FREE NOTES · NCERT + NEET LEVEL

Human Health & Disease

Insaanon ki aam bimariyan (bacterial, viral, protozoan, fungal, helminth), immunity (innate, acquired, antibodies, vaccination, allergies, autoimmunity), immune system, AIDS, cancer aur drugs/alcohol ka galat istemaal.

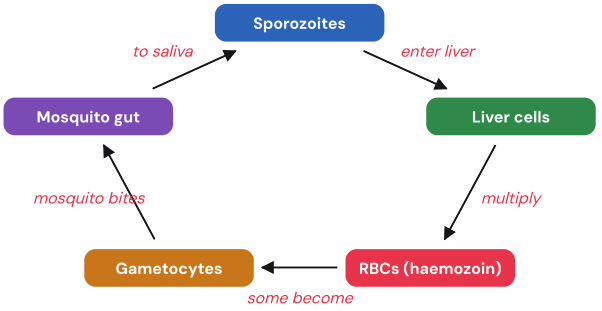
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01 Sehat aur aam bimariyan

Bimari	Rogaanu	Kaise faile / lakshan
Typhoid	*Salmonella typhi* (bacterium)	Ganda khana/paani; lagataar tez bukhaar (39–40 °C), aant me chhed; **Widal test**; "Typhoid Mary" carrier
Pneumonia	*Streptococcus pneumoniae*, *Haemophilus influenzae*	Boondein; alveoli me fluid; honth/nakhoon neele-bhoore
Common cold	Rhino viruses	Naak, saans ki nali; lungs nahi; 3–7 din
Malaria	*Plasmodium* (*P. vivax*, *P. malariae*, *P. falciparum* sabse ghaatak)	Female *Anopheles*; **haemozoin** se thand aur har 3–4 din tez bukhaar
Amoebiasis	*Entamoeba histolytica*	Makkhiyan cysts le jaati; kabz, marod, stool me mucus aur khoon
Ascariasis	*Ascaris* (roundworm)	Mitti/paani me ande; andar khoon behna, anaemia, aant band
Filariasis (elephantiasis)	*Wuchereria* (*W. bancrofti*, *W. malayi*)	Female machhar; pairon aur genitals ki lymphatic vessels me sujan
Ringworm	*Microsporum*, *Trichophyton*, *Epidermophyton* (fungi)	Skin, nakhoon, sir pe sookhe papdidaar daag; garmi aur nami se

02 Malaria life cycle aur bachav

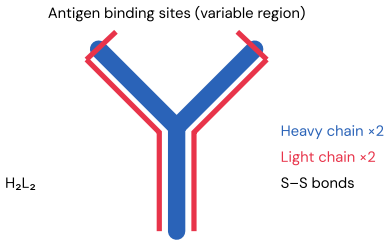
- *Plasmodium* ke do host: insaan (asexual, intermediate host) aur female *Anopheles* (sexual reproduction, definitive host).
- Sporozoites (infective stage) machhar ke kaatne se → liver → RBCs → phatne pe haemozoin.
- Bachav: saaf-safai, saaf paani, kachre ka sahi nipataara, ruka paani nahi, machhardaani, **Gambusia** machhli (larva khaati), insecticides, jaali.
- Vaccines aur antibiotics se smallpox (khatam), polio, diphtheria, pneumonia, tetanus control.



Plasmodium ka life cycle

03 Immunity

- **Innate** (non-specific, janam se): physical barriers (skin, mucus), physiological (pet ka acid, saliva, aansu), cellular (neutrophils/PMNL, monocytes, NK cells, macrophages), cytokine barriers (virus wale cells ke interferons).
- **Acquired** (pathogen-specific, memory ke saath): primary response (kam) aur secondary/anamnestic response (bahut tez).
- **B-lymphocytes**: antibodies (humoral immunity). **T-lymphocytes**: B cells ki madad; cell-mediated immunity (CMI), graft rejection.
- Antibody = H_2L_2 (2 heavy, 2 light chains). Types: IgA, IgM, IgE, IgG.



Antibody ki banawat

04 Active, passive, vaccination, allergy

- **Active immunity**: host khud antibodies banata (infection ya vaccine); dheemi par lambi. **Passive**: bane-banaye antibodies: colostrum (IgA), placenta se foetus ko, anti-tetanus serum, anti-venom.
- **Vaccination**: inactive/kamzor pathogen ya antigenic proteins ⇒ memory B aur T cells. Recombinant DNA vaccines (yeast se hepatitis B vaccine).
- **Allergy**: allergens (dhool ke mites, pollen, jaanwaron ke baal) pe zyada response; IgE; mast cells histamine, serotonin chhodte; chheenk, aankh se paani, behti naak, saans me dikkat. Dawa: anti-histamine, adrenalin, steroids. Aaj ki lifestyle se immunity kam, allergy zyada.
- **Autoimmunity**: body apne cells pe hamla (rheumatoid arthritis).

05 Immune system aur AIDS

- Lymphoid organs: **primary** (bone marrow, thymus: lymphocytes bante aur pakte) aur **secondary** (spleen, lymph nodes, tonsils, chhoti aant ke Peyer's patches, appendix). **MALT** ~50% lymphoid tissue.
- **AIDS**: Acquired Immuno Deficiency Syndrome (pehli baar 1981). **HIV retrovirus** (RNA genome, reverse transcriptase). Failaav: sexual contact, sankramit khoon, needle share, placenta se maa se bachcha. Chhoone se nahi.
- Cycle: HIV **macrophages** me (HIV factory) → reverse transcriptase se viral DNA → **helper T cells (T_H)** me, unki sankhya ghatti ⇒ opportunistic infections (*Mycobacterium*, viruses, fungi, *Toxoplasma*). Incubation 5–10 saal.
- Jaanch: **ELISA**. Ilaaj: anti-retroviral drugs (kuch had tak). Bachav: NACO, surakshit khoon, disposable needles, condom, jaagrukta; 1 December = World AIDS Day.

