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CHO, 300L

EPIDEMIOLOGY ASSIGNMENT

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DEFINITION OF IMMUNIZATION

Immunization is a process that protects individuals and communities from infectious diseases by making their immune systems resistant to a specific pathogen, most commonly through vaccination. Vaccines, which contain weakened or inactive versions of a germ or its parts, stimulate the body to produce antibodies and immune memory without causing illness. This process prevents diseases, disabilities, and deaths from vaccine-preventable illnesses and is a critical component of global public health.

How immunization works

1. Active immunization: This is the most common form, where a vaccine is administered, and the body's immune system responds by creating its own long-lasting protection (antibodies).

2. Passive immunization: This is a temporary form of protection achieved by introducing antibodies from an external source, such as from a mother to her fetus or through injections of antibody-containing blood products.

The immune response: When a vaccine is introduced, it "tricks" the body into thinking it has an infection. The immune system then produces antibodies and creates "memory cells" to fight the specific germ. If the body is exposed to the actual disease later, these memory cells ensure the immune system can quickly recognize and neutralize the pathogen.

Types of vaccines

1. Live-attenuated: Use a weakened version of the germ.

2. Inactivated: Use a killed version of the germ.

3. Subunit, recombinant, and polysaccharide: Use only specific pieces of the germ.

4. Toxoid: Use a toxin made by the germ.

mRNA and viral vector: Use genetic material that gives cells instructions to make a protein of the germ, prompting an immune response.

Benefits of immunization

1. Disease prevention: Vaccines prevent diseases, disabilities, and deaths from over 30 life-threatening infections, including measles, polio, tetanus, and hepatitis.

2. Community protection: When a high percentage of a community is vaccinated, it creates herd immunity, which protects those who cannot be vaccinated, such as infants or people with weakened immune systems.

3. Economic benefits: Immunization is one of the most cost-effective health investments, with a significant return in economic benefits due to reduced healthcare costs and increased productivity.

4. Global health security: Immunization is crucial for preventing the spread of infectious diseases and maintaining global health security.

Challenges to immunization

Despite its success, immunization programs face challenges like disruptions from events such as the COVID-19 pandemic, economic crises, and conflicts.

Misinformation and vaccine hesitancy can also hinder efforts to reach high levels of coverage.

In some areas, factors like ethnicity, religion, and geographic location can create barriers to consistent immuniimmunization schedule is a series of vaccines given at specific ages to protect against diseases. For example, in Nigeria, the schedule includes vaccines like BCG and OPV at birth, followed by multiple doses of Pentavalent, PCV, and Rotavirus vaccines at 6, 10, and 14 weeks, and later vaccines for measles, yellow fever, and meningitis around 9 months of age. The schedule can vary by country, so it is important to check with local health authorities for the specific recommendations in your region.

Newborn to 1 year

At birth: BCG, OPV 0, and Hepatitis B (HBV).

6 weeks: OPV 1, Pentavalent 1, PCV 1, and Rotavirus 1.

10 weeks: OPV 2, Pentavalent 2, PCV 2, and Rotavirus 2.

14 weeks: OPV 3, Pentavalent 3, PCV 3, and IPV.

6 months: Vitamin A.

9 months: Measles, Yellow Fever, and Meningitis vaccine.

1 year: Vitamin A.

Toddler to young adult

12 months: OPV Booster, PCV Booster, and Vitamin A.

13 months: MMR and Chickenpox (Varicella).

18 months: Hepatitis A (1st dose), Pentavalent Booster, and Vitamin A.

19 months: Hepatitis A (2nd dose).

24 months: Hepatitis A (3rd dose) and Typhoid vaccine.

5 years: Pentavalent Booster and Typhoid Booster.

9 years: Cervarix vaccine.

Preventive measures are categorized into primary, secondary, and tertiary prevention, which involve stopping a problem before it starts, detecting and treating it early, and managing it to minimize harm, respectively. Other classifications include primordial prevention, which aims to prevent the risk factors for disease from ever developing. Different types of measures exist within these categories, such as vaccinations, healthy lifestyle choices, and screening tests.

1. Primary prevention

What it is: Measures taken to prevent a disease or injury from occurring in the first place.

Examples:

a. Vaccinations

b. Wearing a seatbelt

c. Eating a healthy diet and exercising

d. Avoiding smoking

e. Wearing sunscreen

2. Secondary prevention

What it is: Measures taken to detect and treat a disease or injury in its early stages.

Examples:

a. Screening tests for high blood pressure or cancer

b. Self-screening for illness

c. Prompt treatment for an infection

3. Tertiary prevention

What it is: Measures taken to manage an established disease to prevent it from worsening or to rehabilitate those affected by it.

Examples:

a. Rehabilitation programs after a stroke

b. Medication to manage a chronic condition

c. Taking steps to minimize the harm from a chronic illness

Primordial prevention

What it is: Aims to prevent the social, economic, and environmental conditions that are precursors to disease.

Examples:

Public health programs that work to prevent risk factors for disease from ever developing

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