

Open Vocational Education Programme

Certificate Course in
COMMUNITY HEALTH

Prevention & Management of Diseases & emergency
451



NATIONAL INSTITUTE OF OPEN SCHOOLING

Certificate Course in
COMMUNITY HEALTH

3

*Prevention and Management of Diseases
& Emergency*

(Course Code – 451)

Course Coordinator

Dr. Mamta Srivastava

Assistant Director

&

Dr. Pawan Kumar Chauhan

Executive Officer



NATIONAL INSTITUTE OF OPEN SCHOOLING

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Certificate Course in Community Health

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FROM THE DESK OF CHAIRMAN

Dear Learner,

Welcome to the National Institute of Open Schooling!

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M C Pant

Chairman, National Institute of Open Schooling

A WORD WITH YOU

Dear Learner,

"Welcome to the Open Vocational Education Programme on Certificate Course in Community Health"

*Even after many years of independence two third of population in India live in rural areas and have no access to proper health care facilities Therefore, Government declared the **Health For All** as the national goal and priority of the nation and launched much appreciated scheme, Jan Swasthya Rakshak (Community Health Worker) to train 5,80,000 health workers on the recommendation of Srivastava Committee in 1977.*

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It was persistently felt that the potential learners needs to be formally trained, who can assist & provide the appropriate care or service to the community in the Rural Sectors, Hospitals, Nursing Homes, and Health Clubs etc and act as facilitators for creating Health awareness, Knowledge of Healthy Environment, Health & Hygiene, First Aid, Prevention of diseases Moreover they get capable enough to provide-appropriate treatment in emergency situations.

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Learner friendly approach has been adopted throughout the Self-instructional Material. Each lesson is written in very simple and chronological order. The in text questions are included in the text matter to analyze the learner's understanding of the lesson. The suggested activities are provided that to beyond classroom.

We hope that this programme will help you to carve a niche in your career and play an important role in the society as a multipurpose skilled Health Worker.

With best compliments

(Dr. Pawan Kr. Chauhan)
Executive Officer, NIOS

FROM THE DESK OF DIRECTOR

Dear Learner,

In the fast expanding world of work, learning new skills has become a necessity. Learning and re-learning has become essential for all. In such an environment, vocational education has assumed great importance. Vocational education, as a stream of education promotes the skill development, and training of youth and directs them towards meaningful employment.

In the formal education system, Secondary and Senior Secondary are important terminal stages because at these stages options are exercised to enter higher education or vocational education or world of work.

In keeping with the needs of the Learners, the NIOS introduced Vocational Education through distance mode in 1991-1992. NIOS provides quality education for all learners particularly for disadvantaged sections of society.

*NIOS has now developed a course in the area of Health namely **Certificate Course in Community Health**. This course is being offered through open learning mode of education.*

Prime objective of this programme is particularly to train the candidates and prepare skilled Health Workers in the community. These trained persons are supposed to work in the community not only as a health worker but also as a facilitator for creating health awareness, knowledge of healthy environment, Health & Hygiene and will be capable enough to provide appropriate treatment in emergent situations i.e. First Aid. We are confident that this course will prove to be beneficial to you.

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**Prevention and Management of
Diseases & Emergency**

CONTENT

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CERTIFICATE COURSE IN COMMUNITY HEALTH

Course Curriculum

Course Title : Certificate Course in Community Health

Level of the Course: Certificate

Introduction of the Course/Programme

Two third population of India lives in rural area and have no access to proper health care. The Alma Ata declaration of 1978 declared health, as a fundamental right and that the attainment of highest possible level of health, a most important worldwide social goal, whose realization requires the action of many other social & economic sectors, in addition to the health sector. Health for all is the National Goal & Priority. There is urgent need to provide Para-professional health workers selected among the community itself, to provide simple, preventive and curative health services including family planning, under the community workers scheme. **The Govt. launched Jan Swasthya Rakshak (Community Health Worker) scheme to train 5,80,000 Health Worker on recommendation of Srivastava Committee in 1977.** This Health Worker Scheme (1977) labeled -as Community Health Volunteers in 1980, which relabeled as village Health Guide in 1981. But due to population explosion poverty, illiteracy and many other causes the National Goal of Health for All has not reached up to its target level. Since there are so many areas/sectors, not only in rural but also in urban where-

- There are no medical facilities fully developed.
- There are no doctors in sufficient number, according to population density.
- No facility is available during the emergency at Night even knowledgeable person who could guide or refer the case to city hospitals.
- There is no person, who could guide the community for Family Planning Prevention of diseases Health & Hygiene,

Health Environment, Polio Prevention, and AIDS etc.

Therefore there is an immediate need to prepare workforces, who can assist/provide the appropriate care/service to the Community in the Rural Sectors, Hospitals, Nursing Homes, and Health Clubs etc. These skilled personals at least one from each village/mohalla will be trained through this Vocational Training Programme: Community Health (Jan-Swasthya). These trained persons will work in the community as a Multipurpose Health worker and they will work as facilitators for creating Health awareness, Knowledge of Healthy Environment, Health & Hygiene and First aid prevention of diseases and provide - appropriate treatment, in emergency situations. Thus, it is expected, that all these gaps can be covered up through the Health workers under this Programme.

Objectives:

After completion of this Programme, a trainee should have -

- Basic knowledge on Human anatomy and Physiology
- Understanding on health, hygiene and nutrition
- Knowledge on communicable, diseases, life style diseases and common non-communicable diseases including emergency measures and Prevention of diseases
- Practical knowledge on First Aid, Pharmacy and drug reaction
- Ability to provide the guidance on maternal and child health care, including family planning and immunization

Eligibility Criteria : 10th Class Pass

Job Opportunities:

It is expected that this programme will be able to train and prepare skilled Health workers. These trained persons will work in the community as a Health worker and they will work as facilitators for creating Health awareness, Knowledge of Healthy Environment Health & Hygiene, and First aid and assist in getting appropriate treatment in emergency situations.

After passing through this course, the trainees will have job opportunities as an assistant/health worker in the Community or Hospital settings such as in Hospitals, Nursing Homes, and Health Clubs etc.

Course Duration : 1 Year

Scheme of Study:

	Theory	Practical/Training
Weightage	40%	60%

Programme	Duration	Essential Contact Hrs.	Total Study Hrs.
Certificate Course In Community Health	One Year	Essential Contact Hrs for Practical including related theoretical instructions/ demonstration	400

Course Content:

- Subject - 1 Basic Life Sciences**
- Subject - 2 Maternal and Child Health Care
(including family Welfare and immunization)**
- Subject - 3 Prevention and Management of
Diseases & Emergency**

DETAILED SYLLABUS

Subject - 1 Basic Life Sciences

- Lesson 1 Anatomy & Physiology - A (Dr. S.C. Sharma)**
Introduction of Anatomy & Physiology, Cell, Tissue, Organs, Organisation of Human body, All Systems in brief.

Lesson 2 Anatomy & Physiology - B (Dr. S.C. Sharma)

Fluid & electrolytes
Dehydration & its effect on systems
Blood, Blood groups
Digestion/ Absorption of nutrients etc.

Lesson 3 Natural Health and Hygiene (Dr. Khan)

Meaning of Health
Natural Health,
Hygiene &
Health Promotion
Home Care + Hygiene etc.

Lesson 4 Home Care and Childhood ailments

(Dr. Tabassum Fatima)

Soothing the throat
Apply GV to Umbilical Infection/Skin infection /Throats
(Gentian Violet)
Apply Eye ointment
Drying the Ear (Pus)
Keeping the room warm for neonate
Bathing the new born (Cleaning)
Personal Hygiene
Pain Abdomen Emergency measures etc.

Lesson 5 Nutrition (Dr. Mamta Srivastava)

Nutrition, Types of Nutrition – nutrition of mother
Carbohydrates
Protein
Fats, Vitamin
Minerals
Nutritional Requirements for different age groups
Nutritional Deficiency
Protein
Calorie
Vitamins – food chart
Anaemia, dietary management etc.

Lesson 6 Yoga and Exercises (Dr. Tabassum Fatima)
Introduction of Yoga, Yoga Exercises including Asans and Pranayama or Breathing Exercises

Practicals:

Use models/charts for anatomy
Identify bones
Difference of artery/Veins
Slides demonstrating RBC/WBC
Identification of nutritious food cereal/pulses etc
Problem solving exercises of different situation
Photographs of severe malnutrition i.e. Kwashiorkor etc.

Subject - 2 Maternal and Child Health Care

Lesson 1 Care of Women during Pregnancy (Dr. Santosh Mehta)

Age of menarche and normal causes of delayed menstruation
Age of marriage - dangers of early marriage and pregnancy below 18 years Sources of STD and Aids through sexual contact
Anaemia and its relation with menstruation
Safe a period

Lesson 2 Care of Women during Intranatal postnatal period

Detection of Anaemia and management with Iron and folic acid
Prevention of Tetanus
High-risk pregnancy
Nutrition in Pregnancy
Antenatal check up /visits to antenatal clinics
Preparation of safe delivery
Detection of complications of pregnancy (Eclamsia Antipartum and Post Partum Haemorage, Retained Placenta)

Resuscitation of newborn if the baby does not cry
Prevention of Hypothermia (Kangaroo case /bathing & cleaning of the child)

Breast-feeding

Nutrition of child (6-12 months), (12-18 months), (18 months - 2 year)

Normal growth of baby, weight at birth, monthly monitoring of weight Care of the nipple and care of cracked nipple.

Positioning of baby during feeding and taking out of air from Stomach

Lesson 3

Breast Feeding

(Dr. V.K. Sood)

Breast-feeding

Absolute breast-feeding

Supplementary feeds

Nutrition of baby 6 months - 12 months

Nutrition in Pregnancy and Severe malnutrition (12 month - 18 months)

Common Cereal/foods & their nutritional value (18 month - 24 months)

Lesson 4

National Health Programmes

(Dr. B.K. Chatterjee)

Lesson 5

Importance and Needs of Family

Welfare Programmes (Dr. K Ashok Kumar)

Methods of Family Planning

Barrier Contraception

Hormonal Contraception

Intrauterine devices

Post-Coital Contraceptive

Ideas of birth rate and Infant mortality rate

Spacing of births

Council ling, MTP and Act of MTP

(MTP Facilities and Guidance to Couples)

Practicals:

Identification of:

Nirodh (Condom)

Copper T

Oral Pills, Saheli
Council ling of Couples

**Lesson 6 Duties of Health Worker
(According to WHO)
(Dr. M.M. Bhattacharjee)**

**Subject - 3 Prevention & Management of
Diseases & Emergency**

**Lesson 1 Communicable Disease - A
(Dr. Lalit Mohan Yadav)**
(Definition, modes of spread, concept of host, agent,
(environment reservoir of infections) Water
borne, Airborne, Food borne and vectors borne diseases,
contact (skin) & parasitic infestations

**Lesson 2 Communicable Diseases - B
(Dr. Lalit Mohan Yadav)**

**Lesson 3 Preventive Measures (All 5 Steps)
(Dr. Lalit Mohan Yadav)**
Specific protection (to be emphasized)
Rehabilitation
Primary prevention
Personal Hygiene
Quarantine measures
Notifiable Diseases

Table of Organisms, Symptoms and Prevention
measures

Lesson 4 First Aid (Dr. M.M. Bhattacharjee)

Definition of Blood Pressure, Temperature, height and
(vii)

weight measurement
Identification of arterial and Venous haemorrhage
Height and weight measurement
Bleeding from Nose
Constriction Bandage
Internal Haemorrhage - Signs + Symptoms and
emergency measures
Shock - Identification and emergency measure, Electric
Shock Emergency
Asphyxia - types; Signs and Symptoms emergency
measure

Lesson 5 Life style diseases (Mrs. Kalpna Shukla)

Hypertension, Diabetes, Obesity, Cancer etc.

Lesson 6 Pharmacies and Drug Reaction

(Dr. M.M. Bhattacharjee)

Introduction of Pharmacies, Drugs, Drug Reaction,
Emergency due to Drug Reaction

Lesson 7 Management and emergency

(Dr. M.M. Bhattacharjee)

Management and emergency, measures of drowning
cases and

Artificial Respiration

Management of fainting cases

Dog Bite, Snake Bite, Insect Bite and Its emergency &
first Aid, Burn - Emergency Measure - Rescue of
patients from burning room and water treatment,
fracture and transport of fracture patients, care of
Paralysis Patients

Emergency measure of unconscious patients

Control of Hyper Pyrexia, Control of Heat stroke - Sun
Stroke, Foreign body in Air passage, Dressing of
wounds, Use of triangular bandage and roller bandages
Bleeding and Pain in the Ear, Dispensing of Drugs
(Especially ointments, Nasal Drop, Eye Drops
Identification of sites of Insulin Injection, Reaction
Local, Systemic Pain Abdomen Emergency - First Aid

Evaluation & Examination Scheme:

Paper	Theory			Practical			Total
	External		Internal Assessment	External		Internal Assessment	
	Max. Marks	Time	Max. Marks	Max. Marks	Time	Max. Marks	Max. Marks
Paper I Basic Life Sciences	70	3hrs	10	100	4hrs	20	200
Paper II Maternal & Child Health Care	70	3hrs	10	100	4hrs	20	200
Paper III Prevention & Management of Diseases & Emergency	70	3hrs	10	100	4hrs	20	200

Passing Criteria

S No.	Subject for the trade test	Max. Marks in Theory	Minimum % for pass	Minimum Marks required for pass
1.	Theory including Internal Assessment	$(70 + 10) \times 3 = 240$ (Written Test Paper – 210) (Internal Assessment – 30)	<u>40%</u>	<u>96</u>
2.	Practical including Internal Assessment	$(100 + 20) \times 3 = 360$ (Practical Test – 300) (Internal Assessment – 60)	<u>60%</u>	<u>216</u>

Note: In theory a trainee should secure 40 % marks in aggregate in theory including Internal Assessment.

In Practicals a trainee, should secure 60 % marks in aggregate in Practical Test including Internal Assessment.

Procedure for Internal continuous Assessment

Theory:

3 Tests of 10 marks each to be conducted after every 45 days

Total Marks = 30

Practical/Training (Internal Assignments):

Assessment will be done by maintaining progress card of each candidate, indicating assessment of each Practical/experiments.

Total Marks= 60

Course Fee : Rs. 5000/-

(NIOS Share - Rs. 1000/- and AVIs Share Rs. 4000/-)

1

COMMUNICABLE DISEASES-A

1.1 INTRODUCTION

Communicable diseases like cholera, gastro enteritis, polio, dengue etc. are frequent every year in India both in epidemic and endemic form. Rapid, unplanned urbanisation without proper water supply and sewage disposal are leading to repeated outbreaks of diseases and taking a heavy toll of life. That is why study of health and communicable diseases have become an essential part of medical and health worker. In this lesson you will get a full picture of communicable diseases, mode of spread, factors causing diseases and its control.

1.2 OBJECTIVES

After reading this lesson you will be able to—

- to know what are communicable diseases;
- to understand their mode of transmission;
- to know their control

1.3 HEALTH AND COMMUNICABLE DISEASES

Health is a feeling of well being of any individual as per W.H.O, definition.

Which includes (a) Physical (b) Mental (c) Social (d) Spiritual (it is added by India) well being of a person.

Disease: It is condition of an individual not feeling well or a condition opposite to health.

What are Communicable Diseases? These are diseases which spread from one individual (who is suffering from the disease) to a healthy person. The communicable diseases spread by germs called micro-organisms, which are very small and cannot be seen with naked eyes. These germs are also spread from one person to another person or persons and also from contaminated water, food, air etc.

What are Non-Communicable Diseases?

Non-Communicable diseases do not spread from one man to another. These diseases are also called **life style diseases**. The diseases are caused by Faulty ways of living of human beings.

How Communicable Diseases spread?

- (a) **By Direct Contact:** Leprosy, S.T.D's, Scabies, Measles, Chicken Pox etc.
- (b) **By Droplet Infection :** Tuberculosis, Influenza, Diphtheria.
- (c) **By Contaminated Water:** Cholera, Typhoid, Poliomyelitis, Hepatitis.
- (d) **By Contaminated Soil:** Tetanus, Round Worm, Hookworm.
- (e) **By Animals (Zoonotic Disease):** Rabies, Bird flu.

Mode of Spread of Communicable Diseases

Following are the mode of spread of communicable diseases.

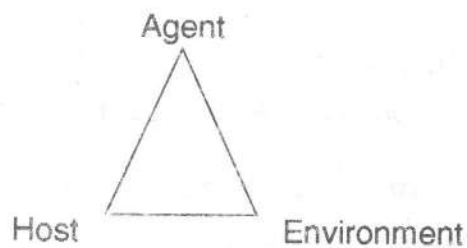
- (a) **By Direct Contact of a person:** who is suffering from communicable diseases like Leprosy, Sexually Transmitted diseases (A.I.D.S; Syphilis, Gonorrhoea etc), skin diseases like Scabies etc.
- (b) **By Air:** When a healthy person comes in contact with a person who is suffering from 'communicable disease' infection comes due to inhala-

tion of germs from the diseased person through air, he gets diseases like Tuberculosis, Influenza, Measles, Diphtheria etc.

- (c) **By Water borne diseases** when a healthy man drinks contaminated water having micro-organisms like bacteria /virus, suffers from diseases like Cholera, Typhoid, Poliomyelitis, Hepatitis etc.
- (d) **By Soil:** If a healthy individual comes in contact with soil which contains micro-organisms (germs) & parasites he will suffer from (i) Tetanus (ii) Roundworm (iii) Hook Worm infection.
- (e) **By Animals (Zoonotic Communicable Diseases)** A healthy person can get infection from animals for example (i) Rabies by the bite of Rabid animals like dogs, monkeys etc (ii) Anthrax (animals) (iii) Plague (Rats)
- (f) **By Infected Food:** If a healthy person takes contaminated /infected food having micro-organisms, he will develop diseases such as : (i) Food Poisoning (ii) Tape worm infection (uncooked meat of cattle or pigs)
- (g) **By Insect Bite:** Insects bite like bite of mosquitoes of different types causes diseases like Malaria, Dengue, Filariasis etc,

1.4 CONCEPT OF AGENT, HOST & ENVIRONMENT

Spread of communicable diseases is due to Agent, Host & Environment. We call it Epidemiological Triad.



In the absence of anyone of these i.e., Agent, Host and Environment, no communicable disease can occur.

Agents of disease:- They are responsible for spread of various diseases. Following are various type of Agents.

1. **Biological Agent:-** They are germs, we call them micro-organism which are very small and cannot be seen them with our naked eyes.

Bacteria :- which are cocci (round shaped); Bacilli (Rod shaped, Vibrio comma shaped)

Viruses :- They are smaller than bacteria and cannot be seen under the microscope but electron microscope is required to see them

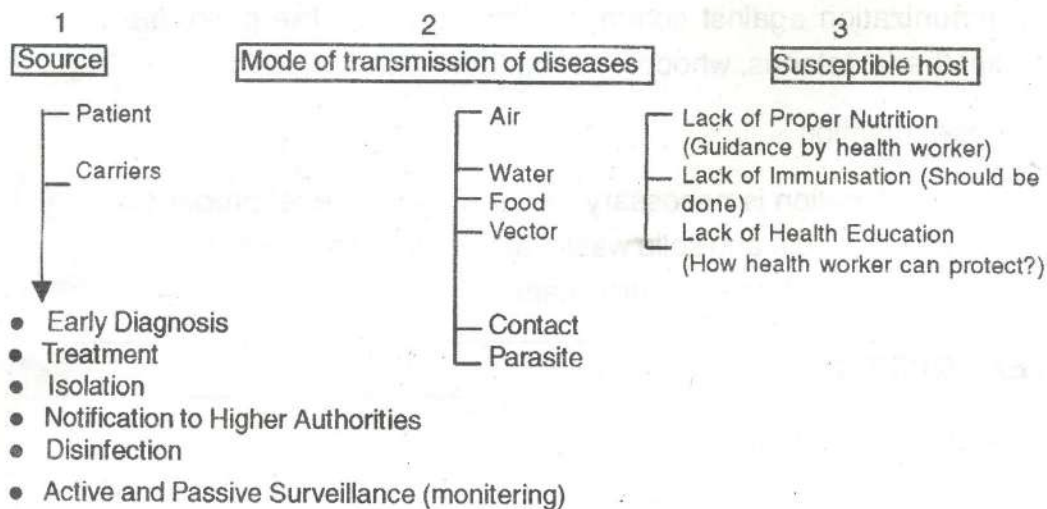
Fungus :- They also act as biological agent. They are Yeast (Unicellular).

2. **Chemical Agent:-** like lead fumes, dust, gases etc. Carbon monoxide (CO) from cars etc.
3. **Nutrient Agent:-** diseases occurring due to excess intake of fat, carbohydrates, protein, (Macro Nutrients) & Vitamins, Calcium, Iron etc (Micro Nutrients). If we take them in excess it gets deposited in the body and we get obesity & due to their deficiency in the food we also get many diseases like:
 - Protein energy deficiency: Kwashiorkar
 - Carbohydrate deficiency - Marasmus
 - Vitamin A deficiency - Night blindness
4. **Physical Agent:-** Diseases occurring due to excess of heat will cause heatstroke, radiation, burn cancer of skin etc.
5. **Mechanical Agent:-** Due to mechanical reasons or chronic friction, injuries fractures etc may occur

1.5 CONTROL OF COMMUNICABLE DISEASES

To control communicable diseases, the principle is to break the chain of infection, which may be from source, mode of transmission of diseases and susceptible host.

Chain of Infection



Carriers are those persons who does not have signs/symptoms of disease but harbours agent of disease and spreads to healthy persons.

Source:- Any source which may be patient or carrier of diseases may give rise to communicable diseases to the healthy persons like neighbours, attendants of the patients and carriers. It is the duty of health workers to refer the patients to hospital for isolation so that he does not transfer the disease to healthy persons and for early diagnosis and treatment. He should inform the higher authorities about dangerous diseases so that they may take preventive measures in the near by areas to check spread of disease. Health worker should have knowledge about spread of disease and try to isolate the patients.

1. Source (patients and carrier)

(i) Survey the area by health worker as early as possible, diagnosis of the disease, remove to hospital (Isolation - keep away from (healthy person), notification to health department so that they may take preventive measures immediately in the near by areas.

2. Mode of transmission of diseases

Diseases may occur due to air pollution, water pollution food contamination. For control of these diseases the pollution certificate for vehicles is required. For water pollution health worker should pay more attention, about disinfection of water sources, Food should be fit for human consumption, food exposed to dust and flies should be destroyed.

3. Protection of susceptible host:- This is done by following ways

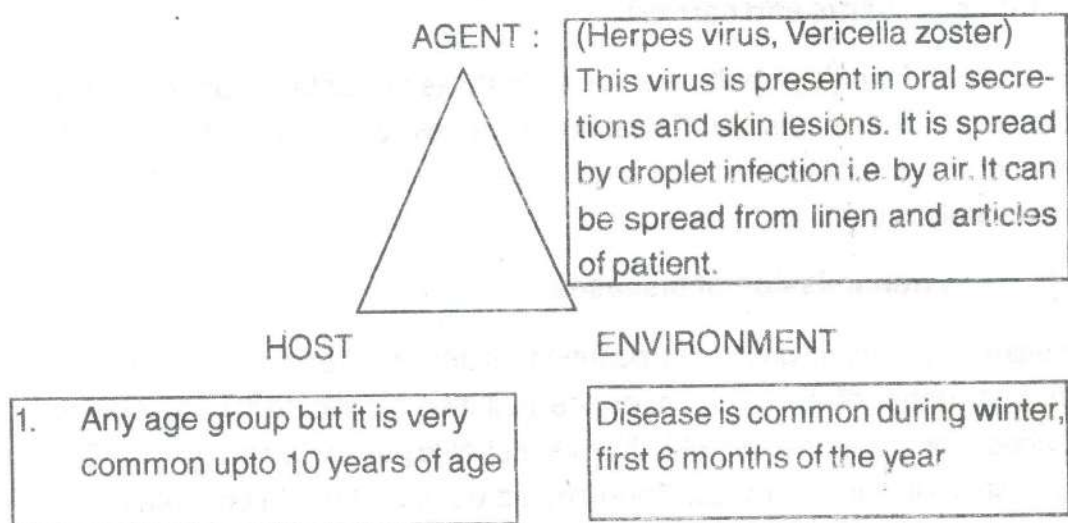
- immunization against communicable diseases like polio, measles, diphtheria, tetanus, whooping cough and tuberculosis etc.
- proper nutrition
- health education is necessary for personal hygiene, proper disposal of human excreta and solid waste, about how communicable diseases are spread and how to control them.

INTEXT QUESTIONS 1.1

- What is health?
.....
- What do you mean by diseases?
.....
- How are communicable diseases spread?
.....

1.6 COMMUNICABLE DISEASES**1. CHICKEN POX**

It is viral disease and is characterized by vascular rash which appears all of a sudden with mild fever, cough and running nose.



2. One attack gives rise to long immunity but second attack is rare.
3. Deaths are rare due to chicken pox but in children, sometimes occur due to complication like pneumonia and bronchopneumonia)
4. Infants (new born who have not attained age of one year) get immunity from their mother for first few months.

Incubation Period: It is 17 days which may be 7 to 21 days.

Clinical features:

1. Onset is sudden with mild fever, backache and shivering and sign of common cold
2. Rash appears along with mild fever.
3. It appears on the trunk where the rash is abundant.
4. Rash appears later on face, arms and legs which is not so abundant. Also present under arm pit and palm.
5. Rash appears at the same time which is a characteristic feature of chicken pox.
6. Scars are on surface only and are temporary.

Diagnosis:

1. Virus can be identified by the examination of vesicle fluid under the electron microscope.
2. By culture of virus on suitable media.

Complication:

They are mild and death is rare due to chicken pox.

1. Haemorrhage (Due to maternal infection during pregnancy)
2. Birth defects in infants given birth by Infected Mother.

3. Foetal death in pregnant females.
4. Bronchopneumonia and pneumonia

Treatment: It is prevented by proper vaccination and administration of immunoglobulin (antibody).

Role of Health Worker:

- Identification of chicken pox cases
- Isolation of cases
- Notification of cases to higher authorities
- Health education regarding prevention
- Immunisation and administration of immunoglobulin (i.e. antibodies)

MEASLES

It is highly infectious disease of children which is an airborne infection caused by a virus . It is a very common disease of developing countries.

Agent: Measles virus is present in secretions of mouth, throat, nose i.e. in respiratory tract of infected person. **Incubation period is ten days.** Period of communicability is from 4 days before & 5 days after the appearance of rash.

AGENT (Measles Virus)



HOST

ENVIRONMENT

Host

Disease of children below 5 years of age

- In Both sexes
- New borns are protected from mother's antibodies up to 6 months.

Environment:

- Very common during winter
- Diseases of slums/J.J. cluster where over crowding and poor nutrition is seen in children

- | | |
|---|--|
| <ul style="list-style-type: none">● It has close relation with malnutrition, the disease is more severe if the nutrition is poor,● If child has got an attack of Measles, it will give rise to malnutrition. | <ul style="list-style-type: none">● Low socio economic condition● Illiterate and having no knowledge of immunization. |
|---|--|

Clinical features:

- Fever, nasal discharge, cough, redness of eyes.
- vomiting & diarrhoea
- Appearance of rash is preceded by appearance of koplik's spots. These are very small bluish white spots on buccal membrane opposite to 1 & 2 upper molars.
- Rash appears behind the ears, neck, face and on extremities.
- Weakness.

Complications :

A single attack of measles gives rise to life long immunity. However, complications are more dangerous like—

1. pneumonia
2. malnutrition
3. diarrhoea
4. respiratory complications

Treatment:

It is a viral disease so antibiotics have no effect, however they are required to check complications. A health worker should think of treatment according to signs and symptoms of patients. Usually **Paracetamol tablet** is given to bring down the temperature.

Role of Health Worker

- Surveillance of Area
- Detection of cases

- Notification to Higher Authorities
- Health Education to Community Regarding
 - (i) Immunisation
 - (ii) Complications due to Measles
- Refer to the Doctor

Control:

1. Isolation of patient
2. Notification to area health officers
3. Disinfection of room and articles
4. Antibiotics if required, send to doctor
5. Immunization by Measles vaccine at 9 months of age or (MMR i.e. Mumps, Measles, Rubella (M.M.R.)
6. Proper nutrition to children to avoid malnutrition.
7. Health education.

Measles immunization

1. It is carried out after 9 months of age.
2. Before 9 months child is protected by mother's antibodies
3. Measles vaccine is to be kept on the 1st shelf of the refrigerator.
4. After reconstitution it is to be used immediately.
5. A single dose of 0.5 cc reconstituted vaccine is given by intra muscular injection.
6. In case of outbreak measles vaccine can be given before 6 months.

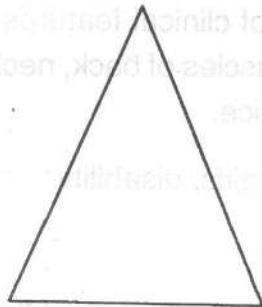
Dose for measles vaccine: 0.5 cc of reconstituted dose is to be given by intra muscular injection.

POLIOMYELITIS

It is a disease of children and in few cases it causes paralysis of limbs. It is a viral disease of alimentary canal but it affects nerves and muscular system mostly affecting lower limbs in children upto five years of age.

1. Polio virus enters our body through mouth and reaches small intestine and through blood reaches to CNS
2. Virus is present in faeces, nose and oropharyngeal secretions.
3. It is also present in infected water.
4. It is destroyed by physical and chemical agents.

AGENT



ENVIRONMENT

1. Polio cases occur during July to September that is during rainy season.
2. Contaminated water, food and flies are responsible for spread of disease.
3. Poor sanitation and overcrowding plays an important role in spread of the disease

HOST

1. It is disease of infants and children.
2. Males are affected more than females.
3. Muscular injections, certain operation of tonsils should be avoided.
4. Antibodies from mother are protecting children upto 6 months after that immunization is required to protect the children.
5. In pregnant women disease may affect during late pregnancy.

Incubation Period: 7 to 14 days

Clinical Feature

1. Mild fever, headache, upper respiratory infections etc. are first sign and symptoms of diseases which disappear after some days.
2. In some other cases these symptoms reappear along with meningeal irritation and stiffness of neck and back.

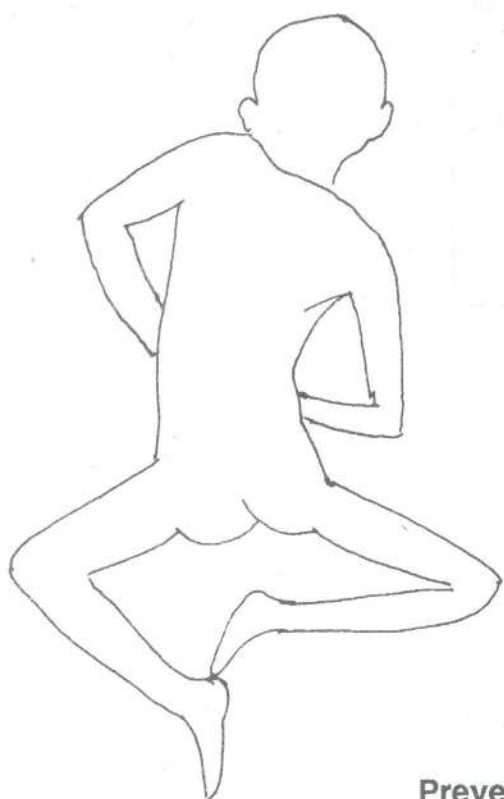


Fig. 1.1 (a) A Polio patient



Fig. 1.1(b)

3. Paralytic Polio may occur showing weakness of muscles and respiratory failure etc. It causes asymmetrical paralysis in which sensation is present. Due to involvement of virus in central nervous system there is facial asymmetry, difficulty in swallowing and voice is weak.

4. Respiratory involvement may even result in death.

Diagnosis

1. On the basis of clinical features like paralysis pain and stiffness of muscles of back, neck etc. or sore throat and changes in voice.

2. Aseptic meningitis, disability.

3. Febrile illness

4. Examination of cerebrospinal fluid (C.S.F.) shows rise in protein and virus is cultured from C.S.F. and stool.

Prevention

1. By means of immunisation by vaccine- that is O.P.V. (Oral Polio Vaccine) which is given by mouth to the children of 0-5 years of age. It is given in 3 doses at 6, 10 and 14 weeks and booster at 18-24 months. (Universal Immunisation Programme)

Pulse Polio Programme

Under this programme which is organised from time to time for immunisation against polio to the children upto 5 years of age. Polio drops are given to children in Polio booths and cold chain is maintained to keep vaccine cool from place of manufacture upto the place of its use either within deep freezers or in ice- boxes etc.

3. Surveillance of cases of paralysis in children and even in suspected cases and when a polio case is found, large number of children should be immunised.
4. Good nursing care is required and physiotherapy will be helpful.
5. Isolation of patients and it is better to refer them to hospital for treatment and rest.

6. Disinfection of water and it should be fit for human consumption.
7. Chlorination of swimming pools, wells and tap water supply.
8. Proper disposal of urine and stool and destruction of flies.
9. Metal calipers should be supplied to children who are paralytic due to wasting of muscles.

