

Communicable Diseases



Definition of communicable diseases

- A communicable disease is an illness due to a specific infectious (biological) agent or its toxic products capable of being directly or indirectly transmitted from man to man, from animal to man, from animal to animal, or from the environment (through air, water, food, etc..) to man.
- a disease that can be spread to a person from another person, an animal or object. Ex: common cold, influenza, tuberculosis, etc.

Communicable disease

- “The disease which can be transmitted from one living being to other (man or animal) or from environment to the living being by an infectious agent or its product is called communicable disease.”

Common Pathogens: Viruses, Bacteria, Fungi & Protozoa

- **Virus:** smallest simplest life form. Not alive, and cause upper respiratory infections and many other type of diseases.



- **Bacteria:** simple one-celled organisms. They are everywhere. Not all bacteria is bad.



- **Fungi:** more complex than bacteria, but cannot make their own food. Thrive in warm, moist environments.



- **Protozoa:** one celled, animal like organisms.



Communicable diseases

- Sudden onset
- Single cause
- Short natural history
- Short treatment schedule
- Cure is achieved
- Single discipline
- Short follow up
- Back to normalcy

How are pathogens spread?

- **Direct Contact** hands and skin
ex: Scabies
- **Indirect Contact** coughs, sneezes, expelling pathogens
in the air ex: flu
- **Contact with animals or insects** – animal and insect bites ex: Lyme's disease (ticks) – chills, fever, headaches, discomfort, a skin eruption, and inflammation with swelling of the joints.
- **Other contacts** such as contaminated food or water.
Ex: Salmonellosis – infection of the digestive tract. Sharp pain, fever, and bloody, watery diarrhea that occur 6 to 48 hours after eating. Nausea and vomiting are common.

Few Important Terminologies related to Communicable Diseases...

Infection

- Infection is the entry and development or multiplication of an infectious agent in the body of man or animals. An infection does not always cause illness.
- There are several levels of infection (Gradients of infection):
 - Colonization (*S. aureus* in skin and normal nasopharynx)
 - Subclinical or inapparent infection (polio)
 - Latent infection (virus of herpes simplex)
 - Manifest or clinical infection

contamination

- The presence of an infectious agent on a body surface, on or in clothes, beddings, toys, surgical instruments or dressings, or other articles or substances including water and food

Infestation

- It is the lodgment, development and reproduction of arthropods on the surface of the body or in the clothing, e.g. lice, itch mite. This term could be also used to describe the invasion of the gut by parasitic worms, e.g. ascariasis.

Contagious disease

- A contagious disease is the one that is transmitted through contact. Examples include scabies, trachoma, STD and leprosy.

Vector of infection

- An insect or any living carrier that transports an infectious agent from an infected individual or its wastes to a susceptible individual or its food or immediate surroundings. Both biological and mechanical transmissions are encountered.

Reservoir

- Any person, animal, arthropod, plant, soil, or substance, or a combination of these, in which an infectious agent normally lives and multiplies, on which it depends primarily for survival, and where it reproduces itself in such a manner that it can be transmitted to a susceptible host. It is the natural habitat of the infectious agent.

Epidemic

- “The unusual occurrence in a community of disease, specific health related behavior, or other health related events clearly **in excess of expected occurrence**”
- (epi= upon; demos= people)
- Epidemics can occur upon endemic states too.

Endemic

- It refers to the constant presence of a disease or infectious agent within a given geographic area or population group. It is **the usual or expected frequency of disease** within a population.
- (En = in; demos = people)

Pandemic and Exotic

- 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 the world, e.g. Influenza pandemics.
- Exotic diseases are those which are imported into a country in which they do not otherwise occur, as for example, rabies in the UK.

Sporadic

- The word sporadic means “scattered about”. The cases occur irregularly, haphazardly from time to time, and generally infrequently. The cases are few and separated widely in time and place that they show no or little connection with each other, nor a recognizable common source of infection.
- However, a sporadic disease could be the starting point of an epidemic when the conditions are favorable for its spread.

Nosocomial infections

- Nosocomial (hospital acquired) infection is an infection originating in a patient while in a hospital or another health care facility. It has to be a new disorder unrelated to the patient's primary condition. Examples include infection of surgical wounds, hepatitis B and urinary tract infections.

