	2	9-12 months of age and 2 nd dose at 16 – 24 months
7	TT (Tetanus Toxoid)	Tetanus	Intramuscular	2	10 yrs and 16 yrs of age For pregnant women two doses given
8	JE vaccination (in selected high disease burden district)	Japanese Encephalitis (brain Fever)	Subcutaneous	2	9-12 months of age and 2 nd dose at 16 and 24 months
9	IPV (Inactivated Polio Vaccine)	Poliomyelitis	Intramuscular	2	6 th and 14 th week

Family planning

A WHO expert committee defined Family planning as:

Family planning refers to practices that help individuals and couples to attain certain objectives

- To avoid unwanted births
- To bring about wanted births
- To regulate the intervals between pregnancies
- To control the time at which births occur in relation to the ages of the parent and
- To determine the number of children in the family

Types of family planning methods

1. Spacing methods:
 - a.) Natural methods
 - b.) Barrier methods: - physical barrier methods - chemical barrier methods - intra-uterine devices - hormonal methods - post conceptional methods
2. Terminal methods

Spacing methods

Natural methods

1. Coitus interruptus/ withdrawn method

In this method the penis is withdrawn from the vagina before ejaculation. In this way semen is prevented from entering the uterine cavity and pregnancy does not take place.

2. Safe period

This method is based upon the process of ovulation and menstrual cycle which helps in determination of the safe period when coitus can be done and unsafe

3. Abstinence

This involves complete avoidance of sexual cohabit.

Barrier methods

Barrier methods are those methods which prevent meeting of sperms with the ovum.

There are three types of barrier methods.

1. Physical Barrier method

A. Condom

It is a thin rubber sheath which is used by men

B. Diaphragm

The diaphragm is used by women in her vagina to form a barrier in front of the cervix. The diaphragm is dome shaped and is like a shallow cap.

C. Vaginal sponge

It is small polyurethane foam sponge, diffused with spermicide. The sponge is shaped in a way that it can be fitted on to the cervix and has a loop on its outer surface which can be used to pull out the sponge after use. Provides protection for 24 hours. It should be inserted before the coitus.

2. Chemical Barrier Method

These methods usually kill the sperms and this way chemical contraceptives help in preventing the pregnancy. The chemical contraceptives which are in use are: foam tablet aerosols, cream jelly and pastes, suppositories and soluble films

3. Intra uterine devices

These are the devices which are placed in the uterine cavity. Earlier these devices were made up of silk worm gut, silk and gold. The three different types of IUD's generations are:

First generation IUDs - These devices were made of polyethylene and are non-medicated. These are available in different sizes and shapes such as coils, spirals, and loops. The lippes loop is the most popular and commonly used device.

Second Generation IUDs - These are also made of polyethylene but copper is added into these. The copper enhances the contraceptive effect. Variety of copper devices are: Copper-7 and copper t-200, Variants of T devices: TCU: 220C and TCU: 380A, Multi load devices: ML-CU: 250, ML-CU: 375, Nova T: T CU-380. All cu devices are more effective and less chances of side effects i.e pain and bleeding and can be fitted easily in nulliparous women and tolerated by them.

Third Generation IUDs: These contain hormones which are released slowly in the uterus. The hormone affects the lining of uterus and cervical mucus. It may affect the sperm.

There are two types of hormone IUDs

PROGESTASERT: It is T shaped device and contains progesterone which is a natural hormone. Progesterone is in more use than the other hormone devices.
LEVONORGESTREL DEVICE: This is also a T shaped device which has levonorgestrel a synthetic steroid. It is found to be more effective. It needs to be changed after five years.

Hormonal methods

Hormonal methods of contraceptives are found to be the most effective method to prevent unwanted pregnancies. It is of two main types:

A. ORAL PILLS

There are varieties of oral contraceptive pills. They are:

1. COMBINED PILLS

The pill is composed of two hormones i.e synthetic oestrogen and progestogen in very small doses. There are two types of pills available with the name of: MALA-D, MALA-N

2. Progestron only pill

This pill is also known as mini pill. It contains only progestogen and it thickens the cervical mucus which prevents the entry of sperms into the uterine cavity. Mini pills are taken throughout the menstrual cycle and these are not used widely because of its high failure rate.

Once a Month Pill: It is modified combined pill. It contains long acting oestrogen and short acting progestogen. These pills are not in use because experimental results revealed high pregnancy rate and irregularity in the menstrual cycle

B. Depot Formulations

These are long acting hormonal contraceptive contains only synthetic progestogen. These are available in three forms:

1. Injectable contraceptives

It is again of two types

a. Progestagen only injectable:

There are two preparations which are available: DMPA: (Depot-medroxy progestron acetate) and NET-EN.

2. Combined injectable contraceptives

These contain progestogen and oestrogen.

3. Subdermal implants

There are two varieties. The earlier one is known as Norplant and latest one is Norplant R-2. Both of these devices are placed under the skin of the arm.

C. Vaginal rings

This method is not much in use. It consists of ring which contains small amount of pregestogen. The ring is fitted into the vagina for three weeks of menstruation cycle, after which it is removed for a week and then reworn after menstruation cycle.

Postconceptional methods

a. Menstrual Regulation

These are the methods which are used after the missed period and pregnancy may or may not have occurred. This method is used in regulating and inducing the menstruation and terminating the pregnancy or aborting the fetus.

b. Menstrual induction

This is done within few days of missed period. It is done by application of prostaglandin F₂ under sedation.

c. Abortion

Abortion refers to the termination of pregnancy before the fetus become viable i.e before it is able to live outside the womb. This period is fixed at 28 weeks when the foetus weighs 1000 grams. Abortions are either spontaneous or induced.

TERMINAL METHODS

Sterilization is only method which gives permanent protection from } conception. Either husband or wife can undergo sterilization by a simple surgical operation i.e vasectomy or tubectomy.

a. Vasectomy

It is sterilization of male. It is very simple and minor The operation involves a small operation which takes hardly 15-20 min. cut on both sides of scrotum then a small portion of vasdeferens (about 1cm) on either side of the scrotum is cut and ligated, folded back and sutured.

b. Tubectomy

It is sterilization of females. This is done by resecting a small part of fallopian tubes and ligates the sected ends. The closing of the tubes can also be done by using other methods like closing the tubes with bands, clips and electrocautery. The operation

can be done through abdominal or vaginal approach.

The most common abdominal procedures are laparoscopy and minilaparotomy. The tubectomy can be done after delivery, between delivery and after abortion.

Practical Activities

1. Antenatal care
2. Post Natal Care
3. Care of newborn
4. Health teaching on Breast Feeding Techniques
5. Health teaching on Immunisation
6. Health teaching on family planning methods

Assessment Activities

1. Preparation of information booklet on antenatal and post natal care
2. Preparation of a chart on breast feeding technique
3. Preparation of information booklet on breast feeding and complementary feeding
4. Preparation of poster on immunization
5. Seminar on family planning methods
6. Health talk on antenatal care, post natal care breast feeding and immunisation

TE Questions

1. The main goal of Antenatal care is to reduce maternal mortality and morbidity rates.
 - a. Write down the schedule of antenatal visits.
 - b. Briefly describe antenatal advises.
2. National immunisation programme targets nine killer diseases. Prepare a POSTER showing the schedule of vaccines.
3. Complete the following
 - a. Apgar score
 - i. Appearance ii.....
 - iii. iv. Activity v.

UNIT 4.6 : ADOLESCENCE

Introduction

Adolescence describes the teenage years between 13 and 19 and can be considered the transitional stage from childhood to adulthood. However, the physical and psychological changes that occur in adolescence can start earlier, during the preteen or “teen” years (ages 9 through 12). Adolescence can be a time of both disorientation and discovery. The transitional period can bring up issues of independence and self-identity; many adolescents and their peers face tough choices regarding schoolwork, sexuality, drugs, alcohol, and social life. Peer groups, romantic interests and external appearance tend to naturally increase in importance for some time during a teen’s journey toward adulthood. This unit covers the concept of adolescence, physical and physiological changes in adolescence, problems of adolescents and promoting optimum health during adolescence.

Learning outcomes

The Learner:

- Defines adolescence
- Describes the physical and physiological changes in adolescence
- Identifies the problems of adolescents
- Practices the different ways of promoting optimum health during adolescence

Adolescence

Adolescence is a period of rapid physical and emotional development. This period starts around 10 years of age and extending till 19 years.

1. This is the Period of rapid growth and development.
2. They experience changes in their bodies and minds during this time.

Physical and Physiological Changes in Adolescence

3. It is important that you give due attention to the health of adolescents, as the health and productivity of the nation depends on them.

As part of growing up, adolescents will go through puberty. Puberty is the time in life when the body undergoes changes from that of a child to an adult. You already know about the chemicals in the body called hormones cause these changes. Because there are so many changes happening during puberty, adolescents find it difficult to adjust to these changes and often they need support.

