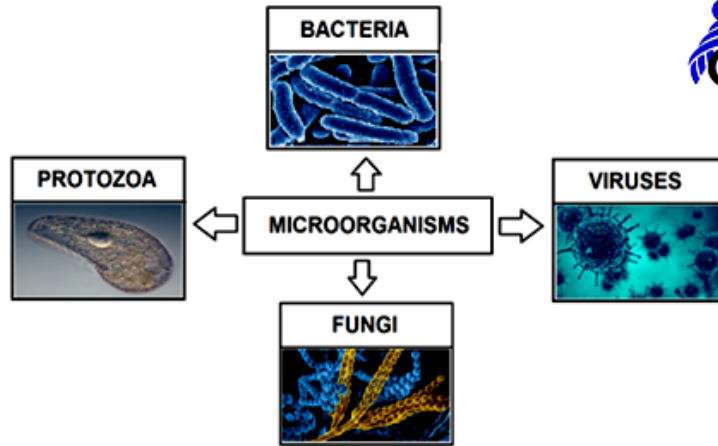


HUMAN HEALTH and DISEASES

FORM 4



SECONDARY SCHOOL NOTES



MICROORGANISMS AND HUMANS

Form 4 Biology Notes

with Exercises



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Chapter -One

Form 4

Micro-organisms and Humans

HUMAN HEALTH and DISEASES Form 4

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Health

Health can be defined as a person's physical, mental and social wellbeing.

Health is a state of complete physical, mental and social wellbeing.

- **Health** may be good or poor.

The below table is about traits of good and poor health;

Traits of Good Health	Traits of Poor Health
Physically fit	Physically unfit
Optimistic (has a positive outlook on life)	Pessimistic (has negative outlook in life)
Respects norms, values and traditions of the society (well-adjusted in society)	Violates norms, values and traditions of the society
Undertaking mental and physical tasks without too much difficulty	Cannot undertaking mental and physical tasks without too much difficulty

Characteristics of a healthy person

- Feels good physically
- Able to carry out physical and mental tasks
- Being optimistic (has positive outlook on life)

DISEASE

Disease is a disorder or bad functioning (malfunction) of mind or body which leads to departure of good health.

Disease is a disorder or malfunction of the mind or body, which destroys good health.

- Malfunction can affect tissue, organ, organ system or whole organism.
- Diseases are characterized by **symptoms** and **signs**.
 - **Symptoms** are indications of diseases felt by a patient.
 - **Signs** are indications of diseases that can be detected or observed by another person or a doctor.
- Factors or agents that cause or influence disease to a person are;
 - 1. Intrinsic factors**
 - Intrinsic factors are disease causing factors which exist in human body.
 - Examples of intrinsic factors are including;
 - a. Genetic disorder (such as hemophilia, color blindness)
 - b. Hormonal disturbance (such as diabetes mellitus, Dwarfism)
 - 2. Extrinsic factors**
 - Extrinsic factors are disease causing factors which exist outside the human body.
 - Examples of extrinsic factors are including;
 - a. Disease-causing microbes (such as TB, cholera, AIDS)
 - b. Nutritional factors or unbalanced diet (such as scurvy, rickets, anemia)

- Diseases may have either single cause or different causes, which can either be;
 - a. Uni-factorial** (single factorial)
 - Uni-factorial disease is a type of disease caused by a single factor (has single cause) such as malaria.
 - b. Multi-factorial**
 - Multi-factorial disease is a type of disease caused by many factors (has many causes), such as heart diseases.

According to their duration, diseases can also either be **acute** or **chronic**

- **Acute diseases** are sudden onset diseases with rapid changes and last for a short time, such as common cold.
- **Chronic diseases** are diseases that develop gradually and continue for months or years and last long, such as tuberculosis (TB).

Categories of Diseases

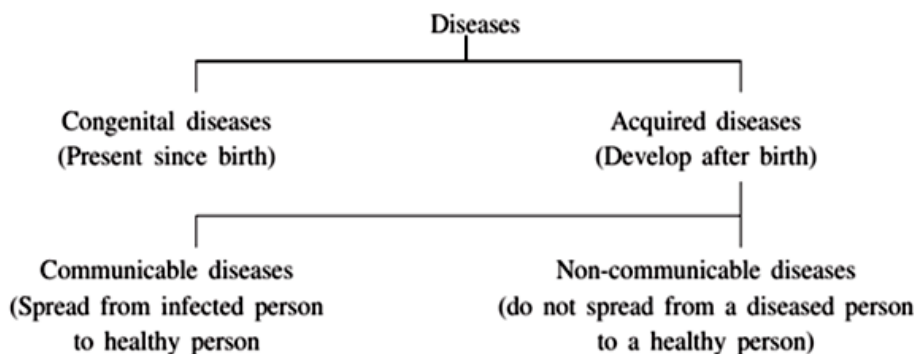
- There are nine broad categories of diseases and are summarized in the below table;