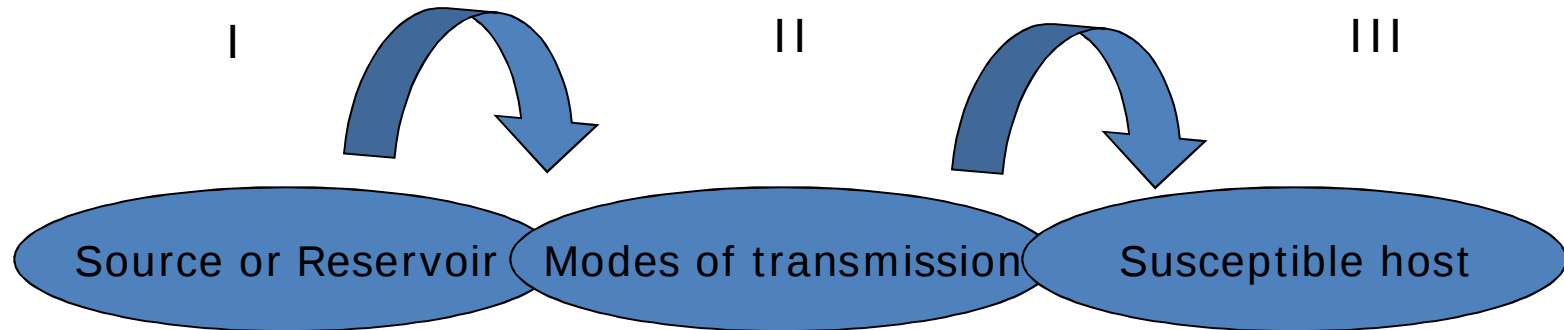
Opportunistic infection

- This is infection by organisms that take the opportunity provided by a defect in host defense (e.g. immunity) to infect the host and thus cause disease. For example, opportunistic infections are very common in AIDS. Organisms include Herpes simplex, cytomegalovirus,
- M. tuberculosis....

Incubation and Latent periods

- Incubation period: time from exposure to development of disease. In other words, the time interval between invasion by an infectious agent and the appearance of the first sign or symptom of the disease in question.
- Latent period: the period between exposure and the onset of infectiousness (this may be shorter or longer than the incubation period).

Dynamics of disease Transmission (Chain of Infection)



Importance of Communicable Diseases

- Significant burden of disease especially in low and middle income countries
- Social impact
- Economic impact
- Potential for rapid spread
- Human security concerns
 - Intentional use

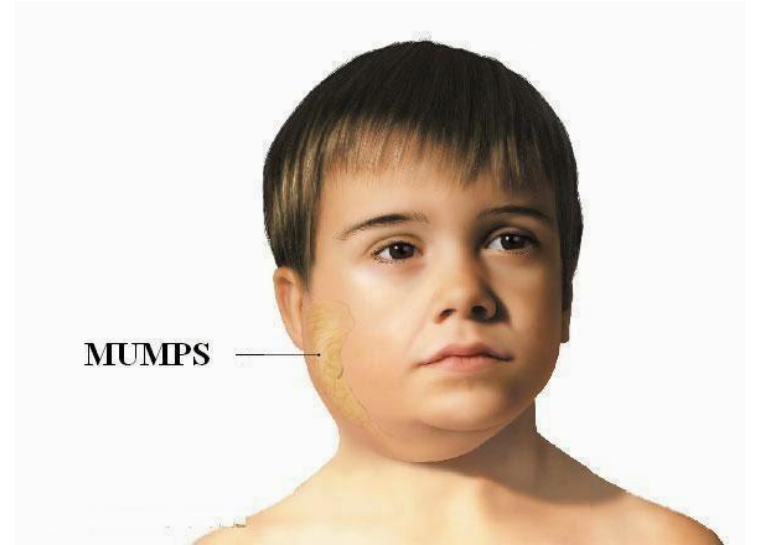
Prevention

- Ways to prevent Infectious Disease
 - Getting enough sleep, avoiding alcohol/cigarettes, and eating a healthy diet.
 - Getting vaccines when available.
 - Staying away from disease carrying animals or food/water that is dirty.

Common communicable diseases

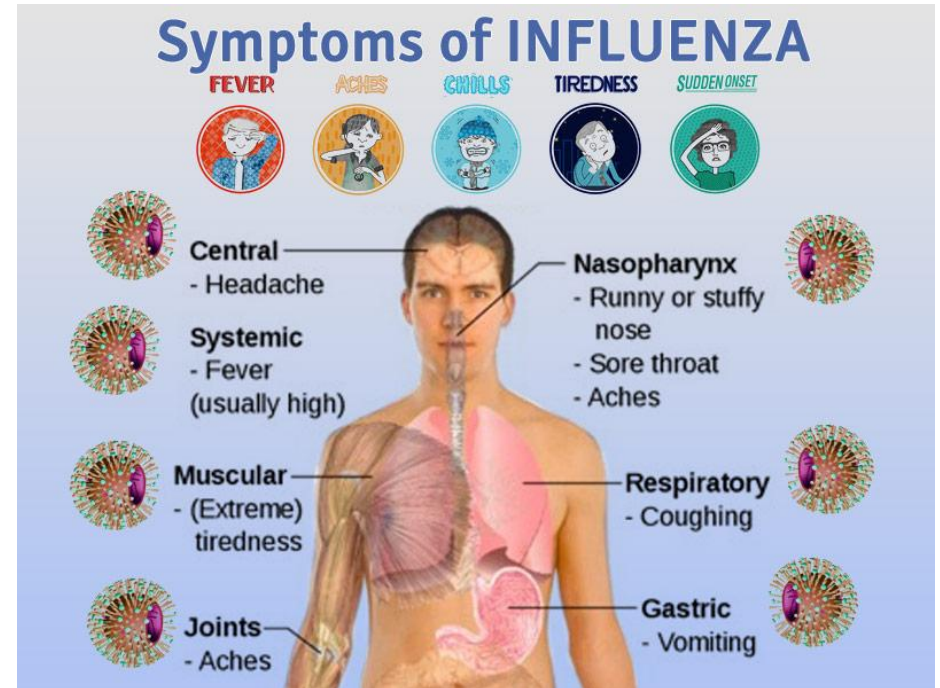
Mumps

- **Cause**
 - RNA virus of myxovirus group
- **Symptom**
 - Pain in parotid gland and other salivary glands, affect testes, ovaries, prostate, pancreas and brain.
- **Prevention**
 - Mumps vaccine and MMR (Measles, Mumps & Rubella) vaccine.



