

IMMUNIZATION PROGRAMME

INTRODUCTION AND HISTORY:

The concept of preventing diseases by vaccination is an ancient one and first vaccination of man against rabies was performed on 6th July 1885. Vaccines are administered to the individuals to induce immunity within the body to protect it from infectious diseases. Of about 200 infectious diseases of man caused by bacteria, viruses and parasites, effective vaccines are available against 18 diseases.

Vaccination has brought in rapid strides in the recent past for prevention and eradication of many infectious diseases. The greatest achievement of mankind has been the global eradication of killer disease of small pox in the year 1978 with an effective immunization drive against small pox. Similarly we are moving fast to eradicate Polio, the cruel affliction that leaves many children crippled, from the world. Already Polio has been eradicated from almost whole of the world except 6 countries including India. There were about 28,000 cases of Polio in the year 1988 in the country and with Intensified Pulse Polio Immunization drive undertaken in the country since 1995 and intensive surveillance of acute flaccid paralysis (**AFP**), only 559 cases were reported in the country in the year 2008.

At the National level, the immunization programme was first introduced in 1978 as “**Expanded Programme on Immunization**” (**EPI**) and this programme was universalized in 1985-86 (UIP) in a phased manner. In the year 1992, this programme formed a part of Child Survival and Safe Motherhood Programme (CSSM) and subsequently this programme was covered under the RCH programme since 1997. Now Strengthening of Immunization Programme has been lunched by GOI as an important component of NRHM (Component-3) through out the country.

AIMS AND OBJECTIVES:

The main aim of the immunization programme is to bring down Infant Mortality Rate (**IMR**) as also the under 5 mortality rate by protecting the children especially the infants from seven life threatening diseases namely Childhood Tuberculosis, Diphtheria,

Pertussis, Tetanus, Measles, Polio and Hepatitis-B. Now Hepatitis-B is part of Routine Immunization in whole of the state. The vaccines are administered as per schedule by holding fixed day immunization sessions in the health institutions and at out reach camps. Special camps are held in the uncovered areas as also the urban slum areas to provide immunization and MCH services. Vitamin-A solution is administered to the children starting at the age of 9 months upto the age of 5 years, to protect them from night blindness in the immunization programme.

A brief account of the vaccine preventable diseases and the immunization undertaken in the routine immunization programme in the state is given below:

1. CHILDHOOD TUBERCULOSIS:

Tuberculosis is an infectious disease of the body affecting almost all the organs of the body especially targeting the lungs. Thousands of children under the age of 5 years are infected every year with tuberculosis and a high percentage of all the infected children especially suffering from Tubercular Meningitis die due to lack of diagnosis and treatment. In-sanitary conditions, poverty, malnourishment, low standards of living, lack of awareness and quackery add on to the problem.

Vaccination with BCG (Bacillus Calmette and Guerin) **at birth** helps in protecting the children from early age tuberculosis. Although BCG vaccination does not produce adequate amounts of humoral antibodies, still in the Indian scenario it protects the children from tuberculosis especially the dangerous form of miliary tuberculosis. It is the most cost effective intervention advocated by WHO to decrease morbidity from tuberculosis amongst the children.

2. DIPHTHERIA (GAL GHOTTU):

The word diphtheria has been derived from Greek word *diphtherie* which denotes leathery skin. Bacteria through droplet (in the air) infection cause the disease. The disease affects children between 2 to 5 years of age and the incubation period is 3 to 4 days. The disease presents with high fever and pain in the throat because of stretched membrane. Death can occur due to complications of diphtheria. About 25000 cases of diphtheria are reported in India every year, however due to good immunization coverage in the state, very few cases are reported in Punjab.

3. PERTUSSIS (WHOOPING COUGH, KALI KHANSI):

Historically whooping cough has been one of the childhood diseases and is found worldwide. It is a bacterial infection of the upper respiratory tract and the incubation period is 10 days. The disease starts as sneezing and coughing and progresses into episodes of whooping cough, which make the child exhausted and restless. The child may recover or die due to implication of the central nervous system.

4. TETANUS:

The word tetanus comes from Greek word *tetanos* which means *to stretch*. Tetanus is probably the fourth commonest cause of death in rural India. **It is estimated that approximately 50% of the neonatal deaths and 25% of the infant deaths occur due to tetanus in the country.** As per sample survey conducted in 1981, approximately 2.5 lac infants died of neonatal tetanus every year in the country.

It is a disease caused by anaerobic bacteria, which are present in the soil and soiled articles. Infection occurs due to contamination of the wounds with soil or contact with soiled articles/ infected instruments, which carry the bacteria in active or passive form. The disease leads to muscle stiffness with the muscles of the jaw often developing spasm (**lock-jaw**). Death occurs due to respiratory complications.

