

DISEASES AND DEFICIENCY





Classification of diseases on the basis of time

Acute disease: diseases that last for a short period of time

eg: fever, cold, cough

Chronic diseases: diseases that last for a long period of time

eg: Diabetes, TB, elephantiasis (filaria)

COMMUNICABLE AND NON-COMMUNICABLE DISEASES

Communicable diseases: diseases that spread from one person to another (infectious diseases)

eg: AIDS, cold, chicken pox, COVID

Non-Communicable diseases: diseases that cannot spread from contact (non-infectious)

eg: diabetes, arthritis, glaucoma, polio

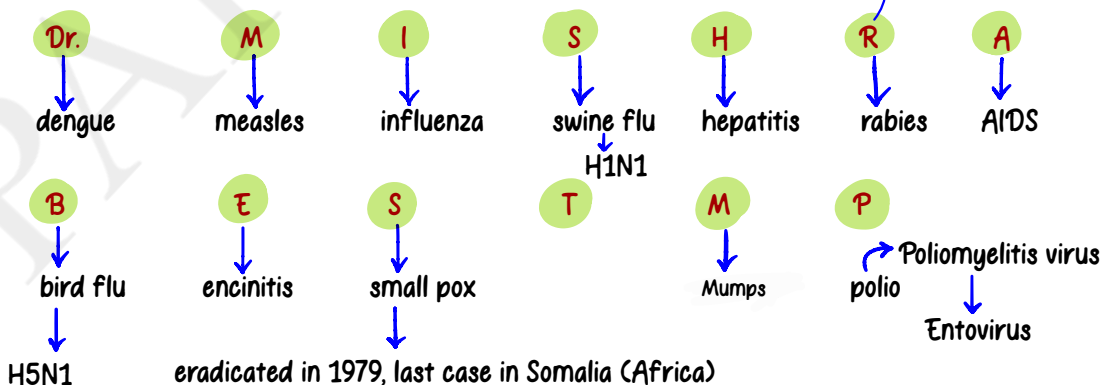
DISEASES CAUSED BY VIRUS

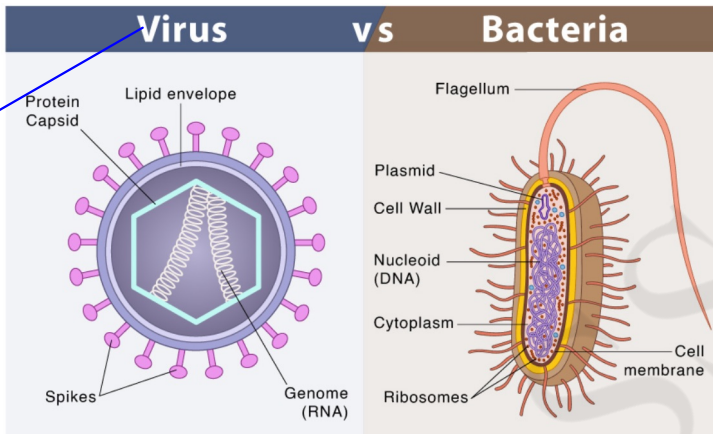
- Virus has a genetic material → DNA
- Behaves as a non-living entity outside → RNA: Retrovirus eg: COVID virus
- Requires a host to replicate (becomes living entity later)

Parasitic

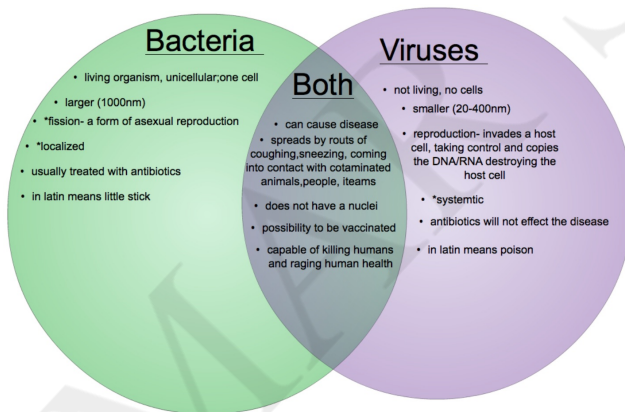
VIRUS DISEASES TRICK

The person develops a symptom called as Hydrophobia (fear of water)



