Multi Year Strategic Plan 2013 – 17

Universal Immunization Program

REACHING EVERY CHILD

Department of Health and Family Welfare
Ministry of Health and Family Welfare
Government of India
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEFI</td>
<td>Adverse Events Following Immunization</td>
</tr>
<tr>
<td>AES</td>
<td>Acute Encephalitis Syndrome</td>
</tr>
<tr>
<td>AFP</td>
<td>Acute Flaccid Paralysis</td>
</tr>
<tr>
<td>ASHA</td>
<td>Accredited Social Health Activist</td>
</tr>
<tr>
<td>AFP</td>
<td>Alternate Vaccine Delivery</td>
</tr>
<tr>
<td>AWW</td>
<td>Anganwadi Worker</td>
</tr>
<tr>
<td>BCG</td>
<td>Bacillus Calmette–Guérin</td>
</tr>
<tr>
<td>bOPV</td>
<td>bivalent Oral Polio Vaccine</td>
</tr>
<tr>
<td>CBHI</td>
<td>Central Bureau of Health Intelligence</td>
</tr>
<tr>
<td>CCE</td>
<td>Cold Chain Equipment</td>
</tr>
<tr>
<td>CCL</td>
<td>Cold Chain and Logistics</td>
</tr>
<tr>
<td>CFC</td>
<td>Carbonfluorocarbon</td>
</tr>
<tr>
<td>cMYP</td>
<td>Comprehensive Multiyear Plan</td>
</tr>
<tr>
<td>CRM</td>
<td>Common Review Mission</td>
</tr>
<tr>
<td>CSO</td>
<td>Civil Society Organization</td>
</tr>
<tr>
<td>CSSM</td>
<td>Child Survival and Safe Motherhood</td>
</tr>
<tr>
<td>DF</td>
<td>Deep Freezer</td>
</tr>
<tr>
<td>DIR</td>
<td>Detailed Investigation Report</td>
</tr>
<tr>
<td>DPT</td>
<td>Diphtheria Pertussis Tetanus</td>
</tr>
<tr>
<td>DTFI</td>
<td>District Task Force on Immunization</td>
</tr>
<tr>
<td>EPC</td>
<td>Empowered Programme Committee</td>
</tr>
<tr>
<td>EPRP</td>
<td>Emergency Preparedness and Response Plan</td>
</tr>
<tr>
<td>eVIN</td>
<td>electronic Vaccine Intelligence Network</td>
</tr>
<tr>
<td>EVM</td>
<td>Effective Vaccine Management</td>
</tr>
<tr>
<td>FHW</td>
<td>Frontline Health Worker</td>
</tr>
<tr>
<td>FIR</td>
<td>First Information Report</td>
</tr>
<tr>
<td>FMG</td>
<td>Financial Management Group</td>
</tr>
<tr>
<td>GMSD</td>
<td>Government Medical Store Depot</td>
</tr>
<tr>
<td>GoI</td>
<td>Government of India</td>
</tr>
<tr>
<td>HepB</td>
<td>Hepatitis B</td>
</tr>
<tr>
<td>HiB</td>
<td>Haemophilus influenzae B</td>
</tr>
<tr>
<td>HMIS</td>
<td>Health Management Information System</td>
</tr>
<tr>
<td>HR</td>
<td>Human Resources</td>
</tr>
<tr>
<td>ICDS</td>
<td>Integrated Child Development Services</td>
</tr>
<tr>
<td>IDH</td>
<td>Infectious Diseases Hospital</td>
</tr>
<tr>
<td>IEC</td>
<td>Information, Education and Communication</td>
</tr>
<tr>
<td>ILR</td>
<td>Ice Lined Refrigerator</td>
</tr>
<tr>
<td>IMNCI</td>
<td>Integrated Management of Neonatal and Childhood Illnesses</td>
</tr>
<tr>
<td>IMR</td>
<td>Infant Mortality Rate</td>
</tr>
<tr>
<td>IPC</td>
<td>Interpersonal Communication</td>
</tr>
<tr>
<td>IPC</td>
<td>Indian Pharmacopoeia Commission</td>
</tr>
<tr>
<td>IPHS</td>
<td>Indian Public Health Standards</td>
</tr>
<tr>
<td>ISP</td>
<td>Immunization Strengthening Project</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Full Form</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------</td>
</tr>
<tr>
<td>ITSU</td>
<td>Immunization Technical Support Unit</td>
</tr>
<tr>
<td>IUUCD</td>
<td>Intra Uterine Contraceptive Device</td>
</tr>
<tr>
<td>JE</td>
<td>Japanese Encephalitis</td>
</tr>
<tr>
<td>JRM</td>
<td>Joint Review Mission</td>
</tr>
<tr>
<td>JSSK</td>
<td>Janani Shishu Suraksha Karyakram</td>
</tr>
<tr>
<td>JSY</td>
<td>Janani Surakhsha Yojna</td>
</tr>
<tr>
<td>KO</td>
<td>Key Objective</td>
</tr>
<tr>
<td>LHV</td>
<td>Lady Health Visitor</td>
</tr>
<tr>
<td>MCTS</td>
<td>Mother and Child Tracking System</td>
</tr>
<tr>
<td>MCV</td>
<td>Measles Containing Vaccine</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
</tr>
<tr>
<td>MDVP</td>
<td>Multi Dose Vial Policy</td>
</tr>
<tr>
<td>MIS</td>
<td>Management Information System</td>
</tr>
<tr>
<td>MMR</td>
<td>Maternal Mortality Rate</td>
</tr>
<tr>
<td>MoHFW</td>
<td>Ministry of Health and Family Welfare</td>
</tr>
<tr>
<td>MSG</td>
<td>Mission Steering Group</td>
</tr>
<tr>
<td>NBSU</td>
<td>Newborn Stabilization Unit</td>
</tr>
<tr>
<td>NCCA</td>
<td>National Cold Chain Assessment</td>
</tr>
<tr>
<td>NCCMIS</td>
<td>National Cold Chain Management Information System</td>
</tr>
<tr>
<td>NCCTC</td>
<td>National Cold Chain Training Center</td>
</tr>
<tr>
<td>NCCVMRC</td>
<td>National Cold Chain Vaccine Management Resource Center</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organization</td>
</tr>
<tr>
<td>NIHFW</td>
<td>National Institute of Health and Family Welfare</td>
</tr>
<tr>
<td>NNT</td>
<td>Neonatal Tetanus</td>
</tr>
<tr>
<td>NRC</td>
<td>Nutrition Rehabilitation Center</td>
</tr>
<tr>
<td>NRHM</td>
<td>National Rural Health Mission</td>
</tr>
<tr>
<td>NTAGI</td>
<td>National Technical Advisory Group on Immunization</td>
</tr>
<tr>
<td>OCP</td>
<td>Oral Contraceptive Pill</td>
</tr>
<tr>
<td>OPV</td>
<td>Oral Polio Vaccine</td>
</tr>
<tr>
<td>ORS</td>
<td>Oral Rehydration Salt</td>
</tr>
<tr>
<td>OVP</td>
<td>Open Vial Policy</td>
</tr>
<tr>
<td>PIP</td>
<td>Program Implementation Plan</td>
</tr>
<tr>
<td>PIR</td>
<td>Preliminary Investigation Report</td>
</tr>
<tr>
<td>RCH</td>
<td>Reproductive and Child Health</td>
</tr>
<tr>
<td>RI</td>
<td>Routine Immunization</td>
</tr>
<tr>
<td>RMNCH+A</td>
<td>Reproductive, Maternal, Newborn, Child Health Plus Adolescents</td>
</tr>
<tr>
<td>RRT</td>
<td>Rapid Response Team</td>
</tr>
<tr>
<td>RTI</td>
<td>Reproductive Tract Infection</td>
</tr>
<tr>
<td>SBHI</td>
<td>State Bureau of Health Intelligence</td>
</tr>
<tr>
<td>SHTO</td>
<td>State Health Transport Organization</td>
</tr>
<tr>
<td>SIA</td>
<td>Supplementary Immunization Activity</td>
</tr>
<tr>
<td>SMS</td>
<td>Short Message Text</td>
</tr>
<tr>
<td>SNCU</td>
<td>Sick Newborn Care Unit</td>
</tr>
<tr>
<td>STI</td>
<td>Sexually Transmitted Infection</td>
</tr>
<tr>
<td>STSC</td>
<td>Standing Technical Sub-Committee</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
</tr>
<tr>
<td>TFR</td>
<td>Total Fertility Rate</td>
</tr>
<tr>
<td>tOPV</td>
<td>trivalent Oral Polio Vaccine</td>
</tr>
<tr>
<td>TT</td>
<td>Tetanus Toxoid</td>
</tr>
<tr>
<td>UIP</td>
<td>Universal Immunization Program</td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
</tr>
<tr>
<td>UT</td>
<td>Union Territory</td>
</tr>
<tr>
<td>VHND</td>
<td>Village Health and Nutrition Day</td>
</tr>
<tr>
<td>VLM</td>
<td>Vaccines Logistics Management</td>
</tr>
<tr>
<td>VMAT</td>
<td>Vaccine Management Assessment Tool</td>
</tr>
<tr>
<td>VPD</td>
<td>Vaccine Preventable Disease</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>WIC</td>
<td>Walk-in Cooler</td>
</tr>
<tr>
<td>WIF</td>
<td>Walk-in Freezer</td>
</tr>
</tbody>
</table>
Abbreviations

1. INTRODUCTION
   1.1 UIP as a component of Reproductive, Maternal, Newborn, Child and Adolescent health (RMNCH+A) in India
   1.2 Purpose of cYMP
   1.3 Planning Process
   1.4 Immunization global priorities

2. NATIONAL CONTEXT
   2.1 History of immunization program in India
   2.2 National Rural Health Mission (NRHM)
   2.3 Burden of vaccine preventable diseases (VPDs)
   2.4 Status of vaccine coverage
      2.4.1 Vaccine coverage and equity issues
   2.5 Current structure for service delivery
      2.5.1 Other stakeholders
      2.5.2 Current UIP Schedule in India
   2.6 UIP successes as a child survival strategy
   2.7 Barriers for effective programming

3. GUIDING PRINCIPLES

4. PROGRAM FRAMEWORK

5. NATIONAL MONITORING AND EVALUATION PLAN FOR UIP
   5.1 Rationale
   5.2 Objective
   5.3 Methodology
   5.4 Components of National M & E Plan
   5.5 Process for National M & E Plan development

6. ANNEXES
1. INTRODUCTION

1. UIP as a component of Reproductive, Maternal, Newborn, Child and Adolescent health in India

There is a growing acknowledgement of the fact that over the years various service packages have been developed around the Reproductive and Child Health program that have tended to function independently. In order to bring about a greater impact of the program there is a need to build synergies between these various packages since they address different stages of the life cycle. The ‘Continuum of Care’ approach includes two dimensions – stages of life cycle and places where care is provided. This approach underpins the RMCH+A strategy that seeks to provide an integrated set of interventions through a large cadre of community-based ASHAs and a three-tiered health system. The key components of the RMCH+A interventions as a ‘continuum of care’ are given in Table 1. Immunization is one of the key elements in this strategy.

