



Poliomyelitis and Eradication of Polio from India

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ABSTRACT

Polio is a disease caused by a virus. Abortive polio is a mild form and has the symptoms of much like cold and flu like, non paralytic polio shows neurological symptoms, in this type there is usually a stiffness of neck and sensitivity to light. Paralytic polio causes the crippling disease. It was Jonas Salk who developed a vaccine prepared from inactivated poliomyelitis vaccine. Albert Sabin developed an attenuated polio vaccine that could be given orally and this vaccine is called trivalent oral polio vaccine. It was on January 2012, India reached a milestone in the history of eradication. Concurrently for past three years the country had not recorded a single case of polio. India had been officially declared by W.H.O., that Wild Polio Virus (WPV) had been eradicated from the country. To achieve this various NGO's had also played an important role to eradicate polio.

KEYWORDS : polio, Abortive polio, Paralytic polio, Polioviruses, Wild Poliovirus, Oral Poliovirus Vaccine, Albert Sabin, Jonas Salk

Poliomyelitis (polio) is a fatal disease (potential) and a crippling disease which threatens children globally. The poliomyelitis viruses attack the nervous system and can cause crippling & paralysis. All children on this planet has the right to walk straight, be physically normal, run, and play. This polio virus enters the human body through the mouth, and it is contagious. There are no symptoms of this polio and is called as asymptomatic polio. In few case it is called a symptomatic polio because the illness occur in three forms a) mild cold-cough like symptoms, fever – and it is called as abortive polio b) when patients shows sensitivity to light and the pain at the back of the neck and neck stiffness happen it is called as the non paralytic polio c) when the limbs nervous system is affected then it is called paralytic polio. In some cases the paralytic polio. In some cases the paralytic polio causes death. In Paralytic polio, the virus enters the circulatory system and attack the nerve governing the muscles of limbs and muscles necessary for breathing, causing the respiratory difficulty and paralysis of the arms and legs. This polio virus enters the body through the alimentary tract and has a incubation period of about 3 to 36 days. No drug has so far made which is 100 percent effective, thus the treatment is symptomatic. Medically, poliovirus has been classified in various ways; like: Polioviruses, Wild Poliovirus, Oral Poliovirus Vaccine (OPV) strain, OPV – like Poliovirus; Vaccine – derived Poliovirus (VDPV). Other type of virus had been classified as i) Brunhilde (type 1), ii) Lansing (type 2), iii) Leon (type 3); the immunity to one strain does not furnish protection against the other two.

At present the physiotherapy is only treatment given post infection. It also can be treated with the alternative therapies, which help the patients in self- healing. Alternative therapies help to reduce the stress, pain fatigue of the children/patients suffering from the polio. Today's world is also governed by the neutraceuticals, the recommended daily intake of vitamins; minerals help the patients to reverse the action. Yoga is also recommended for polio survivors. Body works like myofascial release, various types of massage, acupuncture and acupressure, reiki as well as homeopathy helps reversing the action of the polio.

Poliomyelitis's control was made possible by Enders et al; they discovered the method of growing the virus on tissue of laboratory. Later Salk developed the vaccine by inactivating the poliomyelitis virus of three types a) Brunhilde (type 1), Lansing (type 2) and Leon (type 3) strain. Sabin developed the vaccine which has live polio virus without pathogenic character that can be given (trivalent oral polio

vaccine). All doctor throughout the world recommended this vaccine. Oral polio vaccine allows large population to be immunised because it was easy to administer. The problem with this vaccine was that in very rare case polio could develop either in immunised children or in those who came in contact with them. Whereas inactivated polio vaccination stimulate the immune system of the body through the production of antibody to fight the virus and it never causes polio. The polio virus which has the capability to strike a person without warning. Early symptoms and has the potency to kill within the hours and cripple the victim. Over half of the million people used to get killed in this world. There is no cure for this polio. In early years of 1940's many country had been hit by the polio epidemic and this disease does not discriminate between the rich and poor or there is no age bar for this disease.

As per ICMR Bulletin (June – August 2004), Polio virus can be defined as a) Polio viruses:- Human enteroviruses that exist as three well defined serotype and infect cells via a specific receptors, PVR:cd155 b) Wild Polioviruses: in dates known as believed to have circulate persistently in the community and reference strain derives from these isolates. c) Oral Polioviruses Vaccine (OPV) Strains:- Attenuated polioviruses approved for use in oral vaccine by national control authorities. An approved candidate strains are considered wild. d) OPV – like Polio Virus:- Isolates consistent with a limited period of virus excretion or person to person transmission, usually demonstrating less than 1% difference from parent opv strains by full vp1 sequence homology. Included are isolates that have not been sequenced but have been shown to be vaccine – like by two WHO recommended methods of intratypic differentiation. e) Vaccine – derived Polio viruses (VDPV): isolates consistent with an extensive period of virus excretion or transmission in community, usually demonstrating 1-15% difference from parents OPV strains by full VP1 sequence homology. VOPV'S are classified as wild for programmatic and containment purpose.

