

## CHAPTER

# 11

# Communicable Diseases



உற்றான் அளவும் பிணியளவும் காலமும்  
கற்றான் கருதிச் செயல்.

The learned (physician) should ascertain the condition of his patient; the nature of his disease, and the season (of the year) and (then) proceed (with his treatment).



## LEARNING OBJECTIVES

At the end of the lesson students will be able to

- define technical jargons related to communicable disease
- list out the classification of communicable disease
- identify the clinical manifestation of communicable disease
- understands the complications and control measures of communicable disease



## Introduction

Infections due to living organisms are called communicable diseases. They spread from person to person, or sometimes from animals to people. They occur at all ages but are most serious in childhood and they are preventable to a great extent. In developed countries, communicable diseases have been prevented. But in India it is going through a period of transition, both epidemiological and demographically. Infectious diseases are still persisting as major health problems in spite of having National programmes for the control of many diseases.

## 11.1 Terminology

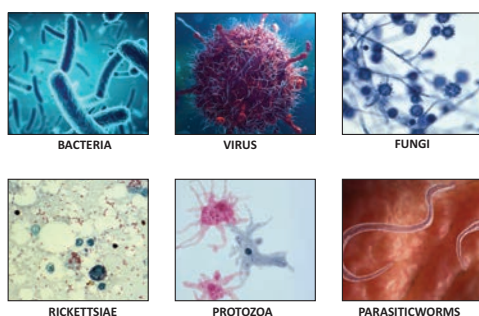
1. **Infection:** The entry and development or multiplication of an infectious agent in the body of human being or animals.
2. **Contamination:** The presence of infectious agent on a body surface or in clothes, beddings, toys, surgical instruments or dressings or other inanimate articles or substances including water, milk and food.
3. **Infestation:** For persons or animals the lodgment, development and reproduction of arthropods on the surface of the body or in the clothing (e.g) lice, itch mite.

4. **Host:** A person or animal including birds and arthropods that affords subsistence or lodgment to an infectious agent under natural condition.
5. **Communicable diseases:** An illness due to specific infectious agent or its toxic products capable of being directly or indirectly transmitted from man to man, animal to animal or from the environment to man or animal.
6. **Epidemic:** The unusual occurrence or sudden outbreak of disease in a community or region.
7. **Endemic:** It refers to the constant presence of a disease or infectious agent within a given geographic area or population group.
8. **Sporadic:** The word sporadic means scattered about. The diseases are so few and separated widely in space.
9. **Pandemic:** An epidemic usually affecting a large proportion of the population, occurring over a wide geographic area such as a section of a nation, the entire nation, a continent or world (eg.) influenza pandemic
10. **Zoonosis:** An infection transmissible under natural conditions from vertebrate animals to man. Eg. Rabies, plague
11. **Eradication:** Termination of all transmission of infection through surveillance.

### Carriers

A carrier is defined as “an infected person or animal that harbours a specific infectious agent in the absence of clinical manifestation and serves as a potential source of infection to others.

TYPES OF PATHOGENS

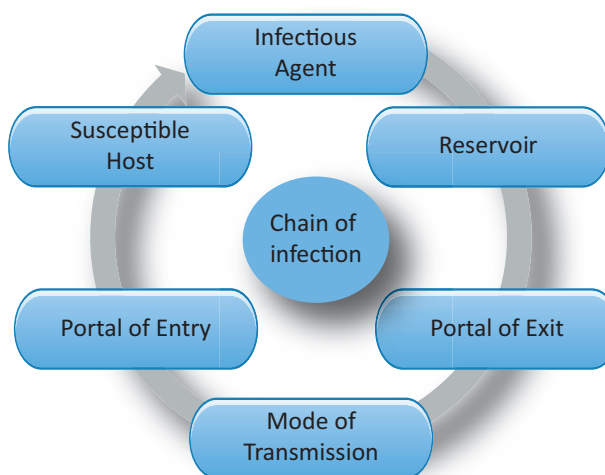


National Centre for Disease Control (NCDC) (previously known as National Institute of Communicable Diseases) is an institute under the Indian Directorate General of Health Services, Ministry of Health and Family Welfare. which was established in July 1963 .

### Definition

**Communicable Disease** - “An illness due to a specific infectious agent or its toxic products capable of being directly or indirectly transmitted from man to man, animal to animal, or from the environment (through air, dust, soil, water, food, etc.) to man or animal.

### Chain of Infection



## 11.2 Source of Reservoir

### Definition

**Infectious agent:** An organism that is capable of producing infection or infectious disease.

A **reservoir** is defined as " living or nonliving material in or on which an infectious agent multiplies or develops and is dependent for its survival in nature.

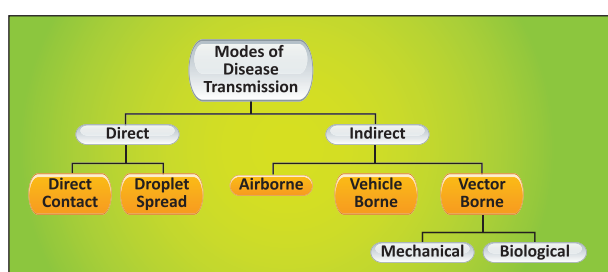
## 1. Human Reservoir

- a. Cases - There are a number of important pathogens that are specifically adapted to man, such as: measles, smallpox, typhoid, meningococcal meningitis, gonorrhea and syphilis. The cycle of transmission is from human to human.
  - b. Carriers - is a person who has become infected with a pathogen, but does not show any signs or symptoms.
2. **Animal Reservoir** - the source of infection may sometimes be animals and birds.
  3. **Nonliving things** - soil and inanimate matter can also act as reservoir of infection. eg. Tetanus in soil.

## 11.3 Mode of Transmission

Infectious diseases are transmitted from person to person by direct or indirect contact. Certain types of viruses, bacteria, parasites, and fungi can cause infectious disease. Malaria, measles, and respiratory illnesses are examples of infectious diseases.

**Susceptible Host** - A person who lacks resistance to a particular pathogenic agent to prevent disease if or when exposed.



### I. Direct Transmission

**1. Direct Contact** - Infection may be transmitted directly from skin to skin, mucosa to mucosa, mucosa to skin of others or same person. Example: skin-to-skin contact as by touching, kissing or sexual intercourse. Diseases transmitted - STD and AIDS, leprosy, leptospirosis, skin and eye infections.

**2. Droplet infection** - This is direct projection of a spray of droplets of saliva and nasopharyngeal secretions (airborne droplets of saliva or sputum) containing infectious organisms. The spray of droplets during coughing and sneezing can spread an infectious disease.

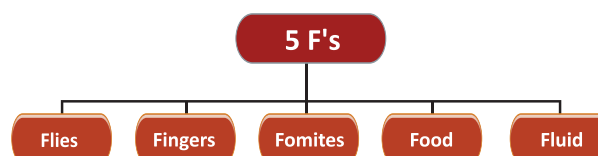
**3. Contact with soil** - The disease agent may be acquired by direct exposure of susceptible tissue to the disease agent in soil, compost or decaying vegetable matter. Examples: hookworm larvae, tetanus, mycosis etc.

**4. Inoculation** into skin or mucosa - Rabies virus by dog bite, Hep. B virus through contaminated needles and syringes etc.

**5. Transplacental** (or vertical) transmission - TORCH agents - (Toxoplasma Gondii, Rubella virus, Cytomegalo virus, and Herpes virus). Varicella virus, Syphilis, Hepatitis B, Coxsackie B and AIDS. Some of the non-living agents (e.g., thalidomide, diethylstilbestrol) can also be transmitted vertically (mother to child) which will affect the embryo and causes malformations in the foetus.

## 11.4 Indirect Transmission

This embraces a variety of mechanisms including the traditional 5 F's, such as



**1. Vehicle-borne** - An indirect transmission of an infectious agent that occurs when a vehicle. (or fomites) touches a person's body or is ingested

**2. Vector - borne** - Vector is defined as an arthropod or any living carrier that transports an infectious agent to a susceptible individual. Infectious agents are transmitted

by insects, especially those that suck blood. These include mosquitoes, fleas, and ticks. The insects become infected when they feed on infected hosts, such as birds, animals, and humans. The disease is transmitted when the insect bites a new host. Eg. Malaria, West Nile virus, and Lyme disease are all spread this way.

