UNIVERSITY COLLEGE HOSPITAL UCH IBADAN

SCHOOL OF COMMUNITY HEALTH

COURSE: PRINCIPLES OF COMMUNICABLE DISEASE AND EPIDEMIOLOGY

LEVEL: 300LEVEL

ASSIGNMENT

DISCUSS IMMUNIZATION AND PREVENTION.

DEFINITION OF IMMUNIZATION

Immunization is the process of protecting an individual against diseases by stimulating the immune system to produce antibodies that fight infections.

It can happen naturally (through infection) or artificially (through vaccines)

DIFFERENT BETWEEN VACCINATION AND IMMUNIZATION T

Vaccination:The process of giving a vaccine to a person, usually through injection, oral drops, or nasal spray.

Focus: The act of administering the vaccine.

Example: A health worker gives a child the measles vaccine.

Immunization:The process by which a person becomes protected from a disease after receiving a vaccine or after natural infection.

Focus: The body's response (developing immunity).

Example: After receiving the measles vaccine, the child's body produces antibodies and becomes protected — this is immunization.

TYPES OF IMMUNIZATION

1. Natural immunity is the type of immunity a person develops without medical or artificial intervention. It occurs in two main ways:

a. Natural Active Immunity:Developed after recovering from an infection

Long-lasting. Example: Chickenpox recovery

b.Natural Passive Immunity:Antibodies from mother to baby through the placenta or breast milk

Temporary

2. Artificial Immunity:It is when the immune system is stimulated on purpose—usually through vaccines or antiserum—so the body can build immunity without having to suffer the actual disease.it in two ways:

a. Artificial Active Immunity:Developed after receiving a vaccine

Long-lasting. Example: Measles vaccine

b.Artificial Passive Immunity:Given by injecting ready-made antibodies

Immediate but short-term.Example: Anti-rabies immunoglobulin

VACCINE

A vaccine is a biological substance that contains weakened or killed organisms, or parts of microbes that stimulate the immune system to produce immunity.

TYPES OF VACCINE

1. Live attenuated vaccines:This contain weakened organisms.Examples:Measles,,OPV,Yellow fever,BCG

2. Inactivated (Killed) vaccines:Organisms are killed but still stimulate immunity.Examples:IPV

Hepatitis A,Rabies vaccine

3. Toxoid vaccines:Contain inactivated toxins.Examples:Tetanus toxoid,Diphtheria toxoid

4. Subunit/Recombinant vaccines:Only specific parts of the organism.Examples:

Hepatitis B,HPV vaccine

5. Conjugate vaccines:Bind a weak antigen with a strong one to improve immunity.

Examples:Hib vaccine,Pneumococcal conjugate vaccine (PCV)

IMPORTANCE OF IMMUNIZATION

a Prevents death from childhood killer diseases

b Protects the community (herd immunity)

c Reduces hospital costs

d.Prevents outbreaks of diseases

e. Helps eradication of diseases (e.g., smallpox)

f.Reduces disability (e.g., polio paralysis)

NATIONAL PROGRAM ON IMMUNIZATION (NPI)

The NPI is essentially the national-level immunization programme adopted by countries to organize and deliver vaccines to prevent infectious diseases. It stems from the global Expanded Programme on Immunization (EPI), which was launched by World Health Organization (WHO) in 1974 to ensure universal access to core life-saving childhood vaccines.

In Nigeria specifically, EPI started in 1979. Later, in 1996, it was formalized as the National Programme on Immunization (NPI).

The NPI is implemented by the National Primary Health Care Development Agency (NPHCDA) — under its Department of Disease Control & Immunization.

Objectives and Purpose:

The NPI aims to:

a.Provide routine immunization for children (and in some cases women of childbearing age) to protect them against vaccine-preventable diseases.

b.Ensure wide and equitable access — reaching all communities including those in rural, remote, or underserved areas.

c.Maintain and sustain immunization services as part of the wider primary health-care system rather than as a temporary campaign.

d Reduce morbidity and mortality from major childhood diseases (and other vaccine-preventable diseases) — supporting overall public health and reducing burden on health systems.

What NPI Covers / Typical Vaccines (in Nigeria).

Under Nigeria's NPI, the immunization schedule includes vaccines against many diseases. These typically include: tuberculosis (BCG), poliomyelitis, hepatitis B, diphtheria, pertussis, tetanus, Haemophilus influenza type B (Hib), measles, yellow fever, and others. Over time additional vaccines (for example pneumococcal disease, rotavirus,HPV,MR) have been introduced.

Vaccinations are given at different ages — starting at birth (or soon after), then at intervals (e.g. 6 weeks, 10 weeks, 14 weeks, and around 9 months) as per the national immunization schedule.

How NPI Is Delivered — Strategies & Implementation

a.Routine immunization (RI) at health facilities (public and private), plus outreach services to reach remote or underserved communities.

b.Use of tailored strategies to overcome barriers: identifying communities with low coverage ("zero-dose" children — those who have never received any vaccine), strengthening supply chains, ensuring cold-chain management, training health workers, improving data systems for tracking and follow-up.

c.Collaboration with partners and global agencies (e.g., WHO, UNICEF, donor organisations) to support financing, technical guidance, vaccine procurement, and outreach.

. Challenges and Gaps

Despite its importance, NPI (in Nigeria) faces several obstacles:Immunization coverage remains incomplete: a significant proportion of children are either partially vaccinated or not vaccinated at all.

