

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

DDR COLLEGE OF PHARMACY HEALTH EDUCATION AND COMMUNITY PHARMACY (2116)

D. Pharmacy First year

Question No. 01. Define first aid. Describe emergency treatment in shock, poisoning, snake bite and burns.

Question No. 02. Differentiate between communicable and non-communicable diseases. Describe causative factors, symptoms, control and treatment of Diabetes mellitus and Cancer.

Question No. 03. Define the term, balanced diet and nutrition. Explain role of vitamins in health.

Question No. 04. Describe causative agent, mode of transmission, prevention and treatment of following diseases: (A) Tuberculosis (B) Hepatitis (C) Poliomyelitis (D) Diphtheria.

Question No. 05. (A) Define family planning. Write in brief about various types of contraceptive methods. (B) Write a short note on STD.

Question No. 06. (A) What do you understand by concept of disease? Describe disease causing agents and concept of prevention of diseases.

(B) Explain arthropod's born diseases in detail.

Question No. 07. Write short note on the following.

(A) Define microbiology. Discuss various types of staining techniques for microorganisms. Discuss Gram staining and acid fast staining in detail.

(B) Give a brief account on vaccination.

Question No. 08. Name the various sources of water supply and water pollution. Describe the various methods for purification of water.

Question No. 09. What is the important role of vitamins, proteins? Describe the disease caused by deficiency of proteins, vitamin B and fat soluble vitamins. Write down their prevention and treatment. **Question No. 10.**

Write short note on the followings:

(A) Health and determinants of health.

(B) Cardiac pulmonary resuscitation.

Question No. 11. (A) Explain in brief various cardio-vascular diseases.

(B) Define health indicator. Explain in brief.

Question No. 12. What are the roles of pharmacist in health education & community development?

Question No. 13. Write short note on:

(A) Immunological products.

(B) Nosocomial infection.

(C) Types of disinfection.

(D) Disinfection procedure for feces, urine and room.

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

Question No. 14. Describe causative agent, mode of transmission, prevention and treatment of following diseases: (A) Pertussis (B) Chicken Pox (C) Rabies (D) Trachoma

ANSWERS:

Question No. 01. Define first aid. Describe emergency treatment in shock, poisoning, snake bite and burns.

Ans. 01. First aid: It is the immediate treatment given to the patient or victim of an accident, poisoning or sudden illness, using facilities or materials available on hand at the time of incident before regular medical help provided to the patient. The aim of first aid is to preserve life, promote recovery and prevent injury or illness until medical aid is obtained.

(A) Shock: Shock is defined as a condition of severe depression of vital functions of body due to poor circulation of the blood.

- 1) Hemorrhagic Shock
- 2) Neurogenic Shock
- 3) Anaphylactic Shock

- 1) Neurogenic shock (when nerves are involved but there is no blood loss).
- 2) Hemorrhagic shock (when there is excessive loss of blood due to severe injuries, burn or dehydration).

Treatment:

- 1) Provide well-ventilated area to the patient and remove the crowd tactfully.
- 2) Raise the legs by keeping a pillow under the legs to improve the circulation.
- 3) If there is difficulty in breathing, raise the head and chest of the patient.
- 4) Loosen the clothes to make him easy and keep the patient warm with a blanket.
- 5) Don't give anything to eat because sometimes an emergency operation is required.
- 6) Immediately shift the patient to hospital.

(B) Poisoning: Poison is a substance, which if given into the body or brought into contact with any part thereof will produce ill health, or death and any drug in a large dose can also act as poison. Some of the common poisons are arsenic, bismuth, mercury, gold, copper, opium, digitalis and heavy metals etc.

General treatment:

- 1) Remove the unabsorbed poison by gastric lavage or by using emetics, purgatives or

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

- 2) Antidote treatment to nullify the poison.
- 3) When the nature of the poison is not known, a general antidote also called universal antidote is used, which consists of the Magnesium oxide (1 Part), Tannic acid (2 Parts) and Activated charcoal - 2 Parts and the mixture of these substances is suspended in a glass full of warm water and give orally.
- 4) Give artificial respiration, if required.
- 5) Symptomatic treatment directed towards protection of various vital organs from the toxic effects of poisons.
- 6) Immediately shift the patient to hospital.

Gastric Lavage: Gastric lavage is an established method for the removal of any unabsorbed poison from the stomach. However gastric lavage is useless if the contents are consumed before 3-4 hour, as the contents are passed in to intestine. Gastric lavage is done with the help of a stomach tube. Solutions and substances used for gastric lavage include:

- 1) Saline 200 ml i.e., 1tea spoonful of NaCl in a glass full of water.
- 2) Warm water.
- 3) KMnO₄ solution.
- 4) For alkaline wash, 5% sodium bicarbonate solution is used.
- 5) Sodium thiosulphate and dimercaprol solutions are used for treatment of toxic metal poisoning, Emetic are used, if patient is not vomiting by using 15gm of sodium chloride in glass full of warm water.

(C) Snake bite: Poisoning due to snake-bite is very dangerous that even leads to death. Out of 3500 species of snake only 250 are poisonous. Some of the poisonous species are cobra, viper and some sea-snakes. Symptoms of poisoning are depending upon the type of snake. Common clinical feature of snakebite are puncture wound, pain, swelling, weakness, dizziness, excessive salivation and vomiting etc.

Treatment:

- 1) Lay the patient down and try to cool and calm him. Give him assurance, as he is very frightened.
- 2) Do not allow him to move the bitten part because the movement may favour faster absorption of poison into systemic circulation.
- 3) Apply a band, cloth above the fang mark to prevent the spread of poison to the other parts of the body.
- 4) Wash the wound with soap and water.
- 5) Make a sharp cut over the bitten area and allow bleeding by squeezing the area.
- 6) Suck out the poison with a suction pump or by mouth and spit it out.
- 7) If breathing stops give artificial respiration.
- 8) Immediately shift the patient to hospital.

(D) Burns & scalds: Burns are the injuries which are caused by dry heat like fire, flame and hot metals etc. Scalds are the injuries which are caused by moist heat like boiling water, steam, hot oil, hot wax etc.

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

Following measures are taken:

- 1) Put off the fire by throwing water, covering the flames with blanket and coat.
- 2) Without wasting time put plenty of cold water or any other non-inflammable liquid.
- 3) Do not try to remove the clothing's from the burnt area rather cut them around.
- 4) Keep the patient calm and in lie down position to avoid shock.
- 5) Do not disturb the blisters in anyway.
- 6) Do not use absorbent cotton, oily substances, antiseptics, flour, butter, baking soda or ink on burn.
- 7) Do not touch the burnt area more than necessary.
- 8) If eyes are affected with burns, wash them thoroughly and afterward cover with sterile dressings.

Question No. 02. Write the differences between communicable and non-communicable diseases. Describe causative factors, symptoms, control and treatment of (A) Diabetes mellitus (B) Cancer.

Ans. 02 Differences between communicable and non-communicable diseases

Communicable diseases

1. Diseases which spread from one person to another directly or indirectly through an person to another directly or indirectly but it is infectious agent or its product.

2. Example tuberculosis, cholera, influenza etc.

Non-communicable diseases

1. Diseases which are not transmitted from one another directly or indirectly but it is caused due to multiple causes.

2. Example cancer, diabetes, blindness etc.

(A) Diabetes Mellitus:

Types of Diabetes Mellitus:

1) Insulin Dependent Diabetes Mellitus (IDDM or Type I) and

2) Non-Insulin Dependent Diabetes Mellitus (NIDDM or Type II)

1) Type I diabetes is seen in young individuals of less than 30 years of age. It is the juvenile onset type diabetes.