Not only does the body change, but the emotions of adolescents change too. How they think and feel about themselves, family and friends may seem different. As adolescents go through puberty, they like to take important decisions for themselves, take on more responsibilities and become more independent.

Changes in girls	Changes in boys
<p>Breasts: In most girls, puberty starts with breast growth. When breasts start to develop, one may notice small, tender lumps under one or both nipples that will get bigger over the next few years. When breasts first begin to develop, it is not unusual for one breast to be larger than the other. However, as they develop, they will be alike in size and shape.</p> <p>Hair: Soft hair will start to grow in the pubic area (the area between legs). This hair will eventually become thick and very curly. Hair grows under the arms and on the legs.</p> <p>Body shape: Hips get wider and waist will get smaller. Body will also begin to build up fat in the stomach, buttocks, and legs. This is normal and gives body the curves of a woman.</p> <p>Body size: Arms, legs, hands, and feet may grow faster than the rest of the body.</p> <p>Skin: Skin may get oilier. This is because glands are growing too. Almost all teenagers get acne at one time or another.</p> <p>Menstruation: During this period menstrual cycle, or “period” begin. Most girls get their periods between 9 and 16 years of age.</p>	<p>Body size: Arms, legs, hands and feet may grow faster than the rest of the body.</p> <p>Body shape: Adolescents will get taller and shoulders will get broader. They will gain a lot of weight. During this time, many boys experience swelling under their nipples. This may cause them to worry that they are growing breasts.</p> <p>During puberty, muscles will also get bigger.</p> <p>Voice: Voice will get deeper. This may start with voice cracking.</p> <p>Hair: Hair will appear under arms, on legs and face, and above penis. Chest hair may appear during puberty or later, although not all men have chest hair.</p> <p>Skin: Skin may get oilier and may sweat more.</p> <p>Penis: Penis and testes will get larger.</p> <p>Boys get erections due to an increase in sex hormones. Erections occur when the penis gets stiff and hard – sometimes for no reason. This is normal. Body will also begin to produce sperm during puberty. This means that during an erection, adolescents may also experience ejaculation. This occurs when semen (made up of sperm and other fluids) is released through the penis. This could happen during sleep. This is called a nocturnal emission or “wet dream.”</p>

Problems of Adolescents - Physical, Physiological and Psychosocial

Adolescence is a time of immense biologic, psychological, and social change. These rapid changes in hormonal milieu, changing ideas and concepts about the world, having to cope up with the expectations from the society and need to establish their own identity keep them in lots of pressure.

Adolescent nutrition

Nearly half of adolescent girls aged 15–19 in India are underweight, with a body mass index of less than 18.5. (UNICEF global database 2011)

There is increase in nutritional requirement during this period of rapid growth micronutrient being as important as energy and protein.

Insufficient dairy product intake in underprivileged girls leads to poor intake of protein and calcium resulting low bone mineral density.

Vitamin A deficiency is also an important issue in economically deprived adolescents.

Under nutrition often delays the onset of puberty and sexual maturation, and result in stunting, poor bone mass accrual and reduced work capacity.

A large proportion of India's adolescents are anaemic: 56 per cent of girls and 30 per cent of boys.

The national Ministry of Health and Family Welfare (MHFW) launched a nationwide Weekly Iron and Folic Acid Supplementation (WIFS) programme in January 2013.

The services delivered under scheme:-

- 1) Weekly iron and folic acid supplementation;
- 2) Bi-annual deworming; and
- 3) Nutrition counselling about how to improve diet, prevent anaemia and minimize the potential side-effects of Iron and Folic Acid supplementation and deworming.

Kishori shakti yojna to improve nutritional and health status of girls in age group of 11-18 years.

Improving nutritional status of adolescent girls helps break the cycle of malnutrition and low birth weight babies.

Eating disorders

ANOREXIA NERVOSA:- It is an eating disorder characterized by a low weight ,fear of gaining weight, a strong desire to be thin and food restriction. This is more

common among 15-19yr old.

Characterized by-

Body weight <85% of expected weight for age and height

Intense fear of becoming fat even though underweight.

Disturbed body image and denial that current body weight is low

In postmenarcheal girls, amenorrhea.

ANOREXIA BULIMIA:-It is an eating disorder characterized by binge eating followed by purging. It is more common in girls between 10-19 yr of age.

Mental health problems

1. Depression is the top cause of illness and disability among adolescents and suicide is the third cause of death.
2. Adjustment disorder, anxiety disorder, delinquent behavior, poor body image, and low self-esteem are other psychological problems.
3. Adolescents are at higher risk of committing suicide because of their cognitive immaturity and increased impulsivity.

Early pregnancy & child birth

- a) Complications linked to pregnancy and childbirth is the second cause of death for 15-19-year-old girls globally.
- b) Babies born to adolescent mothers face a substantially higher risk of dying than those born to women aged 20 to 24.
- c) Unmarried adolescents are likely to resort to unsafe method of abortions, which increases the risk of complication like septicemia and also mortality.
- d) Adolescent pregnancy is also at increased risk of pre-eclampsia, preterm labor, prolonged and obstructed labor, and postpartum hemorrhage. And such pregnancies are 2 to 4 times likely to die during childbirth as compared to adult pregnancies.
- e) Many girls who become pregnant have to drop out of school.
- f) Newborns born to adolescent mothers are also more likely to have low birth weight, with the risk of long-term effects.
- g) WHO published guidelines in 2011 with the UN Population Fund (UNFPA) on preventing early pregnancies and reducing poor reproductive outcomes with 6 main objectives:

- Reducing marriage before the age of 18;
- Creating understanding and support to reduce pregnancy before the age of 20;
- Increasing the use of contraception by adolescents at risk of unintended pregnancy;
- Reducing coerced sex among adolescents;
- Reducing unsafe abortion among adolescents;
- Increasing use of skilled antenatal, childbirth and postnatal care among adolescents.

Gender dysphoria

People who have gender dysphoria feel strongly that they are not the gender they physically appear to be.

For example, a person who has a penis and all other physical traits of a male might feel instead that he is actually a female. That person would have an intense desire to have a female body and to be accepted by others as a female. Or, someone with the physical characteristics of a female would feel her true identity is male.

Sleep disturbance

- a) During the period of rapid growth, adolescents have increased sleep requirement.
- b) But they are deprived of sleep due to increased academic activity, parents working in shift or watching TV late into the night.
- c) Inadequate sleep may cause poor school performance, daytime drowsiness, aggressive behavior, conduct disorder, anxiety, restless leg syndrome and depression.
- d) Sleep deprived teens may have periods of subconscious bouts of sleep during the daytime, making them prone to injuries and accidents.

Sexually transmitted infections

- a) Early sexual activity is not uncommon in India.
- b) Various biological (immature and incompletely estrogenised mucosa) and psychological factors (lack of preparedness, lack of familiarity with barrier contraceptives) make an adolescent susceptible to these infections.
- c) Vaginal discharge is common in adolescent girls and may signify physiological leucorrhoea of puberty or endogenous or sexually transmitted infections.

- d) Pelvic inflammatory disease (PID) is a spectrum of inflammatory disorder of female genital tract. It can present with abdominal pain and vaginal discharge.
- e) Common STIs are
- Bacterial Vaginosis
 - Chlamydia
 - Genital Herpes
 - Gonorrhoea
 - Hepatitis B
 - Hepatitis C
 - Human Papillomavirus
 - Lymphogranuloma Venereum (LGV)
 - Pubic Lice (Crabs)
 - Scabies
 - Syphilis
 - Trichomoniasis
 - Yeast Infections
- f) HIV-
- More than 2 million adolescents are living with HIV
 - Although HIV deaths decreased in last 8 years but adolescents deaths are rising.
 - Young people need to know how to protect themselves and have the means to do so. This includes being able to obtain condoms to prevent sexual transmission of the virus and clean needles and syringes for those who inject drugs. Better access to HIV testing and counselling is also needed.

Obesity

- a) Prevalence of obesity and overweight is higher in boys than in girls.
- b) Obesity has strong association with asthma, sleep disorder, reflux disease, blount disease, slipped femoral epiphysis, gallstones, fatty liver, and numerous metabolic derangements like type 2 diabetes, dyslipidemia, hypertension and polycystic ovarian disease.

Change in sedentary life style, decrease consumption of calorie dense food and increase outdoor activity contribute to control of these disorders.

Gynecological problems

- a) It is common to have anovulatory and irregular menstrual cycles during first two years after menarche.
- b) In polycystic ovarian syndrome, with a combination of menstrual irregularities and ovarian cyst with androgen excess like acne or hirsutism, occurs in around 9% of Indian adolescent girls. The condition has association with other metabolic derangements like obesity, insulin resistance and type 2 diabetes.

