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CHAPTER NOTES

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

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

Chapter 8 — **Human Health and Disease** — covers common diseases, immunity, cancer, drugs/alcohol abuse. Carries **6-8 marks**. Focus on the immune system (innate vs adaptive), AIDS, and cancer.

Key Concepts

Common Diseases

Disease	Pathogen	Type	Symptoms	Vector
Malaria	Plasmodium (vivax/falciparum)	Protozoan	Recurring fever with chills	Female Anopheles mosquito
Amoebiasis	Entamoeba histolytica	Protozoan	Bloody stool, abdominal pain	Housefly (contaminates food)
Ascariasis	Ascaris lumbricoides	Helminth	Internal bleeding, anaemia	Contaminated food/water
Filariasis (Elephantiasis)	Wuchereria bancrofti	Helminth	Swelling of limbs	Female Culex mosquito
Typhoid	Salmonella typhi	Bacteria	High fever, weakness	Contaminated food/water
Pneumonia	Streptococcus pneumoniae	Bacteria	Fever, cough, chest pain	Droplet infection
Ringworm	Microsporum, Trichophyton	Fungi	Scaly lesions on skin	Direct contact

Immunity

Type	Description	Examples
Innate (Non-specific)	Born with; first line of defence	Skin, mucus, stomach acid, WBCs, interferons
Acquired (Adaptive)	Develops after exposure to pathogen	Antibodies, memory cells

Acquired Immunity

Type	Mechanism	Example
Active (Natural)	Body produces antibodies after infection	Getting chickenpox → lifelong immunity
Active (Artificial)	Vaccination → body produces antibodies	Polio vaccine, BCG
Passive (Natural)	Antibodies received from mother	IgA in colostrum, IgG via placenta
Passive (Artificial)	Pre-formed antibodies injected	Anti-tetanus serum, anti-venom

Antibodies (Immunoglobulins)

5 types: IgG (most abundant, crosses placenta), IgA (in secretions, colostrum), IgM (first response), IgE (allergies), IgD (on B-cell surface)

HIV/AIDS

HIV = retrovirus (RNA → DNA using reverse transcriptase)
Attacks **helper T-cells (CD4+)** → destroys immune system
Transmission: sexual contact, blood, mother-to-child, shared needles
ELISA = screening test; **Western Blot** = confirmatory test
AIDS when CD4+ count drops below 200/µL → opportunistic infections

Cancer

- **Oncogenes:** Genes that cause cancer when activated (from proto-oncogenes)
- **Tumour suppressor genes:** Normally prevent cancer (e.g., p53, Rb); mutations → cancer
- **Benign tumour:** Non-spreading, confined. **Malignant tumour:** Invasive, metastasis (spread via blood/lymph)
- **Carcinogens:** UV rays, tobacco, asbestos, aflatoxins, certain viruses

- **Detection:** Biopsy, MRI, CT scan, blood tests for tumour markers
- **Treatment:** Surgery, radiation therapy, chemotherapy, immunotherapy

Drugs and Alcohol Abuse

Category	Examples	Effects
Opioids	Morphine, Heroin, Smack	Sedative, depressant, highly addictive
Cannabinoids	Marijuana, Hashish, Ganja	Euphoria, affects cardiovascular system
Coca alkaloid	Cocaine	Stimulant, interferes with dopamine transport
Hallucinogens	LSD	Hallucinations, altered perception

Quick Revision Points

- Malaria: Plasmodium, female Anopheles; Filariasis: Wuchereria, female Culex
- Innate immunity: born with; Acquired: after exposure (active/passive)
- Vaccination: active artificial immunity; Serum: passive artificial immunity
- HIV: retrovirus, attacks CD4+ T-cells; ELISA screening, Western Blot confirmation
- Cancer: oncogenes (promote), tumour suppressors (prevent); benign vs malignant
- Antibodies: IgG (most common), IgA (colostrum), IgE (allergy)

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