

IMMUNIZATION

Immunization remains the most cost effective tool to reducing childhood morbidity, and mortality occurring from vaccine preventable disease (VPDs) such as Tuberculosis, Poliomyelitis, Diphtheria, Whooping Cough, Tetanus, Neo-natal Tetanus, Measles, Yellow Fever, Hepatitis B and C, Cerebro spinal meningitis.

DEFINITION: Immunization is the process of introducing an antigen into the body to produce a specific immune response.

TYPES OF IMMUNISATION

- i. PASSIVE IMMUNIZATION
- ii. ACTIVE IMMUNIZATION

Passive immunization Passive immunization is where pre-synthesized elements of the immune system are transferred to a person so that the body does not need to produce these elements itself. Currently, antibodies can be used for passive immunization.

Active immunization: Active immunization can occur naturally when a person comes in contact with, for example, a microbe. If the person has not yet come into contact with the microbe and has no pre-made antibodies for defense, as in passive immunization, the person becomes immunized. The immune system will eventually create antibodies and other defenses against the microbe. The next time, the immune response against this microbe can be very efficient; this is the case in many of the childhood infections that a person only contracts once, but then is immune. E.g. chicken pox and measles

TUBERCULOSIS (TB)

This is caused by a germ called mycobacterium tuberculosis.

It usually attacks the lungs and other parts of the body, including the bones, joints and brain

People of all ages can contract T.B

The risk of developing T.B is highest in children aged less than 3 yrs and in very old people although anyone may be affected.

HOW IS T.B SPREAD?

- T.B is spread through the air, when a person with the disease sneezes, the germ enters the air.
- A person inhaling air that contains T.B germs may become infected.
- It can spread rapidly where people are living in crowded conditions.

- In some areas it is possible to become infected by consuming unpasteurized milk (bovine T.B)
- Person who has low immune system (i.e. difficulty to fight disease, e.g. HIV/AIDS)

SIGN AND SYMPTOMS

- Weakness
- Weight loss
- Fever
- Night sweats
- Persistent cough
- Chest pain
- Coughing up of blood

IN YOUNG CHILDREN

- Failure to thrive
- Stunted growth

TREATMENT

People with T.B must complete a course of curative therapy, which usually involves taking two or more anti T.B drugs for at least eight months.

Unfortunately, some people fail to take the medications as prescribed or to complete their course of therapy, or they may be given ineffective treatments. This may lead to multi-drug-resistant T.B which is difficult to treat and can be spread to other people.

A person with the disease can infect others several weeks even after he or she begins treatment

PREVENTION

The best protection available for children against T.B infection is immunization with BCG VACCINE

WHAT IS BCG?

B—Bacillus

C--- Calmett

G--- Guerin

The reconstituted vaccine is even more sensitive to heat than the powder and must therefore be used within six hours or discarded

WHEN GIVEN

- At birth or as soon as possible after birth
- It should not be given to children who have clinical HIV/AIDS

NOTE: If there is no nodule at injection site six weeks after a BCG vaccination, the injection must be repeated.

WHERE IT IS GIVEN BCG vaccine is injected in the top layer of the skin of the upper left arm

SIDE EFFECT

- Normal Reaction
- When BCG vaccine is injected a small raised lump appears within 30 minutes
- After two weeks, a red sore develops which is 10 mm in diameter
- The sore remains for another two weeks and then heals. A small scar about 5mm across resulting from the sore remains for life. This is a sign that the child has been effectively immunized.

TREATMENT

- Keep dry and clean
- Do not put away ointment or medicine

DIPHTHERIA

DEFINITION: Diphtheria is caused by a germ called corynebacterium diphtheria.

The germ produces a toxin that can harm or destroy human body tissues and organs

One type of the disease affects the pharynx and other part of the throat

Diphtheria affects people of all ages, but mostly non-immunizes children under 15 years of age.

HOW IS DIPHTHERIA SPREAD

- The type of diphtheria that affects the throat is spread in droplets and secretions from the nose, throat and eyes when there is close contact between infected and uninfected people.
- The spread of the disease is favored by overcrowding and poor living conditions.
- People infected with diphtheria usually become ill within two to four days.
- Infected individuals can usually spread the disease to other for up to four weeks or longer
- During outbreaks and epidemics some infected persons may carry the germ without showing any signs or symptoms (healthy carriers) but can still spread the disease to other people

SIGNS AND SYMPTOMS

When diphtheria affects the throat and tonsils, the early symptoms and sign are

- Sore throat
- Loss of appetite
- Slight fever
- Within two to three days a bluish-white or grey membrane forms in the throat and tonsils. If there is bleeding the membrane may become grayish-green or black. It sticks to the soft palate of the throat, and bleeding may occur if attempts are made to remove it.
- The patient may recover at this point or may develop severe forms of the disease.