2) Type II diabetes is more commonly type of diabetes and occurs in the middle aged and elderly people and can be controlled by treatment or dietary control. It is adult or maturity onset type diabetes.

Symptoms: Hyperglycemia (increased blood sugar level), glycosuria (sugar in urine), loss in weight, ketosis, acidosis, dry skin and mouth, dry tongue, increased appetite, increased thirst, increased rate of breathing and coma.

Causes of Diabetes:

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

- 1) Decreased production or action of insulin hormone secreted by the beta cells of islet of langerhans in the pancreas. Insulin deficiency may be due to pancreatic disease, defective formation of insulin, destruction of beta cells in the pancreas.
- 2) Heredity.
- 3) Diet rich in carbohydrates and fats.
- 4) Obesity.
- 5) Viral infections.
- 6) Certain chemical agents like alloxan.
- 7) Lacks of exercise, stress, trauma, surgery and pregnancy etc.

Prevention and control:

- 1) Dietary control: Calorie and sugar restricted diet and it should be rich in proteins and fibres.
- 2) Maintaining ideal body weight.
- 3) By use of drugs – The use of insulin along with diet is crucial to the survival of type – I (IDBM).
- 4) For the management of type – II diabetes diet, insulin, oral hypoglycemic agents (Tolbutamide) play a major rule.

(B) Cancer: It is an abnormal and purposeless multiplication of cells and tissues. It invades distant tissues or even distant organs and results in the death of the patient if it grows beyond that stage when it cannot be removed successfully. It is generally classified in two types:

- a. Solid tumors
- b. Leukemia (blood cancer)

Causes of Cancer:

- 1) Smoking, chewing of tobacco are the common cause of cancer of mouth, tongue, larynx, pharynx, stomach, pancreas and kidney.
- 2) Consumption of alcohol leads to higher incidence of cancer of esophagus and stomach.
- 3) Hot spicy foods produce esophageal cancer.
- 4) Long term exposure to various chemical agents like asbestos, nickel, cadmium and chromium causes cancer of lung and skin.
- 5) Many viruses are responsible for causing cancer such as Hepatitis B virus can cause cancer of the liver.
- 6) Physical agents such as sunlight, local heat and ionizing radiations are also causative factors for skin cancer.

- 1) Any persistent lump.
- 2) Wound that does not heal.
- 3) Unusual weight loss.

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

- 4) Unusual bleeding from any part of the body.
- 5) Indigestion and difficulty in swallowing.
- 6) Hoarse voice and regular coughing.

Prevention and control: Cancer can be controlled by two ways i.e., primary prevention and secondary prevention.

Primary prevention: The various primary methods to control cancer are as follow:

- 1) Avoiding carcinogenic agents like alcohol and tobacco.
- 2) Control of air pollution.
- 3) Improvement in personal hygiene.
- 4) Control of radiation exposure.
- 5) Immunization against Hepatitis B virus.
- 6) Testing foods, drugs, cosmetics for their carcinogenic activity.
- 7) Health education to create awareness about cancer.
- 8) Help of law to control known carcinogens.
- 9) Improving life styles, habits and diet.

Secondary Prevention:

- 1) Registration of cancer cases to hospital and providing the medical facilities.
- 2) Developing proper screening programmes for detecting cancer.
- 3) Providing medical facilities to all cancer patients.

Question No. 03. Define the term, balanced diet and nutrition. Explain role of vitamins in health. Ans.03.

Balanced Diet: A diet which contains adequate amounts of all the essential nutrients like carbohydrates, proteins, fats, minerals, water, roughage material and vitamins sufficient for normal growth and development of the body, is called as balanced diet.

Nutrition: Nutrition may be defined as the science of food and its relationship to health. It is one of the most important elements of health care.

Vitamins: Vitamins are complex organic compounds required for vital metabolic functions in the body and are needed by the body in small amounts. They are grouped as:

- a) **Fat soluble vitamins** - Vitamin A, D, E, K.
- b) **Water soluble vitamins** – Vitamin B complex and vitamin C.

Role of Vitamins:

- 1) Vitamin A helps in proper functioning of retina and vision.
- 2) Vitamin A helps in maintaining functioning and integrity of glandular and epithelial tissues.

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

- 3) It helps in skeletal growth and has an anti-infective action.
- 4) Vitamin D facilitates the absorption and utilization of calcium and phosphorus for healthy bones and teeth.
- 5) Vitamin E maintains healthy muscular system and act as antioxidant.
- 6) Involved in the metabolism of carbohydrates, fats and proteins.
- 7) It maintains the strength of the walls of the blood capillaries.
- 8) Normal functioning of skin and nervous system.

Question No. 04. Describe causative agent, mode of transmission, prevention and treatment of following diseases: (A) Tuberculosis (B) Hepatitis (C) Poliomyelitis (D) Diphtheria.

Ans. 04. (A) Tuberculosis: Human tuberculosis is a chronic disease caused by *Mycobacterium tuberculosis*, a non-motile slow growing, non spore forming aerobic bacillus.

Mode of Transmission:

- 1) Mainly by droplet infection.
- 2) By direct contact.
- 3) Inhalation of dust particles.
- 4) By using contaminated food articles or other articles of the patient.

Incubation Period: 04 to 06 weeks

Symptoms: Loss of weight, fatigue, hardy cough and chest pain etc.

Prevention and control:

- 1) Early diagnosis by examination of sputum, chest X-Ray and tuberculin testing.
- 2) Isolation of infected persons and treatment in hospitals specially made for T.B. patients
- 3) Disinfection of handkerchiefs used for nasal discharges by burning.
- 4) B.C.G. vaccine at the time of birth, till the age of 20 days by intradermal injection of 0.05 ml or 0.1 ml.

Ans. 04. (B) Hepatitis: Viral Hepatitis is caused by two types of viruses are:

- 1) *Hepatitis A virus (HAV)*
- 2) *Hepatitis B virus (HBV)*

Hepatitis A: The disease is most common among children and adults.

Causative agent: For Hepatitis A is an entrovirus *Hepatitis A virus*. It multiplies in hepatocytes and is characterized by fever, chills, headache, fatigue, generalized weakness and pain followed by anorexia, nausea, vomiting, dark urine and jaundice.

Mode of Transmission:

- 1) Faecal oral route: It spreads through contaminated water, milk, food or directly from person to person.
- 2) Parenteral route: Through needle, blood or blood products but is rare.

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

3) Sexual transmission: Occur mainly among homosexual men.

Incubation period: 15 to 45 days (usually 28 days) **Prevention and control:**

- 1) Isolation of cases.
- 2) Disinfection of faeces and fomites.
- 3) Providing safe water supply, sanitary disposal of human excreta, adopting antifly measures.
- 4) Promoting simple measures of personal hygiene such as hand washing after toilet or before meal.
- 5) Proper sterilization of needles and syringes.
- 6) By giving human normal immunoglobulin to all contacts before or with in a week exposure by intramuscular route.

Hepatitis B: Causative Agent: *Hepatitis B Virus (HBV)*. This is also called serum hepatitis. It is a major systemic infection with major pathology in the liver.

Mode of Transmission:

- 1) Through blood transfusion, inadequately sterilized syringes and needles, ear piercing and sexual contact.
- 2) Transmission from HBV carrier – mother to their babies.
- 3) Infection may transmitted by kissing.
- 4) Body secretions such as saliva and semen are also infective.

Incubation period: 60 to 80 days.

Prevention and control:

- 1) Active immunization with Hepatitis 'B' vaccine in 3 doses of 1ml each, the first two doses at the interval of one month and third dose 6 months after second dose.
- 2) The Hepatitis B immunoglobulin should be given immediately after accidental inoculation ideally within 6 to 8 hours.
- 3) Screening of blood donors for HBV infection.
- 4) Proper sterilization of needles and syringes.
- 5) Providing health education to community.

