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Level. 300 L CHO
Course. Epidemiology and Communicable Disease .
Assignment. Immunization and Prevention.

1. Meaning of Immunization

Immunization is the process of making a person resistant or protected against infectious diseases by administering **vaccines**.
It strengthens the body's immune system so it can recognize and fight disease-causing organisms in the future.
Immunization = Vaccine + Body's immune response → Long-lasting protection.

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2. Types of Immunization

A. Active Immunization

The body produces its own antibodies after receiving:

- A vaccine (artificial active)
- Natural infection (natural active)

Features:
• Long-lasting, sometimes lifelong
• Slower to develop

B. Passive Immunization

Ready-made antibodies are given.

Examples:

- Maternal antibodies passed to baby via placenta or breast milk (natural passive)
- Injection of antibodies (immunoglobulins) e.g., for rabies or tetanus (artificial passive)

Features:
• Immediate protection
• Short-term immunity

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3. Types of Vaccines

1. Live Attenuated Vaccines

Weakened organisms that still produce immunity. Examples: Measles, Mumps, Rubella (MMR), BCG, Oral Polio.

2. Inactivated (Killed) Vaccines

Organisms are killed but still stimulate immunity. Examples: Inactivated Polio Vaccine (IPV), Hepatitis A.

3. Subunit / Conjugate Vaccines

Only parts of the organism are used. Examples: Hepatitis B, HPV, Pneumococcal vaccine.

4. Toxoid Vaccines

Use inactivated toxins. Examples: Tetanus toxoid, Diphtheria toxoid.

5. mRNA Vaccines

Use genetic material to stimulate immunity. Example: Some COVID-19 vaccines.

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4. Importance of Immunization

Immunization is one of the **most effective public health interventions**.

Major Benefits

- Prevents diseases such as measles, polio, tetanus, hepatitis.
- Reduces illness, disability, and death.
- Helps achieve **herd immunity**.
- Protects vulnerable groups (infants, elderly, pregnant women).
- Reduces healthcare costs.

- Eliminates or eradicates diseases (e.g., smallpox).

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5. Immunization Schedule (General Principles)

Typical childhood vaccinations include:

- BCG
- OPV/IPV
- Pentavalent (DPT + Hib + Hep B)
- Measles/MR
- Rotavirus
- Pneumococcal
- Yellow fever (in some regions)
- HPV (for adolescents)

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6. Contraindications to Immunization

Vaccines **should not** be given when:

- There is a severe allergic reaction to a previous dose.
- There is severe acute illness (postpone).
- Immunocompromised patients should not receive live vaccines.

COMPREHENSIVE DETAILS ON PREVENTION

Prevention refers to measures taken to stop diseases from occurring or spreading.
It includes **primary, secondary, and tertiary** prevention.

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1. Primary Prevention

Aims to **avoid disease before it occurs**.

Examples:

- Immunization
- Health education
- Good nutrition
- Personal hygiene
- Safe drinking water
- Use of condoms
- Insecticide-treated nets
- Environmental sanitation
- Hand washing

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2. Secondary Prevention

Aims to **detect disease early** and treat it.

Examples:

- Screening tests (HIV, BP, diabetes, cancer screening)
- Early diagnosis and prompt treatment
- Isolation of infected persons
- Contact tracing

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3. Tertiary Prevention

Aims to **reduce complications and disability**.

Examples:

- Rehabilitation
- Physiotherapy
- Counseling for chronic diseases
- Long-term medication for hypertension, diabetes
- Support group.

Key Points

Process of protecting people from infectious diseases using vaccines.

Active, passive.

Live, inactivated, toxoid, subunit, mRNA.

Reduces disease, disability, death; promotes herd immunity.

Primary (before disease), secondary (early detection), tertiary (limit damage).

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