Table 1: RMNCH+A continuum of care across life cycle and different levels of healthcare

<table>
<thead>
<tr>
<th>Reproductive care</th>
<th>Pregnancy and child birth care</th>
<th>Newborn and childcare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Comprehensive abortion care</td>
<td>• Skilled obstetric care and immediate newborn care and resuscitation</td>
<td>• Essential newborn care</td>
</tr>
<tr>
<td>• RTI/STI case management, Postpartum IUUD and sterilisation; interval IUUD procedures</td>
<td>• Emergency obstetric care</td>
<td>• Care of sick newborn (SNICU, NBSU)</td>
</tr>
<tr>
<td>• Adolescent friendly health services</td>
<td>• Preventing Parent to Child Transmission (PPTCT) of HIV</td>
<td>• Facility-based care of childhood illnesses (IMNICI)</td>
</tr>
<tr>
<td>Reproductive health care</td>
<td>Postnatal care</td>
<td>Child health care</td>
</tr>
<tr>
<td>• Family planning (including IUUD insertion, OCP and condoms)</td>
<td>• Full antenatal care package</td>
<td>• First level assessment and care for newborn and childhood illnesses</td>
</tr>
<tr>
<td>• Prevention and management of STIs</td>
<td>• PPTCT</td>
<td>• Immunisation</td>
</tr>
<tr>
<td>• Peri-conception Folic acid supplementation</td>
<td></td>
<td>• Micro-nutrient supplementation</td>
</tr>
<tr>
<td>Outreach/hsb centre</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Weekly IFA supplementation</td>
<td>• Counselling and preparation for newborn care, breast feeding, birth preparedness</td>
<td>• Home-based newborn care and prompt referral (HBNC scheme)</td>
</tr>
<tr>
<td>• Information and counselling on sexual reproductive health and family planning</td>
<td>• Demand generation for pregnancy care and institutional delivery (JSY, JSSK)</td>
<td>• Antibiotic for suspected case of newborn sepsis</td>
</tr>
<tr>
<td>• Community based promotion and delivery of contraceptives</td>
<td></td>
<td>• Infant and Young Child Feeding (IYCF), including exclusive breast feeding and complementary feeding</td>
</tr>
<tr>
<td>• Menstrual hygiene</td>
<td></td>
<td>• Child health screening and early intervention services (0–18 years)</td>
</tr>
<tr>
<td>Family &amp; Community</td>
<td></td>
<td>• Early childhood development</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Danger sign recognition and care-seeking for illness</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Use of ORS and Zinc in case of diarrhoea</td>
</tr>
</tbody>
</table>

Intersectoral: Water, sanitation, hygiene, nutrition, education, empowerment

Immunization is one of the most cost effective interventions that prevent needless suffering through sickness, disability and death. The benefits of immunization are not restricted to improvement in health and life expectancy but also have social and economic impact at both community and national levels. Moreover, an effective, equitable immunization program and its impact on reducing the burden of vaccine preventable diseases will greatly contribute.

---

to the achievement of the Millennium Development Goal 4 (MDG4) that envisages a two third reduction in child mortality by 2015.

In the last three decades, India has made significant progress on sustainable and inclusive growth. There is now a greater sense of awareness and expectations from the people as the country makes further social and economic progress. Investments on the social determinants of health have improved availability and access to health services though there still remain challenges of inequity and affordability.

1.2 Purpose of cMYP
This multi-year strategic plan (2013-17) has evolved from its first iteration (cMYP 2005-10) and is underpinned by the GoI RMCH+A 2013 strategy and the National Vaccine Policy, 2011. The document mainly seeks to:

a. Provide a broad framework of objectives, expected results and strategies that cover the different aspects of routine immunization – program service delivery, system strengthening, social mobilization and demand generation, newer vaccines and technology, epidemiology of vaccine preventable diseases and management of adverse events following immunization.

b. Identify costing and financing requirement as part of the planning cycle.

c. Propose monitoring and accountability tracking mechanisms that should lead to improved program efficiency

d. Explore and expand opportunities to integrate other maternal and child health interventions e.g. breastfeeding, Vitamin A supplementation, ORS, through UIP.

1.3 Planning process
The strategic plan had been prepared through a close collaborative and iterative process involving National program managers, state officials, professional associations, development partners and implementing agencies, which provide the goals, objectives, indicators, strategies and costs. As cMYP (2005-10) was completing its life in March 2010, a supplement to extend it till March 2012 was prepared. Initially, a framework for revised cMYP was agreed upon by a working group of National Immunization program managers and development partners where attention was paid to new developments and initiatives which had taken place since 2005. These initiatives included those that have been enacted under the National Rural Health Mission (NRHM) and the recommendations of NTAGI in the recent years. Two regional consultations were held in New Delhi and Kolkata. These consultations were attended by senior officials in the Ministry of Health And Family Welfare (MoHFW), program managers from the national immunization division; state, district and block level immunization officials, and by representatives of development partners and other professional organizations and Non-Government Organizations.

In April 2013, under the guidance of national immunization division, ITSU facilitated the process of drafting the next cMYP (2013-17) and set up a core committee to draft the plan, comprising of representatives from ITSU, WHO and UNICEF. The members of the core committee met and communicated on regular basis amongst themselves to continually refine the draft plan. Inputs on key objectives and strategies came through the national immunization division through regular meetings with the drafting team. The current cMYP document went through several iterations before it was sent to NTAGI for comments, which were subsequently incorporated. In addition to the main strategic component of cMYP, the core committee also worked on the detailed costing of the program under the guidance of national immunization division.

1.4 Global Priorities on immunization
According to WHO, immunization interventions have proven to be a success across the globe and today reach out to over 100 million children and prevent 2.5 million deaths per year. As new global health paradigms emerge, fresh perspectives and priorities are emerging in the field of immunization as well. Universal immunization coverage is an important element of universal health coverage to achieve the MDG by 2015. Despite improved vaccination coverage there are rising inequities amongst different population groups that need to be addressed for a more meaningful success. There are at least ten new antigens now available that can be added to the traditional EPI
interventions including vaccines against Hepatitis B, Rotavirus, Japanese Encephalitis, Human Papilloma Virus etc. Several countries are now moving beyond the traditional target population of infants and pregnant women to include adolescents and adults. WHO expects that by 2015 immunization should contribute to reducing approximately 25% to the reduction in child mortality.\(^2\)

W.H.O. has identified priority areas in immunization for the future to sustain the momentum on immunization.\(^3\) These priorities, which are also reflected in the national cMYP include – strengthening of routine immunization program, accelerate measles control activities, introduce newer vaccines through evidence-based policies, increase access to immunization services through system strengthening. As the current set of MDGs reach their end in 2015, new global health paradigms will emerge which will focus on universal health coverage and sustainable development. A well-functioning UIP which aims to reach out to every child will contribute to universal health coverage and healthier future generation. To achieve this, UIP will need strong underpinning of good governance and accountability at all levels. This will necessarily lead to improved program efficiency and more children will get immunized.

\(^2\) WHO Strategic Plan 2010-15. Department of Immunization, Vaccines and Biologicals
\(^3\) Global Action Vaccine Plan 2011 – 2020. World Health Organization
2. NATIONAL CONTEXT

2.1 History of immunization program in India

The success of Smallpox eradication in the 70s brought attention to the immunization program globally as well as in India. The Expanded Program on Immunization (EPI), a national policy of immunizing all children during the first year of life with DPT, OPV, BCG and typhoid–paratyphoid fever vaccines was launched in 1978. Immunization of pregnant mothers with TT vaccine was introduced in 1983. In 1985, the name of EPI was changed to the Universal Immunization Program (UIP) with activities phased in to the entire country by 1990. The stated objectives of UIP are:

- To rapidly increase immunization coverage
- To improve the quality of services
- To establish a reliable cold chain system to the health facility level
- To introduce a district-wise system for monitoring of performance
- To achieve self-sufficiency in vaccine production

UIP was given the status of a one of the five ‘National Technology Missions’ in 1986. Subsequently in 1992, UIP became a part of Child Survival and Safe Motherhood (CSSM) program and then of Reproductive and Child Health (RCH) program in 1997. A specific Immunization Strengthening Project (ISP) was designed to run from 2000–2003, which included three main components (polio eradication, strengthening routine immunization, and strategic framework for development).

2.2 National Rural Health Mission (NRHM)

Immunization services are a critical component of the GoI’s child survival strategy. In 1997 the MoHFW launched a Reproductive and Child Health (RCH) program to reduce IMR, MMR, TFR and to increase immunization coverage, especially in rural areas. The second phase of the RCH program (2005–10) focused on minimizing regional variations through provision of assured, equitable, and responsive quality services. With a view to strengthen public health system in rural areas, Government of India launched the National Rural Health Mission in 2005. The NRHM was established as a single platform to bring together all of the national health efforts, including RCH. The goal of the NRHM is to address gaps in the provision of effective health care to rural population with a special focus on 18 states, which have weak public health indicators/infrastructure. In order to achieve this goal the NRHM envisions a shift away from the vertical health and family welfare programs to a new architecture in which societies under different programs are merged and resources pooled at the district level. NRHM also provides states with flexibility in making their own plans in delivering RI interventions. It also seeks to strengthen local public health provision with infrastructure and manpower and facilitate the participation of the not-for-profit and for-profit sectors in achieving desirable health outcomes. In the 12th FYP the GoI has proposed a National Health Mission for improving healthcare in rural as well as urban areas. UIP is an integral component of NRHM.

At the National level, the NRHM has a Mission Steering Group (MSG) headed by the Union Minister for Health & Family Welfare and an Empowered Program Committee (EPC) headed by the Union Secretary for Health & Family Welfare. EPC implements the Mission under the overall guidance of the MSG.

At the State level, the Mission functions under the overall guidance of the State Health Mission headed by the Chief Minister of the State and provides oversight to the functioning of the health system and NRHM activities, policy

---


5 The 18 states are Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Himachal Pradesh, Jharkhand, Jammu & Kashmir, Manipur, Mizoram, Meghalaya, Madhya Pradesh, Nagaland, Odisha, Rajasthan, Sikkim, Tripura, Uttarakhand and Uttar Pradesh.

6 Source: www.nrhm.gov.in
inputs for health sector, conducts intersectoral coordination and advocacy. The functions under the Mission are carried out through the State Health & Family Welfare Society led by the Mission Director. Under NRHM, states have set up State Health Societies to strengthen health service delivery infrastructure, financial management, coordination with NGOs/CSOs/donors and monitoring of various national programs.

The State Mission and State Society are interlinked in terms of a common secretariat as shown in Figure 1 below

**Figure 1: Composite organogram of the State Mission and the State Society**
2.3 Burden of vaccine preventable diseases (VPDs)
Over the past 20 years, there has been a general decline in the reported number of cases of the main VPDs. However, in recent years there has been an increasing trend in the number of reported measles, diphtheria and pertussis cases as shown in Figure 2. This increasing trend may be due to an actual increase in number of cases or can be attributed to improvements in case detection and the overall surveillance system strengthening. To minimize this inconsistency and to stabilize the reporting trends, there is an urgent need to improve the surveillance of VPDs in the country. It is estimated that approximately 80,000 children die annually from measles and associated complications. Although this figure has decreased over the years with improvements in routine vaccination coverage rates, measles mortality still remains high. In 2010, the Govt. of India made a decision to introduce a second dose of measles containing vaccine (MCV2) in UIP. In 21 states with measles 1st dose coverage more than 80%, MCV2 was introduced directly in their routine immunization whereas, 14 states were taken up for measles Supplementary Immunization Activity (SIA) followed by introduction of MCV2 six months following the completion of the campaign. Delhi, Sikkim, Goa and Puducherry took initiative themselves and introduced 2nd measles dose through MMR. In September 2013, India committed to eliminating measles and controlling rubella/congenital rubella syndrome (CRS) by 2020 as part of the resolution that was approved by SEARO’s 66th regional committee.

2.4 Status of vaccine coverage
Though the reported vaccination coverage for all vaccines has always been higher than evaluated coverage, the average vaccination coverage has shown a consistent increase over the last two decades as shown in Figure 3 below.