Ans. 04 (C) Poliomyelitis: Poliomyelitis or infantile paralysis is an acute infectious viral disease of the human alimentary tract but may affect the nervous system resulting in paralysis, the extent of which depends upon the damage done to the nerve cells by the virus.

Causative organism: It is caused by virus which has 3 serotypes designated as type 1, type 2 and type 3.

Mode of Transmission: The disease is mainly spread from person to person by:

- 1) Droplet infection during acute stage of disease when virus is present in pharynx.
- 2) It is directly spread through contaminated fingers or indirectly through contaminated water, milk and food.

Incubation period: 7 – 21 days but may vary from 3 to 35 days.

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

Prevention and control:

- 1) Polio can be prevented by active immunization of all infants and children up to 5 years of age with oral polio vaccine (OPV).
- 2) Antibiotics may be given to prevent respiratory complications.

Ans.04. (D) Diphtheria: Diphtheria is an acute infectious disease of upper respiratory tract caused by the toxicogenic gram positive bacillus *Corynebacterium diphtheriae*.

Mode of Transmission: The disease is mainly spread from person to person by:

- 1) Droplet infection through coughing and sneezing etc.
- 2) Indirectly through fomites infected by nasopharyngeal secretions of the patients, for example, spoons, cups, toys and thermometers etc.

Incubation Period: 02 to 04 days.

Prevention and control:

- 1) Do early detection of cases and carriers and their treatment.
- 2) Isolate the patient and refer doctor for active immunization with combined vaccines called DPT vaccines.

Question No. 05 (A) Define family planning. Write in brief about various types of contraceptive methods.

(B) Write a shot note on STD.

Ans.05. (A) Family planning: It refers to the practice that control and plan the number of children in the family. It is essential component of the health care system. Following are the objectives of family planning:

- 1) To avoid unwanted pregnancies and to bring about wanted births.
- 2) To regulate intervals between pregnancies.
- 3) To determine number of children in a family.
- 4) To control the time at which birth occur in relation of ages of parent.
- 5) To Avoid and prevent variety of adverse effects on the health of mother, foetus and child.

Different methods of family planning or contraceptive methods: Contraceptive methods are preventive methods which help women to avoid unwanted pregnancies.

1) Temporary methods: Temporary methods are further divided in to the following groups:

a) Barrier Methods: Barrier contraceptive or mechanical methods are used either to physically block the union of sperms and ovum or chemically inactivate the sperms in the vagina.

(i) Physical Methods: Condom, Vaginal sponge and Diaphragm.

(ii) Chemical Methods: Foam, Creams, Suppositories and Soluble films.

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

b) Intrauterine devices (IUDs): Intra uterine means inside the uterus. It is inserted into the uterus to prevent conception. There are many types of intrauterine devices but Lippes loop and copper-T are the most commonly used device.

(i) Non- medicated IUDs.

(ii) Medicated IUDs: Metal containing IUDs and Hormone containing IUDs.

c) Chemical methods: The main aim of using the chemical contraceptives is to stop the progress of sperms completely or kill them before they enter into the uterus. This is also known as **hormonal method** as the contraceptives mainly consist of oestrogen and progesterone.

(i) Oral pills: Combined pills, Sential pills, Minipills, Post-coital pills and Male Pills.

(ii) Slow release preparations: Injectables, Subcutaneous Implants and Vaginal rings.

d) Natural methods:

(i) Abstinence: Sexual abstinence literally means complete stoppage of sexual contacts. Though it is a completely effective method of birth control but is not practicable.

(ii) Coitus interruptus: It is also known as withdrawal method. It is the oldest method of birth control practiced by a man. In this method the penis is withdrawn from the vagina just before ejaculation.

(iii) Safe period: Rhythm method or safe period method is based on the fact that a woman normally produces one egg-cell every month which is shed during the fertile period which is roughly 10th to 20th day after the onset of menstrual period.

(iv) Basal body temperature method: During a woman's menstrual cycle, her basal body temperature raises at least 0.4 F because of release of hormone (progesterone) after ovulation. This rise in temperature forms the basis of basal body temperature method. Once the temperature rise is noticed the couple can avoid intercourse for preventing pregnancy.

(v) Prolonged lactation method: Breast feeding to infants for 6 months in 50% female can prevent conception.

2. Permanent Methods: Permanent methods are further divided in to two types i.e., Male sterilization (Vasectomy) and Female sterilization (Tubectomy).

(i) Vasectomy: Vasectomy is done in males who do not want more children. It is a simple operation and requires no hospitalization of the patient because the operation requires hardly 15-20 minutes. This operation is done under local anaesthesia during which a small cut equal to the size of a grain of wheat is given on both sides of man's scrotum.

(ii) Tubectomy: Tubectomy is a permanent method of family planning which is done in females. This operation is done under local anaesthesia during which a small piece of each fallopian tube is removed by giving a small cut. The cut ends are tied so as to block the passage of egg cell.

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

Ans.05. (B) Sexually transmitted diseases: Various sexually transmitted diseases are:

(1) Syphilis (2) Gonorrhoea (3) AIDS

(1) Syphilis: It is a chronic infection caused by *Treponema pallidum*.

- 1) Primary: Primary lesion develops on the external genitalia but can be found anywhere.
- 2) Secondary Syphilis: It is characterized by appearance of non-pruritic red or pink macules, red papular lesions, necrotic lesions. Lesions are wide spread and may involve palms, soles, face and scalp. Patient feels headache, sore throat and low irregular fever.
- 3) Tertiary Syphilis: Lesions appear almost anywhere but particularly in the skin, subcutaneous tissue, bone, tongue, testes, liver and CNS.

Mode of Transmission: It is an infection of man and woman hence source of infections are:

- 1) By direct sexual contact.
- 2) Transmitted through the placenta of an infected mother to its foetus.

Prevention and Control:

- 1) Avoiding extramarital sex and prostitutes.
- 2) Using condoms to avoid spread.
- 3) Treatment with penicillin, erythromycin.
- 4) Providing health education about sexually transmitted diseases and its problems.

(2) Gonorrhoea: Gonorrhoea is the infection of mucous membrane of the genito urinary tract with gram negative bacteria *Neisseria gonorrhoea*.

Symptoms: Infections of genital organs, urinary organs, rectum, eye, the patient complains dysuria, increased frequency of urination and yellowish white discharge from urethra.

Incubation Period: 3 to 10 days.

Mode of Transmission:

- 1) It is transmitted by sexual contact.
- 2) Infected mother transmits the diseases to its foetus through placenta.
- 3) Blood transfusion.
- 4) Infected needle and injections etc.

Prevention and Control:

- 1) By avoiding unhealthy sexual contacts.
- 2) Using of condoms by male partner.
- 3) Infected female should not conceive, until fully recovered from the diseases.
- 4) Treatment by drugs like benzyl penicillin and norfloxacin.

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

5) Providing health education about sexually transmitted disease and its problem.

(3) Acquired immuno deficiency syndrome (AIDS): It is caused by the infection due to *Human immuno deficiency virus* (HIV) – Retrovirus. The virus affects adversely the immune system of the body mainly T-lymphocytes. As a result individual is exposed to numerous life threatening infections, neurological disorders and malignancies.

Incubation period: About 10 years.

Mode of Transmission:

- 1) It is transmitted by vaginal, oral and anal sex.
- 2) Transmission through blood transfusion, using infected needles of injection, equipments, razors etc.
- 3) Placental transmission: - From infected mother to the foetus through placenta.

Prevention and control:

- 1) By using condoms.
- 2) By keeping sexual contact with one person.
- 3) Using only disposable sterilized needles and syringes.
- 4) Screening of blood donors.