Influenza

- **Cause**
 - Influenza virus
(respiratory tract infection).
- **Symptom**
 - Feverish, headache, body ache, shivering, perspiration, High temperature, pain in back, exhausted and mentally depressed, sore throat, blocked nose, flu of gastric, nerves and respiration.
- **Prevention**
 - Influenza vaccine.



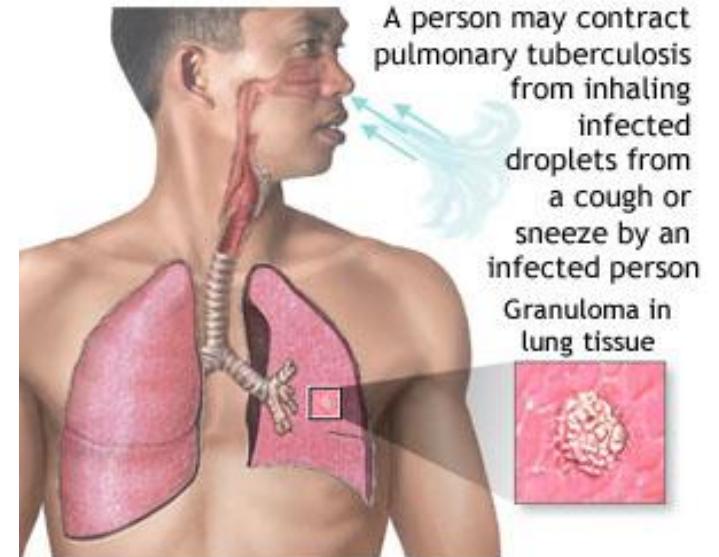
Small pox

- Cause
 - Variola virus.
- Symptom
 - Very heavy chill, vomiting, intense headache, back ache, rise in temperature and rashes.
- Prevention
 - Small pox vaccination.

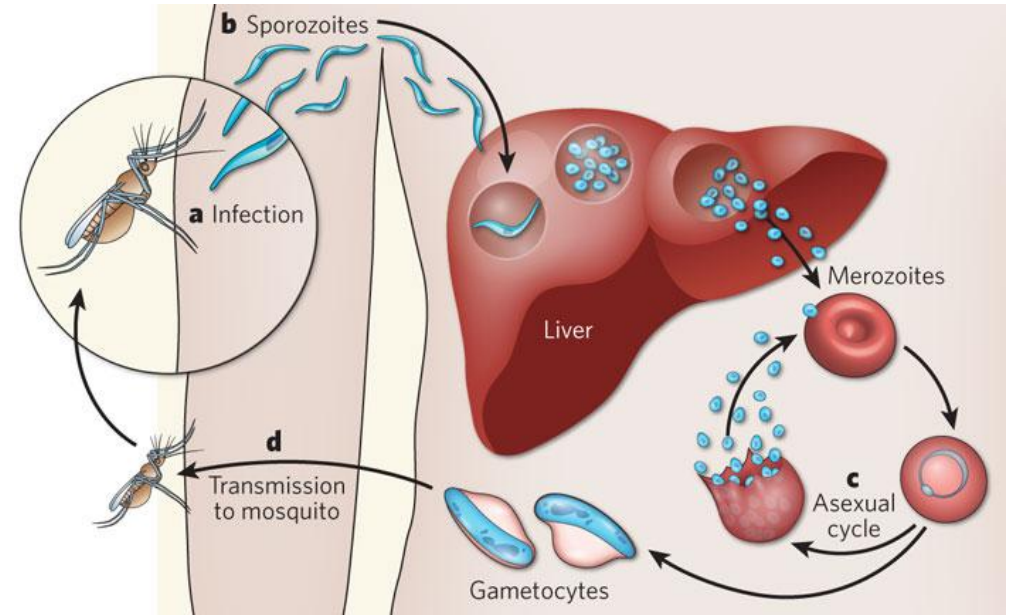


Tuberculosis

- Cause
 - Myco tuberculosis bacteria
- Symptom
 - Cough for more than one month, Continuous fever, chest pain, blood in sputum.
- Prevention
 - BCG (Bacillus Calmette Geurin) vaccine, Chemoprophylaxis.