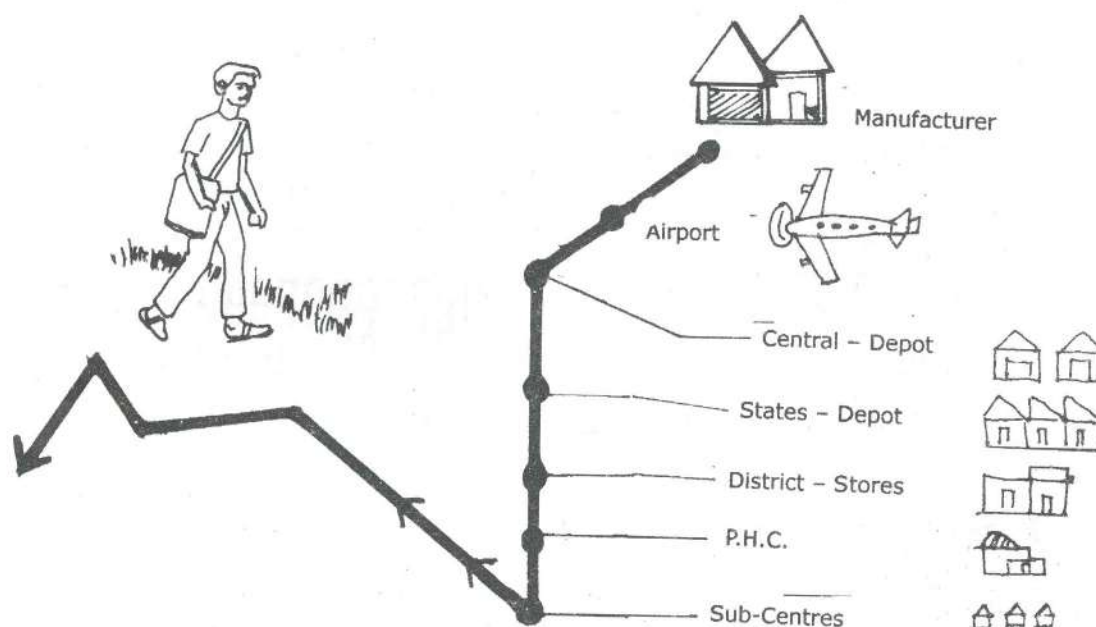
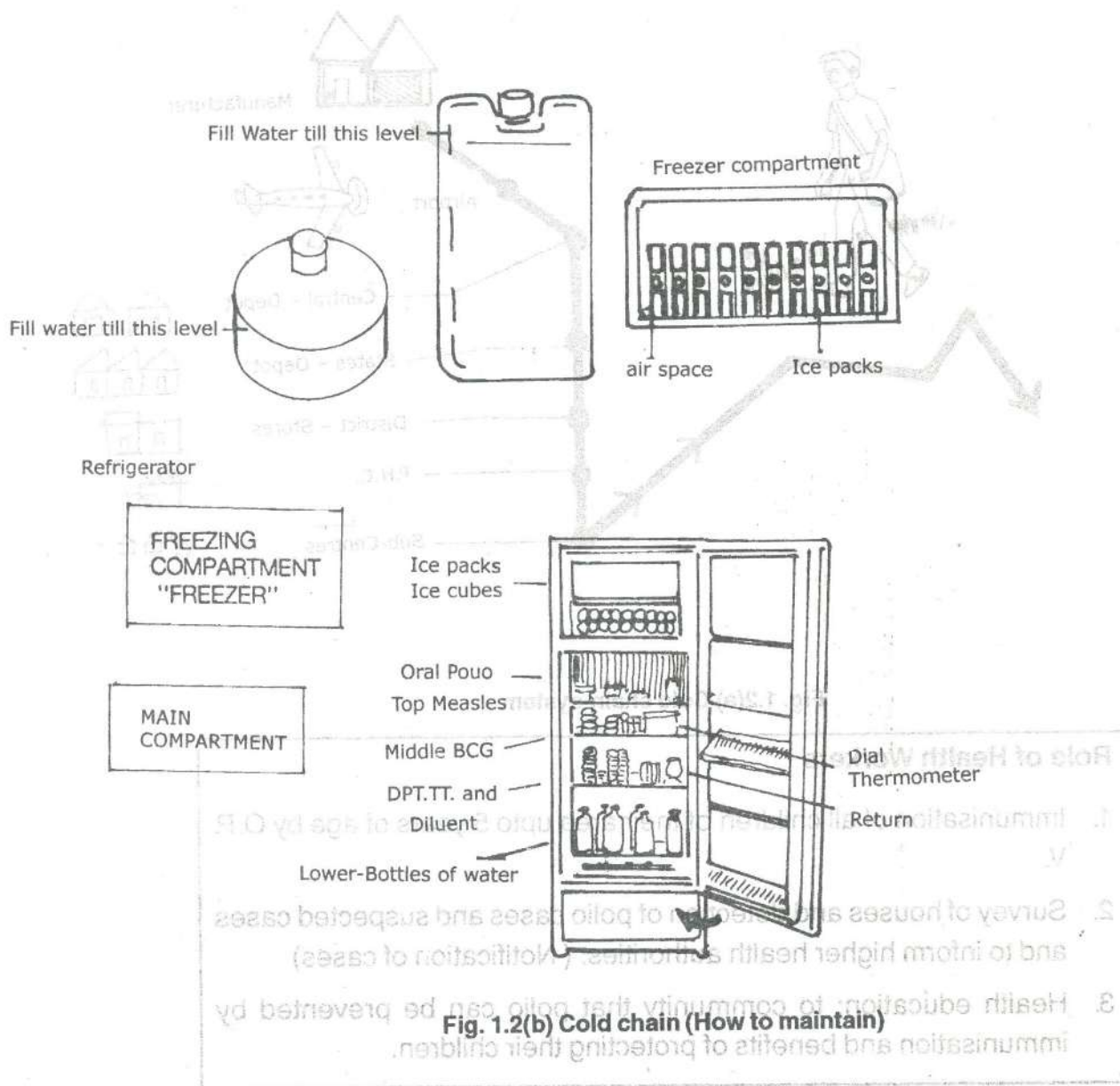


Fig. 1.2(a) Cold chain-system

Role of Health Workers

1. Immunisation of all children of their area upto 5 years of age by O.P. V.
2. Survey of houses and detection of polio cases and suspected cases and to inform higher health authorities. (Notification of cases)
3. Health education: to community that polio can be prevented by immunisation and benefits of protecting their children.

4. Motivation of mothers to have immunisation of their children against polio to protect them from Polio disability.
5. On detection of case of flaccid paralysis, all children of the area should be given O.P.V. atleast 500 children in Urban Area and to all children within 5 kilometres radius in Rural area.
6. By helping in organising pulse polio programme and mass publicity so that large number of children are benefitted by immunization.



INTEXT QUESTIONS 1.2

1. How Poliomyelitis can be prevented?
2. Write the full form of MMR.
3. Name the virus that causes chickenpox.
4. Koplic spots are seen in the disease _____.

1.7 DIARRHOEAL DISEASES

Diarrhoea means when a person is passing loose watery stool which may be mild or its frequency may be more (4-5 times in a day). It may be acute or chronic. Many children die from diarrhoea because they loose enough water and electrolyte from the bodies. Lack of water in their body due to diarrhoea-dysentery will cause dehydration. It means body loose more fluids than its intake. If vomiting is also present along with diarrhoea /dysentery, it may cause severe dehydration.

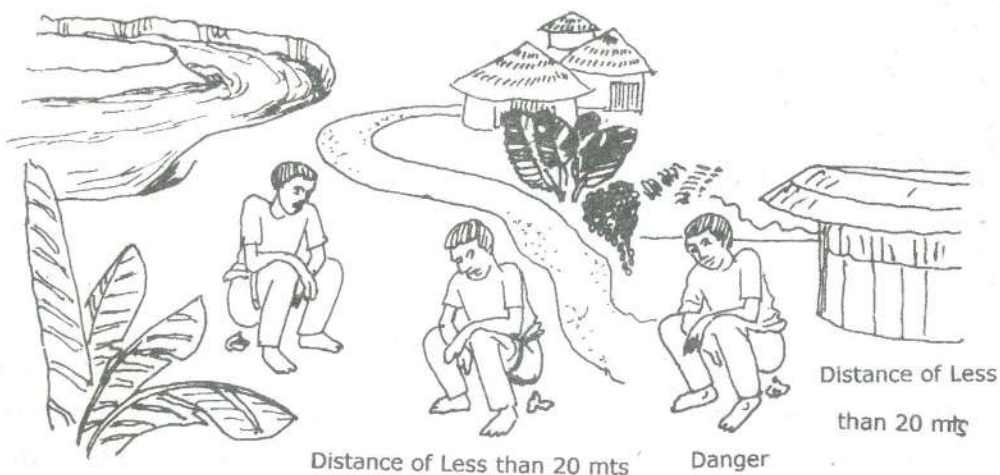


Fig. 1.3 Reason for contamination of water

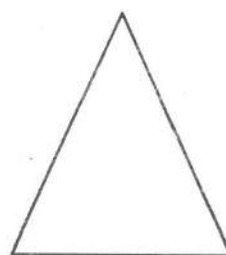
Dysentery means passing of mucus and blood in stool, its frequency will also be more.

Causes of diarrhoea:

1. Bacteria-Salmonella, Vibrio cholerae, E.coli, Shigella Clostridium group etc.
2. Virus: Rota virus is very common in children Adenovirus, Corona Virus etc.
3. Parasites: Entamoeba histolytica, Giardia lamblia
4. Unhygienic Cause: Bottle Feeding (Contaminated Water)

These organisms may be present due to drinking of dirty water, dirty food, food exposed to dust and fly and dirty hands.

AGENTS:



ENVIRONMENT

Season: Summer and rainy season breeding of house flies are more.

Other factors: lack of potable water supply. Poor personal and domestic hygiene and food exposed to dust and flies.

HOST

Age: Most common in children of 4 months to 4 years, but can be occur in adults too.

Other factors: Low socio-economic conditions, lack of sanitation, lack of personal hygiene. When feeding : practices are not correct specially during weaning period (Doodh Chudai). Malnutrition is also responsible for diarrhoea.



Fig. 1.4 (a) Jan Swasthya

Signs of dehydration:

1. Patient loses water and electrolytes
2. Thirsty, sunken eyes, dry tongue
3. Loses elasticity of skin
4. Weak pulse

Dehydration can be recognized by following methods

1. Pulse rate is increased, blood pressure is low, dry mouth, sunken and tearless eyes, in infant soft spot in skull is depressed:
2. Loss of elasticity of the skin.

3. In severe dehydration weak pulse, fever. Patient passes **little amount of urine and if urination is stopped, then take the patient to the doctor immediately.**

Treatment of diarrhoea:

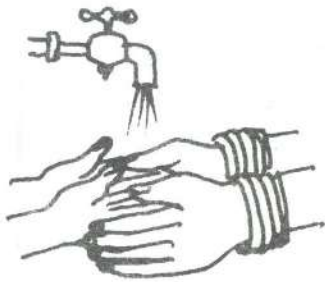
Treatment of dehydration: By Oral Rehydration Therapy and Medicinal Treatment

- a) **Mild dehydration:** home made fluid like daal ka pani, coconut water, shikanji, breast milk for babies
- b) **Moderate dehydration:** mild tea, rice water, sweetened drinks, and O.R.S.
- c) **Severe diarrhoea:** when patient has passed little amount of urine or no urine since long, should be referred to doctor for intravenous fluids.

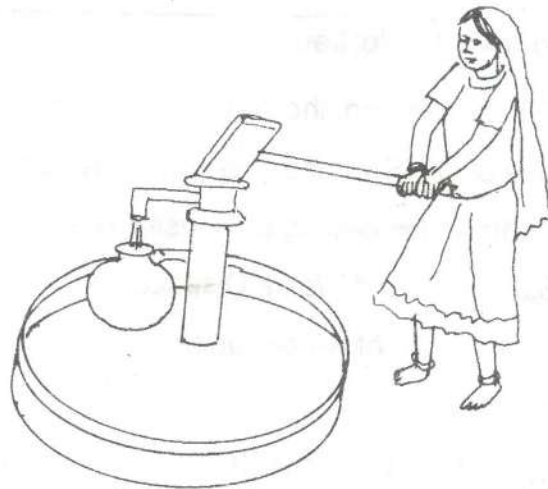
Note: patient should not take fried foods, ghee, butter, raw fruits etc. Mostly treatment of medicine is not required, it is always better to start treatment of dehydration - By O.R.S.
--

Prevention of diarrhoea

- Personal hygiene & cleanliness while cooking, eating food.
 - Washing of hands with soap and water after going to toilet and before and after meals.
 - Trade premises like restaurants hotels should be inspected from time to time for issue of trade license.
 - IEC (information, education, communication): It is mainly water, food and fly born disease, purification of water and ice is important and water should be chlorinated.
 - Health education to community:- It is the duty of health worker to take measures to control of breeding of house fly, destruction of food which is exposed to dust and flies.
-

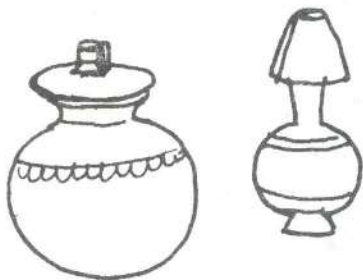


Wash your hands



Proper drainage of water near taps, tubewells

Diarrhoea can be prevented by:



Keep Drinking water covered



Cover the with mud faces



Wash vegetables before use



Continue breast feeding

Fig. 1.4 (b) Jan Swasthya

Role of Health Worker:

1. Breast Feeding should be promoted
2. Use of O.R.S. or use of some home remedies.
3. Control of Breeding of House Flies
4. Sanitation and Waste Disposal
5. Disinfection of water supply
6. Food hygiene raids in area
7. Food handlers (Their personal hygiene and immunization against typhoid)

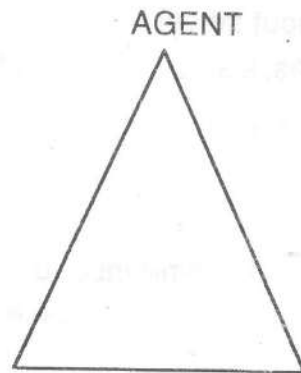


Fig. 1.5 A health worker giving a packet of ORS

CHOLERA

It is caused by cholera bacilli (*Vibrio cholerae*) although it is diarrhoeal disease, but it is very dangerous due to toxin of cholera known as Exotoxin which is liberated in the Central Nervous System. Toxin is liberated by Cholera bacilli which causes rice water stool, vomiting and dehydration and ultimately death occurs, if dehydration is not corrected. The dehydration is very quick in the case of cholera.

Vibrio cholerae present in the lumen of the small intestine produce exotoxin.



ENVIRONMENT

1. Rainy Season and this disease will come along with rain during rainy season.
2. Poor sanitation causing lot of flies
3. Sale of cut fruits exposed to dust and flies

HOST

1. All ages and both the sexes
2. Mobility
3. Low socio-economic people with poor hygiene.
4. People taking contaminated water from shallow hand pump
5. Consumption of cut fruits exposed dust & flies.

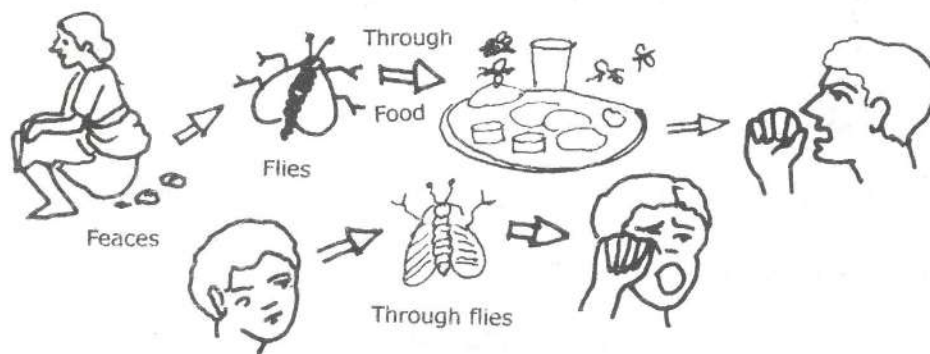


Fig. 1.6 Role of flies in spread of cholera

Clinical features:

1. Painless rice- water stool
2. Vomiting and intensive thirst

3. Patient passes stool without any effort even in bed, pain in abdomen with cramps, sunken eyes, loss of elasticity of skin, dry tongue
4. Pallor, Feeble pulse, low B.P.
5. Respiration is fast
6. Oligurea: Patient will pass less amount of urine or no history of passing urine, since long in severe Cholera cases, health worker should immediately refer such cases to hospital for intravenous fluids and electrolytes

Diagnosis:-

- patient passes rice watery stool without any effort
- Signs and symptoms of dehydration
- Feeble pulse, vomiting, low blood pressure
- History of passing stool very frequently.

Treatment:

1. By ORS and home fluids like rice water, tea, green coconut water, Shikanji, Lassi and breast milk to babies, Daal ka paani, and other liquids to treat dehydration.
2. Proper disposal of stool, vomits and linens of patients
3. Refer the patient to the doctor of Primary Health Centre

Control:

- Survey of the area to detect number of cases of Cholera
 - Early diagnosis and treatment
 - Notification - informing about number of cholera cases. Even if suspected that the patients are suffering from cholera it should be notified to the health officer who will take preventive measures to check the spread of cholera in the neighbouring areas.
 - Distribution of chlorine tablets for purification of water.
 - Treatment centers should be established in case of epidemics where chlorine tablets and also ORS packets are available.
 - Health education to the community regarding rehydration therapy.
-

ORS:- (Oral Rehydration Solution)**Composition of ORS:**

Sodium Chloride - 3.5g,

Sodium Citrate -2.9g ,

Potassium Chloride- 1.5 g,

Glucose /sugar 20 g

Potable water - 1 litre

ORS can also be prepared by having one packet of ORS in one litre of potable water or one teaspoon of it in one glass of water.

Health Education:

It is given to the community for the use of chlorinated water or use of chlorine tablets. Proper washing of hands after passing stool and before eating, proper sanitation, proper disposal of human excreta.

Open defaecation should be stopped. Various food and hygiene raids should be conducted to destroy food exposed to dust and flies. People should be discouraged not to take drinks having unclean ice i.e. ice made from unclean water. They should take hot food not exposed to dust and flies and food should be kept covered. Only that much quantity of food should be prepared which can be consumed immediately. Proper sanitation and personal hygiene is very important to check spread of cholera.

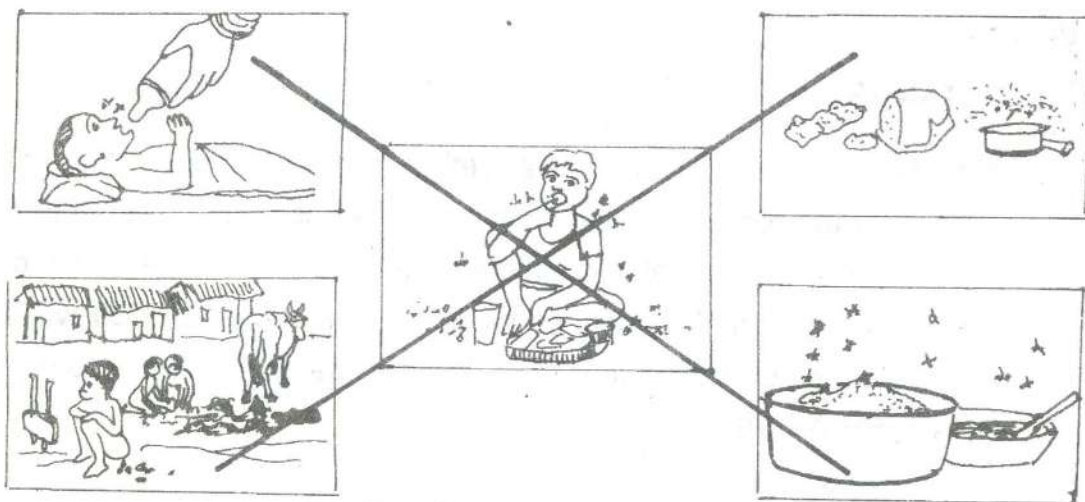


Fig. 1.7 Protection of Food from contamination

Role of Health Worker

- Early diagnosis of cases and their notification to higher authorities
- Preparation of O.R.S. and Distribution of ORS packets
- Food hygiene raids to destroy cut fruits and food exposed to dust and flies . Hand washing before eating and after defecation
- Use of safe water /hot food
- Prompt treatment
- Proper excreta disposal
- Purification of water supply
- Discourage open defecation
- Sanitation

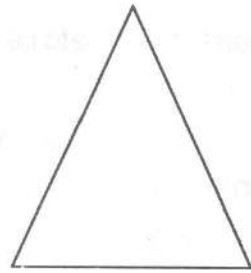
INTEXT QUESTION 1.3

1. What is the meaning of O.R.S.?
2. How can diarrhoea be prevented?
3. Complete the given statements.
 - (i) A cholera patient passes _____ stools.
 - (ii) Liquids like _____ and _____ can also be given to diarrhoea patients.

TETANUS

It is also called lock jaw because teeth becomes clinched and it is very difficult for the patient to open his mouth which is due to toxin of tetanus bacilli. During unfavourable conditions bacilli develop spore so we call it spore bearing organisms. These bacilli secrete exotoxin which will have effect on nerves causing muscular rigidity & painful spasms resulting in DHANUSH AAKAR body shape.

Agent: Tetanus bacilli (*Clostridium tetani*)



Host:

Environment

- Agriculture workers
- Those moving barefoot
- Unhygienic deliveries
- By un-sterilized injections
- Wound burns which are infected by horse & cow dung
- Un-sterilized cutting of umbilical cord
- Street and field injuries

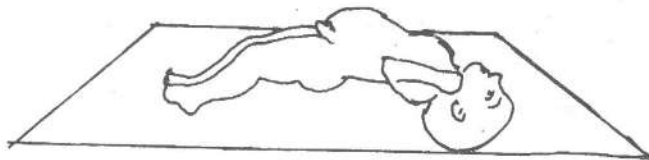


Fig. 1.8

Incubation period: 6-10 days

Sign & Symptoms:

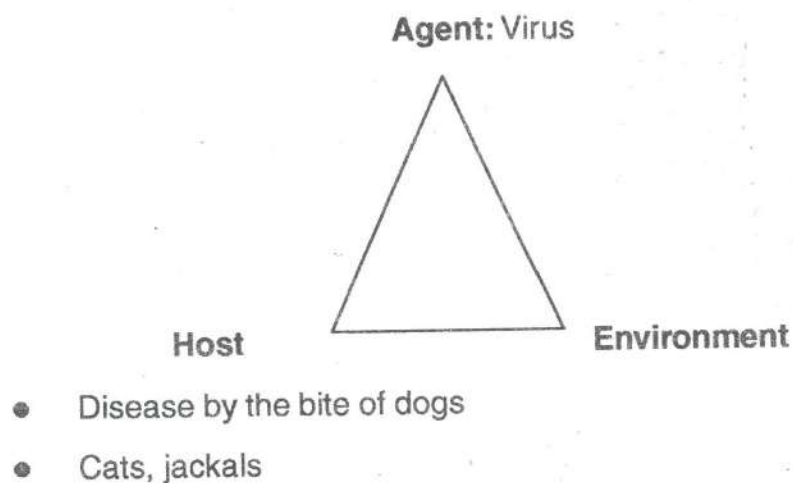
- Painful spasms
- Muscular rigidity
- Lockjaw
- History of street and field injuries and also delivery by untrained dais.

Control:

- Sterilisation of instruments, linens, gloves etc i.e. under steam and pressure. Fumigation of O.T & Labour Room
- Immunization by D.P.T., injections Tetanus toxoid (T.T.) and 2 doses to pregnant mother at 1 month interval
- Storage of D.P.T. vaccine at 4°C to 8°C.
- Prevention of Neonatal tetanus - By two doses of T.T. to pregnant mothers and hygienic deliveries by health workers.
- Identification of patient and early treatment
- Notification to health officers
- Health education.
- Non immunized cases should be treated with Tetanus Gamma Globulin
- Use sterilized needles
- Safe deliveries: Practices under proper sanitation and hygienic conditions
- Refer to Doctor or Primary Health Centre

RABIES

It is communicable diseases due to bite of rabid animals mostly by stray dogs. The disease is 100% fatal & other name of this viral disease is hydrophobia (Hydro = Water; Phobia = fear) It is a zoonotic disease.



- Monkeys

Disease of developing countries where stray dogs population is present.

Clinical features:

1. Head ache, sore throat
2. Fever
3. Hydrophobia-unable to drink water or any liquid due to the muscular spasm
4. Virus will attack on C.N.S.
5. Patient can not tolerate noise/current of air/ bright light
6. Spasm of pharyngeal and neck muscles.
7. 100% Death

Incubation period in man varies. If dog bite is nearer the brain, shorter is the Incubation Period whereas incubation period in dog is fixed i.e. if the dog is rabid, is sure to die within 10 days.

Diagnosis:-

On basis of signs of symptoms.

Confirmation by testing brain of animals in Lab.

Treatment :

1. Wash the wound or scratches with plenty of soap or detergent and water preferable in running tap water (First aid). It is better to wash the wound by potassium permanganate or silver nitrate.
2. **Suturing:-** Wound should not be sutured because it will help spread of virus to deeper tissues. Apply minimum possible sutures and under the cover of antibiotics/serum locally.
 - i. As a principle suturing should not be done unless it is essential
 - ii. Anti rabic treatment should start immediately by rabipur or human diploid vaccine.

Keep dog under observation for ten days. If dog survives, stop the anti rabic treatment. But we have to continue the same, in case the dog dies or disap-

person is killed by public. In this case patient should take full anti rabic treatment,

Rabies in dogs:

They are of two types -

1. Furious rabid dogs: -
 - A. aim less running
 - B. unprovoked biting
 - C. change of voice
 - D. Excessive salivation
 - E. dog bites without provocation and is eating mud, straws sticks etc.
2. Dumb rabid dogs:
 - Paralytic
 - Avoids being seen by others or disturbed

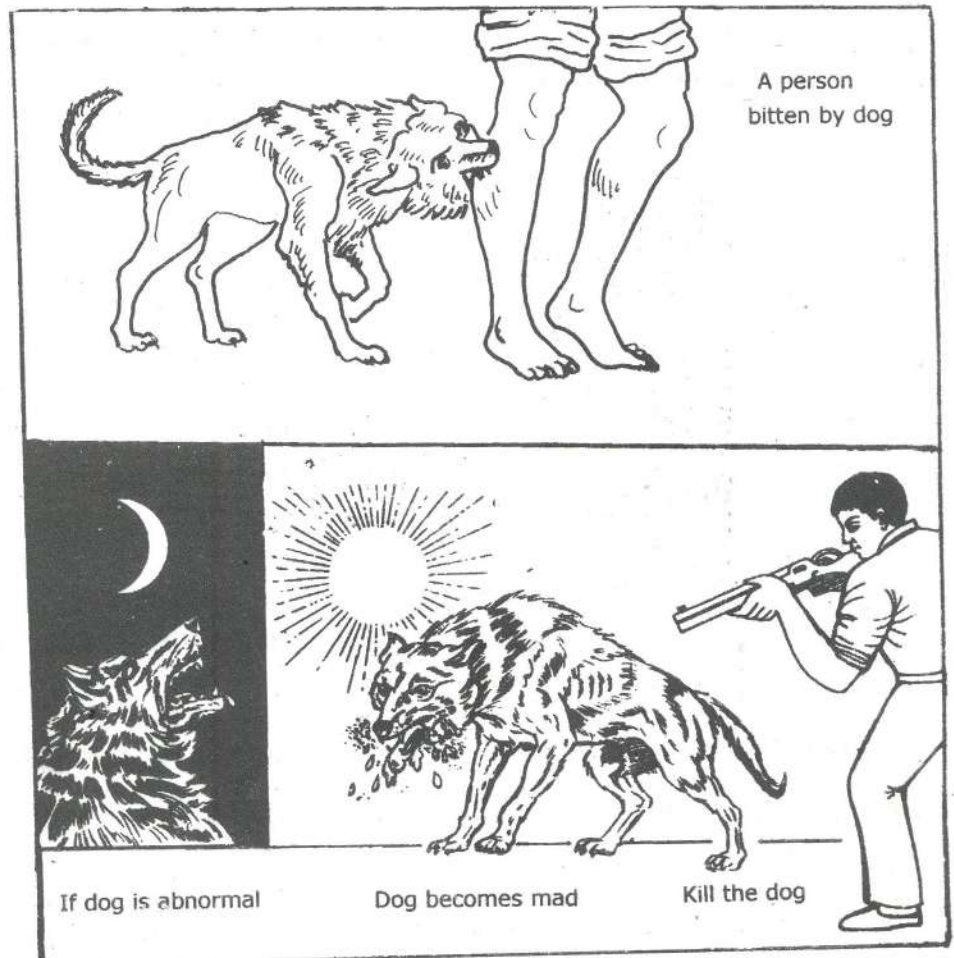


Fig. 1.9 Control of stray dogs

Control:

1. Control on stray dogs either by killing or mass immunization
2. Do not allow stray dog to roam in public places
3. Licensing of all pet dogs after vaccination of dogs by veterinary doctors
4. Health education

Role of Health Worker

- Identification of Rabies cases and their notification
- Vaccination of dogs and their licensing
- Destruction of stray dogs/Vaccination of Dogs
- Refer dog bite cases to doctors for treatment
- Health education to community about rabies.

1.8 FEVER: As a Symptom**Fever in Communicable diseases**

1. Influenza: Viral Infection, disease of children and old persons
 2. Pneumonia: Bacterial infection due to Pneumococci
 3. Diphtheria: Pain in throat, difficulty in swallowing especially in children
 4. Typhoid: High temperature in evening and morning, low pulse rate, pain in abdomen, Widal Test Positive, Bacterial Infection.
 5. Meningitis: May be tubercular or viral with headache and vomiting neck rigidity.
 6. Tuberculosis: Bacterial infection, evening rise of low grade fever, chronic cough with sputum which may have blood.
 7. Measles: Rashes on skin, no history of taking any drug.
 8. Chicken Pox (Viral Infection)
 9. Mumps (Viral Infection)
 10. Plague, Bacterial Infection
-

11. Acute – Bacterial Infection
12. Acute follicular Tonsillitis (Bacterial Infection)
13. Influenza – viral
14. Cellulitis – (Bacterial Infection)
15. Furuncle – Bacterial Infection
16. Puerpural Sepsis.

INTEXT QUESTION 1.4

- I. State True/False
 1. Tuberculosis is viral infection. ()
 2. Tetanus is caused by *Vibrio cholera*. ()
 3. Pneumonia is caused by *Pneumococcus*. ()
 4. *Vibrio cholerae* is causative bacteria for the disease cholera. ()
- II. Fever occurs as a symptom in which diseases. Name at least 5.
.....

1.9 WHAT HAVE YOU LEARNT

In this lesson you have learnt

- What is Health and communicable diseases
- How they spread and their prevention and control
- How to diagnose the communicable diseases.

1.10 TERMINAL QUESTIONS

1. Define the term Health and Disease. How the communicable diseases spread?
 2. What are agent, host and environmental factors in causation of Measles.
 3. What is meant by dehydration? How will you diagnose the degree of dehydration.
-

4. What are the sign, symptoms and treatment of cholera?
5. What are the symptoms of Tuberculosis? Mention the role of Health worker in Tuberculosis.

1.11 ANSWER TO INTEXT QUESTIONS

1.1

1. Health – It is physical, mental, social & spiritual (added by the India) well being of a person and not just the absence of disease.
2. Disease – A condition opposite to health.
3. By chain of infections that is by source, mode of transmission of disease and susceptible host.

1.2

1. By immunization of all children of area upto 5 years by O.P.V. and by pulse polio programme.
2. Measles, Mumps, Rubella
3. Varicella zoster virus, Herpes virus.
4. Measles

1.3

1. Oral Rehydration Solution (O.R.S.)
2. Diarrhoea can be prevented through proper personal and food hygiene, washing of hands with soap and water after going to toilet and before and after meals, health education of community.
3. (i) rice watery
(ii) shikanji, daal ka pani

1.4

- I.
 1. False
 2. False
 3. True
 4. True
 - II. Fever occurs as a symptom in Influenza, pneumonia, typhoid, diphtheria and tuberculosis.
-

2

COMMUNICABLE DISEASES-B

2.1 INTRODUCTION

In the previous chapter we have discussed some of the communicable diseases. Now let us study and understand Parasitic and sexually transmitted diseases. Parasitic diseases are produced by different types of parasite entering into human body through bites of vector (insect which carries parasite in their body or parasite themselves entering human body by cutting skin or by mouth). For eg. – Malaria, Dengue, Fever, Hook worm, Tape worm, Round worm etc.

Sexually transmitted diseases (STD) are diseases which are transmitted from one human being to another (infected individual). For example – Syphilis, Gonorrhoea AIDS, Hepatitis B.

2.2 OBJECTIVES

After reading this lesson you will be able:

- To know what are parasitic diseases.
 - To know various sexually transmitted diseases (STDs).
 - To understand their mode of transmission.
 - To know their control.
-

2.3 PARASITIC DISEASE

(1) DENGUE

Now let us discuss about some of the parasitic diseases—

Role

It is a viral disease carried by *Aedes aegypti* mosquito. It is a public health problem causes more than 10,000 cases & 300 deaths in Delhi alone in 1995.

Aedes aegypti mosquito breeds in clean water in artificial container like tyre, broken bottle, containers Desert Cooler, Over head Tanks (O.H.T.) Mosquito breeds in clean water which has not come in contact with soil.

