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PRINCIPLES OF COMMUNICABLE DISEASE AND EPIDEMIOLOGY.

Discuss Immunization and prevention.

Immunization is the process whereby a person is made resistant to a disease, typically by the administration of a vaccine.

Vaccines stimulate the body's own immune system to protect the person against subsequent infection or disease. Immunization prevents diseases, disabilities, and deaths from vaccine-preventable diseases (VPDs), such as poliomyelitis, Tuberculosis, measles, rubella, parotitis, diphtheria, tetanus, pertussis, hepatitis A and B, bacterial pneumonias, rotavirus diarrheal diseases and bacterial meningitis, cervical cancer

Importance of Immunization

Immunization (vaccination) is one of the most effective ways to protect individuals and communities from infectious diseases. Its importance includes:

1. Prevents Diseases

Vaccines protect against dangerous illnesses such as measles, polio, tetanus, whooping cough, hepatitis B, and more.

They help the body build immunity without having to suffer from the actual disease.

2. Reduces Child Mortality

Many vaccine-preventable diseases used to cause high deaths in children. Immunization greatly lowers these deaths and keeps children healthier.

3. Protects the Community (Herd Immunity)

When many people in a community are vaccinated, diseases have less chance to spread.

This protects babies, elderly people, and those who cannot be vaccinated due to medical reasons.

4. Prevents Outbreaks and Epidemics

Vaccination stops the spread of infections and prevents large outbreaks.

For example, widespread vaccination helped reduce diseases like measles and polio in many

countries.

5. Saves Money

Preventing a disease is cheaper than treating it.

Vaccines reduce hospital bills, loss of work, and long-term disability caused by infections.

6. Protects Future Generations

Some diseases have been eliminated or greatly reduced because of vaccines.

For example, smallpox was eradicated worldwide through immunization.

7. Strengthens the Immune System

Vaccines train the immune system to recognize and fight diseases quickly if they enter the body later.

8. Required for School and Travel

Many schools and countries require children and travelers to be vaccinated to prevent the spread of infections.

9. Safe and Effective

Vaccines are tested and monitored to ensure they are safe.

Side effects are usually mild compared to the risks of the diseases themselves.

Vaccines currently on the Nigerian National Programme on Immunization

BCG- protects against severe forms of Tuberculosis such as Tuberculous meningitis

Oral Polio Vaccine (OPV) and Injectable Polio Vaccine (IPV)- protect against polio which can cause paralysis and death.

Hepatitis B Vaccine- protects against hepatitis B virus infection which causes liver disease, cancer and death. The birth dose confers partial protection•PCV (pneumococcal conjugate vaccine)- protects against pneumonia, meningitis, ear infection etc.

Pentavalent vaccine- contains 5 vaccines – Diphtheria, Pertussis, Tetanus toxoid Haemophilus influenza type B and Hepatitis B vaccine. This protects against diphtheria, whooping cough, tetanus, hepatitis B virus infection and other infections like pneumonia, meningitis, ear infections

Rotavirus- protects against diarrhoea in children

Measles vaccine- protects against measles infection

Yellow fever vaccine- protects against yellow fever infection

Vitamin A- It is not strictly a vaccine. It is a supplement that boosts immunity against infectious diseases and protects against blindness.

Other vaccines available but currently not on the Nigerian Programme on Immunization but which can be obtained at a cost privately are:

Chicken pox vaccine- protects against chicken pox

MMR- protects against measles, mumps and rubella

The current Immunization schedule in Nigeria

At birth- BCG, OPV 0, HBV

6 weeks- OPV 1, PCV 1, Rotavirus 1, Pentavalent 1

10 weeks- OPV 2, PCV 2, Rotavirus 2, Pentavalent 2

14 weeks- OPV 3, PCV 3, IPV, Pentavalent 3

6 months- Vitamin A

9 months- Measles, Yellow fever, Meningitis vaccine

1 year- Vitamin A. Vitamin A is given every 6 months till the age of 5 years

15 months- Measles 2

Chicken pox vaccine and MMR (Measles Mumps Rubella) though available in the country are not currently on the National immunization schedule. They are administered as follows:

Chicken pox- 12 to 15 months

MMR- 15 to 18 months

What is prevention?

Prevention : This is also called preventive health . It means any action taken to keep people healthy and well, and prevent or avoid risk of poor health, illness, injury and early death.

Prevention aims to increase the likelihood that people will stay healthy and well for as long as possible.

OR

“Actions aimed at eradicating, eliminating, or minimizing the impact of disease and disability.

Levels of prevention

1.Primordial Primordial prevention

2.Primary Primary prevention

3.Secondary Secondary prevention

4.Tertiary prevention

1.Primordial Prevention

This is the earliest level of prevention. I.e It focuses on preventing the development of risk factors themselves.

Examples

I.Encouraging healthy lifestyles in children (healthy diet, exercise).

II.Policies that reduce poverty and overcrowding.

III.Preventing young people from developing habits like smoking or alcohol intake.

Goal-Stop the risk factors from appearing in the first place.

2. Primary Prevention

This level aims to prevent disease before it occurs.

How it works

Reduces exposure to risk factors

Increases body resistance

Examples

I.Immunization (e.g., measles, polio vaccines)

II.Using insecticide-treated nets to prevent malaria

III.Health education on hygiene and nutrition

IV. Using sunscreen to prevent skin damage

V.Wearing seatbelts to prevent road traffic injuries

Goal- Stop the onset of disease.

3. Secondary Prevention

This involves early detection and prompt treatment of diseases before complications occur.

Examples

I.Screening tests:

II.Blood pressure checks for hypertension

III.Blood sugar screening for diabetes

IV.Pap smear for cervical cancer

V.Breast self-examination or mammography

VI.Early treatment of infections (e.g., treating malaria early)

Goal: Detect and treat diseases early to stop progression.

4. Tertiary Prevention

This level helps reduce complications, disability, or suffering after a disease has already occurred.

Examples Rehabilitation for stroke patients

I.Physiotherapy after injuries

II.Dietary control and medications to prevent complications of diabetes

III.Support for people living with chronic diseases like hypertension or asthma

Goal-Reduce disability, improve quality of life, prevent further deterioration.