Question No. 06. (A) What do you understand by concept of disease? Describe disease causing agents and concept of prevention of diseases.

(B) Explain arthropod's born diseases in detail.

Ans.06. (A) Disease: It is defined as any deviation from normal functioning or state of complete physical or mental well-being. Disease has several spectrums ranging from mild cases to severe illness. The result (outcome) of a disease may be recovery, disability or death.

Disease causing agents: The first link in the chain of disease transmission is the disease causing agent. The disease causing agent is defined as a living or non-living substance or the excessive presence or absence of a force which may initiate a disease process.

Disease causing agents may be broadly classified as:

- 1) **Biological agents:** They are living organisms such as bacteria, viruses, protozoa and fungi.
- 2) **Nutrient agents:** They are proteins, fats, carbohydrates, vitamins and minerals. Any excess or deficiency of these nutrients can result in diseases.
- 3) **Physical agents:** They are exposure to heat, cold, pressure, electricity, radiation etc.
- 4) **Chemical agents:** They may be exogenous (present outside) such as fumes, dusts, metals, gases etc. and endogenous (produced in the body) such as urea, uric acid, ketones etc.
- 5) **Mechanical agents:** Various mechanical forces may result in injuries (like crushing, tearing and sprains) and even in death.

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

6) **Social agents:** They are poverty, smoking, alcohol, drug abuse, unhealthy life-styles, social isolation etc.

7) **Absence or excess of health factors:** Excess or lack of hormones, nutrients etc. can lead to a variety of diseases.

Concept of prevention of diseases: The goals of medicine are to promote health, to preserve health, to restore health when it is impaired and to minimize suffering and distress. Prevention of a disease includes all these three goals.

Level of prevention: In relation to natural history of disease, three levels of prevention have been classified:

1) Primary prevention 2) Secondary prevention 3) Tertiary prevention

1) Primary prevention: It is the action taken prior to the onset of disease. The intervention is taken at the prepathogenesis phase of the disease. The interventions are:

a. Health promotion b. Specific protection.

2) Secondary prevention: It is the action taken at the early stage of a disease which halts the progress of a disease and prevents complications. The mode of intervention is **early diagnosis and treatment**. This intervention arrests the progress of disease, restores health and prevents irreversible damage. Also it protects other members of the community from acquiring the disease.

3) Tertiary prevention: It is the action taken after the disease has advanced beyond the early stages. The intervention is by **disability limitation and rehabilitation**. These measures minimize the sufferings and help the patient to adjust with the rearrangement of health.

Ans.06. (B) Arthropod's borne diseases: Some of the arthropod borne infections is as follows:

(1) Plague (2) Malaria (3) Filariasis

1) Plague: This is highly fatal infectious disease transmitted from vertebrate animals to men under natural conditions.

Causative Agent: It is caused by *Yersinia pestis*. It is primarily a disease of rodents and vertebrate animals. However human beings are affected incidentally. Vector of plague is rat fleas.

Occurrence: Plague occurs in human beings in three forms i.e., Bubonic, Pneumonic and Septicaemic.

Mode of Transmission:

1) By the bite of infected rat fleas.

2) Plague infections may also occur by direct contact with tissues of an infected animal.

3) Pneumonic plague spread directly from person to person by droplet infection.

Symptoms:

1) Bubonic plague: In this lymph glands are affected and bubos are formed on neck, axilla and groins.

2) Pneumonic plague: It is conveyed by droplet infection due to coughing, sneezing etc.

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

3) Septicaemic Plague: In this blood is infected without the formation of bubos.

Prevention and control:

- 1) Early diagnosis and prompt notification to health authorities.
- 2) Isolation and disinfection of patient's sputum and providing medical treatment.
- 3) Mass destruction of rodents by using rodenticides like Zinc sulphate and barium carbonate etc.
- 4) Control of fleas by destruction and spray of DDT and BHC.
- 5) Immunization with plague vaccine containing killed plague bacilli, subsequently in two doses of 0.5 and 1.0 ml at 1 to 2 weeks intervals.
- 6) Chemoprophylaxis with tetracycline.
- 7) By giving health education to the community.

2) Malaria: Malaria is caused by parasites of the genus plasmodium i.e., *Plasmodium falciparum*, *Plasmodium vivax*, *Plasmodium ovale* and *Plasmodium malariae*. It is transmitted to human beings by the bite of infected female anopheles mosquito. It may also be transmitted by blood transfusion. It is a disease of hot wet climates.

Life cycle of malarial parasite: The female anopheles mosquito becomes infected when it sucks the human blood containing gametocyte, the sexual form of malarial parasite. The infected mosquito inoculates sporozoites into the human blood, which disappear within 30 minutes from the blood and enter the liver. After some days merozoites leave the liver and enter RBCs where further multiplication takes place results in schizonts. Rupture of schizonts releases more merozoites into blood and causes fever.

Sexual cycle of malarial parasite: Some of the young trophozoites grow into male and female form called gametocytes. Male and female gamete unite to form zygote, which grows in the stomach of anopheles into oocyst which on rupturing release number of sporozoites into the body cavity of insect. Then they enter into the salivary glands, from where it is transferred to healthy person by the mosquito bite.

Symptoms: Fever along with chill, profuse perspiration, enlarged liver and spleen, headache and anemia.

Prevention and control:

- 1) Early detection and notification to health authorities.
- 2) Chemotherapy using chloroquine or quinine or other suitable drug.
- 3) Breeding of mosquitoes must be checked and destruction of mosquito larvae by spraying DDT or other chemical substances.
- 4) Protection against mosquito bites by using mosquito nets, windows in the houses should be fitted with wire gauge and by the use of mosquito repellent creams etc.
- 5) Conducting health education programs in the public regarding importance of proper drainage and sanitary measures.
- 6) Chemoprophylaxis by using drugs such as proguanil and pyrimethamine etc.

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

3) Filariasis: Filariasis is caused due to the infection with the filarial worm *Brugia malayi* and *Wuchereria bancrofti*. The parasites complete their life cycle in wucheresia.

Symptoms: Fever accompanied by pain, tenderness, reddening of skin along the course of inflamed lymphatic vessels, inflammation of spermatic cord, temporary edema.

Prevention and control: Protection from mosquito bites by using mosquitoes nets and repellent creams etc.

- 1) Prevention of mosquitoes breeding by spraying insecticides and by proper sanitary disposal of wastes.
- 2) Early detection/diagnosis and treatment with diethyl carbamazine.
- 3) Periodic blood examination.
- 4) Health education to the public.

Question No. 07. Write short note on the following.

(A) Define microbiology. Discuss various type of staining technique for microorganisms. Discuss Gram staining and acid fast staining in detail.

(B) Give a brief account on vaccination.

Ans. 07 (A) Microbiology: Microbiology is the study of the propagation, isolation, identification and biology of micro-organism.