AGENT:



HOST

ENVIRONMENT

All ages and both sexes

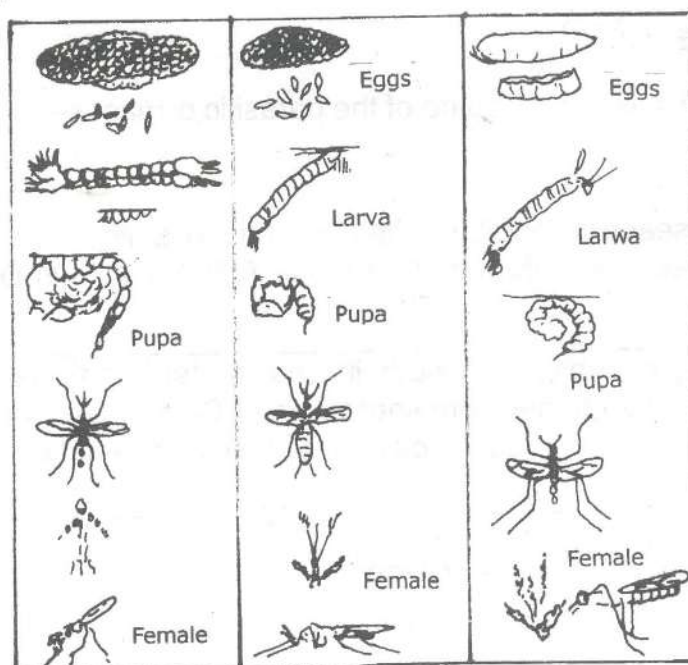
Mostly during rainy season when breeding of mosquito are more (July to November).

Mode of transmission:-

It is due to bite of infected female *Aedes aegypti* mosquito which has acquired virus from infected person.

Clinical features:- there are 3 types of Dengue

1. **Dengue Fever:-** Starts like ordinary fever and the patient becomes alright after 3-4 days
2. **Dengue Haemorrhagic Syndrome (D.HS)-**causes bleeding from gums, nose, ears etc.
 - High fever, bleeding from ear, nose, gums etc. due to low platelets count
 - Liver is enlarged
 - Circulatory failure
3. **Dengue shock syndrome (DSS) :** Fall of blood pressure, feeble pulse, critical condition fall of temperature. Patient may die if not treated.



1. Anopheles

2. Aedes

3. Culex

Fig. 2.1 Sitting, Posture of Different types of Mosquitos

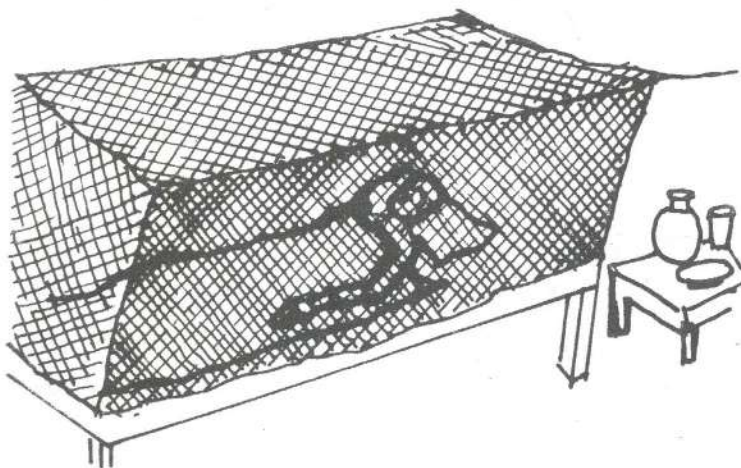
Treatment:

1. No effect of antibiotics
2. Treatment as per symptoms
3. I/V fluids
4. Keep temperature low, **Never give aspirin but paracetamol can be given.**
5. Take the patient to doctor/PHC

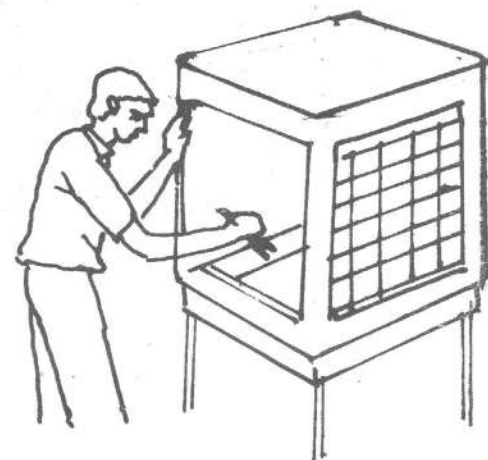
Control:

1. Control of mosquito breeding in overhead tanks/desert coolers, empty bottles, plastic containers etc.
2. Prevent bite of mosquito.
3. Anti larval/anti adult measures
4. Active surveillance
5. The mosquito usually bites during day times & in the evening so the children should not be allowed to play outside.

Do's	Don'ts
• Close observation of DHF (Dengue haemorage fever) and DSS (Dengue shock syndrome) • Blood transfusion in case of severe bleeding. • Treatment of shock by raising foot end, give hot tea or coffee. Cover the patient with blanket. • We should give plattlet transfusion if count comes down below 50,000/- cell cumm as per advise of doctor.	• Do not give Aspirin • No use of antibiotics as it is viral infection • Do not give steroids • We should avoid to give blood transfusion, it may be required in case of profuse bleeding.



Protection of healthy person from Dengue Patient



Checking of cooler by Health worker for A des mosquito larva.

Fig. 2.2 By Courtesy : NMEP (DGHS)

2. Malaria

Any fever can be malaria, which is spread by bite of infected female anopheles mosquito as it contains malaria parasite in its salivary gland. The female anopheles mosquito needs blood meal to lay eggs and injects malarial parasite. The malarial parasite is called Plasmodium. (P.Vivex, P. Falciparm, P.Oval, P. Malaral).

Agent. It is Malaria Parasite which is of four types.

- Plasmodium vivax (It is very common about 70% cases are of this type)
- Plasmodium falciparm (It will cause cerebral malaria and about 25 to 30% cases are present.)
- Plasmodium ovale (It is rare)
- Plasmodium malaral (It is also very rare.)



Host:

- Malaria is common in all age groups and in both the sexes
- Malaria during pregnancy is of high risk
- Migration of population is also responsible for spread of malaria infection.

Environment:

- Mosquito is present in ill ventilated and in dark rooms (ill lighted)
- Over head tanks, which are open, cause mosquito breeding.
- Desert coolers in which water is collected for long period.
- In rainy season, there is collection of water at various places which are named as follows:
 - A. Temporary breeding places.
 - B. Permanent breeding places.
 - C. Pits, pot holes construction places
 - D. Material over the roof like tyres. tin containers, empty bottles etc where rainy water is collected causing breeding of mosquitoes

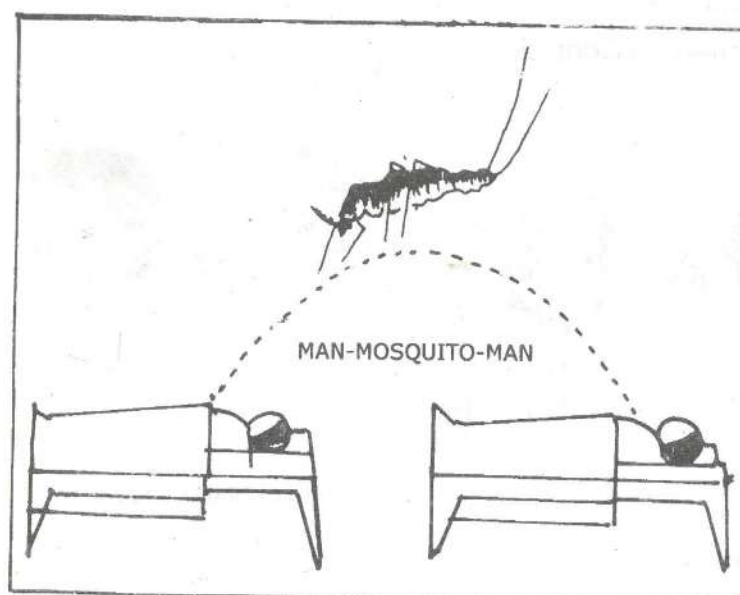


Fig. 2.3 Transmission of Malaria
 By courtesy : N.M.E.P. (D.G.H.S.)

Complications:

- Chill and vigor
- Very high fever resulting in death
- Severe Anaemia
- Brain fever (Cerebral malaria), Pernicious malaria
- Swelling of lungs
- Jaundice

Life Cycle of Anopheles Mosquito

1. Eggs
2. Larva
3. Pupa
4. Adult

Life Cycle of Malaria Parasite

1. Sexual Life Cycle: In stomach of Female Anopheles Mosquito
2. Asexual Life Cycle: In Man

Control

1. Case Finding by Active and Passive Surveillance (By searching cases and drawing slides of fever cases.)
2. Avoid bite of mosquitoes (Use of Mosquito net /Repellants/Coils/Mats)
3. Anti-larval and Adult measures-By spray

4. Early treatment
5. Environmental Control.



Fig. 2.3(a) Sign and symptoms of Malaria fever

Clinical features:

- High fever, chill and rigor
- Cold stage: patient feels very cold and will cover his body with one or two blankets.
- Hot stage : after sometime he removes blanket as he is not Feeling cold.
- Sweating stage: lot of sweat comes out and temperature comes down.
- Enlarged spleen
- Anaemia: weight loss

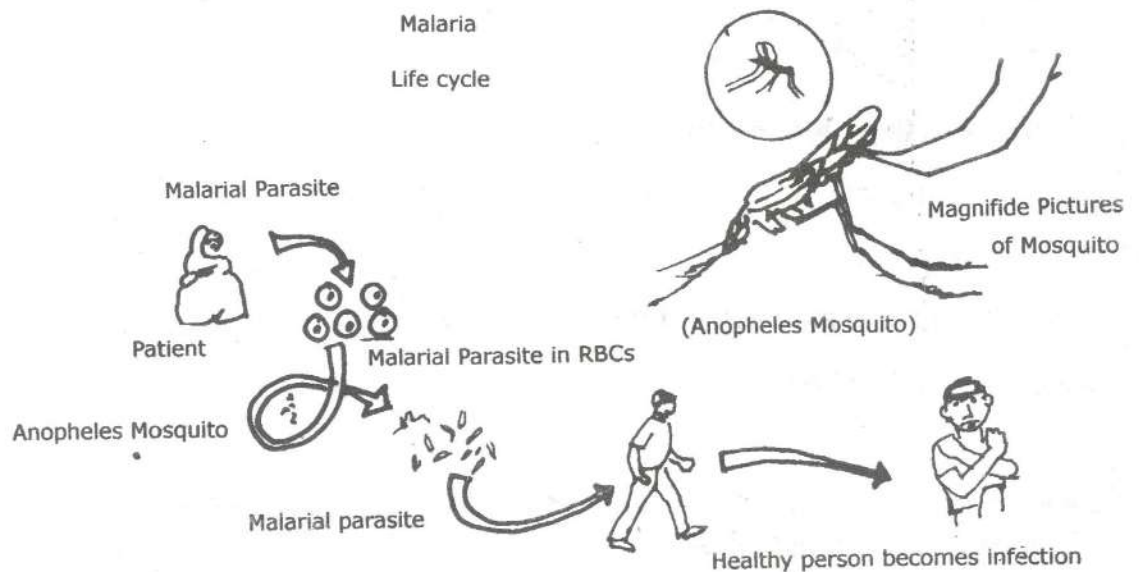


Fig. 2.4

Spread of Malaria

5. The mosquito usually bites in the evening so the children should not be allowed to play outside.

Prevention of Dengue/Malaria

- Avoid mosquito bite by wearing full sleeves clothes.
- Use of mosquito repellents/coils.
- Use of mosquito nets.
- Drain out water from desert collar/tank/tins/Tyres etc.
- Over head tanks should be tightly closed to avoid mosquito breeding.
- Any fever could be Malaria/Dengue send the patient to Hospital.

Role of Health Worker:

1. Surveillance of fever cases (Search for cases and find)
2. Make thick and thin blood slide and send it to malaria/clinic laboratory for diagnosis.
3. Collect the reports and if Blood smear is M.P.+ve, send the case to doctor for treatment.
4. Detect mosquito breeding places and take Anti Larval and Anti Adult measures.
5. Insecticidal spraying
6. Health Education

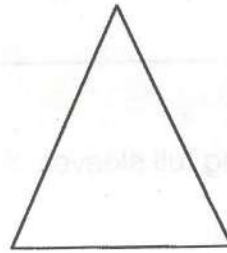


Fig. 2.4(a)'
Examination
(suspected case of Malaria)

LEPROSY

It is a communicable disease caused by **Mycobacterium leprae** which will affect the nerves & skin. It is very old disease, when people used to think that it was -due to bad blood and is incurable disease. It is having social stigma. But it is 100% curable disease.

Agent : Mycobacterium leprae



Host: All ages-Direct Spread

Environment:

- Low socio-economic group
- Over crowding
- Incubation period average 3 years

Sign of leprosy:

- A. Skin patches without any sweating, Absence of pain on pricking-with-apin.
- B. May be flat or raised of reddish pale
- C. No itching or burning in patches.
- D. Thick nerves

Patches: Not of leprosy

- Present from birth
 - Scaling of skin
 - Itching present
 - White in colour, dark or red
-

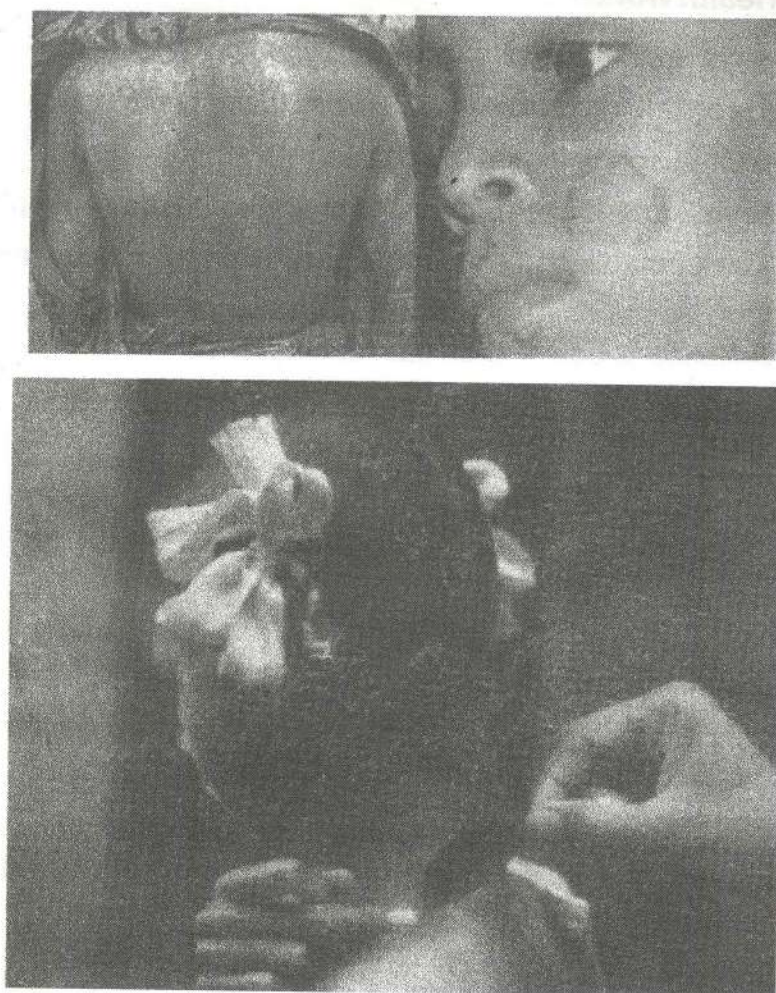


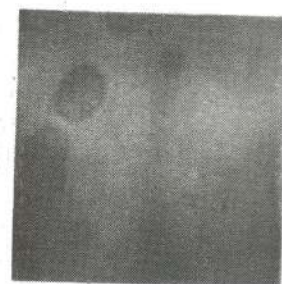
Fig. 2.5 (a) Skin patches of Leprosy Patients (Flat or Raised reddish pole with no sensation of Pain) Courtesy : N.L.E.P. (India)

Health Education to patients

1. They will be cured if they will take full treatment
2. Drugs will stops spreading of disease
3. Patients can lead natural life like marriage, have children and work etc.
4. Refer the patient to doctor/PHC for Multidrug Therapy.

Disabilities

1. Presence of blisters between toes
2. Cracks & fissures on feet & presence of ulcers
3. Injuries on hands



scan7

Fig. 2.6
By Courtesy: National
Leprosy Eradication
Programme (NLEP)

Role of Health Worker

1. Does not spread from one another by touch.
2. Give proper information about leprosy in the community.
3. Motivate suspected cases to go to doctors.
4. Remove fear and social stigma to change attitude of people.
5. It is 100% curable and encourage people to take regular and complete treatment.
6. Surveillance to detect fresh cases.

INTEXT QUESTIONS 2.1

Fill in the blanks—

1. Malaria is caused by _____.
2. Dengue is _____ infection.
3. Bites of Aedes mosquito will cause _____.

TUBERCULOSIS

It is an air borne disease due to tubercular bacilli which causes 2-4 lakhs deaths annually, in spite of the fact, large number of people, get cured after



Fig. 2.7 Tuberculosis Is Air Borne Disease
By Courtesy: WHO Publication

the complete treatment. It is the diseases which is present throughout the world which is more common in developing countries. It is of two types:

- 1) **Pulmonary Tuberculosis** which affects lungs in about 60~ 70% cases.
- 2) **Bovine Source** which is usually due to infected milk. It is **extra pulmonary tuberculosis** which affects glands, bones, intestine, brain etc.

AGENT

Tubercular bacilli (*Mycobacterium tuberculosis*), they are acid fast bacilli, rod shaped, non motile (no movement)

HOST

Any age, sex, individual having H.I.V.(+ve)/AIDS, Diabetics not taking treatment, kidney disease, smokers, low income group etc.

ENVIRONMENT

Overcrowding, low-socio economic conditions, illiterates, ignorance, poor housing conditions having low ventilation. It is observed that a person who is susceptible is having chances of getting infection who is in contact with indoor exposure moreover in close contact to a person who is AFB (+ve) in his sputum.

HOW TUBERCULOSIS IS SPREAD

This disease spreads through air. If a patient of tuberculosis coughs, he will spread lot of bacterias (Tubercular bacilli) in air and if a healthy person inhale these bacterias along with breathing, these Tubercular bacilli will go into lungs and will cause the infection. Extra-pulmonary tuberculosis which is common in glands, bones, kidneys, brain, intestine etc. is never infectious.



Fig. 2.8 How tuberculsis is spread By Courtesy : WHO Publication

When healthy person inhales Tubercular bacilli from infected person Tubercular bacilli go to his lungs alveoli and cause infection and further spread of infection is through blood which will cause primary infection which is mostly common in children. We may see following findings:

- 1) Positive tuberculin skin test
- 2) We may not get clinical findings
- 3) Cervical Lymphadenopathy
- 4) Pericarditis i.e. inflammation of covering of heart

POST PRIMARY INFECTION

It is quite common in adults and following findings are usually available:

- 1) Fibrosis of lungs,
- 2) Cavities in lungs
- 3) Pulmonary effusion i.e. presence of fluid in pleura
- 4) Lymphadenopathy
- 5) Meningitis which is inflammation of covering of brain
- 6) Pericarditis

INCUBATION PERIOD (I.P.)

Usually 3 - 6 weeks which may be even longer in some cases depends upon dose of infection patient has inhaled.

SIGN SYMPTOMS (S.S.)

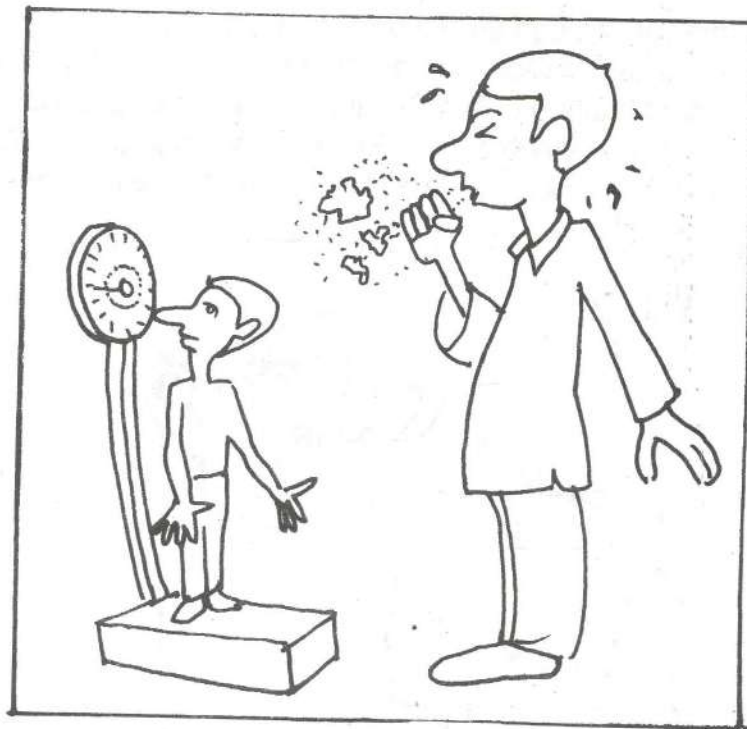


Fig. 2.9 Progressive Loss of Weight in Tuberculosis

- 1) Chronic cough of more than 3 weeks usually with sputum.
- 2) Evening rise of low grade fever.
- 3) Chest pain and blood comes out with sputum (Haemoptysis)
- 4) Weakness and weight loss

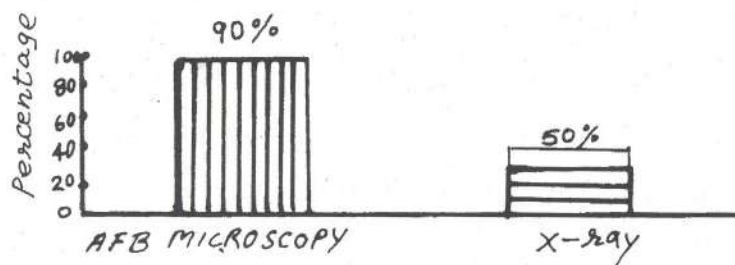


Fig. 2.9 (b) Microscopy is more specific test than X-ray By Courtesy : WHO Publication

DIAGNOSIS

It is done by sputum examination for three days by Ziehl-Nelson Staining (AFB Staining)

- 1) Make smear of sputum
- 2) Fix it over flame
- 3) Put hot carbol fuchsin on it and keep it for 5 minutes
- 4) Wash with tap water
- 5) Decolourise with dilute acid
- 6) Counter stain with Methylene blue for 30 seconds
- 7) Wash with tap water
- 8) Observe under microscope for rod shaped pink bacilli if the case is AFB(+ve)



Fig. 2.10 Collection of sputum by Patient for Microscopic Examination for Diagnosis By Courtesy : Delhi T.B. Central (Govt. of Delhi)

TREATMENT

Tuberculosis is a curable disease. Patients with T.B. having sputum (+ve) for **acid fast bacilli (AFB)** need to be isolated because these are infectious cases. T.B. can be completely cured in case patient takes anti-tubercular medicine for complete duration. Most of anti-tubercular drugs are rifampicin, isoniazid, thiacetazone, ethambutol and pyrazinamide, are taken orally but Streptomycin is to be given by injection (intra-muscular). Patients can take treatment at home but few patients with complications requires hospitalization. In cases of tuberculosis in females breast feeding to babies should be allowed in case mother is AFB(+ve). Baby should get treatment as well as BCG immunization.

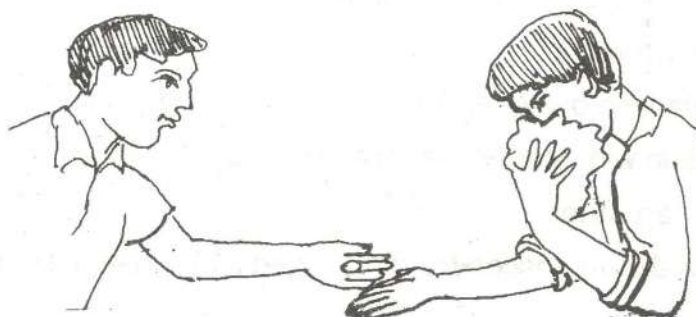


Fig. 2.11 Treatment of a Tuberculosis Patient by Health Worker By Courtesy: WHO Publication (N.D.)

(DOTS) DIRECTLY OBSERVED TREATMENT - SHORT COURSE

Now-a-days we treat the patients by DOTS. Patient is to take medicines in correct dose for 6 to 8 months under the supervision of health worker. Patient swallows the drugs in presence of health worker in intensive period. In continuation phase patients gets medicine for 1 week and takes 1st dose in presence of health worker. Patient can take any of these drugs: Patient Pyrazinamide, Ethambutol, Streptomycin.

If patients does not take treatment regularly he may develop resistance against drugs.



Fig. 2.12 (a) Treatment of Tuberculosis by D.O.T.S.
Courtesy : Delhi T.B. Control Office Gulabi Bagh Delhi (Delhi Govt.)



Fig. 2.12 (b) Treatment of Tuberculosis by D.O.T.S.

PREVENTION AND CONTROL

- 1) By B.C.G. vaccine at birth
- 2) Patients should keep handkerchief on mouth while coughing and sneezing.
- 3) Proper screening by sputum by examination for 3 days if sign symptoms of tuberculosis are observed.
- 4) He/she should take complete treatment

- 5) DOTS medicine are taken in front of health worker
- 6) An uninterrupted supply of anti-tubercular medicines
- 7) Monitoring and supervision of outcome of every patient as far as treatment is concerned
- 8) Screening of AIDS/HIV patients should be done in all tuberculosis cases
- 9) Tuberculin test is not reliable for diagnosis of T.B. as +ve test indicates that individual is infected by T.B. On the other hand, negative test does not rule out tuberculosis

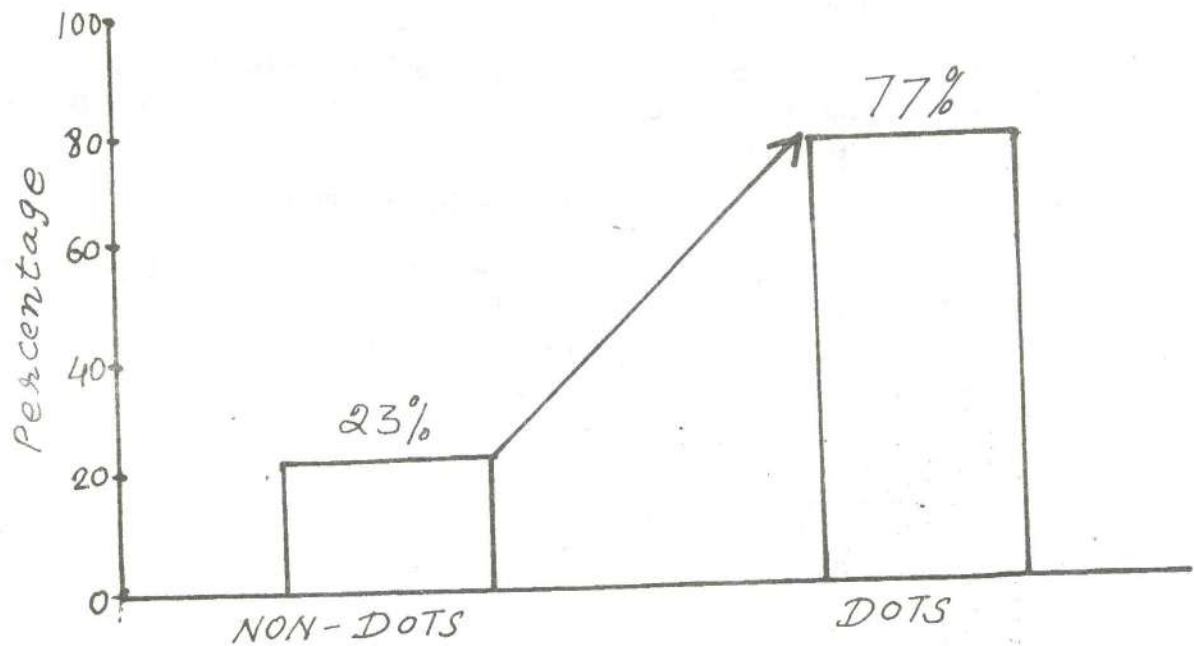


Fig. 2.13 (a) D.O.T.S triples treatment success in SE Asia (W.H.O. Publication)

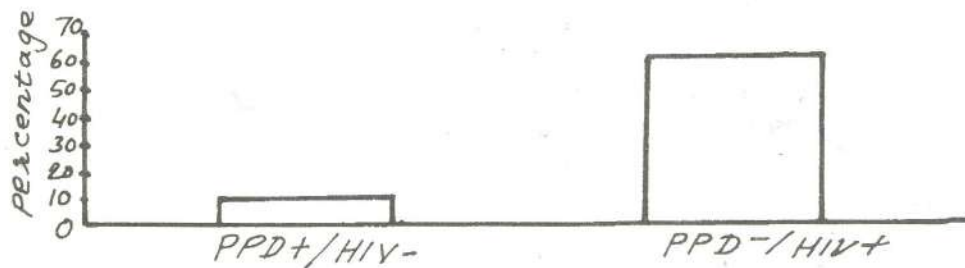


Fig. 2.13(b) Life Time Risk of T.B. Disease

It is most important control of tuberculosis that following points should be observed by health workers:

- 1) Screen for tuberculosis, all patients of H.I.V./AIDS
- 2) Offer HIV testing and counselling of all patients of tuberculosis
- 3) HIV surveillance amongst tuberculosis patient
- 4) Our aim is to increase DOTS treatment in tuberculosis patients and also HIV care
- 5) Screen for diagnosis HIV and AIDS in all tuberculosis patients
- 6) We should establish at national level T.B. and HIV/AIDS co-ordination committee.

In T.B. control i.e. Self-help groups are playing important role for help of the people suffering from either tuberculosis and HIV/AIDS in T.B. control programmes by giving:

- 1) Health education to patients and their families
- 2) Individuals should be informed about the risk to themselves and their families about early signs of T.B., they should know about DOTS, and T.B. patients should ensure to take every precaution to rule out TB of their family members.
- 3) Media is playing important role about AIDS and TB programmes.
- 4) The NGO's are also quite helpful in control of TB/AIDS in the community.

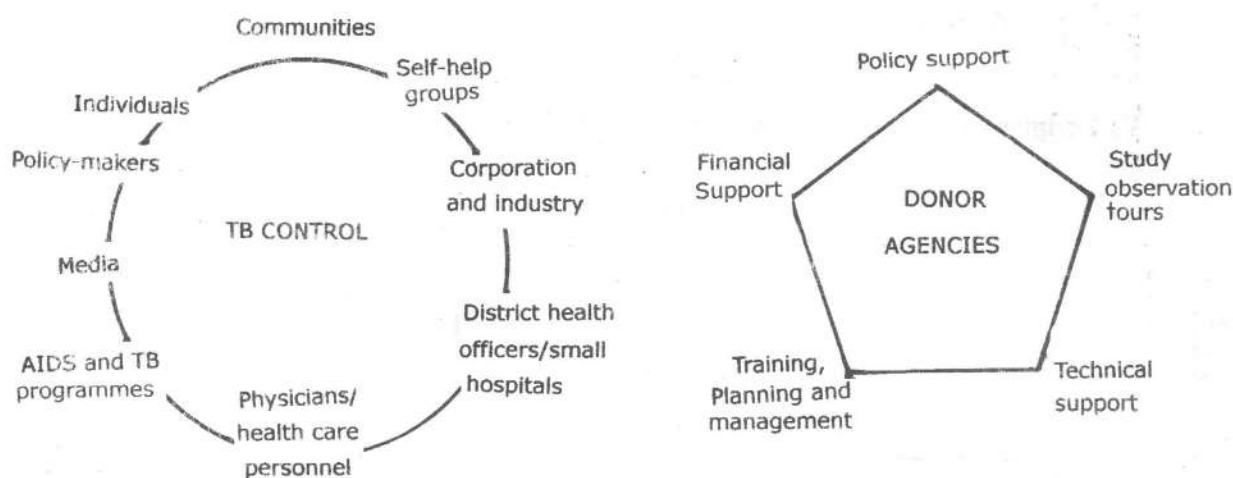
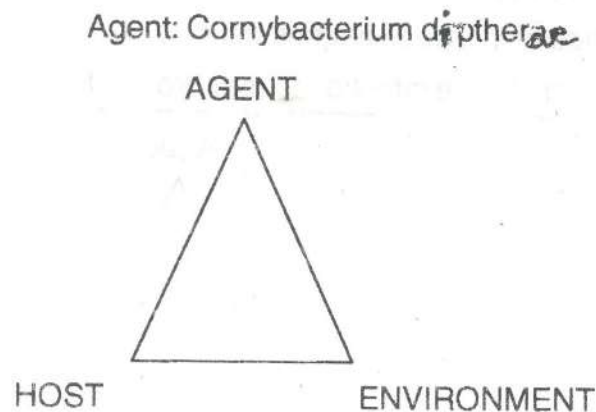


Fig. 2.14 T.B. Control Courtesy : WHO Publication SE Asia (ND)

DIPHTHERIA

This is mainly disease of children. It is acute infection in which micro-organism attacks on tonsils, nose & throat by forming false membrane causing suffocation.



