

Human resource is a valuable resource of the nation. In development of the nation people's health is very essential. Hence it is said that 'Fit people, Fit Nation' man has to do constant efforts in various ways in order to keep body and mind healthy. Pure air, water and nutritive (and nourishing) food (diet) are primary necessities of physical health. Moreover residence and atmosphere around should be clean. Man can live healthy life easily in favourable situation, but on not being adjustable to adverse situation his health is adversely affected and various types of diseases are caused.

Infectious Diseases : Concept :

Infection is a well known word. If one person is suffering from disease and the other person comes in contact with him and is get affected with that disease, then it is called infection. Diseases caused by bacteria, viruses and fungi are infectious. Crores of germs and bacteria from the body of a diseased person reach bodies of other animals via some way and cause disease in them. These bacteria enter human body through medium of air or dust, through water-milk or food, through stings of animals or insects, through - personal contact or through respiration or excreta - urine of disease carrying persons and cause disease. When a disease is spread through bacteria from one animal to other animal we call that disease as the infectious disease. When a large number of persons are attacked with infection of certain disease simultaneously it is called Epidemic. Colds, Influenza (flu), Pneumonia, Tuberculosis (TB) of Lungs. Jaundice, Cholera, Typhoid, Whooping cough, Diphtheria, Measles, Chicken-pox, Leprosy, AIDS, Guineaworm, Dysentery etc. are infectious diseases.

Spread of Infectious Diseases :

Many types of bacteria any how get entry into human body, through air, water, food and contact, white cells contained in (blood, of) human body attack these bacteria. These white cells besiege bacteria of diseases, take the bacteria in their body and kill them. They are body-guards. Anti-toxin as an antidote of poison produced by bacteria of diseases is produced in human blood. Thus due to while blood corpuscles and antidote bacteria of diseases in human body are killed. It is called immunity. Immunity to fight against disease for long time after certain disease is caused is called Acquired Immunity.

Bacteria of a disease anyhow enter the body, reproduce themselves at proper place and colonizes of their own. The time duration required for this is called Incubation period. Thus the time period inbetween entry of bacteria in the body and appearance of the first sign of a disease is called Incubation period.

Different types of bacteria do different actions. Some bacteria are nourished by dead and rotting substances and convert them into harmless substances. Such substances are used as manure for vegetables. Milk is converted into curds and alcohol is prepared from sugar. This is also with the help of one type of bacteria. Some bacteria anyhow get entry into human body and grow there. Due to this, poisonous substances are produced which result in different diseases. These bacteria from a diseased man enter the body of a healthy man and spread disease in such a way that as a result, the epidemic starts. Bacteria of diseases enter the human body mainly through the following ways :

(1) Through Air : Bacteria of some diseases enter the human body alongwith air and dust therein, by taking polluted air during respiration e.g. Bacteria of Tuberculosis (TB), Influenza (Flu), Small-pox, Cough etc.

(2) **Through diet (food) :** Water and milk. Bacteria of some diseases enter human body through polluted water, food or milk e.g. Bacteria of diseases like cholera, (intestinal) worms, dysentery typhoid, jaundice etc.

(3) **Through direct contact :** Some bacteria enter directly or through contact. Such diseases are called contagious diseases e.g. Diseases like scabies, ringworms, leprosy etc. spread through direct touch or contact with a diseased person.

(4) **Through animals and insects :** Rabies, Malaria, Plague, Dengue, elephantiasis are caused through bite of rabid animals, mosquitoes, fleas, flies or insects.

(5) **Through rubbing of skin :** Skin works as coverage against bacteria entering into the body. Even then some times bacteria of diseases enter human body through rubbing of skin e.g. Anthrax, tetanus diseases spread in this way.

(6) **Through organs of generation :** Sexual diseases or secret diseases are contagious diseases entering from one body to another body through organs of generation. Gonorrhea syphilis Chlamydia, Herpes, AIDS are diseases spread through sexual contact.