Category	Description	Examples
Physical diseases	Diseases that cause temporary or permanent damage to the body or part of the body	Leprosy, broken leg, bone fracture
Infectious disease	Diseases caused by pathogens and can be transmitted from person to person or from animal to person. They are also called communicable diseases.	Malaria, cholera, tuberculosis, AIDS
Non-infectious diseases	Diseases that are NOT caused by pathogens and cannot be transmitted from one person to another. They are also known as non-communicable diseases	Sickle cell anemia, stroke, diabetes, heart diseases, hypertension

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Deficiency diseases (nutritional diseases)	Nutritional diseases are diseases caused by an inadequate or unbalanced diet. Deficiency diseases results from missing or short supply of essential nutrients. They are classified into: <ul style="list-style-type: none"> ○ Vitamin deficiency disease ○ Mineral deficiency disease ○ Protein deficiency disease 	Scurvy, night blindness, rickets, anemia, kwashiorkor
Inherited diseases (genetic diseases or genetic disorder)	Diseases are caused by faulty genes and can be passed only from parents to their children.	Hemophilia, cystic fibrosis, sickle cell anemia
Mental diseases	Diseases that affect a person's mind. Mental diseases are diseases caused by brain damage or psychological illness.	Creutzfeldt-Jakob disease (CJD), Alzheimer's, Dementia, Claustrophobia, schizophrenia,
Degenerative diseases	Diseases caused by a gradual decline or loss of function in one or several organs of the body, often associated with ageing	Osteoarthritis, coronary heart diseases, stroke, cancer, hearing and sight defects
Social diseases	These are diseases influenced by person's social environment or people's living conditions and behavior.	Hypothermia, drug-addiction, unhealthy lifestyle.
Self-inflicted diseases	Self-inflicted diseases are diseases caused by damage to a person's health by their own decisions and behavior.	Suicide, choice to smoke, misusing of drugs (alcoholism), and eating high fat diet.



4

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Epidemiology:

- Epidemiology is the study of the patterns of diseases and the various factors that affect its spread.
- Epidemiological studies are used to identify whether a disease is endemic, epidemic and pandemic.

Endemic

- Endemic is a disease that is always present in a population, such as tuberculosis and malaria. (En=in, demo from demos=people)

Epidemic

- Epidemic is a disease that spreads rapidly to affect many people, such as influenza (flu). (Epi =among, demo from demos=people)

Pandemic

- Pandemic is a disease that spreads over large area, such as continent of worldwide, such as AIDS and Corona-virus disease (COVID-19). (Pan=all, demo from demos=people)

Infectious Diseases:

- Infectious diseases are diseases which can be transmitted from one person to another.
- Infectious diseases are transmittable diseases that can spread from an infected person to a healthy person (uninfected person).
- Infectious diseases are any diseases caused by **pathogens** (germs) such as **bacteria, viruses, fungi, protozoa**, and also **worms, parasites** and **insects**.
- **Pathogens (germs)** are microorganisms that cause disease. (A pathogen is a disease-causing organism).
- Infectious diseases are also called **communicable diseases** as they can be passed from one person to person or from animal to person.
- Infectious diseases spread from one person to another through contact, contaminated food and water, air or through animals.

Modes of Infectious Disease Transmission

- The main ways through which communicable diseases (infectious diseases) spread from one host to another are including;
 - 1. Through air**
 - Diseases that spread through air or dust are called **airborne diseases**.
 - Examples of airborne diseases are including; influenza, tuberculosis.
 - 2. Through water**
 - Diseases that spread through contaminated water are called **waterborne diseases**.
 - Examples of waterborne diseases are including; cholera, amoebic dysentery.
 - 3. Through food**
 - Diseases that spread through contaminated food are called **food-borne diseases**.
 - Examples of food-borne diseases are including; cholera, food poisoning, typhoid fever.
 - 4. Insect vector**
 - Vector is any organisms (invertebrates) such as insects that carry germs and spread disease.
 - Diseases that spread through insects from one host to another are called **vector-borne diseases**.
 - **Vectors can spread diseases into two ways:**
 - (a) **Biological transmission**
 - The transmission of diseases through insect bites is called biological transmission, e.g. malaria, sleeping sickness
 - (b) **Mechanical transmission**
 - The transmission of diseases through carrying germs on the legs, mouth or body parts of insects are called mechanical transmission, e.g. cholera
 - 5. Through physical contact**
 - Diseases that spread through physical contact are called contagious diseases. Example, ringworms.
 - 6. Droplet spread** (droplet infection)
 - Droplet spread or droplet infection is a type of disease transmission which an infected person coughs or sneezes on another person and the healthy person inhales the mucus containing pathogen.
 - Examples of droplet spread diseases are including, common cold, influenza, whooping cough, pneumonia.
 - 7. Through sexual contact**
 - Diseases that spread through sexual contact (sexual intercourse) are called sexually transmitted diseases (STD).
 - Examples of sexual transmitted diseases are including, syphilis, gonorrhea, AIDS

8. Through animal bite

- Diseases that spread through the bite of a rabid animal are called animal-borne diseases or pet-borne diseases, e.g. rabies.

