CBSE Class 12 Biology Notes Chapter 8: CBSE Class 12 Biology Notes for Chapter 8 Human Health and Disease are important resources for students preparing for their board exams. These notes provide a detailed overview of various aspects of human health, including the causes, types, and mechanisms of diseases, as well as the importance of maintaining health.

They simplify complex biological concepts, making it easier for students to grasp topics such as infectious diseases, non-communicable diseases, immunity and the role of various pathogens. By studying these notes, students can gain valuable insights into how human health is influenced by genetics, lifestyle and environmental factors.

CBSE Class 12 Biology Notes Chapter 8 Human Health and Disease Overview

CBSE Class 12 Biology Notes for Chapter 8 Human Health and Disease are created by subject experts of Physics Wallah. These notes provide a clear overview of important topics related to health and diseases in humans.

These notes are a helpful study resource for students, making it easier for them to prepare for exams and understand the importance of health in our lives.

CBSE Class 12 Biology Notes Chapter 8 Human Health and Disease PDF

CBSE Class 12 Biology Notes for Chapter 8 Human Health and Disease are now available in PDF format.

With simplified explanations the PDF is designed to help students easily grasp complex topics and prepare effectively for their exams. You can access the PDF from the link provided below making it convenient to study anytime and anywhere. These notes are a great resource for mastering the chapter and ensuring success in the board exams.

CBSE Class 12 Biology Notes Chapter 8 Human Health and Disease

Here we have provided CBSE Class 12 Biology Notes Chapter 8 Human Health and Disease-

What Is Health?

Health, in simple terms, means being free from diseases and infections. However, according to the World Health Organization (WHO), health goes beyond just the absence of illness. It is a

state of complete physical, mental, and social well-being. Maintaining good health requires a balanced diet and regular exercise. Several factors can affect health, such as:

- Poor diet
- Genetic disorders
- Stress and anxiety
- Infections caused by pathogens
- Unhealthy and unhygienic food intake
- Lack of physical activity

What Are Diseases?

A disease is an abnormal condition that affects the health of a living organism. Diseases can be categorized into two main types:

Infectious diseases: These are caused by pathogens like bacteria, viruses, fungi, and parasites. Infectious diseases can easily spread from one person to another, which is why they are also called contagious or communicable diseases. Examples include the common cold, tuberculosis, flu, ringworm and malaria.

Non-infectious diseases: These cannot be transmitted from one person to another and are referred to as non-communicable diseases. They may result from genetic disorders, poor diets, lack of physical activity, or environmental factors. Examples include diabetes, heart disease and cancer.

Some Common Diseases in Humans

Pathogens such as bacteria, viruses, fungi, protozoa, and helminths can cause diseases in humans by entering the body, multiplying, and interfering with normal bodily functions. This often leads to damage, affecting both appearance and body functions. Below are some common diseases, their causative organisms, symptoms and effects:

Disease/Test	Causal Organisms	Symptoms	Effects
Typhoid (Widal test)	Salmonella typhi	Sustained high fever, weakness, stomach pain	Interferes with intestinal functions, causing severe illness.
Pneumonia	Streptococcus pneumoniae, Haemophilus influenzae	Fever, chills, cough, headache	Alveoli fill with fluid, causing severe respiratory problems.

Common Cold	Rhino viruses	Nasal congestion, sore throat, cough, headache	Infects the nose and respiratory passages.
Malaria	Plasmodium (P. vivax, P. malariae, P. falciparum)	Recurring chills and high fever every 3–4 days	Parasites multiply in liver cells, then attack RBCs.
Amoebiasis (Amoebic dysentery)	Entamoeba histolytica	Constipation, abdominal pain, stool with mucus and blood	Infects the large intestine.
Ascariasis	Ascaris (Helminth)	Internal bleeding, muscle pain, fever, anemia	Infected through contaminated water and food.
Elephantiasis (Filariasis)	Wuchereria bancrofti, W. malayi	Inflammation in the lower limbs and genital organs	Lymphatic vessels of the lower limbs get blocked.
Ringworm	Microsporum, Trichophyton, Epidermophyton	Dry, scaly lesions on skin	Infects the skin, nails, and scalp.

Immunity

Immunity is the body's ability to defend and protect itself from harmful invaders like bacteria, viruses, and other foreign substances. There are two main types of immunity:

Innate Immunity – This is the non-specific defense mechanism present from birth. It includes four types of barriers:

- **Physical barriers**: like the skin and mucous membranes that block pathogens.
- **Physiological barriers**: such as stomach acid and enzymes that destroy invaders.
- **Cellular barriers**: cells like white blood cells that engulf and destroy pathogens.
- **Cytokine barriers**: proteins that help regulate the immune response.

Acquired Immunity – This is a pathogen-specific immunity developed over time. It is characterized by the body's ability to "remember" and respond more effectively to the same pathogen upon future exposure.

Active and Passive Immunity

- **Active Immunity**: In this type of immunity, the body produces its own antibodies in response to exposure to antigens, either through infection or vaccination (dead or

weakened microbes). It is a slow process but provides long-lasting protection since the immune system develops memory cells.

- **Passive Immunity**: In passive immunity, ready-made antibodies are introduced into the body to provide immediate protection. This type of immunity is fast-acting but temporary, as the body does not produce its own antibodies or memory cells. Examples include antibodies passed from mother to baby or through antibody injections.