**3. Airborne** - An airborne disease is any disease that is caused by pathogens that can be transmitted through air. Some infectious agents can travel long distances and remain suspended in the air for an extended period of time. Diseases spread by droplet include tuberculosis, measles, Q fever, and Respiratory infections.

**4. Fomite - borne** - Fomites are inanimate articles or substances other than water or food contaminated by the infectious discharges from a patient and capable of harbouring and transferring infectious agent to a healthy person. Fomites includes soiled clothes, toys, towels, linen, cups, spoons, pencils, books, surgical dressing, etc., Diseases transmitted by fomites are typhoid, diphtheria, and skin infections.

**5. Unclean hands and fingers** - Hands are the most common medium by which

pathogenic agents are transferred to food from the skin, nose, bowel, etc., as well as from other food.

### Chain of Disease Transmission

The six factors involved in the chain of disease transmission are


## 11.5 Classification Of Communicable Disease

Epidemiologic classification of communicable diseases based on the mode of transmission of the infectious agent, communicable diseases can be classified as:

- **Waterborne diseases:** transmitted by ingestion of contaminated water.
- **Food borne diseases:** transmitted by the ingestion of contaminated food.
- **Airborne diseases:** transmitted through the air.
- **Vector-borne diseases:** transmitted by vectors, such as mosquitoes and flies.

### Vehicle borne

An indirect transmission of an infectious agent that occurs when a vehicle (or fomite) touches a person's body or is ingested.

| WATER BORNE  | AIR BORNE  | VECTOR BORNE  |
|--|--|---|
| 1. Tyhoid Fever<br>2. Cholero<br>3. Hepatitis-A<br>4. Acute Diarrheal Disease<br>5. Poliomyelitis<br>6. Food Poisoning | 1. Chickenpox<br>2. Measles<br>3. Mumps<br>4. Influenza<br>5. Diptheria<br>6. Whooping cough<br>7. Meningococcal Meningitis<br>8. Acute Respiratory Infection<br>9. Severe Acute Respiratory Syndrome<br>10. Tuberculosis<br>11. Swine Flu | 1. Dengue<br>2. Malaria<br>3. Lymphatic Filariasis<br>4. Chikungunya<br> |

## 11.6 Water Borne Disease (Diseases Transmitted Through Water)

### ■ Typhoid fever

#### Definition

Typhoid fever is an acute bacterial infection mainly caused by *Salmonella Typhi*

**Causative Organism** - *Salmonella Typhi*.

**Mode of transmission** - By water and food contaminated by faeces and urine of patients and carriers. Flies may infect Food which will turn in to source of infection.

**Incubation period** - 10 days to 14 days

#### ■ Clinical manifestations

1. Fever (High grade 103 - 104F)
2. Cough and sore throat
3. Severe mental confusion
4. Fatigue
5. Weakness
6. Vomiting
7. Weight Loss
8. Headache
9. Abdominal pain
10. Severe Diarrhea
11. Severe Constipation
12. Skin rash ( pink spots)

If the typhoid fever continues untreated for more than two or three weeks, the affected individual may be delirious or unable to stand or move and which will lead to fatal complication.

#### Diagnosis

Widal Test

#### ■ Control measures

1. Control of reservoir
2. Sanitation and hygiene.
3. Immunization

**1. Control of reservoir** - The usual methods of control are their identification

- a. **Early Diagnosis** : Culture of blood and stools are the important investigation for the confirmation of the diagnosis of cases.
- b. **Notification** : Notification to the health authority to prevent the spread and control the infection.
- c. **Isolation** : Infected cases should be isolated till three bacteriologically negative stools and urine.
- d. **Treatment** - Appropriate treatment to control the infection and prevent complications.

**e. Disinfection :**

1. Stools and urine should be received in closed containers and disinfected with 5% cresol for at least 2 hours.
2. All soiled clothes and linen should be soaked in 2% chlorine solution and steam sterilized.
3. All health care providers should disinfect their hand(hand washing)
4. Follow-up examination of stools and urine should be done for typhoid 3 to 4 months.
5. Carriers should be identified by cultured and serological examination.
6. The carriers should be kept under surveillance. They should be prevented from handling food, milk or water for others.
7. Health education regarding washing of hands with soap, after defaecation or urination and before preparing food is an essential.

#### 2. Sanitation and Hygiene

1. Protection and purification of drinking water supply.
2. Improvement of basic sanitation and promotion of food hygiene.

**3. Immunization** - There are two vaccines to prevent *typhoid*.





1. One is an inactivated (killed) Typhoid vaccine given in injection form.
2. The other is a live, attenuated (weakened) vaccine which is taken orally (by mouth).

## ■ Treatment

### Appropriate Antibiotics

### Nursing care

1. Maintain body temperature to normal.
2. Provide comfort measures.
3. Follow side effects of drugs.
4. Monitor vital signs.
5. Follow strict precautions such as hands washing, wearing gloves and health education to all persons about personal hygiene
6. Observe the patient closely for sign and symptoms of complications such as bowel perforation.
7. Accurately record intake and output.
8. Provide proper skin and mouth care.

### Complications

1. Intestinal bleeding
2. Fresh blood in the motion
3. Intestinal perforation (occur in the third week).

1. Antonius Musa, a Roman physician who achieved fame by treating the Emperor Augustus 2,000 year ago, with cold baths when he fell ill with typhoid.
2. Thomas Willis who is credited with the first description of typhoid fever in 1659.
3. French physician Pierre Charles Alexander Louis first proposed the name "typhoid"

## ■ Cholera

Cholera is an acute diarrhoeal disease caused by V . Cholera (Classical El. Tor)

**Causative organism** - Vibrio Cholera

## ■ Mode of transmission

Transmission occurs from man to man via

- a. Faecal contaminated water
- b. Contaminated food and water
- c. Direct contact

**Incubation period** - Few hours to 5 days

## ■ Clinical manifestations

Onset is abrupt with profuse, painless, watery diarrhea known as rice water stool.

- Muscular cramps
- In Children – Fever, convulsions or coma, loss of muscular tone.
- Vomiting
- Sunken Eyes
- Hallow checks
- Skin pale
- Husky voice
- Extremities are cold.
- Pulse rapid and feable.
- Blood pressure is low
- Shallow and quick respiration

### Diagnosis

Stool test

### Complications

1. Shock,
2. Severe dehydration,
3. Low blood sugar in children which can cause seizures, unconsciousness, and even death
4. hypokalemia(low potassium level)

## ■ Control measure

1. **Verification of the diagnosis** : All cases of diarrhea should be investigated .
2. **Notification** : Cholera is a notifiable disease locally, nationally and



internationally. Health workers at all levels should be trained to identify and notify cases immediately to the local health authority.

3. **Early case finding** : An aggressive search for case (mild, moderate, severe) should be made in the community to be able to initiate prompt treatment.
4. **Establishment of treatment centers** : In the control of cholera, no time should be lost in providing treatment for the patients.
  1. Easily accessible treatment facilities in the community
  2. Treatment for dehydration
    - For Mild dehydration - treatment at home with oral rehydration fluid.
    - For Severely dehydrated patients requires intravenous fluids in a nearest treatment centre or hospital.
    - When it is endemic or threatening - mobile teams should be established.
  3. Epidemiological investigations to study the extent of the outbreak and identify the modes of transmission.
  4. Sanitation measures
    - a. Water Sanitation
    - b. Excreta Disposal - Health education messages should stress the proper use of such facilities.
    - c. Food sanitation - Sale of foods under hygienic conditions. Health education regarding eating cooked hot food, and proper food handling techniques.
    - d. Disinfection: Most effective disinfectant is bleaching powder. Clothes and personal items to be disinfected with disinfectant (dettol).
  5. Health Education regarding Oral Rehydration therapy, Early diagnosis and adequate treatment and Food sanitation

## ■ Treatment

1. Replacement of fluids and Electrolytes.
2. Antibiotics
3. Anti diarrheal drugs
4. Rehydration therapy : The oral rehydration therapy and intra venous fluids (IVF).
5. Vaccination to protect the people from Cholera.