9. Contact with soil

- Diseases that spread through contact with contaminated soil are called soil-borne diseases, e.g. tetanus.

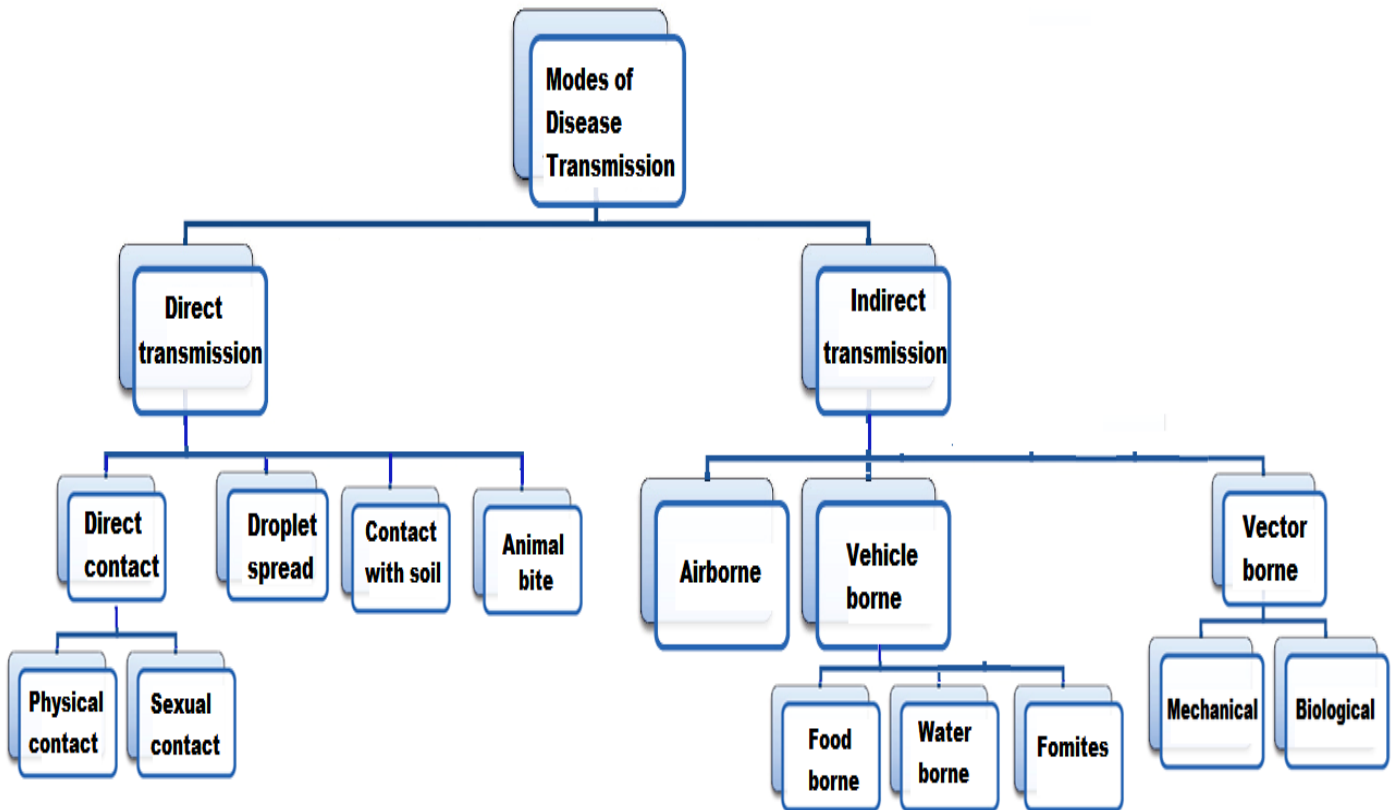


NOTE

Difference between Vector and Vehicle

↪ A **vector** is a living organisms (invertebrates) that carry and can transmit an infectious agent, or pathogen, from one host to another. Example, mosquitoes, ticks, fleas.

↪ A **vehicle** is a non-living things or inanimate objects that can transmit germs or spread disease from one host to another. Examples, food, water, air and also **fomites** (inanimate objects) such as toothbrush, surgical instruments, doorknob, clothes.



