

Addressing high vaccination coverage in primary health care setting: challenges and best practices

Bobby Paul^a and Indranil Saha^b

^a Associate Professor and Head, Preventive and Social Medicine, All India Institute of Hygiene and Public Health, Kolkata, West Bengal, India
ORCID id: [0000-0003-0217-2458](https://orcid.org/0000-0003-0217-2458)

^b Professor, Community Medicine, IQ City Medical College, Durgapur, West Bengal, India.
ORCID id: [0000-0001-6622-7695](https://orcid.org/0000-0001-6622-7695)

Correspondence:

Indranil Saha
drsahaindranil@gmail.com

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INTRODUCTION

It is an undoubted fact that vaccines have proven to be one of the most successful public health interventions to combat the burden of infectious diseases in a cost effective manner thereby alleviating adverse health consequences and improving quality of life in the population. Vaccines can save countless lives in a country provided there is an ongoing successful immunization programme with high vaccine uptake rates. This in turn depends on many factors such as population understanding of the need and value of vaccination, availability of vaccines and accessible immunization services through all levels of health care, especially primary health care services.

Global vaccination coverage – the proportion of the world’s children who receive recommended vaccines – has remained the same over the past decade. Despite various technological innovations, huge investments in terms of money and manpower, an estimated 21.8 million infants globally are still not being reached by routine immunization services.^[1] The percentage of children receiving the diphtheria, tetanus and pertussis vaccine (DTP) is often used as an indicator of how well countries are providing routine immunization services. In 2017, an estimated 19.9 million infants worldwide were not reached with 3 doses of DTP vaccine, and around 60% of these children live in 10 countries: Afghanistan, Angola, the Democratic Republic of the Congo, Ethiopia, India, Indonesia, Iraq, Nigeria, Pakistan and South Africa.^[2] About 71 countries are yet to achieve the Global Vaccine Action Plan (GVAP) target of 90% or greater coverage of DTP3.^[3]

Addressing immunization gaps through country-specific tailor made vaccination strategies in order to reach every person with lifesaving vaccines is thus the need of the hour. Therefore strategies to increase immunization uptake combined with strengthening of primary health care services are key components for achieving high vaccine coverage in any community. With this background this paper aims to outline the challenges in achieving good immunization coverage in primary health care setting, and strategies undertaken by developed countries for increasing uptake. The best practices of India in her endeavour to achieve 100% immunization coverage have also been highlighted in this article.

VACCINE HESITANCY: THE GLOBAL CHALLENGE

Out of all the challenges outlined in Table 1, currently vaccine hesitancy has been identified as one of the ten major public health threats to global health in 2019.^[4] Vaccine hesitancy refers to delay in acceptance or refusal of vaccines despite availability of vaccination services.^[5]

Numerous instances of vaccine hesitancy have been reported from different parts of the world. In America, during the Influenza (H1N1) pandemic in 2009, hesitancy to take influenza vaccine was noted among many pregnant women despite the recommendations provided by their health-care provider and their country’s immunization programme leaders.^[6] Hesitancy in accepting measles vaccine in Europe, the human papillomavirus (HPV) vaccine in Japan and India, and the polio vaccine in parts of Nigeria and Pakistan are some more examples of this growing threat to achieve universal immunization coverage.^[7]

The reasons of vaccine hesitancy are complex, vaccine specific and country specific. Lack of confidence among the beneficiaries in vaccines and its side

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Table 1. System approach (S) in analysing the challenges of achieving high vaccine uptake in primary health care settings

S	Components	Challenges
Input	Beneficiaries – children, mothers	Vaccine hesitancy; drop out; left out
	Vaccinators	Vaccine hesitancy; lack of in-service training; complacency
	Vaccine supply & logistics	Irregular supply of vaccines, diluents, syringes; Cold chain non functional
	Settings	Far away from human dwellings; frequent power supply cut-offs
Process	Timing	May not be aligned with community demand; long waiting; long queue
	Behaviour of health personnel	Not satisfactory; do not explain pros and cons
	Administration of vaccine	Painful; side effects
Output	Sufferings	Adverse events following immunization; drop out; diseased in spite of having vaccine
	Performance	Immediate gain not perceived
Feedback	How beneficiaries perceived	Becomes a burden to come regularly
	Community	Drop out and left out might be high
	Health sector	Percentage of beneficiaries vaccinated, utilisation rate of different vaccines might be low

effects, unpredictable vaccine supply chains, and mistrust in the policy-makers who decide which vaccines are needed and when, and complacent attitude owing to a belief that vaccination is not a necessary preventive action all contribute to the reasons behind vaccine hesitancy. Additionally, inconvenience in accessibility, availability, affordability, inability to understand due to language problems, low level of literacy among the community members, and poor attitudes of immunization service providers are also some of the causes cited by the SAGE Working Group on Vaccine Hesitancy.^[7]

There is no-one stop solution to deal with vaccine hesitancy. Based on the final recommendations by the SAGE Group in 2014, the first step for any country to deal with this problem is to have an in-depth understanding of the root causes of vaccine hesitancy by the stakeholders. Capacity building of the health-care workers to deal with vaccine hesitancy in patients and parents and inclusion of appropriate training in the curricula of nursing, medical and other health-care students to alleviate their negative attitude and/or hesitancy towards vaccination would in

future strongly influence acceptance rate of their potential vaccine recipients. The Working Group also noted that educating children about benefits of vaccination would help to shape their beliefs and behaviour in the future, and sharing effective practices and lessons learnt from various countries was also recommended.^[8]