Staining technique of microbes: Staining techniques are of importance for the identification of microorganisms. After isolation of the causative microorganisms staining them properly does morphological study. Preparation of a smear is the first step in staining procedure. A loopful of liquid culture or fluid specimen or a section of bacterial colony is taken and spread as thin film over the required area on a slide. Smear is then heat fixed by moving the slide on the flame for 2-3 times. Various techniques of staining are:

- a) Simple staining.
- b) Gram's staining.
- c) Acid fast staining/Ziehl- Neelson staining.
- d) Endospore staining.
- e) Volutin granule staining.
- f) Capsule staining.

a) Simple Staining: Smear is fixed by moving the slide on the flame for 2-3 times or it is fixed with alcohol. Smear is stained with dyes such as crystal violet, fuschin, methylene blue or safranine. Allow the stain to react for 30 seconds to 3 minutes depending on the stain used. Wash it with gentle stream of cool water. Dry it and examine under oil immersion lens of the compound microscope.

b) Gram-Staining Method: By this method morphological details of the bacteria can be made visible and microorganism can be grouped as gram positive and gram negative bacteria. The procedure of the staining is as follow:

- 1) A thin film of bacterium is fixed on a slide using nichrome wire loop. 15

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

- 2) Smear is heat fixed by moving the slides on the flame for 2-3 times or it is fixed with alcohol.
- 3) Cover the smear with methyl violet stain for one minute and excess of stain is removed by washing with water.
- 4) Immerse the slide in dilute solution of iodine for two minutes to fix the colour.
- 5) The smear is then decolorized with alcohol or acetone.
- 6) Wash the smear quickly by running tap water.
- 7) Cover the smear with dilute carbol fuschin for 30 seconds.
- 8) Wash with tap water and dry it in air.
- 9) Examine the slide under oil immersion lens.

Gram positive bacteria will retain the violet colour of methyl violet, for example, Streptococci, Pneumococci. Gram negative bacteria are decolourized by spirit, alcohol and are stained with counter stain like carbol fuschin, safranin which gives pink colour to them, for example, *E. coli*, gonococci, *S. typhi*.

c) Acid-fast staining: Certain organisms are not easily stained by usual dyes due to high lipid content but when stained with acid fast stain retain the colour even after washing with acid and are called acid fast microbes. Ziehl – Neelson method is used which involves staining with hot concentrated carbol fuschin solution, washing with water and then with 20% sulphuric acid alternatively until the film has only a faint pink colour. The film is then washed with water. Acid fast organisms retain the colour, for example, *Mycobacterium tuberculosis*, *Mycobacterium leprae*. The procedure of the staining is as follow:

- 1) Prepare and fix a smear of mucoid part of the sputum.
- 2) Cover the smear with carbol fuschin for 5 minutes.
- 3) Wash the smear with water.
- 4) Put slide in 20% H₂SO₄ for one minute and then through it.
- 5) Wash the slide with water.
- 6) Put methylene blue for 30 seconds and wash with water.
- 7) Dry the slide and observe it under oil immersion lens.
- 8) Tubercle bacilli are stained red or pink where as the background is blue.

Ans.07. (B) Immunisation: Immunisation is defined as production of immunity or resistance in the body by means of immunological agents. Immunization is classified as:

- 1) Passive immunization which makes use of antisera and gamma globulin.
- 2) Active immunization which makes use of vaccines and toxoids.

Vaccines: Vaccine is a preparation containing an antigen which stimulates the production of specific antibody.

Vaccines can stimulate the production of specific antibody.

Vaccines can be classified:

- 1) Live vaccines.
- 2) Killed vaccines.

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

3) Toxoids.

4) Mixed vaccines.

Live vaccines: Live vaccines are prepared from live attenuated organisms. Examples of live vaccines are BCG, small pox, oral polio, except polio, other is administered in single dose.

Killed vaccines: They contain organisms which are killed by heat or chemicals. Examples are vaccines used for the prevention of cholera, typhoid, rabies, influenza etc. The killed vaccines are administered in larger dose since they are weak compared to live vaccines.

Toxoids: They are obtained by detoxicating the exotoxins produced by microorganisms e.g., tetanus toxoid.

Mixed vaccines: These vaccines contain more than one type of immunizing agent e.g. DPT (triple vaccine).

The mixed vaccines simplify administration, reduce the cost and decrease the number of vaccinations.

DPT or Triple Antigen: It contains Diphtheria toxoid, Tetanus toxoid and Pertussis vaccine. Also it contains aluminum phosphate as a mineral carrier and thiomersal as a preservative. DPT produces immunisation against three diseases diphtheria, pertussis (whooping cough) and tetanus. DPT is given in children in the 6th, 10th, 14th, Weeks for immunisation. Again a booster dose is given at 1 ½ years. At 5 years, DT is given. A mild to moderate reaction may be produced in children occasionally and it is due to pertussis component.

Polio vaccine: It is used for immunisation against poliomyelitis. It is available as: a) Salk vaccine b) Sabin vaccine.

a) Salk vaccine is a killed vaccine containing all three types (type 1, 2 and 3) of killed polio virus. It is given by subcutaneous or intramuscular injection in 3 or 4 doses.

b) Sabin vaccine is a live oral polio vaccine. It is prepared from attenuated strains of all three types. Starting from the 6th week of a child and a total of 3 doses are given. A booster dose is given at 18 months.

Question No. 08. Name the various sources of water supply and water pollution. Describe the various methods for purification of water.

Ans.08. Classification of Water Sources:-

1) Above the surface : Rain.

2) Surface water: Reservoirs, rivers, streams, ponds, tanks and lakes.

3) Ground water: Shallow wells, deep wells and springs.

1) Dissolved gases like H₂S, CO₂, NH₃ and N₂.

2) Dissolved minerals like sodium, calcium and magnesium salts.

3) Suspended impurities like clay, sand and mud.

4) Micro-organisms and organic matter.

1) Sewage containing organic matter and pathogenic agents.

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

- 2) Industrial and trade waste (containing chemicals).
- 3) Agricultural pollutants (Containing fertilizers and pesticides).
- 4) Physical pollutants (like heat and radioactive materials).

Purification of water: It is of great importance in community medicine. Water may be purified either on a large scale or small scale.

a) Large scale purification of water: It involves five main steps.

- 1) Protection
- 2) Storage
- 3) Coagulation and sedimentation
- 4) Filtration
- 5) Disinfection.

Protection: Water source must be protected from human feces and also from human and animal contact.

Storage: It is done in natural and artificial reservoir for 10 to 14 days. Considerable amount of purification (up to 90 per cent) occurs due to physical, chemical and biological changes. Storages beyond two weeks are not recommended since it leads to growth of algae.

Coagulation & Sedimentation – The water from the settling tanks is led continuously into the plant. Here the water is treated with a chemical coagulant such as alum to remove turbidity and colour. The amount of alum used 5 to 40 mg per liter, depending upon the amount of turbidity present in the water. The coagulated water is then led to the settlement tank where the precipitates are allowed to settle at the bottom of settlement tank. The flocculated material from the settlement tank is removed from below.

Filtration: It removes 98 to 99% of bacteria and other impurities. Two types of filters are in use viz. slow sand filter and rapid sand filter.

Disinfection: It involves chlorination i.e., **chlorination:** It is the addition of chlorine to filtered water for further purification. It is cheapest and most reliable method of purification. Chlorination is supplement and not a substitute for sand filtration. Advantage of chlorination are :

- a) It kills pathogenic bacteria.
- b) It oxidizes iron, manganese and H₂O.
- c) It destroys taste and odour producing constituents.
- d) It controls algae and similar organisms.
- e) It aids coagulation.

b) Small scale purification of water: It is done by 1) boiling 2) Chemical disinfection 3) Filtration

Boiling: Boiling of water kills bacteria, spores and ova. Also, it removes hardness. But taste is altered on boiling. Boiling is a satisfactory method of water purification for domestic purpose.

Chemical disinfection: It is done with bleaching powder, chloramines, chlorine tablets, iodine or potassium permanganate. But chemical disinfectants are not suitable for domestic use.

Filtration: Water can be filtered in a small scale by filtration. Three types of domestic filters are used. They are: 1. Pasteur Chamber land filter 2. Berkefeld filter 3. Katadyn filter.

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

Question No. 09. What is the important role of vitamins and proteins? Describe the disease caused by deficiency of proteins, vitamin B and fat soluble vitamins. Write down their prevention and treatment.