## ■ Hepatitis A

**Definition** - Hepatitis A is a systematic disorder that primarily affects the liver.

## ■ Causative organism

Heptatitis A virus (Enterovirus)

**Mode of transmission** - Faeco oral route and direct contact

**Incubation period**- 14 -28 days

## ■ Clinical manifestations

1. Fever
2. Malaise
3. Severe anorexia, nausea and vomiting,
4. Pain in right hypochondriac region
5. Passing dark color urine and pale stool.

## ■ Complications

Acute liver failure

## ■ Control measures

### a) Control of reservoir

Complete bed rest and disinfection of faeces and fomites by using 0.5 % sodium hypochlorite is recommended to prevent the spread of infection to others.

### b) Control of transmission :

1. Hand washing before eating and after defaecation.
2. Sanitary disposal of excreta.

3. Purification of community water supplies by flocculation, Filtration and adequate chlorination.

#### c) Control of susceptible population :

**Vaccines:** Several inactivated or live attenuated vaccines against Hepatitis A is available to protect against the infection.

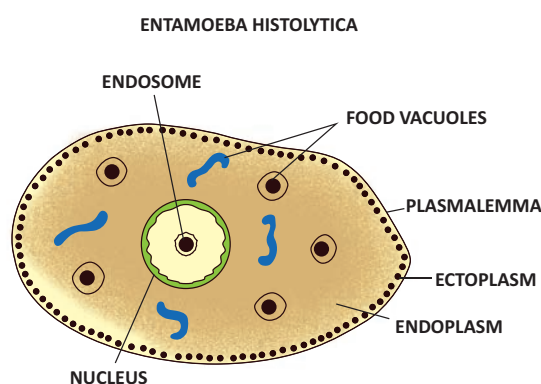
### Treatment

1. The patient has to be provided with adequate rest.
2. Bland diet should be provided
3. Avoid Alcohol

### Acute Diarrheal Diseases

#### Definition

According to WHO Acute diarrhea is defined as an abnormally frequent discharge of semisolid or fluid faecal matter from the bowel, lasting less than the 14 days by WHO.



### Causative Organism

**Bacteria:** Escherichia coli, Shigella, salmonella etc.,

**Virus:** Rota virus, adenovirus etc.

**Parasites:** Endamoeba hystelytica, Giardia lamblin etc.

**Mode Of Transmission** - Direct transmission - Faeco – oral route

**Incubation Period** - Few Hour to one day.

### Clinical Manifestation

1. Sunken eyes

2. Tachycardia
3. Hypotension
4. Irritable and restlessness
5. Pallor
6. Rapid respiration
7. Sudden collapse if not treated properly
8. Stools loose and fluid in consistency, greenish or yellow green in colour, may contain mucus or blood.
9. Vomiting
10. Fever
11. Poor skin turgor, dry skin and dry mouth
12. Sunken fontanels in children

#### Diagnosis – Stool test

#### Complications

1. Persistent diarrhea
2. Malnutrition
3. Vitamins and mineral deficiencies
4. Hypoglycemia resulting in convulsions and brain damage
5. Electrolyte loss
6. Hypovolemic shock
7. Acute renal failure

### Control Measures

1. Promote exclusive breastfeeding
2. Immunization
3. Using sanitary latrines
4. Keep food and water clean and closed.
5. Wash hands before eating and after defaecation.

### Treatment

**Oral Rehydration Therapy:** Give some available liquids like rice water, oral rehydration solution (ORS) packet to be dissolved in one litre of drinking water and stir with clean spoon, till it dissolves. Give  $\frac{1}{4}$  to  $\frac{1}{2}$  cup after every loose motion to a child



less than 2 years of age and 100-200 ml if the child is above 2 years. The solution should be consumed within 24 hours and should not be heated or boiled.

### Appropriate feeding

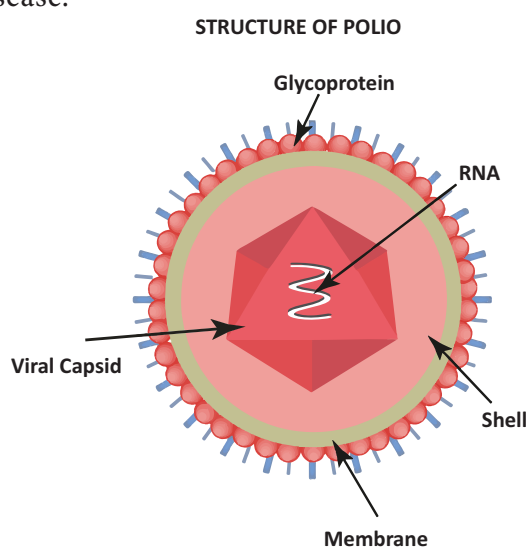
- a) Coconut water
- b) Rice water
- c) Dhal water
- d) Smashed banana
- e) Watery tea
- f) Breakfast feeding to be continued.

### Appropriate drugs:

- a) Antibiotics for Bacterial infection
- b) Symptomatic treatment for fever, vomiting etc.
- c) Anti – Motility agents.
- d) Intravenous infusion to severely dehydrated clients.

## Poliomyelitis

Poliomyelitis is an acute viral infection caused by polio viruses. It is a crippling disease.



### Causative organism

Three types of polioviruses (Type I, II, III)

**Mode of transmission** - Faeco – oral route: Through contaminated water, food, fingers etc.

**Droplet infection** : Coughing and sneezing an important route of transmission during the acute stage.

**Incubation period** - 7 to 21 days. It may vary from 3 to 35 days.

### Clinical manifestation

- a) Respiratory – Coryza, soar throat or cough.
- b) Gastro Intestinal Tract – Vomiting, diarrhea or constipation.
- c) Continuous – Fever, headache, drowsiness, restlessness, irritability and sweating.
- d) Pain – Spontaneous by the movement of back, neck, limbs.
- e) Hyperparesthesia
- f) Nuchal and spinal rigidity
- g) Tachycardia
- h) Excessive perspiration
- i) Paralysis

### Complications

1. Myocarditis
2. Hypertension
3. Pulmonary edema
4. Pneumonia
5. Depression

### Control measures

i) **Sanitation** : Measures to reduce transmission such as improved water supply, proper excreta disposal and improved domestic and food hygiene. Simple hygienic measures like hand washing with soap before preparing food, before eating, before feeding a child, after defecation, after cleaning a child who has defecated and after disposing off a child's stool should be promoted.

ii) **Health education** : important part of health workers job is, to prevent diarrhea by educating and helping community members to adopt and maintain preventive measures such as breast-feeding, weaning, clean drinking water,

use of plenty of water, use of sanitary latrine, proper disposal of stools of young children and patients with infection, etc.

**iii) Immunization :** Immunization against measles is a potential intervention for diarrhea

**Control Measures** Two types of vaccines are used

- Inactivated (Salk) vaccine (Injection)
- oral (Sabin) polio vaccine (OPV).

**iv) Fly control :** Flies breeding in association with human or animal faeces should be controlled.

## Treatment

- Mild analgesics and sedatives to relieve pain and induce sleep.
- For constipation – Mild laxatives
- Antibiotics to prevent respiratory complication.
- If respiratory failure occurs, treat with artificial respirators.
- Rehabilitation

## 11.7 Diseases Transmitted Through Air

### Chickenpox (Varicella)

**Definition** - Chickenpox or varicella is an acute highly infectious disease caused by varicella zoster

### Causative organism

Varicella zoster

**Mode of transmission** - Droplet nuclei

**Incubation period** - About 10 -21 days

### Complications (Children and Adults)

- Haemorrhages
- Pneumonia
- Encephalitis

- Acute cerebellar ataxia

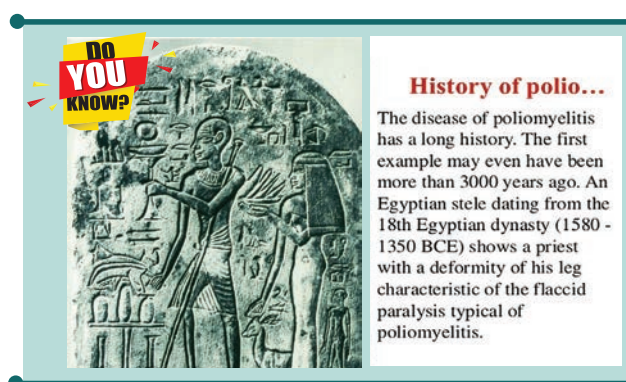
The control measures are notifications isolation of cases for about 6 days after onset of rashes and disinfection of articles soiled by nose and throat discharges.