Substance abuse

- a) Most of the tobacco and alcohol use starts during adolescence.
- b) Alcohol (21%), Tobacco (14%), cannabis (3%), and opium (0.4%) are the most prevalent substance abuse in Indian adolescence.
- c) Addicts are more prone to accidents, injuries, violence and trading sex for drugs, HIV, hepatitis C, sexually transmitted disease and tuberculosis.

Violence

- a) WHO defines violence as
 - a. “The intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community that either results in or has a high likelihood of resulting in injury, death, psychologic harm, maldevelopment or deprivation”
 - b) Physical and sexual violence are common in India.
 - c) 20-30% of young females suffering from domestic violence and 5-9% young females reporting sexual violence (NFHS3).
 - d) Motor vehicle and industrial accidents are common in boys whereas burns are common in girls.

Multiple treatment modalities are used simultaneously in managing adolescents with persistent violent and aggressive behavior and range from cognitive-behavioral therapy involving the individual and family to specific family interventions (parent management training, multisystemic treatment) and pharmacotherapy.

Treatment of existing comorbid conditions, such as attention-deficit/hyperactivity disorder, depression, and substance abuse, appears to reduce aggressive behavior.

Lack of sex education

- a) The majority of Indian adolescent do not get formal sex education in an effective way.
- b) Peers, books, internet and magazines are their main source of information about sex.
- c) Parents often fail to discuss issues like safe sex, dating, abortion, HIV, and sexually transmitted diseases.

Social challenges

1. Media
 - a. With the availability of electronic media, adolescents are exposed to information from all across the world.
 - b. This exposure is unsupervised because of working parents and increasing use of electronic gadgets.
 - c. Due to inability to separate fact from fantasy, adolescents succumb to the glamorous portrayal of tobacco or alcohol consumption, unrealistic expectations, physical aggression, destructive behavior and unprotected sex.
2. Peer pressure
 - a. Peer formation is a part of adolescent social development.
 - b. Pressure for conforming to norms drive many of their actions and decisions, including risk taking behavior and initiation of substance abuse.
3. Poverty
 - a. Children belonging to poorer families are likely to have inadequate diets, have higher chances of having depression, antisocial behavior and engaging in drugs or sexual activity at earlier ages.
4. Illiteracy
 - a. Though situation is improving over the years, still 33% of Indian youth are not able to complete their primary education.
 - b. Female gender belonging to rural and poor background is risk factor for illiteracy.
5. Early Marriage
 - a. Though the legal age for marriage is 18 yr for girls, many states still have the practice of childhood and early marriage.

6. Academic and Emotional Stress
 - a. Examinations cause significant physiological and psychological stress.
 - b. Apart from rapid changes in their body structures, various other factors like peer acceptance, discrimination, academic burden, parental expectations, changing social environments cause stress among adolescents.
 - c. Some adolescents may face adjustment problems resulting in various psychological and somatic effects.
7. Discrimination
 - a. Adolescent girls are often asked to limit their outdoor or extracurricular activities and are not involved in any decision making. They are expected to do household work.
 - b. Gender based discrimination is seen in education and even food distribution

PROMOTING OPTIMUM HEALTH DURING ADOLESCENCE

The major cause of morbidity and mortality in adolescence is not diseases, but health damaging behaviours. Effective health education for adolescence should incorporate a developmentally appropriate health education programme .it include

1. Personal care
 - Personal hygiene including hair, eyes, foot menstrual etc
 - Body posture
 - Body art tattooing and piercing
 - Eating habits
 - Rest and sleep
 - Exercise and activity
 - Dental health
 - Prevention of accidents and injuries
 - Stress reduction measures
 - Immunization
 - Nutrition
2. Family life education and life skill education
 - Basis of friendship

- Communication skill
 - Positive thinking
 - Self awareness
 - Coping with stress and emotion
 - Resolving conflicts
3. Premarital counselling
 4. Prevention of addictive behaviour
 5. Prevention of sexual molestation
 6. Early management of medical and behavioural problem
 7. Internet safety
 8. Vocational guidance
 9. Life skill Education

Practical Activities

1. Visit to adolescent clinic

Assessment Activities

- 1 Survey among school children on adolescent problem

TE Questions

1. Adolescence is a time of immense biologic, psychological, and social change. Describe the major physiological problems of adolescence.
As part of career guidance and counseling centre a doctor is visiting your school. Prepare five questions regarding adolescent problems.

UNIT 4.7: NATIONAL HEALTH PROGRAMMES

Introduction

Since India became free, several measures have been taken by national government to improve the health of the people. Prominent among these measures are the National Health Programmes, which have been launched by the central government for the control/eradication of the communicable diseases, improvement of environmental sanitation, raising the standard of nutrition, control of population and improving rural health.

Learning outcomes

The Learner:

- Describes the national health programmes in India
- Participates in the national health programmes

National health programmes

Brief account of some important national health programmes are discussed below.

1. Mission indradhanush

Mission Indradhanush was launched by the Ministry of Health and Family Welfare, Government of India on December 25, 2014. Between 2009-2013 immunization coverage has increased from 61% to 65%, indicating only 1% increase in coverage every year. To accelerate the process of immunization by covering 5% and more children every year, Indradhanush mission has been adopted to achieve target of full coverage by 2020.

The Mission Indradhanush, depicting seven colours of the rainbow, aims to cover all those children by 2020 who are either unvaccinated, or are partially vaccinated against seven vaccine preventable diseases which include diphtheria, whooping cough, tetanus, polio, tuberculosis, measles and hepatitis B.

2. National vector borne disease control programme

Launched in 2003-04 by merging National anti -malaria control programme, National Filaria Control Programme and Kala Azar Control programmes .Japanese B Encephalitis and Dengue/DHF have also been included in this Program Directorate of NAMP is the nodal agency for prevention and control of major Vector Borne Diseases

List of Vector Borne Diseases Control Programme Legislations:

1. National Anti - Malaria programme
2. Kala - Azar Control Programme
3. National Filaria Control Programme
4. Japanese Encephalitis Control Programme
5. Dengue and Dengue Hemorrhagic fever

3. Revised national tuberculosis eradication programme

The National TB Control Programme was started in 1962 with the aim to detect cases earliest and treat them. In the district, the programme is implemented through the district Tuberculosis Centre (DTC) and the Primary Health Institutions. The District Tuberculosis Programme (DTP) is supported by the state level organization for the coordination and supervision of the programme. The Revised National Tuberculosis Control Programme (RNTCP), based on the DOTS strategy, began as a pilot project in 1993 and was launched as a national programme in 1997 but rapid RNTCP expansion began in late 1998

The Revised National Tuberculosis Control Programme has initiated early and firm steps to its declared objective of 'Universal access to early quality diagnosis and quality TB care for all TB patients'. The year 2012 witnessed innumerable activities happening towards the same. Notification of TB; case based web based recording and reporting system (NIKSHAY); Standards of TB care in India; Composite indicator for monitoring programme performance; Rapid scale up of the programmatic management of drug resistant TB services are few of the worthwhile mention in this regard.

NIKSHAY, the web based reporting for TB programme has been another notable achievement initiated in 2012 and has enabled capture and transfer of individual patient data from the remotest health institutions of the country.

4. National aids control programme

National AIDS Control Programme was launched in India in the year 1987. The ministry of Health and family welfare has set up National AIDS Control Organisation (NACO) as a separate wing to implement and closely monitor the various components of the programme. The aim of the programme was:

1. To prevent further transmission of HIV
2. To decrease the morbidity and mortality associated with HIV infection

3. To minimize the socioeconomic impact of resulting from HIV infection
 - a) NACP Phase I (1992-1999)
 - b) NACP Phase II (1999-2000)
 - c) NACP Phase III (2007- 2012)
 - d) NACP Phase IV (2012-2017)

The objectives of NACP Phase IV are

Objective 1: Reduce new infections by 50%

Objective 2: Provide comprehensive care and support to all persons living with HIV/AIDS and treatment services for all those who require it.

Key Strategies

Strategy 1: Intensifying and consolidating prevention services, with a focus on HRGs and vulnerable population.

Strategy 2: Increasing access and promoting comprehensive care, support and treatment

Strategy 3: Expanding IEC services for (a) general population and (b) high risk groups with a focus on behaviour change and demand generation.

Strategy 4: Building capacities at national, state, district and facility levels

Strategy 5: Strengthening Strategic Information Management Systems

5. National programme for control of blindness

National Programme for Control of Blindness was launched in the year 1976 as a 100% Centrally Sponsored scheme with the goal to reduce the prevalence of blindness from 1.4% to 0.3%. As per Survey in 2001-02, prevalence of blindness is estimated to be 1.1%. Rapid Survey on Avoidable Blindness conducted under NPCB during 2006-07 showed reduction in the prevalence of blindness from 1.1% (2001-02) to 1% (2006-07). Various activities/initiatives undertaken during the Five Year Plans under NPCB are targeted towards achieving the goal of reducing the prevalence of blindness to 0.3% by the year 2020.