(7) **Through disease holder :** Some men are such that bacteria of specific disease are there in their bodies, but as they have got immunity to fight against such bacteria the disease do not adhere to them, but if bacteria from their bodies enter bodies of others, then they can be diseased. Such persons are called carriers of diseases. In such a way when a man becomes free from certain disease, he is carrier of bacteria for some days. Hence his disease can be adhered to the other person. Diphtheria, typhoid etc. spread through disease carriers.

Characteristics of Infectious Diseases :

General characteristics of infectious diseases are as follows :

The time - period in between entry of bacteria of diseases into human body and appearance of signs of disease is called Incubation period. During this period white blood corpuscles (w.b.c.) i.e. white cells in blood fight to destroy bacteria. Antitoxins produced in blood do not allow the poison produced through bacteria to affect on human body. The disease - resistance strength of human body is called Natural Immunity.

Some times man, falls ill and then he gets recovered then strength to fight against specific disease is produced in him. It is called Acquired Immunity e.g. man suffers small-pox disease only once and then it does not affect again. Such condition can be brought by injecting acquired immunity vaccine.

- Each infectious disease has a definite time-period. The disease recovers at the end of the time-period.
- All infectious diseases are caused by specific type of bacteria. Each disease is caused by different types of bacteria.
- A person gets immunity to fight against a disease after he is caught once by that disease.
- This disease spreads from a diseased person to a healthy person.
- At the time of attack of an infectious disease the diseased person has to pass through specific conditions.
- A diseased patient experiences characteristics like dislike (or aversion) no appetite, weakness, feeling dry neck, nausea-feeling, feeling body-ache etc.

Control :

It is very essential for the society to prevent infectious diseases. The method of preventing infectious diseases is called control of diseases. This control can be distributed in two parts.

General Prevention :

In order to get rid of disease, take care that immunity of our body is maintained good. Breathe in and breathe out in pure, to drink clean (filtered) water, to take proper nutritious food, to do proper exercises, to perform yoga and yogasanas regularly, to have (sound) sleep and rest, to take sun-bath at the sun-rise to maintain internal organs of the body clean and healthy to take inject immunity vaccine, to observe rules of health and hygiene and to develop immunity to fight against bacteria of diseases. We should have information regarding bacteria causing different diseases specific disease is caused by certain type of bacteria. If we understand which condition is congenial to bacteria then resistance remedy can be implemented well. Bacteria usually grow in dirty, dark and wet air. So we should reside in well-sunlit and well-ventilated open air residence. Enough water facility, proper gutter (drainage) facility, and sanitation are must.

Specific Control :

The following hints should be followed in order to prevent spread of certain infectious diseases :

(1) Give a notification to the Health Department :

If any man becomes a victim to infectious disease, immediately the Health Department should be informed, so that they can take proper steps for prevention of that disease.

(2) The patient should be kept separate and away :

The patient should be kept away from the other healthy person. Keep the patient in a separate room in the house or separate room in the hospital.

(3) Segregate the person treating the patient :

The person giving treatment to the patient should not be allowed to mix with other persons. He should be kept separate in school or people's contact.

(4) Inoculation :

In the very beginning of epidemic persons should get injected vaccine and thus develop one's own immunity.

(5) Quarantine period :

Where the infectious disease has spread, people of such a village should not be allowed to mix with other people. During incubation period keep them separate. Moreover they should be kept under the care of the doctor, so that they won't make healthy person a diseased one.

(6) Use disinfectants :

Bacteria in all the things that are used by the patient, should be destroyed by disinfectants. Substance by which bacteria can be destroyed are called disinfectants e.g. phenyl.

Disinfectants are of three types :

(1) Natural disinfectants

(2) Physical disinfectants

(3) Chemical disinfectants

(1) Natural disinfectants : Sunlight and pure air are natural disinfectants. Keep clothes of the patient and the things he used open in sunlight. Hence bacteria therein are destroyed. The growth of bacteria of typhoid, tuberculosis (TB) etc. stops due to the sunlight. This decreases the strength of bacteria to produce bacteria.