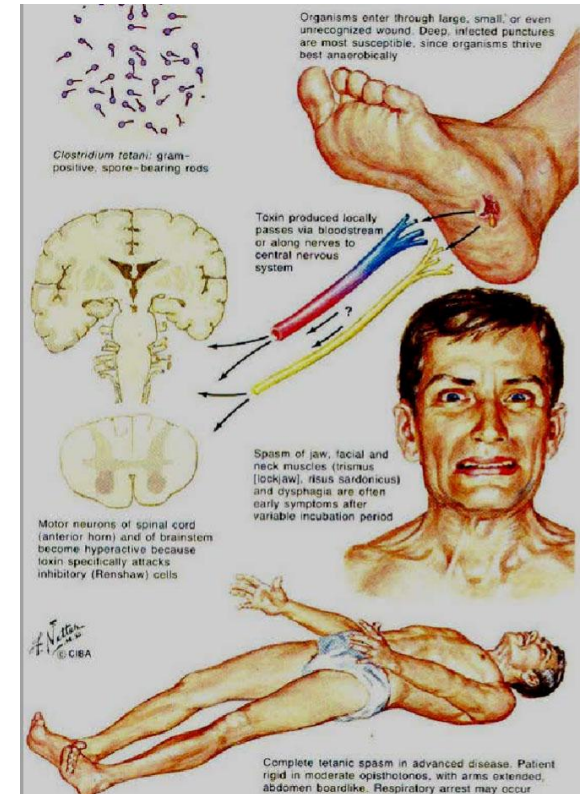
Malaria



- **Cause**
 - Parasites of genus *Plasmodium* transmitted by female anopheline mosquito.
- **Symptom**
 - COLD-HEAT-SWEATING stages.
 - Serious fever, head ache, cold and shivering, enlargement of spleen.
- **Prevention**
 - Measures to be applied by Individual and Community.

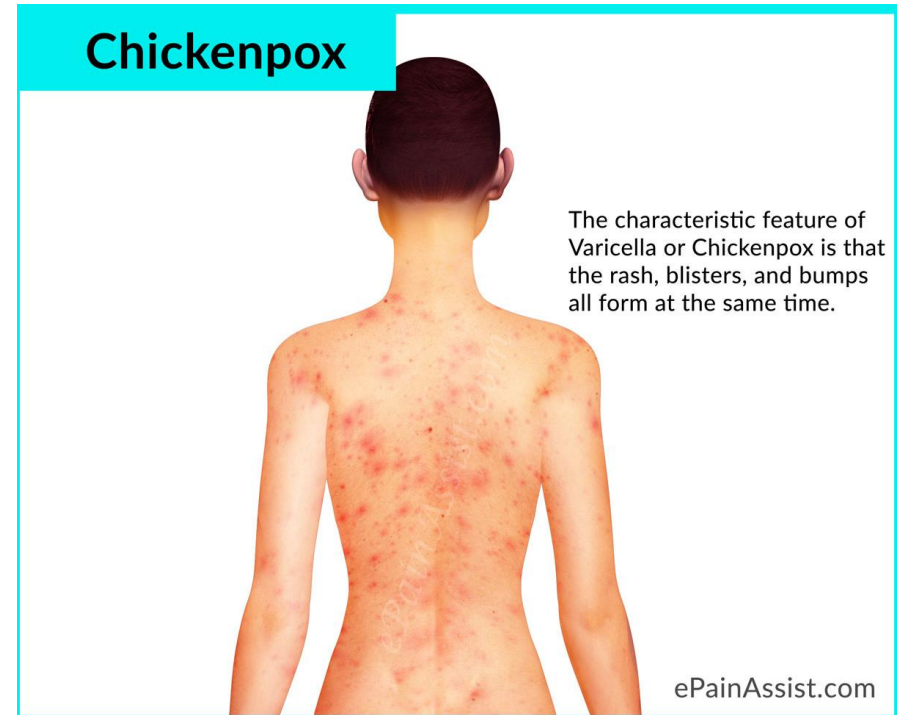
Tetanus

- Leads to 'Locked jaw'
- Cause
 - Exotoxin of *Clostridium tetani*.
- Symptom
 - Painful spasm of voluntary muscles like Masseter (jaw), facial muscles, muscles of back and neck, lower limbs and abdomen.
- Prevention
 - Tetanus toxic vaccination and DPT (Diphtheria Pertussis Tetanus).
 - Active immunization by TT (Tetanus Toxoid)
 - Human tetanus hyper immune globulin
 - Antibiotics for treatment.



Chicken pox

- Cause
 - Varicella Zoster (VZ Virus).
- Symptom
 - Mild fever, back pain, leg pain, Chillness and vomiting, rashes or blisters.
- Prevention
 - V-Z Immunoglobulin.



Rabies

- **Cause**
 - Lyssavirus type 1.
- **Symptom**
 - Hydrophobia
 - Head ache, sore throat, slight fever lasting 2-10 days, pain and tightening of the site of the wound.
 - Patient does not like noise, bright light or cold draught of air.
 - Mental changes like fear of death, anger, irritability and depression.
- **Treatment**
 - Local treatment of wounds, Observation of animal for 10 days, Indications for rabies treatment, Anti-rabies treatment- Nervous tissue (sheep brain) vaccine, Avian Embryo (Inactivated duck) vaccines, Cell culture (Human Diploid Cell) vaccine.



Cholera

- Cause
 - Vibrio- Cholerae.
- Symptom
 - Severe diarrhoe, vomiting thirst, headache, rise in temperature, stools are loose and watery with greenish in colour, body temperature is low and pulse rate feeble.
- Prevention
 - Cholera vaccine, Vomitings and stools to be burnout or disinfectant used.
 - Boiled water, vegetables to be cleaned by potassium permanganate, drains neat and clean, care for drinking water.