Figure 2: Trends in the reported cases of Measles and Pertussis from 1990-2010 (Source CBHI)
Figure 3: Trends in vaccination coverage over the last twenty years as shown in different surveys

However these averages mask the disparities between geographies and population groups. These inequities represent gaps in service delivery that leaves certain groups of children at a high risk of remaining unvaccinated. As per NHFS–3 data, nine states are below the national average for vaccination coverage including Madhya Pradesh, Uttar Pradesh, Bihar, Jharkhand. Even within states there exists a difference in total coverage between different districts as shown in Figure 4.7

Figure 4: District level coverage of fully immunized children between 12-23 months of age. (Source: DLHS 2007-08)

7 NFHS-3 data
2.4.1 Vaccine coverage and equity issues

While vaccines under UIP are provided free of cost through all the public health facilities across the countries, disparities in coverage exist for different population groups that need to be addressed. There are significant inequities in vaccination coverage in different states based on various factors related to individual (gender, birth order), family (area of residence, wealth, parental education), demography (religion, caste) and the society (access to health care, community literacy level) characteristics.\(^8\)

There is a clear gender coverage differential as reported by different surveys. Boys generally have a higher vaccination coverage than girls as reported by most surveys conducted across the country (Figure 5).

![Figure 5: Gender differential in vaccine coverage (Source – HMIS)](image)

The gap between genders also exists for individual vaccines – BCG, DPT and measles. Urban areas have higher vaccination coverage as compared to rural areas and this gap exists for all vaccines. Within urban areas, slum populations have a lower coverage. Migrants coming to urban areas to have a lower coverage level as compared to the resident population. Urban and rural poor populations have a lower coverage as compared to the wealthier one. Vaccination coverage is also lower amongst infants coming from scheduled caste (SC), scheduled tribes (ST) and other backward castes (see Figure 6).

![Figure 6: Differentials in vaccine coverage across geography, caste and wealth status (Source – UNICEF CES 2009)](image)

A comparison of states showing good and poor performance on immunization coverage is given in Annex 1 and Annex 2 respectively.

---

2.5 Current structure for immunization service delivery in the country

The implementation of the UIP is a joint responsibility of Government at all levels, namely Central, State/Union Territory Districts and Sub Districts. The relationships between central and state immunization departments and between state and district immunization officers are all critical for efficient and effective service delivery.

National: The MoHFW comprises of four departments, each of which is led by a Secretary to the GoI. These include: (i) Department of Health & Family Welfare; (ii) Department of Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy; (iii) Department of Health Research; and (iv) Department of AIDS Control. The MoHFW is responsible for implementing various national health programs in all states of India. The Directorate General of Health Services renders technical advice on all medical and public health matters and is involved in the monitoring of implementation of various health services. The MoHFW is responsible for funding of various national programs including immunization program, providing technical assistance and policy guidance to the states, and for monitoring and evaluation. Funding for extra staff and other health system resources at the state level is provided by the NRHM, a flexible mechanism that allows for integration of funds for all the national schemes while allowing for states to flexibly allocate funds for system improvement in a manner that is consistent with their needs and challenges. All states are required to submit in advance a program implementation plan (PIP) for a financial year, along with complete projections of funds required to implement the PIP.

To augment technical and managerial support under UIP for strengthening, revitalization and successful implementation of RI, the Immunization Division at MoHFW has set up an Immunization Technical Support Unit (ITSU). The ITSU is staffed with technical officers to support various functions of UIP under six different pillars: strategic planning and system design, monitoring and evaluation, vaccine logistics and cold chain management, adverse events following immunization (AEFI) management and vaccine quality and safety, translation of evidence to policy, and strategic communication. Through ITSU, ministry will facilitate to harmonize various initiatives being piloted or implemented in different states by all immunization partners and provide a single platform for discussions, development of strategies and coordination with partners for scaling up the successful models.

State: At the state level, the Secretary of Health is responsible for all health related efforts. The State Department of Health and Family Welfare is led by a Director of Health Services under which the State Directorate of Health Services serves as the technical wing. Additionally, some large states such as Bihar, Madhya Pradesh, Uttar Pradesh, Andhra Pradesh, and Karnataka have additional zonal or regional or divisions set-up between the State Directorate of Health Services and the District Health Administration. Most of the states have dedicated State EPI Officer, however, at places Deputy Director-HFW has additional responsibility of being EPI Officer. Additional support for UIP at the state level is provided by a cold chain officer and by data and administrative support staff. The State Governments are responsible for implementation and supervision of the various programs and for provision of relevant infrastructure and curative services in the states including village outreach sessions for immunization.

District: In the district, under the overall supervision of Chief Medical and Health Officer (CMHO) or Civil Surgeon (CS), the District Immunization Officer (DIO) coordinates all the immunization related efforts. The responsibility for immunization also lies with Block Medical Officers and PHC Medical Officers. The Auxiliary Nurse Midwife (ANM) delivers the immunization services to the community.

Immunization services are provided through sub-centers, primary health centers, and community health centers, and through sub-divisional/taluk/specialty hospitals, tertiary hospitals, urban health services provided by municipalities, hospitals and dispensaries run by railways, defense, public sector undertakings, Employees’ State Insurance Scheme hospitals and dispensaries which are funded by the Government (State and Centre). Private health sector also provides an estimated 15–20% of immunization services. The Indian Public Health Standards (IPHS) for immunization has been drafted to improve the quality of the service and NRHM supports efforts to improve the quality of service by strengthening sub-centers and primary health centers. The funding mechanism for
Immunization has also been simplified and made flexible along with adoption of the bottom up planning approach through district and state Project Implementation plans (PIPs). Immunization service delivery in many areas within a district, i.e. urban areas, especially slums and peri-urban areas, where migrant families live; areas in semi-legal situations due to weak infrastructure; areas which are managed by different local bodies i.e. railways, cantonment etc. has been and, is still a major concern.

2.5.1 Other stakeholders

Civil Society Civil Society Organizations (CSOs): These organizations offer a wide range of experience and knowledge essential for UIP. They can provide insight into gaps in health service delivery and identify practical and political challenges that must be overcome to improve the health of citizens. CSOs therefore play a crucial role to advocate for policy changes, generate greater transparency and hold governments and other healthcare stakeholders to account. At country level, Civil Society encompasses a diverse array of actors, including: patient groups, health workers, medical or health unions and associations, faith-based organizations, non-governmental organizations, community-based organizations, academic institutions, media, advocacy groups, migrants, women, youth and other neglected or vulnerable groups. Civil society groups of particular importance to ensuring that UIP achieves its intended results are those with expertise in: maternal health, child health, immunizations, nutrition, health systems and services, monitoring and evaluation. The MOHFW will engage more proactively with academia, professional societies, and other national agencies and committees and networks like the development partners forum to ensure a cohesive and coordinated approach to achieving national immunization priorities.

Private hospitals and clinics: Private health sector plays an important role in providing immunization services and fill gaps in delivery of RI services through public system. Studies in India have shown that private sector does enable increased access to traditional EPI vaccines for those who can afford to pay. Private sector also plays a role in introducing newer and underutilized vaccines prior to their induction in the public program. Private sector also has a key role to play in supporting the surveillance system for vaccine preventable diseases and adverse events following immunization by reporting cases that may have been missed out by the public surveillance system.

2.5.2 Current UIP Schedule in India

The current UIP vaccination schedule caters to pregnant women, infants, children and adolescents as shown in Table 2 below.

---

### Table 2: Vaccination schedule under UIP in India

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>When to give</th>
<th>Dose</th>
<th>Route</th>
<th>Site</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>For Pregnant Women</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TT-1</td>
<td>Early in pregnancy</td>
<td>0.5 ml</td>
<td>Intra-muscular</td>
<td>Upper Arm</td>
</tr>
<tr>
<td>TT-2</td>
<td>4 weeks after TT-1*</td>
<td>0.5 ml</td>
<td>Intra-muscular</td>
<td>Upper Arm</td>
</tr>
<tr>
<td>TT- Booster</td>
<td>If received 2 TT doses in a pregnancy within the last 3 years</td>
<td>0.5 ml</td>
<td>Intra-muscular</td>
<td>Upper Arm</td>
</tr>
<tr>
<td><strong>For Infants</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BCG</td>
<td>At birth or as early as possible till one year of age</td>
<td>0.1 ml (0.05 ml until 1 month of age)</td>
<td>Intra-dermal</td>
<td>Left Upper Arm</td>
</tr>
<tr>
<td>Hepatitis B Birth dose</td>
<td>At birth or as early as possible within 24 hours</td>
<td>0.5 ml</td>
<td>Intra-muscular</td>
<td>Antero-lateral side of mid-thigh</td>
</tr>
<tr>
<td>OPV Zero dose</td>
<td>At birth or as early as possible within the first 15 days</td>
<td>2 drops</td>
<td>Oral</td>
<td>Oral</td>
</tr>
<tr>
<td>OPV 1, 2 &amp; 3</td>
<td>At 6 weeks, 10 weeks &amp; 14 weeks</td>
<td>2 drops</td>
<td>Oral</td>
<td>Oral</td>
</tr>
<tr>
<td>DPT 1, 2 &amp; 3</td>
<td>0.5 ml</td>
<td>Intra-muscular</td>
<td>Antero-lateral side of mid-thigh</td>
<td></td>
</tr>
<tr>
<td>Hepatitis B 1, 2 &amp; 3</td>
<td>0.5 ml</td>
<td>Intra-muscular</td>
<td>Antero-lateral side of mid-thigh</td>
<td></td>
</tr>
<tr>
<td>HiB containing Pentavalent 1, 2 &amp; 3**</td>
<td>0.5 ml</td>
<td>Intra-muscular</td>
<td>Antero-lateral side of mid-thigh</td>
<td></td>
</tr>
<tr>
<td>Measles 1st dose</td>
<td>9 completed months-12 months. (give up to 5 years if not received at 9-12 months age)</td>
<td>0.5 ml</td>
<td>Sub-cutaneous</td>
<td>Right upper Arm</td>
</tr>
<tr>
<td>JE 1st dose***</td>
<td>9 completed months</td>
<td>0.5 ml</td>
<td>Sub-cutaneous</td>
<td>Left Upper Arm</td>
</tr>
<tr>
<td><strong>For Children and Adolescents</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DPT 1st booster</td>
<td>16-24 months</td>
<td>0.5 ml</td>
<td>Intra-muscular</td>
<td>Antero-lateral side of mid-thigh</td>
</tr>
<tr>
<td>OPV Booster</td>
<td>16-24 months</td>
<td>2 drops</td>
<td>Oral</td>
<td>Oral</td>
</tr>
<tr>
<td>Measles 2nd dose</td>
<td>16-24 Months</td>
<td>0.5 ml</td>
<td>Sub-cutaneous</td>
<td>Right upper Arm</td>
</tr>
<tr>
<td>JE 2nd dose</td>
<td>16-24 months with DPT/OPV booster</td>
<td>0.5 ml</td>
<td>Sub-cutaneous</td>
<td>Left Upper Arm</td>
</tr>
<tr>
<td>DPT 2nd Booster</td>
<td>5-6 years</td>
<td>0.5 ml</td>
<td>Intra-muscular</td>
<td>Upper Arm</td>
</tr>
<tr>
<td>TT</td>
<td>10 years &amp; 16 years</td>
<td>0.5 ml</td>
<td>Intra-muscular</td>
<td>Upper Arm</td>
</tr>
<tr>
<td>Vitamin A****</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Give TT-2 or Booster doses before 36 weeks of pregnancy. However, give these even if more than 36 weeks have passed. Give TT to a woman in labor, if she has not previously received TT.

**Pentavalent vaccines contains a combination of DPT, HepB and Hib. In the states where it has been introduced, it will replace DPT 1, 2 & 3 and Hepatitis B 1, 2 & 3. Hepatitis B birth dose and booster doses of DPT will continue as before.

*** JE Vaccine (SA 14-14-2) is given in select endemic districts, after the campaign is over in that district.

**** The 2nd to 9th doses of Vitamin A can be administered to children 1-5 years old during biannual rounds, in collaboration with ICDS.
2.6 UIP successes as a child survival strategy

The Universal Immunization Program (UIP) in India is one of the largest of its kind in the world, in terms of quantity of vaccines used, number of beneficiaries reached out to, number of immunization sessions organized, the geographical spread and diversity of areas covered. It caters to nearly 27 million infants and 30 million pregnant women annually free of cost. There is a strong political commitment for achieving universal immunization coverage in the country along with the eradication and elimination of the targeted diseases.