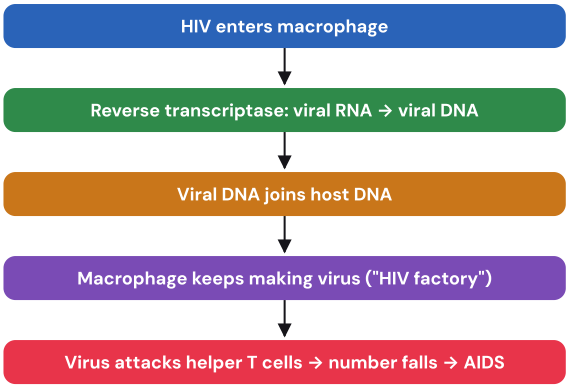
06 Cancer aur drugs

- Normal cells me **contact inhibition**; cancer cells me nahi ⇒ tumours. **Benign** (ek jagah) vs **malignant** (failne wale; **metastasis**: khoon se failna). Carcinogens: physical (X-rays, γ-rays, UV), chemical (tambaku ka dhuan), biological (oncogenic viruses; proto-oncogenes/c-onc active).
- Jaanch: biopsy, histopathology, blood aur bone marrow test (leukaemia), radiography, CT, MRI; monoclonal antibodies. Ilaaj: surgery, radiotherapy, chemotherapy, immunotherapy (α-interferon).
- **Drugs**: opioids (heroin/smack = afeem *Papaver somniferum* ke morphine se diacetylmorphine; depressant), cannabinoids (*Cannabis sativa*: marijuana, hashish, charas, ganja; heart pe asar), cocaine (*Erythroxylum coca*; dopamine; euphoria, hallucinations). Hallucinogens: *Atropa belladonna*, *Datura*.
- Tambaku: nicotine adrenal gland ko uksaata, BP aur dhadkan badhti; smoking ⇒ lungs, bladder, gale ka cancer; bronchitis, emphysema, CHD; khoon me CO badhta. Kishoravastha (12–18): jigyasa, doston ka dabaav. Asar: withdrawal symptoms, liver cirrhosis (alcohol), needles se AIDS. Bachav: peer pressure se bacho, shiksha, parents/doston ki madad, khatre ke sanket, professional madad.

07 Extra: aur bimariyan + tricks

Bimari	Rogaanu	Failaav
Dengue	Dengue virus (flavivirus)	*Aedes* machhar (din me kaatta)
Chikungunya	Chikungunya virus	*Aedes* machhar
Cholera	*Vibrio cholerae*	Paani (chawal ke paani jaisa stool)
Tuberculosis	*Mycobacterium tuberculosis*	Hawa
Tetanus	*Clostridium tetani*	Ghaav (lockjaw)
Diphtheria	*Corynebacterium diphtheriae*	Hawa
Plague	*Yersinia pestis*	Chuhe ka pissu
Rabies	Rabies virus	Kutte ka kaatna
Sleeping sickness	*Trypanosoma*	Tsetse makkhi
Kala-azar	*Leishmania donovani*	Sand fly

- Vaccine generations: 1st = poora mara/kamzor rogaanu (polio, BCG); 2nd = subunit (recombinant hepatitis B); 3rd = DNA/recombinant vector vaccines.
- Cancer types: **carcinoma** (epithelium), **sarcoma** (connective tissue), **leukaemia** (blood cells), **lymphoma** (lymph tissue).
- Machhar trick: **"A-D-C"** = *Aedes* → Dengue, Chikungunya; *Anopheles* → malaria; *Culex* → filariasis.



HIV se AIDS kaise

08 Important Q&A

Q1. HIV ko retrovirus kyun kehte? Kin cells pe hamla?

Genome RNA, reverse transcriptase se DNA banta (ulta flow). Macrophages aur helper T cells pe hamla.

Q2. Active aur passive immunity me antar?

Active: antigen milne pe apne antibodies; dheemi, lambi. Passive: bane-banaye antibodies; turant, thodi der.

Q3. Malaria me tez bukhaar kyun?

RBCs phatne se haemozoin (zehar) nikalta, har 3–4 din thand aur tez bukhaar.

09 Common mistakes

- Female Anopheles ko intermediate host kehna (definitive hai; insaan intermediate).
- Kehna ki common cold lungs me.
- Antibody H_2L likhna (H_2L_2 hai).
- Sochna ki AIDS chhoone se failta.

10 Practice (NEET style)

1. Typhoid ka test?
2. Machhar larva khane wali machhli?
3. Colostrum me antibody?
4. HIV ka test?
5. Morphine kis plant se?

ANSWERS

1) Widal test · 2) Gambusia · 3) IgA · 4) ELISA · 5) *Papaver somniferum*

11 Quick revision: exam se 5 minute pehle

DISEASES

- Typhoid: Salmonella, Widal
- Malaria: Plasmodium, haemozoin
- Filariasis: Wuchereria

IMMUNITY

- Innate vs acquired
- B humoral, T cell-mediated
- H_2L_2; IgE allergy

AIDS

- Retrovirus, reverse transcriptase
- Helper T cells maarta
- ELISA

CANCER/DRUGS

- Contact inhibition khatam
- Metastasis
- Heroin, cannabinoids, cocaine

Koi doubt? padhaiadda.netlify.app pe AI Doubt Solver se poocho, ya is chapter ka mock test do.