(2) Physical disinfectants : Hot air, fire, steam of boiling water etc. are physical disinfectants. So get the low-priced things like cotton bandages, excreta - urine, vomit etc. of the patient burnt. Things like books, clothes vessels etc. can be made germ-free by using hot air.

(3) Chemical disinfectants : Chemical substances in solid, liquid and gaseous form are used as disinfectants. If solid substances are to be used, first its solution has to be prepared. Disinfectants like phenol or carbolic acid, cresol, phenyl etc. made from coal-tar are used. Kerosene, petroleum oil are used to destroy maggots (worms) of mosquitoes in closed water. As the soap contains alkali it is used to wash greasiness coarseness of the oil.

Chlorine, sulphur dioxide, formaldehyde etc. gaseous disinfectants are used to make air inside the room germfree.

Now let us get information about four infectious diseases spread through air (colds, influenza, pneumonia, and tuberculosis (TB) of lungs and five infectious diseases (jaundice, cholera, typhoid, guinea worm, dysentery), spread by food and water.

(1) Common Cold : Common cold is an ordinary disease of respiratory system. People with less immunity catch up colds with change in seasons, wearing wet clothes.

Virus of this infectious disease spread in air through sneezing, clothes of the diseased person. Virus of colds enter into nose-neck of a healthy person through breathing there and they grow. Hence he is attacked by colds.

Characteristics of colds :

Headache, nose-watering, sneezing, feeling giddy, burning of eyes, shivering, frequent sneezing, nostrils choked up tube, some times swelling in eustachian tube and hence experience of deafness.

Treatment and prevention of colds :

Give complete rest to the patient go on smelling Eucalyptus oil in hand-kerchief or clean piece of cloth. Inhale essence of bishop's seeds. Take hot drinks like tea and coffee. Inhale balm, respiratory system opens.

To consult a doctor :

Well-known saying about colds is : 'Colds comes abruptly and goes slowly'. Many a times carelessness brings colds and then the patient gets rid of it only after treatment.

Flue or Influenza :

Virus of this disease enter into the body of a healthy person through respiration or sneezing of the diseased person, and through excreta-urine and phlegm and thus this disease spreads.

Characteristics of Flu :

Sudden fever, colds giddiness bodyache, head-ache, nose.

Fatigue, shivering, body-pain, some times perspiration physical - mental fatigue.

Treatment and prevention of Flu :

Take complete rest.

Remember : Keep away from cold - humid air, gargle with hot salty water. Give the patient hot, light, liquid and nutritious food, consult a doctor in characteristics of bronchitis or pneumonia. Cleanse clothes and things of the patient with disinfectants.

In epidemic of influenza children of the school should be kept away from crowded places. They may not eat open food of market. Proper use of handkerchief while sneezing, coughing.

Pneumonia :

Pneumonia is a disease caused by one type of bacteria and some virus. It is considered as a fatal disease - proportion of this disease in much is children below the age of six.

Characteristics of Pneumonia :

In the beginning shivering in body headache, fever. Due to swelling in wind-pipe trouble occurs in breathing in, chest severely aching. The patient has a fit of dry and severe coughing and drags out. Phlegm of yellowish colour. Many a times children have more fever and alongwith it attack of fits also.

Treatment and prevention of Pneumonia :

Immediately consult a doctor in case of such characteristics and do treatment accordingly. Children should be particularly admitted to the hospital and proper treatment be given.

Tuberculosis (TB) of Lungs :

TB is a disease caused by special type of bacteria. TB is of many types. Particular part of the body is attacked by bacteria, then it is called TB of that particular part. Bacteria enter into the Lungs and then they grow. It is called TB of Lungs. If it starts in intestine, bones or joints then it is called. TB of that specific part. It is a general belief that TB means TB of Lungs. Here we would discuss about TB of Lungs.

How this disease is caused ?