As a key element of the national child survival strategy, UIP has contributed significantly to reducing mortality and morbidity due to vaccine preventable diseases and the infant mortality rate over the last decade. While surveillance information for specific VPDs is limited, the steady fall of IMR from 123 to 50 deaths per 1000 live-births does in part reflect the impact of the UIP.\(^\text{10}\)

Since its launch in 1995, the Pulse Polio campaign aimed at eradicating polio from India, has begun to show results. Government at the national and state levels is implementing strategies on a scale and intensity that is unprecedented in the history of polio eradication. These efforts have brought India closer to the goal of polio eradication and there is currently no reported case since January 2011\(^\text{11}\). India has been declared polio non-endemic country by World Health Organization in early 2012. Neonatal tetanus cases have declined significantly as more pregnant women received TT vaccine as part of their antenatal care. There has been an overall reduction in the number of cases and deaths due to diphtheria, pertussis and measles as well.

Under National Rural Health Mission, MoHFW has undertaken a number of initiatives to improve health systems and immunization outcomes. Districts have been provided with more human as well as financial resources to improve delivery of immunization and other health services. Introduction of ASHA into the system as a community link worker has brought about a major improvement in community mobilization. Districts have strengthened their delivery systems and developed micro-plans for improved efficiency. The number of vaccine delivery points has increased along with the cold chain points. MoHFW also introduced a system for Alternate Vaccine Delivery (AVD) to provide vaccines at the outreach session sites. Innovative technology like auto-disable syringes, are now in use in all states and Union Territories. Immunization related trainings have led to an increased capacity of frontline health workers to deliver vaccines at the village level. Focus in the urban areas has led to an improved immunization services in slums areas, though more needs to be done in this area.\(^\text{12}\) MoHFW has also initiated Mother and Child Tracking System (MCTS) to enable the entry of mother and child data into a central database.

Year 2012-13 was declared by GoI as the year of Intensification of RI in India. In this context, the MoHFW had put in place a few strategic actions to improve immunization coverage. These included health systems improvement, promoting village health and nutrition day (VHND), Immunization Weeks, launching of the “Teeka Express” for delivery of vaccines to outreach sessions, pilot launching of the National Cold Chain Management Information System (NCCMIS) for real-time monitoring and management of cold chain systems and setting up of the Immunization Technical Support Unit (ITSU) to provide technical and programmatic support for successful implementation of the UIP.

India’s ‘Call to Action on Child Survival and Development’ announced in February 2013, and led by the MoHFW, GoI, calls for a concerted, convergent and inter-sectorial approach to achieving the country’s child survival goals by 2017. Based on composite indicators GoI has identified strengthening efforts in the 184 High Priority Districts in

\(^{10}\) SRS 2011

\(^{11}\) National Polio Surveillance Program. www.npspindia.org.

\(^{12}\) UIP Review 2004
the country. This five-year ambitious target will heighten the importance of ‘continuum of care’, ensuring the tight linkage between maternal and newborn health as outlined in the new strategic document called RMNCH+A. Strengthening RI to increase coverage has been identified as a key intervention in RMNCH+A. A number of different ministries, global and Indian experts, good-will ambassadors, private sector, civil society, media, and faith-based organizations have pledged to recommit themselves to the Call to Action.

2.7 Barriers for effective programming
Overall immunization coverage levels are low in the country. According to the CES 2009, the reasons for low immunization coverage pertain to issues on the demand and supply side as given in Figure 7 below.

Figure 7: Reasons for low immunization coverage in India (Source – UNICEF CES 2009)

The performance of immunization program in India is regularly assessed through UIP review meetings at national and state levels, Joint Review Missions (JRM) and Common Review Missions (CRM) sent by govt. At least one national review is conducted every year besides additional state specific review as per the program need. The common constraints in immunization program are summarized below:

a. Gaps in cold chain and vaccine logistics management: There is limited cold chain infrastructure and capacity in many states – even for routine UIP vaccines. Systematic efforts to identify gaps and address issues in cold chain and VLM have been conducted in recent years. In addition to the 2008 NCCA, a number of vaccine and cold chain management assessments (Vaccine Management Assessment Tool (VMAT)/EVM assessments) have been conducted in 10 states and one national UIP store (Government Medical Store Depots (GMSD) – Karnal) between 2007-11\(^{13}\). A recent National level assessment of EVM conducted by Govt and UNICEF in 10 states and 4 GMSDs along with other studies including deep dive and KPMG exercises by ITSU have identified the following constraints:

- Infrastructure issues include poor infrastructure of vaccine stores and transportation systems; there is a lack of standards for vaccine stores at different levels and insufficient temperature

\(^{13}\) National Cold Chain Assessment, India. July 2008. NRHM & UNICEF
monitoring system at all vaccines storage points from GMSDs to last cold chain point level. There exist difficulties in procuring the right quality of cold chain equipment on time with adequate after sale support. There is a paucity of repair kits and spares cold chain technicians and inequitable cold chain point (last vaccine storage site) distribution. Cold chain equipment in many states in the country is old and in many cases broken. There is also a paucity of available data on Vaccine Logistics and cold chain to devise National plans and strategies to address them.

- **HR issues** such as lack of a CCL support unit with experts on cold chain for both the immunization division of MoHFW and at the state level; lack of induction training and a regular educational program for staff inducted in the Vaccine Logistics and Cold Chain system; insufficient institutional training capacity to manage cold chain and logistics at all levels; shortage of trained manpower and relevant job-aids for managing cold chain at all levels (state, division/regional and district levels); and lack of HR with capacity for Vaccine Logistics Management (VLM) at all levels (national, GMSDs, state, district and PHCs). The shortage of HR is more acute in the poor performing states and specifically at the field level.

- **Monitoring and MIS issues** such as lack of real time vaccine stock status, consumption patterns, wastage rates, along with a continuous temperature monitoring system for cold chain, lack of cold chain inventory and real-time NCCMIS, no regular review of CCL system at the state and district level, and poor documentation and MIS for vaccine management (standardized registers, records and procedures).

- **Vaccine procurement issues** are significant as delay in placement of procurement orders and irregular supply of vaccines have a direct impact on vaccine availability affecting immunization coverage. Moreover, certified vaccine suppliers are few, and since orders are always given to the lowest bidder, the supply of vaccines is often erratic.

These constraints have led to high breakdown rate of equipment, overstocking and stock outs, inadequate monitoring and supervision, poor management, and the possibility of AEFIs, thus hampering improved vaccine coverage.

b. **Poor social mobilization:** Low levels of awareness, communication and information sharing amongst frontline workers as well as poor HR capacity for BCC in government institutions as a whole contributes to the problem of high lefts outs and drop outs. Studies have shown that insufficient and ineffective health communication along with lack of promotion or follow-up of RIs are two of the main health system constrains behind low coverage in immunization, preventing parents from initiating or following through with their child’s vaccination schedule. Given that the actual rate of immunization is low, the high drop-out rate reduces the number of fully immunized children in the country. Poor populations and those with lower levels of education are most vulnerable to impacts of low levels of advocacy and communication. Listed below are some of the system-related constraints in advocacy and communication that lead to low levels of immunization coverage.

- There is weak capacity at the state level and inadequate HR to generate evidence based communication strategies, and effective BCC campaigns

- Weak communication capacities (spokesperson system) within the government machinery at national and state levels in handling/ addressing AEFIs.

- Information dissemination is not timely, and often mixed messages are received by beneficiaries

- Weak counseling and interpersonal communication (IPC) skills among health workers and community mobilizers, which adversely affects dissemination of communication of messages.

- Weak capacities and counseling skills of service providers to ensure delivery of quality care, especially in hard-to-reach areas.

There is an urgent need to strategically approach communication, aiming at behavior change both at the service delivery level and at the community level to generate demand among the caregivers. Meeting the
shortfall of health professionals and building their counseling and communication skills are imperative to a sustained and holistic response to the public health concerns in the country. This requires health care to be addressed not only from the scientific perspective of what works, but also from the social and behavioral perspective of who needs it the most. One also needs to understand the social norms and barriers which prevent them from accessing the services and how to reach the unreached.

c. **Poor data management and analysis for evidence generation:** A robust system for data management and evidence generation is crucial to support informed decision making for the creation of realistic goals and strategies for improvement of current coverage levels and introduction of new antigens in UIP. Since the inception of UIP, India’s had set up a reporting mechanism from the health center to national level. In last few years, country has also introduced electronic data systems like HMIS and MCTS to improve reporting, analysis, monitoring and planning at all levels. However, there are big gaps in quality of data being reported, its analysis and use for decision making and thus leading to inadequate information to support NTAGI and UIP to design and implement strategies to improve immunization quality and coverage. Some of the main constraints in the area of data management and evidence generation are listed below:

- **Poor monitoring and evaluation for data entry**, resulting in errors in data entry and inaccurate data. In recent years, partners’ support and networks have contributed to increased monitoring and supportive supervision with visible positive impact in select states. However, there is a need to build the capacity of government officials and strengthen the system to improve monitoring and supervision by government officials.
- **Poor monitoring and evaluation results** in insufficient data quality and reporting rates. A vast majority of states have wide gaps in reported and evaluated coverage data. The factors for this variation need to be identified through regular data quality audits and necessary corrective measures should be taken.
- **Inadequate surveillance data quality and reporting rates** result in poor surveillance of VPDs and AEFIs. While some attention has been paid to strengthening VPD surveillance, systemic deficiencies and bottlenecks such as insufficient laboratory capacity and limited trained manpower at the district levels to carry out surveillance, continue to exist. Inadequate VPDs reporting results in the inability of UIP to measure disease burden to make a decision on the introduction of new antigens and impact of vaccination on the disease. There is a felt need for HR capacity building in VPD surveillance, strengthening laboratory capacity by improving infrastructure and making reagents available, and building system for timely reporting and actions. Similarly surveillance of AEFI cases is poor and a structured response to reported serious cases of AEFI is lacking.
- **Limited focus on operational research** for immunization and finding locally suitable solutions. Good quality research is needed to provide an evidence base for a more informed decision making and improving performance.

The successful implementation of HMIS under NRHM and MCTS under Mission Mode Project provides a great opportunity to strengthen data management and evidence generation to inform decision making in UIP. With the augmentation of human resource at national level also provides an opportunity for coordination between various reporting and surveillance systems in the country as well as putting up a system for using information for decision making.

d. **Weak human resource capacity:** In a study of HR needs assessment in UIP by Mavlankar et al (IIM Ahmedabad)\(^\text{14}\) it was found that there is limited technical and operational human resource capacity and quality at various levels in UIP. Immunization cells at both the state and the national level are small and inadequately staffed. Key personnel capacities are spread thin across multiple areas in day to day management with no focus on priorities. They are not able to focus on developing strategic solutions and to organize and coordinate activities such as introducing new vaccines, updating technology. Applying for international funding and support, writing reports and analyzing data etc. The roles and responsibilities of the officials at the state immunization cells also are not well defined. Furthermore, state immunization

\(^{14}\) Universal Immunization Program in India: A Study on HR Needs Assessment at National and State Levels. Dr D.V Mavalankar et al, IIM Ahmedabad. Study commissioned by HRD Committee on UIP constituted by GoI.
officials have no financial powers, and their titles are not commensurate with their responsibilities.

The lack of human resource capacity and poorly defined roles and responsibilities at various levels have a cascading effect on all other areas of program performance, including monitoring and evaluation, supply chain and logistics management, and strategic communications. Lower quality of monitoring and supportive supervision of the program leads to reduced efficiency and effectiveness of interventions at all levels of programming and needs to be addressed seriously.