Bacterial Diseases

- Bacteria grow everywhere and can multiply fast, for example, bacteria can **double every 20 minutes**.
- Bacteria that cause diseases (infectious diseases) to living organisms are called **pathogenic bacteria**. They produce **toxins** which cause diseases.
- The infectious diseases caused by the **pathogenic bacteria** are including; cholera, tuberculosis, tetanus, gonorrhoea, syphilis, diphtheria, salmonella food poisoning, whooping cough, pneumonia, typhoid, botulism.

Shapes of Bacteria

- Bacteria that cause diseases are broadly classified into four groups according to their shapes.

Type of bacteria	Shape	Example	Disease caused
Coccus	Spherical shaped	Mycoplasma pneumonia	Pneumonia
Bacillus	Rod shaped	Salmonella typhi	Typhoid fever
Spirilla (Spirillum)	Spiral shaped	Treponema pallidum	Syphilis
Vibrio	Coma-shaped	Vibrio cholerae	cholera

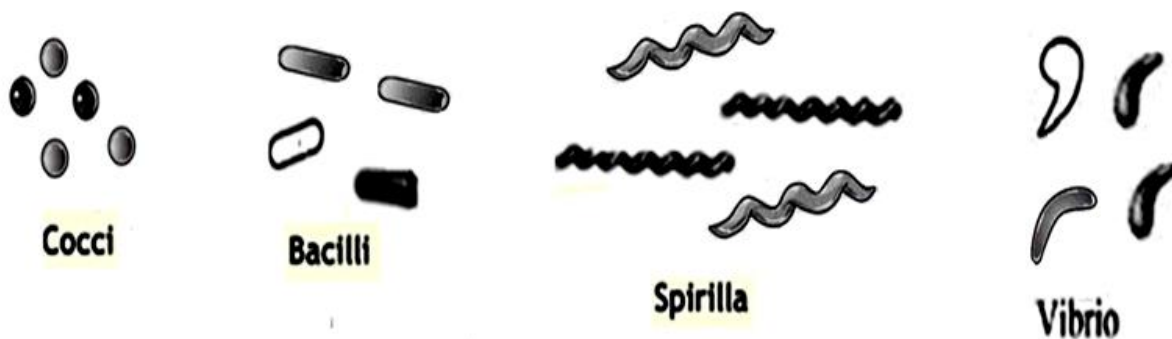



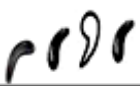


Figure: Different shapes of bacteria

Basic shapes of bacteria with examples

Bacterial shape	Description	Name of bacteria	Example	Disease caused
	Spherical shaped (Round shaped)	Cocci	Mycoplasma pneumonia	Pneumonia
	Rod shaped	Bacilli	Salmonella typhi	Typhoid fever
	Spiral shaped	Spirilla (Spiral)	Treponema pallidum	Syphilis
	Coma-shaped	Vibrio	Vibrio cholerae	Cholera

Cholera

Pathogen	Vibrio cholerae
Methods of transmission	Food-borne, water-borne
Incubation period	1 – 5 days
Site of infection (Site of attack)	Walls of small intestine
Symptoms	Severe diarrhea, loss of water and salt, dehydration and weakness
Method of diagnosis	Microscopic analysis of faeces
Treatment	Rehydration which can either be oral rehydration solutions (ORS) or intravenous fluids and taking antibiotics like tetracycline to reduce the duration and volume of diarrhea
Control	<ul style="list-style-type: none"> - Drinking water should be chlorinated or boiled - Keeping good hygiene - Hands must be washed after visiting toilets (good personal hygiene) - Proper washing and cooking of food - Flies should not be allowed to sit on eatables and utensils - Infected people should be treated

Diphtheria

Pathogen	Corynebacterium diphtheria
Methods of transmission	Through inhalation of cough droplets from an infected person
Site of infection	Nose, throat and larynx (upper respiratory system)
Symptoms	Sore throat, fever, swollen glands, nose and throat get blocked, difficult breathing.
Treatment	Antibiotics such as penicillin
Control	<ul style="list-style-type: none">- Vaccination against diphtheria (Babies should be given DPT vaccine)- Avoid close contact with infected person- Isolation of the infected child

Whooping cough

Pathogen	Bordetella pertussis
Methods of transmission	Through inhalation of cough droplets from an infected child
Site of infection	Upper respiratory system
Symptoms	Mild sneezing, runny nose and fever. Later there is hard and dry cough, whooping or wheezing during inspiration and vomiting. Secondary bacterial infection leads to pneumonia.
Control	Vaccination against whooping cough
Treatment	Antibiotics like tetracycline

Tuberculosis (TB)