Two things are essential for this disease. (1) Entry of particular germs of TB in the body. (2) Favourable condition for the growth of these germs e.g. weakness in body.

Innumerable bacteria of this disease spread in air with breathing and coughing of the patient of TB. Innumerable germs of TB come out in sputum of a diseased of TB. Sputum gets dried, then germs stay flying with dust-particles. When a man breaths in and out in such type of air germs of this disease enter into his lungs.

TB germs enter into the body then TB is definite. It is not so. If a man whose immunity is reduced due to some reason, germs of disease enter into his body and grow there. A man who does not get enough nutritious food, who resides in a place without facility of air and light, a person who has fallen weak due to long sickness, a person who has infection of HIV, immunity decreases. If germs of TB enter into the body of such a person, symptoms of TB appear.

Characteristics of TB of Lungs :

In the beginning fever at night and perspiration. Then coughing begins. Cough begins to come out blood in phlegm - chest-ache, rapid breathing, distaste for food, weakness increases day by day, loss of weight, loss of vitality, man becomes bed-ridden. If proper treatment is done from the very beginning, then the diseased can be free of disease. If the disease becomes chronic, then the treatment becomes rather difficult.

Control of TB :

The central government has launched a movement for eradication of tuberculosis. Survey and free treatment are a part of the movement. Non-government organizations (NGOs) also give a good contribution in its control. Examination (test) of phlegm and X-ray of chest these two things give diagnosis of TB. Control of the disease can be had by timely treatment. For long term prevention, long term treatment is required to be given, until fully recovered.

Treatment and Prevention of TB :

In the spittoon of the diseased of TB there are innumerable TB bacteria. So the diseased should not spit anywhere on road. He should spit in spit-pot with antiseptic medicine. Then close the pot properly and destroy it in fire. At the time of coughing the diseased should hold a hand-kerchief with antiseptic medicine already sprinkled, in front of his mouth keep the patient of TB in a separate room. Others except the nursing attendant should remain away from him as much as possible. His things like clothes, vessels etc. should be kept separate. The patients room and his things should be made free from bacteria. Arrange for enough sunlight and open air in his room.

Take care that dust mixed in air may not enter in our lungs with breathing in and out.

Bacteria of TB live for long in closed and dark place. They die (vanish) in sunlight and open air so house should be kept clean. Have a facility of enough air and light in house.

Entry of bacteria of the disease in the body and lack of immunity to fight against them in blood. These two are responsible causes for this disease. To enhance immunity of the body man should eat. enough nutritious food. Proper exercise, yoga, yogasanas and rest are also required. The diseased needs dry air, plenty of sunlight nutritious food and rest.

BCG vaccine is given to all new borne for prevention of TB

Nowadays many effective medicines are available. That should be taken for a complete period according to the doctor's consultation and advice. Irregularity of the treatment harms the patient, not only that, it harms, much to the society. Due to the incomplete treatment bacteria of TB get accustomed to medicines and then it has no effect. If the other person is infected with those bacteria, then these medicines don't prove effective for him also.

Diseases spreading through food and water :

(1) Jaundice : It is a disease caused due to infection of viruses in liver. Incubation period of this disease is 15-50 days. Proportion of bilirubin in body increases. Skin and eyes appear yellowish. This condition is called jaundice. Viruses of this disease come out through stool vomit, urine, blood of the patient and it infects others. Liver gets swelling.

Characteristics of Jaundice : Fever, yellowish urine, distaste, vomit and pain. In case of yellowish urine alongwith fever, get immediately the laboratory test done and diagnose whether jaundice or not. It is inevitable to know whether it is jaundice or not, before prescribing medicine for fever.

Laboratory test : Proportion of bilirubin increases. Proportion of haemoglobin decreases. Presence of bile in urine is detected.