AIDS (Acquired Immuno Deficiency Syndrome)

AIDS is caused by the **Human Immunodeficiency Virus (HIV)**, which belongs to the retrovirus group. It weakens the immune system, making the body vulnerable to infections and certain cancers. HIV is primarily transmitted through:

- Sexual contact with an infected person
- Contaminated blood transfusions and blood products
- Sharing of infected needles
- Transmission from an infected mother to her child during pregnancy, childbirth, or breastfeeding

The **ELISA** (Enzyme-linked immunosorbent assay) test is commonly used to diagnose AIDS. This condition progresses over time, severely impairing the body's defense mechanisms.

Cancer

Cancer is one of the most feared diseases worldwide, being a major cause of death. In healthy individuals, normal cells exhibit **contact inhibition**, a property that prevents their uncontrolled growth upon coming into contact with other cells. Cancer cells lose this ability, leading to unchecked growth and tumor formation.

Differences Between Normal and Cancer Cells:

Characteristics	Normal Cells	Cancer Cells
Morphology	Uniform shape and size	Varied shapes and sizes with irregular nuclei and small cytoplasm
Reproduction & Cell Death	Stop dividing when cell numbers are sufficient, undergo apoptosis when damaged	Do not stop growing, resulting in tumors; fail to undergo apoptosis
Communication	Communicate for proper functioning	Do not communicate effectively with other cells

Adhesion & Invasion	Bond to other cells through external membranes	Lose adhesion molecules, spread via blood/lymphatic system (metastasis)
Specialization	Mature with specialized functions	Remain immature and lack specialization
Signal Recognition	Recognize signals to stop dividing	Ignore signals, causing unregulated division

Types of Tumors:

1. **Benign Tumors**: Non-cancerous, confined to one organ, slow-growing, and non-invasive.
2. **Malignant Tumors**: Cancerous, grow rapidly, spread (metastasis) to other parts of the body, and cause significant damage.

Causes of Cancer:

Cancer can be induced by physical, chemical, or biological agents called **carcinogens**. **Oncogenic viruses** contain viral oncogenes, while **cellular oncogenes** or **proto-oncogenes** in normal cells can be activated to transform into cancerous cells under specific conditions.

Detection & Diagnosis:

Cancer is detected through **biopsy**, **histopathological studies**, **blood tests**, and imaging techniques like **CT scans**, **MRI**, and **radiography**.

Treatment Options:

1. **Surgery**: Removal of cancerous tissues.
2. **Radiotherapy**: Lethal irradiation of tumor cells.
3. **Chemotherapy**: Drugs to kill cancer cells (side effects include hair loss and anemia).
4. **Immunotherapy**: Use of immune-boosting agents like **alpha-interferon** to help the body destroy tumors.

Drugs and Alcohol Abuse

Many commonly abused drugs include **opioids**, **cannabinoids**, and **coca alkaloids**, which are obtained from flowering plants and fungi.

- **Opioids**: These drugs bind to specific receptors in the central nervous system and the gastrointestinal tract. A well-known opioid is **heroin**, also called **smack**. Chemically known as **diacetylmorphine**, it is a white, bitter crystalline substance extracted from the poppy plant (**Papaver somniferum**). Heroin is taken by snorting or injection and acts as a depressant, slowing down the body's functions.

- **Cannabinoids**: This group of chemicals interacts with cannabinoid receptors in the brain. Natural cannabinoids are derived from the **Cannabis sativa** plant and include substances like **marijuana**, **hashish**, **charas**, and **ganja**. These drugs are consumed by inhalation or ingestion and primarily affect the cardiovascular system.
- **Coca alkaloids**: Cocaine, a powerful stimulant, is extracted from the **coca plant** (**Erythroxylum coca**), native to South America. Known as **coke** or **crack**, it is typically snorted and has a strong stimulating effect on the central nervous system, leading to euphoria and increased energy. Cocaine interferes with the transport of the neurotransmitter **dopamine**.

Adolescence and Drug Abuse

Adolescence, the transition period from childhood to maturity, occurs between the ages of 12 and 18. It is often during this time that individuals may encounter or experiment with drugs for reasons such as:

- **Curiosity**
- **Adventure or excitement**
- **Experimentation**
- **Pressure to excel in exams**
- **Stress**

Effects of Drug and Alcohol Abuse:

- Reckless behavior
- Mischievous or violent actions
- Decline in academic performance
- Depression, isolation, and aggressiveness

When someone becomes dependent on drugs or alcohol, abruptly discontinuing them can lead to **withdrawal symptoms**, such as anxiety, shakiness, nausea, and sweating.

Prevention:

To prevent drug abuse, individuals should avoid **peer pressure**, seek **education and counseling**, get help from **family and friends**, and if needed, pursue **professional medical assistance**.

Benefits of CBSE Class 12 Biology Notes Chapter 8 Human Health and Disease

- **Comprehensive Understanding**: The notes provide a detailed overview of various aspects of human health and diseases helping students grasp important concepts.

- **Exam Preparation**: These notes cover important topics likely to be included in exams aiding students in effective revision and improving their chances of scoring well.
- **Clear Definitions and Explanations**: The notes break down complex terms and concepts, making them easier to understand for students.
- **Study Resource**: These notes are a reliable resource for quick reference, saving time during revision sessions.
- **Foundation for Advanced Studies**: A solid understanding of human health and disease provides a strong foundation for students interested in pursuing higher studies in medicine, biology or related fields.
- **Encouragement of Healthy Practices**: The notes often emphasize the importance of maintaining good health and preventing diseases promoting awareness of personal health management.