Host: Children below
5 years, both sexes

Environment : Winter Season

Clinical features

- low grade of fever with pain in throat.
- tonsils are affected having membrane on it .On removal it bleeds
- Difficulty in swallowing
- Patient can die due to blockage of air tract, if not operated.
- Immediately rush to hospital.

Control treatment

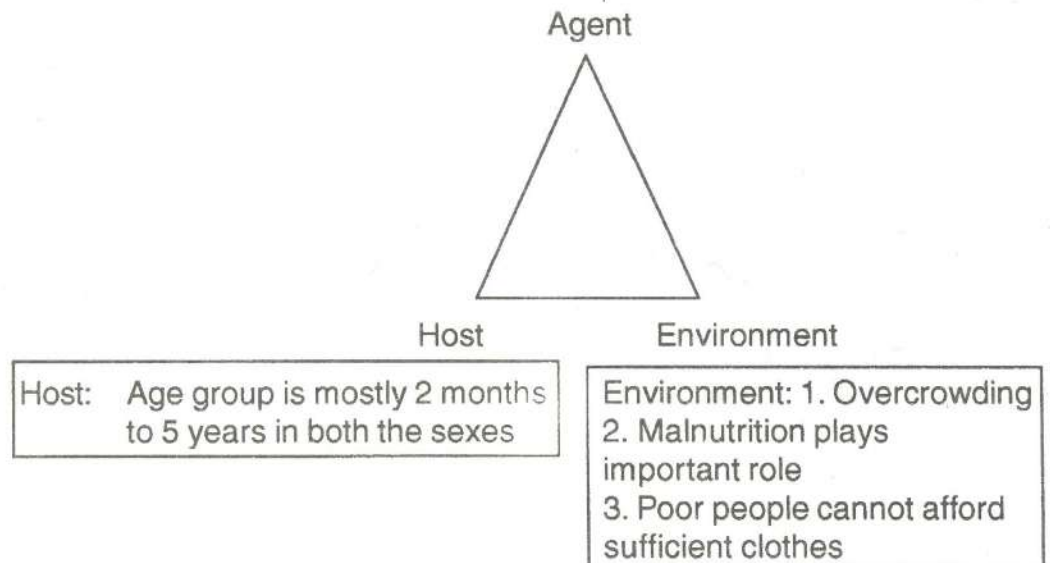
1. By immunization- D.P.T. (Diphtheria, Pertussis, Tetanus)
2. Storage of vaccine at 4°C to 8°C
3. Refer to doctor/PHC.
5. Isolation of patient, care of attendants necessary.
6. Notification to health officers,
7. Disinfection measures.

PNEUMONIA

It is the disease due to pneumococcus i.e. bacterial disease of the lung and is-acute respiratory infection. Deaths are quite common in most of the chil-

dren if not treated well. We can treat children in home under the guidance of doctor.

1. *Diplococcus pneumoniae*
2. It causes obstruction in breathing by filling fibrin in lung alveoli
3. Obstruction in alveoli causes difficulty in breathing
4. It cause air borne infection to man from infected person



Other causes: Pneumonia can also be caused by meningococcal meningitis, tuberculosis and various viruses.

Clinical features:

1. Child is drowsy-poor response, when we talk
2. Mostly children having malnutrition-moderate to severe
3. abnormal breathing, which is noisy & fast
4. cough, cold, running nose & fever
5. excessive drowsiness
6. unable to take liquid diet
7. In severe cases child may have convulsions
8. Cyanosis i.e. blue colour nails and lips

Treatment:

1. Antibiotics & Antipyretic like paracetamol
2. Keep the child warm
3. Maintain Proper nutrition (Food should not be stopped)

4. Refer the severe case to hospital/PHC
5. Oxygen inhalation is required in serious cases
6. Continue breast feeding
7. Death occurs due to
 - patient has taken no treatment
 - attended hospital too late
 - inadequate treatment

Prevention

1. Breast feeding is ideal which will protect the child from pneumonia
2. Avoid over crowding, dusty, smoky atmosphere
3. Eat well balanced diet
4. Adequate rest to children
5. Wearing of warm clothes to children to avoid from exposure of cold
6. Vit A prophylaxis
7. Health education to mothers regarding pneumonia

INTEXT QUESTIONS 2.2

Answer the following question

1. What are the signs & symptoms of pneumonia?
.....
2. Mention any two role of health worker in Tuberculosis.
.....
3. What are the sign of Leprosy?
.....

2.4 FOOD POISONING

Sudden onset of signs & symptoms of loose motions, vomiting, pain abdomen etc. After taking contaminated food having bacterias or chemical substances. Many people will develop same symptoms after taking common food in any party/marriage or function within a short period.

Signs-Symptoms

1. Fever, nausea & vomiting
 2. Pain in abdomen
-

3. Loose motions
4. In some cases blood & mucus in stool indicating severe cases. In case of signs/symptoms are of severe nature with death of most of the patients indicating following signs/symptoms which are nongastro intestinal due to exo-toxin.

In extreme cases poisoning occurs due to eating of food from tin food.

- blurring of vision
- weakness of muscles
- double vision
- patient can not eat/drink due to difficulty in swallowing
- paralysis of upper & lower limbs

Causes of food poisoning

- Food Poisoning due to bacteria & their toxins e.g Salmonella, Clostridium, Botulinum bacilli, Staphylococcus
- Non Bacterial food poisoning
- By chemical, arsenic
- By plants
- By sea food
- By contamination of fertilizers, pesticides

Prevention & control:

1. Food Handlers:

Having no communicable disease, wearing caps, immunized against typhoid, trimming of nails, personal hygiene should be perfect.

2. Slaughter house:

Should be having proper sanitation, animals should be examined by veterinary doctor, before and after slaughtering.

3. Pasterization of milk.
 4. Use of refrigerators
 5. Thoroughly cooked food & should be consumed same day if possible.
 6. Home canning should be avoided as it can give rise to food poisoning.
 7. Sanitary improvement regarding place, furniture utensils, equipments use of potable water. Area should be free from flies, rats, dust etc.
-

8. Proper Garbage disposal

Treatment : Refer the patient to doctor/PHC.

Role of Health Worker:

1. Early reporting of cases to higher authorities.
2. Food sanitation by food hygiene raids.
3. Surveillance
4. Refrigeration of food
5. Refer the cases to doctors.

INTEXT QUESTIONS 2.3

State whether true or false.

1. In extreme cases poisoning occur due to eating of food from tin food. ()
2. Contamination of food by the use of fertilizers, pesticides is also one of the cause of food poisoning. ()
3. Proper garbage disposal has no role in food poisoning. ()

2.5 SEXUALLY TRANSMITTED DISEASES (STD)

This group of diseases is due to bacterial viral, protozoal infection for example

- A.I.D.S. (Acquired immunodeficiency syndrome)
- Syphilis
- Gonorrhoea
- Hepatitis B
- Trichomonas Vaginalis

Risk Factors

1. Age: 20 to 40 years
2. Sex: Male will suffer more than females
3. Low socio-economic conditions
4. Migration
5. Illiteracy & ignorance
6. Homosexuality



1. Gonorrhoea
2. Syphilis
3. A.I.D.S.
4. Hepatitis-B
5. Trichomonas Vaginalis

Fig. 2.15 S.T.D.

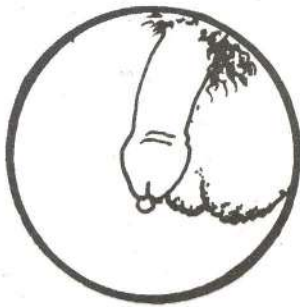


Fig. 2.16 Discharge from penis

7. Drug addiction

Sign/Symptoms of S.T.D.

- Foul small discharge from vagina & burning & itching in vagina-pain during intercourse
- Burning pain while passing urine
- Sores/rashes in sex organ
- Discharge from penis

Complication of STDs

- Urethral stricture
- Infertility
- Ectopic pregnancy
- Congenital syphilis
- Abdominal pain

Prevention- To avoid going to prostitutes

- Use of condom
- Avoid multiple partners or having sores/discharge
- Wash remittals after sexual intercourse
- Early treatment
- Screening in surveillance, case finding
- Health Education-about signs and symptoms, treatment, find out partners & treat them.
- S.T.D. Clinics
- Periodical checkup of sex worker~

Complications

- Chronic illness
- Jaundice
- Infertility
- Abortions
- Cancers

Signs/Symptoms

A- Syphilis: It is due to bacteria *Treponema pallidum* which is cork screw type of bacteria. In these cases we observe painless sore on genitals of male & female.

Syphilis

AGENT (*Treponema pallidum*)



HOST

- Age group 18-30 yrs. (Young people)
- Males are more affected
- Bus drivers & conductors
- Roaming representatives of different, companies police-men
- Soldiers, policemen
- Single/separated, divorced

ENVIRONMENT

- Low socio-economic status
- Migratory population i.e. people coming from villages to city

Incubation period: 10-90 days.

Signs & Symptoms:

- Germs will spread in the broken skin & then to heart, bones etc. through blood.
- Disease will affect the developing baby if mother is suffering from syphilis, through placenta.
- Chancre (wound) will develop on the penis of male & outside of vagina which is painless.
- This disease will cause infertility in males & females.
- There is painless swelling on lymph nodes on thighs.
- So patient do not take treatment due to social stigma/shyness, later on there is formation of rashes, mouth ulcer & swelling of joints.

Diagnosis : In routine, by VDRL Test.

Treatment :

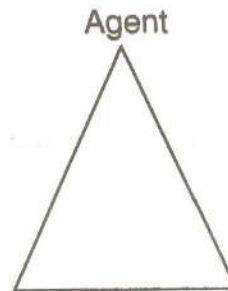
- Early diagnosis & treatment by long acting penicillin till the patient becomes VDRL-VE.

- It can be prevented by use of condom.
- Health Education to community.

B-Gonorrhoea: In this disease male and females are having painful urethral discharge.

Agent.

Neisseria Gonorrhoea: It is grams negative cocci



Host.

Age : 18-30 years

Sex: Males are suffering more

Single Divorced, separated

Socio-economically poor

Illiterates

Unemployment

Environment

Due to industrialisation
migration, population
explosion, slums

Incubation period (IP): 1 to 3 days

Sign/Symptoms

Purulent Urethral discharge

Diagnosis:

Smear is repeated from urethral discharge and after staining with gram stain. And also by culture one can diagnose the disease.

Treatment: By antibiotics

A.I.D.S.

In India we are having more than 5 million H.I.V. positive cases, It means the number of these cases are increasing. India is expected to cross the number of H.I. V. cases than Africa which is having largest number of H.I.V. positive cases in the world. **It is caused by human immunodeficiency virus (H.I.V.) which is a viral disease.** Presently available antibiotics will have no role to control the disease. Virus will attack on immune system in body. It means defence system of body will breakdown, which fights various diseases.

A.I.D.S. means Acquired Immuno Deficiency Syndrome.

- Acquired:- We get it from surroundings as it is not inherited disease.
- Immuno Deficiency:- means immune system of body is destroyed by H.I.V. So the defence system of body is destructed and it can not defend against development of disease of infection.
- Syndrom:- A group of sign/symptoms of illness due to H.I.V.

H.I.V. It is viral infection that will cause A.I.D.S. in males or females

- H- Human
- I- Immunodeficiency
- V- Virus

H.I.V. Positive means, we find antibodies in the blood of the patients against H.I.V. with in 6 to 12 weeks. It is the period or time to develop antibodies in body of patients (Window period). If we test the blood during window period it will be H.I.V. Negative although the patients is H.I.V. Positive or Infected.

Window Periods:

It is the period of roughly 6 to 12 weeks in which a patient after getting H.I.V. infection develops the antibodies in he/her blood. We should be very careful in blood bank and keep it in mind that we do not transfuse a blood of a H.I.V. person who is in window period.

Agent :- Human Immuno - Deficiency virus (H.I.V.)

Host

- Mostly age group 20-40 yrs.
- Both Sexes
- Divorce, Separated
- Away from home/family
- Prostitutes, call girls
- Truck drivers

Environment:

- Low socio-economic people/J.J. clusters slums
- Migration
- Social factors contribute the spread of STD' s like Urbanization

General symptoms of HIV/AIDS infection

- More than 10% reduction in body weight in a short period time.
- Continuous fever for more than one month.
- Chronic diarrhoea, persistent dry cough, oral rash and shortness of breath.
- Swelling in lymph nodes.
- Visual disturbance and vomiting.
- Skin blotches, eczema, fungal infection and sometime cancer.
- Damaged nervous system & brain leading to loss of memory.

Clinical Features:

- Loss of appetite
- Weight loss
- Diarrhoea
- Prolonged Fever
- Patient may be suffering from tuberculosis
- Industrialization
- Alcoholism
- Changing social values
- Recurrent infection

Mode of Spread of A.I.D.S.

- By having sex with male or female partners having H.I.V. Positive (Oral/ vaginal/Anal) As H.I.V. is present in semen, saliva, vaginal secretions, blood & blood products, mother's milk,
- By infected needles- Drug users
- By infected blood & blood products
- Infected mothers to their babies through placenta.

How A.I.D.S. will not spread by:

A.I.D.S. will not spread by:

- | | |
|-----------------|-------------------------|
| ● Shaking hands | ● Sharing of telephones |
| ● Hugging | ● Sharing of offices |
| ● Dry kissing | ● Playing together |

- Sneezing, coughing
- Mosquito bites
- Sharing of toilet
- Travelling together in buses and trains
- Living in the same room
- Donating blood aseptically

Control:

1. Use of condom
2. Safe sex; multiple sex should be avoided
3. Avoid syringes & needles (Infected) there should be proper disposal by incineration (burning) of plastic syringes it is advisable to use disposable syringes.
4. Early treatment and Diagnosis:- Diagnosis of both partners should be made necessary and treatment should be given.
5. Health Education: It should be given as to how A.I.D.S. is spread i.e.
 - I. By sex
 - II. By H.I.V. infected blood and blood products, haemo-diagnosis, proper screening of H.I.V. in blood banks up gradation of blood banks
 - III. By infected syringes, needles, razors, bleeds in that case, barbers and beauty parlours should be given trade license.
 - IV. A.I.D.S. also spreads through placenta to babies from H.I.V. Positive mothers.
6. Detection of cases: It is the duty of health worker to detect H.I.V. positive cases in the society as the disease is having social stigma
7. Compulsory testing of blood before transmission. - And to encourage voluntary blood donation and we should avoid to collect blood from professional donors
8. Proper screening of prostitutes to detect H.I.V. positive cases.

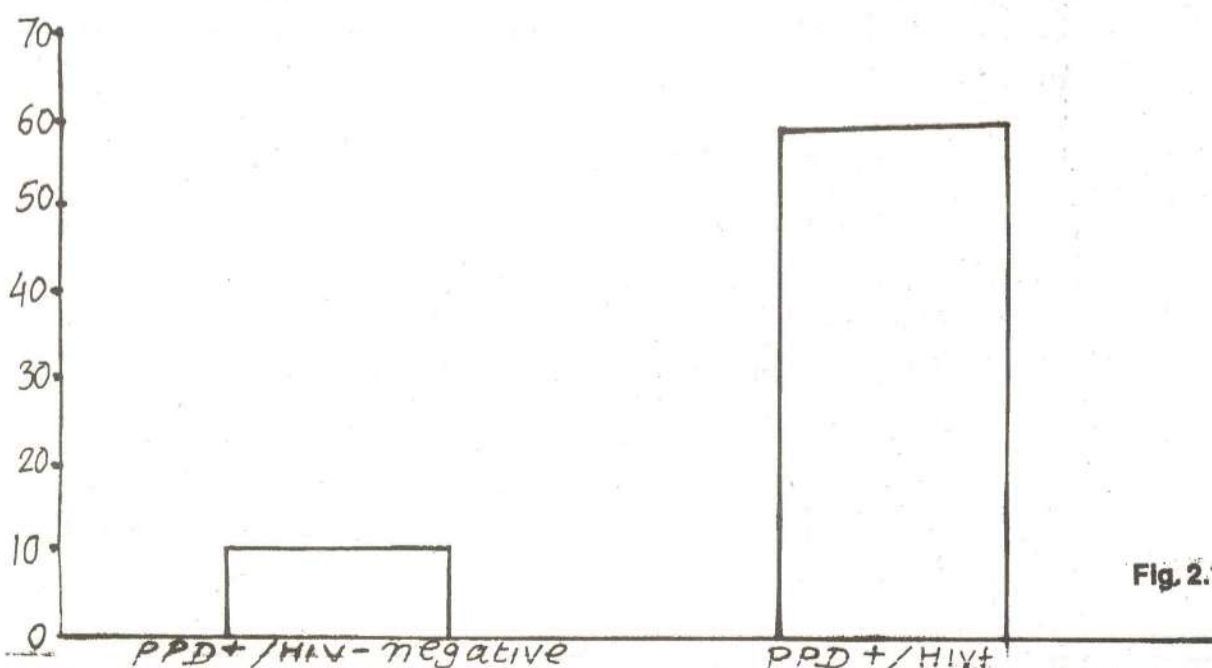


Fig. 2.17

IN-TEXT QUESTIONS 2.4

1. Write the full form of A.I.D.S.
2. Name any two sexually transmitted diseases.
3. Explain how A.I.D.S. will not spread.

2.6 PARASITIC INFESTATIONS

1. AMOEBIASIS

Amoebic Dysentery is a disease caused by unicellular amoeba called **Entamoeba histolytica**.

Dysentery is a parasitic infection in intestine of man causing intestinal amoebiasis or extra-intestinal amoebiasis in lungs, liver, spleen, brain etc.

Agent: Entamoeba histolytica
It is a unicellular organism



Host: All ages, both sexes,
he is infective of passing cysts in stool.

Environment: 1. Contaminated water/food
2. Contaminated fruits and vegetables
3. If food is touched by Food Handlers
4. Poor sanitation

Mode of Transmission:

1. Faeco-oral route
2. Flies
3. Homosexuals
4. Spread by contaminated water and food.

Clinical Features:

Pain in abdomen; loose motions with small amount of stool, blood and mucus in the stool. Liver abscess very common, abscess may also be present in lungs/brain.

Treatment:

Tablet Metronidazole 30 mg/kg/d in 3 divided doses for 5 days.

Tablet Tinidazole 600mg BD. X 5 Days

Prevention and Control:

- Washing of hands with soap before eating and after defaecation.
- Safe disposal of human excreta
- Chlorination of water and disinfection of walls twice a week
- Food hygiene-Destruction of food exposed to flies
- Personal Hygiene
- Fruits should be eaten after proper washing
- Boiling / Filtration of Water
- Health education to community

2. Hook Worm (*Ancylostoma duodenale*)

Parasitic infection which causes severe anaemia and occurs while walking bare foot. It is quite common in the areas where there is practice of passing stool in open i.e. open defaecation:

Adult Hookworm

1. Lives in small intestine of man
2. Male adult smaller than female about 8 mm and 12 mm respectively greyish white, cylindrical
3. It has anterior and posterior ends.
4. It has genital openings.
5. Adult worm can live in small intestine for 3-4 years.

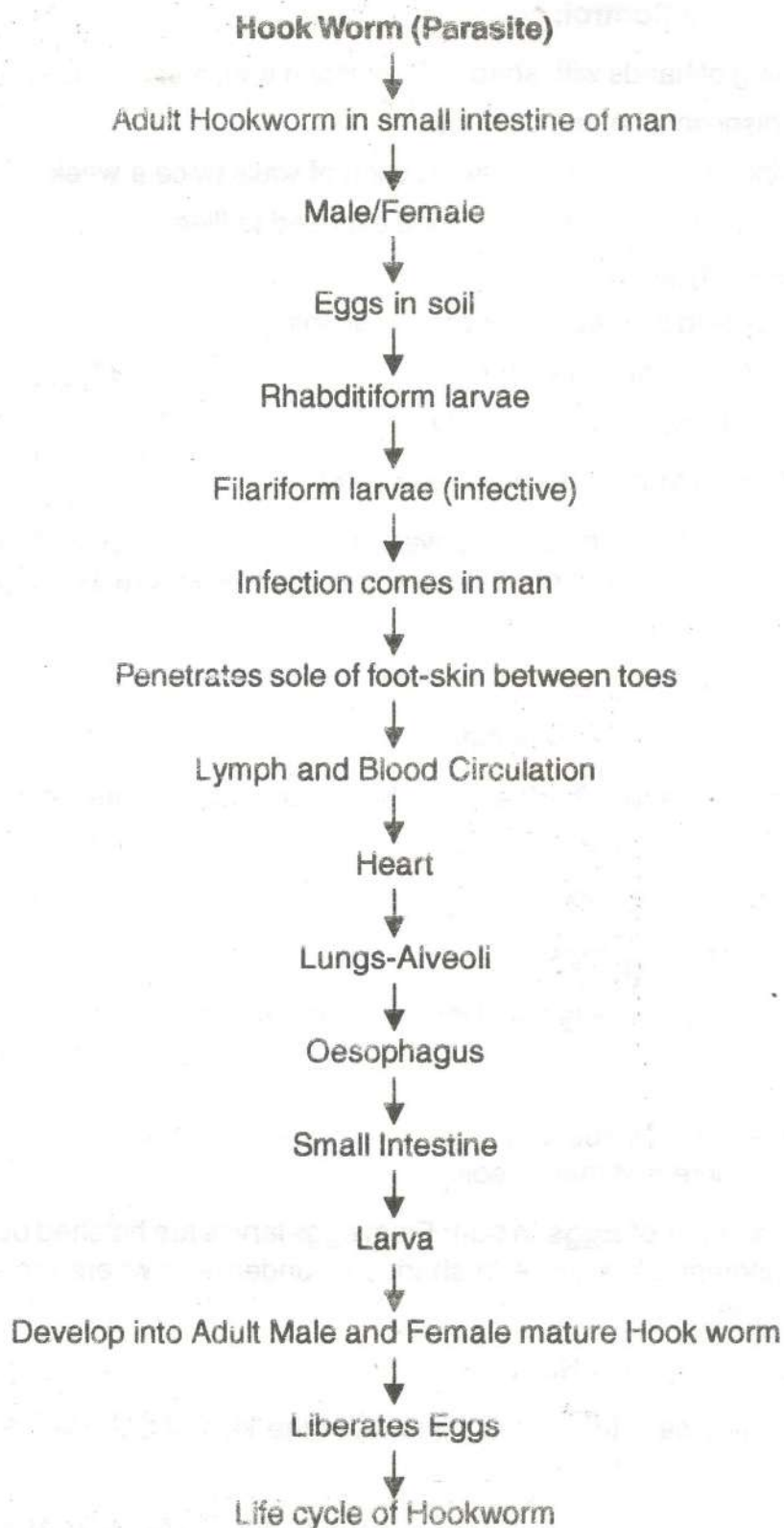
Life cycle:

- A. **Eggs:** are oval, colourless eggs with thick walls are passed with faeces (stool) by infected man in soil.
- B. **Development of Eggs in soil:** From eggs larvae are hatched out in soil development takes place in shades i.e. undertrees where moisture is also present.

C. Entrance into New Host:

If a man walks bare foot, larva penetrates the skin of the sole of foot or

fingers and reaches subcutaneous tissues and reaches through blood circulation from heart to lungs (Alveolar space), migrates to trachea, and swallowed to oesophagus, stomach and finally small intestine and develops into male and female adult worms.



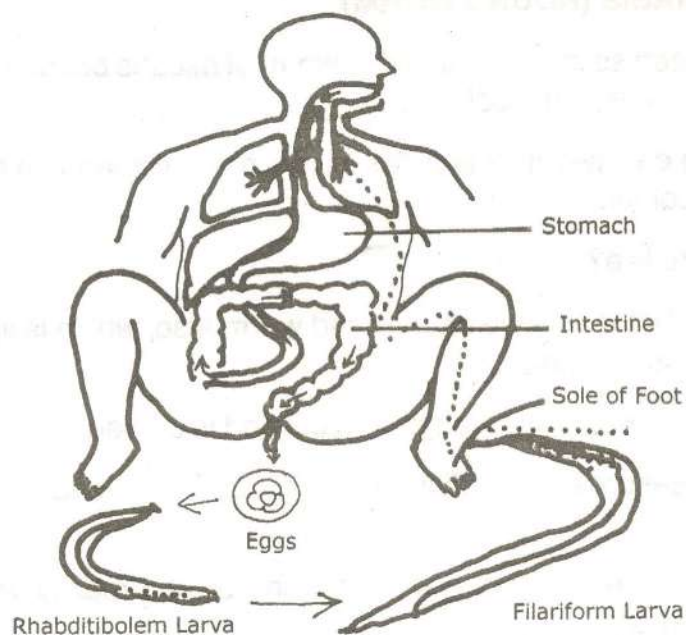


Fig. 2.18 Hook Worm (Parasite)

Clinical Features:

1. Allergy
2. Bronchitis
3. Severe anaemia- pale and white skin
4. Pain in abdomen

Diagnosis:

Stool Examination

Prevention:

1. Avoid passing the stool in the field
2. While walking wear shoes

Role of Health Worker:

1. Proper Disposal of Human excreta
2. Discourage open defaecation
3. Wear shoes
4. Refer the cases of severe anaemia to doctors especially in pregnant women.

3. ASCARIASIS (ROUND WORM)

We have seen so many times adult worm of ascaris come out from nose or mouth while passing stool.

It looks like earthworm. It is parasite which is quite large in size- white and pinkish in colour.

How it looks like?

It is round, that is why we call it round worm also, which is light brown with both the ends tapering.

Male: It is 15 to 20 cms in length. It's tail end is curved.

Female: Measures 20 to 35cm in length (approx.) longer and quite stout than male.

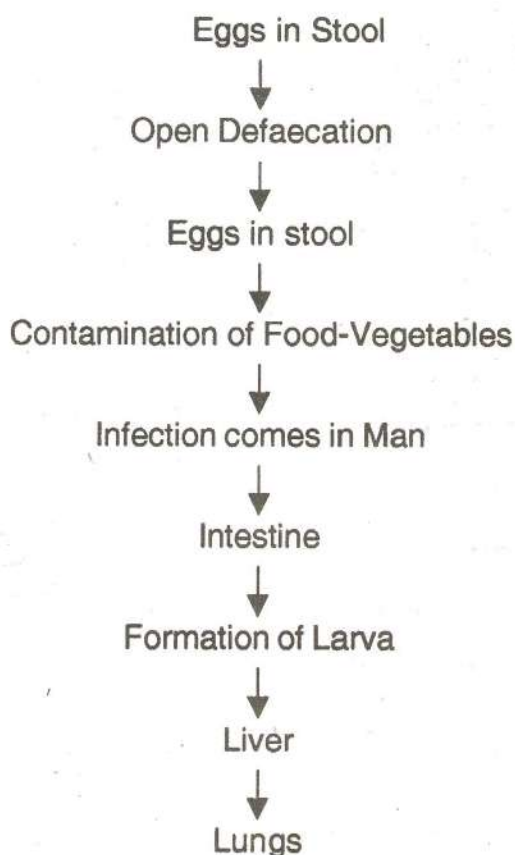
Eggs: They come out along with stool in soil and mainly passed with the stool in open soil.

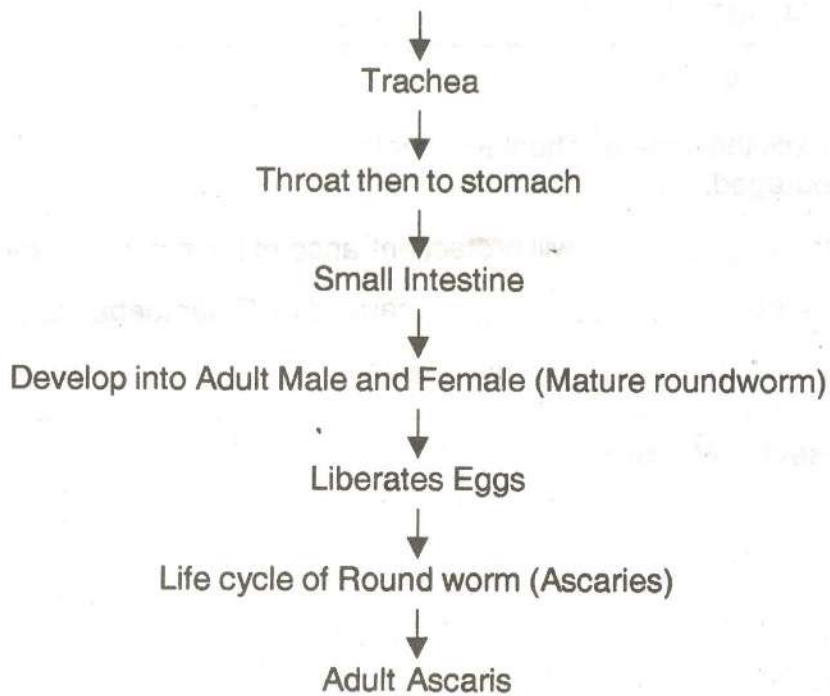
Portal of Entry: Eggs enter in gastro-intestinal tract and along with food and water than formation of larvas which are passing through lungs and convert into male and female adults in small intestine.



Fig. 2.19 Round Worm

Round Worm (Parasite)





Clinical Features:

1. Anaemia
2. Allergy and difficulty in breathing
3. Eosinophilia
4. Allergy due to body fluid of adult worm
5. Blocking of intestine due to adults male and female
6. Intestinal Obstruction

Diagnosis:

1. Examination of Stool
2. Adult worm present in vomit/stool

Treatment:

Tab. Mebendazole and Albendazole

Prevention:

1. Disposal of Excreta by Proper Method
2. Treatment of patients
3. Personal hygiene
4. Food Hygiene
5. Avoid passing stool in the field

INTEXT QUESTIONS 2.5

Fill in the Blanks.

1. To check the spread of hookworm infestation _____ should be discouraged.
2. Wearing _____ will protect entrance of larva of hook worm.
3. The disease _____ is caused by *Entamoeba histolytica*.
4. Round worm infestation is diagnosed by _____ examination.

Role of Health Worker:

1. Early diagnosis of cases
2. Personal Hygiene
3. Sanitation of Area
4. Discourage open defaecation

2.7 WHAT HAVE YOU LERNT

- In this lesson you have learnt about various communicable parasitic and sexually transmitted diseases (STDs).
- Now you also know the sign and symptoms of these diseases parasites enter the body of any human being through the bites of the vector and cause parasitic diseases. STD are transmitted from infected person to healthy person (through sexual contact). Hence it is important to know and understand their prevention and control.

2.8 TERMINAL QUESTIONS

1. Write down various parasitic disease. Also write the sign, symptoms and treatment of these diseases.
2. What are general symptoms of HIV/AIDs infection also write it clinical features.
3. Write short notes on – (a) Hook worm
(b) Round worm

2.9 ANSWERS TO INTEXT QUESTIONS

- 2.1** 1. Malaria Parasite

2. Viral
3. Dengue Fever

- 2.2** 1. Cough, cold, running nose, abnormal breathing, drowsiness – poor response
2. - Disposal of sputum
 - To encourage B.C.G. immunization programme.
 3. - Skin patches without any sweating absence of pain on pricking with a pin.
 - No itching or burning in patches
 - Thick nerves.

- 2.3** 1. True
2. True
 3. False

- 2.4** 1. Acquired Immunes Deficiency Syndrome.
2. - Syphilis
 - Gonorrhoea
 3. AIDS will not spread by-
 - Shaking hands
 - Hugging
 - Drug kissing
 - Sneezing, coughing
 - Mosquito bites
 - Sharing toilets

- 2.5** 1. Open defecation
2. Shoes
 3. Amoebiasis
 4. stool

3

PREVENTIVE MEASURES (ALL 5 STEPS)

3.1 INTRODUCTION

Modern concept of control of diseases lies not in its cure but in prevention. Most of the diseases whether communicable or non communicable can be prevented with efficient echo management. Rehabilitation is another part which helps man to come to its original health.

3.2 OBJECTIVES

After reading this lesson you will be able to :

- Identify the factors responsible for diseases
- Take tips to prevent the growth of causative factors and their total destruction
- Increase the immunity of the community by suitable changes in food and water supply and inducing immunity by vaccination.

3.3 SPECIFIC PROTECTION

We have to take certain protection against diseases so that bacteria, virus parasite and fungus do not enter the healthy body of an individual, this is called "Specific Protection".

To control communicable diseases we do immunization by means of active and passive immunization. So that, people develop immunity and they develop antibodies against a particular disease for which vaccination has been done "**(Active Immunization)**". On the other hand, to destroy the bacteria or viruses, sometimes we inject readymade antibodies and these are called "**Passive Immunization**". Such immunization lasts for a short period e.g. Tetanus Anti Toxin or Immunoglobulin.

But in practice, under National Immunization Schedule, Immunization against six communicable diseases is done which is essential for child survival and child development. These diseases are Poliomyelitis, Pertussis, Tetanus, Measles, Diphtheria, Tuberculosis. About 30-35% of child deaths are due to these six diseases. Whereas most of the children die due to measles so it is important to do active immunization in children in first year of their life.