While UIP is a part of a wider RMNCH+A strategy of the government, there is a need to increase the HR capacity and numbers of immunization managers at all levels. GoI has set up an Immunization Technical Support Unit (ITSU) to augment human resource capacity at national level with focal persons assigned for specific functions like – cold chain and Vaccine logistics, Evidence to Policy and surveillance, Strategic Communication, Monitoring and Evaluation and Adverse Events Following Immunization (AEFI) etc. Training immunization staff on relevant topics will improve program efficiency and effectiveness as well.

e. Need for a well delineated accountability systems: A major problem is the lack of institutionalized and uniform accountability structures, focused on performance review at each administrative level i.e. central, state and district levels. Country has Multi Year Strategic Plan for UIP but its implementation is not monitored in absence of a monitoring and accountability structure. Though, there are review mechanisms in place at all levels, but these are not followed consistently. Moreover, in absence of a robust system for data analysis, interventions and follow up these are not very effective.

f. Evidence synthesis for informed policy making: The NTAGI was formed in 2001 and tasked with advising the MoHFW on issues related to the program, policy and implementation of the national immunization program. Since it’s inception the NTAGI has recommended a evidence based recommendations to the UIP, such as the introduction of the Hepatitis B, Pentavalent and Japanese Encephalitis vaccine; use of VVM in government vaccine supplies; use of AD syringes etc. However, there is great scope for revision and improvement in the decision making process for the introduction of new vaccines in the UIP. In the light of the current advancements in the field and the availability of several new interventions, it is imperative to establish scientific evidence based protocols for making immunization related decisions.

As India considers adding new antigens (e.g., rotavirus, pneumococcal, MMR, HPV, IPV/hexavalent, cholera, typhoid, and JE) as well as new immunization technologies (e.g., updated injection safety devices), the immunization program also needs to keep pace. NTAGI is an advisory body with clear terms of reference for overall guidance but not day to day operations. NTAGI needs a well-defined secretariat to conduct regular meetings and a clear scope of work that maintains focus on making a structured recommendations on immunization. At the same time, there is an ever increasing need to develop capacity to identify and address critical gaps in evidence base. The health system must be able to evaluate new vaccines for safety, efficacy, relevance and cost-effectiveness; accommodate the new vaccines in its cold chain management system and vaccine logistics; assess and respond in real time to roll-out challenges; and conduct post-marketing surveillance to ensure that lessons learnt from the roll-out are incorporated back into the system.
3. GUIDING PRINCIPLES OF UIP

The services provided through the UIP shall be guided by the following principles

1. **Universal immunization coverage**: Sustaining demand and ensuring that all pregnant mothers, children and adolescents are immunized as per national schedule in line with the principles of universal health coverage

2. **Equitable access**: Ensuring that the immunizations services reach out to the underserved, needy and most vulnerable populations while addressing regional inequalities across states

3. **High quality services and innovation**: Maintaining highest possible quality in vaccine procurement, storage, distribution and delivery services in an innovative and safe manner.

4. **Sustainability and Partnerships**: Committing resources – financial, human and technical, that sustain immunization benefits to the people at all times and promoting partnerships across different sectors and organizations build synergies and expand the overall coverage of the program.

5. **Governance**: Decentralized planning through a bottoms up approach to improve operational efficiency

6. **Management excellence and accountability**: Implementation, oversight and accountability of interventions that optimize efficient use of resources
4. UIP STRATEGIC PLAN: 2013-17

This comprehensive multiyear strategy plan seizes on the opportunity to address geographic and social inequities in immunization coverage rates, and other immunization related issues highlighted in earlier sections. The plan aims to strengthen immunization infrastructure within the broader RCH program and offer a platform for integrating other primary care interventions and strengthening the public health system at all levels. UIP offers universal immunization coverage to all children in the country as per the national immunization schedule.

4.1 UIP strategic plan framework

This plan derives its essence from the National Vaccine Policy 2011 and is underpinned by the goals ascribed in the National Health Policy 2002 and National Rural Health Mission 2005. The plan framework consists of an overarching Goal and a set of six Key Objectives (KO) that cover different aspects of the immunization program including operational efficiency, epidemiological support, health system strengthening and demand generation (See Box 1). These Key Objectives are interlinked and mutually reinforce each other, thus providing greater focus, structure and flexibility for developing context-specific strategies and interventions. Each Key Objective has a set of Expected Results to be achieved in the medium term and a set of actionable strategies that can be contextualized in the State and District implementation plans. The framework elements are designed to be simple, feasible, flexible and relevant to the needs of the people. As part of providing better governance for the program, the UIP strategic plan has a comprehensive monitoring and accountability tracking framework which consists of a key indicators, targets, source of information, assigned responsibility and information dissemination.

Box1 UIP Goal and Key Objectives

<table>
<thead>
<tr>
<th>GOAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce mortality and morbidity due to vaccine preventable diseases through high quality immunization services</td>
</tr>
</tbody>
</table>

**KEY OBJECTIVES**

**KO 1**: Improve program service delivery for equitable and efficient immunization services by all districts

**KO 2**: Increase demand and reduce barriers for people to access immunization services through improved advocacy at all levels and social mobilization

**KO 3**: Strengthen and maintain robust surveillance system for vaccine preventable diseases (VPDs) and adverse events following immunization (AEFI)

**KO 4**: Introduce and expand the use of new and underutilized vaccines and technology in UIP

**KO 5**: Strengthen health system for immunization program

**KO 6**: Contribute to global polio eradication, measles, maternal and neonatal tetanus elimination

4.2 Impact indicators

1. Reduction in infant mortality rate
2. Reduction in cases of vaccine preventable diseases

4.3 Target population

Ri interventions will be targeted at reaching out to all eligible children and pregnant women as per the national schedule. Given the equity issues, special efforts will be made to ensure that immunization services reach out to targeted beneficiaries belonging to the lower socioeconomic strata, those living in urban slums, rural areas, tribal and other hard to reach areas.
The following section elaborates on the strategic framework further

**KEY OBJECTIVE 1: Improve program service delivery for equitable and efficient immunization services by all districts**

Vaccine logistics management is one of the critical elements in the immunization program to ensure that all vaccines are available at the last cold chain point for immunization sessions. Similarly, a reliable and adequate cold chain network is essential to ensure that vaccines are stored within the recommended temperature ranges, and safe and potent vaccines are delivered to children. Various recent studies like Effective Vaccine Management (EVM 2013), Vaccine Wastage Study (2008), ITSU deep dive study, KPMG vaccine logistics study (2013), ICMR Freezing study etc. have pointed out issues related to the existing vaccine logistics system up to the last cold chain point, and the capacity, functionality and maintenance of cold chain equipment at all levels.

**Key Performance Indicators (KPI)**

1. % of districts where > 90% sessions were held as planned
2. % of districts having > 80% full immunization coverage
3. % of districts having less than 10% dropout from DPT1-DPT3 (or Pentavalent)

The indicators will disaggregated by gender, geography (urban slum, urban, rural) and socio-economic parameters, where relevant

**Expected Result 1.1: Strengthen the national cold chain management system:**

Maintaining a strong cold chain system is critical for maximizing the operational efficiency of UIP. Strategies to achieve this will focus on capacity building, hardware management and innovative technology.

**Strategies**

1. **Develop National Cold Chain Management action plan:**

   A national plan for cold chain management is essential for improving overall UIP program efficiency. The national cold chain plan shall be based on the various situation analyses on cold chain and vaccine logistics management in the country. The major components of the plan will include:

   a) **National Standards:**

      One of the major gaps in cold chain management is the absence of standards performance parameters. The national cold chain plan will include standards for the following:

      - Vaccine storage at all levels as per WHO standards
      - Cold Chain point expansion guidelines
      - Cold Chain Equipment plan for different levels of vaccine stores
      - Quality maintenance of vaccines
      - Temperature Monitoring of cold chain system
      - Human resource for Cold Chain and Vaccine Logistics
      - CCE Testing Lab

   b) **Specification of equipment and accessories**

      A specification committee comprising technical experts from the field, the National Cold Chain Training Centre (NCCTC), Engineering colleges, IITs, and program experts will be established to provide guidelines on the technical specifications of cold chain equipment and accessories.

   c) **Procurement guidelines for cold chain equipment and accessories**

      Procurement guidelines for cold chain equipment and accessories shall be developed, and reviewed periodically by a technical committee of experts convened by the MoHFW. The guidelines shall provide parameters for
equipment procurement, rationale for purchase, quantity, guidelines on aging etc. The technical committee
shall meet at least once a year.

Stress will be placed on promoting indigenous cold chain equipment which is contextualized and adaptable to
local needs and environment. A Management Information System (MIS) for tracking the working status of cold
chain equipment and spare parts will also be set up. The plan will also focus on regular retiring of old and sick
cold chain equipment, regular program reviews with cold chain officers, staff trainings, maintenance and
servicing of cold chain equipment, implementation of MIS, logistics and supply chain management.

d) Promote indigenous cold chain equipment for immunization
To reduce costs and improve overall program efficiency, the MoH will promote the use of cold chain equipment
that is locally produced and serviced by Indian manufacturers. NCCVMRC will organize consultative meetings
with engineering colleges, industries, IITs, national physical laboratories, DG S&D to determine the safety
standard, program need and scale of requirement required to fulfill the needs of UIP.

2. Enhance the capacity of the National Cold Chain Vaccine Management Resource Centre (NCCVMRC) and
the National Cold Chain Training Center (NCCTC) to better manage the Cold Chain and Vaccine Logistics
Management (VLM) system.
The NCCVMRC has been set up in National Institute of Health and Family Welfare (NIHFW) to conduct training
and capacity building activities on cold chain equipment and vaccine management, including preventive
maintenance and repair, at the state level. The center provides supportive supervision to states to promote
smooth functioning of cold chain and vaccine management systems. The Centre also undertakes cold chain and
vaccine management assessments and reviews jointly with the Immunization division (MoH), UNICEF, WHO and
other partners. It functions as an extended wing of the Immunization division (MoH) for cold chain and vaccine
management. The NCCVMRC’s needs enhancement in terms of human resources recruitment, infrastructure
and equipment to be able to function effectively (See Annex 3).

The NCCTC which has been set up at SHTO Pune is the country’s only cold chain training center. The NCCTC will
have its capacity strengthened to function as a testing lab of equipment performance, experiment with
innovative technologies, support the MoHFW for procurement by producing evidence on the specifications of
equipment and their performance, develop appropriate spare parts for all types of cold chain equipment
enabling local repair, develop a training module of Cold Chain Equipment (CCE) repair and maintenance,
and provide maintenance support to GMSDs. The center will be run as an independent body with its own governance
and management structure reporting to the Director, NIHFW.

3. Conduct a nationwide rollout of cold chain MIS
The National Cold Chain Management Information System (NCCMIS) which is a web based system for tracking
cold chain equipment in real time shall be expanded to cover all states. The system will be hosted in NIHFW
servers with helpline support provided by NCCVMRC. Key objectives of the NCCMIS are to provide
information/guidance on: (i) cold chain infrastructure up to the lowest level with performance indicators; (ii)
stock positions of cold chain equipment spare parts at GMSDs and at the state level, and specification for local
procurement; (iii) troubleshooting of cold chain equipment; (iv) cold chain and vaccine management practices
as per national norms; (v) available trained HR in cold chain and upcoming training programs; and (vi) cold chain
space requirements for introduction of new vaccines.

4. Increase the number of cold chain points closer to vaccination sites in selected states and take up
repairs and maintenance work of the existing equipment
Currently, there are over 27,000 cold chain points across the country. All states need to plan and ensure that
one cold chain point caters to a population of 30,000 in rural areas, up to 50,000 population in urban areas, and
15-20,000 population in tribal and hard to reach areas, keeping in mind factors such as distance from and time to travel to session sites.

All cold chain equipment that is not CFC-free, which is more than 10 years old and is nonfunctional will be replaced. Given their poor state, all four GMSDs will have their capacity and infrastructure upgraded to meet national standards which will include renovation, refurbishment, addition of more storage capacity, continuous temperature monitoring and real time tracking of vaccines and logistics.