## Clinical manifestations

| Pre-eruptive stage: | Eruptive stage:   |
|---------------------|---|
| 1. Fever            | 1. Rash, Clusters, itchy blisters                                   |
| 2. Pain in back     | 2. First appears on the trunk, then face, arms, axilla and in legs. |
| 3. Shivering        | 3. Rashes in buccal surface.  |
| 4. Malaise          |   |

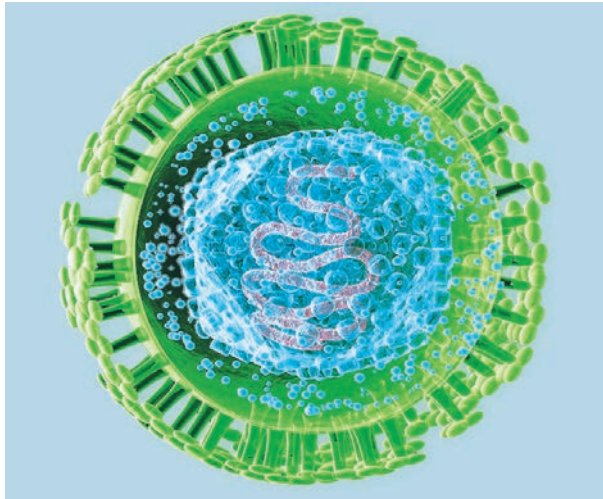
## Preventive measures

- Varicella zoster immunoglobulin :** Varicella zoster immunoglobulin given within 72 hours of exposure has been recommended for prevention of chicken pox.
- Vaccines :** The live attenuated varicella virus vaccine is safe and currently recommended for children between 12-18 months of age who have not had chicken pox.



## Medication

- Anti – pyretic
- Anti viral drugs



## ■ Measles

### Definition

Measles is an acute highly infectious disease of childhood caused by a specific virus of the group Myxo viruses.

### ■ Causative organism

RNA Para Myxo viruses

**Mode of transmission** - Droplet infection

**Incubation period** - 10 days from exposure to onset of fever and 14 days to appearance of rash. Average 7 days.

### ■ Clinical manifestations

There are three stages

#### 1. Prodromal stage:

1. Fever
2. Coryza
3. Sneezing
4. Nasal discharge
5. Cough
6. Redness of Eyes
7. Lacrimation
8. Photophobia
9. Vomiting
10. Diarrhea
11. Koplik's Spots on A Red Base

#### 2. Eruptive phase:

1. Duskyred
2. Macular
3. Maculo-papular rash
4. Rashes become confluent, blotchy

#### 3. Post-measles stage:

1. Weight loss
2. Weakness
3. Growth retardation
4. Reactivation of Pulmonary tuberculosis
5. Nutritional and metabolic effects

## ■ Complications

1. Measles – associated diarrhea,
2. Pneumonia
3. Otitis media.
4. Febrile convulsions,
5. Encephalitis
6. Pan-encephalitis.

### Control measures

- a) Isolation for 7 days after the onset of rash.
- b) Immunization of contacts within 2 days of exposure. (if vaccine is contra indicated immunoglobulin should be given within 3 – 4 days of exposure)
- c) Prompt immunization at the beginning of an endemic is essential to limit the spread.

## ■ Treatment

There is no specific treatment for measles, but the condition usually improves within 7 to 10 days. Following measures are important to control infection.

1. Controlling fever and relieving pain
2. Plenty of fluids to prevent dehydration
3. Treating cold like symptoms
4. Care of the sore eyes - cleaning the crusts with wet cotton swabs.

**Measles vaccine:** Measles is best prevented by active immunization. The

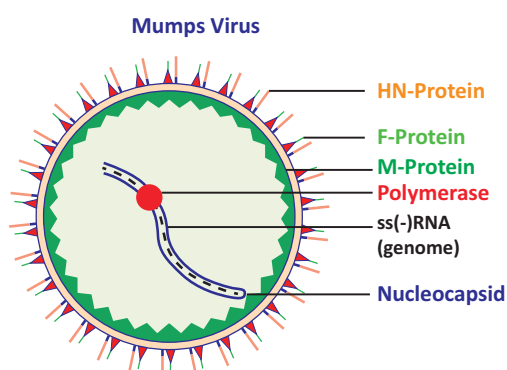
vaccine is presented as a freeze dried product. It is most important to store the vaccine at 2 – 8 degree celsius.

The most effective month of immunization by World Health Organization is at 9 months of age.

## ■ Mumps

### Definition

Mumps is an acute infections disease caused by virus infections. It is common in winter.



## ■ Causative organism

RNA virus classified as Genus Rubella virus of the family paramyxoviridae.

### Mode of transmission

1. droplet nuclei
2. direct contact with an infected person.

**Incubation period** - Varies from 2-3 weeks usually 18 days

## ■ Clinical Manifestation

1. Pain, swelling in one or both the parotid glands.
2. Ear ache
3. Pain and stiffness on opening the mouth
4. Fever
5. Headache

### Complications

1. Orchitis
2. Ovaritis

3. Pancreatitis
4. Meningo-encephalitis
5. Myocarditis
6. Nerve deafness, poly arthritis and hydrocephalous are rare

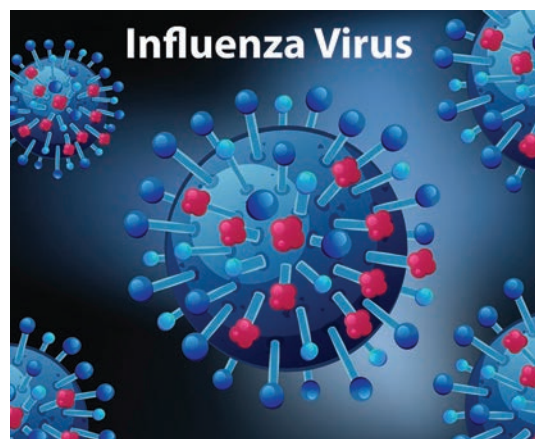
## ■ Control measures

1. **Early Diagnosis** - The cases should be identified to take appropriate measures by health authorities to control the disease
2. **Isolation**- The case should be isolated till the clinical manifestations are cleared or subsided.
3. **Disinfection** - As virus is present in saliva, blood, urine. Articles used by patient, which come in contact with these should be disinfected.
4. **Surveillance** - By surveillance source of infection, route of transmission and identification of cases and susceptible contacts is possible to prevent the further spread of disease.

## ■ Preventive measures

- a. **Vaccination:** A single dose (0-5 ml) highly effective, live attenuated vaccine is now available for the prevention of mumps.
- b. **Immunoglobulin** : A specific immunoglobulin is available, but its protective effect has not been established.

## ■ Influenza



## Definition

Influenza (commonly known as Flu) is an acute infection of the respiratory tract. It is caused by the influenza viruses. Influenza tends to spread very rapidly.

## Causative organism

Influenza virus are 3 types. Namely A, B, C

**Mode of transmission** - Influenza spreads mainly from person by droplet infection created by sneezing, Coughing or talking. The portal of entry of the virus is the respiratory tract.

**Incubation period** - 18 – 72 hours

## Clinical manifestations

1. Fever
2. Chills
3. Aches
4. Pains
5. Cough
6. Generalized weakness

**Complications** - Pneumonia

## Treatment

Antiviral drugs: These drugs may also modify the severity of influenza. If started with in 24-48 hours of onset of illness

## Control Measures

- Avoidance of crowded places
- Good ventilation of public buildings
- Covering the face when coughing and sneezing with handkerchief or cloth
- Isolation of cases of influenza

## Diphtheria

### Definition

Diphtheria is an acute infections, caused by the exotoxin of diphtheria bacilli. The disease attacks mainly the throat, tonsils, larynx or nose. Where the baccilli produces a grayish-

white membrane which spread in to the air passages.