How cholera affects the body

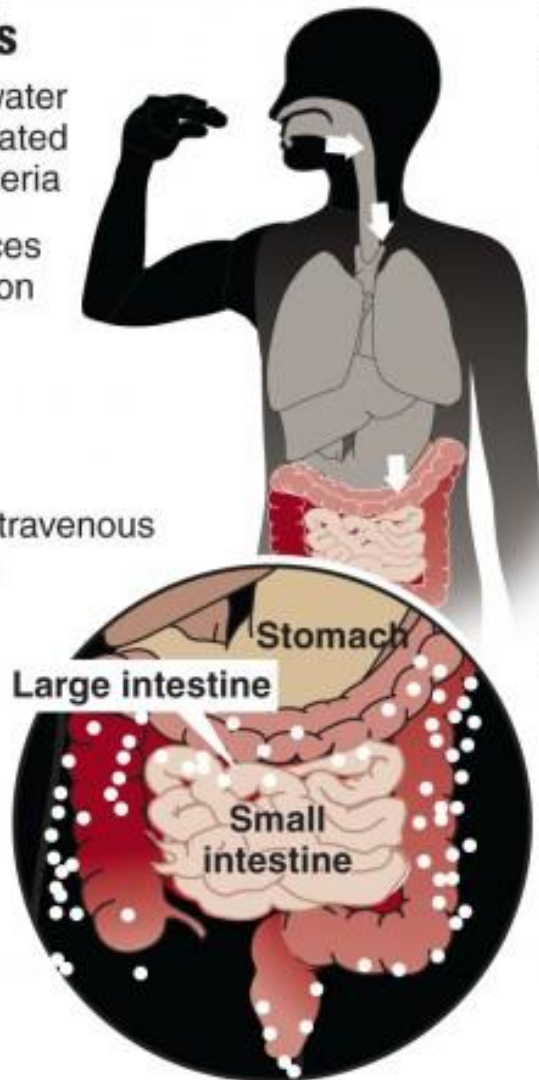
Cholera is an acute intestinal infection that causes severe diarrhea, dehydration and, if not treated promptly, death.

How it spreads

- People ingest water or food contaminated with cholera bacteria
- In epidemic, feces of diseased person is source of contamination

Treatment

- Salt solution, intravenous fluids, antibiotics
- In unprepared communities, death rates can be as high as 50 percent



In the large intestine

- 1 Bacteria multiply rapidly

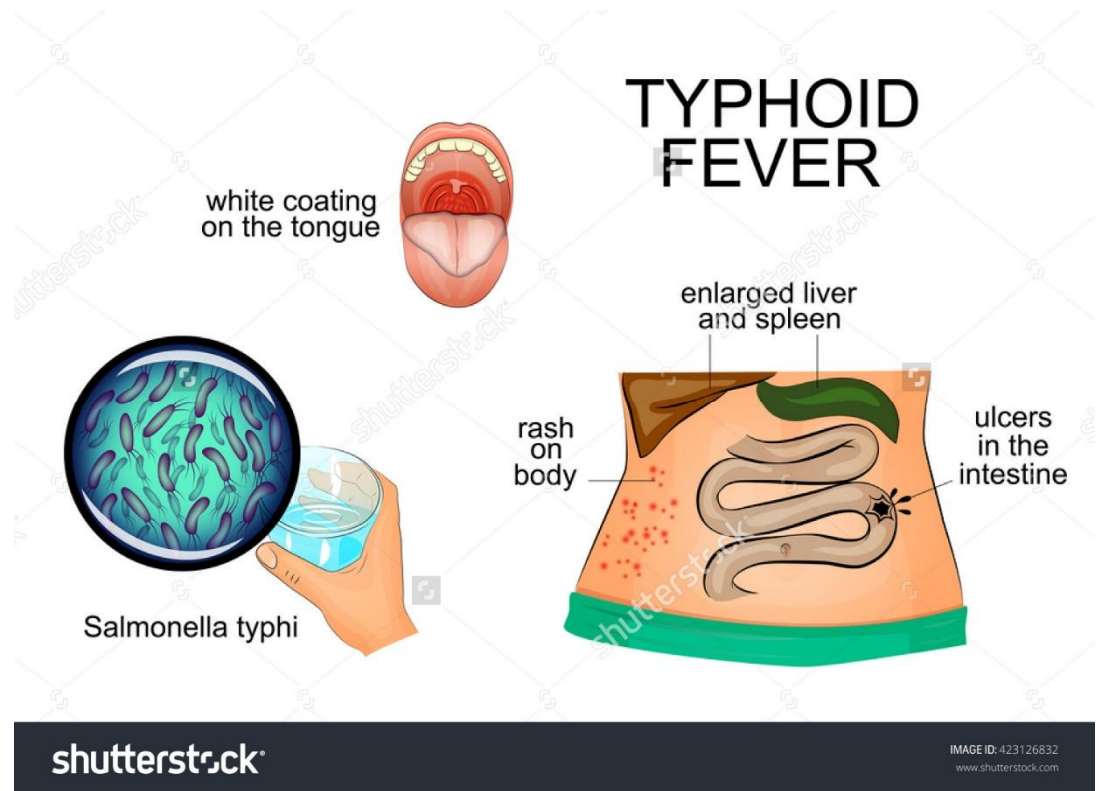


- 2 Toxin from bacteria penetrates cells of intestinal wall

- 3 Toxin prevents intestine from absorbing water from digested food; diarrhea, dehydration result

Typhoid

- **Cause**
 - Typhoid Bacilli.
- **Symptom**
 - Fever for 3 weeks, head ache, loss of appetite, swollen spleen, diarrhoe, red spots on skin of trunk.
- **Prevention**
 - Anti typhoid vaccines.