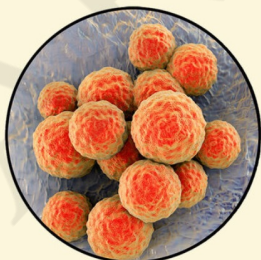


Genetic material encoded in a protein envelope known as Capsid



EXAMPLES OF BACTERIA

• Length: 2 μm
• Diameter: 0.5 μm



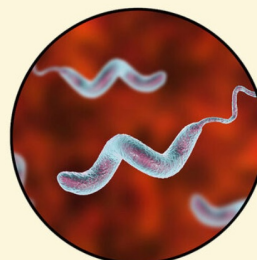
Spherical

Coccus



Rod-like

Bacillus



Spiral

Spirillum

VIRAL SHAPES

Polyhedral
(Adenovirus)



Spherical
(Influenza)



Helical
(Tobacco mosaic virus)



Complex
(Bacteriophage)

- Size/diameter: 20-200 nm
- 1st to discover antibiotics **Penicillin**: Alexander Fleming

Difference between virus and bacteria

Virus

- Genetic material: DNA/RNA + Protein
↓
Retrovirus
Eg: CORONO virus
- Non-living entity
- It needs a host cell
- Parasitic in nature
- It cannot be treated with antibiotics

Bacteria

- They are prokaryotes, they lack true nucleus and membrane bound organelles, instead they have nucleoid. Their genetic material is called genophore (bacterial DNA)
- Unicellular and living entity
- Divides on its own
- Parasitic/Saprophytic
- Antibiotics can be used to treat bacterial infections



Pathogens

1. Virus
2. Bacteria
3. Protozoa
4. Fungus

Diseases caused by Virus

HEPATITIS → Types: A, B, C

- It affects liver (hepatitis is inflammation of the liver)
- India's first indigenous Hepatitis-A vaccine: Havisure

• **Hepatitis A:** Transmission through food

• **Hepatitis B:** Sexually transmitted through bodily fluids

• **Hepatitis C:** Transmitted when in contact with infected blood

JAUNDICE

- It mainly affects liver

MUMPS

- It a viral disease that affects the parotid salivary glands (cheek and jaw area)