Strategies

1. Decentralized implementation of the scheme through District Health Societies (NPCB)
2. Reduction in the backlog of blind persons by active screening of population

above 50 years, organising screening eye camps and transporting operable cases to eye care facilities

3. Development of eye care services and improvement in quality of eye care by training of personnel, supply of high-tech ophthalmic equipment, strengthening follow up services and regular monitoring of services;
4. Screening of school age group (Primary & Secondary) children for identification and treatment of Refractive Errors, with special attention in under-served areas;
5. Public awareness about prevention and timely treatment of eye ailments;
6. Special focus on illiterate women in rural areas. For this purpose, there should be convergence with various ongoing schemes for development of women and children;
7. To make eye care comprehensive, besides cataract surgery, provision of assistance for other eye diseases like Diabetic Retinopathy, Glaucoma Management, Laser Techniques, Corneal Transplantation, Vitreoretinal Surgery, Treatment of Childhood Blindness etc.;
8. Construction of dedicated Eye Wards and Eye OTs in District Hospitals in NE States and few other States as per need;
9. Development of Mobile Ophthalmic Units [renamed as Multipurpose District Mobile Ophthalmic Units (MDMOU)] in the district level for patient screening & transportation of patients;
10. Continuing emphasis on Primary Healthcare (eye care) by establishing Vision centers in all PHCs with a PMOA in position.
11. Participation of community and Panchayat Raj institutions in organizing services in rural areas;
12. Involvement of Private Practitioners in the programme.

6. Universal immunization programme

The Expanded Program on Immunization (EPI), a program for immunizing all children during the first year of life with DPT, OPV, BCG and typhoid–paratyphoid fever vaccines was launched in 1978. In 1985, the name of EPI was changed to the Universal Immunization Program (UIP). The stated objectives of UIP are to:

- Rapidly increase immunization coverage
- Improve the quality of services

- Establish a reliable cold chain system to the health facility level
- Introduce a district-wise system for monitoring of performance
- Achieve self-sufficiency in vaccine production

India's Universal Immunization Programme is one of the largest of its kind in the world, in terms of quantity of vaccine used, number of beneficiaries reached out to, number of immunization sessions organized and the geographical spread and diversity of areas covered. It caters to nearly 27 million infants and 30 million pregnant women annually free of cost. There is a strong political commitment in the country for achieving universal immunization coverage and for the eradication and elimination of the targeted diseases.

7. Pulse polio immunization programme

With the global initiative of eradication of polio in 1988 following World Health Assembly resolution in 1988, Pulse Polio Immunization programme was launched in India in 1995. Children in the age group of 0-5 years administered polio drops during National and Sub-national immunization rounds (in high risk areas) every year. About 172 million children are immunized during each National Immunization Day (NID).

The last polio case in the country was reported from Howrah district of West Bengal with date of onset 13th January 2011. Thereafter no polio case has been reported in the country.

WHO on 24th February 2012 removed India from the list of countries with active endemic wild polio virus transmission.

The Pulse Polio Initiative was started with an objective of achieving hundred per cent coverage under Oral Polio Vaccine. It aimed to immunize children through improved social mobilization, plan mop-up operations in areas where poliovirus has almost disappeared and maintain high level of morale among the public.

8. National health mission

National Health Mission (NHM) encompassing two Sub-Missions, National Rural Health Mission (NRHM) and National Urban Health Mission (NUHM).

Vision of NHM is "Attainment of Universal Access to Equitable, Affordable and Quality health care services, accountable and responsive to people's needs, with effective inter-sectoral convergent action to address the wider social determinants of health".

Goals of NHM

1. Reduce MMR to 1/1000 live births
2. Reduce IMR to 25/1000 live births
3. Reduce TFR to 2.1
4. Prevention and reduction of anaemia in women aged 15–49 years
5. Prevent and reduce mortality & morbidity from communicable, non-communicable; injuries and emerging diseases
6. Reduce household out-of-pocket expenditure on total health care expenditure
7. Reduce annual incidence and mortality from Tuberculosis by half
8. Reduce prevalence of Leprosy to <1/10000 population and incidence to zero in all districts
9. Annual Malaria Incidence to be <1/1000
10. Less than 1 per cent microfilaria prevalence in all districts
11. Kala-azar Elimination by 2015, <1 case per 10000 population in all blocks

9. Reproductive, maternal, newborn, child and adolescent health

RMNCH+A approach has been launched in 2013 and it essentially looks to address the major causes of mortality among women and children as well as the delays in accessing and utilizing health care and services. The RMNCH+A strategic approach has been developed to provide an understanding of ‘continuum of care’ to ensure equal focus on various life stages. Priority interventions for each thematic area have been included in this to ensure that the linkages between them are contextualized to the same and consecutive life stage. It also introduces new initiatives like the use of Score Card to track the performance, National Iron + Initiative to address the issue of anemia across all age groups and the Comprehensive Screening and Early interventions for defects at birth, diseases and deficiencies among children and adolescents. The RMNCH+A appropriately directs the States to focus their efforts on the most vulnerable population and disadvantaged groups in the country. It also emphasizes on the need to reinforce efforts in those poor performing districts that have already been identified as the high focus districts.

10. National cancer control programme

The National Cancer Control Programme was launched in 1975-76 with the objectives of primary prevention, early detection, treatment and rehabilitation. In order to cater to the changing needs of the disease the programme has undergone

three revisions with the third revision in December 2004. Under the revised programme, the primary focus is on correcting the geographic imbalance in the availability of cancer care facilities across the country. The scope of the programme and the quantum of assistance under the various schemes have been increased.

11. National mental health programme

The Government of India has launched the National Mental Health Programme (NMHP) in 1982, keeping in view the heavy burden of mental illness in the community, and the absolute inadequacy of mental health care infrastructure in the country to deal with it.

NMHP has 3 components:

1. Treatment of Mentally ill
2. Rehabilitation
3. Prevention and promotion of positive mental health.

Aims

1. Prevention and treatment of mental and neurological disorders and their associated disabilities.
2. Use of mental health technology to improve general health services.
3. Application of mental health principles in total national development to improve quality of life.

12. Janani shishu suraksha karyakram

Government of India has launched Janani Shishu Suraksha Karyakaram (JSSK) on 1st June, 2011.

The scheme is estimated to benefit more than 12 million pregnant women who access Government health facilities for their delivery. Moreover it will motivate those who still choose to deliver at their homes to opt for institutional deliveries. . It is an initiative with a hope that states would come forward and ensure that benefits under JSSK would reach every needy pregnant woman coming to government institutional facility. All the States and UTs have initiated implementation of the scheme.

The following are the Free Entitlements for pregnant women:

- Free and cashless delivery
- Free C-Section
- Free drugs and consumables

- Free diagnostics
- Free diet during stay in the health institutions
- Free provision of blood
- Exemption from user charges
- Free transport from home to health institutions
- Free transport between facilities in case of referral
- Free drop back from Institutions to home after 48hrs stay

13. Rashtriya kishor swasthya karyakram

The Ministry of Health & Family Welfare has launched a health programme for adolescents, in the age group of 10-19 years, which would target their nutrition, reproductive health and substance abuse, among other issues.

The *Rashtriya Kishor Swasthya Karyakram* was launched on 7th January, 2014. The key principle of this programme is adolescent participation and leadership, Equity and inclusion, Gender Equity and strategic partnerships with other sectors and stakeholders. The programme envisions enabling all adolescents in India to realize their full potential by making informed and responsible decisions related to their health and well-being and by accessing the services and support they need to do so.

To guide the implementation of this programme, MOHFW in collaboration with UNFPA has developed a National Adolescent Health Strategy. It realigns the existing clinic-based curative approach to focus on a more holistic model based on a continuum of care for adolescent health and developmental needs.

The Rashtriya Kishor Swasthya Karyakram (National Adolescent Health Programme), will comprehensively address the health needs of the 243 million adolescents. It introduces community-based interventions through peer educators, and is underpinned by collaborations with other ministries and state governments.

14. National programme for prevention and control of diabetes, cardiovascular diseases and stroke

Considering the rising burden of NCDs and common risk factors to major Chronic Non-Communicable Diseases, Government of India initiated an integrated National Programme for Prevention and Control of Cancers, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS). The focus of the Programme is on health promotion and prevention, strengthening of infrastructure including human resources, early diagnosis and management and integration with the primary health care system through

NCD cells at different levels for optimal operational synergies. National Cancer Control Programme, an on-going Programme, has been integrated under NPCDCS.