Pathogen	Mycobacterium tuberculosis and mycobacterium bovis
Methods of transmission	Airborne; via unpasteurized milk from cattle
Incubation period	Weeks, months or years
Site of action of pathogen	Primary infection in lungs, secondary infection in lymph nodes, bones, stomach and gut
Symptoms	Racking cough, coughing blood, chest pain, shortness of breath, fever, sweating and weight loss
Method of diagnosis	Microscopic examination of sputum for bacteria, Chest X-ray
Treatment	<ul style="list-style-type: none"> - Antibiotics are administered as treatment - BCG (Bacillus Calmette Guerin) vaccination is given to children as a preventive measure.
Control	<ul style="list-style-type: none"> - Avoid close contact with infected people - Milk must be pasteurized - Cattle with TB diseases must be eradicated - Patients must be treated - Isolation of patient to avoid spread of infection - Living rooms should be airy, neat and with clean surroundings - Spitting in public places must be banned

Pneumonia

Pathogen	Mycoplasma pneumoniae
Methods of transmission	Through inhaling infected air
Site of infection	Lungs
Symptoms	<ul style="list-style-type: none"> - Coughing sputum which occasionally contains blood - Sore throat - Headache and fever
Treatment	Antibiotics like sulfonamides
Control	Avoiding close contact with infected person

Tetanus (Lockjaw)

Pathogen	Clostridium tetani
Transmission	Contaminated soil or objects with tetanus bacteria enter the body through cut or wounds
Site of infection	Nervous system and body muscles
Symptoms	<ul style="list-style-type: none">- Muscle spasms- Spasms and stiffness in jaw muscles- Stiffness of neck muscles- Stiffness of abdominal muscles- Difficulty in breathing and swallowing- Fever
Control	Avoid contaminated soil or objects and always by wearing protective food wears
Treatment and prevention	<ul style="list-style-type: none">- Injection of tetanus toxoid- Children are normally vaccinated against tetanus

Syphilis

Pathogen	Treponema pallidum
Methods of transmission	Through sexual intercourse (STD)
Incubation period	Symptoms of the disease occur in about 10 – 90 days after being infected.
Site of infection of pathogen	Reproductive organs (genitals)
Symptoms	Rash on body, fever, headache, pain in bones and joints, sore throat, nervous problems, fatigue, hair loss, swollen lymph nodes
Treatment	Antibiotics such as penicillin
Control and prevention	Avoiding illegal sex and having examination before marriage

Gonorrhoea

Pathogen	Neisseria gonorrhoeae
Methods of transmission	Through sexual intercourse (STD)
Incubation period	About 2 – 5 days after getting infection
Site of infection of pathogen	Reproductive organs, specially urethra in males and cervix in females
Symptoms	<ul style="list-style-type: none"> - Painful urination (burning during urination) - Whitish discharge from reproductive organs (genital) - Rashes on palms and mild sore throat - Pain in joints, Abdominal pain - Bleeding between periods in females - Pain or swelling in testicles in males
Treatment	Taking antibiotics, such as ceftriaxone injection
Control and prevention	<ul style="list-style-type: none"> - Avoiding illegal sex and having examination before marriage

Symptoms of gonorrhoea in females	Symptoms of gonorrhoea in males
Burning/pain during urination	Burning during urination
Thick yellowish-white vaginal discharge	Itching
Abdominal pain	Rectal pain
Pain during sex	Thick yellowish/green discharge from penis

Botulism

Pathogen	Clostridium botulinum
Methods of transmission	Through eating poorly processed home canned food
Site of infection	Gastrointestinal tract
Symptoms	Nausea, vomiting, abdominal pain, blurred vision, difficult breathing and muscle paralysis
Treatment	A drug called an antitoxin
Control	Properly processing of food and checking expire date before using food

Typhoid

Pathogen	Salmonella typhi
Methods of transmission	Through ingestion contaminated water and food (Food-borne and waterborne)
Incubation period	About 1 – 3 weeks
Site of infection	Intestines
Symptoms	<ul style="list-style-type: none"> - Fever, headache, sore throat - Muscular pain, diarrhea, abdominal pain, vomiting and loss of appetite - Abdominal pain, weakness and fatigue
Treatment	Antibiotics like ampicillin
Control	<ul style="list-style-type: none"> - Keeping good hygiene - To boil or chlorinate drinking water - To wash hands after visiting toilets and before the meal - Avoid taking exposed food and drinks - Proper disposal of excreta of the patient - Keep flies away from food