Treatment and Prevention of Jaundice : Inform the health department. If need be, admit the patient in the hospital and give him treatment according to the doctor's, advice. Keep away from the patients contact. Put disinfectant medicine in excreta-urine and then destroy it. Drink water and milk after boiled them. Don't eat stale - open food from bazaar. Take more carbohydrates / glucose in order to increase efficiency of the liver. Avoid ghee-oil-fatty food for some time according to the medical advice. Before taking injection, syringe and needle should be sterilized or use disposable syringe. While donating blood or taking blood, proper test for B. type jaundice should be done. Unsafe sexual relation is harmful.

Cholera : Cholera many a times is a fatal disease. It causes due to particular type of bacteria (cholera vibrio).

Characteristics of Cholera : Bacteria of this disease enter human body through polluted water and food. In a very short time within three days characteristics of the disease appear. Bacteria enter the intestine and loose motions start. Colour of the motion is like water from cooked rice. Alongwith motions, vomiting also starts. Hands and legs / feet ache. Weakness prevails, Urine hinders. Feeling thirsty. Slow pulse. Body begins to be cold slowly. In absence of proper treatment the patient may die. Throbbing of heart becomes slow. Decrease of proportion of water and salts in body due to loose motions and vomiting, That can be fatal.

Cholera : Treatment and Prevention : Inform the health Department. During epidemic drink milk, water after boiling, Don't eat stale open food from bazaar. Excreta, urine, vomit of the patient should be buried or burnt / with disinfectant medicines.

In order to maintain proper proportion of water and salts give him ORS Solution (Oral Rehydration Solution) as First Aid. It can be prepared at home also. In a litre of boiled water add 5 gram salt and 20 gram sugar. Give this solution 750 ml per hour to the adult and 300 ml to children. Clothes bed, vessels of the patient should be cleansed with disinfectant or wash them after boiling in water for half an hour. Nursing person should wash his/her hands with disinfectant medicine or soap.

Children should not be allowed to come in contact with the patient. Give frequently lemon juice or buttermilk. Stop nuisance of flies. Add potassium permanganate in places of water.

Typhoid : Typhoid is caused with entry of specific type of bacteria in the body Duration of fever is seven fifteen or twenty one days. There is a typical pattern of rise in temperature so it is called periodic fever.. Attack of bacteria (typhoid bacillus) on intestine of man is responsible for this disease. This disease spreads, through water food and flies.

Characteristics of Typhoid : Swelling in intestine, round ulcers, stomach-ache, head ache, fever, physical weakness, hunger decreases, constipation or loose motion. Ulcers in intestine cause bleeding in stomach. If timely treatment is not available then the patient may die. Severe fever may cause sometimes swelling in the brain, which may result in altered sensorium.

Typhoid : Treatment and Prevention : Give the patient complete rest. Give him liquid food. Drink milk and water after boiled. If fever increases put cloth soaked in simple water on the body. Get burnt excreta-urine, vomit, of the patient after adding disinfectants. Cleanse clothes bed sheets of the patient with disinfectant medicine or dry them in heat of sun. Nursing person should get injected vaccine of the typhoid. Keep control over nuisance of flies.

Guinea Worm : Guinea worm is a worm disease. It is a troublesome worm. Eggs of guinea worm enlarge in stomach of the germs named cyclopsas. These germs are seen in large quantity in water of step well, and dirty - closed water. By drinking such water, these germs enter human body. In digestive organs of man young ones of guinea worm come out from stomach of cyclopsa. Slowly they try to find a way out. They reach toward feet of man. Concerned part of foot gets swelling and it appears like boils. The patient suffers fever pain increases. After few days boils burst. Thin and long worm gets out. We call it guinea worm.

Treatment of guinea worm : According to the doctor's, advice roll the worm on straw carefully and draw it out. While doing so, if the worm breaks then there is a boil at another place and it again comes out from it.

Prevention of Guinea worm : Drink filtered water. Add disinfectants to water of step-wells and destroy cyclopsa. These germs should be killed by making water pure through chlorine. Now step-wells are mostly filled in. If they are, then also water is not used for drinking. Even then, in Rajasthan near border of Gujarat, this disease still prevails.