POLIO → Totally eradicated from India, as declared in 2023

- It affects the nervous system → nerves in spinal cord or brain stem

• Virus: **Poliomyelitis/Polio virus**

• 1st polio vaccine was created by: **Dr. Jonas Salk**

• **Inactivated (killed) polio vaccine (IPV)** by Dr. John Salk

• **Live attenuated (weakened) oral polio vaccine (OPV)** by Dr. Albert Sabin

CERVICAL CANCER

- It affects the cervix region in women

• Virus: **Human Papillomavirus** → Causes cancer in the cervix

Detected through: **Smear Test**

DENGUE

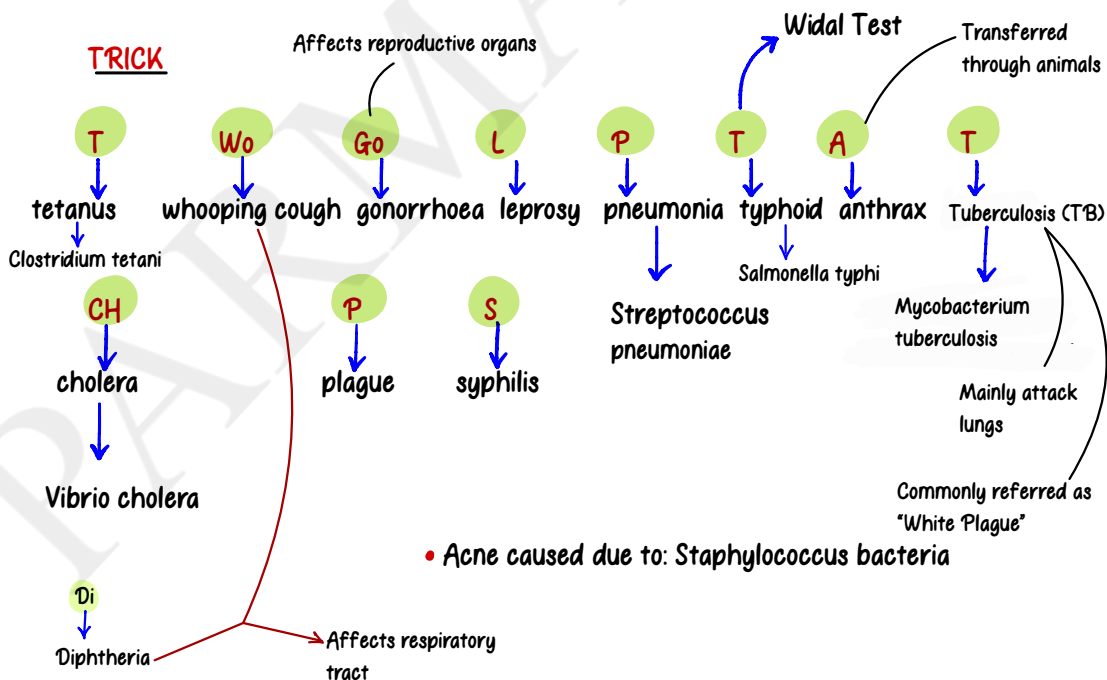
- **carrier:** female *Aedes aegypti* mosquito

AIDS (Acquired Immunodeficiency Syndrome)

- sexually-transmitted diseases
- **virus:** HIV → Human Immunodeficiency Virus (retrovirus)
- **death:** due to weak immune system
- **method of transmission:** sexual contact, blood transfusions, from mother to baby
- **test:** ELISA Test (Enzyme-linked Immunosorbent Assay)
- **AIDS DAY:** 1st Dec

Diseases caused by bacteria

TRICK





PLAGUE

- Death due to plague known as: **Black Death**
- 1897-1906: 12 Million death in India
- Caused by: ***Yersinia pestis***

LEPROSY

- Affects skin
- Also known as **Hansen's Disease**
- Caused by: ***Mycobacterium leprae***

CHOLERA

- Caused by: ***Vibrio cholera***
- It is a water borne disease
- Death due to cholera known as: **Blue Death**

TUBERCULOSIS

- Caused by: ***Mycobacterium tuberculosis***
- Vaccine: **BCG (Bacillus Calmette-Guerin)**

Diseases caused by fungi

B → Baldness

A → Athlete's foot

R → Ring worm

S → Scabies

A → Asthma

Diseases caused by Protozoan

Malaria → 25th April (Malaria Day)

Detection: VIVAX TEST

- **Protozoa:** plasmodium
- **Carrier:** female Anopheles mosquito
- **Treatment:** Quinine (found in bark of cinchona tree)

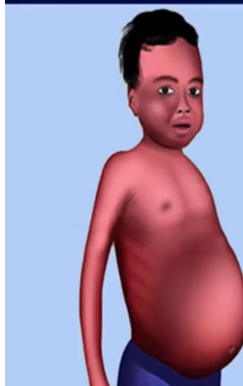
Sleeping Sickness

- **Protozoa:** Trypanosoma
- **Carrier:** Tse-Tse flies

Kala Azar

- **Protozoa:** Leishmania
- **Carrier:** Sandfly

Symptoms of Visceral Leishmaniasis (kala azar)



- Enlargement of the spleen
- Enlargement of the liver
- Night sweats
- Severe temperature or irregular bouts of fever that can last for weeks
- Bleeding
- Blackening of the skin
- Scaly skin
- Dark and ashen skin
- Cough
- Weakness
- Substantial weight loss



Disease caused by Fungus

- B:** Baldness
- A:** Asthma
- R:** Ring worm
- S:** Scabies → Skin disease
- A:** Athlete's Foot

PANDEMIC/EPIDEMIC/ENDEMIC

- **Pandemic:** Sudden an intention cases across several countries, continents, or the world
- **Epidemic:** Sudden increase in cases spreading through a large population
- **Endemic:** These disease are constantly present in a population or region with relatively low spread