3.4 IMMUNIZATION SCHEDULE

At birth - BCG, OPV and Hepatitis-B

At 6 weeks, 10 weeks and 14 weeks - DPT and OPV

At 9 months - Measles or MMR (Mumps, Measles and Rubella), [2 Lakh IU "Vitamin-A"]

At 16-24 months - DPT and OPV

At 5-6 years - DT

At 10-16 years - TT (Tetanus Toxoid)

For pregnant woman, two doses of TT

(1 at early pregnancy

One month after 2nd dose of TT)

NOTE:

- 1) Interval between 2 doses should not be less than one month.
- 2) Minor cough, colds and mild fever are not a contradiction to vaccination.

3.5 CHEMOPROPYLAXIS AGAINST SOME DISEASES

Chemoprophylaxis means use of some drugs which will not allow growth of micro-organisms (anti microbial agents) during an epidemic or when the disease is present so that man is protected from occurrence of infection of some disease. These diseases are diphtheria, whooping cough, tuberculo-

sis, tetanus, meningitis etc. for example, in malaria we give chloroquine to prevent clinical attacks of malaria atleast before one week entering in disease place and is continued until four weeks after leaving the place.

NAME OF DISEASE	PROPHYLAXIS	DRUG TO BE USED
• Tuberculosis	Susceptible Contacts	Isoniazid
• Diphtheria	Susceptible Contacts	Erythromycin
• Tetanus	Injury	Erythromycin & TT
• Malaria	Place where malaria is common	Chloroquine
• Meningo Coccal Infection	Susceptible Contacts	Ciprofloxacin



Fig. 3.1 Use sanitary latrines



Fig. 3.2 Wash hands with soap and water

3.6 USE OF PROTECTIVE MASKS

It protects from respiratory infections such as tuberculosis, influenza, plague, pneumonia etc. which are transmitted by inhalation of micro-organisms (germs). They are shed in environment by the patients suffering from such diseases while speaking, coughing or sneezing. These micro-organisms are present in the air. Protective masks should be used in operation theatre and labour room. Doctors, nurses use these masks to protect themselves.

3.7 ROUTES OF MICRO-ORGANISMS ENTERING IN HEALTHY PEOPLE

A. Oral Route: By dirty hands, contaminated water and food, we may get diseases like cholera, food poisoning, polio etc.

Specific Prevention

- (i) Washing hands with soap and water before eating after **defaecation** and also washing of fruits and vegetables.
- (ii) Safe supply of water and hot food and by keeping cooked food in refrigerators.

B. Fecal Route: By dirty hands, which are not washed properly with soap after defaecation. Micro-organisms from excreta enters into food or water and makes human being ill.

Specific prevention

- (i) Wash you hands properly with soap & water
- (ii) Always use latrines and keep them clean.

C. Insect like house-flies will cause diseases like cholera, food poisoning, diarrhoea etc.

Specific Prevention

- (i) Keep flies and insects away from area
- (ii) Proper sanitation

D. Direct Contact route

Direct contact route due to direct contact with diseased person, a healthy person may get diseases like leprosy, sexually transmitted diseases, AIDS and Hepatitis B.

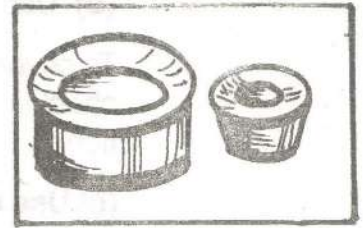


Fig. 3.3 Keep all food items covered

Specific Prevention

- (i) Avoid multi-sex partners.
- (ii) Use of disposable syringes
- (iii) Blood and blood products should be properly screened to avoid above mentioned infections to the recipient.
- (iv) Proper disposal of hospital waste by incinerator
- (v) Hand washing after examination of patients

3.8 SPECIFIC PROTECTION IN HOSPITAL

It is done by keeping hospital area neat and clean by following methods:

(a) use of disinfectants and sterilization

- Protect healthy people and patient by isolation of patients who are suffering from communicable diseases.
- Other special areas to be kept clean are :
 - (ii) Labour room
 - (iii) Operation Theatre
 - (iv) Nursery of new born-babies
 - (v) Recovery room

The above mentioned areas are to be kept bacteria-free by doing fumigation and disinfection time to time by various chemicals like formiline. Sterilization of operation theatre, labour room and hospital equipments etc. is one of the best example of specific protection for the patients. If any patient dies due to communicable diseases, proper disinfection should be done.

- 100000

3.9 REHABILITATION

Rehabilitation is a process by which a patient is brought back to his normal activities after a disease producing disability or disability due to accidents.

The Physical Deformity may be of two types:

1) Temporary

2) Permanent

1) **Temporary:** This disability occurs in various types of long standing diseases resulting in restricted use of hands and feet or speech in all such medical conditions physiotherapy and speech therapy will bring them back to a condition where they can perform their normal life.

2) **Permanent:** This may occur due to accidents, fracture and dislocation, traumatic amputation and hemiplegia. Many of these disabilities are of permanent type where the normal activity can be restored by application of Artificial Prosthesis for limbs. In other cases disabilities can be reduced by appropriate physiotherapy and exercises so that about 60% functions of limbs can be restored.

Rehabilitation is required under the following conditions:

- 1) Tuberculosis of joints leading to Ankylosis (fixing of joints).
- 2) Management of fracture and dislocation of bones
- 3) Old age fracture of neck of femur (bone)
- 4) Severe Osteoarthritis
- 5) Head injuries and disability following it

3.10 PREVENTION OF DISEASES

Health worker should take necessary steps to prevent spread of communicable diseases in the community. There are three steps by which he can take measures to prevent diseases.

- 1) Primary Prevention
- 2) Secondary Prevention
- 3) Tertiary Prevention

Objectives

- 1) Health worker will take necessary measures in the community so that diseases will not come or affect the body.
- 2) If diseases are in the community, what is his role in controlling it?

- 3) How to help people in case disease has already affected the body and to limit further damage due to various diseases

1) Primary Prevention

It is the duty of health worker to help the people to improve their health which can be done.

By improving Health Status

It can be done by health education regarding healthy life style for prevention of diseases by various lectures, posters and hand bills etc. regarding spread of diseases and how to prevent them.

- 1) He may tell them that not to take food which is exposed to dust and flies and also cut fruits and vegetables.
- 2) To avoid drinking shallow hand pump's water and use of bleaching powder in the wells twice a week, if it is used for drinking purpose. use of chlorinated tap water or use of chlorine tablets if such water is not available.
- 3) They should remember that the spread of diseases is due to dirty fingers, contaminated or unwholesome food, flies, faeces or fomites.
- 4) They should wash their hands with soap and water after coming from toilets and before eating.
- 5) Avoid smoking and taking alcohol

Health promotion of people in the community can also be done by family planning to limit the number of children so that their socio-economic condition will improve. By good personal hygiene they can keep themselves away from various diseases. Specific protection will also be very helpful to prevent various disease by means of immunization. Use of condom can prevent S.T.D. and helpful in family planning.

2) Secondary Prevention

Diseases have come in the community and it is duty of health worker to control them by means to breaking the chain of infection

Chain of Infection	Source	Steps to control	Mode of transmission of Disease
1. Patient		-early diagnosis	-unwholesome water
2. Carriers			(water borne diseases)
		-early treatment	-air borne
		-isolation	- from soil
		-notification	- direct contact
		-health education	- animals

3) Tertiary Prevention

Steps are to taken after disease has affected.

- By limitation of movement due to disability - can be done by doctors in disease like Leprosy
- Rehabilitation and Occupational Therapy - Physiotherapist and Occupational Therapist are helpful in these cases

3.11 PERSONAL HYGIENE

Certain healthy habits protects the body from acquiring many diseases, such habits practised by wise human being is called "Personal Hygiene". Several diseases are due to poor personal hygiene, for example skin diseases, decay of teeth, boils, scabies etc. The science of health embraces all the factors which contribute to healthy living.

Personal hygiene is concerned with physical health where as Environment also play important role like contamination of water, air pollution, certain insect borne diseases like Malaria, filaria etc.



Fig. 3.4 Personal Hygiene

a). Daily Bath:

It keeps the body free from dust, sweating. It is good to take bath with

soap and water and to clean all the parts of body. During winter it is beneficial to have sun bath to get Vitamin D from "Sun Rays", which is required for our bones to protect us from certain diseases of bones like Oestomalacia (in adult) & Rickets (in children).

b) Wearing clean clothes:

We should wash our clothes daily and dry them in sun, then wear them after taking daily bath. Sun rays will kill germs (micro -organisms).

If you wear dirty clothes no body will like to talk to you. So your dress should be neat and clean.

c) Care of teeth:

Brushing after taking meals for dental care as well as for oral hygiene. Regular brushing is helpful to avoid cavity formation in teeth and their decay. It also keep gums healthy to avoid diseases like pyorrhoea. Moreover foul smell from mouth will not come. Dental checkup by dental surgeon is necessary time to time.

d) Care of Eyes:

Protect your eyes from smoke, eye injuries and dust. In children Vitamin - A is required to protect them from diseases like night blindness and avoid to put kajal or surma in eyes as it is harmful for eyes or it may give infection to eyes if yours fingers are dirty. Malnutrition will give rise to diseases like Xerophthalmia & Night blindness. Consult the doctor to check eye diseases like cataract & errors in vision. Care of eyes can be done by:

- I. School children's eye checkups.
 - II. Corneal ulcers (Check-up and treatment)
 - III. Consult eye surgeon
 - IV. Improve your diet (To have balanced diet)
 - V. Control of fluid
 - VI. Health education
 - VII. Good physical health
-

d) Washing Hands:

Washing hands with soap and water after defaecation and before eating your food. Food handlers should keep their hands properly washed to avoid spread of diseases.

f) Cutting of Nails:

Long nails come in contact with food while you are eating. Lot of dirt and bacteria will accumulate under them and will spread so many diseases. We should check nails of food handlers working at the places where food is being served.

g) Care of Hairs:

One should have short hair to avoid dandruff or lice in long hairs. Regular washing of hairs with shampoo and good diet (Nutrition) will help to have healthy hair, free from bacteria. It is the duty of health workers to ensure that kitchen workers in eating houses should wear the cap to avoid hair fall while cooking food.

h) Avoid Open Defaecation

It will give rise to many diseases like Cholera, Hookworm infection etc. Human excreta should be disposed off in most hygienic manner and use of Sanitary Latrines is always advisable.

i) Hygiene During Menstruation:

Menstruating women are always considered unclean and are having so many taboos. Due to superstitious belief they are not allowed to work in kitchen and take part in other household activities. To control menstrual discharge clean sanitary pad should be used.

Sexual intercourse during menstruation in healthy people is not harmful as there is no sound medical reason for advising against it in healthy couple.

3.12 QUARANTINE

If any person has come in contact with communicable disease, he/she

Table of organisms, Symptoms and Preventive Measures

Disease	Microorganism	Symptoms	Treatment	Preventive Measures
Cholera	Vibrio cholerae	Dehydration Rice Water Painless Diarrhoea	O.R.S. Antibiotic Tetracycline Home made fluids	Early Diagnosis and Treatment Isolation, Notification, Health Education, Immunisation Dis-infection of vomitus and human excreta
Bacillary dysentery	Shigella (bacteria)	Dehydration Diarrhoea with blood and mucus	O.R.S. Antibiotic Home made fluids	Disinfection of human excreta, treatment of patients/carriers, health education, protection of food and water
Amoebic dysentery	Entamoeba histolytica (parasite)	Diarrhoea small quantity with blood Tenosmes & griping pain	O.R.S. Metronidazole Tabs Home made fluids	Proper disposal of Human excreta to avoid contamination of water, vegetables etc. Personal hygiene

B. Bacterial Diseases

Disease	Microorganism	Symptoms	Treatment	Preventive Measures
Tuberculosis	Mycobacterium tuberculosis	Evening rise of low grade fever Weight loss Chronic cough May be blood with sputum, chest pain	D.O.T.S. Anti Tuberculosis for more then 3 weeks	Sputum examination for A.F.B.(Acid Fast Bacillus) B.C.G. Health education Mantoux Test
Tetanus	Clostridium tetani	• Painful spasms • Muscular rigidity • Lock Jaw • History of Injury Street and field injuries and also delivery by untrained by dais.	- DPT doses in infants and children - wounds treatment and - anti toxin treatment	• Tetanus toxoid to pregnant ladies, in operations, • Autoclaving of instruments linens, gloves etc • Fumigation of O.T. & Labour Room • Immunization by T.T./ D.P.T., injections Tetanus toxoid and 2 doses to pregnant mother at 1 month interval • Storage of D.P.T. vaccine at 4° C to 8°C. • Prevention of Neonatal tetanus - By two doses of T.T.by pregrant mothers and hygienic deliveries by trained workers. • Identification of cases and early treatment

				• Notification to health officers • Health education. • Non immunized cases should be treated with Tetanus Gamma Globulin
Pneumonia	Pneumococcus Staphylococcus Streptococcus	H/o common cold Fever and Rigor Cough with sputum	Antibiotics Symptomatic for pain/fever	Avoid smoking and cold Early Diagnosis by X-Ray Avoid upper respiratory infections
Maningitis	Strepto coccal Meningo Coccal	High Fever Headache Neck Pain	Antibiotic Anitubarculai in case of tuberculosis	Immunization BCG
	Tubercular	Rigidity Convulsion Coma (unconsciousness)	No sedatives Antipyritic	Prevention by giving drugs Epidemics to Contacts

C. Protozoa

Disease	Microorganism	Symptoms	Treatment	Preventive Measures
Malaria	Malaria Parasite Plasmodium Species: 1. P. vivax 2. P.falciparum 3. P.ovale 4. P.malariae	Fever with Chill and rigor Cold stage Hot stage Sweating stage Vivax Malaria causes repeated attacks after intervals of 3-4 days	Treatment with chloroquine and primaquine (Radical Treatment)	Engineering methods to control mosquito Anti larval measures Anti adult mosquito measures Spray/Fogging Use of mosquito net and repellants Biological Control Domestic measures Personal hygiene Food sanitation Potable water Sanitation
	P.falciparum	Very high fever with convulsions and unconsciousness.		
Giardiasis	Giardia ova and cyst	Pain in abdomen Diarrhoea	Metronidazole	Sewage disposal Water treatment, personal hygiene, food sanitation, Potable water
Entamoeba histolytica	Entamoeba histolytica (Entamoeba histolytica cyst in stool)	Liver abscess Amobic Dysentery Pain Abdomen	Antibiotics- Metronidazole; health education personal hygiene	Improving envionmental sanitation and -water supply, Treatment of Carriers. food hygiene Potable, water, for drinking

D. Viral Diseases

Disease	Microorganism	Symptoms	Treatment	Preventive Measures
Small Pox	Virus	(the disease has been eradicated)		

Pneumonia	Pneumococcus Staphylococcus Streptococcus	H/o common cold Fever and Rigor Cough with sputum	Antibiotics Symptomatic for pain/fever	- Notification to health officers - Health education. - Non immunized cases should be treated with Tetanus Gamma Globulin
				Avoid smoking and cold Early Diagnosis by X-Ray Avoid upper respiratory infections
Meningitis	Strepto coccal Meningo Coccal	High Fever Headache Neck Pain	Antibiotic Anituberculai in case of tuberculosis	Immunization BCG
	Tubercular	Rigidity Convulsion Coma (unconsciousness)	No sedatives Antipyretic	Prevention by giving drugs Epidemics to Contacts

C. Protozoa

Disease	Microorganism	Symptoms	Treatment	Preventive Measures
Malaria	Malaria Parasite Plasmodium Species: 1. P. vivax 2. P.falciparum 3. P.ovale 4. P.malariae	Fever with Chill and rigor Cold stage Hot stage Sweating stage Vivax Malaria causes repeated attacks after intervals of 3-4 days	Treatment with chloroquine and primaquine (Radical Treatment)	Engineering methods to control mosquito Anti larval measures Anti adult mosquito measures Spray/Fogging Use of mosquito net and repellants Biological Control Domestic measures Personal hygiene Food sanitation Potable water Sanitation
	P.falciparum	Very high fever with convulsions and unconsciousness.		
Giardiasis	Giardia ova and cyst	Pain in abdomen Diarrhoea	Metronidazole	Sewage disposal Water treatment, personal hygiene, food sanitation, Potable water
Entamoeba histolytica	Entamoeba histolytica (Entamoeba histolytica cyst in stool)	Liver abscess Amoebic Dysentery Pain Abdomen	Antibiotics- Metronidazole; health education personal hygiene	Improving environmental sanitation and -water supply, Treatment of Carriers. food hygiene Potable, water, for drinking

D. Viral Diseases

Disease	Microorganism	Symptoms	Treatment	Preventive Measures
Small Pox	Virus	(the disease has been eradicated)		

Influenza	Influenza virus	Fever, cough, weakness and bodyache	Symptomatic Antipyretic Analgesics	Vaccination of children and adults
Poliomyelitis	polio virus	Non-paralytic with mild Symptoms and Paralytic with symptoms Pain in neck and back; Stiffness fever muscle spasm	Hospitalization, if paralysis affects more parts of body, analgesic treatment for pain; use of splints to check deformities	OPV Vaccine drops 0-5 years. Maintenance of cold chain Minor cases to limit physical activity and injections to be avoided physio-therapy of paralytic cases.
AIDS	H.I.V. virus	There are no signs or symptoms, but the following may be seen: ● Weight loss ● Diarrhoea ● Fever ● Patient may be suffering from tuberculosis	Symptomatic	1- Use of condom 2- Un-safe sex, multiple sex should be avoided 3- Avoid syringes & needles (Infected) there should be proper disposal by incineration of plastic syringes it is advisable to use disposable syringes 4- Early treatment and Diagnosis:- Diagnosis of both partners should be made necessary and treatment should be given. 5- Health Education:
Measles	Measles virus	Fever, nasal discharge, cough, redness of eyes. vomiting & diarrhoea Appearance of rash is preceded by appearance of koplik's spots. Bluish and very small on buccal membrane opposite to 1st & 2nd upper molars. Rash appears on behind the ears, neck face and to extremities. Weight is reduced, weakness.	It is a viral disease so Antibiotics are having no effect, however they are required to check complications. Usually paracetamol tablet is given to Bring down the temperature. Health education.	Isolation of patient Notification to area health officers Disinfection of room and articles Antibiotics if required to prevent complication Send to doctor By Immunization Measles by vaccine at 9 months of age or M.M.R. Proper nutrition to children To avoid malnutrition.
Mumps	Myxovirus	Pain and swelling in parotid glands	Symptomatic	Isolation and immunisation Antibiotics to prevent complication
Chickenpox	Varicella	Maculo-popular Rash and scabs ; fever with body ache	By gamma globulin as well as symptomatic treatment; antibiotics if required	Isolation and immunisation

E. Fungi

Disease	Microorganism	Symptoms	Treatment	Preventive Measures
Candidia	Aspergillus	Cough with mucus, expectoration, chest pain	Hamycin	Culture of fungus Prevention of moistness in folds of the body by proper clothing.
	Albicains	White spots on mucus membrane, mouth & vagina burning sensation & discharge	Anti fungal drugs	Personal Hygiene of mouth & Vagina

F. Worms

Disease	Microorganism	Symptoms	Treatment	Preventive Measures
Parasitic Infection by Roundworm (Ascariasis)	Ascaris lumbricoides (Roundworm)	Pain in abdomen, Iron deficiency Anaemia Poor nutrition Diarrhoea Allergy	Mebendazole and Albendazole	Disposal of Excreta by Proper method Treatment of patients Personal hygiene Food Hygiene Avoid passing stool in the field
Parasitic infection by hookworm	Ancylostoma duodenale (Hookworm)	Allergy Bronchitis Severe anaemia- pale and white skin Pain in abdomen	Diagnosis: Stool Examination Treatment: By drugs- mebendazole and albendazole Iron (orally)	Proper disposal of human excreta. Avoid passing the stool in the Field While walking wears shoes
Parasitic infection of tape worm taeniasis	Taenia solium (Tape worm) Taenia saginata (Beef tapeworm)	Gastrointestinal disorders, anaemic conditions, hunger, Abdominal pain	Albendazole	Eating of properly cooked meat (pork or beef)

FEVER:

Communicable diseases having fever

1. Influenza: Viral Infection, disease of children and old persons
2. Pneumonia: Bacterial infection due to Pneumococci
3. Diphtheria: Pain in throat, difficulty in swallowing usually disease of children during winter
4. Typhoid: High temperature in evening and morning, low pulse rate, pain in abdomen, Widal Test Positive, Bacterial Infection
5. Meningitis: May be tubercular or viral with headache and vomiting neck rigidity.
6. Tuberculosis: Bacterial infection, evening rise of low grade fever, chronic cough with sputum may have blood.
7. Measles: Rashes on skin, no history of taking any drug

should be kept away from healthy persons till the incubation period of that particular disease in which he/she has come in contact is over. Incubation period means period from entry of agent (micro-organism) in any person to development of signs/symptoms of that disease, is called Incubation Period (I.P.).

It is applicable on passengers of ships and aeroplanes which are coming from a country where communicable disease is present. Such passengers who have come without immunization against particular communicable disease which is present in the country from where he is going are not allowed to enter in the country till the maximum period of quarantine is over. It is different for different disease like 5 days for cholera, 6 days for yellow fever and plague. Incubation Period is counted from date of departure of a passenger from his country.

INTEXT QUESTIONS 3.2

Fill in the Blanks.

1. Rehabilitation is helpful for a patient to bring back to his _____.
2. Physical deformity may be of _____ types.
3. Prevention of diseases are primary secondary _____ prevention.

3.13 WHAT HAVE YOU LEARNT

In this lesson you have learnt the various steps to prevent the communicable diseases. Immunisation is tool to prevent the communicable disease in the area specially in the children against 6 diseases i.e. Tuberculosis, Polio, Tetanus, pertusis, Diphtheria and Measles.

3.14 TERMINAL QUESTIONS

1. Describe the immunization schedule as per WHO against 6 diseases.
2. Write on specific protection that are to be taken in hospitals.
3. What do you mean by personal hygiene, write about the care of eyes.

3.15 ANSWER TO INTEXT QUESTIONS

- 3.1** 1. Condom
-

2. Shoes
3. Gloves
4. Disease

3.2 1. Normal activity

2. Two
3. Tertiary
4. Disease

3.16 SUGGESTED ACTIVITIES

1. Visit to MCH centre to observe immunization schedule.
2. Observe a hospital to see the what are the specific protection measures being taken.

4

FIRST AID

4.1 INTRODUCTION

Emergency conditions threatening human life & their management is called First Aid. Emergency care may be required at any time in life and First Aid provided at right time, saves lives and also prevents gross damage of essential organs and tissues. The immediate treatment given to the victim of an accident or sudden illness, before medical help arrives is called First Aid. Due to importance of First Aid, America and Europe has made First Aid compulsory subject of study for all citizen. This lesson will provide you the basic knowledge to be a skilled health worker, who can provide emergency First Aid in life threatening situations.

FIRST AID

- Saves life
- Lessens pain
- Helps in early recovery
- Prevents conditions from worsening
- Prevents organ damage

4.2 OBJECTIVES

After reading this lesson you will be able to:

- detect different medical and surgical emergencies faced in human life
-

- diagnose emergencies from their signs and symptoms
- provide first aid to such diseases and save lives
- learn about different resuscitation procedures and practice them in classroom
- also know about the body parameters.

4.3 GENERAL OBSERVATIONS

To treat human being during emergency one must know certain facts about human body, like height, weight, pulse and blood pressure. Any deviation from normal may be due to some diseases or accidents resulting in disturbance of normal human activity.

- Whenever a patient reports to clinic or hospital, his or her weight should be checked and recorded. The weight should be taken by removing shoes and with light indoor clothing.
- The height is also recorded by height measuring vertical scales with a gliding arm.
- A patient is declared over-weight when his/her weight crosses the standard of weight as per his/her height. A person who is more than 20% of body weight of his/her upper limit of weight, is considered over-weight. Over-weight or obesity leads to different types of diseases like Diabetes, Hypertension and Heart diseases etc.

	age (years)	Weight		Height	
		(kg.)	(lb)	(cm)	(in)
Infants	0.0–0.5	6	13	60	24
	0.5–1.0	9	20	71	28
Children	1–3	13	29	90	35
	4–6	20	44	112	44
7–10	28	62	132	52	
Males	11–14	45	99	157	62
	15–18	66	145	176	69
	19–22	70	154	177	70
	23–50	70	154	178	70
	51+	70	154	178	70



Fig. 4.1
CLINICAL
THERMOMETER

Females	11-14	46	101	157	62
	15-18	55	120	163	64
	19-22	55	120	163	64
	23-50	55	120	163	64
	51+	55	120	163	64

PULSE

When the left ventricle of heart contracts, it sends the blood forward and thus set up a pressure wave that can be felt in the arteries. The pressure wave dilates the arterial wall as it runs forward and this can be felt as a pulse.

As the pulse represents the power of contraction of ventricle, it increases during running or reduced during sleeping. The pulse is checked generally at the wrist

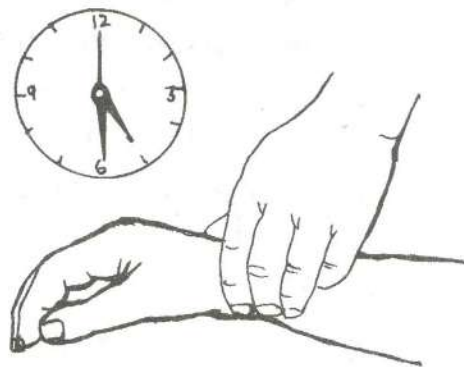


Fig. 4.2

Use tip of your first two fingers to take the radial pulse.

lower part on the lateral side over the radial artery. It is known as Radial Pulse. The other common sites are carotid, subclavian, brachial, post tibial and femoral artery. The carotid arterial pulse is usually felt as it is easily accessible and checked whenever a medical emergency case is detected.

BLOOD PRESSURE

a) Auscultatory Method

The arterial blood pressure is routinely measured by Auscultatory Method that is by use of Stethoscope. An inflatable cuff is attached by rubber tubing to a mercury manometer or a dial with hand.

The cuff is wrapped around the arm of the patient and the pressure is raised to a point when our radial pulse is not palpable. The dial of Stethoscope is placed above the brachial artery at the elbow joint and pressure in the cuff is lowered gradually till the sound of the heart is audible at the Stethoscope. This point is Systolic blood pressure. The pressure in the cuff is further lowered where the intensity of the sound gradually increases till such time where the sound suddenly reduces and appears to be muffled. This point is taken as Diastolic Pressure.

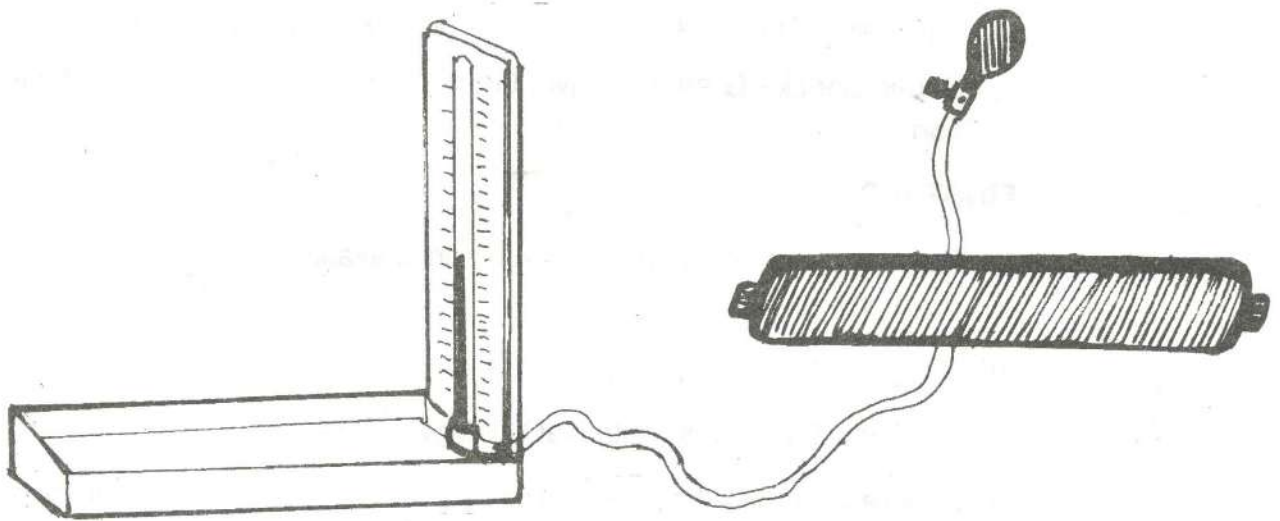


Fig. 4.3 Blood pressure instrument

4.4 SHOCK

Shock is a condition that develops after an injury or internal hemorrhage resulting in lowering of blood pressure, rapid pulse rate, rapid heart rate, pale skin, cold sweating and sensation of collapse, lack of sensation ultimately unconsciousness and sometimes death.

Clinical Features : Low blood pressure (Systolic below 90 mm of Hg), rapid heart rate, rapid pulse rate, pale colour of skin, cold sweating, hurried respiration, altered sensation, signs of intense peripheral vascular constriction, nausea etc.

CLASSIFICATION

Shock may be of following types:

- a) Hemorrhagic Shock e.g. Peptic ulcer hemorrhage
- b) Shock due to an accident or injury
- c) Shock due to internal hemorrhage - Intestinal hemorrhage
- d) Due to dehydration e.g. Diarrhoea, Cholera
- e) Due to some disease of internal organ - Pancreatitis

- f) Shock due to Acute Myocardial Infraction, left ventricular failure and arrhythmias
- g) Vasogenic Shock - Anaphylectic Shock, Neurogenic Shock.
- h) Septic Shock - Gram negative, Gram positive bacteria and viral infection

FIRST AID

- 1) Raise the feet so that maximum blood is available to the heart and circulation
- 2) Oxygen inhalation through face mask
- 3) I.V. fluids 5% glucose with NaCl, Ringer's lactate
- 4) If there is internal hemorrhage, blood transfusion, plasma volume expander
- 5) Constant monitoring of pulse, blood pressure, heart rate and blood glucose, blood urea
- 6) Treatment of the underlying cause
- 7) Transfer the patient to hospital as soon as possible.

ELECTRIC SHOCK

When a person comes in contact with electricity whether through naked wire or through leaking electrical appliances, the person gets electric shocks.

If a person receives electric shocks his breathing and heart rate both will be affected. The first effort will be to switch off the main switch if it is nearby or separate him from the source of leakage with the help of a piece of wood and then give artificial respiration, oxygen and I.V. drip with 5% glucose saline to restore blood pressure. If possible send the patient to hospital.

HYPOTHERMIA

This condition develops among old age people or minor children and infants during winter months, when the temperature drop to near zero. This is more common in hilly areas where small infants, children and old age people cannot cover themselves properly resulting in dropping of temperature of the body and ultimately if the process is not reversed, death occurs. A Hypothermic patients present himself with the following symptoms:

- 1) Feeling weak and tired
- 2) Uncontrollable shivering
- 3) Pulse weak, respiration weak
- 4) If patient is not treated at this stage, he becomes unconscious and die

TREATMENT

- 1) Remove all wet clothings
- 2) Move the patients to a dry place near a fire or heater
- 3) Cover him with blankets and quilts
- 4) Apply hot water bottle under the feet.
- 5) Give warm and soft drinks to drink like tea, coffee, and milk etc. with extra sugar
- 6) If the condition does not improve, send the patient to hospital.

Chill blens and frostbite - if the weather is very cold nearing 0°C , human body parts which are exposed specially finger of hand and feet gets swollen, red and itchy. This condition called chill blen and if the condition does not improve the parts become blue due to reduced circulation, this condition is called frostbite. If the condition does deteriorate further the parts becomes blue in colour and dry gangrene starts. It requires amputation of the part later on.

TREATMENT

- 1) Initially keeping the part warm by using warm socks or gloves.
- 2) Use of hot bags, adequates warm clothings, blankets and quilts improve the condition.

ANAPHYLAXIS (2)

Anaphylaxis is an allergic reaction of the body towards any foreign substance. It may be drug, due to food, inhaled allergens, bee stings etc. It is a hypersensitive reaction of the body towards any foreign protein resulting in low blood pressure difficulty in respiration and dyspnoea.

Symptoms occur immediately or a few minutes after injection, a drug or insect bite. Sometimes the anaphylactic reaction occurs within $\frac{1}{2}$ hr. to 1 hr.

after the drug is taken orally, but in case of injection or bee or wasp bite, the reaction occurs immediately. Commonly used agents causing anaphylactic reaction are:

- 1) Drugs like Penicillin, Ampicillin, Amoxycillin, Tetracyclin and Sulfa drugs like Sulfonamides, Co-trimoxazole
- 2) Non Steroidal Anti-inflammatory Injection and tablets e.g. Inj. voveron, voveron Tabs.
- 3) Injection of local Anaesthetics like lignocaine or xylocaine, Inj. B1, B6, B12, Inj. Triple Antigen.
- 4) Radiographic agents of Iodine contents
- 5) Venoms of bee, wasp, jelly fish etc.
- 6) Hormones - Inj. Insulin
- 7) Various types of pollens and allergens
- 8) Sea fish and prawns
- 9) Eggs and milk

ANAPHYLACTIC REACTIONS AND ITS TREATMENT

Such reactions are life threatening and of serious nature and immediate treatment should be started

- Avil or any anti allergic tablet to be given.
- Rush immediately to doctor or PHC.

INTEXT QUESTIONS 4.1

1. What is meant by shock? Give the sign and symptoms of shock.

.....

2. What is anaphylactic shock? What is its treatment.

.....

3. Dehydration occurs in patients suffering from disease _____.

4. _____ is an anti allergic tablet.

