

Immunization with MMR Vaccine THE NEED OF THE HOUR

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Measles kills more children than any other vaccine preventable diseases, about 800,000 every year (1). It is one of the most contagious of the infectious diseases and mathematical models suggest that in a totally susceptible population, the average case of measles may result in transmission of measles to 12-18 persons (2). The disease poses a substantial health problem in both developing and developed countries. In the pre-immunization era 2.5 million children died due to measles or its related complications-bronchopneumonia being the leading cause of death. Predisposing factors for complications and death are :- young age, malnutrition, overcrowding and coincidental respiratory or gastrointestinal illness (3). Though it is estimated that immunity level required to interrupt transmission is 94% or higher, no level of immunity short of 100% will absolutely guarantee absence of transmission (4). Despite tremendous progress made to prevent Measles worldwide with immunization, only 40 countries (1%) reported zero measles cases in 1996. To achieve global coverage of 90%, at least 14.3 million additional children need to be vaccinated each year (5).

The health league table analyses the number of unimmunized children below one year of age. The alarming average for the developing world is still 23%. This points towards improper reporting and

the need for improving disease surveillance and immunization services through increased Government support (1).

The Americans, Caribbean, Spain, Finland, Sweden are heading towards the goal of Measles elimination by the year 2000, while Africa reported 62 % of Measles cases worldwide in 1996 and America only 138 cases ! Clearly steps need to be taken to eliminate this disparity between the developing and developed nations because "The Right to Health" should not be denied to any child in the world (6). The problems of controlling and eliminating measles is further confounded by **malnutrition** with a child in a developing country being 400 times more susceptible to die than his counterpart in the developed world (7).

It has been shown that bringing administration of the second dose as close as is logistically possible to the first dose is the best way of satisfying vaccination policy, which includes two dose measles schedule, although benefits of the second dose are based on high levels of coverage. Recently Canada has recommended that the second dose should be given before 4-6 years at any time after the first as long as a minimum of one month separates the two (8). This decision has been further reinforced by the studies in Catalonia where it has been shown that adverse reactions after vaccination are less

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frequent when the vaccine is administered at 4-6 years rather than 10-12 years.(9)

Mumps is an acute infectious disease caused by paramyxovirus with special predilection for parotid glands and nervous tissue. Essentially, a disease of pre-school children 2-9 years, it produces severe symptoms in unimmunized adults also. Serious complications are more common in adults than in children and include orchitis (38%), aseptic meningitis (4-6%), meningoencephalitis, pancreatitis, sudden bilateral sensorineural deafness and spontaneous abortions in the first trimester of pregnancy (10). Significant shifts have occurred in morbidity from children to adults as a result of effective immunization and urbanization. However, outbreaks still occur in colleges in America. Moreover the protection afforded by the vaccine lasts for about 15 years. This makes it necessary to immunize not only the susceptible children but also susceptible adults. The MM Vaccine has also been used in USA. The protective efficacy of the L-Zagreb mumps strain has been demonstrated to be about 90% when the vaccine is administered to 12-14 month old children as single antigen mumps vaccine or combined with Measles and Rubella vaccine (11). The principal strategy to prevent mumps is to achieve and maintain high immunization levels by routinely vaccinating all children with two doses of MMR (12) Some authors distinguish mucosal from systemic immunity conferred by mumps vaccination and emphasise that complications such as orchitis, pancreatitis and meningitis are much rarer in vaccinated individuals even when parotid swelling occurs.

Rubella is a mild exanthematous viral infection of children and young adults but it assumes great importance when it occurs in a pregnant woman from whom the causative virus can be transmitted to the fetus, with disastrous effects (13). The first 12 weeks of

pregnancy are clearly the most dangerous to the mother for rubella infection (14). If only virologically confirmed maternal rubella is considered, the rate of transmission to the fetus during first trimester of pregnancy is higher than 80% (15).

Early infection tends to result in ocular disease (congenital cataracts) while infection late in the first half of pregnancy is likely to result in deafness (16). Even in India 45% women of childbearing age are susceptible to rubella (17). The susceptibility rates in Caribbean being 40-50% and Latin America 30-60% (18). The benefits of immunization are obvious in USA not only in terms of disease prevention but also with regards to health economic benefits.

In 1995-96 a review of Rubella Immunization Strategies was conducted. Worldwide 78 countries (More than 1/3rd) reported a national policy using Rubella Vaccine. This was closely related to the countries economic status. Based on the United Nations country classification Rubella vaccine is used in 92% of the Industrialized countries, 36% in countries with economies in transition, and 28% of developing countries. Prevention of Congenital Rubella Syndrome (CRS) can be achieved by adopting any one of the following strategies :

- (a) Providing direct protection to women and / or school girls (Selective Vaccination Strategy).
- (b) Vaccinating all boys and girls to provide indirect protection by reducing transmission of rubella virus (Childhood Vaccination Strategy).
- (c) Or by a combination of these approaches (Combined Strategy).

Combined Strategy was most commonly used (60%). It is essential to include women of child bearing age in any rubella control strategy (19). The RA 2713 is the most widely used strain throughout the world except Japan; even small subcutaneous doses (< 3PFU) are

immunogenic. In addition to vaccination, strengthening of surveillance for rubella and CRS are extremely important (20-21).

Conclusion

Clearly MMR Vaccination is the need of the hour more so for developing countries. We need to formulate strategies based on the local epidemiological situations faced by respective countries keeping in mind the goal of global eradication. The high risk groups and children with missed opportunities and vaccine failure need to be the target in order to achieve high levels of herd immunity (94-97%), preferably 100% required for elimination of these three communicable diseases to minimize morbidity and mortality. In this context, the EPI recognises that there is no immunization schedule which is ideal for all situations, each country should determine its own schedule to best fit its own needs.

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