## Causative organism

Corynebacterium diphtheria caused by exotoxin of diphtheria bacilli.

### Mode of transmission

1. Droplet infection.
2. Infected cutaneous lesions.
3. Infective object or dust, contaminated with nasopharyngeal secretions.

**Incubation period** - 2-6 days occasionally longer

## Clinical manifestations

The onset of symptoms is typically gradual. Most common presenting symptoms are

- Sore throat
- Malaise
- Cervical lymphadenopathy
- Low grade fever.
- Pharyngo tonsillar diphtheria - sore throat and difficult in swallowing
- Mild erythema is the earliest pharyngeal finding
- Isolated spots of gray and white exudate.
- Membranous pharyngitis
- Massive swelling of the tonsils, Uvula, cervical lymph nodes, submandibular region, and anterior neck (the so-called "bull neck" of toxic diphtheria).
- Aspiration of the membrane can lead to suffocation.
- Laryngeal diphtheria causes obstructive croup stridor and eventually asphyxia.
- Respiratory stridor may ensue, leading to respiratory insufficiency and death.

## Complications

- Diphtheria toxin can lead to
- Damage of the heart (myocarditis)





- Nervous system
- Kidneys.
- Neurological (Encephalitis encephalopathy)
- Prolonged convulsions
- Infantile spasm

### Control measures

#### 1. Cases and carriers

- Early detection:** Carriers can be detected only by culture method. Swabs can be taken from both the nose and throat and examined by culture methods for diphtheria bacilli.
- Isolation:** Suspected cases and carriers should be promptly isolated, preferably in a hospital for at least 14 days.
- Treatment:** For Cases when diphtheria is suspected diphtheria antitoxin should be given without delay. IM or IV in doses ranging from 20,000 to 1,00,000 units or more depending upon the severity of the case.

**2. For Carriers :** The carriers should be treated with 10 days course of oral erythromycin which is the most effective drug for the treatment carriers.

- Contacts :** Contacts need special attention. They should be throat swabbed and their immunity status determined. The bacteriological surveillance of close contact should be continued for several weeks.
- Community :** The only effective control is by active immunization with diphtheria toxoid. All children who are not previously immunized should be given a dose of 500 to 1000 IV diphtheria antitoxin.

### Treatment

- The specific treatment is diphtheria antitoxin which must be given immediately

in doses ranging from 10,000 to 80,000 units according to the severity of the case.

- Antibiotics (penicillin) help to eliminate the infection and prevent production of further toxin.
- Bed rest is essential to prevent heart failure.
- Tracheostomy may be needed if there is respiratory obstruction.

### Preventive measures

- Diphtheria can be prevented by active immunization either by DPT or diphtheria vaccine.
- The current practice is to immunize all infants with DPT starting from the age of 6 weeks.
- DPT vaccine protects not only against diphtheria but also against pertussis and tetanus.
- A booster dose (0.5 ml) of DPT is recommended at the age of 1½ to 2 years followed by another dose (DT only) at the age of 5 and 6 years.

## Whooping Cough

### Definition

A highly infectious disease of the respiratory tract, caused by the whooping cough bacilli. The disease occurs in epidemics every 3-4 years.

### Causative organism

Whooping cough bacilli Bordetella pertussis.

**Mode of transmission** - Droplet method and by personal contact.

**Incubation period** - Usually 7 to 14 days but not more than 3 weeks

### Clinical manifestations

- a. Catarrhal Stage
- b. Paroxysmal Stage
- c. Convalescent Stage.



1. Fever
2. Cold
3. Running nose
4. Irritating cough which gradually becomes paroxysmal within 1-2 weeks.

### Complications

- Hernia
- Prolapsed rectum
- Sub conjunctiva hemorrhage
- Encephalopathy
- Pneumonia and bronchiectasis

### Control measures

- a. Early diagnosis
- b. Isolation and treatment of cases
- c. Disinfection of discharges from nose and throat are general principles of control
- d. Early diagnosis is possible only by bacteriological examination of nose and throat Secretions.
- e. Enthroning may help to shorten the duration of illness.

### Treatment

**Activation Immunization:** It is a practice to administer pertussis vaccine in combination with diphtheria and tetanus toxoid as DPT vaccine.

It can be treated with antibiotics, usually erythromycin for 2 weeks.

### meningococcal Meningitis

#### Definition

Meningococcal meningitis or cerebrospinal fever is an acute communicable disease caused by *Neisseria meningitidis*. It usually begins with intense headache, vomiting and stiff neck and progresses to coma within a few hours.

### Causative organism

*Neisseria meningitidis*

**Mode of transmission** - Droplet infection

**Incubation period** - 2-10 days

### Clinical manifestations

1. Headache
2. Fever
3. Nausea/vomiting
4. Photophobia
5. Neck stiffness and various neurological sign.

### Complications

- Disseminated intravascular coagulation (DIC; blood clotting disorder)
- Encephalitis
- Persistent fever
- Seizures
- brain damage
- Behavioral and personality changes
- Vision loss (partial or total)
- Cerebral palsy
- Hearing loss (partial or total)
- Learning disabilities or mental retardation
- Paralysis (partial or total) Speech loss (partial or total)
- Severe bacterial meningitis also may cause the head and heels to bend backward and the body to bow forward (called opisthotonos),
- Coma, and death

### Control Measures

- a. **Control of cases, carriers and contacts.**
- b. **Cases:** Treatment with antibiotics can save the lives of 95% of patients provided that, it is started during the first 2 days of illness. Penicillin is the drug of choice.
- c. **Contact:** Close contact of persons with confirmed meningococcal disease patients

are at an increased risk of developing meningococcal illness.

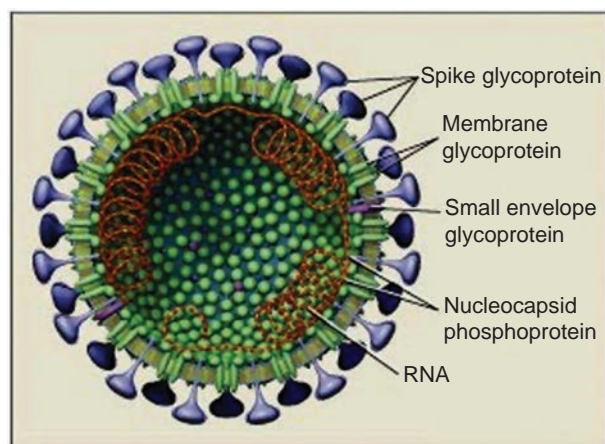
- d. **Mass chemoprophylaxis:** Mass medication of the total population some of which are not infected. Mass chemoprophylaxis be restricted and closely and medically supervised
- e. **Communities :** Mass treatment causes an immediate drop in the maintenance rate of meningitis and in the proportion carriers.
- f. **Environmental measures :** Improved housing and prevention of over-crowding are longterm measures.

## Acute Respiratory Infections

### Definition

Acute respiratory infections may cause inflammation of the respiratory tract anywhere from nose to alveoli.

Schematic drawing of SARS coronavirus



### Causative organism

- SARS Corona virus

**Mode of transmission** - air-born route.

**Incubation period** - 18-72 hours

### Clinical manifestations

Running nose, cough, sore throat, breathing difficult and ear problems. Fever is common in acute respiratory problem, most

children with these infections have only mild infection such as cold or cough.

## Complication – Pneumonia

The high mortality and morbidity rate attribute to acute respiratory infections.