Foreign body in the airway (Trachea)

It is very common in children and sometimes in infants. Children put various small objects in the mouth like coins, electrical parts, the toys parts, small nuts or seeds of plants in the mouth. A fit of cough or sneezing and the foreign body goes in to the respiratory tract and giving rise to a medical emergency with the sudden onset of respiratory distress, coughing and producing hissing sound along with inspiration.

If foreign body is suspected and if the child is small, hold the child by the leg in the air and head below and pat at the back. In 90% of the cases, the foreign body will come out.

If the child is bigger and if he cannot be held by the leg then hold the child in prone position with the head down on the hand of the first aider lower than the chest and thump at the back or chest thrust is made when the child is lying on the back on the hand of the first aider, head lower than the body.



Fig. 4.4 Heimlich Manuever applied to take out foreign bodies in trachea

The Heimlich's Manuver.

This manuver is applied with bigger children. The steps in this maneuver are as follows:-

1. Stand behind the patient and put your arms below the axillae (armpit), encircle the abdomen below the navel
2. Both the hands should join together and clasp it with the other hand below the xiphoid sternum.
3. Be careful that your hand should not touch the xiphoid otherwise damage of internal organs will occur.
4. Press both fist on the abdomen with a quick upward thrust in the mid-line upto five to six thrusts will be enough.

If the patient fails to respond to these maneuver, send the patient to the hospital for removal of foreign body through a laryngoscope.

4.5 RABIES/DOG BITE

All unprovoked bites should be considered as rabies.

Rabies comes from bite of rabid animals like dog, cat, wolf, jackal, monkey, bat etc.

Signs:

In the animal

- Acts strangely - restless and irritable
- May go wild
- Foaming at mouth - cannot eat/drink
- Usually dies within 10 days.

In people:

- Alert nervous and irritable
 - Difficulty in swallowing - thick saliva
 - Afraid of drinking water - Hydrophobia
 - Convulsion (fits) paralysis and death (All Patients suffering from rabies will die)
-

AVOID CONTACT WITH SALIVA, URINE, SWEAT OF THE VICTIM, MILK OF ANIMALS, AS THESE SECRETIONS ARE INFECTIOUS. DO NOT GIVE MOUTH TO MOUTH BREATHING.

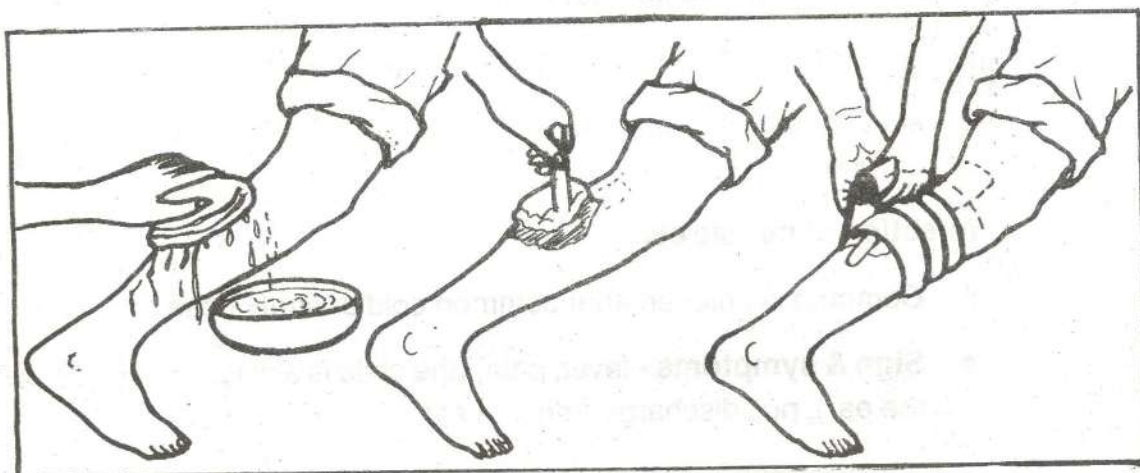
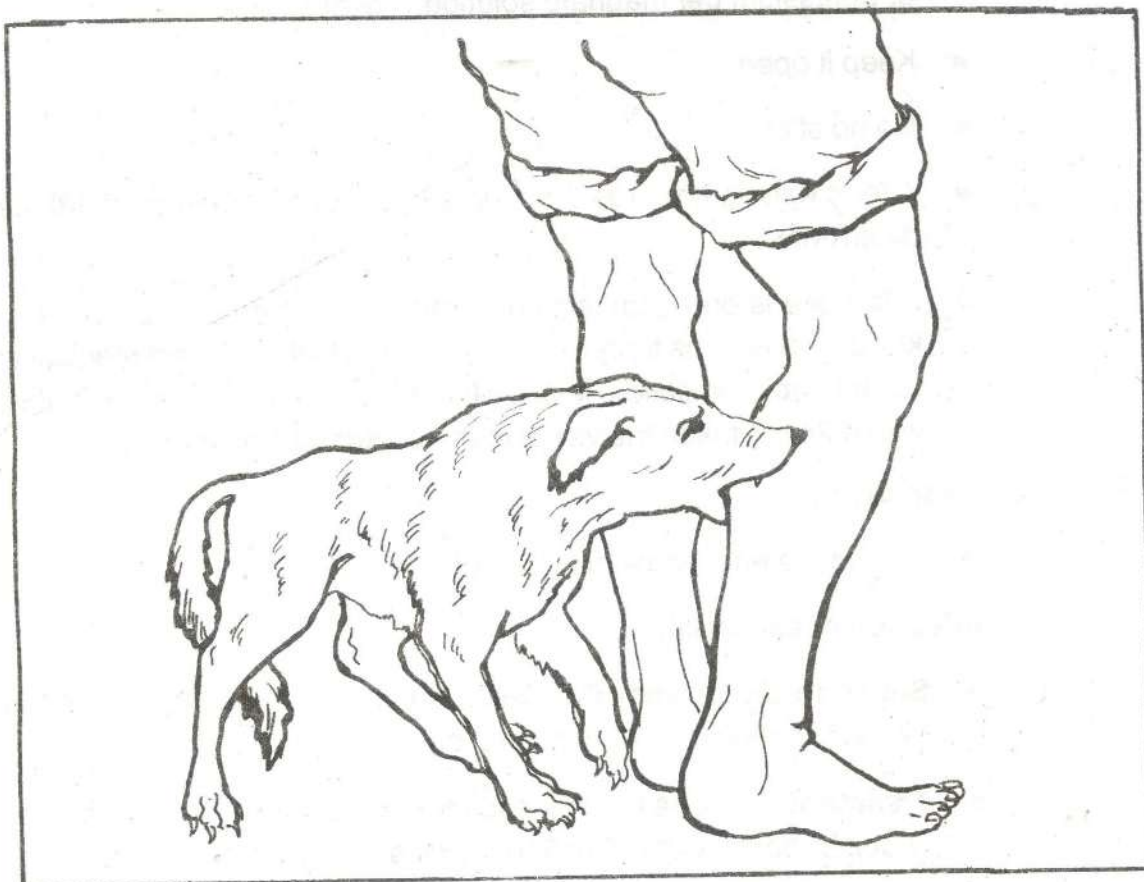


Fig. 4.5 Dog bite and its immediate treatment

If a person is bitten by an animal suspected to have rabies then

- Tie / cage the animal for 15 days
- Wash the bitten area with soap and jet of water and hydrogen peroxide or potassium permanganate solution, if available.
- Keep it open.
- Do not stitch.
- After cleaning the area put few drops of carbolic acid/spirit/tincture of iodine/KMnO₄.
- If the bite is on head/neck/ or if the animal dies before 15 days or is killed or cannot be traced - take the victim to the nearest medical center for anti rabies injection, tetanus toxoid, antibiotics, if required otherwise within 24 hrs take the victim to the doctor for treatment.

EAR ACHE

- Pain in the ear can be because of :-

Infection of ear canal.

- **Sign and symptoms** - Pain when you pull outer ear, itching, redness of ear canal, reduced hearing if the ear is blocked.
- **Treatment** - mix one teaspoon full of vinegar (sirka) mixed with one teaspoon of boiled water. Put 3 to 4 drops, 3 to 4 times in a day.
 - For pain give paracetamol.
 - If person gets fever or pus discharge, seek medical help
 - For wax use warm mustard oil/coconut oil. Do not use borax glycerine.

Infection of middle ear

- II. Common in children after common cold or stuffy nose.
- **Sign & symptoms** - fever, pain, (the child is always crying and rubbing the ear), pus discharge from the ear
 - **Treatment** - early medical treatment is important else it may cause permanent deafness or meningitis.

- **Prevention** - Do not bottle feed the baby while lying flat on his back as the milk can go upto his nose into the ear and cause ear infection.
- Teach the children to wipe and not to blow the nose when they have cold

Foreign bodies in ear

- **Sign & symptoms** - Small objects like grain, beads, or insects can easily go inside the ear causing pain and reduced hearing.
- **Treatment** - Pull the outer ear outward and upward to straightened the ear canal, lower the ear and shake the child head. This will help the small objects to fall out.
 - In case of insects, showing light sometimes helps the insect to walk out. Drop warm coconut/mustard oil in the ear. This would kill the insect and it might flow out
 - Hardened ear waxed is a common cause of pain and blockage of ear.
- **Prevention** - never use any sharp or pointed object to clear the ear. Seek medical help.
 - Refer to patient to PHC/Hospital if not improved.

BLEEDING FROM A WOUND

- Raise the injured part
- With clean cloth apply direct pressure on the wound to stop bleeding
- If bleeding does not stop-
 - Tie a constriction bandage - with a cloth/belt, tie the arm/leg close & above the wound, between the wound and the body.

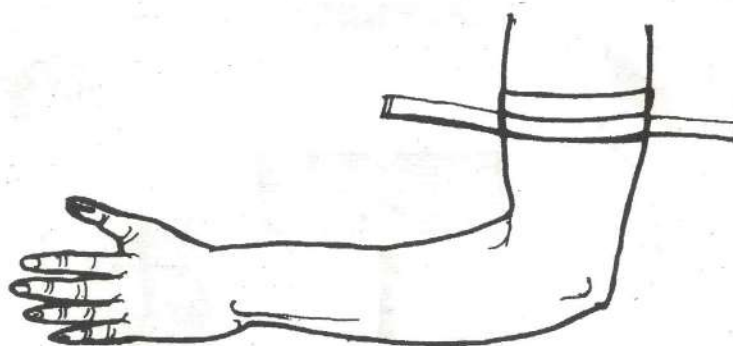


Fig. 4.6 Constriction Bandage to stop Haemarrage

- Keep the wound as high as possible.
- Do not make it so tight that the arm/leg become blue
- Don't use wire/string/thin rope
- Loosen the tie for a few seconds after every half an hour to check for bleeding. Generally the bleeding stops between 2 to 5 minutes. Keeping it tight for too long can damage the limb.
- Do not use cow dung/dirt etc. to stop bleeding.

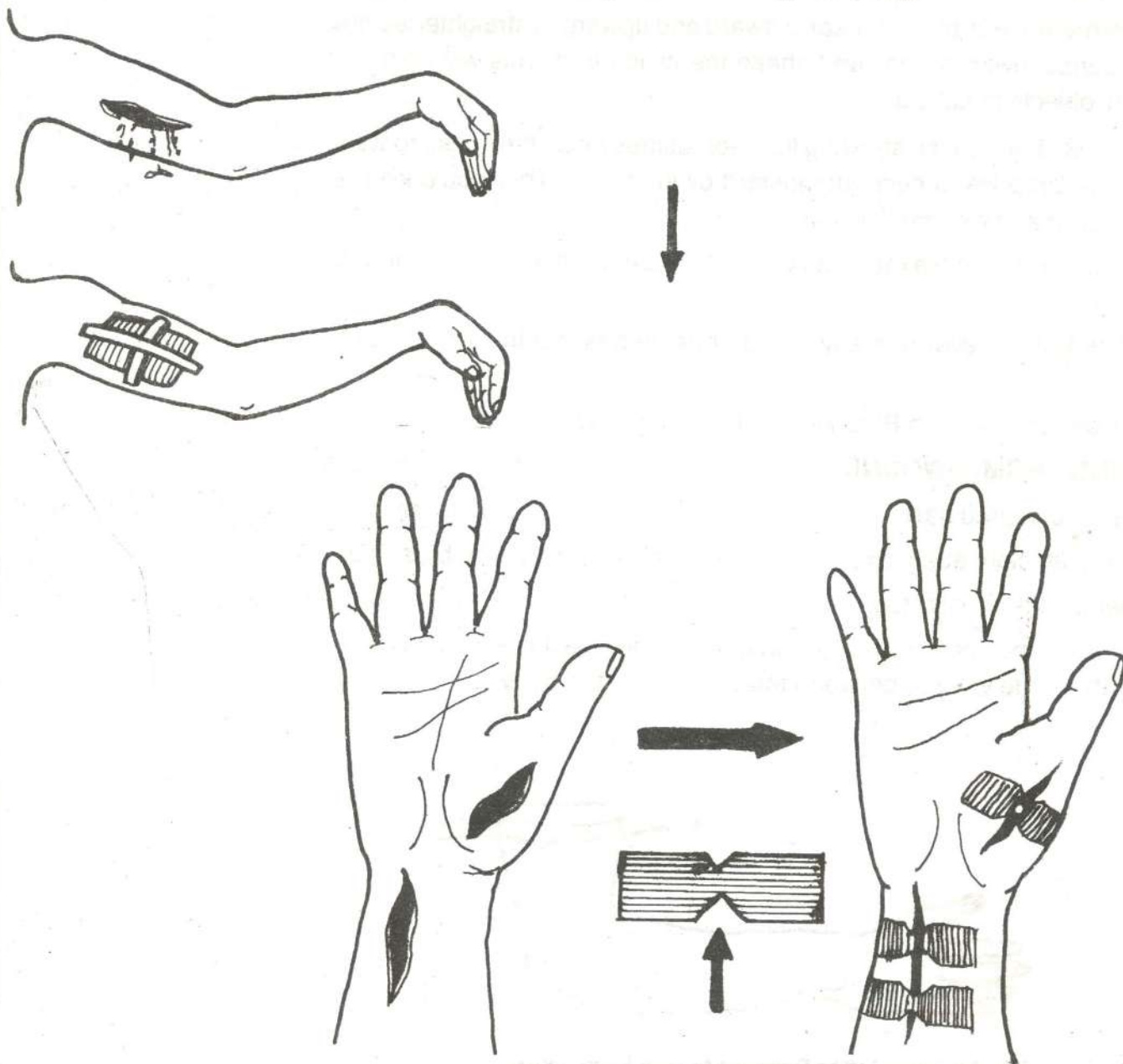


Fig. 4.7 First Aid in Injuries

NOSE ACHE

Foreign bodies: Children sometimes get small object and food particles like chana/dal inserted in the nose.

Sign & Symptoms - Foreign bodies cause whitish mucus discharge from the nose. Later it may become yellowish or foul smelling when it gets infected.

Treatment:

- In older children- ask the child to blow the nose or make him sneeze.
- If the object is deep or if the child is very young - seek medical help and refer to hospital/PHC.



Fig. 4.8 Foreign Body Extracted from NOSE

Nose Bleed :

- Common Causes are nose picking, trauma, high blood pressure etc.
- **Treatment**
 - Stay calm
 - Pinch the nose firmly for 10 min in the soft part
 - Apply ice/cold water on the nose
 - Pack the nostril with a gauze soaked in vaseline and pinch again firmly.

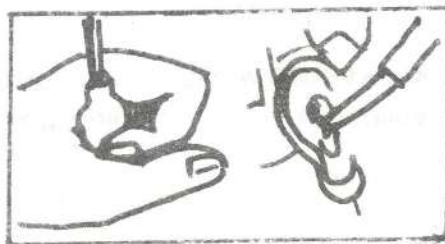


Fig. 4.3

Steps to use ear drops

1. Tilt head sideways or lie on one side with the ear upward
2. Gently pull the lobe to expose the ear canal.
3. Apply the amount of drops prescribed by doctor.
4. Wait five minutes before turning to the other ear.



Fig. 4.4

5. Use cotton wool to close the ear canal after applying the drops only if the manufactures recommend this.
6. Ear -drops should not burn or sting longer than a few minutes.
7. If the bottle is open, use within 15 days. Do not use after.

Steps to use eye drops

1. Wash your hands with soap & water.
2. Do not touch the dropper opening.
3. Look upward
4. Pull the lower eyelid down to make a "gutter".
5. Bring the dropper as close to the "gutter" as possible without touching it or the eye.
6. Apply the prescribed amount of drops in the 'gutter'.
7. Close the eye for two minutes. Do not shut the eye too tight.
8. Excess fluid can be removed with a tissue.
9. If more than one kind of eye - drop is used with for at least five minutes before applying the next drops.
10. Eye -drops may cause a burning feeling but this should not last for more than few minutes. If it does last longer consult a doctor.

**Eye Drop Step I****Eye Drop Step II****Fig. 4.5****Points to remember while****giving eye -drops to children:**

1. Let the child lie with head straight
2. The child's eyes should be closed

3. Drip the amount of drops prescribed into the corner of the eye
4. Keep the head straight
5. Remove the excess fluid

Giving nasal drops to children

1. Blow the nose
2. Sit down and tilt head backward strongly or lie down with a pillow under the shoulders; keep head straight.
3. Insert the dropper one centimeter into the nostril.



Fig. 4.6 : Steps to use nasal drops

INTERNAL HAEMARRAGE

(Internal haemorrhage is also called concealed haemorrhage as the blood cannot be seen from outside and the bleeding occurs in internal organs like stomach, intestine, liver, spleen, kidney etc.) Sometimes the blood can be seen outside through stool, urine, vomiting and uterine discharges. Whenever an internal hemorrhage is suspected the following signs and symptoms are searched.

1. Pallor or pale colour as if the blood is drained out.
 2. Cold sweaty skin
 3. Severe thirst
 4. Giddiness or faintness
 5. Restlessness
 6. Quick and weak pulse
 7. The breathing is shallow and accompanied by yawning.
 8. Air hunger or long, drawn inspiration
 9. Unconsciousness
-

Causes : Injury in the abdomen, Peptic ulcer, Malena, (black stool) Kidney stone etc.

Treatment :- Allow the patient to lie down, the foot end may be raised so that more blood is available to the vital organs like heart, lungs and liver etc. Reassure the patient and give some tea or hot-milk only to the patients who are not suffering from G.I. tract haemorrhage.

BANDAGES

Bandages may be of two types

1. Roller Bandage
2. Triangular Bandage

A Triangular bandage is made of cloth of one meter square. (show a triangular bandage) cut in to two pieces and hemmed. While tying, the ends are tie with a reef knot. (show Reef knot) which does not slip. A granny knot slips. A triangular bandage may be used as head bandage or can be used as a sling.

Roller bandage is a loose woven cloth of varying diameter $\frac{1}{2}$ ", $\frac{1}{3}$ ", 2" are normally used by health workers to dress wounds.

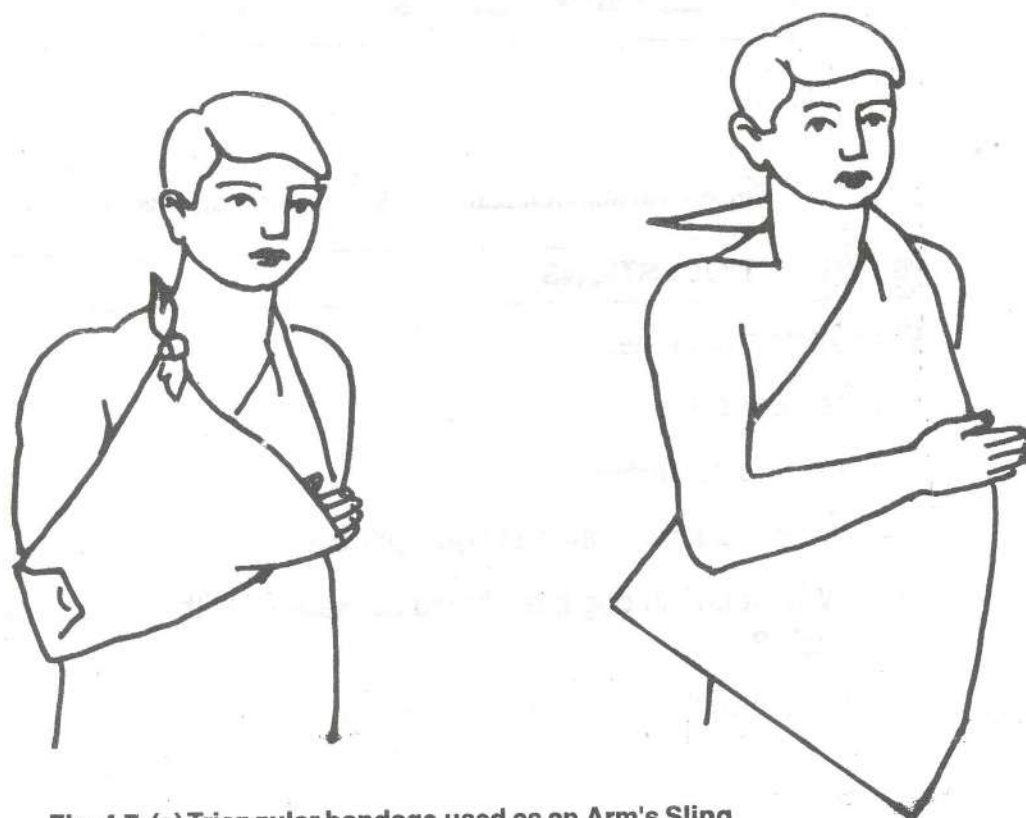


Fig. 4.7 (a) Triangular bandage used as an Arm's Sling

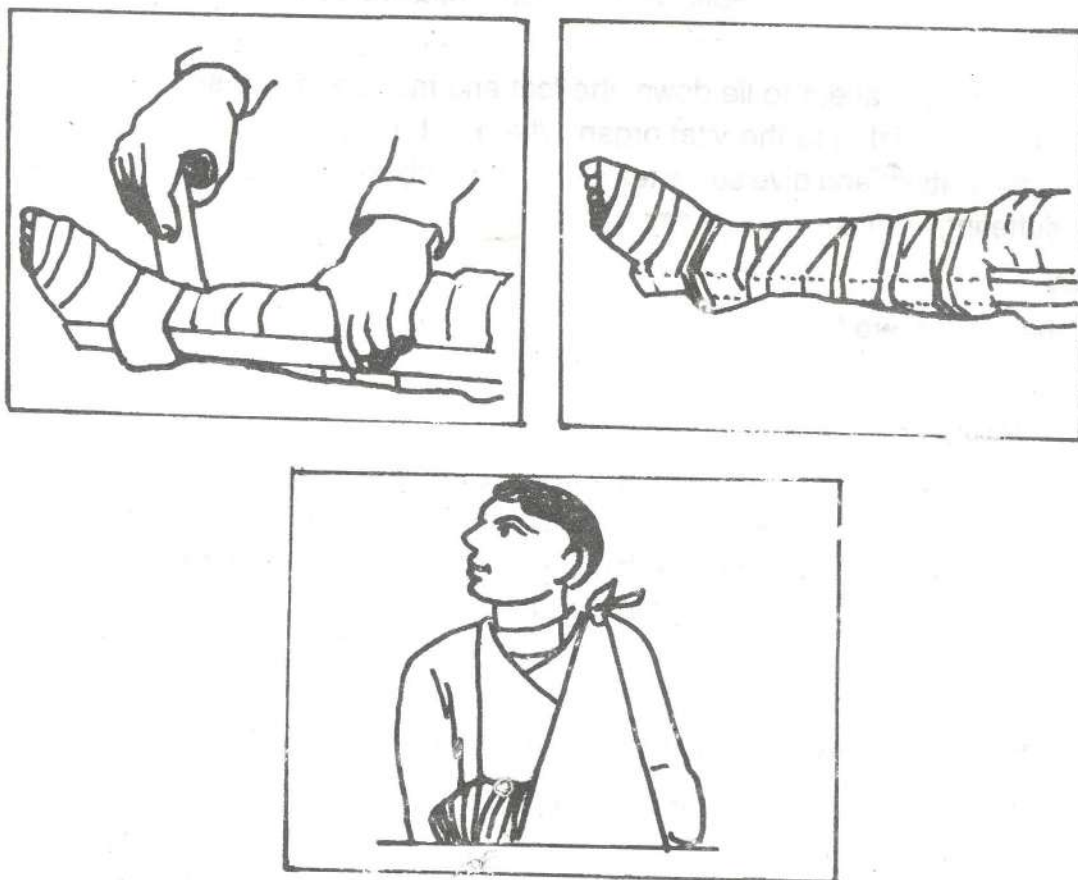


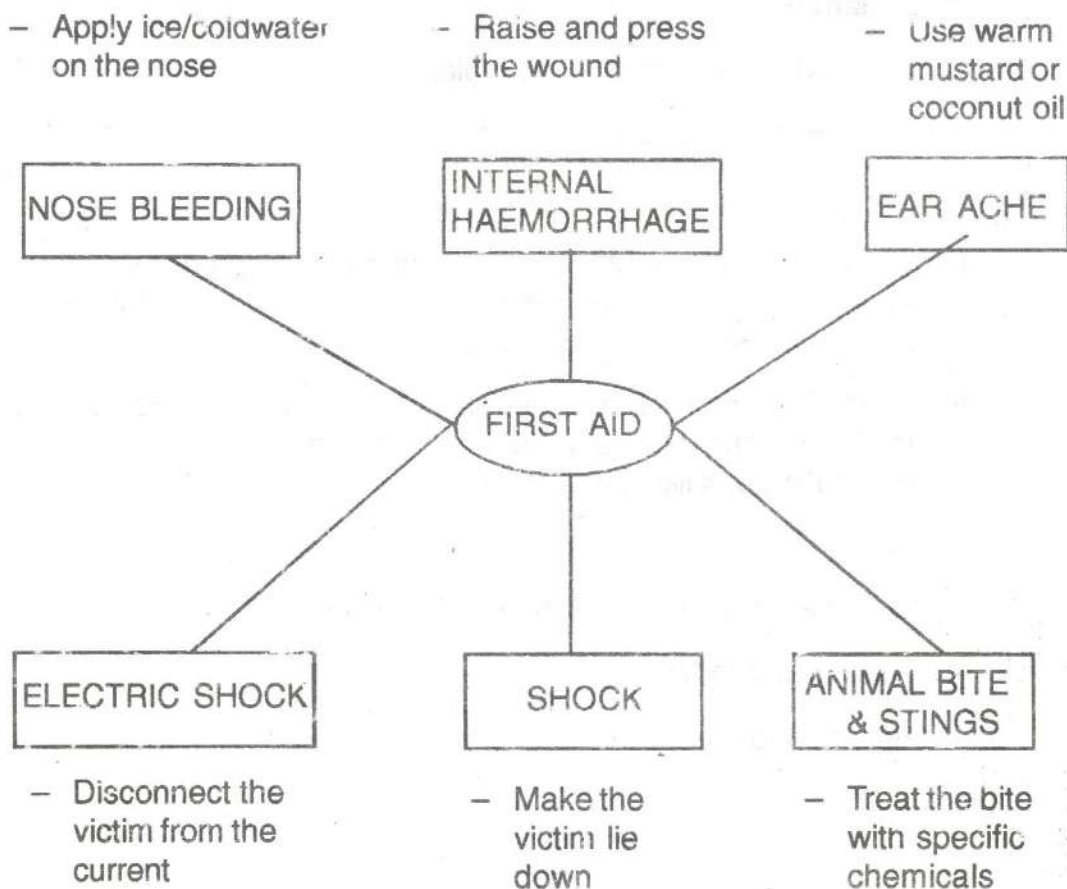
Fig. 4.7 (b) Immobilisation by Splint and Triangular bandage

5.2 INTEXT QUESTIONS

1. Write short notes on –
 - (a) Ear ache
 - (b) Internal hemorrhage
2. What is another name of Hydrophobia.
3. Why wound in dog bite should be washed with soaped and running water?
4. What are the two types of bandages.

4.6 WHAT HAVE YOU LEARNT

In this lesson you have learnt the importance of First Aid given in time to save human lives. You have also understood when and where to provide first aid by diagnosing sign and symptoms. First Aid helps in preventing conditions from worsening.



4.7 TERMINAL QUESTIONS

1. What is hypothermia? Write down its signs symptoms and treatment.
2. How would you take care of a person with a bleeding wound?
3. Write down the steps to use eye drops.

4.8 ANSWER TO INTEXT QUESTIONS

- 4.1** 1. Shock is a condition that develops after an injury or internal heamorrhage.

Sign & symptoms – Low blood pressure, rapid heart rate, pale colour of skin, lack of sensation & sometimes death.

2. Anaphylactic is an allergic reaction of the body towards any foreign substance. It may be due to drug, food, inhaled allergens, bee stings etc.

Treatment :-

- Avil or any anti-allergic tablet.
- Rush immediately to doctor or PHC.

4.2

1. (a) Ear ache occurs when you pull outer ear, itching redness of ear canal, reduced hearing if the ear is blocked, pus discharge. It is due to infection in the ear indicated by fever.
(b) Internal haemorrhage is also called concealed haemorrhage as the blood cannot be seen from outside and the bleeding occurs in internal organs like stomach, intestine, liver, spleen, kidney etc.
2. Rabies
3. To wash the virus causing Rabies in the patient
4. – Triangular bandage
– Roller bandage

First Aid Box



First Aid Box

The items required for First Aid Box is listed below:

- | | |
|-----------------------|----------------------------------|
| ● Small plastic bowl | For washing cuts and wounds |
| ● Cotton wool | To use with gauze as dressing |
| ● Sterilised dressing | To put on wounds |
| ● Roller bandage | To hold dressing in place. |
| ● Magnifying glass | To help to locate splinters |
| ● Tweezers | To remove loose splinters |
| ● Glucose sweets | To be given in case of shock. |
| ● Adhesive dressing | For minor cuts and scratches |
| ● Scissors | To cut the bandage |
| ● Safety pins | For pinning bandages |
| ● Paper tissue | For wiping away dirt from wounds |
| ● Gauze | To use with cotton wool on wound |
| ● Burnol | To apply on burns |
| ● Mercury Chrome | To apply on cuts |
| ● Dettol | To clean wounds |

5

LIFE STYLE DISEASES

5.1 INTRODUCTION

"Lifestyle Diseases" or "Diseases of Civilization" are diseases that appears to become more widespread as countries become more industrialized. These diseases are potentially preventable and can be lowered with changes in diet, lifestyle and environment.

Lifestyle diseases are a result of an inappropriate relationship of people with their environment. The onset of these diseases are slow, they take years to develop and once encountered do not lend themselves to cure.

The term '**lifestyle**' means '**the way people live**' reflecting a whole range of social values, attitudes and activities. It is composed of cultural and behavioural patterns and life long personal habits such as smoking, alcoholism. Lifestyles are learnt through social interaction with parents, peer group, friends and sibling and through school and mass media.

Health requires the promotion of healthy lifestyle. In the last 20 years various studies indicated that there is an association between health and lifestyle of individuals. Many health problems such as vascular heart diseases, asthma, diabetes, oral cancer, obesity and lung cancer are associated with lifestyle changes. Too many people are dying relatively young from heart disease and cancer and other diseases of modern times.

Can lifestyle diseases be prevented? What are different types of lifestyle diseases? How can we modify our lifestyle to prevent the onset of a particular disease. These are some of the questions, whose answer, you will learn in this lesson.

5.2 OBJECTIVES

After reading this lesson you will be able to:

- Describe lifestyle diseases.
- Differentiate between different types of lifestyle diseases.
- Discuss symptoms of various diseases.
- List important risk factors of various diseases.
- Modify lifestyle to prevent the diseases.
- Suggest preventive measures to check the onset of these diseases.

CORONARY HEART DISEASE (CHD)

There are a dozen forms of lifestyle disease. **Atherosclerosis** is the most common and serious vascular disease. Yellowish plaque of cholesterol, fat and other remains are deposited in the walls of large and medium sized arteries. It usually occurs with aging. It is linked to overweight, high blood pressure, and diabetes.

- (i) **Coronary Heart Disease (CHD)** has been defined as “impairment of heart function due to inadequate blood flow to the heart caused by obstructive changes in the coronary circulation to the heart. CHD may be related to lifestyle and psychological stress.
- (ii) Heart disease and other forms of cardiovascular disease can lead to **congestive heart failure**, and may also cause disturbance in normal heart beat which is called **Arrhythmia**.

Risk factors or causes of CHD – The causes are multi-factorial. Apart from the increasing age and sex, studies have identified several important risk factors. Some of these factors are modifiable by lifestyle whereas other are not modifiable. These risk factors are discussed below:

Not modifiable	Modifiable
Age	Cigarette smoking, drinking
Sex	High Blood Pressure
Family History	Increased serum cholesterol level
Genetic History	Diabetes, obesity, lack of physical exercise, stress

Let us discuss these modifiable factors in detail

1. **Smoking** - Smoking has been identified as a major CHD risk factor. It is responsible for 25% of CHD deaths under 65 years of age in men.
2. **Hypertension** - High blood pressure can lead to a variety of cardiovascular complication for anyone.
3. **Serum cholesterol** - Risk of CHD rises steadily with the serum cholesterol concentration.