Dysentery :

Dysentery are of two types :

(1) Amoebic Dysentery (2) Bacillary Dysentery.

Micro organisms like amoeba enter the body through milk, water or food and cause amoebic dysentery. So there is swelling in big intestine and ulcers. Specific type of micro organisms cause bacillary dysentery. This dysentery causes motions like blood mixed water.

Characteristics of Dysentery : In amoebic dysentery some time probably liver is harmed due to micro organisms. Motions, puss or blood alongwith motion, some times greasy. Yellow substance with motion.

In Bacillary dysentery characteristics are rather acute. Water decreases terribly in the body. Drinking of polluted water, staying in over crowded places, indigestion, eating eatables from hotels, hard labour, lack of enough rest. Such a person is easily caught in dysentery and that too, in acute proportion.

Prevention of Dysentery :

Causes of dysentery should be removed. Don't take open, polluted food-water. Take enough rest. Give the patient (saltless) buttermilk. Credually, water from cooked rice, moong water, cunjee of sago etc. which are light articles of food may be given. Drink milk-water after it is boiled Treat according to the Doctor's advice.

In order that dysentery may not spread, excreta-urine of the patient should not be thrown in open place but using disinfectants dispose off properly. Don't keep food articles open. Take care that flies may not sit and touch the eatables. In raing season, this disease of intenstine becomes stronger, then avoid heavy food criticles, sweets etc.

EXERCISE

1. Answer the following questions in detail :

- (1) What is infectious disease ? How do infectious diseases spread ?
- (2) State characteristics of infectious diseases.
- (3) State general control and specific control for control of infectious diseases.
- (4) Give names of diseases spread through air. State their characteristics, treatment and preventive measures.
- (5) Give names of diseases spread through food and water. State their characteristics treatment and preventive measures.

2. Write short notes :

- (1) Characteristics and treatment of influenza
- (2) Characteristics and prevention of tuberculosis (TB) of Lungs
- (3) Treatment and control of Jaundice
- (4) Characteristics, treatment and control of typhoid
- (5) Types, characteristics, treatment and control of dysentery.

3. Write answer to following questions in one or two sentences :

- (1) What is meant by 'to be infected' ?
- (2) Which cells of body destroy germs ?
- (3) What do we, call method of preventing infectious disease ?
- (4) Why should one get vaccine injected ?
- (5) Which bacteria produce cholera ?

4. Fill in the blanks with proper word on the basis of the text-book :

- (1) In order that disease may not cause strength of our body should be developed.
- (2) Substances that destroy germs are called substances.
- (3) Disinfectants are of types.
- (4) In body, some time, experienced due to swelling in eustachian tube.

5. Answer the following questions by selecting correct choice from the choices given below :

- (1) In the beginning when does the patient of tuberculosis suffer slow fever ?
(A) Morning (B) Evening
(C) Afternoon (D) Night
- (2) In which disease treatment of proper medicines should be taken for long ?
(A) Colds (B) Typhoid
(C) Tuberculosis (D) Guineaworm
- (3) How do bacteria of tuberculosis (TB) enter human body ?
(A) Through food-water (B) Through air
(C) Through contact (D) Through germs
- (4) How do bacteria of typhoid enter human body ?
(A) Through rubbing of skin (B) Through organs
(C) Through animals (D) Through food-water milk
- (5) What is that substance called through which germs are destroyed ?
(A) Disinfections (B)
(C) Deoderants (D)
- (6) What is the cause of deafness in colds ?
(A) Swelling in eustachian tube (B) Shivering in body
(C) Sneezing (D) Nostrils check up
- (7) Which part of the body is affected by pneumonia ?
(A) Heart (B) Lungs
(C) Digestive system (D) Excretary system
- (8) What is the cause of dysentery ?
(A) Mosquitoes bite
(B) Affected by colds
(C) Red cells get destroyed
(D) Micro organisms named amoeba entering human body

Activity

- Prepare a chart showing details regarding characteristics, prevention, treatment of the diseases included in the curriculum.