All existing cold chain points have one ILR and one DF, however, 50% of these equipment need immediate replacement, and this replacement will be done within three years. It is assumed that the ILRs/DFs needed for the new cold chain points will be procured within five years. Given that nearly one-third of PHCs have less than 8 hours of electricity in a day, solar/hybrid equipment will be procured for such facilities in the next three years. There shall be one cold chain handler in each cold chain point. States will be supported to develop sustainable models of alternate vaccine delivery (AVD) to session sites in rural and remote areas, and particularly in northeast states.

5. Facilitate installation and/or replacement of cold chain equipment of vaccine stores at different levels

With the availability of newer vaccines, and their potential introduction, there will be a need of eight WICs of 40 cub mt and four WIFs in each GMSD to accommodate higher vaccine stock levels. The current situation and future requirements of cold chain equipment in each of the 4 GMSDs is given in Table 4.

**Table 4: Cold Chain equipment in the 4 GMSDs**

<table>
<thead>
<tr>
<th>GMSD</th>
<th>WIC</th>
<th>WIF</th>
<th>Future needs (within plan period)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kolkata</td>
<td>4</td>
<td>2</td>
<td>Need 2 more WIC and 2 more WIF</td>
</tr>
<tr>
<td>Chennai</td>
<td>2</td>
<td>2</td>
<td>Need 6 more WIC and 2 more WIF</td>
</tr>
<tr>
<td>Karnal*</td>
<td></td>
<td></td>
<td>Need 8 WIC and 4 WIF</td>
</tr>
<tr>
<td>Mumbai</td>
<td>2</td>
<td>2</td>
<td>Need 6 more WIC and 2 more WIF</td>
</tr>
</tbody>
</table>

* Needs 100% replacement of cold chain equipment

In addition to the GMSDs, each of the 39 State Vaccine Stores need to have 50% of their existing cold chain equipment replaced within the plan period. Each of these stores should have at least 4 WICs and 2 WIFs of 40 cub mt. which shall be put in place within the plan period.

Each of the 139 Divisional Vaccine Stores need to have 1 WIC of 40 cub mt and 1 WIF of 20 cub mt, which shall be put in place within the plan period.

District Vaccine Stores for those districts with a population of more than 2 million need 1 WIC and 6 DF each, while those districts with a population below 2 million require their district vaccine stores to have 8 large ILR and 4 large DF each before the end of the plan period.

Supplies of all non-electrical equipment (vaccine carrier, ice boxes) and accessories\(^\text{15}\) shall be updated as per the needs of every cold chain point.

---

\(^{15}\) Accessories include voltage stabilizer with every ILR and DF, toolkit for cold chain technicians
6. Enhance management capacity and numbers of cold chain and vaccine logistics staff at all levels with the district being responsible for stock distribution planning, management and repair.

India is a vast country and putting a robust cold chain system in place requires a larger number of staff at all levels. As recommended in the Mavalankar report there shall be a position created for a focal point on cold chain at the national level. Each State should also make provision for a cold chain officer along with one Assistant at that level. In addition, each district should have one Vaccine Logistics Manager and one Cold Chain Handler. The majority of issues and barriers related to cold chain and vaccine logistics pertain to program management rather than technical faults. All staff associated with cold chain and vaccine logistics will be provided training on various aspects of program management.

7. Promote mentoring and supportive supervision to ensure that vaccines are stored within the correct temperature range

Various models of supportive supervision exist - using line supervisors, externally hired monitors or medical college faculty to provide mentoring and supportive supervision. A mixed approach will be applied based on state requirements to ensure that RI sessions use quality vaccines that have been stored at appropriate temperatures throughout the cold chain. Effective cold chain and vaccine management consultants will be used to review these improvement plans and vaccine store self-assessments using standard formats and local improvement plans from facilities visited.

8. Scale up a system for SMS-enabled real time temperature monitoring for cold chain as part of electronic Vaccine Intelligence Network (eVIN)

Real time monitoring of cold chain equipment along with prompt alerts and corrective action are critical for the immunization program as all vaccines under the program are temperature sensitive and cannot be used once damaged. As the majority of cold chain points in the country are located in remote village settings with limited facilities, a special SMS-enabled temperature monitoring system has been developed and is being currently piloted. The technology will be further refined to prepare for its expansion to all cold chain points in the country. As part of the eVIN strategy, the possibility of unifying vaccine logistics management, temperature monitoring and cold chain equipment inventory management into one system will also be explored.

9. Enhance capacity of cold chain handlers and mechanics across the country

The training for vaccine and cold chain handlers shall be based on standard technical guidelines developed by the government\textsuperscript{16}. In addition to induction training, the cold chain mechanics and technicians will also be provided training on cold chain equipment – WIC, WIF, DF, ILR, cold chain accessories, solar/hybrid equipment. Refresher trainings will be held every three years to sustain capacity and ensure quality.

Expected Result 1.2: Strengthen vaccine and syringe logistics management across the country including forecasting and procurement at central level

A significant challenge in improving RI coverage is lack of visibility at nearly levels in the chain. Managers do not have real time vaccine stocks status at all levels, consumption patterns, wastage rates etc. Without such information, it is difficult to hold system functionaries responsible for lack of performance, or to generate prompt responses to breakdowns/bottlenecks in the vaccine supply chain. Data from the states where VMAT, EVMs and deep dives were conducted by UNICEF and ITSU indicate that the distribution of vaccines is uneven with some cold chain points holding excess stock levels, while others have stock outs within the same district/division. Even when there are few stock outs reported, there is evidence that store managers are slowing down vaccine distribution to cold chain points below them, or to session sites as a means of preventing stock outs. This can lead to insufficient vaccines reaching immunization sessions, thus directly affecting the immunization coverage.

Strategies

1. Develop a Vaccine and Syringe Logistics management system in the country with real-time stock visibility.
   Under the Universal Immunization Program, vaccines and syringes are centrally procured and supplied to States/Union Territories (UTs). The details of vaccines/syringe receipt, issue, wastage and consumption are documented in a variety of registers across the country. Some states have also started computerized documentation of stock levels, but only down to the district level. No nationwide vaccine logistics management and monitoring system currently exists which provides real time visibility of the stock data, consumption patterns, wastage rates etc. In the absence of such a system, a variety of ad hoc principles and processes are applied in distributing vaccines. With the potential introduction of more costly vaccines under the UIP, a robust vaccine logistics management system is a dire need.

   A Vaccine Logistics management model is being developed which can cater to requirements at all levels i.e. from GMSD to the last vaccine storage point (last cold chain point). The product will be field tested and updated to be made ready for country-wide rollout. When fully implemented, the system will also provide better estimates for further procurement and will outline the effects on the logistics system of delays in procurement and erratic vaccine supply patterns. Based on data analysis and the vaccine supply schedule being followed, new guidelines for defining minimum and maximum stocks at different levels will also be developed.

2. Strengthen HR capacity at all levels for vaccine management, including effective vaccine store management and forecasting

   It is essential for an effective vaccine logistic management system to be supplemented by an operations team that keeps the network operational as well ensures prompt response based on data. The government will introduce a position for VLM at national, state and district levels at least in the twelve high priority states. The district level VLM will also oversee the functionality of cold chain equipment in the district and will ensure swift repair/replacement of cold chain equipment with support from the district refrigerator mechanic. These staff will be provided training on vaccine logistics and cold chain management.

3. Pilot new technology for improving vaccine logistics and cold chain management with an overall objective to develop an electronic Vaccine Intelligence Network (eVIN)

   There is substantial technology up gradation going on rapidly across the world in the field of vaccine logistics and cold chain management. These interventions can be useful in ensuring the availability of safe and potent vaccines up to the last cold chain point. Such technological interventions will be field tested for performance and will be considered for implementation with the ultimate aim of developing an electronic Vaccine Intelligence Network (eVIN).

   Computer optimization models, such as HERMES, will be used for exploring means to maximize vaccine and syringe logistics efficiency.

4. Implement Effective Vaccine Management (EVM) improvement plans

   EVMs assessments were conducted in ten priority states in 2013. These states include Jammu & Kashmir, Haryana, Rajasthan, UP, Bihar, Chhattisgarh, MP, Karnataka, Kerala and Tripura. The key recommendations from the EVM assessments will be implemented through the PIPs of the respective states. These recommendations are included in Annex 4. A trained pool of effective cold chain and vaccine

---

17 National Effective Vaccine Management Plan 2013: Summary Report. UNICEF and MoHFW.
management consultants will review the progress of PIPs in states that have completed an EVM assessment and prepared improvement plans.

**Expected Result 1.3:** Ensure safer injection practices and reduced vaccine wastage

**Strategies**

1. **Review existing mechanisms and policies on waste management**
   The disposal of syringes and other waste associated with immunization sessions shall be based on the Biomedical Waste Management and Handling Rules, 1998, and Central Pollution Control Board (CPCB) Guidelines for hospital and immunization waste disposal. Under the NRHM, an Infection Management and Environment Plan (IMEP) policy framework has been formed to guide waste disposal processes. These guidelines will be widely disseminated and shared during review meetings. All health facilities will have ‘waste management guidelines’ prominently displayed at the site of waste generation.

2. **Strengthen the implementation of Open Vial Policy (OVP) and Bundling Policy to reduce waste at the session sites**
   India had adopted the Multi Dose Vial Policy (MDVP) for OPV during SIA campaigns. In 2011, the Multi Dose Vial Policy was adopted for the birth dose of the Hepatitis B vaccine, and the zero dose of the Oral Polio vaccine in the UIP. Later, in the year 2011, the Multi Dose Vial policy was adopted and implemented as part of RI for the Pentavalent vaccine in two states. The current open vial policy (OVP) applies to multi-dose vials of DPT, TT, Hepatitis B, Oral Polio and Liquid Pentavalent vaccines (where applicable). This policy does not apply to Measles, BCG, and Japanese Encephalitis (JE) vaccines (See Annex 5)

   All relevant immunization training shall have a component on the OVP in order to facilitate the appropriate use and return of vials, and reduce wastage. The policy of bundling shall be adopted for all vaccines, AD syringes, reconstitution syringes, diluents, disposal bags, and hub cutters to reduce wastage and improve logistics efficiency, wherever applicable. The required amount of vaccines for a session will be packed along with the needed logistics, so as to ensure that safe injection practices are adopted.

3. **Scale up training on injection safety and waste disposal guidelines for all categories of staff**
   A vaccine wastage assessment carried out by UNICEF in 2010 revealed high wastage rates ranging from 61% (for BCG) to 27% (for DPT). The main causes of wastage include vaccine expiry, discarding unused doses, poor reconstitution practices, exposure to heat, frozen vaccines, missing inventory and theft.

   In order to reduce vaccine wastage, all categories of staff shall be trained on this aspect of the program as part of their regular training regimen and given job aids on injection safety and safe waste disposal.

4. **Expand the availability and use of hub cutters in all districts and explore other technological advancements to ensure safe and appropriate bio-waste handling**
   To ensure safer injection practices, health workers will be trained on the use of hub cutters as part of their on-going trainings. In addition, technological developments in injection safety and bio-waste management will be explored and field tested. Based on performance evaluations, cost considerations, feasibility of use at the field level etc., the inclusion of these technologies in the Immunization program will be considered.

---

18 Vaccine Wastage Assessment: Field assessment and observations from National stores and five selected states of India. UNICEF, April 2010.
**Expected Result 1.4:** Ensure that regular immunization sessions are planned and held and coverage increased

**Strategies**

1. **Conduct risk analysis at State and District level**
   Country has identified high priority districts for interventions under RMNCHA+A where immunization coverage has been considered a one of the key elements. States have also identified high priority district under Emergency Preparedness and Response Plan (EPRP) to prevent wild polio virus importation. Further risk analysis will be done to identify high risk blocks and urban dwellings with low coverage.