High level of low-density lipoprotein (LDL) cholesterol is directly associated with CHD. High Density Lipoprotein(HDL) is protective against the development of CHD. A total cholesterol/HDL ratio has been developed. A ratio of less than 3.5 has been recommended for CHD prevention.

4. **Diabetes** - The risk of CHD is 2-3 times higher in diabetics than in non-diabetics. CHD is responsible for 30 to 50 percent of deaths in diabetics over the age of 40 years in industrialized and developed countries.
5. **Obesity** - The studies had found that the risk of developing CHD increased 3 to 4 times in obese women. For every one Kilogram increase in body weight, the risk of death from CHD increased by one percent.
6. **Lack of physical exercise** - Sedentary life style is associated with a greater risk of development of early CHD. Regular physical exercise increases the concentration of HDL and decreases both body weight and blood pressure which are beneficial to cardiovascular health.
7. **Stress** - Studies have shown that individuals who have restlessness, hostility and a sense of urgency or impatience are more prone to CHD than the calmer persons.

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Prevention of CHD

1. **Dietary changes** – Dietary modification is the main preventive strategy in the prevention of CHD. These include –
 - Reduction of fat intake to 20-30% of the total calorie intake
 - Reduction of dietary cholesterol
 - Reduction of saturated fat in diet
 - Increase in dietary fibre consumption (vegetables, fruits, whole grain and legumes)
 - Avoidance of alcohol consumption
 - Reduction of salt intake to 5g daily or less.
2. **Smoking** – Efforts should be made to achieve the goal of a smoke free-society.
3. **Blood Pressure** – Studies proved that even a small reduction in the average blood pressure of the whole population by a mere 2 or 3mm Hg would produce a large reduction in the incidence of cerebro-vascular & cardiovascular complication. This reduction in blood pressure involves a multi-factorial approach -
 - Reduced salt intake
 - Avoidance of a high alcohol intakes
 - Regular physical activity
 - Weight control
4. **Physical Activity** – Regular physical activity should be a part of normal daily life.

INTEXT QUESTION 5.1

Write 'True or False' for the following statements

1. Lifestyle diseases are the result of an inappropriate relationship of people with their environment. ()
 2. Lifestyle diseases are not preventable. ()
 3. High blood pressure, smoking, obesity, diabetes are the main risk factors for Coronary Heart Disease. ()
-

4. Lack of physical exercise is linked with Coronary Heart Disease. ()
5. Increased level of high density lipoprotein (HDL) can lead to development of Coronary Heart Disease. ()

HYPERTENSION (HIGH BLOOD PRESSURE)

High Blood Pressure or Hypertension means high pressure (tension) in the arteries. The arteries are the vessels that carry blood from the pumping heart to all the tissues and organs of the body. Normal blood pressure is 120/80, pressure between 120/80 and 139/89 is called 'Pre-hypertension' and a blood pressure of 150/90 or above is considered high blood pressure.

120 – systolic blood pressure

80 – the diastolic blood pressure

Systolic blood pressure represents the pressure in the arteries as the heart contracts and pumps blood into the arteries.

Diastolic blood pressure – represents the pressure in the arteries as the heart relaxes after the contraction.

The WHO in its expert committee report has defined hypertension in adults as a systolic pressure equal to or greater than 160mm Hg/or a diastolic pressure equal to or greater than 95mm Hg. The terms 'Mild Hypertension' in adults has been defined as a 'diastolic pressure between 90 and 105mm Hg.

Classification – Hypertension is divided into primary (essential) and secondary.

- a) **Essential Hypertension** – When the causes of hypertension are generally unknown it is called primary or essential hypertension. It accounts for 90 percent of the cases of hypertension.
- b) **Secondary Hypertension** – When the cause of hypertension is some other disease process or abnormality it is called secondary hypertension.

Prevalence – In some industrialized countries up to 25% of adults have diastolic pressure above 90mm Hg. Studies showed that in India the prevalence of hypertension is 59.9 and 69.9 per 1000 in males and females respectively in urban population and 35.5 and 35.9 per 1000 in males and females respectively in the rural population.

Complication of Hypertension

Mortality – High blood pressure is a major risk factor for stroke, CHD, heart or kidney failure and eye damage. The higher the pressure the greater the risk and lower the expectation of life.

How is blood pressure measured – The blood pressure is measured with an instrument called (sphygmomanometer). The instrument measure the blood pressure in units called millimeters of mercury (mm Hg.)



Fig. 5.1 Measurement of B.P. by using Sphygmomanometer

1. Risk factors for Hypertension

Non-modifiable risk factors	Modifiable risk factors
Age Genetic factor	Obesity Salt intake Saturated fat Alcohol Physical activity Environmental stress Other factors

Let us learn these modifiable risk factor in details –

- a) **Obesity** – Studies have identified obesity as a major risk factor for hypertension. The greater the weight gain, the greater the risk of getting high blood pressure.

- b) **Salt intake** – High salt intake (7-8gm per day) increases blood pressure proportionately. Low sodium (salt) intake has been found to lower blood pressure.

Besides sodium, there are other minerals elements such as potassium reduces blood pressure. Potassium supplement have been found to lower blood pressure of mild to moderate hypertensives.

- c) **Saturated Fat** – Saturated fat raises blood pressure as well as serum cholesterol.
- d) **Alcohol** – High alcohol intake is associated with an increased risk of high blood pressure. Alcohol consumption raises systolic pressure more than the diastolic.
- e) **Physical activity** – Lack of physical activity and sedentary life style increases the blood pressure.
- f) **Environmental stress** – The term hypertension itself means a disorder initiated by tension or stress. It is an accepted fact that psychological factors operate through mental processes to produce hypertension.
- g) **Other factors** – The most common cause of hypertension is oral contraceptives because of the estrogen component present in it.

Non-Modifiable Risk Factors

Age – blood pressure rises with age in both sexes.

Genetic factor – There are several studies which show that blood pressure levels are also influenced by genetic factors.

Prevention of Hypertension

1. **Dietary changes** –Hypertension can be prevented through dietary changes. These changes in the diet is of great importance. These are –
 - Reduction in salt intake to an average of not more than 5g per day
 - Lower fat intake
 - Avoidance of alcohol intake
 - Lower calorie intake to reduce weight.
 2. **Weight reduction** – The prevention and correction of obesity is a way of reducing the risk of hypertension and indirectly CHD.
 3. **Regular exercise** – Regular exercise such as jogging, bicycle riding
-

or swimming for 30 to 45 minute daily may lower blood pressure by as a much as 5 to 15mm Hg.

4. Reduction of stress through yoga, meditation can lower blood pressure.

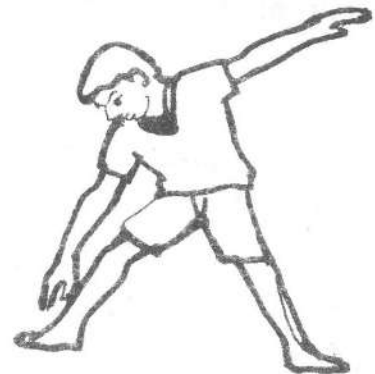
Prevention of CHD



Picture of a person jogging



Picture of a girl doing skipping



Picture of a person doing exercise

Fig. 5.2

5. Avoidance of smoking
6. **Health Education** – The general public should be given preventive advice on all risk factors and related health problem.

INTEXT QUESTIONS 5.2

Fill in the Blanks.

1. High Blood pressure means _____.
2. Hypertension is divided into _____, _____.
3. Risk factors for hypertension are _____, _____, _____.
4. Hypertension can be prevented through these two dietary changes _____ and _____.
5. Regular exercise for 30 to 45 minutes may lower blood pressure by _____ to _____ mm Hg.

STROKE

Stroke is a world wide health problem. It is one of the leading causes of death and disability through out the world.

The term stroke is applied to acute severe manifestation of cerebrovascular disease. It causes both physical and mental crippling. WHO defined stroke as "rapidly developed clinical signs of focal disturbance of cerebral function, lasting more than 24 hours, leading to death, with no apparent cause other than vascular origin". Strokes includes a number of syndromes these are –

- Cerebral haemorrhage
- Cerebral thrombosis

Risk factors -

- a) **Hypertension** – This is the main risk factor for cerebral thrombosis as well as cerebral haemorrhage.
- b) **Other factors** – such as diabetes, increased serum blood lipids, obesity, smoking, oral contraceptives etc. may also cause stroke.
- c) **Age** – Usually stroke rates rise steeply with age.
- d) **Sex** – The incidence rates of stroke are higher in males than females at all ages.

Prevention

Let us learn some preventive measure to avoid stroke. These are -

- Control of hypertension
- Control of diabetes
- Stop smoking.

DIABETES MELLITUS

Diabetes has now emerged as an important public health problem in developing world. It is estimated that by the year 2025 there will be 80 million diabetics in the South East Asia. The rising prevalence of diabetes in developing countries is closely associated with industrialization and socio-economic development.

Diabetes refers to hyperglycemia (increase in blood glucose level), the cause of diabetes is the defective production or action of insulin. Insulin is a

hormone that controls glucose, fat and amino acid metabolism. Insulin is secreted by Islets of Langerhans cells found in the pancreas.

Diabetes leads to large number of other complications – such as cerebro vascular, cardiovascular, renal, neurological, ophthalmological complications.

WHO has adopted following classification of diabetes.

I Diabetes Mellitus-

1. Insulin dependent diabetes mellitus – IDDM(Type-I)
2. Non-insulin dependent diabetes mellitus – NIDDM(Type-II)
3. Malnutrition – related diabetes mellitus
4. Other types – pancreatic, hormonal drug induced, genetic defects

II Impaired glucose tolerance

III Gestational diabetes mellitus (pregnancy related)

What causes diabetes

The underlying cause of diabetes is insulin deficiency which is absolute in IDDM and partial in NIDDM. Do you know, this may be due to various factors such as

- (a) pancreatic disorder
- (b) defects in production of insulin
- (c) destruction of insulin producing beta cells.
- (d) Genetic defects
- (e) Auto-immunity

Risk factors – Let us study risk factors related to diabetes

1. **Age** – Studies shows that prevalence rises steeply with age.
2. **Sex** – It is found in equal proportion in male and female.
3. **Genetic Factors** - Diabetes is considered a genetic disease. Children of diabetic parents have greater risk of getting this disease.
4. **Obesity** – Obesity is a very important risk factor for NIDDM. Obesity produces resistance to the action of insulin.

5. **Sedentary Life Style** – Lack of physical exercise results in increased blood sugar level.
6. **Malnutrition** – Malnutrition in early infancy and childhood may result in failure of beta cell function and hence cause diabetes
7. Excessive Intake of alcohol.
8. Viral infections like Mumps, Rubella etc. destroy the insulin producing beta cells.
9. Chemical agents have toxic effect on beta cells.
10. Stress, anxiety and trauma may lead to NIDDM.

Detection of Diabetes

1. Urine test for glucose – in most of the diabetics, urine samples indicate the presence of glucose. But in normal person it is absent.
2. Blood sugar testing – oral glucose tolerance test is done to detect diabetes

(i) Fasting blood sugar level	80-120mg. more than 120	Normal Risk group
(ii) Post Prandial blood sugar 2 hours after meal	140-160mg. more than 160	Normal Risk group
(iii) Now a days HbA_{1c} (Glycosylated Hemoglobin) level is estimated .	below 6.0 more than 6.0	Normal Risk group

HbA_{1c} provides a long term index of glucose control.

Prevention

After learning so much about this epidemic disease it is very important to know the preventive measures to control and reduce the risk of diabetes. These measures are

- i) Dietary Changes
 - Reduce intake of refined carbohydrates and sugar
 - Reduce intake of saturated fat
 - Increase intake of fresh and green leafy vegetables
 - Increase intake of dietary fibres (whole grain, coarse cereals, whole legumes)

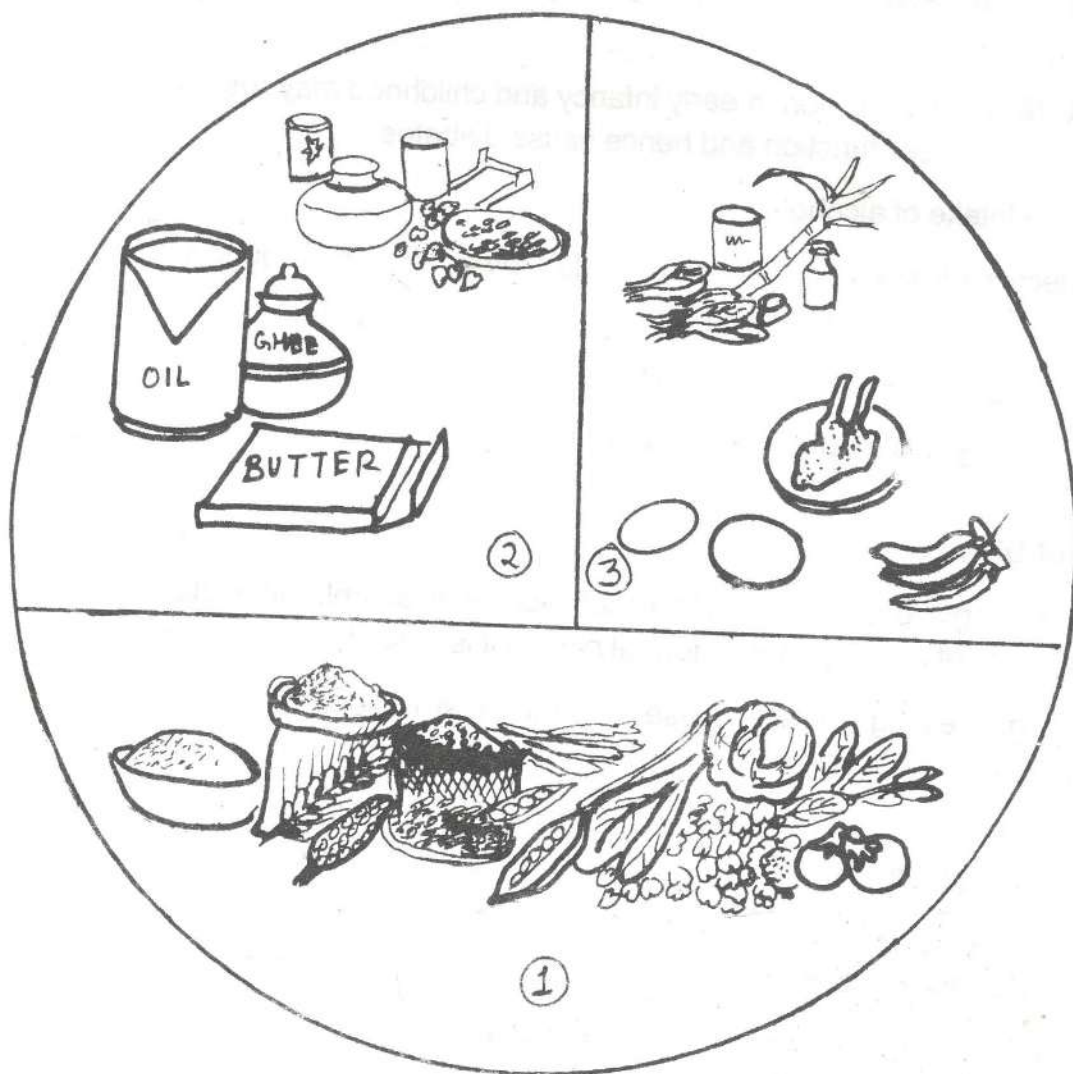


Fig. 5.3

①

Eat plenty

whole grain, cereals, pulses, fruits, vegetables. Jamun fruit, Guava, Papaya.

②

Eat Less

Refined sugar, carbohydrate and fats of butter, pure ghee, pickles.

③

Avoid

Red meats, fruit juices, cold drink, aerated drinks, sweets, Egg Yolk, Fried food, Maida products, Banana, Mango, Honey, Jam.

INTEXT QUESTION 5.3

1. Match the following

a. Stroke	1. Increase in blood glucose level
b. Diabetes	2. Controls glucose, fat & amino acid metabolism
c. Insulin	3. Glycosylated haemoglobin
d. Obesity	4. Important risk factor for diabetes
e. HbA	5. Physical & mental crippling

OBESITY

Obesity is the presence of excess fat in the body. The World Health Organization (WHO) terms obesity a worldwide epidemic. Obesity is an abnormal accumulation of body fat, usually 20% or more over an individual's ideal body weight. 20 to 40% over ideal weight is considered mildly obese, 40-100% over ideal weight is considered moderately obese and 100% over ideal weight is considered severely or morbidly obese.

Recent guidelines for obesity use a measurement called Body Mass Index (BMI). Body Mass Index is the individual's weight in kilograms and divided by height in meter square. BMI of 25.9 – 29 is considered over weight, BMI over 30 is considered obese.

What causes obesity –

1. Calorie Intake –

- More calories are consumed than the body's utilization.
- Excess calories are stored as fat in adipose tissue.

2. Fat Intake – Excess amount of saturated fat in person's diet are immediately stored in fat cells, which add to the body's weight and girth as they expand and multiply.

3. Genetic Factor – These factors significantly influence how the body regulates the food intake and the rate at which it turns food into energy.

4. Sedentary Lifestyle – or lack of physical activity cause obesity.

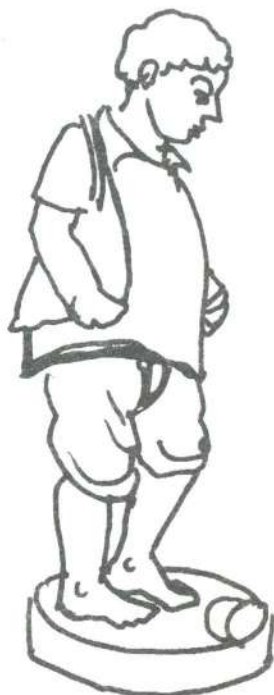


Fig. 5.4 Obese person on a weighing machine

5. **Psychological Factors** such as depression and low self esteem may play an important role in weight gain.

Health Risks associated with obesity –

- (i) **Type 2 (adult onset) diabetes** – The risk of type 2 diabetes (NIDDM) increases with the degree and duration of obesity. Type 2 diabetes is associated with central obesity.

Central obesity means a person has excess fat around his/her waist, so that the body is shaped like an apple.

- (ii) **High Blood Pressure** – Hypertension is common among obese adults. Studies showed that weight gain tends to increase blood pressure in women more significantly than in men. The risk of developing high blood pressure is also higher in obese people who are apple shaped (central obesity) than in people who are pear shaped (fat distribution mainly in hips and thighs).

- (iii) High cholesterol levels
- (iv) Stroke
- (v) Heart Attack
- (vi) Congestive Heart Failure
- (vii) Cancer
- (viii) Gallstones
- (ix) Gout and gouty arthritis
- (x) Menstrual irregularities or cessation of menstruation
- (xi) Decreased fertility and pregnancy complications
- (xii) Gum disease

Diagnosis

Diagnosis of obesity is made by observation and by comparing the patient's weight to ideal weight charts.

Prevention

1. Dietary changes
 - Reduction in calorie intake – consumption of less calories
 - Reduction in fat intake – particularly saturated fats like ghee, butter.

2. Maintaining a food diary to check and regulate what and how much a person should eat as per height.
3. Eating small frequent meals.
4. Fibre rich food such as raw fruits and vegetables, whole cereals, whole pulses should be eaten.
5. Increased physical activity and follow regular exercise pattern. At least 30 min. brisk walk daily.
6. Person should be motivated to indulge in various outdoor activities games etc. to remove psychological stress and loneliness. These activities and games will also help the person to remain fit & healthy.

CANCER

Cancer is a disease characterized by uncontrolled, abnormal growth of cells. Cancer has been the number two cause of death since 1938 but now days it is considered the number one disease of civilization.

It is estimated that there are approximately 2-2.5 million cases of cancer in India. Half of these cases die each year. Therefore, it is important to study this disease in detail. There are more than 150 different kinds of cancer.

Most Frequent Cancers in Males/Females in India

Males	Females
Mouth	Uterus (Cervix)
Stomach	Breast
Lung	Mouth
Prostate	Ovary

Studies have showed that the incidence of lung cancer is more common in males of Delhi & Mumbai. Females of these cities have more incidence of breast cancer as compared to other cities of India.

What causes cancer?

1. **Tobacco** – Tobacco smoking and chewing is the main cause of cancer of lung, mouth, pharynx, larynx.
2. **Alcohol** – excessive intake of alcohol is linked with liver and oesophageal cancer.

3. **Diet** – Studies shows that food additive and contaminants are considered the causative agent of cancer. Whereas eating of some food such as smoked fish is related to stomach cancer and high fat diet to breast cancer.
4. **Occupation** – It has been found that labourers or workers who have exposure to benzene, arsenic, cadmium, chromium, asbestos are prone to develop cancers.
5. **Viral Infection** – Studies have found that hepatitis B and C virus is related to liver cancer.
6. **Parasitic Infection** – Parasitic infection increased the risk of bladder cancer.
7. **Others**- Many environmental factors such as sunlight, radiation, air and water pollution, medications and pesticides are also considered to be the causative agent of cancer.
8. **Customs, habits and life-styles** – In India, some customs & habits such as tobacco and betel chewing, spicy foods are the main cause of oral cancer.

Warning symptoms of cancer

- A lump or hard area in the breast
- A change in mole size
- A change in digestive and bowel habits
- A persistent cough with blood
- Excessive loss of blood during menstruation
- Unexplained weight loss

Prevention and Treatment of Cancer

- Complete Avoidance of tobacco intake
 - Reduce intake of alcohol
 - Junk foods and preserved foods should be avoided. Healthy food habits such as eating fresh fruits and vegetables should be encouraged. Food containing high dietary fibre such as whole cereals, pulses should be consumed daily.
-

INTEXT QUESTION 5.4

1. What is obesity?
.....
 2. Write two health risks associated with obesity.
.....
 3. What do you understand by cancer?
.....
 4. Write two symptoms of cancer.
.....
-

A checklist for lifestyle diseases

- **Check for these symptoms of diabetes**
 1. Increased thirst (polydipsia)
 2. Increased urination (polyuria)
 3. increased hunger (polyphagia)
 4. progressive weight loss
 5. Slow healing of cuts and wounds.
 - **Check for these symptoms of CHD**
 1. Chest pain on exertion
 2. Apprehension
 3. Palpitation & sweating
 - **Check for these symptoms of Hypertension**
 1. Headache
 2. Palpitation
 3. Breathlessness on exertion
 - **Check for these symptoms of stroke**
 1. Severe headache
 2. vomiting
 3. weakness of body parts
-

● Check for these symptoms of cancer

Oral

- Non-healing ulcer in the mouth
- Weight loss

Lung cancer

- Persistent cough with blood
- unexplained weight loss

Breast Cancer

- Pain in the breast with lump
- Milk discharge with blood

Uterine cancer

- Irregular increased bleeding from vagina

Stomach cancer

- Pain in the upper part of the abdomen
- Vomiting
- Anaemia
- Loss of appetite

Tips For a Healthy Lifestyle

- Consume daily whole grain cereals, pulses and flour (with bran/choker).
- Eat plenty of fresh fruits and vegetables daily.
- Consume refined vegetable oils.
- Reduce the intake of refined sugars and carbohydrates.
- Reduce the intake of junk and fatty foods like pizza, burgers, French fries and other processed foods.
- Reduce intake of aerated soft drinks and colas, instead consume fresh lime water, coconut water, lassi, buttermilk etc.
- Quit smoking
- Quit chewing of tobacco, paan masala and supari
- Avoid alcohol
- Exercise regularly for at-least half an hour daily.
- Maintain peace and harmony at place of work and at home.

5.5 WHAT HAVE YOU LEARNT

In this lesson we have learnt about the meaning and importance of life style diseases. Different types of life style diseases such as Coronary Heart Disease, Obesity, High Blood Pressure, Stroke, Diabetes Mellities and Cancer have been explained extensively in this lesson. We have also learnt the risk factors associated with these diseases and the preventive measures to be adopted to control these disease.

5.6 TERMINAL QUESTIONS

1. What do you mean by lifestyle diseases? Explain any 2 of them in detail.
2. Discuss four risk factors linked with Coronary Heart Diseases (HD).
3. State four preventive measures for Diabetes.
4. Write five health risks associated with obesity.
5. Mention warning symptoms of cancer.

5.7 ANSWER TO INTEXT QUESTIONS

5.1 1. T

2. F

3. T

4. T

5. F

5.2 1. High blood pressure means high pressure in the arteries.

2. Hypertension is divided into primary and secondary Hypertension.

3. Risk factors for hypertensions are obesity, high salt intake, saturated fat, and alcohol.

4. Hypertension can be prevented through these two dietary changes.

(i) Reduction in salt intake

(ii) Less fat intake

5. Regular exercise for 30 to 45 minute may lower blood pressure by 5 to 15 mm Hg.

5.3 a) 5

b) 1

c) 2

d) 4

e) 3

5.4 1. Obesity is the presence of excess fat in the body.

2. Health risks associated with obesity are:

(i) Type 2 (adult onset) diabetes (NIDDM)

(ii) High Blood Pressure

3. Cancer is a disease characterized by uncontrolled, abnormal growth of cells.

4. (i) Unexplained weight loss

(ii) A change in mole size

5.8 SUGGESTED ACTIVITIES

1. Prepare a questionnaire for conducting a household survey about life style diseases. Collect the information from atleast 10 houses.

6

PHARMACY AND DRUG REACTIONS

6.1 INTRODUCTION

Pharmacy is a branch of medical science which deals with drugs used for treatment of various diseases.

Drugs are Plant, Animal or chemical origin and are used to destroy bacteria, parasite, virus and fungus inside the body. However drugs which destroy the disease producing organism may give rise to allergic or other systemic reaction which may be life threatening. In this lesson you will learn about different types of drugs and their doses.

6.2 OBJECTIVES

In this lesson you will be able to:

- learn about drugs and their doses;
 - understand how certain drugs causes reaction in the body even in therapeutic doses;
 - know how even drugs like vitamin may cause systemic reaction in some individuals;
-

- prevent reaction by taking certain precautions before and while using the drugs;
- treat reactions immediately so that it is not life threatening;

6.3 PHARMACY

The source of pharmaceutical medicines are many like animals, plants, minerals etc. The medicine in allopathic are mostly used in refined form, after separating the active ingredients by chemical process.

Pharmacology is a subject that deals with drugs used for different diseases and their actions on different parts of the body. Different types of drugs are used for different purposes, for example to reduce fever, headache, joint pain etc.

Drugs are given in different forms

- | | | |
|--------------------|----------|--|
| 1) Tablets | e.g. | Paracetamol |
| 2) Capsule | e.g. | Ampicillin Caps. |
| 3) Liquids | e.g. | Cough syrup, Tonics |
| 4) Inhalation | e.g. | Nasal inhaler for asthma |
| 5) Injection | e.g. | Injection Vitamin B-complex |
| 6) Ointment | e.g. | Soframycin Ointment |
| 7) Drops | e.g. | Nasal drops, Eye drops |
| 8) Adhesive strips | e.g. | Glycerine trinitrate strips |
| 9) Suppositories | e.g. | Dulcolax suppositories, glycerine suppositories. |
| 10) Powders | for e.g. | Antifungal powder in fungus infection. |

Drugs are used in different doses :

- | | | |
|-------------------------|---|----------|
| 1) Once daily | - | (O.D.) |
| 2) Twice daily | - | (B.D.) |
| 3) Three times daily | - | (T.D.) |
| 4) Four times daily | - | (Q.1D.) |
| 5) At night only | - | (H.S.) |
| 6) As and when required | - | (S.O.S.) |

All doses of drugs depend on the weight of the patient. Child dose is much less than adult. Such drugs cannot be used for children like Aspirin or sleeping drugs.

Child dose is determined by

$$\text{Clerks' rule} = \text{child dose} = \frac{\text{adult dose} \times \text{child weight in kg}}{70}$$

Dose means the amount of drugs which will be effective to reduce or eliminate the disease. Effective dose of drugs depends on certain conditions like

- 1) Age, Sex, Pregnancy, Race, Diet
 - 2) Presence of certain diseases like liver diseases, kidney diseases, gastric, ulcer etc.
 - 3) Weight of individual
- Table of Height & Weight is given below according to age.

Table of Height & Weight according to Age & Height

	Age (Years)	Weight (kg.) (lb.)		Height (cm) (in)	
Infants	0.0-0.5	6	13	60	24
	0.5-1.0	9	20	71	28
Children	1-3	13	29	90	35
	4-6	20	44	112	44
	7-10	28	62	132	52
Males	11-14	45	99	157	62
	15-18	6	145	176	69
	19-22	70	154	177	70
	23-50	70	154	178	70
	51+	70	154	178	70
Females	11-14	46	101	157	62
	15-18	55	120	163	64
	19-22	55	120	163	64
	23-50	55	120	163	64
	51+	55	120	163	64

Now you should know about certain basic drugs which are normally used by health worker

- 1) Analgesic - Drug which reduces pain e.g. paracetamol, aspirin
- 2) Antipyretic - Drug which reduces fever e.g. Paracetamol
- 3) Antiamoebic - Drug which is used in amoebic Dysentery e.g. Metronidazole.
- 4) Expectorant - Syrup which reduces cough e.g. any cough syrup
- 5) Acute Respiratory Infection e.g. Cotrimoxazole syrup, tabs.
- 6) Acute Diarrhoeal Infection e.g. Oral Rehydration Salt (ORS)
- 7) Anti Malaria e.g. Chloroquin tabs. and syrup
- 8) Antiallergic e.g. Avil tabs and syrup Cetirizine tabs.
- 9) Antiseptic e.g. Savlon, Dettol
- 10) Disinfectant e.g. Phenyl, Cresol.
- 11) Anthelmintics e.g. Drugs used for worm Infestation

INTEXT QUESTION 6.1

1. What do you understand by pharmacy?

.....

2. What is pharmacology?

.....

3. Give one example each of antipyretic and analgesic drugs.

.....

6.4 ANTISEPTICS AND DISINFECTANT

Antiseptic is a substance that prevents the growth of bacteria whereas disinfectant is a substance that destroys bacteria in the environment. Antiseptic when applied to the skin prevents the growth of bacteria e.g. alcohol, dettol, savlon etc.

Disinfectant when poured over infected material destroys bacteria. Thus cresol or phenol is added to sputum of positive tuberculosis patients or stool of cholera patients. The disinfectants are corrosive in nature and cannot be applied to the living tissue.

Sterilization is a process by which a bacteria and its spores are destroyed. When a bacteria is put in an adverse circumstances, it covers itself with a tough coating which cannot be destroyed by heat or acids or alkalies. This is called spores.

Disinfectant can be natural like sunlight. The ultra-violet rays in sunlight destroy bacteria, viruses but spores cannot be destroyed by sunlight.

2) BOILING OR STEAMING

Boiling in water for 20 minutes destroys most of the bacteria but not the spores. Most of the surgical instruments scissors, knife, Injection, syringes are sterilized in this way. The same sterilization can be done by pressure cooker. At the bottom of the pressure cooker, a separator or a stainless plate is kept, so that instruments do not come in contact with direct heat.

3) Steam under pressure is the best form of sterilization. At home it can be obtained from a pressure cooker steam under 5lb pressure for 20 minutes is sufficient to kill bacteria and its spores. As the pressure cooker has very limited capacity, a special appliance Autoclave is used. Autoclave being large in size so that in addition to instruments, linens, gowns, gloves, towels used in operation can be sterilized.

INTEXT QUESTION 6.2

1. Define 'Antiseptic'. Give two example.

.....

2. Fill in the blanks.

- (i) _____ are corrosive in nature and cannot be applied to be living tissue.
- (ii) Sterilization is a process by which _____ and its _____ can be destroyed.
- (iii) _____ and _____ are anti-allergic.

6.5 DRUG REACTION

Drugs are important weapons to combat diseases which shorten human longevity. However most of the drugs can produce reactions in human beings as for example Penicillin and Ampicillin. For this purpose drugs should be used more cautiously and only by people who have complete knowledge of composition, doses and adverse reactions. They may provide thor-

ough knowledge and procedures to control drug reaction before it is becoming life threatening;

A very simple drug like paracetamol or Nimuslide give rise to some reactions. So the rules and instructions what to use must be followed by competent person who can use drugs as per law, otherwise it is a punishable offence.

Types of Drug Reaction

1. Immediate Reaction
2. Delayed Reaction

Reaction may be of three types

1. Local reaction and generalized reaction like skin rashes intense itching, e.g. Sulfa drug reaction, voveron reaction.
2. Systemic reaction – Immediate and life threatening as for example penicillin reaction.
3. Systemic delayed reaction as for example;
 - (i) Enteroquinol – Retinal atrophy and permanent damage leading to blindness.
 - (ii) Chloroquin – Break down of blood. Primaquin also causing haemolysis

List of common drugs that cause reaction.

- (i) Paracetamol – none, in some cases the patient feel restlessness and urticaria.
 - (ii) Nimuslide – should not be used in children below 6 year. Use with caution below 10 years causing liver damage.
 - (iii) Voveron tablet – urticaria restlessness, itching.
 - (iv) Sulfa Drugs – Septran
 - (v) Penicillin group of drugs
 - (vi) Ampicillin, Amoxycillin Capsule, Injections
-

Immediate systemic reactions are called Anaphylactic reaction. Such reaction are characterised by restlessness, difficulty in respiration, shivering, cold and clammy skin, quick and weak pulse and fall of blood pressure and unconsciousness. It's a life threatening emergency and patient should be sent immediately to hospital.

In all cases of drug reactions health worker should give.