Salmonella Food Poisoning

Pathogen	Salmonella typhimurium, Salmonella enteritidis and some types of Escherichia coli
Methods of transmission	Through eating meat or egg or drinking contaminated with the bacteria (contaminated food)
Incubation period	From 12 to 24 hours after eating contaminated food
Site of infection	Gastrointestinal tract (Alimentary canal)
Symptoms	Diarrhea, vomiting, abdominal pain, nausea
Control and prevention	<ul style="list-style-type: none"> - Food must be cooked well and milk must be pasteurized well - Good hygiene - Keep cooked and raw foods separate - Wash raw fruits and vegetables thoroughly before eating them. - Wash hands before preparing or eating food. - Wash hands after using the toilet
Treatment	The main treatment for this disease is taking more fluids to prevent dehydration and replace fluids and electrolytes that you lose when you have diarrhea (Rehydration)

Antibiotics

- Antibiotics are drugs that are used to treat infectious bacterial diseases and some fungi.
- The correct antibiotics must be chosen for a particular disease, for example care must be taken in selecting antibiotics for treating cases of TB; because there are some bacteria that can resist to some antibiotics.
- Antibiotics act on bacterial infections but are not effective against viral infections.
- Some bacteria are resistant to the antibiotics, because they synthesize an enzyme that can destroy penicillin and are more likely to survive and reproduce successfully. For example, **Mycobacterium tuberculosis** is resistant to penicillin.
- **Role of antibiotics are including;**
 - a) Inhibit the growth of pathogenic organisms
 - b) Killing bacteria
 - c) They usually interfere or prevent formation of bacterial cell wall
 - d) They stop bacteria from multiplying
 - e) Inhibit protein synthesis in bacteria

Viral Diseases

- Viruses are smaller than bacteria and can reproduce only inside other cells.
- Viruses consist of genetic material of DNA or RNA surrounded by a protective coat of protein.
- Viruses do not produce toxins, but they damage the body cells they invade.
- Viruses can infect all types of organisms such as animals, plants and even other microorganisms like bacteria.
- In human, viruses cause diseases like influenza (flu), common cold (cold), AIDS, measles, chickenpox, smallpox, hepatitis, poliomyelitis, mumps

Common Cold

Pathogen	rhinovirus
Methods of transmission	Inhaling infected air droplets or contacts
Incubation period	12 to 78 hours
Site of infection	Respiratory tract
Symptoms	Watering eyes, runny nose, swollen nasal membranes making it difficult to breathe through the nose, mild headache, sore throat, coughing
Treatment	- Drink plenty of fluids Take symptom relief like paracetamol, ibuprofen, etc
Control	Avoiding close contact with infected ones

Measles

Pathogen	Measles virus (Rubeola virus)
Methods of transmission	Through inhaling infected air, physical contact
Site of infection	Eyes, nose, throat, skin
Symptoms	Fever, headache, sore throat, runny nose, inflammation of the eyes, cough, appearance of rashes on the body
Control	<ul style="list-style-type: none">- Isolation of infected person- Vaccination

Influenza (flu)

Pathogen	Influenza virus (Influenza viruses A and B)
Methods of transmission	Through airborne
Site of infection	Lining of the throat and breathing passages
Symptoms	Fever, headache, inflammation of the respiratory tract, sore throat, dry cough, muscle or body ache, fatigue,
Treatment	<ul style="list-style-type: none">- Drink plenty of fluids- Take symptom relief like paracetamol, ibuprofen, etc
Control	Avoid close contact with infected ones

Hepatitis A

Pathogen	Hepatitis A virus
Methods of transmission	Contaminated water and food
Site of infection	Liver
Symptoms	Tiredness, loss of appetite, nausea, upset stomach, enlarged liver, jaundice (eyes and skin become yellowish), body ache, fatigue, belly pain, mild fever
Control	Keeping good hygiene, chlorinating drinking water, avoid taking fat rich substances.

Hepatitis B

Pathogen	Hepatitis B virus
Methods of transmission	Through sexual contact, blood transfusion, sharing needles and syringes
Site of infection	Liver
Symptoms	Symptoms are similar to hepatitis A but more severe
Control	Avoid illegal sex, checking blood before transfusion, avoiding sharing needles, taking hepatitis B vaccine

AIDS (Acquired immune deficiency syndrome)

Pathogen	Human immunodeficiency virus (HIV)
Methods of transmission	<ul style="list-style-type: none"> ○ In semen and vaginal fluids during sexual intercourse with infected person ○ Transfusion of infected blood ○ Sharing contaminated needles and syringes ○ Mother to fetus across placenta ○ Mother to infant in breast feeding
Site of action of pathogen	Immune system such as T-helper lymphocytes and macrophages
Incubation period	A few weeks, but up to ten years or more before symptoms of AIDS develop
Symptoms	<ul style="list-style-type: none"> ○ Flu-like symptoms, ○ AIDS-opportunistic infections; including pneumonia, TB and cancer. ○ Weight loss, diarrhea, fever, sweating and ○ Mental disease (dementia)
Method of diagnosis	Blood test for antibodies to HIV
Treatment and Control	<p>No medicine or vaccine is known to be available against HIV infection. Therefore, care has to be taken through the following measures:</p> <ul style="list-style-type: none"> ○ Avoid unlawful sexual intercourse ○ Only disposable needles and syringes should be used ○ The blood to be transfused to the needy person, should be free from HIV germ ○ A common razor should not be used by the barber ○ Medicines which boost the immune system of AIDS sufferers ○ Treatments for other infections which develop in AIDS sufferers