2. **Provide training to and follow up with relevant staff on preparation and implementation of RI micro-plans**
   Continuous training and skill building of health staff involved in routine immunization program is required to achieve and sustain quality and coverage of immunization. Training modules for front line health workers, medical officers and cold chain and vaccine supply staff have been prepared and states are using them regularly to train the staff. Ministry updates these modules on regular interval and provides to states. These modules include all relevant components for preparation of plan for RI and its implementation and monitoring. However, GoI has identified issues in implementation of training which varies from state to state resulting in gaps in performance. GoI will encourage all states to develop a time bound schedule for training for all staffs and refresher trainings at regular intervals. These cycles to be aligned with annual PIP.

   Guidelines for micro-planning and service delivery have been developed and included in the immunization handbooks for Medical officers and Health workers. Health workers and other relevant UIP staff will be trained on preparation of micro-plans that ensure inclusion of areas with underserved population, hard to reach areas and others. The efforts will be made to reach the un-reached population at least 4 times a year. The support of the development partners will be sought for the micro-planning efforts. The districts should ensure that micro-plans are available and being used to provide immunization services in the area.

3. **Promote fixed-day, fixed time and fixed site strategy**
   MoHFW has recommended fix-day, fix time and fix site strategy for outreach sessions for delivering immunization services to ensure that communities are aware of the immunization day which is now being implemented by all states. Under this strategy, GoI has recommended that immunization sites be fixed for each habitation, preferably at sub-centers; in villages at anganwadi centers, school and panchayat chaupal, etc. The day of the week and time of session in a particular location are also fixed. The immunization session can also be combined with Village Health and Nutrition Days (VHNDs) under NRHM to help maximize the opportunity for community mobilization and service delivery.

   GoI is planning to strengthen health service delivery in urban areas now and GoI is making similar efforts for urban areas. These will be further strengthened with special focus to reach poor and underserved populations living especially in slums, streets and peri-urban areas.

4. **Fill up gaps in RI coverage through strengthening alternative vaccine delivery to provide needs-based immunization services in difficult to reach areas**
   To ensure improved vaccine and logistics supply and help ANM to spend more time at outreach session site and focus on improving immunization service delivery, GoI has provided funds for implementing alternate vaccine delivery (AVD) system. These efforts will be further strengthened. Under the plan for intensification
of RI, GoI has planned to provide vaccine delivery vans to high priority districts and blocks to strengthen vaccine supply. In this regard, GoI has already provided 120 vehicles in 6 districts of five states – Madhya Pradesh, UP, Haryana, Jammu & Kashmir and Rajasthan to implement a pilot before expansion. These vehicles have been branded a “Teeka Express”. These vehicles will be used not only for vaccine delivery but carrying other logistics also for immunization sessions, promoting IEC for RI, running mobile health clinic etc. depending on the need of the district.

5. **Reduce left-outs and missed opportunities, drop-outs and ensure booster doses**

   GoI aims to identify all areas/populations/opportunities to reduce left outs and to improve booster coverage beyond primary immunization schedule. This is also important in view of new antigens being introduced in UIP. To improve the access with the aim of reducing left outs GoI has developed guidelines to include all high risk populations/areas, identified through polio eradication program, in the routine immunization micro-plans. GoI has also recommended to use polio micro-plan to identify all small areas/hamlets under each sub-center area to be reflected in micro-plan to improve reach and monitoring. It will be further strengthened by identifying all opportunities/places like OPDs, schools etc. to enquire and vaccinate children.

   a) **Health facilities**: Every contact of health care system with children of vaccination age will be used to enquire about child’s vaccination status. Vaccines will be administered where applicable, provided the minimum interval between doses is respected. Possible reasons for non-vaccination shall be identified and addressed.

   b) **Schools**: School health programs will be strengthened. The LHV will visit every school with ANMs at least once a year with vaccines to assess the immunization status of children and ensure vaccination with DPT of children aged 5-6 years, and TT vaccination for children aged 10 and 16 years.

Once a beneficiary is registered, all efforts will be made to ensure full utilization of immunization services for completion of immunization scheduled. The special efforts will be made in the areas where immunization coverage is low and/or dropout rates are high.

   a) **Strengthen use of Due List by frontline health workers for tracking beneficiaries and improve communication with parents to reduce drop outs** –

      Ensure that States/UTs make available the standardized Due List to all the FHWs with appropriate guidelines and trainings for its effective use.

   b) **Strengthen Mother and Child Tracking System (MCTS)** – GoI has launched Mother and Child Tracking System to improve registration of pregnant women and infants and utilization of Ante Natal Care (ANC) and immunization services. This is being implemented as a mission mode project and all states have implemented this. The implementation and utilization of MCTS will be further strengthened to achieve the objectives.

NRHM framework will be utilized by the states to do innovations to increase immunization coverage. The best practices and successful examples will be disseminated widely for cross learning and adoption by the states.

6. **Strengthen the RI supervision and monitoring system**

   MOHFW will focus on improving program supervision and monitoring for RI at all levels using data generated in the program and through field monitoring. RI partnership in the country is actively participating in monitoring of implementation at field level and assisted states in involving their program
managers and staff in the monitoring. Haryana has developed a monitoring system by involving independent monitors using NRHM funds. Other states will also encouraged to prepare plans for monitoring and propose in PIPs.

7. **Involve private facilities in delivering RI services**
The involvement should be underpinned by accountability and quality standards that are regulated by the state nodal medical authority. Public and private practitioners providing vaccination will be provided free of charge vaccine and immunization cards etc. All private practitioners, offering vaccination services, will be expected to maintain appropriate institutional records, retrievable on demand. They will also be expected to report coverage, VPDs, AEFI, wastage on a monthly basis. Private sector accountability and quality issues will be coordinated by the nodal medical authority providing the vaccines as per the GoI guidelines. Necessary efforts will be made to implement the guidelines for involvement of private practitioners in immunization program.

8. **Plan and conduct immunization weeks at regular intervals** to improve coverage level in missed out and hard to reach areas, followed by integration of these areas under the district RI micro-plans.

---

**Expected Result 1.5: Improve program coordination at all levels**

**Strategies**

1. **Conduct bi-annual national level meetings of state EPI officers**
   National level half yearly meetings of all state EPI officers will be conducted on regular basis. The State immunization officials will be requested to conduct regular and quality quarterly review meetings with the District Immunization officers to strengthen the program at ground level. GoI has issued directives to all States for setting up State and district level task force on immunization for improved program coordination and monitoring. States will ensure that these task force meetings are held every month and necessary feedback is shared with national immunization division.

2. **Improve coordination with development partners through regular meetings and information sharing**
   Ministry recognizes various efforts being done and support provided by development partners in routine immunization strengthening both at national and sub national level. Efforts will be made to ensure better coordination between government and development partners through regular coordination meetings, partner’s forum and other relevant platforms.

3. **Promote immunization and related interventions through Immunization Action Group (IAG) including academia, CSOs, political representatives**
   IAG, which has been setup by MoHFW, will advise and provide technical inputs to the national immunization division on ways to improve routine immunization coverage and issues around newer and underutilized vaccines.

**KEY OBJECTIVE 2: Increase demand and reduce barriers for people to access immunization services through improved social mobilization.**

---

Key Performance Indicators (KPI)

1. % of caregivers who are aware about next due vaccination
2. % of caregivers who did not feel the need for immunization
3. % of caregivers who fear side effects of immunization

The indicators will be disaggregated by gender, geography (urban slum, urban, rural) and socio-economic parameters, where relevant

Expected Result 2.1: Develop and implement a multi-pronged national communication strategy with a focus on priority states

Strategies

1. Develop state specific Communication Implementation plans, advocacy and social mobilization plans
   A national strategic communication plan for RI will be prepared. The states and districts will also be encouraged to prepare an integrated communication work plan. This plan will have focus upon components and strategies for addressing the issues related to left outs, drop out, and to increase community participation in immunization.

   The IRI communication guidelines have been developed by GoI to provide a roadmap to the immunization program managers and IEC functionaries at state, district and block level. These guidelines can be used as a reference while formulation state-specific communication plans.  

2. Strengthen national and state capacity on behavior change communication
   National and state level workshops will be conducted for immunization program managers and other staff working on communication. The trainings will focus on strengthening their communication and planning skills to better operationalize and implement IEC interventions. MoH will also conduct regular national and state level meetings to monitor the progress, identify gaps and suggest possible solutions on communication strategies. In addition, effective communication activities and best practices will be documented and shared with all the stakeholders to be used for inter-state learning.

3. Engage with partners to ensure a wider dissemination of immunization messages.
   Enhanced partnerships with CSOs, NGOs will promote greater awareness and access to RI services. The CSO engagement strategy will focus on engaging civil society in policy and advocacy processes. The GoI will engage the private sector to work in immunization program as part of their CSR utilizing their strengths in communication.

4. Ensure adequate funds are available for communication interventions
   NRHM has provided necessary flexibility to use funds for activities related to immunization program. The available funds with districts will be utilized for health communication. The untied funds with AWW/ASHA, VHSC and ANM may also be used for these communication efforts, if funding from other sources is not available. States will be encouraged to prepare a detailed IEC plan for immunization and funds will be allocated to this activity from NRHM PIP part A.

---

Expected Result 2.2: Effective communication channels are set up with the community for better acceptance of vaccines

Strategies

1. Use frontline health workers and community platforms like village health and nutrition day, to promote RI through interpersonal communication (IPC) with families
   Utilize the widespread network of over 860,000 ASHA workers in the country to conduct social mobilization for improving immunization coverage. Interpersonal communication (IPC) with individuals and families will be strongly promoted through the frontline health workers – ASHA, ANM, Anganwadi workers and other key leaders in the communities.

   GoI has developed a training kit to improve IPC skills of frontline health workers to improve awareness amongst parents about need for immunization and completion of recommended schedule and to reduce fear of AEFI to reduce drop outs. All FHW will be trained on using this kit.

   The community members, non-government organization and interest groups in immunization like women’s self-help groups will be involved in advocacy for implementation, and increasing demand for services. The events like VHNDs will be utilized as opportunities for community mobilization. Where-ever the reports of mistrust towards immunization by community members are noticed, these should be studied and appropriate corrective actions need to be taken.

2. Promote inter-sectoral synergies between organizations, communities and individuals on promoting immunization
   At the community level there is a greater scope of better social mobilization and reaching local community leaders through convergence of RI with ICDS, women self-help groups and panchayati raj institutions. The program will also seek to involve local MLAs and MPs to utilize their funds to ensure that each and every child in their community is vaccinated. Local institutions, community networks, and religious groups will also be reached out in coordinated way to reach specific groups of people for dialogue with planned messages. School children and adolescents will also be engaged as change agents to dispel myths and misconceptions related to immunization.

Expected Result 2.3: Evidence based and contextually relevant communication messages are disseminated in the community

Strategies

1. Identify issues and barriers for immunization in hard to reach populations, to be addressed in the communication plan
   Targeted communication will be needed for those who have never participated before, or who are not participating consistently because of lack of knowledge, doubts and misconceptions, or frustration with the quality of health services. The issues and barriers for the immunization will be addressed in the integrated communication work plan. The focus will be on SC, ST population, migratory population and difficult to access areas. The reasons for low coverage and level of knowledge about immunization program will be regularly assessed. The findings from these assessments will be a base for communication and social mobilization plans.
2. Develop and disseminate widely, new communication material on immunization
Promote the RI branding with a new logo color coding and tagline through various media. New audiovisual communication messages for TV and radio along with print material will be developed. The government will also use social media as a parallel communication channel to increase visibility about RI with multiple target audience. The program will strengthen delivery of interpersonal communication using Polio SMNet (from UNICEF), school teachers, student networks, national level youth networks to support social mobilization. Institutions like NSS, NCC etc. will be mobilized to reach out of school youth and eligible children in hard to reach population areas

Standard Operating Procedures (SOPs) will be developed for production of new communication materials and their dissemination to the states

3. Increase people’s confidence in vaccine safety through generation and dissemination of supportive data
GoI will engage all categories of media – print, electronic - through regular workshops, meetings and field visits to advocate for and create an enabling environment that leads to an increasing demand for immunization services.

With newer vaccines planned for introduction in the coming years, all efforts will be made to educate people and dispel any misinformation. Communication strategies for newer vaccines including campaigns will be developed in consultation with all stakeholders.