- | | |
|--------------------------|---|
| 1. Adult | – Avil (25mg) tab immediately. |
| 2. Children | – Avil (10mg) ½ tab/ce trizine ½ tab immediately. |
| 3. Children below 10 yrs | – 10mg avil - ½ tab. |
| Up to 5 yrs | – 10mg cetirizine - ½ tab. |
| 4. Children below 6 yrs. | – 10mg avil – 1/4 tab. |
| Up to 6 yrs. | – 10 mg cetirizine 1/4 tab. |
- and send, the patient to hospital immediately.

IN-TEXT QUESTION 6.3

1. What is meant by Drug Reaction.

.....

2. Which type of drug reaction is very dangerous?

.....

3. Fill up the blanks:-

1. Drug may produce _____ of any time.
2. Drug reaction may be _____ threatening.

6.6 LIST OF DRUGS/DRESSING

1. Tab Paracetab. 500 mg.
 2. ORS (WHO formula) NaCitrate Composition.
 3. Syr. Cotrimoxazole.
 4. Tab Iron & Folic Acid (50 mg Iron) + 0.5 mg Folic Acid)
 5. Tab Chloroquine Phosphate.
-

6. Tab Piperizine Citrate
7. Sulphacetamide Eye drops (20%)
8. Gauze
9. Bandage
10. Cotton
11. Soap
12. Gentian violet
13. Disposable Delivery Kit.
14. Scissors
15. Thermometer.

6.7 WHAT HAVE YOU LEARNT

In this lesson you have learnt about drug their doses and their reaction in the body. You can now understand that all drugs may produce allergic reactions. Reactions may be local, generalized or systemic reaction. Generalised system reaction are often serious so the patient should be sent to hospital immediately.

6.8 TERMINAL QUESTIONS

1. List down all drugs which are normally used by health worker.
2. What is drug reaction. Name the drugs that causes reaction.
3. What do you mean by
 - a) Analgesic
 - b) Antipyretic
 - c) Expectorant

6.9 ANSWER TO INTEXT QUESTION

- [6.1]**
1. Pharmacy is a branch of medical science which deals with the drugs and their doses.
 2. Pharmacology is a subject that deals with drugs used for different disease and their actions on different parts of the body.
 3. Paracetmól and aspirin.
-

6.2 1. Antiseptic is a substance that prevents the growth of bacteria. e.g. dettol, sevlon.

2. (i) Disinfectants
- (ii) bacteria, spores
- (iii) Avil tab., cetirizine tab.

6.3 1. Allergic reaction produced by the drugs in the form of urticaria or systemic reactions are called drugs reaction.

2. Systemic drug reaction.
3. (i) Local drug reaction
- (ii) Life threatening

7

MANAGEMENT OF EMERGENCY

7.1 INTRODUCTION

Emergency conditions arises due to diseases, accidents, snake bite, drowning, dog bites or drug reactions. It requires urgent and immediate medical attention which may save lives, are termed as Emergency Management.

7.2 OBJECTIVES

In this lesson you will be able to:

- know what measures are to be taken in case of Medical and Surgical Emergencies.
- understand that first 15 minutes are very important during medical emergency, the expert help provided by a trained health worker is life saving and prevents organ damage.
- manage various medical emergencies and life saving measures.

7.3 COMMON EMERGENCIES

(i) DROWNING

When a person goes under-water and who does not know swimming he gets submerged and lack of air under-water produces hypoxaemia. The

duration of hypoxaemia is a very important factor, on which depends survival of the person. For this reason restoration of respiration after removing all water from the lungs is very important for which artificial respiration is given.

TREATMENT

As soon as a victim is taken out of water, his mouth and respiratory

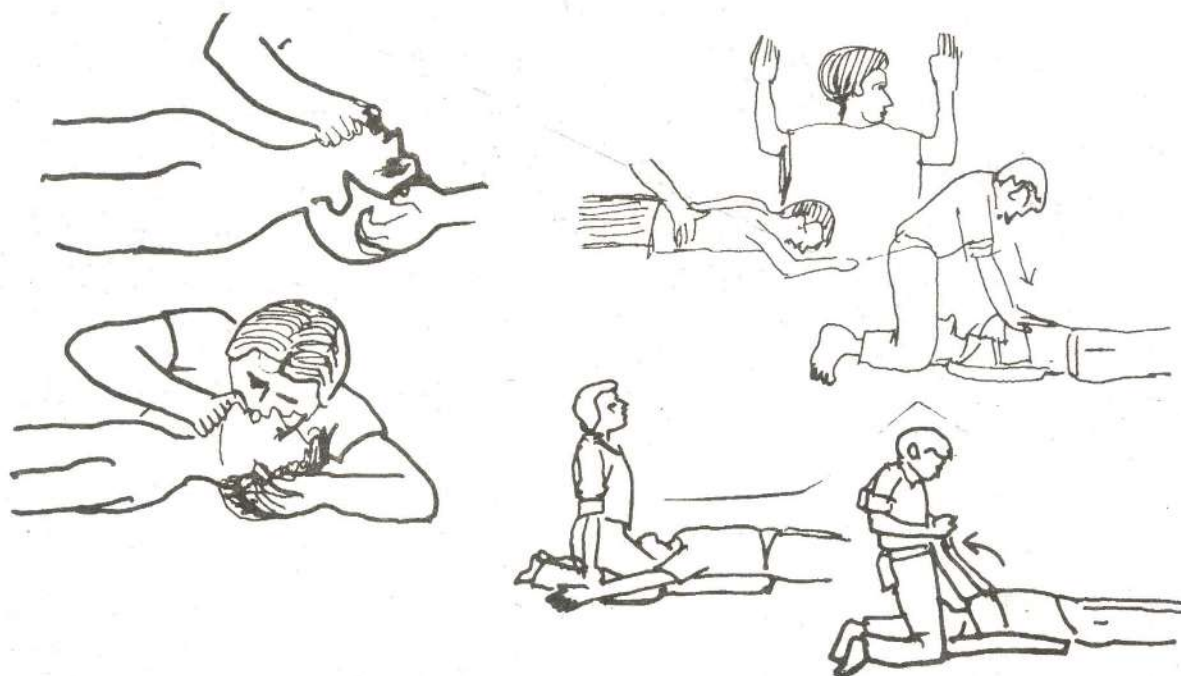


Fig. 7.1 (a) Mouth to Mouth Artificial Resp.

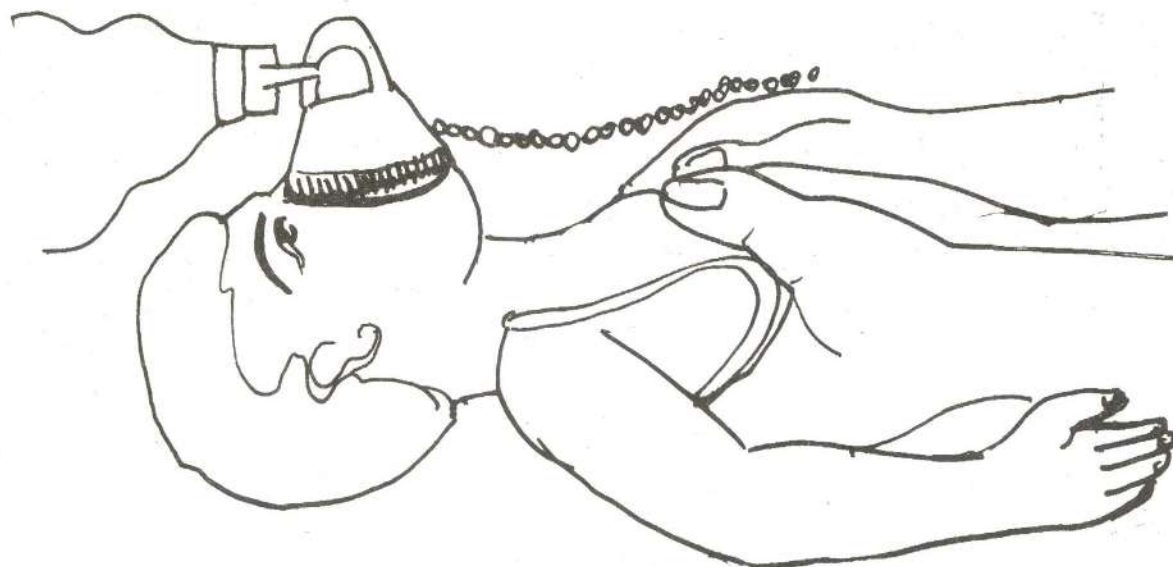


Fig. 7.1 (b) Artificial respiration by Ambubag and chest compression

passage are cleaned and mouth to mouth respiration should be started. If the victim is suspected to be for a long time in water the mouth to mouth respiration can be started by bringing the patient in shallow water and supporting his body by hands. Mouth to mouth respiration should be done by putting a clean handkerchief on victims mouth to prevent the entry of harmful micro-organisms. After the patient is taken out of water and respiration has started, the water swallowed by him during drowning shall be taken out. This is carried out by turning the head on one side and giving pressure on upper abdomen and the water gushes out of his mouth. The patient should be quickly transferred to hospital for oxygenation and perfusion. During transportation, an armubag should be used to maintain the respiration.

(ii) HEAT STROKE OR SUN STROKE

Ours being a tropical country, in most of the places temperature goes very high upto 45°C under the sun. Heat strokes are more common in elderly person and alcoholics. The main signs and symptoms are :

1. Body becomes red and hot to touch, temperature may be as high as 41°C.
2. Patient becomes restless, difficulty in respiration occurs. Patients blood pressure falls and he becomes unconscious.

Treatment:

Place the patient in shade and remove all clothings. Pour cold water on the body and fan him vigorously till the body temperature comes down. Pour cold water slowly in the mouth till the temperature is dropped. If ORS (Oral rehydration solution) is available, give water with ORS. Continue the treatment, till the patient recovers.

(iii) BURNS

Whenever the skin of the body is damaged by dry heat, steam or electric shock it is called Burns.

Causes of burns :

- a. Dry heat from fire
 - b. Moist heat from steam
 - c. Electrical shock
 - d. Frictional heat
-

- e. Burns due to acid and alkali.
- f. Radioactive burns.

Types of Burns

- i) 1st degree - where only epidermis is damaged and there is no blister.
- ii) 2nd degree - Where both epidermis and dermis are damaged and blisters are produced.
- iii) 3rd degree - Where both epidermis and dermis are damaged and underlying structures like subcutaneous tissues, blood vessels and nerves are damaged.

Treatment:

- a) Immediate treatment is, pouring cold water till the burning subsides.
- b) Do not break the blisters. If the blisters are broken, wash it with boiled cold water and bandage it by applying burnol, silver Sulfadiazine ointment. Gention Violet application if ointment is not available.
- c) Give plenty of water with glucose and transfer to hospital for further treatment.

Burns with acid and alkalis should be washed thoroughly with cold water and bandaged with antiseptic ointment.

Burns in the eyes may occur accidentally by spilling of acids and alkalies. Wash the eye with cold water repeatedly till the burning sensation reduces. Apply Chloromycetin application, and bandage the eye and send him to hospital.

(iv) Snake Bite

In India various types of poisonous or non-poisonous snakes are found in jungles, and near habitation. There are about 200 species of snakes in India. Out of these about 52 are of poisonous variety. About 20,000 people die every year due to snake bite. The common poisonous Indian snakes are Cobra, Krate & Viper.

Treatment:

- 1. Wash the bite area with soap and water.
- 2. Apply a constrictive bandage or a binder with any cloth or rubber tub-

ing or if available with a tourniquet. The constrictive bandage about 2" to 4" above the bite to prevent spread of poison.

3. Send the patient to hospital for anti venom therapy.
4. Under no condition the constrictive bandage should be loosened before the onset of anti venom therapy.
5. If the hospital is far away, during transportation bandage can be loosened for a few seconds and can be reapplied, to prevent the onset of gangrene due to stoppage of blood circulation.
6. After thorough washing, the bite area should be cleaned with a Iodine Solution.
7. Reassuring the patient and give him some tea, coffee or sweetened milk.

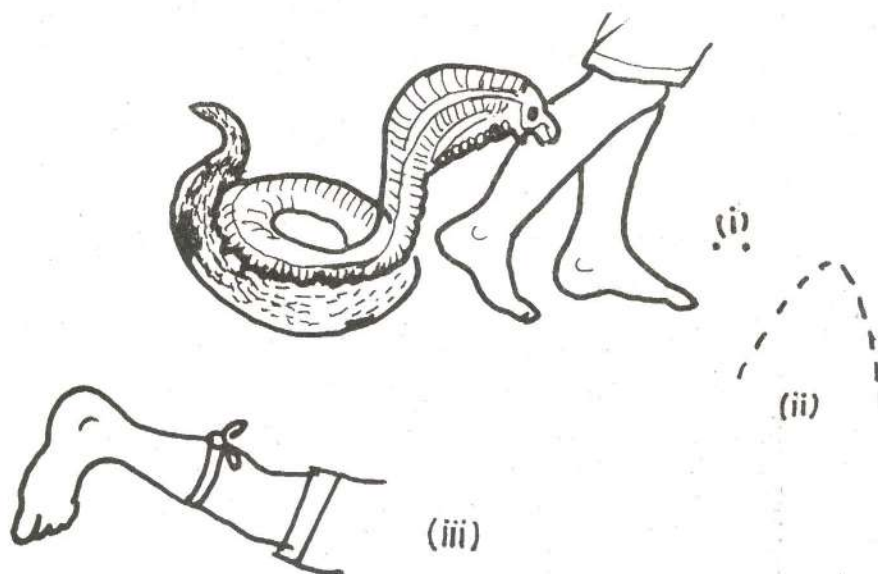


Fig. 7.2 (i) Poisonous (ii) Non poisonous bite marks (iii) Constrictive bandage

(v) FEVER

Normal body temperature is 98.4 degree Fahrenheit or 37 degree centigrade. When the body temperature rises above normal, it is called fever.

Fever is a body reaction towards infection by virus, bacteria, worms or parasite. When the temperature rises above 103 degree F, it is to be controlled very quickly otherwise it will cause fits in children and brain damage in adults. It may also cause dehydration when the temperature crosses 102 degree F, immediate action should be taken to bring it down. Temperature above 105 degree F may cause death.

Commonest causes of high fever are:-

1. Malaria, Acute Bronchitis, Pneumonia.
2. Viral infection like Dengue, Japanese Encephalitis, Kalazar etc.
3. Heat stroke or sun stroke.

Temperature is measured by thermometer which has got marking from 94 degree F to 110 degree F. It has a portion which contains mercury and the other portions have markings. The mercury portion is placed under the tongue or in the armpit and kept for half minute and then taken out and reading is taken. When the temperature is high the following steps are to be taken:

1. Remove all the clothing and wipe the body with wet towel repeatedly and fan him vigorously. Apply cold compress on forehead.
2. Give Paracetamol syrup or tablet to bring down the temperature.

(vi) FITS (Convulsion)

It is a condition when the patient is semiconscious or unconscious and throw his hands and feet in the air with jerky movements. The patient starts trembling, teeth may be clinched and tongue may be caught in between, thus causing bleeding. This condition is called fits.

Fits or convulsion may occur due to following causes :

- (1) Fits in children due to high fever, round worm infection.
- (2) Fits due to some diseases like Cerebral Malaria, Encephalitis, Tuberculosis of brain causing Meningitis, Brain Tumor, Epilepsy etc.
- (3) Psychological diseases like Hysteria.

Treatment

- (1) Care should be taken to prevent tongue biting.

- (2) In case of other diseases, when fits occurs and condition is serious, send the patient to the hospital.

(vii) ABDOMINAL PAIN

Abdominal pain may occur due to various causes. These causes may be a minor indigestion to a life threatening emergency. So each abdominal pain is to be taken seriously. If the pain does not get relieved by a pain reliever, the patient should be sent to a doctor for a differential diagnosis. The causes of abdominal pain are :

- (1) Causes in the stomach - Acute Gastritis, Gastric Ulcer.
- (2) Causes in the intestine - Round worm infection, Amoebiasis infection in the intestine, Appendicitis, Intestinal obstruction, Hernia etc.
- (3) Gall Bladder infection and Gall stones, Liver infection, Liver abscess.
- (4) Pancreas -acute Pancreatitis.
- (5) Causes in the kidney -Infection in the kidney, Renal colic due to stone or infection.
- (6) Infection in ovary, fallopian tube, pregnancy in fallopian tube.

Acute abdomen: Due to injury or due to perforation in stomach and intestine, the intestinal contents spread inside of abdomen resulting a condition called Acute Abdomen- which require immediate surgical intervention.

Signs & Symptoms :

1. Severe pain in the abdomen.
2. Forceful vomiting
3. No bowel movement
4. No sound of the intestine is heard with the Stethoscope.
5. Abdomen feels disturbed, hard and tender.

Treatment:

Nothing by mouth.

Send the patient to the hospital as quickly as possible.

(viii) HEAD INJURY

Head Injury usually occurs in an accident.

Automobile accidents like motor, motorcycle or scooter accident. Occasional injury may occur due to fall from a height.

Head injury patients may come with various signs and symptoms :

1. Vomiting
2. Pain in the head
3. External injury with bleeding
4. Watery discharge from nose and ear.
5. Loss of consciousness for a short time.
6. Complete loss of consciousness.

Whatever may be the symptoms, Head injury is a very serious condition. The patient should be carefully lifted and send to hospital for treatment. No attempt should be made to keep the patient at home for treatment.

INTEXT QUESTIONS 7.1

Fill up the Blanks:

1. Drowning patient requires immediate _____ respiration.
 2. High fever is controlled by pouring _____ over the body.
 3. In head injury nothing should be given by _____.
-

(ix) FRACTURE

Definition

Fracture means the breaking of bones into two or more parts leading to discontinuity of the structure of bone.

Types of Fracture:

- 1) **Simple Fracture** - It is a type of fracture where the bone breaks into two or more parts.
 - 2) **Compound Fracture** - It is a type of fracture where the bones not only breaks but the broken parts damage the skin and muscles and come in contact with the outside atmosphere. Such a fracture is dangerous as it gets infected by bacteria from outside atmosphere.
-

3) **Complicated Fracture** -

When the fractured parts of bones damages artery, vein or nerve, it is called Complicated Fracture.

4) **Comminuted Fracture** -

When the bone breaks into several parts it is called Comminuted Fracture.

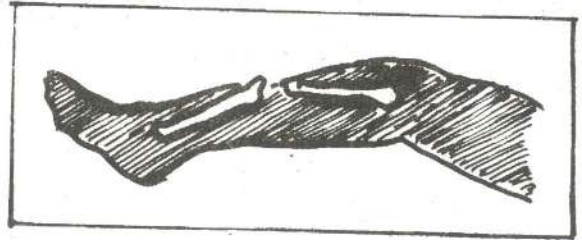


Fig. 7.3 Compound Fracture

5) **Green stick Fracture** - In children, the bones are soft and can be bend like a green stick without break. When the bone in children breaks, it does not break completely, one side breaks but the other side remains intact. It is called Green Stick Fracture.

6) **Depressed Fracture** - When a fracture occurs in skull bone, the skull bone goes inside and it is called a Depressed Fracture. This is a very serious fracture and it depresses the brain and gives rise to paralysis.

Treatment

1. **Simple Fracture** - First aid treatment of simple fracture consists of **immobilization of the part by a splint**. A splint is a piece of flat wood, or stick or even folded paste boards to which the limb is tied by bandage.

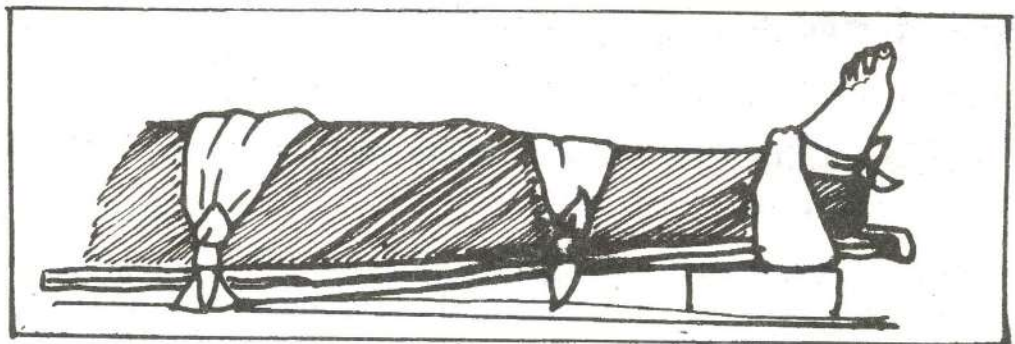
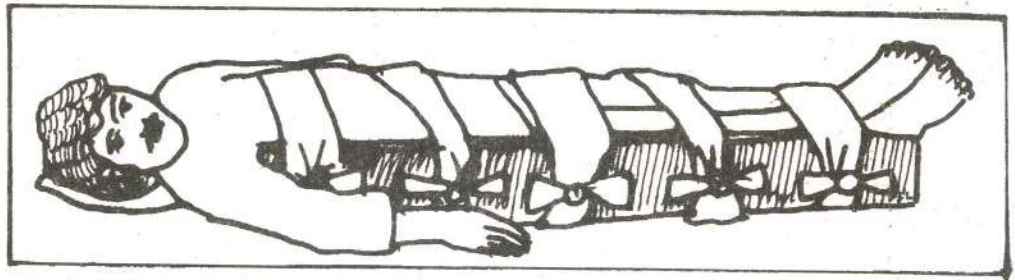


Fig. 7.4 Use of splint in leg fracture

2. In case of **Compound Fracture**, a clean and sterilized dressing is applied and the part is immobilized by a splint. The patient is sent to the hospital as soon as possible.
3. In **Complicated Fracture**, if there is bleeding, the bleeding is stopped by pressure bandage and send the patient to the hospital after applying a splint.
4. In **Comminuted Fracture**, a splint is applied and send the patient to the hospital.
5. In **Green Stick Fracture**, a splint is applied and send the patient to hospital.
6. In **Depressed Fracture** of skull, many serious complications may occur. So the patient should be sent to hospital as soon as possible.

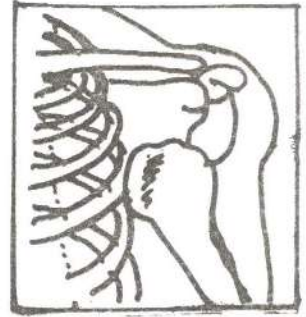


Fig. 7.5 Dislocation of shoulder

DISLOCATION

Dislocation always occurs in a joint. Due to injury the bones at joint gets displaced from its original position. In dislocation the bones lose its function and in the joint no movement takes place. In case of fracture the bones show unnatural movement. In dislocation severe pain occurs.

Send the patient to hospital for relieving dislocation.

You will read more about using the splint in the practical.

INTEXT QUESTIONS 7.2

- A.
 - 1) What is Compound Fracture and outline its treatment.
 - 2) Define a Fracture and give its difference with dislocation.
- B. **WRITE VERY SHORT NOTES:**
 - 1) Comminuted Fracture
 - 2) Complicated Fracture
 - 3) Depressed Fracture
 - 4) Green Stick Fracture

(x) CARE OF PARALYZED PATIENTS

Intensive care of paralyzed patients are required to maintain personal hygiene. If proper hygiene is not maintained, the patient will develop various complications and their recovery will be delayed. You must know that:-

- (1) How to deal with paralyzed patients where institutional care is not available.
- (2) With proper maintenance of personal hygiene, complications become less, life expectancy increases and recovery becomes rapid.

Paralysis may occur due to various causes, commonest are :-

- i) Cerebral Thrombosis or Haemorrhage.
- ii) Brain Tumours Benign or Cancerous.
- iii) Injury in head due to accident or homicidal attack.
- iv) Rupture of artery in the brain.
- v) Dislodging of blood clots from any parts of the body and reaching the brain.

In paralysis, patients are unable to do their own work, so they have to be assisted to do their daily routine. As the patients are lying most of the time, certain special care to be taken to maintain their personal hygiene.

- (1) Cleaning of the mouth and teeth and maintaining the oral hygiene. Applying Boroglycerine from time to time will prevent the infection to grow. If there is fungal growth which is very common specially in children and antifungal liquid like Micorniazole is mixed with Boroglycerine before applying.
- (2) Care of the skin, specially back skin is very necessary. In paralyzed patients due to pressure constantly at the back, pressure sores develop which are called bedsores. Once the bed sores develop, it is very difficult to cure and the patient health deteriorates very quickly. To prevent this, the patients position is changed every 1-2 hours so that circulation is not hampered due to pressure of the bed. Nowadays, water-bed is used which does not produce much pressure on the back skin, thereby chances of developing bed sores are minimized.

In case of bed sores development, Antibiotics, local dressing by Antiseptics like, Soframycin or silver Sulfadiazine leads rise to quick recovery. Use

of air rings at the pressure points help give the speedy recovery from bed sores.

(xi) POISONS

Poisons are substances which when taken internally causes disturbance of body functions and alternately vital functions are affected causing death.

Common Poisons are :- Follidol Tik20, Kerosene, Dettol, Phenyl, Harpic, Oleander fruits, Sulfuric acid. Hydro chloric acid, bathroom cleaning acid, Inhalation of carbon Monoxide.

1. Identification of poison of possibility
2. If acids or alkali poisoning give plenty of water to drink to dilute acids or alkalis.

Treatment

1. For any ingested poison the first step is to take out the poison as quickly as possible. This can be done by inducing vomiting or giving a stomach wash. Give plenty of salt water to drink. This will induce vomiting. Repeat the procedure till the column of water becomes normal. Stomach wash can be given in hospital. If the patient comes later when the patient is drowsy send him to hospital.

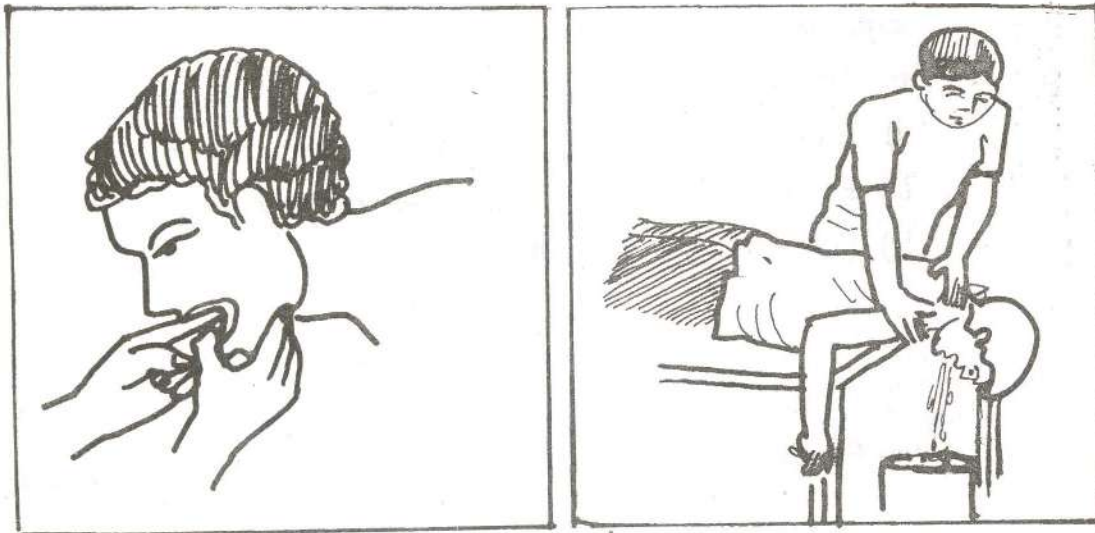


Fig. 7.6 Induced vomiting

Organo Phosphorus Poisoning by Tik20 or follidol (a crop spraying insecticide) is very common in villages. By inducing vomiting the poison can be taken out and send the patient to hospital as the poison causes liver damage after absorption.

Kerosene poisoning - It causes Broncho Pneumonia which is a common symptom. The patient require O_2 inhalation and Antibiotic treatment.

Poisoning with alkali or acids by bathroom cleaning agents is very common. If the poison is alkaline, then vinegar is mixed with water and given to the patient to drink. In case of acid poisoning sodium bicarbonate is mixed with water is given to patient to drink. Send him to hospital for further treatment.

Dettol or Phenyl poisoning is fairly common in children. Plenty of water to dilute the poison prevents the damage of stomach and oesophagus.

INTEXT QUESTIONS 7.3

- A. 1. Give the treatment of drowning.
2. Describe the sign and symptoms of heat stroke or sun stroke and its management.

Write very short notes

- B. 1. Drowning
2. High fever and its management
- C. 1. Match the following

Emergencies

- i) Drowning
- ii) Burns
- iii) Fever
- iv) Fractures
- v) Fits
- vi) Poisons
- vii) Paralysis

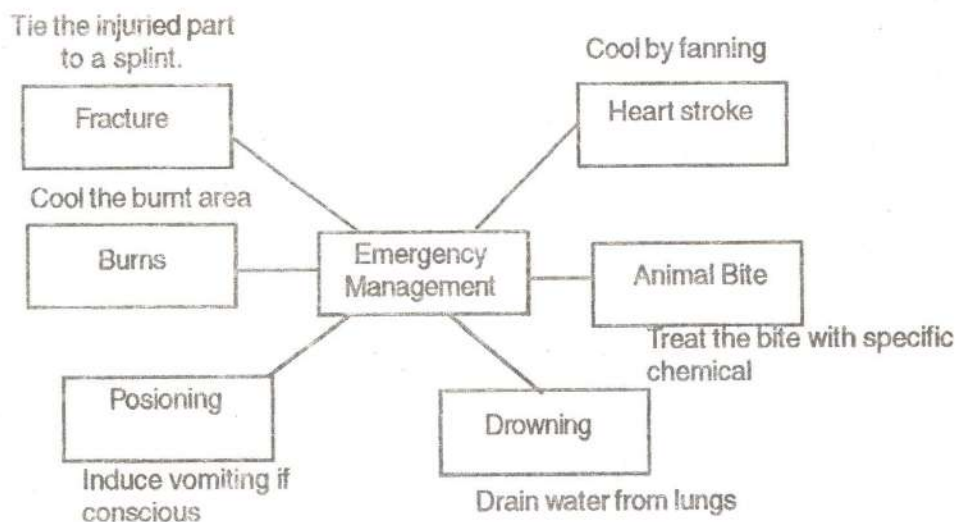
Management

- a) Induced vomiting and stomach wash.
- b) Remove clothes, fan vigorously.
- c) Skin care to prevent bed sores.
- d) Pour cold water, apply Burnol or other ointment.
- e) Mouth to mouth respiration
- f) Immobilization by a splint
- g) Prevent tongue biting and rush to hospital

- D. i) Body becomes _____ and _____ in sun strokes or heat strokes.
- ii) Do not break the _____ in case of burns.
- iii) The common poisonous Indian snakes are _____.
- iv) Fever is a body reaction, towards infection by _____.
- v) Psychological diseases like _____ causes Fits/Convulsions.
- vi) Acute Abdomen is due to injury or perforation in _____.
- vii) Head injury usually occurs due to _____.

7.4 WHAT HAVE YOU LEARNT

In this lesson you have learnt about the common emergencies, like burns, drowning, snake bite, fractures etc. you must have understand their causes, common symptoms and their management. Most of the time these measures are life saving so that everybody should have a good knowledge about these.



7.5 TERMINAL QUESTIONS

- Describe different types of poisoning occur in human being. Outline its main treatment.
- Name different types of Fractures and give its treatment.

3. Give the treatment of high fever? Why is it so important to bring down the temperature quickly.
4. Explain the treatment of drowning. What precautions you will take while giving artificial respiration.
5. Outline different types of Burns and their treatment.

7.6 ANSWER TO INTEXT QUESTIONS

7.1 1. Mouth to mouth

2. Cold water

3. Mouth

7.2 1. Compound fractures:- where bone is not only broken but the broken part damages the skin and muscle and come in contact with the outside atmosphere.

2. Fracture means breaking of bones into two or more parts leading to discontinuity of the structure of bones.

When bones at its joints are displaced from its original position it is called dislocation.

- B.
1. When bone breaks into several parts.
 2. When fractured parts of bone damages, arteries, veins or nerves.
 3. When fracture occurs in skull bone and skull bone goes inside which depresses the brain and may give rise to paralysis.
 4. When the bone in children breaks, it does not break completely, one side breaks but the other side remains intact. It is called Green Stick Fracture.

7.3

A. 1. Mouth to mouth respiration

2. Body becomes red, body temperature increases to 41°C, patient becomes restless, B.P. is low. Keep the patient under shade, fan him vigorously, pour cold water.

B. 1. When a person goes under water, who does not know swimming, he gets submerged and lack of air under water produces hypoxemia. For its management mouth to mouth respiration should be done after taking out water from the lungs.

2. When the temperature rises above 103 degree F, it is to be controlled very quickly otherwise it will cause fits or brain damage. Temperature above 105 degree F may cause death. To manage high fever remove all clothes and wipe the body with wet towel and fan him vigorously. Paracetamol syrup should be given.

i) e

ii) d

iii) b

iv) f

v) g

vi) a

vii) c

7.3

- D. i) red and hot
ii) blisters
iii) cobra, krait and viper
iv) Bacteria, virus or parasite
v) Hysteria
vi) Abdomen
vii) Accidents

7.6 SUGGESTED ACTIVITIES

1. Application of splint. Triangular Bandage - Practice for managing fractures.
 2. Artificial Respiration - Practice mouth to mouth.
 3. Practice how to apply constrictive bandage in snake bite.
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