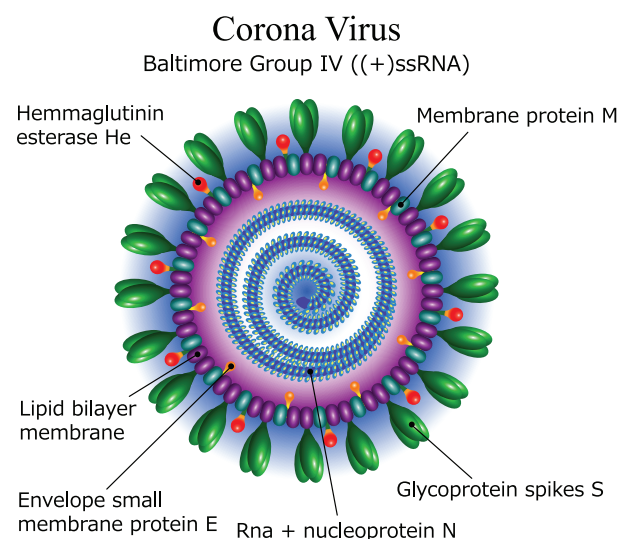
### HIB vaccine

Hemophiles influenza type B, HIB is an important cause of pneumonia and meningitis among children in developing world.

### Treatment

- Antibiotic

## Severe Acute Respiratory Syndrome



### Definition

Severe acute respiratory syndrome is a communicable viral disease

### Causative organism

Corona virus

### Mode of transmission

1. Close contact with infected person
2. Contaminated air and surfaces
3. If a person touches a contaminate surface and then touches their eye, mouth or nose

**Incubation period** - 2 to 7 days

## Clinical manifestations

1. Fever
2. Malaise chills
3. Headache
4. Myalgia
5. Dizziness
6. Cough sore throat
7. Running nose
8. Acute respiratory distress

## Complications

1. Pneumonia
2. Breathing problems.
3. Orchitis

## Control measures

- Good hand hygiene
- Pay attention to what surfaces you touch
- Infected person must cover their mouths when they cough or sneeze
- Use surgical mask
- Use gloves

## Treatment

There is no specific treatment for SARS. No clinical improvement has been attributable to the use of antibiotics

## Tuberculosis

**Definition** - Tuberculosis is a chronic infection disease caused by tubercle bacilli. The disease primarily affects lungs and causes pulmonary tuberculosis. It can also affect intestine, meninges, bones and joints, lymph glands, skin and other tissues of the body. The disease also affects animals such as cattle which is known as bovine tuberculosis.

## Causative organism

Mycobacterium tuberculosis

## Mode of transmission

Droplet infection, Tuberculosis mainly spread by droplet infection.

**Other ways :** Pulmonary tuberculosis is also transmitted by inhalation of infected dust.

**Incubation period** - This may be weeks or months, depending upon the host-parasite relationship and the dose of infection,

## Clinical manifestations

1. Chronic cough
2. Continuous low grade fever
3. Chest pain
4. Haemoptysis
5. Loss of weight

## Complications

|                     |                   |
|---------------------|-------------------|
| • Hemoptysis        | • Asperigilloma   |
| • Pleurisy          | • Endobronchitis  |
| • Pleural effusion' | • Bronchitis      |
| • Empyema           | • Laryngitis      |
| • Pneumothorax      | • B ronchiectasis |

## Control measures

- a. Early case finding
- b. Chemotherapy
- c. BCG Vaccination
- d. Health education

## Early case finding

**Case:** The first step in tuberculosis control programme is early detection of all cases in the community. WHO defines a case of pulmonary tuberculosis as, "a person whose sputum is positive for tubercle bacilli".

**Case finding tools:** Sputum examination by direct microscopy is now considered for early detection of cases. The reliability, cheapness and ease of direct sputum examination has made it number one case finding measure all over the world.

## Health education.

The health education programme should motivate patients to undergo regular treatment and follow up, disposals of sputum and co-operation with agencies administering the programme.

## Treatment

Anti Tuberculosis Treatment Drugs

## Swine flu

**Definition** - Swine flu which is called pig flu. Swine flu caused by swine influenza virus.

**Causative Organism** - influenza virus subtypes H1N1, H1N2, H3N1 and H3H2

## Mode of Transmission

Influenza virus can be directly transmitted from pigs to people.

**Incubation Period** - Within 7 days.

## Clinical features

|               |                       |
|---------------|-----------------------|
| • Fever       | • Nausea              |
| • Sore throat | • Chills              |
| • Cough       | • Headache            |
| • Body ache   | • Shortness of breath |
| • Fatigue     |                       |

## Control Measures

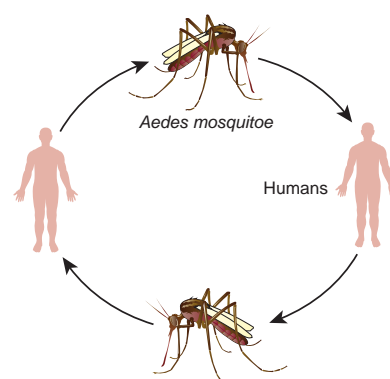
- Adequate amount of sleep and supply nutritious food.
- Consider taking multivitamins and vitamin C supplement.
- Wash your hands regularly with soap and water.
- Avoid close contact or stay away from sick people.
- Avoid sharing drinks or utensils.
- Avoid touching your face.
- Wear a face mask as directed by physician.
- Stay updated and avoid travelling to affected areas.
- Meat to be inspected and certified
- Health education
- Adequate sewage treatment and disposal
- Early detection and early treatment
- Through cooking of beef and pork is the most effective method to prevent food borne infection.

## Treatment

- Vaccination is the best protection against contracting the infection.
- Antiviral drugs can be used for prevention or treatment of flu viruses.

## 11.8 Diseases transmitted through arthropods

### Dengue Fever



#### Definition

A viral disease transmitted by mosquitoes, and causing sudden fever and acute pains in the joints.

A severe form of dengue fever, also called dengue hemorrhagic fever, can cause severe bleeding, a sudden drop in blood pressure (shock) and death.

### Causative organism

Causative agent of the disease is the Dengue virus,

**Mode of transmission** - Dengue fever is transmitted to humans through the bites of infective female *Aedes aegypti* mosquitoes.

**Incubation period** - 3 to 14 days usually 4 to 7 days.

### Clinical manifestations

#### Dengue Haemorrhagic fever

- All symptoms of dengue viral fever.
- Maculopapular





- Scarletine form or petechial rash appears on third day of illness
- Head ache
- Nausea, vomiting
- Coffee colour vomiting
- Abdominal pain
- Pharyngitis
- Cough and dyspepsia

### Dengue shock syndrome

- In addition to signs and symptoms of the above clinical feature client may go for shock.
- Sudden collapse
- Cold and clammy extremities
- Weak thread pulse
- Circumoral cyanosis along with haemorrhagic manifestation
- Occasionally epistaxis, haematemesis, malena or subarachnoid haemorrhage.

### Control measures

- Mosquito control
  - a. Cover all water containers.
  - b. Change water in flower vases every week.
  - c. Clean the surrounding area of the house.
  - d. Use insecticide spray in the house to kill adult mosquitoes.
- **Vaccines** : So far there is no satisfactory vaccine and no immediate prospect of preventing the disease by immunization

### Other measures

- Isolation under bed rest
- Wear full sleeves shirts and full pants.
- Use of mosquito repellent creams, liquids, coils, mats etc.
- Use of bed nets for sleeping infants and young children during day time to prevent mosquito bite.

### Treatment

- a. Bed rest is advisable during the acute febrile phase.
  - b. Antipyretics or sponging are required to keep the body temperature at 98.6 degree F
  - c. Oral fluid and electrolyte therapy is recommended for patients with excessive sweating, vomiting or diarrhea.
  - d. Analgesics or a mild sedative may be required for those with severe pain.
  - e. Home available fluids to be given to prevent dehydration,
  - f. Fluid replacement should be minimum volume that is sufficient to maintain effective circulation during the period of leakage.
- **Management of shock** : Immediate replacement of plasma loss with isotonic salt solution.

### Malaria:

#### Definition

Malaria is a protozoal disease caused by infection with parasites of the Genus plasmodium.