COMPLICATION

- Abnormal heart beats may occur during the early stage of the illness or weeks later
- Heart failure may result
- Patients with severe or complications may die

TREATMENT

- Refer to doctor
- Persons in whom diphtheria is suspected should be given appropriate antibiotics
- They should be isolated to avoid exposing others to the germ
- Patient become non-infectious about two days after the commencement of antibiotic treatment

PREVENTION

- The most effective way of preventing diphtheria is to maintain a high level of immunization in the community
- Diphtheria toxoid vaccine is given together with pertussis vaccine and tetanus toxoid as DPT vaccine.

PERTUSSIS

What is pertussis? Pertussis or whooping cough is a disease of the respiratory tract caused by a germ called Bordetella Pertussis

The germ lives in the mouth, nose and throat

The disease is common in non-immunized children all over the world

It has become increasingly in countries where immunization coverage is low

The disease is most dangerous in children aged less than 1 year

HOW IS IT SPREAD

- Pertussis spread very easily from person to person through droplets produced by coughing or sneezing.
- Most persons exposed to the germ become infected
- The most susceptible people are the youngest non-immunized children
- The disease is most readily transmitted as severe days after a person has been exposed to the germs until three weeks after they start coughing.

SIGNS AND SYMPTOMS

There are usually three stages

STAGE 1

In infants, they appear to have a common cold with;

- Watery eyes
- Running nose
- Sneezing
- Fever
- A mild cough

STAGE 2

- The cough worsens
- The child has numerous bouts of rapid coughing
- At the end of these bouts the child takes in air with a high-pitched whoop
- The child may turn blue because of lack of oxygen during a long bout of coughing
- Vomiting and exhaustion often following the coughing attack usually at night.
- This stage usually lasts one to six weeks but may go on for up to ten weeks. The attacks become milder with a period of time

STAGE 3

- Recovering takes place
- The coughing gradually becomes less intense and stops in two to three weeks.

COMPLICATION

- Complications are most probable in young infants
- The commonest and cause of most deaths is bacterial pneumonia
- Convulsions and seizures may occur. These arise because of;
- The reduced oxygen supply to the brain during coughing attacks or

- The toxins released by the pertussis germs
- Inflammation of the middle ear (otitis media)
- Dehydration

TREATMENT

- Refer to the doctor
- Treatment with an antibiotic, usually erythromycin may make the illness less severe
- The use of antibiotics also reduces the ability of the patient to infect others because the medicines kills germs in the nose and throat ,
- Plenty of fluids should be given to prevent dehydration

PREVENTION

Prevention involves immunization with pertussis vaccine, which is usually given in combination with diphtheria and tetanus as DPT

Newborns and infants are not protected against pertussis by maternal antibodies.

A person infected with pertussis usually acquires lifelong immunity.

TETANUS --- including maternal and neonatal tetanus (MNT)

WHAT IS TETANUS

Tetanus or lockjaw is caused by the germ clostridium tetani, which grows in damaged tissue e.g. in a wound or in a baby's damaged tissue

The bacteria form spores that can survive in the environment for years

The toxin they produce poisons the nerve s that control the muscles and this cause stiffness

In tetanus the affected persons muscles all contract, making the body stiff. The disease is particularly common and serious in newborn babies, when it is called neonatal tetanus (NNT)

People of all ages can contract tetanus

Almost all babies who contract the disease die

In Nigeria, NNT is a major cause of neonatal deaths

Maternal tetanus commonly occurs following an abortion or after delivery.

HOW IS TETANUS SPREAD

Tetanus is not transmitted from person to person

A newborn baby may be infected if the knife, razor or other instrument used to cut the umbilical cord is dirty (use a new and sterilized instruments always)

Infection may also occur if animal dung or ash is used to dress the cord, or if soil enters the baby's navel.

Infant and children may also contract tetanus when dirty instruments are used for circumcision, scarification and skin piercing

Also if dirt, charcoal or other unclean substances are rubbed into a wound.

SIGNS AND SYMPTOMS

- Muscular stiffness in the jaw is common
- Stiffness of the neck
- Difficulty in swallowing
- Stiffness of the stomach muscles
- Muscle spasms
- Sweating
- Fever

Newborn babies with tetanus appear normal at birth but stop sucking 3-10days later. At 5-13 days they are still not breast Feeding, the whole body becomes stiff, severe muscle contractions and convulsions occur and death follows in most cases.

COMPLICATION

- Fractures of the spine or other bones may occur as a result of muscle spasms and convulsion
- Abnormal heartbeat
- Coma
- Pneumonia and other infections may also occur
- Death is particularly likely in the very young

TREATMENT

- Wounds should be thoroughly cleaned and dead tissue should be removed
- For person with wound that are either clean or minor and who are not fully perforated against tetanus, tetanus immune globulin (ATS) should be given immediately.
- Antispasmodics may be given
- Antibiotics may also be used

PREVENTION

The prevention of neonatal tetanus requires women of childbearing age to receive correct doses of tetanus toxoid as per schedules. This results in the protection of mothers and tetanus antibodies being transferred from them to their fetuses. Clean practices during delivery and clean wound care are also very important in preventing tetanus.

