

Routine Immunization: India's Achilles' heel!

Immunization programs are the cornerstone of public health, world over. Vaccination was practiced in India since the early 1900s, especially against small pox, in late 1940's. In 1962, BCG inoculation was included in the National Tuberculosis Control Program. A formal program under the name of Expanded Program of Immunization (EPI) was launched in 1978(1). This gained momentum in 1985 under Universal Immunization Program (UIP). UIP was merged in child survival and safe motherhood program (CSSM) in 1992-93. Since 1997 immunization activities are an important component of Reproductive and Child Health (RCH) program. A National Technical Advisory Group on Immunization (NTAGI) was set up in 2003, and a Midterm Strategic Plan (MTSP) developed in 2004. From April 2005, immunization is an important component of RCH II under the National Rural Health Mission (NRHM).

CURRENT SCENARIO

India has one of the lowest routine immunization (RI) rates in the world(2). Estimates from the 2005-2006 Indian National Family Health Survey (NFHS-3) indicate that only 43.5% of children age 12-23 months were fully vaccinated (received BCG, measles, and 3 doses of DPT and polio vaccines), and 5% had received no vaccinations at all(3). Given an annual birth cohort of 24 million surviving infants and an under 5 year mortality rate of 74/1000(4), this results in over 12.5 million under-immunized children each year. While national-level immunization rates are an important indicator of population protection, heterogeneity in sub-national and local immunization coverage often provides a critical mass of susceptible individuals that can result in outbreaks. For example, in Uttar Pradesh (UP) and Bihar, only 23% and 32.8% of all children age 12-23 months, respectively were fully vaccinated(3). Heterogeneity of coverage rates is not the only problem faced by RI in India, the falsification of data and over-reporting of rates, are

other big concerns. Routine reporting is currently complemented by periodic Coverage Evaluation Surveys (CES) that offer updated information. The data indicates that DPT3 reported coverage is more than 90% in 2006 (MoHFW, GOI) while it was only 68% as per the CES-2006 results(1). The discrepancy in the number estimated is more evident in Uttar Pradesh, Bihar, Madhya Pradesh, Orissa and Rajasthan. Evidence also indicates that coverage levels are significantly higher in those areas with regular access to the services (63%) as compared to those communities where sessions are less frequent or irregular (33%)(1).

CHALLENGES AHEAD FOR ROUTINE IMMUNIZATION

The size and diversity of India make successful implementation of RI program more challenging, as do resource constraints and competing priorities. Considering the current state, the challenges in front of RI programs in India can be grouped in to three major groups:

- How best to utilize available vaccines?
- How to measure effectiveness of RI program?
- How to effectively incorporate 'newer vaccines' in to RI?

A. How best to utilize available vaccines?

Availability of vaccines used for RI program in India is not a major issue. But how to achieve uniformly high coverage with available vaccines, particularly in the states having higher disease burden, is the major challenge. Several reasons are cited for poor immunization rates(1,4,5); few are enumerated below:

- Inadequate delivery of health services (supply shortages, vacant staff positions, lack of training);
- Lack of information on the specific locations and age recommendations for receiving immunizations;

- Lack of accountability, inadequate supervision and monitoring, and no micro-planning at district level;
- Over-emphasis given to PPI/SIAs rounds of OPV and their adverse impact on RI;
- Weak surveillance for all vaccine preventable diseases (VPD) except polio;
- General lack of inter-sectoral coordination, resulting in missing opportunities to improve immunization coverage and quality;
- Varying date, place, and time of immunization sessions, making it difficult for parents to access services;
- Complacency, for reasons such as the belief that uncommon diseases are not important, or a mistaken belief that measles is common and therefore not a dangerous disease;
- Lack of support for ANMs from other staff at the health centers;
- Lack of awareness that children need routine immunizations and the belief that vaccines are not effective or, that only the polio vaccine is necessary;
- Parental time constraints and parental non-acceptance of immunization etc.

Thus, the problem lies at various levels in the system, including planning, training, implementation and monitoring of the program.

B. How to measure effectiveness of RI program?

Does coverage of individual antigen the only yardstick to measure effectiveness of the RI program? Or the intended end result, i.e. the absence of a particular VPD should serve as a better correlate? There are vaccines like polio, measles, etc that possess considerable 'herd effect', and if they behave true to their presumed potential, achieving more than 90% coverage may not always be mandatory and the target disease should disappear well before achieving that high coverage. In other words, if potent and effective antigens are employed judiciously the problem of inadequate coverage can

be sorted out to certain extent. Even then, the dismal rates of immunization coverage in few states are not going to be acceptable. Hence, the best correlate for an effective RI program should be the control or elimination of a VPD rather than mere coverage rates. Here comes the role of VPD surveillance which is unfortunately non-existent in the country.

C. How to effectively incorporate 'newer vaccines' in to RI program?

Another significant development is the availability of many new vaccines and renewed global interest in the 'developing world's' immunization programs, along with availability of new funding opportunities and schemes by many giant multinational NGOs. These funding schemes provide great opportunities as well as incentive to strengthen routine immunization in developing countries.