### Causative organism

Female anopheles mosquitoes

**Mode of Transmission** - Malaria is transmitted by the bite of infected female anopheles mosquito.

**Incubation Period** - In some strains the incubation period may be delayed for as long as 6-9 months

**Intermittent fever** has 3 stages.

1. Cold stage (1/4 to 1/2 hours) - Head ache, Shivering fever rising rapidly
2. Hot stage (1/2 to 5 hours) - Very hot feeling, severe headache, skin flushed, fever starts falling



3. Sweating stage - Profuse sweating, temperature normal, Enlargement of spleen and secondary anaemia.

## ■ Diagnosis

Blood smear test

### Treatment

Antimalarial drugs

## ■ Lymphatic Filariasis

### Definition

Lymphatic filariasis commonly known as elephantiasis, is a mosquito borne disease caused by the filarial parasites.

**Causative organism** - Wucheriria bronchofti, Brugia malayi

**Mode of transmission** - It is transmitted by the bite of culex mosquitoes.

**Incubation period** - 5 to 10 months

## ■ Clinical manifestations

- Fever
- Lymphangitis
- Elephantiasis evident in legs and arm

## ■ Control measures - Vector control

- Anti larval measures
- Chemical control – mosquito larvicidal
- Removing the pistia plant from all water collections and convert the ponds to fish or lotus culture.
- **Environmental measures** : Larvicidal operations are complemented by minor engineering operations such as filling up of ditches and pools, drainage of stagnant water,adequate maintenance of septic tanks and soakage pits etc.,

### Diagnosis test

Blood smear by microscopic examinations

### Treatment

Chemotherapy – Mass drug administration (MDA) regimens.

## ■ Chikungunya Fever

A dengue like disease caused by a group A virus.

## ■ Causative organism

Aedes aegypt, Aedes albopictus female mosquitoes

**Mode of transmission** –Transmitted from human to human by the bites of infected female mosquitoes.

**Incubation period** - 4 to 7 days

## ■ Clinical manifestations

- High fever with chills
- Severe articular pains in the limbs and spinal column.
- Arthralgia
- Anorexia
- Conjunctivitis
- Coffee-coloured vomiting
- Epistaxis
- Arthropathy : pain, swelling and stiffness, especially of the meta carpophalanges wrist Elbow, shoulder, knee, ankle and metatarsal joints.

### Diagnosis

Serological tests: ELISA (Enzyme Linked Immuno Sorbent Assays)

### Complications

1. Dementia
2. Cerebral problems
3. Kidney disorders
4. Paralysis

## Control measures

- The *Aedes aegypti* mosquito breeds in clean water.
- All water containers should be covered, to eliminate mosquito from the breeding places.
- Abate is increasingly used as a larvicide.
- Aerosol spray of ultra low volume (ULV) quantities of malathion or sumithion (250 ml / hectare) has been found to be effective in interrupting transmission and stopping
- Epidemics of dengue haemorrhagic fever.

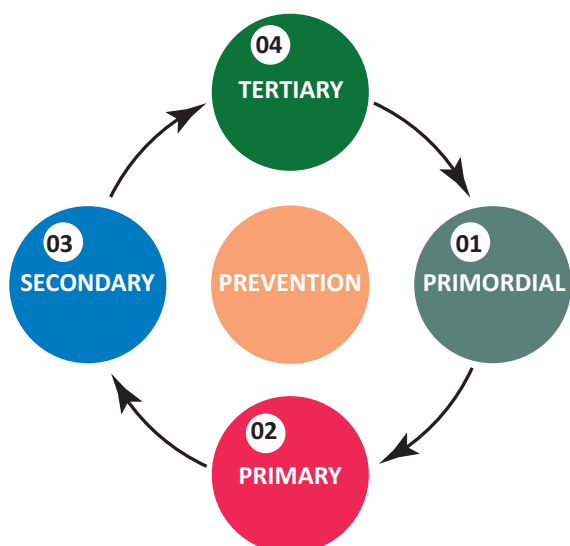
## Treatment

- Analgesics
- Anti – pyretics
- Fluids

### Prevention of communicable diseases

Communicable diseases can be prevented by appropriate preventive measures which include:

- Good site planning
- Provision of basic clinical services
- Provision of appropriate shelter
- Clean water supply
- Sanitation
- Mass vaccination against specific diseases
- Regular and sufficient food supply
- Control of vectors
- Health education specific protection. Eg. Immunization chemoprophylaxis



## 11.9 Prevention Of Communicable Diseases

**PRIMORDIAL – PREVENTION** : It is a new concept, receiving special attention in the prevention of chronic diseases. This is primary prevention in its purest sense, that is prevention of the emergence or development of risk factors in countries or population. An groups in which they have not yet appeared eg many adult health problems.

### Primary Prevention

- Increasing the resistance of the host
- Inactivating the agent
- Interrupt the chain of infection
- Restricting spread of infection
- Health education
- Specific protection (eg) Immunization, Chemoprophylaxis.

### Secondary Prevention

- Activities targeted at detecting disease at earliest possible. Examples case finding, health screening, health education

### Tertiary Prevention

- Limits the progression of disability
- Treatment of symptoms and rehabilitation vary with each specific disease

### Surveillance

- Surveillance is the ongoing systematic collection, analysis and interpretation of data in order to plan, implement and evaluate public health intervention.

### Outbreak Control

- An outbreak is occurrence of a number of cases of a disease that is unusually large or unexpected for a given place and time. Early detection and control of the disease is advisable.

## Management of a communicable disease outbreak

- Preparation
- Detection
- Response
- Evaluation



### Preparation for the outbreak

- Health coordination meetings
- Strong surveillance system
- Outbreak response plan for each disease
- Stocks of IV fluids, antibiotics and vaccines
- Plans for isolation wards
- Laboratory support

### Detection of outbreak

- Surveillance system with early warning system for epidemic prone diseases.
- Inform ministry of health and WHO in case of outbreaks of specific diseases.
- Take appropriate specimens (stool, CSF or serum) for laboratory confirmation.
- Include cases in the weekly reports
- Assess appropriateness and effectiveness of containment measures.
- Assess timelines of outbreak detection and response.
- Change public health policy if indicated.
- Write and disseminate outbreak report

### Global Disease Eradication Efforts

Methods to accomplish the goal of eradication of diseases include:

- immunization and vaccination
- drug therapy
- community training
- health education
- national disease surveillance efforts

### Nurses' Role

Community health nurses play an important role with regard to all population at risk for communicable disease

Nurses concerned with communicable disease control must

- Recognize vulnerable area.
- Locate the reservoirs and source of infectious disease agents
- Identify the environmental factors which promote the spread of communicable disease.
- Identify characteristic of vulnerability of community member and groups-particularly those subject to intervention
- Community health nurses must work collaboratively with other public health professional. Organize immunization and educational programs, to improve community infection control policies.

## SUMMARY

1. The important water borne diseases are typhoid fever, cholera, hepatitis A and acute diarrhoeal disease. Typhoid fever is caused by salmonella typhi and the mode of transmission is by faeco oral route. Complication of typhoid fever is intestinal perforation.
2. **Cholera** is an acute infectious disease caused by cholera (vibrio cholera) and the mode of transmission is by oro -faecal route.
3. Cholera is a notifiable disease and it not identified and treated early can cause sudden death.
4. **Hepatitis** - is a systematic disorder that primarily affects the liver. The causative organism is hepatitis a virus. Mode of transmission is faeco oral route and direct contact and the incubation period is 15 to 50 days usually 28 days.