IMMUNIZATION AGAINST DIPHTHERIA, PERTUSSIS AND TETANUS:

For protection against diphtheria, pertussis and tetanus, **DPT vaccine (triple antigen)** is administered parentally (injected) starting at the age of 6 weeks. 3 doses are given at an interval of one month each at 6 weeks, 10 weeks and 14 weeks of age and a booster dose is given after one year of the 3rd dose. At the age of 5 years, injection DT is given, which may now be replaced with injection DPT.

For protection of the neonates and mothers from tetanus, 2 injections of Tetanus Toxoid are administered to the pregnant women during pregnancy. In case woman is already immunized, then only one injection of TT (booster) is administered.

5. POLIOMYELITIS

Polio is a cruel affliction that leaves many children crippled for life. In the past many children used to die due to Polio disease. The disease is caused by infection with wild poliovirus, which remains alive in the intestines of the children usually under 5 years of age and is transmitted through infected food. The disease affects the nervous system leading to paralysis of the limbs, which may progress to muscles of the respiratory system leading to death.

Pulse Polio Programme was introduced in 1995 for eradication of Polio from the world. With enhanced surveillance for detection of acute flaccid paralysis (**AFP**) cases, many unreported cases of wild polio virus i.e. positive polio cases are detected now which will facilitate eradication of polio from the country. Tremendous success has already been achieved as only 559 cases of wild poliovirus were detected in the country in the year 2008, out of which 2 cases were from Punjab state. Since a large number of migratory populations from Bihar and Utter Pradesh, the endemic states, keep on traveling to Punjab, Delhi and Haryana states regularly, there is all time danger of importation of the wild-virus in the state. As such we have to remain vigilant and all steps have to be taken to ensure full coverage in the routine immunization as also the Intensified Pulse Polio Immunization (IPPI) campaign.

In the routine immunization programme, two drops of Oral Polio Vaccine (OPV) are administered alongwith DPT vaccination. In addition OPV is administered at birth as zero dose and during IPPI campaign. Now additional rounds of coverage of children of migratory populations are undertaken in Punjab commensurate with the state rounds undertaken in U.P. and Bihar since Wild Polio is endemic in these states.

6. MEASLES:

Measles is one of the highly contagious, acute and febrile ailments of the children, which presents with a rash on the body. Some times the disease may affect the adolescents and adults also. It is a viral disease and infection occurs through respiratory tract and ultimately skin, brain and lungs get involved. The incubation period of measles is 10 to 12 days and recovery is rapid, however complications of measles kill almost 2 million children every year in the world. In India children aged 1-2 years are more susceptible to acquire the infection. The fatality rate of the disease in India is

between 1-3 % and complications of measles (mainly bronchopneumonia and enteritis) kill almost 2 lac children in India every year.

Vaccination against measles was incorporated in the immunization programme in the year 1985. It is very effective in prophylaxis and controlling the spread of the disease especially in India where malnutrition and poor sanitary conditions aggravate spread of the disease. Measles vaccination is given when the child attains the age of 9 months upto the age of 15 months. Vaccination protects the child against Measles. Vitamin-A supplementation gives further protection.

HEPATITIS-B IMMUNIZATION IN PUNJAB

Hepatitis-B disease also called *Viral Hepatitis*, is one of the inflammatory viral diseases of the liver. It is one of the many forms of Hepatitis from amongst Hepatitis-“A”, “B”, “C”, “E” and “Delta Hepatitis”. It is a serious liver disease and is caused due to infection with Hepatitis-B virus. The causative virus is present in the blood and body fluids of the infected person. Hepatitis-B virus attacks the liver and over the years may lead to severe liver complications or even death.

About 30% of the world population has evidence of Hepatitis-B virus and more than 10 lac persons die from complications of this infection i.e. cirrhosis and liver cancer every year in the world. It is estimated that 60% of the chronic liver diseases are due to Hepatitis-B infection and in 80% of liver cancer cases in India, the underlying cause is Hepatitis-B infection.