Services offered under NPCDCS

Major risk factors for these NCDs are raised blood pressure, cholesterol, tobacco use, unhealthy diet, physical inactivity, alcohol consumption, and obesity which are modifiable. Hence a majority of cancers and CVDs can be prevented and treated if diagnosed at an early stage. Health promotion and prevention of chronic NCDs are yet to be adequately addressed in the country's health system. Presently, Clinical services, too, are not adequately equipped to provide the required level of care for these diseases in primary and secondary health-care settings. Therefore, the appropriate strategies have been devised to be implemented under NPCDCS to ensure that the NCDs can be prevented and managed in an effective manner.

A. Cardiovascular Diseases (CVD), Diabetes & Stroke

- A Cardiac care unit at each of the 100 district hospitals.
- NCD clinic at 100 district hospitals and 700 Community Health Centres (CHCs) for diagnosis and management of Cardiovascular Diseases (CVD), Diabetes & Stroke.
- Provision for availability of life saving drugs, to each district hospital in 100 districts.
- Opportunistic Screening for diabetes and high blood pressure to all persons above 30 years including pregnant women of all age groups at 20,000 Sub Centres.
- Home based care for bed ridden cases in 100 districts.
- Support for contractual manpower and equipments at the 100 district hospitals & 700 CHCs for management of NCDs including health promotion activities.

B. Cancer:

- Common diagnostic services, basic surgery, chemotherapy and palliative care for cancer cases at 100 district hospitals.
- Support for Chemotherapy drugs at each district hospital
- Day care Chemotherapy facilities at 100 district hospitals.
- Facility for laboratory investigations including Mammography at 100 district hospitals
- Home based palliative care for chronic, debilitating and progressive cancer patients at 100 districts.

- Support for contractual manpower and equipment for management of cancer cases at the 100 district hospitals.
- Strengthening of 65 centre Tertiary Cancer Centres (TCCs)

15. National family welfare programme

India launched the National Family Welfare Programme in 1951 with the objective of “reducing the birth rate to the extent necessary to stabilize the population at a level consistent with the requirement of the National economy. The Family Welfare Programme in India is recognized as a priority area, and is being implemented as a 100% centrally sponsored programme.

Practical Activities

1. Health talk on National Health Programmes
2. Poster preparation on National Health Programmes

Assessment Activities

1. Questionnaire for Interactive session with a JPHN on national health programmes
2. Report of interactive session
3. Seminar on National health programmes
4. Report of visit to primary health centre
5. Poster preparation on National Health Programmes

TE Questions

1. National Health Programmes, which have been launched by the central government for the control/eradication of the communicable diseases.
 - a. List down Ten national health programmes.
 - b. Describe the National AIDS control programme briefly.
2. Mission Indradhanush was launched by the Ministry of Health and Family Welfare, Government of India on _____

UNIT: 4.8: HEALTH CARE OF THE COMMUNITY

Introduction

Health is influenced by a number of factors such as adequate food, housing, basic sanitation, healthy life styles, protection against environmental hazards and communicable diseases. The frontiers of health extend beyond the narrow limits of medical care. So the health care embraces a multitude of services provided to individuals or community by agents of health services or professions for the purpose of promoting, maintaining, monitoring or restoring health.

Learning outcomes

The Learner:

- Describes the levels of health care
- Defines the primary health care
- Enlists the Millennium development goals
- Explains the various aspects of primary health care
- Explains the primary health care in India
- Describes the Integrated Child Development Scheme
- Describes the local self government
- Describes about the national and international health agencies

Health care of the community

Levels of health care

Primary Healthcare

Primary healthcare denotes the first level of contact between individuals and families with the health system.

In India, Primary Healthcare is provided through a network of Sub centres and Primary Health Centres in rural areas, whereas in urban areas, it is provided through Health posts and Family Welfare Centres.

Secondary Health Care

Secondary Healthcare refers to a second tier of health system, in which patients from primary health care are referred to specialists in higher hospitals for treatment. In India, the health centres for secondary health care include District hospitals and Community Health Centre at block level.

Tertiary Health Care

Tertiary Health care refers to a third level of health system, in which specialized consultative care is provided usually on referral from primary and secondary medical care. Specialised Intensive Care Units, advanced diagnostic support services and specialized medical personnel on the key features of tertiary health care. In India, under public health system, tertiary care service is provided by medical colleges and advanced medical research institutes.

Primary Health Care

The Alma-Atta conference defined primary health care as follows “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 & country can afford.

Elements of primary health care

Alma-Atta declaration has outlined essential components of primary health care

1. Education concerning prevailing health problems and the methods of preventing and controlling them.
2. Promotion of food supply and proper nutrition
3. Adequate supply of safe water and basic sanitation
4. Maternal and child health care including family planning
5. Immunization against major infectious diseases
6. Prevention and control of locally endemic diseases
7. Appropriate treatment of common diseases and injuries
8. Provision of essential drugs

Principles of primary health care

a. Equitable distribution

This means health services should be shared by all people irrespective of their ability to pay and all (rich, or poor, urban or rural) must have access to health services.

b. Community participation

The involvement of individuals, families and communities in promotion of their own health and welfare is an essential ingredient of primary health care.

c. Intersectional coordination

The components of primary health care cannot be provided by the health sector

alone. In addition to health all related sectors like agriculture, animal husbandry, food, industry, education, housing, public works, communication and other sectors are involved. These sectors are coordinated to achieve cooperation.

d. Appropriate technology

Appropriate technology means technology that is scientifically sound, adaptable to local needs and acceptable to those who apply it and those for whom it is used and that can be maintained by the people themselves in keeping with the principle of self reliance with the resources the community and country can afford.

Millennium development goals

The Millennium Development Goals (MDGs) are eight international development goals that were officially established following the *Millennium Summit of the United Nations in 2000*, following the adoption of the United Nations Millennium Declaration. All 193 United Nations member states and at least 23 international organizations have agreed to achieve these goals by the year 2015. The goals are:

1. Eradicating extreme poverty and hunger,
2. Achieving universal primary education,
3. Promoting gender equality and empowering women
4. Reducing child mortality rates,
5. Improving maternal health,
6. Combating HIV/AIDS, malaria, and other diseases,
7. Ensuring environmental sustainability, and
8. Developing a global partnership for development.

Each of the goals has specific stated targets and dates for achieving those targets.

Primary Health care in India

1. Village level
 - a. Village health Guides
 - b. Training of local dais
 - c. ICDS scheme
 - d. ASHA Scheme
2. Sub-centres

They are the peripheral outpost of existing health delivery system in rural areas. There is one sub centre for every 5000 population and one for every 3000 population

in hilly, tribal and backward areas. Each subcentre is manned by one male and one female multipurpose worker. Functions of subcentres are limited to mother and child health care, family planning and immunization.

The work at subcentres is supervised by male and female health assistants.

Staffing pattern in health subcentres

Health worker (Male)	-	1
Health worker (female)	-	1
Voluntary worker	-	1
Total	-	3

3. Primary Health Centres

The Bhore Committee in 1946 gave the concept of primary health centre as a basic health unit, to provide as close to the people as possible, an integrated curative and preventive health care to the rural population with emphasis on preventive and promotive aspects of health care.

In 1983 the National Health plan was formulated, under which the PHC were to be reorganized on the basis of one PHC for 30,000 population and 20,000 in tribal, hilly and backward areas

Functions of PHC

1. Medical care including referral and laboratory services
2. Prevention and control of locally endemic diseases
3. Environment sanitation with priority for provision of safe water supply and sanitary disposal of excreta
4. Maternal and child health services (MCH)
5. Family planning
6. School Health Service
7. Health education
8. Collection and reporting of vital statistics
9. Carrying out National Health programmes
10. Training of Personal – health guides, health workers, local dais and health assistants

Staffing pattern of PHC

Medical officer	-	1
Community Health officer	-	1
Pharmacist	-	1
Nurse midwife	-	1
ANM	-	1
Health educator (Block extension Educator)	-	1
Health assistant (Male)	-	1
Health assistant (female)	-	1
VDC	-	1
LDC	-	1
Lab technician	-	1
Driver (subject to availability of vehicle)	-	1
Class IV	-	4
Total	-	16

4. Community Health Centres (CHC)

To provide adequate treatment and referral services. One CHC for every 80000 to 120000 population.

Staffing pattern

Medical officer	:	4
Nurse midwife	:	7
Dresser	:	1
Pharmacist	:	1
Lab technician:		1
Radio grapher	:	1
Ward boys	:	2
Dhobi	:	1
Sweepers	:	3

Mali	:	1
Chowkidar	:	1
Aya	:	1
Peon	:	1

Integrated Child Development Scheme (ICDS)

Started by the Government of India in 1975, the Integrated Child Development Scheme (ICDS) has been instrumental in improving the health and wellbeing of mothers and children under 6 by providing health and nutrition education, health services, supplementary food, and pre-school education.

The ICDS national development program is one of the largest in the world. It reaches more than 34 million children aged 0-6 years and 7 million pregnant and lactating mothers.

