

IMMUNISATION PROGRAMME

INTRODUCTION AND HISTORY:

The concept of preventing diseases by vaccination is an ancient one. Smallpox was probably the first disease people tried to prevent by purposely inoculating themselves. It was Edward Jenner, a British Physician who, in 1796 demonstrated the possibility of using cowpox vaccine as an immunisation for smallpox in humans for the first time and used the word vaccination. The 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 immunisation 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. With Intensified Pulse Polio Immunisation drive undertaken in the country since 1995 and intensive surveillance of acute flaccid paralysis (**AFP**) since 1997 there has been continuous decline in the polio cases. The last case of Polio in India was reported in January 2011 from West Bengal.

At the National level, the immunisation programme was first introduced in 1978 as “**Expanded Programme on Immunisation**” (**EPI**) and this programme was universalized in 1985-86 (UIP) in a phased manner. In the year 1992, immunisation programme was incorporated as part of Child Survival and Safe Motherhood Programme (CSSM). Immunisation became a part of Reproductive and Child Health (RCH) Strategy in 1997. Now, since inception of National Rural Health Mission (NRHM) in 2005, Immunisation has been given a separate identity as Component –III. This also underlines the importance of immunisation as an important strategy and component for the reduction of infant mortality rate.

AIMS AND OBJECTIVES:

The aim of the immunisation programme is to bring down the child mortality rate especially the Infant Mortality Rate (**IMR**) by innoculating the infants against seven life threatening diseases namely Childhood Tuberculosis, Diphtheria, Pertussis, Tetanus, Measles, Polio and Hepatitis-B. Whereas all the other vaccines were being given to the children since 1985 (as part of UIP), Hepatitis-B was introduced in two districts Hoshiarpur and Roop Nagar in the year 2002 as a part of nationwide pilot project. In 2008 Hepatitis B was made a part of routine immunisation throughout the state. All the vaccines are administered as per the Government of India schedule by holding fixed

day immunisation sessions in the health institutions and at outreach camps. Special camps are held in the uncovered areas as also the urban slum areas to provide immunisation and MCH services to the beneficiaries. 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 immunisation programme.

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

1. CHILDHOOD TUBERCULOSIS:

Tuberculosis is an infectious disease 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 the infected children especially those suffering from Tubercular Meningitis die due to lack of diagnosis and treatment. Insanitary conditions, poverty, malnourishment, low standards of living, lack of awareness and quackery add to the problem.

Immunisation 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 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 that affects children between 2 to 5 years of age. The incubation period of Diphtheria 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 25,000 cases of diphtheria are reported in India every year. However, due to good immunisation coverage in the state, very few cases are reported in Punjab.

3. PERTUSSIS (WHOOPIING COUGH, KALI KHANSI):

Historically whooping cough has been one of the important childhood diseases and is found worldwide. Pertussis is a bacterial infection of the upper respiratory tract having an incubation period of 10 days. The disease starts as sneezing and coughing and progresses into episodes of whooping cough, which leave the child exhausted and restless. The child may recover or die due to the involvement 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.

Tetanus is caused by anaerobic bacteria 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 involvement of respiratory muscles.

IMMUNISATION 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. Three doses are given at one month interval each at 6 weeks, 10 weeks and 14 weeks of age and a booster dose is given one year after 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 within the last three years, only one injection of TT (booster) is administered.

5. POLIOMYELITIS

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

In the year 1988, all the member nations of the World Health Organisation resolved to eradicate Poliomyelitis. Following this Government of India initiated Intensive immunisation and surveillance activities in 1995. With enhanced surveillance for detection of acute flaccid paralysis (**AFP**) cases, many unreported cases of wild polio virus i.e. positive polio cases were detected which facilitated the process of eradication of polio from the country. Tremendous success has been achieved in the process of polio eradication as no case of Polio has been reported in the country since January 2011. The State of Punjab reported last case of polio in September 2009.