Poliomyelitis (Polio)

Pathogen	Virus (polio virus)
Methods of transmission	Contaminated food and water
Site of infection	First it attacks the intestines and later spreads to the nervous system
Symptoms	Fever, headache, stiffness of neck and finally muscle paralysis and brain damage
Control	<ul style="list-style-type: none">- Polio vaccine drop (oral polio vaccine, OPV) are given to children- Keeping good hygiene

Chickenpox

Pathogen	Chickenpox virus (varicella virus)
Methods of transmission	Contact with infected person
Site of infection	Skin
Symptoms	Fever, headache, rash filled with fluid
Control	Avoid close contact with infected ones, the patient should be kept in isolation, vaccination

Smallpox

Pathogen	Variola virus (smallpox virus)
Methods of transmission	Contact with infected person
Site of infection	Skin
Symptoms	Fever, headache, vomiting, backache, severe fatigue, rashes filled with fluid
Control	Avoid close contact with infected ones, vaccination

Mumps

Pathogen	Mumps virus (known as paramyxovirus)
Methods of transmission	Inhaling infected air, direct contact with an infected person
Site of infection	Salivary glands
Symptoms	Chilly, headache, fever, swollen salivary glands, muscle ache, weakness, fatigue, loss of appetite
Control	Avoid close contact with infected ones, vaccination

Protozoa Diseases

- **Protozoa** are single-celled organisms.
- Some of the protozoa are parasites which live on or inside another organism and cause harm to the host.
- Parasitic protozoa cause diseases to human, for example, food contaminated with protozoa can cause amoebic dysentery to humans. Also malaria is a disease caused by protozoa which are passed to human by the female anopheles mosquito.

Amoebic Dysentery

Pathogen	Entamoeba histolytica
Methods of transmission	Water borne and food borne (contaminated water and food)
Site of infection	Lining of the intestine
Symptoms	<ul style="list-style-type: none"> ○ Feeling of abdominal pain and nausea ○ Formation of ulcers in intestine ○ Diarrhea and vomiting ○ Dehydration and faeces with blood
Control and treatment	<ul style="list-style-type: none"> ○ Proper sanitation should be maintained ○ Wash hands properly after toilet and before eating or handling food ○ Vegetables and fruits must be properly washed before eating ○ To boil or chlorinate the water ○ Cook food thoroughly ○ Antibiotics may be given to the patients

Malaria

Pathogen	Plasmodium (Plasmodium falciparum, P. Vivax, P. Ovule, P. malaria)
Methods of transmission	By bites of infected female anopheles mosquito (insect vector)
Incubation period	A week to year
Site of infection	Liver, red blood cells, brain
Method of diagnosis	Microscopical examination of blood
Symptoms	Fever, anemia, nausea, headache, muscle and joint pain, backache, shivering, enlarged spleen
Control and treatment	<ul style="list-style-type: none">○ Use of mosquito net and mosquito repellents○ No water should be allowed to collect in ditches or other open places to prevent mosquito breeding○ Tall grass and bushes should also be cleared near human dwellings○ To eliminate breeding grounds by spraying stagnant water, ponds, lakes using oil and insecticide which suffocate or poison the larvae○ Anti-malarial drugs should be taken such as chloroquine, doxycycline, quinine, mefloquine

Fungal Diseases

- Fungal infection is a skin disease caused by a **fungus**, which can affect one area of the body or many areas of the body, such as the skin, nails, mouth, feet, areas with skin folds such as the groin and also thighs.
- Fungi cause irritating and contagious diseases to humans.
- The common fungal infections are including, **athlete's foot, jock itch, ringworm** and **yeast infection**.

Athlete's Foot

- **Athlete's foot**, also called **tinea pedis**, is a fungal infection of the **feet**.
- Athlete's foot spread through **physical contact** and affects the areas between the toes and the feet.
- Athlete's foot often spreads when people walk barefoot in toilets or public bathrooms.
- **The common symptoms of Athlete's foot are including;**
 - Irritation between the toes
 - Redness, itching
 - Burning and sometimes blisters and sores.
- **Athlete's foot** can be **treated** with antifungal drugs such as **Griseofulvin**.
- **Control of Athlete's foot are including;**
 - Regular washing of feet
 - Regular changing of socks
 - Avoiding sharing of foot wears.
 - Do not walk barefoot, especially in places that may be wet, such as toilets or bathrooms.