ICDS OBJECTIVES

- To improve the nutritional status of preschool children 0-6 years of age group.
- To lay the foundation of proper psychological development of the child
- To reduce the incidence of mortality, morbidity malnutrition and school drop out
- To achieve effective coordination of policy and implementation in various departments to promote child development
- To enhance the capability of the mother to look after the normal health and nutritional needs of the child through proper nutrition and health education.

THE TARGET GROUPS

- Pregnant women
- Nursing Mothers
- Children less than 3 years
- Children between 3-6 years
- Adolescent girls(11-18 years)

COMPONENTS

Immunization

- Immunization of pregnant women and infants protects children from six vaccine preventable diseases-polio, diphtheria, pertussis, tetanus, tuberculosis and measles.

- These are major preventable causes of child mortality, disability, morbidity and related malnutrition. Immunization of pregnant women against tetanus also reduces maternal and neonatal mortality

Referral Services

- During health check-ups and growth monitoring, sick or malnourished children, in need of prompt medical attention, are referred to the Primary Health Centre or its sub-centre.
- The anganwadi worker has also been oriented to detect disabilities in young children. She enlists all such cases in a special register and refers them to the medical officer of the Primary Health Centre/ Sub-centre

Non-formal Pre-School Education (PSE)

- Non-formal Pre-school Education (PSE) component of the ICDS may well be considered the backbone of the ICDS program.
- These Anganwadi Centres (AWC) have been set up in every village in the country.
- This is also the most joyful play-way daily activity, visibly sustained for three hours a day. It brings and keeps young children at the anganwadi centre.
- Its program for the three-to six years old children in the anganwadi is directed towards providing and ensuring a natural, joyful and stimulating environment, with emphasis on necessary inputs for optimal growth and development.
- The early learning component of the ICDS is a significant input for providing a sound foundation for cumulative lifelong learning and development.
- It also contributes to the universalization of primary education, by providing to the child the necessary preparation for primary schooling and offering substitute care to younger siblings, thus freeing the older ones – especially girls – to attend school.

Health check-ups

- Record of weight and height of children at periodical intervals
- Watch over milestones
- Immunization
- General check up for detection of disease

- Treatment of diseases like diarrhea, ARI
- Deworming
- Prophylaxis against vitamin A deficiency and anemia
- Referral of serious cases

Adolescent girls scheme (Kishori shakti yojna)

- General health check ups
- Immunization
- Treatment of minor ailments
- Deworming
- Prophylactic measures against anemia, IDD, vitamin deficiency
- Referral
- Anganwadi Centre
- Anganwadi is the Focal Point for Delivery of ICDS Services.
- Located in a Village/Slum.
- Anganwadi is run by an Anganwadi worker (AWW), supported by a Helper.
- AWW is the 1st Point of Contact for families experiencing nutrition and health problems.

Anganwadi worker (AWW)

- Monitor growth of children
- Provide non formal pre-school education
- Provide supplementary nutrition
- Give health and nutrition education
- Referral for sick children
- Elicit community participation
- Provide health service in collaboration with ANM/ASHA
- Implement adolescent girls' scheme

PANCHAYATI RAJ

It is a 3 tier structure of rural local self government in India, linking the village to the district. The 3 institutions are;

1. Panchayat- at the village level
2. Panchayat Samiti- at the block level
3. Zila Parishad- at the district level

The Panchayati Raj institutions are accepted as agencies of public welfare.

All development programmes are channeled through them.

They strengthen democracy at its root, & ensure more effective & better participation of the people in the government.

1. At the village level It consists of
 - (a) The Gram Sabha
 - (b) The Gram Panchayat
 - (c) The Nyaya Panchayat

Gram Sabha- The assembly of all the adults of the village, which meets at least twice a year.

It considers proposals for taxation; discuss the annual programme & elects members of itself.

Gram Panchayat

An agency for planning & development at the village level.

Its strength varies from 15 to 30, & population covered varies widely from 5,000-15,000 or more.

The members hold office for a period of 5 years.

Every panchayat has an elected President (Sarpanch /Sabhapati /Mukhiya), a vice President & a Panchayat Secretary.

The functions-

They cover the entire field of civic administration, including sanitation & public health & social & economic development of the village.

2. At the Block level

It consists of about 100 villages & a population of about 80,000 to 1,20,000.

The Panchayati Raj agency at the block level is the Panchayat Samiti /Janpada Panchayat.

It consists of all Sarpanchas of the village panchayats in the Block; MLAs, MPs

residing in the block area; representatives of women, scheduled castes, scheduled tribes & cooperative societies.

The Block Development Officer is the ex-officio secretary of it, & his staff gives assistant to the village panchayats engaged in development programmes.

Function

Execution of the community development programme in the block

3. At the District level

The Zilla Parishad is the agency of rural local self govt. at the district level.

The members are all heads of the Panchayat Samities in the district; MPs, MLAs of the district, representatives of scheduled castes, scheduled tribes & women, & 2 persons of experience in administration, rural development.

The collector is a nonvoting member, the members varying from 40-70.

INTERNATIONAL HEALTH AGENCIES

World Health Organization

- a. The World Health Organization (WHO) is a specialized agency of the United nations (UN)
- b. Concerned with international public health
- c. It was established on 7 April 1948
- d. Headquarters in Geneva, Switzerland
- e. Member of the United Nations Development Group
- f. The preamble WHO's constitution states that its objective "is the attainment by all people of the highest possible level of health"

WHO identifies its role as one of six main objectives:

- a. Providing leadership on matters critical to health and engaging in partnerships where joint action is needed
- b. Shaping the research agenda and stimulating the generation, translation and dissemination of valuable knowledge;
- c. Setting norms and standards and promoting and monitoring their implementation;
- d. Articulating ethical and evidence-based policy options;

- e. Providing technical support, catalysing change, and building sustainable institutional capacity;
- f. Monitoring the health situation and assessing health trends.

Work of WHO

1. Prevention and control of specific diseases

Communicable diseases

- a. to reducing the “health, social and economic burden” of communicable diseases in general
- b. Combat HIV/AIDS, malaria and tuberculosis in particular
- c. Aims to eradicate polio

Non-communicable diseases

Aimed at the prevention and reduction of “disease, disability and premature from chronic non communicable diseases, mental disorders, violence and injuries and visual impairment

Life and lifestyle

- a. to “reduce morbidity and mortality and improve health during key stages of life, including pregnancy, childbirth, the neonatal period, childhood and adolescence, and improve sexual and reproductive health and promote active and healthy aging for all individuals”
- b. reduce risk factors for “health conditions associated with use of tobacco, alcohol and drugs and other psychoactive substances, unhealthy diets and physical inactivity and unsafe sex”
- c. WHO works to improve nutrition, food safety and food security and to ensure this has a positive effect on public health and sustainable

Emergency work

- a. When any sort of disaster or emergency occurs, it is WHO’s stated objective to reduce any consequences it may have on world health and its social and economic implications

2. Development of comprehensive health services

Health policy

- a. Addresses government health policy with two aims:
- b. firstly, “to address the underlying social and economic determinants of health

through policies and programmes that enhance health equity and integrate pro-poor, gender responsive, and human rights-based approaches”

- c. Secondly “to promote a healthier environment, intensify primary prevention and influence public policies in all sectors so as to address the root causes of environmental threats to health”.
- d. In terms of health services, WHO looks to improve “governance, financing, staffing and management” and the availability and quality of evidence and research to guide policy making. it also strives to “ensure improved access, quality and use of medical products and technologies”

3. Family health

- Maternal and child health care
- Human reproduction
- Nutrition
- Health education
- ‘Improvement of the quality of life of the family as a unit’

4. Environmental health

1. Advises governments for programmes for provision of basic sanitation
2. Activities are directed to protection of the quality of air, water, and food; health conditions of work, radiation protection and early identification of new hazards originating from new technological developments

5. Health statistics

Morbidity and mortality statistics relating to health problems

6. Biomedical research

Does not do research but stimulates and coordinates research work

Established worldwide network of collaborating centres

Awarding grants to research workers and research institutions for promoting research

7. Health literature and information

Clearing house for information on health problems

Hundreds of publication on health subjects

WHO library is one of satellite centre for Medical Literature Analysis and Retrieval System (MEDLARS)

Public information service both at head quarters and six regional offices

8. Cooperation with other organisations

Collaborates with UN and other specialized agencies

Relations with number of international government organisations

Membership

1. Open to all countries
2. As of 2012, the WHO has 194 member states
3. As of 2009, it also had two associate members, Puerto Rico and Tokelau

Assembly and Executive Board

- The World Health Assembly is the legislative and supreme body of WHO.
- Based in Geneva, it typically meets yearly in May
- It appoints the Director-General every five years, and votes on matters of policy and finance of WHO, including the proposed budget.
- It also reviews reports of the Executive Board and decides whether there are areas of work requiring further examination
- The Assembly elects 34 members, technically qualified in the field of health, to the Executive Board for three-year terms
- The main functions of the Board are to carry out the decisions and policies of the Assembly, to advise it and to facilitate its work.

