

CHAPTER : 8

IMMUNIZATION (VACCINATION)

Before birth, a child lives in a definite environment in mother's womb. Therefore, during the gestational development only the internal environment affects the baby's health. But, after birth, he gets a new environment every moment of which affects his health continuously. Harmful elements present in the environment adversely affect the baby's health and as a result he suffers from different types of diseases. A survey shows that in India, 2/3rd of children lose their lives to Tetanus in the first month of their lives. Approximately 25% babies die because of Diarrhoea. Not only in India, but also in other developing countries 50-52 lakh children die due to Diarrhoea, Measles, Dehydration, Diphtheria, Polio and Tuberculosis.

Keeping in mind the mortality rate, it is important to pay attention to child health care. The foundation of a good health of a child is laid at the time of his birth. It is our responsibility to develop each child into a healthy and competent member of the family and society and a citizen of the country. Parents as well as guardians too should pay attention towards child health care. For this, after the baby's birth he should be vaccinated on time so that his body develops resistance capacity for different diseases.

Immunization

The best way to prevent a disease is immunization. Immunization is the process whereby a

person is made immune or resistant to an infectious 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.

A vaccine typically contains an agent that resembles a disease-causing micro organism and is often made from weakened or killed forms of the microbe, its toxins or one of its surface proteins. Vaccine provides active acquired immunity to a particular disease. Some vaccines are orally administered while others are injected in the body.

Mainly immunization is done in two steps-

1. Primary immunization
2. Secondary immunization

In primary immunization for developing disease resistance, one or more injections are administered. These primary injections are for a definite time period. And so, as the time passes the disease resistance capacity reduces.

After the duration of primary immunization, secondary immunization starts. These are also called as 'boosters'. If the secondary immunization is not given then the disease is likely to appear.

Different vaccines for prevention of diseases

1. **Chicken pox vaccine-** Chicken Pox is a serious disease. At present, this is under control. The main solution for this disease is getting vaccinated in the first week after birth.

Chicken Pox vaccine was discovered by Edward Jenner (1774). His experiments have proved that cow pox provides protection against small pox. 'Cowpox' or 'Vaccinia' virus is administered through the vaccine which provides disease resistance capacity.

Pressure method is used for applying injections. Before the child is vaccinated for chicken pox, it should be ensured that he is not suffering from fever or is not weak and has no skin problem. The last patient of this disease was reported in 1975.

2. **B.C.G. Vaccine-** BCG Vaccine is administered for prevention from Tuberculosis. This vaccine is first given in the first month of birth and then at the age of 5 or 7. BCG was prepared by two scientists- Calmette and Guérin and hence, the name of the vaccine- Bacilli Calmette Guérin (B.C.G.)

Tuberculin Skin Test is performed for applying BCG vaccine. Only Tuberculin negatives are given the BCG vaccine.

This vaccine is injected in the upper part of the arm. After 6 weeks to 3 months of vaccination, a lump is formed. This stays for 2-3 months. If the lump stays for longer period, the person should consult the doctor.

3. **D.P.T. (Diphtheria, Whooping Cough and Tetanus) or Triple Antigen-** The vaccine components include Diphtheria and Tetanus toxoids and killed whole cells of the organism that cause Pertussis (WP). This vaccine should be administered to all the newborns in 3rd, 4th

and 5th month. The booster vaccine is given in the 2nd year. With this, the child is secured against the disease attacking period.

After this vaccination, baby suffers from fever and there is soreness at the point of vaccination. Medication for fever and soreness should be taken from a doctor. Fever stays for 24 hours and if baby suffers for longer, a doctor should be consulted.

4. **Polio Vaccine-** There is no cure available for Polio and so administration of vaccine for polio becomes very important. Now-a-days, polio vaccine in the form of liquid drops or as sweet tablets is given. As it is given orally so the problem of fever or soreness does not appear.

Trivalent Oral Polio vaccine is available in our country. It is given when baby is 2-3 months old. 3 doses of the vaccine should be given at fixed duration of 4-8 weeks. Thereafter, dose is given once in a year to increase disease resistance. If oral polio vaccine is not available, then polio injections are given. If the child is suffering from diarrhoea or other viral disease then oral polio vaccine should not be given. It is best to give triple antigen and polio vaccine at the same time.

5. **Typhoid and Para-typhoid-** Typhoid is a prevalent disease in India. A combined vaccine of typhoid and Para-typhoid is available in the market. Sometimes Cholera vaccine is also included in it. When the child is of 2 years or a little less, this vaccine is given. This vaccine is generally given 2-3 times within a gap of 1-4 weeks. Secondary vaccine of this should be administered every year. The best time to give typhoid vaccine is the beginning of summers. The injection has Para-typhoid vaccine too. Fever and soreness are common side-effects.

- 6. Cholera Vaccine-** Just like Typhoid vaccine, Cholera vaccine should be administered when the baby is 1-2 years of age. Summers are the suitable time for its application. This vaccine is generally given 2-3 times within a gap of 1-4 weeks. Vaccine should be administered every year to increase disease resistance.

IMPORTANT POINTS:

1. After the baby's birth he should be vaccinated on time so that his body develops resistance capacity for different diseases.
2. A person is made immune or resistant to an infectious disease, typically by the administration of a vaccine.
3. A baby should be vaccinated for chickenpox in the first week after birth.
4. BCG vaccine is given for protection against tuberculosis.
5. Triple antigen vaccine is given for diphtheria, whooping cough and tetanus.
6. Polio vaccine is orally administered.
7. Typhoid, Para-typhoid and cholera vaccine is given in combination.

EXERCISE

1. Choose the correct option-

- (i) Chickenpox Vaccine is administered in
 - (a) First week after birth
 - (b) First month after birth
 - (c) First year after birth
 - (d) Five years after birth
- (ii) BCG Vaccine is given for
 - (a) Tuberculosis
 - (b) Measles
 - (c) Jaundice
 - (d) Polio
- (iii) Lump is formed after which vaccination
 - (a) Chickenpox
 - (b) BCG

- (iv) Which of the following vaccine is given orally?
 - (a) Jaundice
 - (b) Cholera
 - (c) Measles
 - (d) Polio
- (v) Which of the following vaccines can be given in combination?
 - (a) Chickenpox and Measles
 - (b) Polio and Typhoid
 - (c) Cholera and Typhoid
 - (d) Tuberculosis and Whooping cough

2. Fill in the blanks-

- (i) The vaccine of Cholera is administered at the age of _____
 - (ii) The full form of O.P.V. is _____
 - (iii) Triple Antigen Vaccine is _____, _____ and _____
 - (iv) BCG Vaccine is for _____ disease.
 - (v) _____ discovered Chickenpox Vaccine.
3. Why is vaccination important?
 4. Presently vaccines of which diseases are available?
 5. What is immunization?
 6. What are the steps of immunization?
 7. For which disease is Chickenpox Vaccine given?
 8. When and why are BCG, DPT and Polio vaccines administered?
 9. Which vaccines are available in the market and explain their benefits.

ANSWERS

1. (i) a (ii) a (iii) b (iv) d (v) c
2. (i) 1-2 years (ii) Oral Polio Vaccine
(iii) Diphtheria, Whooping Cough and Tetanus
(iv) Tuberculosis (v) Edward Jenner