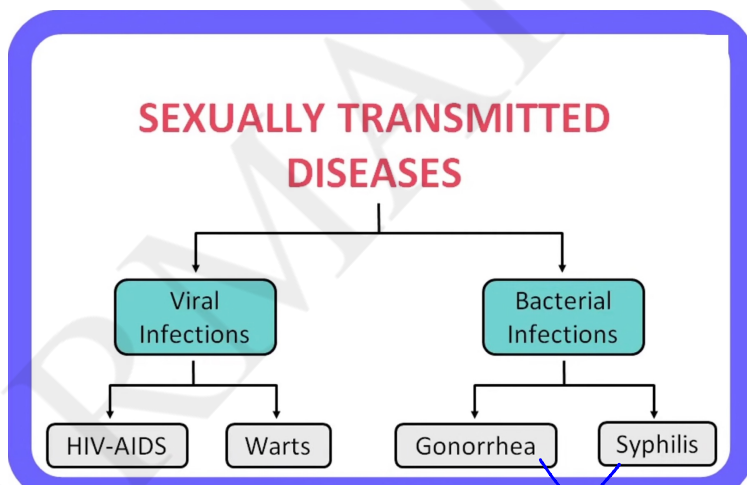
GENETIC DISORDERS

Genetic disorders are caused due to **gene malfunction (meiosis)**

MENDELIAN DISORDERS

Change in gene (**gene defects**)

- Down Syndrome
- Thalassaemia
- Sickle Cell Anaemia
- Colour blindness
- Turner's Syndrome: One X-chromosome is missing in female
- Albinism
- Angelman Syndrome
- Klienfelter Syndrome: Presence of an extra copy of X-chromosome in males



sexually transmitted diseases

Spread of diseases

- **Air:** TB, Pneumonia, common cold
- **Water:** Cholera, Diarrhoea, Amoebic dysentery



- TB spread through droplet infection (affects lungs)
- Visible sign of severe iodine deficiency: Swelling in neck (goitre), if thyroid gland doesn't produce Thyroxine hormone
- Antibiotics do not work against viral diseases but only against bacterial diseases (disrupts cell wall formation)
- Beri beri cannot be prevented by vaccination
- According to WHO, "Hygiene refers to conditions, health, and prevent spread of disease"
- Plant diseases
- Citrus cranker: bacteria
- Rust of wheat: fungus
- Yellow vein mosaic: virus
- Aster Yellow: bacteria
- Crown Gall: bacteria
- Ergot: fungus
- Snow mild: fungus
- Black knot: fungus
- Blight: fungus/bacteria
- Disease caused by drinking contaminated water: Cholera
- Epilepsy: disorder resulting in abnormal electrical discharge from brain cells causing seizures
- Jaundice: skin and eyes turn yellow due to deposit of bile pigments
- Pernicious anaemia: due to B12 deficiency
- Varicella Zoster virus: Chicken pox



- *Wilson disease: excessive amount of deposition of Cu*
- *Night blindness: due to Vitamin A*
- *Nyctophobia: fear of darkness*
- *Diabetes mellitus: Glucose level is high*
- *Monkey bite: disease caused is Rabies*
- *Soft bone disease: Osteomalacia*
- *Osteoporosis: when bones become fragile, due to deficiency of Vitamin D*
- *Osteomyelitis: inflammation in bone*
- *Mad Hatter Disease: due to Mercury poisoning*
 - ↓
 - also responsible for Minimata disease*
- *Inhaling iron dust causes Siderosis disease*
- *Itai Itai: caused due to Cadmium deposition*
- *Blue baby syndrome: caused due to Nitrate deposition*
- *Rickets: affects bones*
- *Dementia, diarrhoea, dermatitis: three D's caused by Pellagra*



- *Helicobacter pylori*: responsible for peptic ulcers
- *Escherichia coli*: causes diarrhoea
- Mode of transmission of disease "Yellow vein mosaic of bhindi": insect
- Bacille Calmette–Guerin vaccine (BCG): Tuberculosis
- X-linked recessive disorder: Hemophilia A
- Evil influence of stars: Influenza
- Plague is caused by bacteria: *Yersinia pestis*
- Flavivirus: genetic material is RNA