About 20 year back the eradication of the polio started. With the government policies and with aid of the non-government organization, religious leader, academic institution and lakhs of health volunteers (the biggest group had been formed) against this crippling disease. It was indeed the heroic and herculean task for the Indian government to achieve this task because India being the vast country with different landscape throughout the length and breadth, to reach to every child, the volunteers, doctor and officers was to walk on foot, go on bicycle or even in boats. The vaccine use to travel in plastic bags or

in boxes slung around their shoulders. In spite of the frequent cut off of the electricity the cold chain of the vaccine used to maintain by ice- box on its way to remote places. Many occasions our Honourable President of India had launched, National and sub- National Immunization Day. Our Prime Minister too had appealed to his countrymen to immunise their children with the polio drops. Various artists and especially the film artist actively took the responsibility to advertise on behalf of government. In our constitution the Article 47 say that, through health is a State subject, the concurrent list provided scope for the Central Government to take active role in advising, guiding and monitoring the control activities and even make laws especially when issues assume national importance (ICMR Bulletins). Thus the herculean task of stopping wild polio virus transmission has been achieved and been sustained. The critics of India who use to say that India will never be polio free country.

At present WHO has made the four major objective and areas of work in the Polio Eradication and Endgame Strategic Plan, these are a) Polio virus detection and Interruption – to stop transmission of polio virus, enhancing and improving OPV campaign. b) Immunization system strengthen and OPV withdrawal – to hasten immunization and to introduce one dose of IPV and then replacing trivalent OPV with bivalent OPV. c) Containment and certification: this objective encompasses the certification of wild polio virus by 2018. And d) legacy planning – it's about the mainstreaming of eventual program going around for polio and other health program.

Looking at the history, India had introduced the OPV in the year 1986, because, about 201000 case of polio cases were recorded annually. After a decade the government of India decided to roll out two national and many sub-national campaign every year for the children up to the 5 years of age. It used to be very high numbers in all the aspect to eradicate polio from India about 25 million vaccinators led by about 175,000 volunteers visiting all the houses in whole country to vaccinate the children. In India, every day 20 million passengers are on move, for e.g. in bus, train, etc. These type of the children was also targeted to vaccinate them and the supervisors and volunteers used to vaccinate the people in moving bus, trains and even in market places. The labour force of India was also targeted for immunisation because these labour forces are usually migrant workers which move from one place to other places when their work are over or in search of jobs. And most of them use to be of other states of India. This polio eradication programme of India is one of the biggest achievements of the country. For past three years there had been no single polio case in this country. Along with the India, other country was also certified for eradication of polio, these were- Korea, Maldives, Nepal, Thailand, Timor- Leste, Sri Lanka, Bhutan, Myanmar and Bangladesh. Well, the major challenges faced by the Indian Government was 1) the population, the population explosion had such an impact on the policy of Indian Government that it constant required improvement. About 175 million children were to be vaccinated twice a year. 2) Population density – with high population, higher density of the people. 3) Poor

quality of drinking water- its well known fact that many Indians do not have access to clean, pure, hygienic drinking water. 4) Malnourished children- malnourished children do not get the same immunity from the vaccine than the healthy children get. If the children are suffering from the diarrhoea – then the vaccine will not stay in the body long enough to do any good.

Parents usually have a question in their minds that, is it safe to get their child, children vaccinated multiple times? In order to get full protection the vaccine is designed for multiple administrations. Usually about ten doses are considered to be fully protected. The number of dose taken also depends on the children health and nutritional status. Extra dose of OPV usually gives valuable additional immunity against polio. Its also safe to be given to sick children. All the sick children and new born should be immunised during the campaigns. OPV (oral polio vaccine) and IPV (inactivated polio vaccine) both gives the life time immunity against polio virus.

With continuing presence of polio viruses in neighbouring country and other country India still faces the risk of resurgence. However if any countrymen are travelling to these country where polio still exist, it become mandatory for both inbound and outbound travellers to get vaccinated at least one month before they travel. So ascertain no cases emerge here the programme in India is still maintaining high population immunity through mass vaccination campaigns and surveillance.

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