United nations international children's emergency fund (unicef)

HISTORY OF UNICEF

UNICEF = United Nations International Children's Emergency Fund

The head quarters of UNICEF is in New York

Milestones

- | | | |
|------|---|--|
| 1946 | : | Focus on Food to Europe |
| 1953 | : | UNICEF becomes permanent part |
| 1959 | : | Declaration of the Rights of the Child |
| 1961 | : | Education |
| 1965 | : | Nobel Peace Prize |

1989 : Convention on the Rights of the Child

2002 : Special Session on Children

Threefold Mission of UNICEF

- To ensure that basic nutrition, health, and education needs of children are met
- Structures of UNICEF
- Over 190 countries and territories
- Fundraising of UNICEF
- Sponsorship
- UNICEF was established for humanitarian and developmental assistance to children and mothers

INDIAN RED CROSS SOCIETY

- Estd. 1920 400 branches all over India
- Founded by a Swiss business man Henry Dunant
- Execute programmes for promotion of health ,prevention of illness and mitigation of suffering among people
- Activities are :-

RELIEF WORK

When disasters like earth quakes, floods, drought, epidemic etc occurs

MILK AND MEDICAL SUPPLIES

Milk powder, medicines, vitamins and other supplies to a number of hospitals, dispensaries, maternity and child welfare centers, schools and orphanages

ARMED FORCES

Care of sick and wounded among forces

Runs a well equipped hospital 'Red Cross Home' in Bangalore

MATERNAL AND CHILD WELFARE SERVICES

Runs maternal and child welfare centres

Bureau of maternity and child welfare gives technical advices and financial aid

FAMILY PLANNING

Family planning clinics

BLOOD BANK AND FIRST AID

Runs blood bank

St. Johns ambulance association

NATIONAL HEALTH AGENCIES – BHARAT SEVAK SAMAJ, FAMILY PLANNING ASSOCIATION OF INDIA, PROFESSIONAL BODIES

Bharat Sevak Samaj (BSS)

- Non political and non official organisation
- Estd 1952
- Objective – to help people to achieve health by their own actions and efforts
- Important activity- improvement of sanitation in villages

Family Planning Association of India

- Estd. 1949 head quarters at Mumbai
- Conducts family planning clinics
- Trained doctors, health visitors, social workers
- Answer enquiries at Head Quarters

Professional Bodies

- The Indian Medical Association
- All Indian Dental association
- The Trained Nurses Association of India (TNAI)

They conduct annual conferences, publish journals, arrange scientific sessions and exhibitions, Foster research, set up standards of professional education and organise relief camps during calamities

Practical Activities

1. Field visits to PHC, Anganawadi, LSG office

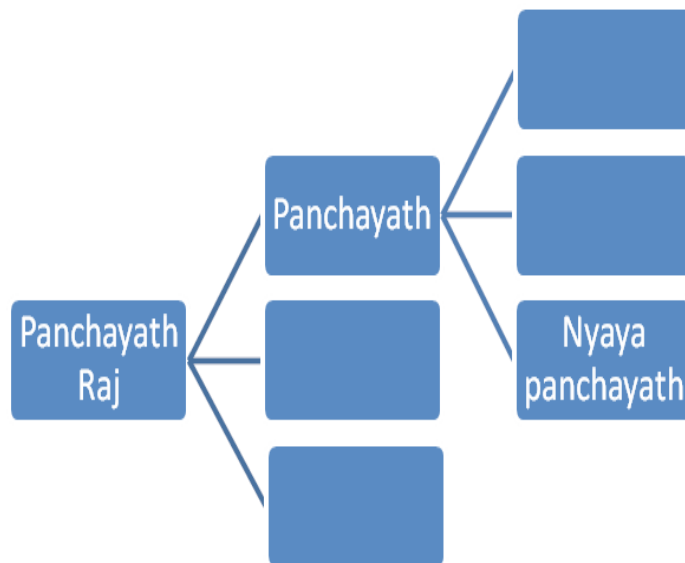
Assessment Activities

- 1 Preparation of a chart on staff pattern and functions of PHC
- 2 Report of Visit to PHC
- 3 Preparation of Questionnaire for Interaction with anganawadi worker
- 4 Report of Interaction with anganawadi worker
- 5 Report of visit to anganawadi

- 6 Preparation of Questionnaire for Interaction with an LSG member
- 7 Report of Interaction with an LSG member
- 8 Report of Visit to LSG office
- 9 Preparation of chart on international health agencies

TE Questions

1. Primary healthcare denotes the first level of contact between individuals and families with the health system
 - a. Define primary health care.
 - b. Outline essential components of primary health care
 - c. Enumerate the principles of primary health care.
2. Primary health centre is the basic health unit.
 - a. List down the functions of primary health centre.
3. Complete the following diagram



UNIT : 4.9 HEALTH EDUCATION

Introduction

The practice of instructing people and communities in the principles of hygiene and in ways of avoiding disease is a very ancient one. An elementary study of the history of medicine reveals that since time immemorial it has been considered a necessity to instruct communities in health matters for their protection and survival. This unit deals with various aspects of health education.

Learning outcomes

The Learner:

- Defines health education
- Explains the aims and objectives of health education
- Describes the content of health education
- Explains the principles of health education
- Enlists the settings for health education
- Enumerates the methods of health education
- Enlists the AV Aids used for health education
- Explains the steps for health education
- Organizes the health education programme

Definition

Health education is a process which informs, motivate and helps people to adopt and maintain healthy practices and life styles; advocates environmental changes as needed to facilitate this goal and conducts professional training and research to the same end.

Aims and objectives

- To inform the general public of the principles of physical and mental hygiene and methods of preventing avoidable diseases.
- To create an informed body of opinion and knowledge. (social workers, teachers)
- To give the public accurate information of medical discoveries.
- To facilitate the acceptance and proper usage of medical measures.

Contents of health education

1. Human Biology
2. Nutrition
3. Hygiene
4. Family Health Care
5. Control of Communicable and Non-Communicable diseases
6. Mental Health
7. Prevention of Accidents
8. Use of Health services

Principles of health education

1. Interest

Identify topic of interest

Identify the "felt needs" of the people

Then prepare a programme

2. Participation

Educator should encourage people to participate in health education programmes

Group discussions, panel discussions, etc provide opportunities for people's participation

Peoples participation leads to acceptance

3. Known to Unknown

Start with what the people already know and then give the new knowledge

Existing knowledge as people as the basic step

4. Comprehension

Determine the level of literacy and understanding of audience.

Language of communication, understandable to audience

Usage of technical or medical terms should be avoided.

5. Reinforcement

Also called as "booster dose"

Refers to repetition needed

6. Motivation

Defined as “the fundamental desire for learning in an individual”

2 types:

Primary motive → inborn desires, Food, clothing, housing

Secondary motive → outside forces

Gifts, a word of praise, love, rewards

7. Learning by Doing

Learning process accompanied by doing the new things.

Based on famous Chinese proverb “if I hear, I forget; if I see, I remember; if I do, I know.

8. Soil, Seed and Sower

Soil → people to whom education is given

Seeds → Health facts to be given

Sower → media to transmit the facts

All components are interdependent and result in dynamic interaction.

9. Good Human Relations

Health educator should have good personal qualities

Be able to maintain friendly relations with people

Should have a kind and sympathetic attitude

10. Community leaders

Leaders can be used to reach people of the community and to convince them about the need for health education.