Whooping Cough (Pertussis)



- **Cause**
 - A small coccabacillus called 'Bordetella'.
- **Symptom**
 - Mild fever, running nose, sneezing, dry cough and irritation, lung infectio, fracture of rib, haemorrhages in brain and below conjunctive of eyes, convulsions..
- **Prevention**
 - DPT vaccine and isolation of patients.

Diphtheria

- Cause
 - Coryne Bacterium Diphtheria (C shaped bacteria).
- Symptom
 - Respiratory obstruction, lymph glands become enlarged.
- Prevention
 - Diphtherium Pertusis Tetanus (DPT) vaccine.

Diphtheria and Diphtheria Symptoms

Diphtheria is a serious disease caused by the bacterium *Corynebacterium diphtheriae*. It spreads easily and quickly from person to person, through sneezing or coughing. Diphtheria is especially dangerous when it affects the throat, where it can cause a gray to black, tough, fiber-like membrane that may block the airways. The most serious complications are caused by toxins produced by the diphtheria bacterium that spread through the bloodstream and damage the heart, nervous system and other vital organs. In severe cases, diphtheria can be fatal.



Leprosy

- also called as Hansen's Disease
- Cause
 - Mycobacterium-Leprae.
- Symptom
 - Hypo pigmented patches
 - Partial or total loss of cutaneous sensation in affected area.
 - Thickened nerves
 - Nodules or lumps in face and ears
 - Plantar ulcers
 - Loss of fingers or toes
 - Nasal depression
 - Foot drop
 - Claw toes and other deformities
- Prevention
 - BCG vaccine
 - BCG + M- Vaccine



Hepatitis A

- **Cause**
 - Hepatitis A virus
- **Mode of transmission**
 - Faecal route, Direct contact with faeces, indirect contamination of food (raw), water, hands and cooking utensils, poor hygiene and sanitation.
- **Symptoms**
 - Nausea, vomiting, yellowness in eyes, ears and urine.
 - Diarrhoea, pale stool, abdominal pain and fatigue.
 - Fever and chill, lack of appetite, sore throat.
- **Prevention**
 - Human immunoglobulin, boiled water, chlorination of water, regular injections, sterilization of syringes and needles, hygienic measures, sanitary disposal of excreta.

- Immunoglobulin (also called gamma globulin or immune globulin) is a substance made from human blood plasma. The plasma, processed from donated human blood, contains antibodies that protect the body against diseases.

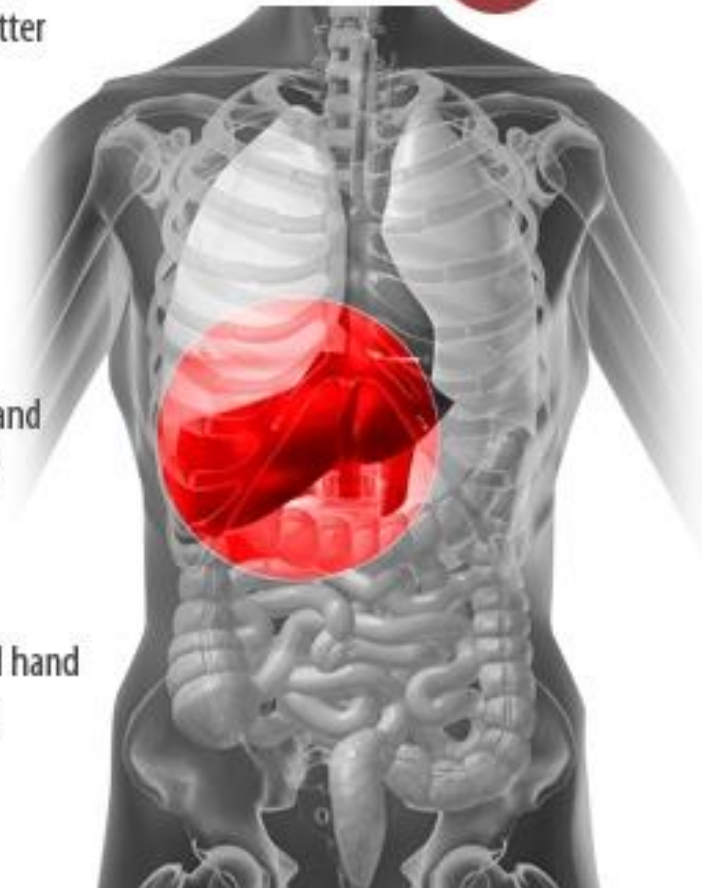
HEPATITIS **A** FACTS

- 1** Is a viral infection of the liver spread when faecal matter enters the mouth



- 2** May last several weeks and can be debilitating but most people recover completely

- 3** Preventable with careful hand washing, keeping toilets and bathrooms clean, avoiding infected water sources