WHEN IS IT GIVEN?

Five doses are given to women of childbearing age

- TT1- at first contact with woman of child bearing age or as early as possible in pregnancy
- TT 2- at least 4 weeks after TT1
- TT3- at least 6 weeks after TT2
- TT4- at least 1 year after TT3
- TT5- at least 1 year after TT4

SIDE EFFECT

After injection a woman may have

- Mild pain
- Redness
- Warmth

HOW TO TREAT SIDE EFFECT---apply ice pack

POLIOMYELITIS (POLIO)

WHAT IS POLIO?

Polio is caused by the poliomyelitis virus. It is a crippling disease that can occur in adult but it is much common in children.

HOW IS POLIO SPREAD?

- The virus enters the body through the mouth when people eat food or drink water contaminated by feces.
- The disease is most likely to spread in areas of poor sanitation
- The virus enters the bloodstream and may invade certain types of nerves cells, which can damage or destroy the system
- The virus also occurs in throat secretions, and is sometimes spread in airborne droplets through close contact with person carrying the infection who are sneezing or coughing, or through other types of exposure to throat and nose secretions.

SIGNS AND SYMPTOMS

- People infected with the polio virus may not feel ill
- Some may have symptoms such as fever, loose stools, sore throat, stomach upset, headache, stomach ache and sometimes there may be pain or stiffness neck, back and legs

COMPLICATIONS

- About 1 in 200 infected children becomes paralyzed and most of these children have some permanent paralysis.
- Death may occur if the muscles used for breathing are paralyzed and no respiration is available.

TREATMENT

- Refer to doctor
- There is no treatment but the symptoms can be relieved
- Sometimes the patient has to use a respirator in order for breathing to continue.

PREVENTION

- Polio prevention involves immunization with oral polio vaccine(OPV)
- Antibodies from the mother provide protection to the infant for two to three months after birth.

SIDE EFFECT – Oral polio vaccine has no side effect

MEASLES

WHAT IS MEASLES?

Measles is caused by the measles virus and is highly infectious i.e. very easily spread it kills more children than any other of the target disease. It is constantly present in some populations and often occurs in epidemics proportions.

In conditions of crowding and poverty where large members of non-immunized people are in close contact the stage is set for measles epidemics.

HOW IS MEASLES SPREAD?

- Measles is spread by contact with nose and throat secretions of infected people and in airborne droplets released when an infected person sneezes or coughs.
- Transmission by airborne droplets can occur even two hours after an infected person has left a room or other closed area.
- An infected person can affect others a few days before and for several days after he or she develops symptoms.
- The disease spreads easily wherever infants and children gather together.

SIGNS AND SYMPTOMS

- The first sign of infection is a high fever lasting 1-7days
- During this period, there may be a runny nose
- Cough
- Red and watery eyes and small white spots inside the cheeks
- After several days a slightly raised rash develops spreading from the face and upper neck to the body and then to the hands and feet over a period of three days
- It last for 5-6 days
- There may also be loss of appetite and especially in infants.

COMPLICATION

- Complications occurs particularly in children aged less than 5 years and in adult aged over 20 years
- Severe diarrhea which may be problem, especially in infants
- Dehydration from severe diarrhea
- Inflammation of middle ear
- Pneumonia, which is the commonest cause of death associated with measles.
- This occurs because the measles virus weakens the immune system.

PREVENTION

- The prevention of measles involves immunization with measles vaccine
- Children age less than 12 months, if not immunized are likely to acquire measles infection
- Receive one dose at 9th month or before the age of 1 year
- Isolate at least four days after the skin rash appears
- Isolate for the duration of the illness if they are also malnourished.

HEPATITIS

WHAT IS HEPATITISB?

It is a disease caused by the Hepatitis B virus, which affects the liver. People infected usually recover but some continue to carry the virus for years and can spread the infection to others.

HOW IS IT SPREAD?

- The Hepatitis B virus is carried in the blood, saliva, semen, vaginal fluid and most of the other body fluids.
- Injection with unsterilized needles or syringes contaminated by the virus of infected person.

- Transmission during sexual intercourse

SIGNS AND SYMPTOMS

- General weakness
- Loss of appetite
- Jaundice
- Stomach upset
- Dark urine and pale stools

COMPLICATION

- Chronic hepatitis]
- Liver Failure
- Liver cancer
- Death

TREATMENT

- Refer to the doctor
- In chronic infection; the disease can sometimes be controlled by immunosuppressive

PREVENTION

- Hepatitis B can be prevented with hepatitis B vaccine
- NPI recommends that children receive three doses during the first year of life and it is as follows
 - i. At birth
 - ii. 6 weeks
 - iii. 14 week

All pregnant women should be tested to determine whether they carry the virus in their blood.

- Babies of mothers who are carriers should receive an injection of hepatitis B antibodies (hepatitis B immune globulin) together with first dose of vaccine at birth.