Immunization programs need continued support with proven strategies and fresh approaches to permit the 'effective' introduction of new vaccines. Here, the emphasis is on 'effective'-meaning thereby introduction of a vaccine in to national immunization schedule that has a measurable impact on the epidemiology of the disease. Merely making the vaccine available in few pockets, for certain sections and for limited duration will not have any impact at national level. The 'equity' needs to be ensured so that the vaccine reaches to the section of the society who needs it the most. According to recent reports, there are at least 23 new or improved vaccines for children and adolescents in development(6,7). Integrating these vaccines into routine programs will be a real challenge. Though these vaccines will be available to poor developing countries like India at subsidized rates, they will substantially increase the expenditure on routine immunizations. To fully take advantage of these new vaccines, it is essential to identify novel strategies and utilize proven strategies for improving routine immunization at the service delivery level. Despite the attention that global immunization has attracted in recent years in terms of the introduction of new vaccines and the strengthening of health systems, there is a clear need to ensure that program managers are aware of what strategies at the health facility level will be needed to strengthen programs(7).

WHAT IS THE WAY FORWARD?

The above analysis has put forward many issues that need urgent attention from all stakeholders and partners. The main issues are poor utilization of available vaccines due to inadequate coverage, lack of an effective VPD surveillance system, ineffective vaccines and inappropriate vaccination schedules. Certain vaccines like BCG, OPV are found to be wanting as far as their effectiveness is concerned. Many experts believe that EPI schedule is flawed on immunological grounds and has also outlived its utility. With the advent of many new antigens and combinations, there is an urgent need to revise it comprehensively. But, before dwelling on the technical aspects, let's first concentrate on how to take the most out of the existing resources and pave way for future expansion. The most daunting task is how to improve immunization coverage? The issues are mainly managerial and can be addressed in five broad groups:

- (i) bringing immunization closer to communities;
- (ii) using effective IEC to increase demand for vaccination;
- (iii) improving practices at fixed sites;
- (iv) better monitoring and supervision, and fixing accountability at district level; and
- (v) exploring and adopting innovative methods and practices.

Bringing immunization closer to communities: Non-health workers should be involved to encourage people to seek immunization services, or increased access to immunization services by bringing services to community. For example, in Bangladesh semi-literate and illiterate local women were employed in an urban setting to track defaulters, to refer them to services and accompany mothers to immunization clinics(8). In Kenya, school buildings were utilized as immunization centers, with schoolchildren circulating immunization information within their communities(9). In Nigeria, access to immunization services was improved by increasing the number of locations offering immunization and adding mobile clinics in the evenings(10). We can learn from these experiences and try to curtail the distance between

the community and service providers. In India, we can also seek the services of 'quacks' and utilize their services to reach unreached section of the society after imparting them adequate training and resources. They have fair chances of success because of their community knowledge, the respect they are given by the community, and the fact that they have access to community members who may not be reached by mass media.

Using effective IEC to increase demand: All elements of an immunization program need to be addressed. Information can be provided through numerous channels to either increase awareness of the benefits of immunization or to promote participation. These strategies increase demand for vaccination without changing the service delivery. Mass communication campaigns have the potential to reach large numbers of people, if access to the type of media selected is good(7).

Improving practices at fixed sites: Improved health facility practices can increase coverage through reducing "drop-outs" and "missed opportunities". In Ethiopia, the use of reminder stickers for parents resulted in nearly 50% decrease in dropout between DPT1 and DPT2(11).

Better monitoring and supervision, and fixing accountability: This is probably the key to success at micro-level. The success of SIAs in polio eradication program has highlighted the significance of these measures. This approach coupled with intensive micro-planning as done prior to a SIA round should pave the way for better coverage in poorly performing states.

Exploring and adopting innovative methods: Involvement of 'quacks' and other non-health workers are examples of innovative ways to improve RI. We need to not only constantly explore ways to augment rates, but at the same time adopt them in to the practice also. For instance, in Nicaragua, food incentives were introduced to create demand for immunization services(12). Use of mobile vans and teams, use of auto-disable syringes, peer-training of health workers from well-performing health facilities to poorly-performing centers, 'cash-incentives', involving community pharmacists for RI services,

making RI compulsory before school admission are few examples of innovative ways of improving RI coverage(7,13,14).

ROLE OF IAP AND PRIVATE PRACTITIONERS

Pediatricians and immunization providers are among key opinion leaders at the national and state level and also have a voice in local communities. Therefore, continued support of pediatricians will be essential to sustain acceptance of vaccines, thus improving routine immunization rates. The recommendations and guidelines of IAPCOI and other sub-committees are religiously followed by almost all IAP members across the country. Recommendations on improvement of RI have been recently published, where role of an IAP member is clearly defined(15). Apart from it, IAP is now invited to many national meetings related to formulation of national immunization program and regularly invited to NTAGI. Hence, it is our duty to not only issue recommendations that are technically sound for individual protection, but also keep the larger public interest in perspective while drafting them. We must walk this tight rope with perfection. Furthermore, our technical advice to the government on probable introduction of any new vaccine should be based on local need, proper evaluation of the quality of the product, feasibility of its widespread use, and its potential impact on disease epidemiology.

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