One potentially useful tool to address vaccine hesitancy is the Tailoring Immunization Programmes (TIP) model, developed by WHO/EURO. TIP model would help to identify and prioritize vaccine hesitant populations and subgroups, diagnose the demand and supply –side barriers and enablers to vaccination and design evidence based interventions appropriate to the setting to increase uptake followed by evaluation of impact and outcomes.^[9]

STRATEGIES FOR IMPROVING IMMUNIZATION COVERGAE: LESSONS FROM DEVELOPED COUNTRIES

A systematic review conducted by Williams N et al on strategies to increase immunization coverage among preschool children in developed countries (mainly from

the USA, UK, Ireland, Australia, New Zealand and Finland) revealed parental reminders (both generic and specific) had the capacity to increase uptake by 11%. Strategies aimed at immunization providers improved immunization rates by 7% when compared to reminders, 8% when educational programmes were studied and 19% when feedback programmes were studied.^[13] Feedback of vaccine provider performance to authority or combined with strategies like providing them with financial incentives also improved immunization coverage rates. However there is limited evidence for patient-held records and parental education alone as contributors for improving immunization coverage.

Multi-component interventions aimed at both the parent (reminder cards plus educational posters) and the provider (education plus incentives) were also reported to be effective for augmenting immunization coverage.^[10] Immunization levels in the United States are high, but gaps still exist. In order to increase immunization coverage rates, AFIX (Assessment, Feedback, Incentives, Exchange) approach is widely practiced which consist of - assessment of an immunization provider's coverage rates, feedback of the results of the assessment to provider staff, incentives to improve deficiencies and raise immunization rates, and exchange of information and ideas among healthcare providers.^[11]

BEST PRACTICES FROM INDIA

The Government of India (GoI) in its commitment to provide 100% immunization coverage through universal immunization programme (UIP) has been operational for more than 30 years catering to a birth cohort of 2.7 crore children annually.^[12] The Ministry of Health & Family Welfare (MoHFW), GoI, since the last decade has implemented various technological innovations and has finally achieved 91% coverage as per WHO and UNICEF estimates of immunization coverage in 2017.^[13] Few of the innovative strategies that are operational in this success story of India are initiatives like ANMOL, Kilkari, eVIN, and Intensified Mission Indradhanush.

ANMOL or ANM Online is an android-based tablet application that is being provided in a phased manner to Auxilliary Nurse Midwives (ANMs) who work at subcentre level by the MoHFW with support from UNICEF. They record the services provided to beneficiaries and update them on a real time basis, ensuring high quality prompt reporting, and maintaining accountability. This application, with its pre-loaded audio and video files also facilitates the ANMs in providing counselling services on high-risk pregnancies, immunization and family planning.^[14]

Another innovative technology to ensure data-driven and efficient management of immunization supply chain is Electronic Vaccine Intelligence Network (eVIN)

introduced by GoI in collaboration with United Nations Development Programme. The goal is to ensure equity in vaccine availability across the vast and diverse geographic terrain of the Indian subcontinent, systemizing vaccine recordkeeping and digitalizing vaccine inventory and thereby avoid vaccine wastage, over-stocking and stock-outs. The eVIN also enables the cold chain handlers to track real-time temperature information of the cold chain equipment through installation of temperature loggers across all the vaccine storage cold chain points in the country.^[15]

Furthermore, the Intensified Mission Indradhanush was also launched by GoI with an ambitious aim to move beyond 90% full immunization in districts by December 2018. In addition to routine immunization, four rounds of vaccination sessions, spread over 7 working days was conducted in selected low performing areas in full immunization coverage. The focus was on urban slums with migration, high risk areas identified by polio eradication programme, villages with three or more consecutive missed routine immunization sessions, and areas with vacant subcentres for more than 3 months.^[16]

From January 2016 onwards, GoI launched Kilkari (a baby's gurgle in Hindi, national language of India). It is a nation-wide mobile health programme designed by BBC Media Action, to deliver free, weekly, time-appropriate audio messages about pregnancy, child birth, vaccination and other child care practices, starting from second trimester of pregnancy and continuing until the child is one year old through Interactive Voice Response (IVR). The idea of repetitive messaging and reaching out to even illiterate population by audio messages would help to generate vaccine demand among the beneficiaries and thereby ensure high immunization coverage rate.^[17] Thus, the combined efforts of the above mentioned initiatives have proved to reach the unreached with all available vaccines in a sustainable manner in India.

WAY FORWARD

In the current decade of vaccines (2011-2020), four out of every five children receive at least a basic set of vaccinations during infancy and are therefore able to lead healthier, more productive lives. But unfortunately, this means one child in every five is not being reached.^[18] Despite overwhelming efforts to close immunization coverage gaps by various countries, specially low or middle income group countries, unmet need still remains to be recognized and technologically and scientifically sound innovative strategies, need to be integrated with the existing immunization programme. On a futuristic note, introduction of new vaccines into routine immunization programmes would require research on immunological interference effects and optimization of delivery schedules. In order to achieve this, concerted action among the

research community, manufacturers, health professionals, programme managers, national immunization technical advisory groups, vaccine regulatory agencies and development partners is needed for the next decade.

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