

AI Generated Immune Basics Bullet Point Summary

Immune System – Study Summary

Defense Lines

1. First Line (Innate, Non-Specific):

- o Skin, mucous membranes, secretions (tears, saliva, gastric acid).
- o Normal flora prevent pathogen growth.

2. Second Line (Innate, Non-Specific):

- o Inflammatory response (redness, heat, swelling, pain).
- o Fever (↑ temperature slows pathogens).
- o Phagocytes (neutrophils, macrophages).
- o Natural killer cells.

3. Third Line (Adaptive, Specific):

- o Involves **lymphocytes (B cells & T cells)**.
 - o Has **memory** for stronger secondary response.
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Cells of Immunity

- **B Cells:** produce antibodies (humoral immunity).
 - **T Cells:**
 - o Helper T cells (CD4+) – coordinate response.
 - o Cytotoxic T cells (CD8+) – kill infected cells.
 - o Regulatory T cells – prevent overreaction.
 - **Macrophages:** antigen-presenting cells (APCs).
 - **Neutrophils:** first responders, phagocytic.
 - **Eosinophils:** fight parasites, allergic reactions.
 - **Basophils/Mast cells:** release histamine.
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Types of Immunity

- **Innate (Natural):** present at birth, no memory.
- **Adaptive (Acquired):** develops after exposure.

- o Active: natural infection or vaccination.
 - o Passive: maternal antibodies, immune globulin.
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Antibodies (Immunoglobulins)

- **IgG:** most abundant, crosses placenta (long-term immunity).
 - **IgA:** in secretions (tears, saliva, breast milk).
 - **IgM:** first responder to infection.
 - **IgE:** allergic reactions, parasites.
 - **IgD:** role in B cell activation.
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Hypersensitivity Reactions

1. **Type I:** Immediate (IgE-mediated) → allergies, anaphylaxis.
 2. **Type II:** Cytotoxic (IgG/IgM) → transfusion reaction, hemolysis.
 3. **Type III:** Immune complex → lupus, RA.
 4. **Type IV:** Delayed (T-cell mediated) → TB test, contact dermatitis.
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Autoimmune Disorders (Examples)

- **RA, Lupus (SLE), Type 1 Diabetes, MS, Myasthenia Gravis.**
 - Body fails to recognize self from non-self.
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Diagnostic Tests

- CBC with differential.
 - ESR, CRP (inflammation).
 - ANA (antinuclear antibodies → autoimmune).
 - HIV testing (antigen/antibody, CD4 count, viral load).
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□ Key Facts to Remember

- Innate = fast, no memory. Adaptive = slow, has memory.
- CD4+ = helper T cells. CD8+ = cytotoxic T cells.

- IgG = long-term, IgM = first, IgA = secretions, IgE = allergy/parasite.
- 4 hypersensitivity types: I (allergy), II (cytotoxic), III (immune complex), IV (delayed).