

## Health Metrics Improve Childhood Immunisation Coverage in a Rural Population of Andhra Pradesh

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### Summary

Infant and child mortality, including deaths due to vaccine-preventable diseases, remains high in the rural areas of India. In Andhra Pradesh, the immunisation coverage of children in the 12-23 month age-group has progressively declined to 43%, indicating the immediate need for taking corrective steps. The Rural Effective Affordable Comprehensive Healthcare (REACH) project, based on the health metrics strategy was initiated to improve childhood immunisation coverage. Information on the immunisation status of children was recorded and each child was tracked with the help of a computerised database to provide timely immunisation. The health metrics strategy resulted in complete immunisation (96%) of all the 698 children in the 12-23 month age-group residing in the villages of the Medchal Mandal in the year 2007, as compared to 43% reported by the National Family Health Survey-3. Action oriented health metrics coupled with information technology can thereby improve childhood immunisation significantly.

In view of the colossal differences in the availability and utilization of health services and unacceptable health indicators, the Tenth Five Year Plan<sup>1</sup> emphasized the need for quality health metrics along with a greater involvement of the private health sector to improve health care delivery. Andhra Pradesh (AP), one of the poorest performing states with respect to complete childhood immunisation, has a coverage rate of only 58.7 % for children between 12-23 months of age in rural areas (NFHS-2)<sup>2</sup>.

The NFHS-2 results highlighted the need to develop an appropriate strategy to provide proactive health care to the rural population. The health metrics system, based on information technology, could be used not only to monitor coverage but also initiate appropriate action for the timely immunization of children. The health metrics strategy originally developed by the World Health Organisation<sup>3</sup> attempts "to increase the availability and use of timely and accurate health information in countries and globally through shared agreement on priorities in core health information systems." In this study, we assess and describe how the health metrics strategy

utilised by the REACH (Rural Effective Affordable Comprehensive Healthcare) project has been successful in achieving universal immunisation coverage for children in the 12-23 months age-group.

Science Health Allied Research Education (SHARE) India, a non-profit non-government organisation, initiated the REACH project in the Medchal mandal of Ranga Reddy District in Andhra Pradesh; with the hypothesis that action oriented health metrics will significantly improve universal immunisation coverage.

A house to house baseline survey of Medchal mandal (excluding the Medchal town) of Ranga Reddy District in A.P., was carried out by the REACH project. The Medchal mandal comprises of 40 villages, 43,271 residents and 7,405 households. Six hundred and ninety eight children in the 12-23 month age group, as on 31st January, 2008 are subjects of this study. Although the Medchal Mandal is 25-40 kilometres away from Hyderabad, this district is drought prone and socioeconomically backward with limited access to health care. SHARE India is located in the premises of the Medciti Medical College in the Ghanpur village

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of Medchal *mandal* and hence the project was implemented in this region.

For the purpose of this project, 44 Community Health Volunteers (CHVs) were recruited from all the villages in the district, one per 1000 population, and were trained in data collection, reporting, identification of pregnant women, and motivation of women on different aspects of mother and child care. The CHVs served as the link between REACH and the community in the project villages. As residents of the village they worked for, CHVs collected information on pregnant women and registered them. Expecting mothers were encouraged to avail antenatal care either at the Mediciti hospital or the Primary Health Centre (PHC). Information on the date of last menstrual period, expected date of delivery, and TT immunisation was recorded and expecting mothers were followed up until delivery to collect information on pregnancy outcome. Information on the immunisation status of all infants born in the jurisdiction of the CHV was recorded and reported to the REACH staff regularly. Infants and children who had not been vaccinated were identified by cross checking immunisation cards. The CHVs met every week at the REACH project office to submit reports which were scrutinized by four health supervisors (one per 10 CHVs) and two field coordinators for completeness and accuracy of data. Health supervisors conducted independent house to house visits to validate data collected by the CHVs as per a fixed tour programme. The Health Supervisors administered the required vaccines to children who were not previously immunized and recorded the date of immunisation on immunisation cards. Immunisation for all eligible infants and children below 2 years was carried out against BCG, Poliomyelitis, DPT and Measles.

Data collected by the CHVs, after necessary scrutiny, was transferred to a computerized data base. Daily 'alert reports', listing the names of all the children requiring immunisation were generated for every village and handed over to the field staff for immunisation. In addition, monthly reports generated by the REACH project were sent to the PHC to alert them of the vaccination needs in these communities. In contrast to manual records maintained by the government, the electronic REACH database acted as a monitoring system to track every child in need of immunization and initiate appropriate action.

Analysis was carried out using a management statistical software package - *Stata-9*. For the purpose of analysis, the criteria adopted by the NFHS<sup>4</sup> were used to make valid comparisons. The distribution of immunisation coverage according to age and vaccine by different service providers like the government, REACH and private hospitals was calculated to assess the contribution of REACH in immunising children.

All 698 children (Boys: 362; Girls: 336) in the 12-23 month age group living in villages of Medchal Mandal as on the 31st of January, 2008 were subjects of this study. Ninety six percent of them had received complete immunisation. There was no difference in the extent of coverage between sexes. The distribution of children was comparable among all the age groups and between sexes.

An appraisal of the contribution of different health providers i.e., REACH project, PHC, private practitioners and hospitals providing immunisation services indicated that 62% of the children were immunised by the PHC, and 34% of the children were vaccinated by the REACH personnel, while private practitioners vaccinated 3% of the local children. It is evident that, as a result of close monitoring by the health metrics approach, an additional third of the eligible children received the benefits of immunisation.

Our study reveals that quality health metrics when applied to a large rural population can contribute to a significant increase in immunisation coverage. Tracking each and every child enabled us to identify those who were not immunised and take appropriate action. However, quality assured timely monitoring is not easily accomplished over long periods<sup>5</sup>. The health metrics strategy has also appeared to be an effective approach to improve immunisation coverage by government functionaries (62%) and private practitioners (3%) to a total of 65%, compared to the NFHS-3<sup>4</sup> report of 43%. However, it is possible that the government functionaries may have achieved better immunisation coverage as a result of information shared with them by the REACH project. In the future, we plan to count and observe the results of immunisation, by providing monthly reports of children who are not immunized to government health care providers, without having the REACH personnel provide immediate follow-up services. If the model is successful, surveillance by health metrics may boost

the accountability of government health functionaries to achieve almost a two fold increase in the immunisation rate, making universal immunisation a reality.

The REACH strategy of utilising health metrics by identifying married couples in a village and monitoring pregnant women through their delivery facilitated an accurate determination of date of birth which helped provide age appropriate immunisation to each infant.

In conclusion, we can state that a high quality, timely and comprehensive health metrics system where universal application is aided by information technology can drastically improve childhood immunisation rates. In the future, it can be tested whether creating such a system of health metrics could lead to improvement in global health care with respect to many other health care services delivered at the household level.

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