Ans. Proteins are complex organic nitrogenous compounds consisting of carbon, hydrogen, oxygen, nitrogen, sulphur and phosphorus. They are made up of number of smaller units of amino acids. These amino acids are classified as:

- a) Essential amino acid: These amino acids cannot be synthesized in the body and must be included in the diet for example: Leucine and Isoleucine.
- b) Non- essential amino acid: These amino acids can be synthesized in the body for example, Arginine and Glycine.

Sources of protein: The different sources of proteins are milk, eggs, meat, fish, pulses, cereals and fruits etc.

- a) First class proteins: Protein foods, which contain all essential amino acids in correct proportions such as meat, egg, fish, soya bean and milk
- b) Second class proteins: They do not contain all the essential amino acids in the correct proportions such as peas, beans and pulses.

Role/Functions of proteins:

- 1) Required for body building, repair and maintenance of body tissues.
- 2) Biosynthesis of plasma proteins and hemoglobin.
- 3) Biosynthesis of antibodies, enzymes and hormones.
- 4) Play an important role in the constitution of all tissues including body fluids, for example blood.
- 5) Provide energy and heat.
- 6) Responsible for the cell-mediated immune response.

Protein deficiency diseases:

a) Kwashiorkor: It occurs mostly in the second year of life. It is due to weaning of the child from breast to a diet low in protein.

Symptoms:

- 1. The child is miserable and apathetic with a characteristic mewing cry.
- 2. The skin changes may vary from pigmentation, thickening and cracks to ulceration.
- 3. Hair is thin and sparse and colour is reddish or grey.

Treatment: Diet with adequate proteins and proper calorific value should be given to the infants.

b) Marasmus: It is a clinical condition of protein energy malnutrition resulting from deficiency of protein and calories usually occurs in the age group of 1/2- 5 years.

Symptoms: Severe muscle wasting, severe growth retardation, wasting of muscles, failure to gain weight, child feels good appetite but is irritable and marked wasting of skin & bones.

Treatment: Diet with adequate proteins and proper calorific value should be given to the infants. 19

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

Vitamins: Vitamins are complex organic compounds required for vital metabolic functions in the body and are needed by the body in small amounts. They are grouped as:

- a) Fat soluble vitamins - Vitamin A, D, E, K.
- b) Water soluble vitamins – Vitamin B complex and vitamin C.

Role of Vitamins:

- 1) Vitamin A helps in proper functioning of retina and vision.
- 2) Vitamin A helps in maintaining functioning and integrity of glandular and epithelial tissues.
- 3) It helps in skeletal growth and has an anti-infective action.
- 4) Vitamin D facilitates the absorption and utilization of calcium and phosphorus for healthy bones and teeth.
- 5) Vitamin E maintains healthy muscular system and act as antioxidant.
- 6) Involved in the metabolism of carbohydrates, fats and proteins.

Vitamin A deficiency diseases:

a) Xerophthalmia (Dry eyes) – It is caused by the deficiency of vitamin-A. It is an eye disease due to lack of secretion of lachrymal or tear glands. It may result in bacterial growth, thickening, keratinization and ulceration of cornea and even blindness. It is the main cause of blindness among children in India.

b) Night Blindness (Nyctolopia) – It is also caused by deficiency of vitamin-A. It is the inability of a person to see in dim light. Dryness of skin, respiratory infections like common cold also occurs due to deficiency of vitamin-A.

Vitamin B1 deficiency diseases:

a) Beri-Beri – Beriberi is caused by deficiency of vitamin B₁ or thiamine. It is characterized by loss of appetite, decrease in weight, retarded growth, degeneration of nerves, muscle atrophy, heart failure and oedema of hands and legs.

Vitamin B2 deficiency diseases:

a) Cheilosis – Cheilosis is caused by deficiency of vitamin B₂ or riboflavin. In this disease inflammation and cracking at corners of the mouth takes place.

b) Photophobia, corneal ulcers, dryness of skin and hair loss also occurs due to vitamin B₂ deficiency

4) Niacin deficiency diseases:

a) Pellagra – It is caused by the deficiency of niacin or Nicotinic acid. It is characterized by skin eruption, swollen lips, digestive disturbances and nervous disorders.

Vitamin B3 or Pantothenic acid deficiency diseases:

Burning feet syndrome in which itching and burning of feet takes place is caused by deficiency of vitamin

B3. Vitamin B12 deficiency diseases–

a) Pernicious anemia – It is caused by deficiency of vitamin B₁₂ or cyanocobalamin. It is characterized by malformed RBC's without hemoglobin. It may prove fatal.

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

b) Megaloblastic anemia – It is caused by deficiency of folic acid and vitamin B₁₂. It is characterized by the presence of large immature nucleated RBC's in the blood.

Prevention and treatment – All the diseases which are caused by deficiency of vitamins are prevented by taking diet with adequate amount of vitamin rich items. If necessary then vitamin supplements are also taken.

Vitamin D: There are two biological precursor of vitamin D known as ergosterol and 7- dehydro-cholesterol which are converted to vitamin D₂ and D₃ respectively by ultra violet rays present in sun light.

Sources of Vitamin D: It is present in egg yolk, cod liver oil, halibut liver oil and ghee.

Vitamin D deficiency diseases: Deficiency of vitamin D leads to rickets and dental caries in children and Osteomalacia in adults.

Vitamin E: Vitamin E (tocopherol) is an anti-sterility vitamin. Vitamin E is present in wheat, cereal, embryos, green leaves, and some vegetable oil. Therapeutically vitamin E is used in prevention of abortion, in certain menstrual disorders and in the improvement of lactation. Deficiency of vitamin E leads to death of fetus in uterus and sterility in males and females.

Vitamin K: Vitamin K is fat soluble vitamin. It is essential for normal coagulation of blood and necessary for the formation of prothrombin and other blood clotting factors in liver. It is occur in green leaves, alfalfa, spinach, cauliflower, carrot etc. Bacteria present in small intestine also produce vitamin K. Deficiency of vitamin K leads to increased prothrombin time, and a tendency for haemorrhage from skin.

Question 10: Write short note on the followings:

(A) Health and determinants of health.

(B) Cardiac pulmonary resuscitation.

Ans.10 (A) Health and determinants of health: Health is not only absence of disease but a state of complete physical, mental and social well being.

1) Physical health: It refers to the perfect functioning of the body state in which every cell and every organ is functioning at optimum capacity.

2) Mental health: It is defined as the ability of the individual to make personal and social adjustments. These adjustments are concerned with one's daily life in relation to others, at home and at work and he adjusts in a way acceptable to the society.

3) Social health: The health of the people depends on the social and environmental conditions, poverty, illiteracy, unemployment and adverse social relation greatly affect the health of an individual.

Determinants of health: There are many factors, which may be internal within the individual and external in the environment, or society, which governs the health of an individual. Important determinants of health are:

1) Heredity.

2) Environment.

3) Life-style.

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

4) Socio- economic conditions.

5) Health and family welfare services.

6) Other factors such as food, education, industry or policies that raises the standard of living, agriculture, social welfare and rural development etc.

a) Heredity: The state of health of an individual to some extent depends on the genetic constitution of the body. Certain common diseases are of genetic origin, For example, Hemophilia, mental retardation, diabetes and epilepsy.

b) Environment: Environment is divided into internal environment and external environment. The internal environment of an individual includes each and every component, part, tissue, organ and organ system and their functioning. Where as external environment consists of those things to which human being is exposed. So environment also affects the health of a person.

c) Life-style: Life style denotes the way people live. Many health problems are associated with life- style changes or personal habits (e.g. smoking, alcoholism). Certain life styles factors also promote health. For example- adequate nutrition, enough sleep and sufficient physical activity.

d) Socio-economic conditions: Economic status, education, occupation, political system, housing employment, nutrition etc. influence human health. The economic status determines standard of living, quality of life, size of the family and purchasing power. However, sometimes a good economic condition may be a reason for illness, for example, coronary heart disease in economically sound individual. Education is second major factor influencing health status. Further, suitable employment in productive work promotes health as it gives job satisfaction and raises economic status of an individual.

e) Health and family welfare services: The main aim of these services is to provide primary health care and to improve health status of population for example treatment of diseases, prevention of illness, provision of safe drinking water, healthy environment etc.