In the Routine Immunisation Programme, two drops of Oral Polio Vaccine (OPV) are administered along with the doses of DPT immunisation. In addition OPV is administered at birth as zero dose and during IPPI campaign.

Additional SIAs (Supplementary Immunisation Activity) are conducted in the State to immunize the children of migratory populations in order to prevent the re-emergence of Polio virus in the State and to ensure the complete immunisation of children of migratory populations commensurate with the state rounds undertaken in U.P. and Bihar.

6. MEASLES:

Measles is one of the highly contagious, acute febrile ailments of the children, which presents with a rash on the body. Sometimes the disease may affect the adolescents and adults as well. Measles is a viral disease transmitted through respiratory tract that affects skin, brain and lungs. The incubation period of measles is 10 to 12 days and recovery is rapid. The 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. Immunisation against measles was incorporated in the immunisation 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 hygienic conditions aggravate spread of the disease. Measles immunisation is given when the child attains the age of 9 months upto the age of 15 months. Immunisation protects the child against Measles. The second dose of Measles was introduced throughout the State in December 2010. The second dose of Measles is given alongwith booster dose of DPT and OPV at the age of 18 months.

Vitamin-A supplementation gives further protection.

7. HEPATITIS-B

Hepatitis an inflammatory disease of the liver is caused by many viruses. Hepatitis B is one of the many forms of Hepatitis from amongst Hepatitis-“A”, “B”, “C”, “E” and “Delta Hepatitis”. 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, unsafe sex, 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 its 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. These asymptomatic chronic carriers are not likely to 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.

Immunisation 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 Immunisation program. Govt. of India with support from Global Alliance of Vaccines & Immunisation (GAVI) & other international donor partners launched Hepatitis B immunisation in 32 districts & 15 metro cities of the country as a Pilot project in the year 2002. In Punjab 2 districts of Ropar & Hoshiarpur were selected for the pilot project. Hepatitis-B immunisation was inducted in the Routine Immunisation 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 immunisation is part of the Routine Immunisation.

Hepatitis-B immunisation 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 Hepatitis B immunisation in carrier adults is doubtful. Immunisation with Hepatitis B can prevent infection 7 days before or within 7 days after exposure and immunity lasts for more than 13 years. Hepatitis-B immunisation protects individuals against risk of hepato-cellular carcinoma. Thus Hepatitis B vaccine is the first available preventive remedy against carcinoma liver. It also protects individuals from complication of Cirrhosis of liver.

STATUS OF IMMUNISATION PROGRAM IN PUNJAB

STATE LEVEL

1. Immunisation program is looked after by the **Assistant Director (EPI) also called as State Immunisation 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.
2. **Cold Chain Officer** looks after the supply, distribution and maintenance of cold chain of the vaccines and other logistics.

DISTRICT LEVEL

1. The Immunisation program is looked after by **District Immunisation Officers (DIO)** and by **District Family Welfare Officers** where the post of DIO is not sanctioned.
2. One Computer Assistant is sanctioned per district for day to day work and reporting exclusively for Immunisation program.
3. Twelve **Refrigeration Mechanics** are posted in districts for maintenance of cold chain equipment.

URBAN AREAS

The **Senior Medical Officers** of the hospitals look after the implementation of the program activities carried out by the LHVs and ANMs. Additional 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.

RURAL AREAS

The **Senior Medical Officers** of the Block PHCs/ CHCs look after the implementation of the program carried out the BEE, LHVs and ANMs. 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 Punjab. It is mandatory for all the service providers to keep a hard copy of the respective plan with them during the immunisation session.

In the rural areas, ASHAs and AWWs support the program and incentives are paid to them as per annual approved PIP.

All the injectable vaccines are administered through Auto-disable Syringes now.

Facility for proper disposal of used syringes/ needles and other items has been provided.

Committees for investigation and management of Adverse Events Following Immunisation (**AEFI**) have been constituted at the state and all district levels.

The DIOs/ DFWOs have targeted tour plans and they supervise the program as per prescribed format.

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.