SYMPTOMS INCLUDE

nausea



vomiting



SPREAD BY



direct
contact



food &
beverages



cups &
spoons

and any other objects handled by
the infected person

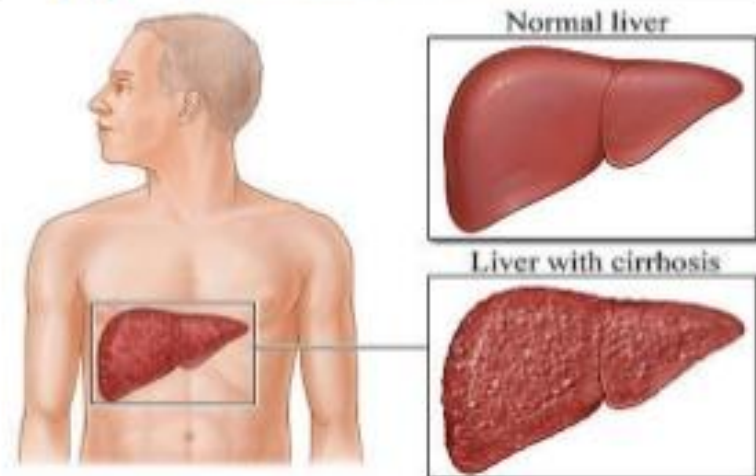
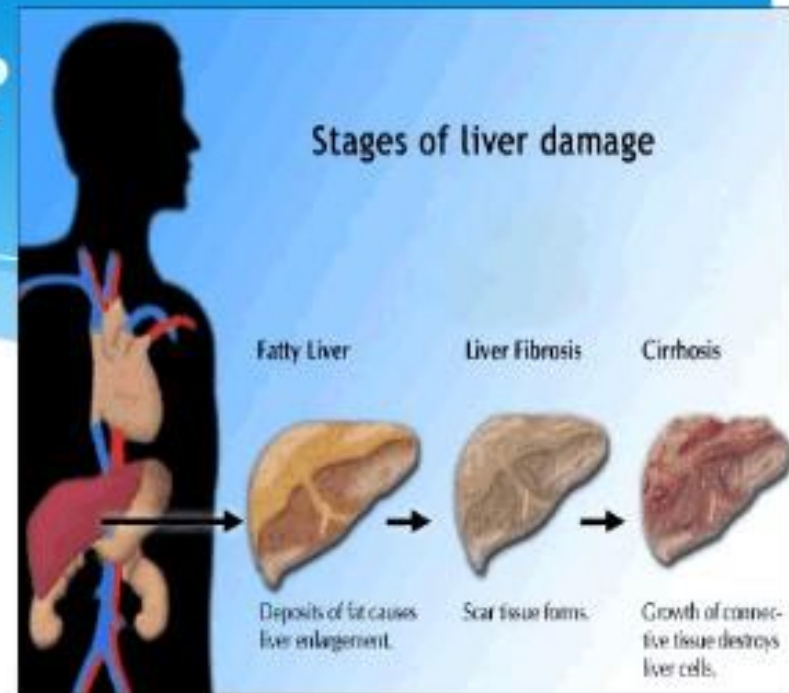
Hepatitis B

- **Cause**
 - Hepatitis B virus
- **Modes of transmission**
 - Blood transfusion, inadequately sterilized needles, syringes etc., exposure of infected blood, sexual transmission, fetus in uterus.
- **Symptom**
 - Chronic liver disease.
- **Prevention**
 - Hepatitis B immunoglobulin, Hepatitis B vaccine, simple hygienic measures, sanitary disposal of excreta, Chlorination of water, care during blood transfusion.

What is Hepatitis B?

- Hepatitis B can cause **short-term(ACUTE)** infection that may/may not cause any symptoms and the person gets better on his own in most people. However a few progress to **persistent (CHRONIC)** infection and may remain well but pass the infection to others.

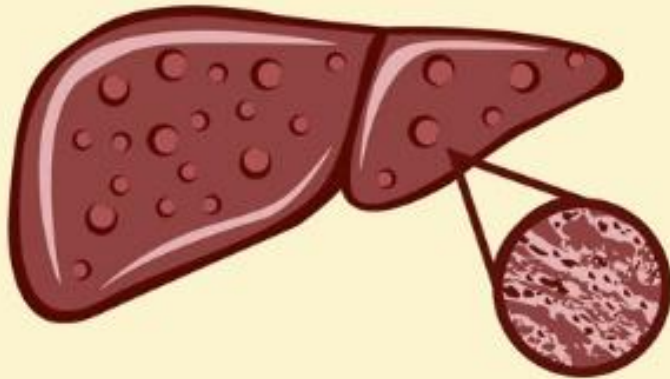
- Some people develop serious liver problems.
- The virus is mainly transmitted by sexual contact, Needle sharing to inject drugs and from mother to baby.