Ans.10. (B) Resuscitation methods: Resuscitation is the process of maintaining the exchange of gases in the lungs through artificial respiration and revival of heart activities.

Principles of resuscitation: Resuscitation is required when there is no breathing or inadequate circulation.

The aims of resuscitation are:

- 1) To clear the airway. This is achieved by removing obstruction if any.
- 2) To restore breathing. This is achieved by artificial respiration.
- 3) To restore circulation. This can be attempted by cardiac massage.

Clearing the airway

Obstruction of airway may occur due to

- 1) Tongue falling back
- 2) Inhaled foreign body

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

3) Vomit

The obstructed airway is opened as follows:

- 1) The jaw is lifted forward and the head is tilted on the neck. The foreign body is now removed by fingers.
- 2) Back blow can also expel the foreign body.

Mouth to mouth artificial respiration: After making sure that the airway is clear, the patient turned onto his back. After kneeling by his side, the nose is pinched with one hand and the chin bent forward with the other. After taking a long breath, the mouth is kept over that of the patient. His lungs are inflated and this is noted by expansion of his chest. Now, the mouth is taken away and it is carefully watched whether the patient exhales the breath. After doing that five or six times the patient starts breathing again.

Restoration of circulation: This is done by chest compression (closed chest cardiac massage, (CCCM). Before doing this, artificial respiration is done as above. One hand is placed over the lower third of the sternum and the other hand is placed over the first. By this position, the hands lie over the heart. With the arms straight, the hands are rocked backwards and forwards alternately. This releases and compresses the heart. Ultimately it forces blood to circulate.

Question 11: (A) Explain in brief various cardio-vascular diseases

(B) Define health indicator. Explain in brief.

Ans.11 (A) Cardio-vascular disease: The various cardio-vascular diseases are:-

- 1) Coronary heart disease
- 2) Rheumatic heart disease
- 3) Hypertension

1) Coronary heart disease (CHD): The following are the main coronary heart diseases: Angina pectoris, myocardial infraction, cardiac failure and arrhythmias etc

- 1) Avoid smoking and excessive consumption of alcohol.
- 2) Control obesity and maintain standard weigh.
- 3) Restrict intake of salt, sugar and saturated fatty acid.
- 4) Increases consumption of vegetables and fresh fruits.
- 5) Ensure optimum regular exercise, relaxed way of life and avoid stress and strain of life.
- 6) Control hypertension and diabetes mellitus.
- 7) Cases of CHD and elderly persons should undergo regular medical checkup.

2) Rheumatic heart disease: It is not a communicable diseases but leads to rheumatic heart disease which damages the heart and is common cause of premature death.

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

Prevention and control:

- 1) Treat cases of sore throat in children promptly with penicillin.
- 2) Mass screening of children for rheumatic heart disease should be done through school health services.
- 3) Socio-economic and living conditions of the public should be improved.
- 4) Health education and personal hygiene should be improved that is helpful in prevention of diseases.

3) Hypertension: Hypertension is derived from two words i.e. hyper means 'excessive' and tension means 'pressure' in the case of blood. Therefore, hypertension means high blood pressure and blood pressure is the force or pressure exerted by blood on the inside wall of the blood vessels. There are two types of Hypertensions.

- 1) Essential hypertension: When the cause of hypertension is unknown is known as essential hypertension
- 2) Secondary hypertension: When the cause of hypertension is due to some disorders it is known as secondary hypertension. The common causes of secondary hypertension are renal diseases, endocrine disorders and toxemia of pregnancy.

Prevention and control: Hypertension can be controlled by adopting following measures:

- 1) Avoid smoking, chewing of tobacco and excessive consumption of alcohol.
- 2) Restrict intake of saturated fats in the diet.
- 3) Reduce weight and do regular physical exercise.
- 4) Avoid stress and strain of life and avoid worries.
- 5) Use antihypertensive drugs as prescribed by doctor, such as atenolol and nifedipine.

Ans.11. (B) Health Indicator: Indicators are defined as the factors which give information and are required to assess the health of a community and they are also required for the comparison of health status between the people of one community with other community over certain period. Various health indicators are as follows:

- a) Mortality indicators.
- b) Morbidity indicators.
- c) Disability rates.
- d) Nutritional status indicators.
- e) Health care delivery indicators.
- f) Environmental indicators.
- g) Social and mental health indicators.
- h) Utilization rates.
- i) Socio-economic indicators.

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

a) Mortality indicators (Death rate): Frequency of death is an important indicator of health in a community. Of the various mortality rates, crude death rate is the frequently used index.

$$\text{Crude death rate} = \frac{\text{No. of deaths in a year} \times 1000}{\text{Mid-year population}}$$

The other death rates used are infant mortality rate, child mortality rate, maternal mortality rate, proportional mortality rate and disease specific mortality rate.

b) Morbidity indicators: The occurrence of disease is also an indicator of health. The various morbidity indicators are incidence rate, hospital attendance, admission and discharge rate.

c) Disability rates: These include days of restricted activity, bed disability days and work loss days

d) Nutritional status indicators: They are measurements of height, weight and mid-arm circumference.

e) Health care delivery indicators: They are doctor population ratio, doctor – nurse ratio, population – bed ratio etc.

f) Environmental indicators: They include proportion of the population who get safe water, and also indicators relating to pollution of air, light and water.

g) Social and mental health indicators: Suicides, homicides, smoking, alcoholism and drug abuse.

Question No. 12. What is the role of pharmacist in Health education & community development?

Ans. 12. In modern era, with the rising of the education level of the professional pharmacist and awareness of the public, it is expected that our professional and community pharmacist shall play an important role in the prevention of many communicable and non-communicable diseases, their treatment and rehabilitation. The following areas have now emerged wherein the pharmacist can be actively involved in the delivery of health care to the community.

1) All the drugs related problems:- The pharmacist involvement in this area is to perform disease preventing and health promoting activities, which include counseling on proper use of over the counter(OTC) and prescribed medications.

2) Pharmacoepidemiology:- It is concerned with the safety and risk assessment of a new drug and generate information about pharmaceutical outcomes and monitor associated risk and adverse drug reactions in the post marketing phase.

3) Communicable diseases control:- The role of pharmacist in the control of various communicable diseases such as tuberculosis, syphilis, gonorrhea, AIDs etc consist of an awareness of the natural history of these diseases and referral of the patients to proper medical care facilities and public education.

4) Chronic disease control:- A community pharmacist can encourage his/her client to adopt themselves to good living habits and moderate exercise for preventing cardiovascular diseases. He can promote measures such as quitting smoking, controlling high blood pressure, lowering cholesterol intake, increasing physical activity etc.

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

5) Health Education:- Health education is the process that inform, aware, motivate, help and guide people to adopt and maintain healthy practices and life styles. The commonly adopted health practices which are detrimental to health have to be changed e.g. outdoor defecation, use of polluted water, indulgences in drinking and smoking, abuse of drugs, physical inactivity etc. Pharmacist can aware the people about timely immunization, adoption of suitable methods of family planning, use of safe drinking water and rehabilitation of alcoholics and drug addicts.

6) Maternal and child health :- The basic idea behind the maternal and child health is to take adequate care of the mother and her child through the time in which they are exposed to the greatest risk of disease and death i.e. during pregnancy, after birth and the first year of life. The pharmacist can play important role by guiding the mother for the protection of her child against the diseases by following proper immunization schedules, by promoting breast feeding.