Reasons include: lack of awareness/education among parents or caregivers; logistical challenges in delivering vaccines to remote or underserved areas; weak health infrastructure and poor primary health-care capacity; stock-outs; inadequate funding; insufficient motivation or community engagement.

Inequity: certain populations — e.g., remote rural communities, conflict-affected zones, migrants, or socially marginalized groups — may be disproportionately underserved.

Drop-out: even for children who begin immunization, follow-up doses may be missed due to poor tracking, caregiver unawareness or logistical barriers.

Nigeria Routine Immunization Schedule (0–5 years)

At Birth:BCG,OPV 0,Hepatitis B (Birth dose)

6 Weeks:OPV 1,Pentavalent 1 (DPT + Hep B + Hib),PCV 1,Rotavirus ,IPV 1

10 Weeks:OPV 2,Pentavalent 2,PCV 2,Rotavirus 2

14 Weeks:OPV 3,Pentavalent 3,PCV 3,IPV2

6months: Vitamin A(100,000I.U)

9 Months:Measles 1,Yellow fever, Meningitis A

12months: Vitamin A (200,000I.U)

15 Months:,Measles 2

9years: HPV

COLD CHAIN SYSTEM

The cold chain is a temperature-controlled system used to store and transport vaccines from

manufacturer to the point of use.

Temperature Requirement:Most vaccines: +2°C to +8°C,Freezer for some vaccines: –15°C to –25°C

Cold Chain Equipment:Walk-in cold rooms,Deep freezers,Ice-lined refrigerators,Cold boxes,

Vaccine carriers,Ice packs,Thermometers

Routes of Vaccine Administration

Oral – OPV, Rotavirus

Intradermal – BCG

Intramuscular – Pentavalent, PCV, Hepatitis B,IPV, Meningitis A

Subcutaneous – Yellow fever, Measles

Contraindications to Immunization

Do not immunize if:

a Severe allergic reaction to previous dose

b.High fever (postpone)

c.Immunocompromised child (avoid live vaccines)

d.Pregnancy (avoid some vaccines)

Adverse Reactions of Vaccines:Pain and swelling at injection site,Mild fever,Irritability

Rare: severe allergic reaction (anaphylaxis)

HERD IMMUNITY:When a large percentage of the population is immune to a disease, it becomes difficult for the disease to spread.

BARRIERS TO IMMUNIZATION

a.Lack of awareness

b.Vaccine hesitancy

c.Poor cold chain

d.Inadequate supply

e.Cultural barrier

f.Distance to health facility

STRATEGIES TO IMPROVE IMMUNIZATION COVERAGE:

a Health education

b.Mobile/outreach services

c.Strengthening cold chain

d.Community participation

e.Supportive supervision

f.Regular monitoring.

PREVENTION

Prevention of Diseases:

Disease prevention refers to all the measures taken to stop diseases from occurring, reduce their severity, or prevent complications. Public health classifies prevention into three major levels, sometimes expanded to five.

1. Primary Prevention:This level aims to stop a disease before it occurs.Examples:Immunization/vaccination,Health education (handwashing, hygiene, breastfeeding),Environmental sanitation,Safe water supply,Vector control (mosquito nets, insecticides),Good nutrition,

Purpose:Remove risk factors and strengthen the body's resistance.

2 Secondary Prevention:This focuses on early detection and prompt treatment to prevent examples:Screening tests (BP checks, blood sugar tests, HIV testing),Early diagnosis,Effective treatment,Contact tracing (e.g., TB, STIs)

Purposes:Catch disease early and stop progression.

3. Tertiary Prevention:This aims to reduce disability and restore the best possible quality of life after disease has examples:Rehabilitation (physiotherapy, occupational therapy),Disability limitation,Support groups,Surgery to restore function.

Purpose.Prevent long-term complications and improve life after illness.

4. Primordial Prevention:Targets the social, economic, and environmental conditions that

increase the risk of diseases, before risk factors even develop.Examples:Policies reducing poverty,Clean environment,Good housing,Laws restricting tobacco sales.

5. Quaternary Prevention:Prevents over-medicalization and protects people from unnecessary tests or harmful treatments.

IMPORTANCE OF PREVENTION

1. Reduces disease occurrence:Prevention stops many illnesses before they happen.

Examples: immunization prevents measles, yellow fever; hygiene prevents diarrheal diseases.

2. Saves lives:By stopping diseases early—or preventing them entirely—fewer people die from preventable conditions.

3. Saves money (cost-effective:)Treating a disease is far more expensive than preventing it.

For example, giving a vaccine is cheaper than treating complications of the disease.

4. Reduces complications and disability:Secondary and tertiary prevention help detect diseases early and limit long-term damage.E.g., early BP screening prevents stroke.

5. Improves quality of life:Healthy people are more productive, active, and able to live full lives without frequent sickness.

6. Protects communities (not just individuals:When many people are protected, herd immunity prevents outbreaks and protects vulnerable groups like infants and the elderly.

7. Reduces burden on health facilities:Hospitals and health centers are less overwhelmed when fewer people fall ill.

8.Promotes healthy habits:Prevention encourages good behaviors such as exercise, safe water use, sanitation, and good nutrition.

9. Helps control epidemics and pandemics:Prevention measures—like surveillance, isolation, vaccination—stop the spread of infectious diseases.

10.Supports national development:A healthier population means greater productivity, better school attendance, and stronger economic growth.