Hepatitis C

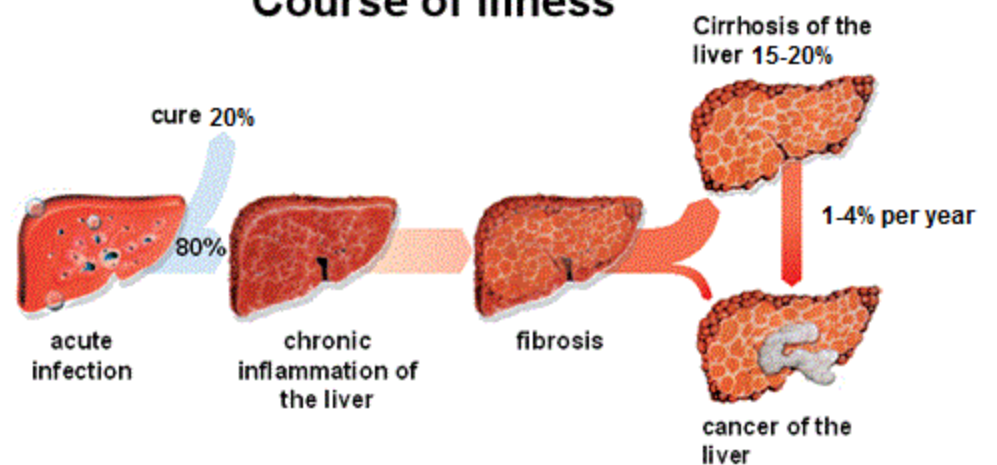
- Cause
 - Hepatitis C virus
- Symptom
 - Debilitating tiredness.
- Prevention
 - Human immune globulin.

Hepatitis C, or “hep C,”
is an infection that causes
liver inflammation.



The main method of transmission
is contact with the blood of an
infected person.

Hepatitis C Course of illness



Measles

Measles



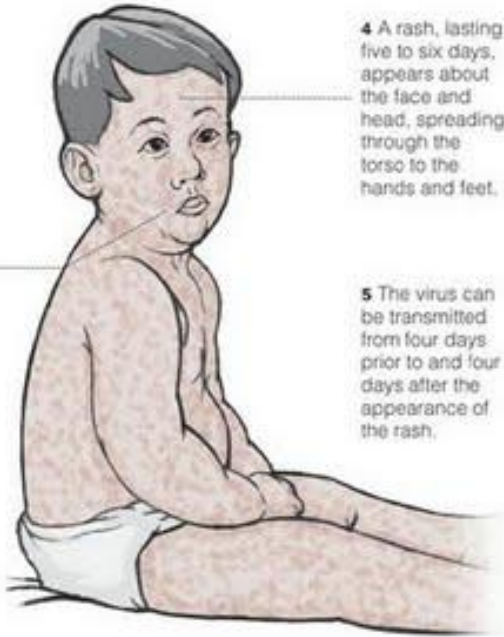
- Cause
 - Measles virus (RNA of paramyxovirus)
- Symptom
 - Fever, cough, sneezing, running nose, eyes become red, fine spots on mucus membrane of mouth, measles rashes.
- Prevention
 - Measles vaccine.

Characteristics of Measles

1 The virus is spread by breathing in virus-containing droplets or by touching contaminated surfaces.

2 The virus grows in cells in the back of the throat and lungs. Symptoms appear after 10 to 12 days.

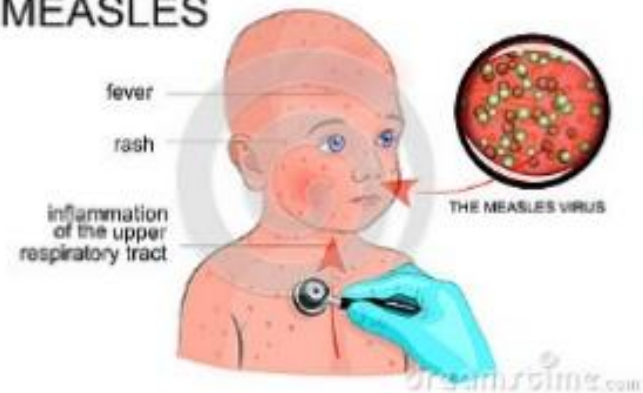
3 Infected person has a fever lasting two to four days, followed by a cough, runny nose and red, watery eyes.



4 A rash, lasting five to six days, appears about the face and head, spreading through the torso to the hands and feet.

5 The virus can be transmitted from four days prior to and four days after the appearance of the rash.

MEASLES



Rubella

Rubella Virus

- From Latin meaning "*little red*"
- *Acquired rubella; German measles; 3-day measles*
- Caused by an enveloped, single stranded RNA virus of the *Togaviridae* family
- Highly contagious and transmitted through respiratory secretions
- Occurred most often in childhood



- **Cause**
 - RNA virus of Togaviridae family
- **Symptom**
 - Sore throat, cough, mild fever, rashes, lymph glands of neck are swollen.
- **Prevention**
 - Anti Rubella vaccine and MMR (Measles, Mumps & Rubella) vaccine.

Rubella (German Measles)



- Mild fever, sore back of neck/ear lymph nodes
- Faint Pink/Red Spots merge to itchy patches on face, more noticeable after warm shower.
- Patches leave face, may peel, will fade as it spreads head to toe.
- Older children: Pink eyes, headache, loss of appetite, joint pain.
- CRS: Fetus of unexposed 1st trimester moms: deafness, cataracts, heart defects, mental retardation

(kidshealth.org)