7) Nutrition:- The pharmacist can make a significant role in assuring adequate nutrition by advising his patients about basic needs for children, pregnant women, special diet instructions for diabetic and allergic patients.

8) Environmental health: The pharmacist's role in environmental health is alertness to the condition prevailing in his community action and towards the control of any hazardous diseases due to air, water, noise pollution and spoiled food.

9) Rehabilitation of alcoholics and drug addicts:- The pharmacist have many opportunities to help individuals who became dependent upon alcohol and drugs.

Question No. 13. Write short note on:

(A) Immunological products.

(B) Nosocomial infection.

(C) Types of disinfection.

(D) Disinfection procedure for feces, urine and room.

Ans. 13. (A) Immunological products: These are the preparations which are meant for the prevention or treatment of disease such products are vaccines, antitoxin and antiserum or for the diagnostic purposes e. g. bacterial toxins. These are biological products and are the proteinous in nature except poliomyelitis vaccine. Almost all the immunological preparations are administered by parentral route except poliomyelitis vaccine which is administered by oral route. This is due to the fact that the immunological preparations become inactive when administered by oral route. These products may lose their potency on storage.

Classification of immunological preparations:

1) Vaccine:

a) Vaccine containing living bacteria e. g. B.C.G. vaccine.

b) Vaccine containing dead bacteria e.g. cholera pertussis vaccines.

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

- c) Vaccine containing dead rickettesia e.g. typhus vaccine.
- d) Vaccine containing living virus e. g. measles, small pox and yellow fever vaccines.
- e) Vaccine containing toxoids e.g. diphtheria, tetnus vaccines.

- 2) Diagnostic preparations containing bacterial toxin used for schick test and tuberculin test.
- 3) Preparation containing antibodies (antitoxin and antiserum) used to produce passive immunity.

Ans. 13. (B) Nosocomial infection: Hospital Acquired Infection (HAI) is also known as nosocomial infection. They are defined as the infection acquired by the patient after they have been admitted to the hospital or other health care centre. Prior to admission in the hospital the patient do not have any such disease. They can get disease from different sources like patients, unsterilized instruments, infected hands of surgeons, nurses, ward boys and other hospital staff who come in contact with the patients, contaminated food, water, other drinks may also be a source of infections. Articles like linen, bed clothes, furniture, sinks, basins, pots, door handles etc. are also a source of infection. Hospital dust, air and discharge of the patient which are highly contaminated with micro-organisms, are the most important source of infection.

Prevention and Control:

- 1) Isolate the infectious patient.
- 2) Doctors, nurses and other staff members attending to the patient must take precautions for personal hygiene.
- 3) They should wear face mask and apron and use disinfectants for hand washing.
- 4) The articles used by the patient should be thoroughly disinfected.
- 5) Wound dressings and discharges of patients like urine, faeces, nasal secretions, sputum etc. should be destroyed in a sanitary manner.

Ans. 13. (C) Types of disinfection: Disinfection is the process of killing the pathogenic micro-organisms from the inanimate articles. Disinfection is classified into three categories:

- 1) Concurrent disinfection
- 2) Terminal disinfection
- 3) Prophylactic disinfection

1) Concurrent disinfection: Concurrent disinfection means immediate destruction of infectious material excreted by the patient like faeces, urine, sputum and vomiting. Soiled cloths, bed sheets, dressings etc. are also immediately disinfected as soon as they soiled with the discharges of the patient.

2) Terminal disinfection: In terminal disinfection when the patient is discharged or dies all his beddings, utensils, furniture and room is disinfected so as to prevent the transmission of infections to other patient.

3) Prophylactic disinfection: Prophylactic disinfection includes the measures which we adopt to avoid the spreading of diseases e.g. washing of hands with soap, boiling of water, pasteurization of milk and chlorination of water.

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

Ans. 13. (D) Disinfection procedure for feces and urine: Face and urine should be collected in a impervious container to which an equal volume of 8% bleaching powder, 10% formalin solution, 5% cresol or 10% of phenol is added. The disinfectant is allowed to remain in contact for at least two hours. After disinfection the container is emptied in a drain.

Disinfection procedure for room: The wall of hospital rooms and operation theatres are generally painted with washable paints and floors are made of chips or marble which can be easily cleaned by washing with water. The floor and walls are mopped with soap or any detergent. Chemical disinfection can be done by using 2-3% cresol, 5% phenol, 10% formalin solution or a concentrated solution of bleaching powder. The floor and walls are allowed to remain in contact for 4 to 6 hours then it washed with free flow of water.

Question No. 14. Describe causative agent, mode of transmission, prevention and treatment of following diseases:

(A) Pertussis (B) Chicken Pox (C) Rabies (D) Trachoma

Ans. 14. (A) Pertussis: Pertussis is an acute infection of respiratory tract common among children under 5 years of age. It is caused by *Bordetella pertussis*.

Mode of transmission: 1) By droplet infection.

2) By direct contact.

Incubation period: 07 to 14 days.

Symptoms: 1) Severe attacks of an irritating cough.

2) Paroxysmal attacks of cough are more severe in night

Prevention and control: 1) Early diagnosis of diseases.

2) Isolation of the patient.

3) Treatment with erythromycin, ampicillin and Co-trimoxazole.

4) Active immunization with DPT vaccine and pertussis vaccine.

Ans. 14. (B) Chicken – Pox: The causative agent for chicken pox is called *Varicella zoster virus (V-Z Virus)* or *Human (alpha) herpes virus 3*.

Mode of transmission: 1) By droplet infection.

2) Contamination from the discharge from ruptured lesion of skin.

3) Placental transfer of virus can occur and results in infection in the foetus.

2) Notification of the cases to medical officer.

3) Isolation of the patient.

4) Disinfection of articles used by patients.

D. Pharmacy First year -HEALTH EDUCATION AND COMMUNITY PHARMACY

Ans. 14 (C) Rabies: Rabies is an acute and highly fatal viral infectious disease affecting the central nervous system and caused by *Lyssa virus type 1*. The term rabies is derived from Latin word 'rabidus' meaning mad. It is also known as hydrophobia as the patient shows fear from water. **Mode of transmission:** 1) Bites of rabid animals.

2) Saliva, licking on a scratched or abraded skin of a rabid animal.

Incubation period: 10 days to 08 months.

Prevention and control: 1) Clean the wounds and scratches with soap and water, then apply spirit or tincture of iodine on the wound and cover it with surgical dressings.

2) Observe the biting animal for 10 days. If the animal dies or shows signs of illness within 10 days it means the animal is rabid and anti-rabies treatment should be started immediately.

Ans.14. (D) Trachoma: It is a chronic communicable disease of the eye and is an important cause of blindness. It is caused by a virus *Chlamydia trachomatis* that attacks on mucous membrane covering the surface of eyeball and lining of the eyelid.

Mode of transmission: 1) The disease is mainly spread from person to person by direct contact.

2) Indirectly through infected fomites of the patients, for example, towels, cloths, surma or kajal sticks, spoons, cups, toys and thermometers etc

Incubation period: 05-12 days.

Symptoms: It includes development of granular elevations in the conjunctiva, keratoconjunctivitis (combined inflammation of cornea & conjunctiva), epithelial keraritis etc.

Prevention and control:

1) Early diagnosis and treatment with tetracyclines and sulfa drugs of the cases should be done.

2) Attempts should be made to remove illiteracy, ignorance, poverty and overcrowding.

3) Common use of eye preparation, towel, handkerchief etc. should be avoided.

4) Defecation in the open should be discouraged.

5) Anti-fly measures should be taken.