The incubation period of Hepatitis-B is 1.5 to 3 months and fatality rate is 1 to 2%. Hepatitis-B virus is 40 to 100 times more infectious than HIV (AIDS) virus. It spreads through unsafe injections, sexual transmission, mother to child during birth and child to child contact especially with injuries and boils etc. **Hepatitis-B infection is not transmitted through food, water, breastfeeding, tears, sweat, urine, stools and air droplets etc.**

Children below 7 years of age have the highest infection rate & run the highest risk of developing chronic Hepatitis-B which leads to serious complications. **There is no cure for Hepatitis-B infection or serious complications.** People infected with acute Hepatitis-B virus infection can be treated for their symptoms and most of the infected

persons become chronic carriers of the disease and are asymptomatic and therefore these chronic carriers will not seek treatment. The number of Hepatitis-B carriers in India has been estimated to be around 4 crore, the carrier rate being upto 4% of the population. Thus, in Punjab 10 lac people are estimated to be carriers of Hepatitis-B.

Preventive vaccination against Hepatitis-B protects individuals from the risk of complications for e.g. Hepato-cellular carcinoma (cancer) and Cirrhosis of liver etc. Thus Hepatitis-B vaccination alone can help prevent complications of Hepatitis-B and save precious lives of thousands of Indians who die due to illness related with Hepatitis-B infection annually.

A safe and effective vaccine against Hepatitis-B has been available since 1982 and is administered in 120 countries. As per WHO guidelines Hepatitis-B vaccine is integrated in the routine infant Immunization program. Govt. of India with support from Global Alliance of Vaccines & Immunization (GAVI) & other international donor partners launched HB vaccination in 32 districts & 15 metro cities of the country as a Pilot project in the year 2002 and in Punjab 2 districts of Ropar & Hoshiarpur were selected.

Now Hepatitis-B Vaccination has been introduced in the Routine Immunization Program of infants in Punjab by Govt. of India in Jan. 2008. Punjab is one of the 11 States (Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Himachal Pradesh, J&K, Punjab, Maharashtra, Madhya Pradesh, West Bengal and Chattisgarh) where Hepatitis-B Vaccination is part of the Routine Immunization.

Hepatitis-B vaccination is very safe and 95% effective. It is given at the same time as DPT vaccine at 6, 10 and 14 weeks of age. Booster doses are not necessary. Efficacy of HB vaccination in carrier adults is doubtful. Vaccination can prevent HB infection 7 days before or within 7 days after exposure and immunity lasts for more than 13 years. There is no Hepatitis-B Vaccination for older children or adults under the program. Only new beneficiaries eligible for DPT are to be covered for Hepatitis-B Vaccination.

Hepatitis-B Vaccination protects individuals from risk of hepato-cellular carcinoma. Thus HB vaccine is the first available preventive remedy against carcinoma liver. It also protects individuals from complication of Cirrhosis of liver.

STATUS OF IMMUNIZATION PROGRAM IN PUNJAB

- At the state level, Immunization program is looked after by the Assistant Director (EPI) also called as State EPI Officer. He is supported by EPI branch in the office of Director Health Services. A Computer Assistant is posted under the component for day to day working and reporting.
- At the state level, a Cold Chain Officer looks after the supply, distribution and maintenance of cold chain of the vaccines and other logistics.
- At the district level, the program is looked after by DIOs (where posted) and by DFWO where the post of DIO is not sanctioned. One Computer Assistant is sanctioned per district for day to day work and reporting exclusively for Immunization program.
- 12 Refrigeration Mechanics are posted in districts for maintenance of cold chain equipment.
- All the inject-able vaccines are administered with auto-disabled syringes now.
- Facility for proper disposal of used syringes/ needles and other items has been provided.
- Committees for management of adverse events following immunization (**AEFI**) have been constituted at the state and all district levels.
- In the urban area, the Senior Medical Officers of the hospitals look after the implementation of the program by the LHVs and ANMs deployed. In addition, more ANMs have been posted for providing services in the slum areas. For uncovered areas, urban areas have been provided mobility support for coverage through mobile teams.
- In the rural area, the Senior Medical Officers of the block PHCs look after the implementation of the program by the BEE, LHVs and ANMs deployed. Now, almost all vacancies of ANMs have been filled in and rather second ANM has been posted at many places. Services are provided by holding fixed day service camps at all the PHC/ Sub-centre headquarters as well as by holding fixed day outreach camps in other villages. Besides, services are provided on the VHNDs.

- For all the rural areas, computerized micro-plan of the beneficiaries has been prepared on the basis of prevailing birth rate and IMR and is available on website of NRHM. It is mandatory for all the service providers to keep a hard copy of the respective plan with them.
- In the rural areas, ASHAs and AWWs support the program and incentives are paid to them as per annual approved PIP.
- The DIOs/ DFWOs have targeted tour plans and they have to undertake supervision of the program as per format provided.
- Mobility support has been provided for transportation of vaccines and logistics at the state, district and block level.
- Implementation of the program is reviewed every month at the state level during the Civil Surgeons Conference.