Athlete's foot

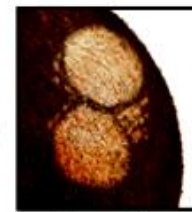
Jock Itch

- Jock itch, also called **tinea cruris**, is a common skin infection caused by a type of fungus called **tinea**.
- The fungus thrives in warm, moist areas of the body and also affects the groin or genitals, inner thighs and buttocks.
- Jock itch can spread from person to person through direct contact or indirectly from objects carrying the fungus.
- **The common symptoms of jock itch are including;**
 - Red, itchy rash that is often ring-shaped.
 - Burning sensation
 - Peeling or cracking skin
 - Persistent itching
 - Changes of skin color
 - The affected areas can be scaly
- **Jock itch** can be **treated** with antifungal drugs such as **Griseofulvin**.

- **Control of jock itch are including;**
 - Keep the affected area clean and dry
 - Keep the groin area (genitals) clean and dry
 - Wear clean clothes (Regularly change the underwear)
 - Keep the folds of the skin clean and dry
 - Do not share personal item

Ringworm of the Scalp

- Ringworm of the scalp, also called **tinea capitis** is a fungal infection of the **scalp** and **hair**.
- The fungi attack the outer layer of the skin on the scalp and hair or head.
- Ringworm of the scalp is a highly contagious infection which spreads from human to human through physical contact and also sharing combs, hairbrushes, hats and pillows.



Tinea capitis
(Ringworm of the scalp)



- **The main symptoms of the ringworm of the scalp are including;**
 - Scaly circular bands on the head.
 - Hairs in the affected area become loose and break off.
 - Itchy, scaly and bald patches on the head.
 - The infected patch spreads outward and heals at the center forming ring appearance.



Ringworm of the scalp

- Ringworm of the scalp can be **treated** with antifungal drugs such as **Griseofulvin**.
- **Control of the ringworm of the scalp are including;**
 - Avoid sharing combs with other people
 - Keep proper hygiene of the head
 - Infected children should be isolated and treated promptly

Ringworm of the Body

- Ringworm, also called **tinea corporis**, is a fungal infection of the skin.
- Ringworm of the body causes a red, scaly ring or circle of rash on the top layer of the skin.
- Ringworm can spread by direct contact with infected people. It may also spread on contact with or touching clothes or other objects such as furniture that have been contact with an infected person. Heat and humidity may help to spread the infection.
- **The common symptoms of the ringworm of the body are including;**
 - A scaly ring-shaped area on the skin
 - A circular, red and flat sore patches
 - The outer part of the sore can be raised while the skin in the middle appears normal.
 - A round and flat patch of itchy skin.
- **Control of the ringworm of the body are including;**
 - Keep the affected area clean and dry
 - Do not share personal items such as clothes and towels.
 - Use of antifungal drugs



Ringworm of the body



Candidiasis

- **Candidiasis** is a disease caused by yeast-like fungi called **candida**.
- They occur when yeast on the skin grows more actively and causes a red, scaling, itchy rash on the skin.
- Yeast infections or **candida** infections are not usually contagious.
- **Candidiasis** or yeast infection may affect nearly any skin surface on the body, but are most likely to occur in warm, moist, creased areas including the armpits and groin, and it can also affects the mouth.
- The main types of infections caused by candida are including;
 1. Oral thrush
 2. Genital yeast infection (Genital Candidiasis)
 3. Diaper rash

⇒ **Oral thrush**

- Oral thrush is a form of candida infection that affects the mouth and it is common in babies.
- The common symptoms of oral thrush are including;
 - a) White or yellow patches on the tongue, lips, gums, roof of the mouth and inner cheeks.
 - b) Redness or soreness in the mouth and throat
 - c) Cracking at the corners of the mouth
 - d) Pain when swallowing, if it spreads to the throat.



Oral thrush



⇒ **Genital yeast infection**

- Candida also causes **vaginal yeast infection**.
- The common symptoms are including;
 - a) Itching
 - b) Redness and swelling
 - c) Pain and burning during urination

⇒ **Diaper rash**

- Candida can cause **diaper rash** in infants.
- **Diaper rashes** caused by infection with a yeast (fungus) called **candida** are very common in children and grows best in warm and moist areas under a baby's diaper.
- Diaper rash can be caused by wearing one diaper for too long or wearing wet and dirty diaper for too long.
- Diaper rash causes the baby's skin sore, red, scaly and irritating.
- Diaper rash can be prevented by keeping the baby's bottom clean, dry and change the baby's diaper often.