5. **Acute diarrheal disease** - is an acute or chronic intestinal disturbance characterized by passing more than three loose motions in a day with in 24 hours. Oral rehydration therapy is the most important thing in maintaining the hydration level.
6. **Polio myelitis** - is an acute viral infection caused by polioviruses. It is a crippling disease. The causative organism is three types of polioviruses (Type I, II and III) Mode of transmission is by faeco oral route and droplet infection.
7. **Food poisoning** - is an acute gastro enteritis caused by the ingestion of food or drink contaminated with either living bacteria or other toxins or chemical substances.
8. Diseases transmitted through parasites are amoebiasis, ancylostomiasis, Taenia solium and Tarmia saginata and Ascariasis.
9. Amoebiasis - is a common infection of the human gastro intestinal tract and caused by Entamoeba histolytica.
10. Hook worm infestation - is a chronic infestation of small intestine. The causative organism is Ancylostoma duodenale, Necator americanus.
11. Ascariasis - is a common helmenthic infection in man caused by Ascaris lumbricoids.
12. Tape worm infestation or Taeniasis - is a group of cestode infections which are important zoonotic disease.
13. All the diseases transmitted through oro-faeco route and the diseases caused by parasites may be controlled and prevented by proper sanitation method, improved personal hygiene and vaccines.
14. Chickenpox or varicella - an acute highly infectious disease caused by varicella – zooster. Virusit is characterized by vesicular rash, that may be accompanied by fever and malaise.
15. Swelling of the parotid glands is the first indication of mumps.
16. Influenza spread mainly from person to person by droplet infection or droplet nuclei created by sneezing coughing or talking.
17. Diphtheria spreads mainly by droplet infection. Transmission occurs by objects like cup, thermometer, toys, pencils
18. Meningococcal meningitis or cerebro spinal fever is an acute communicable disease caused by N. meningitis.
19. Acute respiratory infections may cause inflammation of the respiratory tract anywhere from nose to alveoli.
20. The word rubeola means red spots.
21. There are three main test currently used in tuberculosis, mantoux intradermal test, the head and the tiny multiple puncture test. Tuberculosis which affects animals is known as “bovine tuberculosis.”
22. Swine flu which is called pig flu caused by influenza virus.
23. Malaria is a protozoal disease caused by infection with parasite of the Genus plasmodium and transmitted to man by infected anopheline mosquito.
24. Lymphatic filariasis is caused by Wuchereria bancrofti. The lymphoedema management is washing and drying the affected limb, elevating the limb and exercising.
25. Dengue fever is otherwise called as break-bone fever.
26. Chikungunya fever caused by group A virus, the chikungunya virus and transmitted by Aedes, culex and mansonias mosquitoes. The incubation period of chikungunya fever is 4-7 days.
27. Japanese encephalitis is a mosquito borne encephalitis infecting mainly animals and incidently man.
28. Tetanus is an acute neuromuscular disorder caused by clostridium tetani. Tetanus is entirely preventable disease by active immunization with tetanus toxoid.



## GLOSSARY

A-Z

|                   |                                 |   |
|-------------------|---------------------------------|---|
| Portal of entry   | நோய் நுழைவாயில்                 | The site through micro organisms enters in to host                            |
| Susceptible       | எளிதில் பாதிக்கக்கூடிய          | Can be easily affected  |
| Contamination     | மாசுபட்ட / தூய்மைக்கேடு         | Presence of unwanted harmful substance  |
| Notification      | அறிவிப்பு                       | The act of notifying  |
| Isolation         | தனிமைப்படுத்தப்பட்ட             | The process of being alone  |
| Disinfection      | விஷ கிருமிகளை நீக்குதல்         | The process of cleaning by using chemicals                                    |
| Causative agent   | நோய் தோன்ற காரணமாகும்           | acting as a cause / producing an effect /                                     |
| Incubation period | நோய் அரும்பு / உருவாகும் காலம்  | The period between exposure to an infection and appearance of first symptoms. |
| Sanitary          | சுகாதாரமான                      | Hygienic and clean  |
| Photo phobia      | கண்கூச்சம்                      | Extreme sensitivity / to light  |
| droplet           | நீர்த்திவலை                     | A very small drop of a liquid/  |
| Anthro pod        | கணுக்காலிகள்                    | A type of animals with no spine, six or more joined legs/                     |
| Surveillance      | நோய்- நிகழ்வு ஆய்வு கண்காணிப்பு | Close observation   |
| chemoprophylaxis  | நோய்க்கட்டுப்பாடு               | The use of drugs to prevent disease/  |
| eradication       | ஒழித்தல் முற்றிலும் அழித்தல்    | The complete destruction of something/  |



## Evaluation

### I. Choose the best answer

- Typhoid fever is caused by
  - salmonella typhi
  - wuchereria bancrofti
  - Varicella zoster
  - Mycobacterium tubercle
- Typhoid fever is a
  - vector borne disease
  - water borne disease
  - airborne disease
  - zoonotic disease
- Mode of transmission of cholera is
  - Faeco oral route
  - droplet
  - contact with infected persons
  - blood transfusion
- Incubation period of cholera is
  - few hours to 2 days
  - few hours to 5 days
  - few hours to 7 days
  - more than 7 days



5. Control measures for food poisoning
    - a) food sanitation and personal hygiene
    - b) good environmental sanitation
    - c) antibiotics
    - d) bland diet
  6. Chickenpox is caused by
    - a) Rubeola
    - b) Varicella-zoster
    - c) German measles
    - d) Varicella virus
  7. A typical dusky red macular or maculopapular rash begins at which stage
    - a) prodromal stage
    - b) eruptive phase
    - c) post measles stage
    - d) pre-eruptive stage
  8. The incubation period of mumps is
    - a) 12 – 25 days
    - b) 18-72 hours
    - c) 2-6 days
    - d) 7-14 days
  9. The causative organism of tuberculosis is
    - a) M.leprae
    - b) Mycobacterium tuberculosis
    - c) RNA virus
    - d) Y.pestis
  10. Dengue fever is caused by
    - a) plasmodium vivax
    - b) Aedes aegypti
    - c) plasmodium falciparum
    - d) Aedes albopictus
  11. Filariasis is transmitted by the
    - a) bite of infected vector mosquitoes
    - b) bite of infected animals
    - c) bite of infected birds
    - d) bite of infected flies.
  12. Incubation period of filaria is
    - a) 1-6 months
    - b) 6-8 months
    - c) 8 to 12 months
    - d) 16-18 months
  13. Plague is caused by
    - a) Y.Pestis
    - b) T.Pallidum
    - c) Vibrio cholera
    - d) C.tetani
  14. Genital herpes is caused by
    - a) Herpes simplex virus
    - b) Hepatitis B Virus
    - c) Human papilloma virus
    - d) candida Albicans
  15. An example for viral sexually transmitted disease
    - a) Gonorrhoea
    - b) syphilis
    - c) chancroid
    - d) Genital human papilloma
  16. Primary prevention includes which of the following
    - a) health promotion and specific protection
    - b) early diagnosis and treatment
    - c) disability limitation
    - d) all of the above
  17. The best method to prevent pulmonary tuberculosis is
    - a) case isolation
    - b) treatment of cases
    - c) BCG vaccination
    - d) chemoprophylaxis
  18. Main aim of tuberculosis treatment is
    - a) radiological cure
    - b) contact tracing
    - c) bacteriological cure
    - d) to prevent complications
- 
- ## II. Fill in the blanks
1. Poliomyelitis is a \_\_\_\_\_ disease.
  2. Hepatitis affects \_\_\_\_\_ organ.
  3. \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ causes acute diarrhoeal disease.
  4. Incubation period of malaria is \_\_\_\_\_.



5. Arthropathy is present in \_\_\_\_\_ fever.
6. Leptospirosis is transmitted from \_\_\_\_\_ to man
7. Chickenpox is transmitted from \_\_\_\_\_ to \_\_\_\_\_.
8. Koplik's spots appear on the \_\_\_\_\_ Mucosa.
9. Influenza is a acute \_\_\_\_\_ infection
10. Whooping cough otherwise known as \_\_\_\_\_
11. SARS caused by \_\_\_\_\_ virus.
12. BCG vaccine is given to prevent \_\_\_\_\_
13. Gonorrhoea is transmitted through \_\_\_\_\_
14. The incubation period of tetanus is \_\_\_\_\_
15. Japanese encephalitis is transmitted to man by \_\_\_\_\_

### III. Write short notes (5 marks)

1. Poliomyelitis
2. Tuberculosis
3. Dengue fever
4. Leprosy
5. Malaria

### IV. Write briefly

1. Disease transmitted through parasites.
2. Sexually transmitted diseases
3. Diseases transmitted through arthropod.
4. Disease transmitted through animals.

### V. Write in detail

1. Disease transmitted through oro faecal route
2. Disease transmitted through air.
3. Diseases transmitted through contact.



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