Settings for health education

1. HOSPITAL – Reception, wards, waiting area etc.
2. HOME – During home visits
3. SCHOOL
4. COMMUNITY – Bus stands, markets, malls, old age homes etc

Methods of health education

Health education methods can be chiefly divided into:

- i. One way or didactic methods
 - a. Lecture
 - b. Films
 - c. Charts
 - d. Flannelgraph
 - e. Exhibits
 - f. Flashcards
- ii. Two way or Socratic methods
 - a. Group discussion
 - b. Panel discussion
 - c. Symposium
 - d. Workshop
 - e. Role playing
 - f. Demonstration
 - g. Simulation exercises

Health education at large scale or mass media communication

- a. Posters
- b. Health magazine
- c. Press
- d. Films
- e. Radio and television
- f. Health exhibition
- g. Health museum
- h. Indigenous media

AUDIO VISUAL AIDS

It can be classified based of sensory experience

1. Audio aids – radio, tape recorder, CD player, gramophone, microphone, amplifier etc.
2. Visual aids - black and white board, charts, maps, pictures, models text books, slide projector, flash cards, flannel graph, poster, slides etc

3. Audiovisual aids – LCD projector, film projector, television, computer, VCD player, street plays, health plays etc

Steps of health education

1. Need Assessment – Different techniques like questionnaires, Delphi technique, Salient belief assessment can be done
2. Content Development
3. Process – Various techniques may be used for health education process which depends on the a. content to be taught b. needs of the patient c. skill of the educator
4. Evaluation - Process evaluation and outcome evaluation should be done

Practical Activities

1. Health Education on selected Topics

Assessment Activities

1. Health talk
2. Preparation of a chart on major contents of health education
3. Preparation of AV aid for health education

TE Questions

1. Health education is a process of educating people about health.
 - a. Define health education.
 - b. Enumerate the major contents of health education
 - c. Describe the principles of health education
2. A one way method of health education is _____

UNIT 4.10 DISASTER MANAGEMENT

Introduction

A disaster is a situation in which the community is incapable of coping. It is a natural or human-caused event which causes intense negative impacts on people, goods, services and/or the environment, exceeding the affected community's capability to respond; therefore the community seeks the assistance of government and international agencies

There is no country that is immune from disaster, though vulnerability to disaster varies. Any disaster can interrupt essential services, such as health care, electricity, water, sewage/garbage removal, transportation and communications. This unit discusses the various aspects of disaster management.

Learning Outcomes

The Learner:

- Defines Disaster
- Enlists the types of disaster
- Enlists the phases of disaster
- Describes the disaster management

•••DISASTER

Disaster is an occurrence that causes damage, economic, disruption, loss of human life and disorientation of health and health services on a scale sufficient to warrant an extraordinary response from outside the affected community or area. (WHO)

Types of disasters

There are two types of disasters:

a) Meteorological	b) Topographical	c) Environmenta
<ul style="list-style-type: none"> • Floods • Tsunami • Cyclone • Hurricane • Typhoon • Snow storm • Blizzard • Hail storm 	<ul style="list-style-type: none"> • Earthquake • Volcanic Eruptions • Landslides and Avalanches • Asteroids • Limnic eruptions 	<ul style="list-style-type: none"> • Global warming • El Niño-Southern Oscillation • Ozone depletion- UVB Radiation • Solar flare

1. Natural disaster
 1. Man-made disaster

(a) Technological	(b) Industrial	(c) Warfare
<ul style="list-style-type: none"> • Transport failure • Public place failure • Fire 	<ul style="list-style-type: none"> • Chemical spills • Radioactive spills 	<ul style="list-style-type: none"> • War • Terrorism • Internal conflicts • Civil unrest • Chemical, biological, radiological, nuclear, and explosives (CBRNE)

Phases of disaster

1. Preimpact phase
2. Impact Phase
3. Postimpact phase
4. Rehabilitation phase

Disaster management

The Red Cross and Red Crescent societies define disaster management as the organisation and management of resources and responsibilities for dealing with all humanitarian aspects of emergencies, in particular preparedness, response and recovery in order to lessen the impact of disasters.

Disaster management cycle

1. **Mitigation:** Measures put in place to minimize the results from a disaster. Examples: building codes and zoning; vulnerability analyses; public education.
2. **Preparedness:** Planning how to respond. Examples: preparedness plans; emergency exercises/training; warning systems.
3. **Response:** Initial actions taken as the event takes place. It involves efforts to minimize the hazards created by a disaster. Examples: evacuation; search and rescue; emergency relief.



4. Recovery: Returning the community to normal. Ideally, the affected area should be put in a condition equal to or better than it was before the disaster took place. Examples: temporary housing; grants; medical care.

There are three fundamental aspects of disaster management;

1. Disaster response
2. Disaster preparedness
3. Disaster mitigation

Disaster impact and response

Medical treatment for large number of casualties is likely to be needed only after certain types of disaster. Most injuries are sustained during the impact and thus the greatest need for emergency care occurs in the first few hours. The management of mass casualty can be further divided in to search and rescue, first aid, triage and stabilisation of victims, hospital treatment and redistribution of patients to other hospitals if necessary.

Search rescue and first aid

After a major disaster the need for search, rescue and first aid is likely to be so great that organised relief services will be able to meet only a small fraction of demand. Most immediate help comes from the uninjured survivors

Field care

Most injured persons converge spontaneously to health facilities. The health service resources are redirected to new priority. Bed availability and surgical services should be maximised. Provisions should be made for food and shelter. An enquiry centre should be established. Priority should be given to victims' identification and adequate mortuary space should be provided.

Triage

Triage is the only approach that can provide maximum benefit to the greatest number of injured in a major disaster situation. It consists of rapidly classifying the injured on the basis of the severity of their injuries and the likelihood of their survival with prompt medical intervention. Higher priority is granted to victims whose immediate or long-term prognosis can be dramatically affected by simple intensive care. Moribund patients who require a great deal of attention, with questionable benefit, have the lowest priority. It should be carried out at the site of disaster, in order to determine transportation facility, and admission to the hospital, where the patient' needs and priority should be reassessed.

Most commonly used, internationally accepted four colour code system in triage consists of the following; red indicates high priority treatment/transfer, yellow signals medium priority, green indicates ambulatory patients and black for dead or moribund patients. All patients should be identified with tags which consists of name, age, place of origin, triage category, diagnosis and initial treatment

Tagging

All patients should be identified with tags stating their name, age, place of origin, triage category, diagnosis and initial treatment.

Identification of dead

Taking care of the dead is an essential part of triage. Care of the dead includes: 1) removal of the dead from the disaster scene 2) shifting to the mortuary 3) identification 4) reception of bereaved relatives

Relief phase

The type and quantity of humanitarian relief supplies are usually determined by two main factors:

1. The type of disaster, since distinct events have different effects on the population
2. The type and quantity of supplies available locally.

There are four principal components in managing humanitarian supplies:

- a) Acquisition of supplies
- b) Transportation
- c) Storage
- d) Distribution.

Epidemiological surveillance and disease control

Disasters can increase the transmission of communicable disease through following mechanism:

- a. Overcrowding and poor sanitation
- b. Population displacement
- c. Disruption and the contamination of water supply, damage to sewerage system and power systems
- d. Disruption of routine control programmes

- e. Ecological changes
- f. Displacement of domestic and wild animals
- g. Provision of emergency food, water and shelter

VACCINATION

Health authorities are often under considerable public and political pressure to begin mass vaccination programmes usually against typhoid, cholera and tetanus. Practically it may be very difficult and supplying safe drinking water and proper disposal of excreta continue to be most practical and effective strategies than vaccination.

NUTRITION

The immediate steps for ensuring that the food relief programme will be effective include a) assessing the food supplies after disaster b) gauging the nutritional needs of affected population) calculating daily food rations and need for large population groups d) monitoring the nutritional status of affected population.

REHABILITATION

In first weeks after disaster the pattern of health needs will change rapidly

1. Water supply
2. Food safety
3. Basic sanitation and personal hygiene
4. Vector control

DISASTER MITIGATION IN HEALTH SECTOR

Emergency prevention and mitigation involves measures designed either to prevent hazards from causing emergency or to lessen the likely effects of emergencies.

These measures include:-

1. Flood Mitigation Works
2. Appropriate Land-use Planning
3. Improved Building Codes
4. Reduction or Protection of Vulnerable Population and Structures.

DISASTER PREPAREDNESS

Emergency preparedness is “a programme of long term development activities whose goals are to strengthen the overall capacity and capability of a country to manage efficiently all types of emergency. It should bring about an orderly transition from relief through recovery, and back to sustained development

The reasons of community preparedness are:-

- (a) Members of the community have the most to lose from being vulnerable to disasters and the most to gain from an effective and appropriate emergency preparedness programme
- (b) Those who first respond to an emergency come from within the community. When transport and communications are disrupted, an external emergency response may not arrive for days
- (c) Resources is most easily pooled at the community level and every community possesses capabilities. Failure to exploit these capabilities is poor resource management
- (d) Sustained development is best achieved by allowing emergency-affected communities to design, manage, and implement internal and external assistance programme.

Policy development

The policy development is “the formal statement of a course of action”. Policy is strategic in nature and performs the following functions:

- a. Establish long - term goals;
- b. Assign responsibilities for achieving goals;
- c. Establish recommended work practice; and
- d. Determine criteria for decision making.

Practical Activities

1. Field visits

Assessment Activities

Preparation of chart on disaster cycle

Preparation of report on visit to fire station

TE Questions

1. Disasters can violently disrupt our day to day lives and change history for ever.
 - a. Define disaster.
 - b. Describe the stages of disaster management.

EXTENDED ACTIVITIES FOR MODULE 4

- a. Field visit
- b. Survey
- c. Health education
- d. Health expo
- e. Health diet expo
- f. School health programme
- g. Health club activities
- h. Wellness clinics
- i. Life style disease clinic
- j. Source reduction drive
- k. Disinfection of wells

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