4. Develop effective communication response for AEFI crisis management
In order to dispel any public misapprehension around adverse events following immunization GoI will develop communication guidelines to handle situations around AEFI.

KEY OBJECTIVE 3: Strengthen and maintain a robust surveillance system for vaccine preventable diseases (VPDs) and adverse events following immunization (AEFI)

The burden of diseases preventable by the vaccines is the most significant factor for making a decision on the introduction of the relevant vaccines in the UIP. Therefore, a robust surveillance system to detect cases and deaths due to vaccine preventable diseases is essential to generate evidence to inform the decision on the introduction of the vaccine as well as to measure its impact on the disease in the period post introduction. Besides that, the completeness and quality of VPD surveillance data is also necessary to observe the trends in disease incidence and geographical spread to help plan to strengthen the immunization program. Reporting of VPDs has been an integral part of UIP reporting system. Major challenges for UIP include - weak capacity of frontline health workers to identify cases, lack of attention in the health system for VPD reporting, need for better coordination between various surveillance systems and poor reporting from private sectors and bigger institutions. This has adversely impacted informed decision making on newer vaccine introduction and vaccine impact assessment. Therefore, it is necessary to develop the capacity of health workers for improved detection of VPDs, regular review of reports and data and coordination amongst various surveillance systems and efforts to include other private sectors and other institutions for improving VPD surveillance in the country. The goal of immunization is to protect individual and the community from vaccine preventable diseases (VPD). Although modern vaccines are safe, no vaccine is entirely without risk; adverse reactions will occasionally occur following vaccination. Some people experience adverse events after immunization ranging from mild side-effects to rare life-threatening illnesses. However, in the majority of serious cases these events are merely coincidences. In others, they are caused by the vaccine or by an error in the administration or handling of the vaccine. Sometimes there is no causal relationship between the
vaccine and the adverse effects. Maintaining public trust in vaccine safety, therefore, is key to the success of all vaccination programs.\(^{21}\)

Irrespective of the cause, when adverse events following immunization (AEFIs) occur, people become confused to the extent that they refuse further immunization of their children, making the children susceptible to VPDs which are more disabling and life-threatening. Surveillance of AEFIs, i.e. systematic collection of data on events following immunization, provides valuable information to help plan and take necessary actions in order to sustain public confidence and ensure smooth functioning of the program. The national AEFI surveillance program supports the effective vaccine pharmacovigilance function for ensuring use of safe vaccines. Aggregate data for serious and non-serious AEFI are currently collected through routine monthly reporting in the HMIS but, details of serious AEFIs are also reported directly using the FIR, PIR and DIR formats.

Along with the national health programs, which generate their own respective data through surveillance e.g. HIV, TB etc., there are different surveillance systems in India that provide information of various diseases, including VPDs. These include:

**Integrated Disease Surveillance Project (IDSP)** – this is a nationwide system that captures information on outbreaks of diseases including VPDs - diphtheria, pertussis, measles, AES, AFP, and Hepatitis B.

**Central and State Bureaus of Health Intelligence (CBHI/SBHI)** – this nationwide system captures information on suspected cases through passive surveillance including that on all VPDs which under the current UIP.

**Health Information Management System (HIMS)** - Within the NRHM framework, HMIS is an electronic data reporting system that captures data for health service delivery at health facility level every month to assist health departments, at all levels, in managing and planning health programs. HMIS also captures information on VPD disease burden from sub-block level on a monthly basis.

**WHO supported AFP and Measles outbreak surveillance** through NPSP network – AFP surveillance is a laboratory based system for poliovirus detection in all states. The lab-based measles surveillance is covering 15 states generating data on measles and rubella outbreaks. The laboratory assisted joint AFP-measles surveillance system is planned to cover all states/UTs by the end of 2014.

**Acute Encephalitis Syndrome (AES/JE) surveillance** – this is a facility-based surveillance system providing information on AES as per the guidelines under the National Vector Borne Disease Control Program with lab support provided by ICMR.

**Multicenter Pneumonia and Meningitis Surveillance** - Sentinel surveillance sites are functional to identify etiologic diagnosis of pneumonia and meningitis among children less than two years.

**Rotavirus Surveillance Network in India** - The Indian Rotavirus strain surveillance network is functional in seven regions, four hospitals and four labs. Children below five years, admitted with acute gastroenteritis and given rehydration for at least six hours are enrolled. Sites for sample collection for Rotavirus surveillance are in following cities: Delhi, Mumbai, Pune, Vellore, Jabalpur, Imphal, Kolkata

**Key Performance Indicators (KPI)**

1. Number of States with >80% districts providing timely reports on VPDs including zero report
2. % Increase in the number of notified serious AEFI cases above the 2012 baseline value

---

\(^{21}\) Immunization Safety Surveillance: Guidelines for Managers of Immunization Programmes on Reporting and Investigating Adverse Events Following Immunization. WHO Regional Office for Western Pacific. 1999.
The indicators will be disaggregated by gender, geography (urban slum, urban, rural) and socio-economic parameters, where relevant.

**Expected Result 3.1:** Institutionalize and strengthen surveillance mechanisms for VPDs

**Strategies**

1. **Assessment of trends on VPD burden in context of reported immunization coverage**
   There is a need to use epidemiological methods to better measure the impact of the immunization program. This will involve an initial landscaping of existing surveillance systems in the country. Efforts will be made for collating and analyzing data on VPDs generated from different surveillance systems and collate them to provide appropriate feedback. The following will be analyzed - data on the VPD disease burden, emerging trends in the molecular epidemiology of different VPD antigens, seroprevalence of protective antibodies against the VPDs, geographical variations in VPDs and other relevant tasks. MoHFW will work towards developing a system that facilitates convergence of relevant data from various surveillance systems like IDSP, NPSP etc. in the country.

2. **Strengthen and improve coordination between Health information system (HMIS) and disease surveillance systems such as IDSP, NPSP etc. to gather information on VPDs**
   IDSP based surveillance system, along with other systems, need to be strengthened from district onwards to capture information on all VPDs. The model of District/Municipal Corporation based surveillance unit for action and reporting to the state would be further strengthened. In order to better streamline information sharing on VPD and AEFI occurrence across the country, MoHFW will strengthen coordination and data sharing between IDSP and Immunization Division at national level to monitor and improve program performance. Similarly coordination at the state and district levels will also be promoted to strengthen DIO’s role as focal person for all information on VPD and AEFI.

3. **Involve private sector in reporting of VPDs to further strengthen surveillance systems and inform policy making**
   In view of the number of patients using private healthcare, lessons learnt from Kerala will be used to link surveillance and monitoring mechanisms with the private sector. Community reporting of VPDs will also be encouraged and specific strategies will be reviewed. Mechanisms for coverage data collection, compilation and flow from session sites/sub-centers/private clinics to the district and then to the State on uniform patterns will be highlighted. VPD surveillance mechanisms will attempt to integrate as much as possible with other surveillance mechanisms, without losing the required responsiveness for outbreak response or diluting the focus on AFP surveillance.

4. **Strengthen laboratories(including polio and measles lab network) and epidemiology units at medical colleges and other institutions for timely reporting, case investigation and detailed data analysis**
   For improved coordination and information sharing Infectious Diseases Hospitals and super specialty hospitals should be integrated into IDSP. There is a network of IDH that needs to strengthen their laboratory capacity to provided updated information on outbreaks of existing or potential VPDs. India has developed a Health Management Information System (HMIS) for reporting of all health related data from field. This tool will be used for updating VPD surveillance data in India.

5. **Strengthen sentinel surveillance for newer antigens**
   Improve coordination, information sharing with existing agencies and systems such as IDSP, ICMR, CBHI and SBHI networks so as to coordinate, collate and generate robust data which will guide a more evidence-based policies and program interventions in the immunization program future.
Expected Result 3.2: Institutionalize and strengthen surveillance mechanisms for AEFIs

Strategies

1. Revitalize the institutional framework and guidelines for AEFI surveillance in the country
   The National AEFI guidelines mandate that all states and districts in the country constitute AEFI committees at each level, to assist in streamlining AEFI reporting mechanism, investigating serious AEFI, and be involved in causality assessment at state and national level. An AEFI secretariat for the National AEFI Committee has been set up at ITSU-MoHFW, New Delhi to coordinate all AEFI related activities in India with technical support and oversight from a leading medical college (LHMC). In addition Zonal AEFI consultants are planned to be in place to provide technical support and oversight to the AEFI Secretariat in the 4 zones of the country and enable timely reporting, investigation and support to the states.

   The National AEFI committee has been reconstituted to support the program in reviewing and updating information on tasks and responsibilities of key stakeholders in the AEFI system, including the Drug Controller General of India (DCGI), Indian Pharmacopoeia Commission (IPC), National UIP managers and State-level UIP managers.

2. Train field level staff on new National AEFI Guidelines
   National AEFI Operational Guidelines which were revised in 2010 are being revised and will be published in 2014. These guidelines will be distributed to all medical officers till Primary Health Centers and will be used for training the UIP staff including ASHA and ANMs. Innovative AEFI reporting models shall be piloted to enable enhanced AEFI reporting. The revised guidelines will also be utilized for trainings of AEFI committee members in the country. An abridged Standard Operating Procedure (SOP) for AEFI surveillance and case investigation version been printed and widely disseminated in 2011. There is well known poor reporting of minor AEFIs in India. The efforts will be made to train the field staff in collecting data on minor AEFIs and pass this information to the next level.

3. Convergence with vaccine pharmacovigilance stakeholders and private sector for AEFI reporting and analysis
   Since 2010, India is already participating in WHO Global network of post-marketing surveillance and GoI nominated Maharashtra state for uploading AEFI data into the Uppsala Monitoring Centre vaccine safety database. The national immunization division has also started coordination with the IPC, the coordinating agency for the National Pharmacovigilance Program of India to collate and monitor vaccine safety reports in the country. The National AEFI Program already shares all data on vaccine safety with the national regulatory authority to inform all vaccine safety stakeholders.

4. Electronic database and reporting system for AEFI
   AEFI surveillance data require detailed analysis on numerous parameters in the context of the doses distributed and children vaccinated in the UIP. Currently serious AEFIs are reported manually on FIR/PIR

---

and DIR formats by districts but can be transmitted electronically to the higher level (state and national). The government will pilot an electronic AEFI database and reporting system which is E2P compliant for AEFI reporting by 2015 in a phased manner.

KEY OBJECTIVE 4: Introduce and expand the use of new and underutilized vaccines and technology in UIP

As UIP evolves, newer antigens, e.g. rotavirus, JE, rubella, Pneumococcal and Pentavalent vaccines are expected to be introduced and expanded in the schedule. This will require a strong epidemiological underpinning for estimating disease burden in the country through a robust surveillance system to be put in place. There will be a need for improving coordination amongst different stakeholders and experts to develop an evidence-based policy for introducing newer antigens in the program in the medium term. In addition to newer antigens, improved service delivery will require innovations in technology and approaches.

The choice of newer vaccines to be included in the UIP will be determined and periodically reviewed by the MoH&FW, taking guidance from the NTAGI. Basic clinical and operational studies will be encouraged to provide inputs for NTAGI. These studies will provide evidence for decisions on the timing and selection of new vaccine introduction and provide guidelines for the use of these new vaccines. Such analysis will include the major mortality-causing diseases of children in India, namely acute diarrheal diseases and acute respiratory diseases, in anticipation of rotavirus vaccine and pneumococcal vaccine becoming available. Disease burden and health economic analyses will help assess the cost–benefit ratios of new vaccine introduction. Box 2 captures the key principles that will guide the inclusion of newer vaccine in UIP as per the national vaccine policy 2011

Box 2: Principles to guide the inclusion of newer vaccines

- Disease burden (incidence/prevalence, absolute number of morbidity/mortality, epidemic/pandemic potential);
- Safety and efficacy of the vaccine under consideration;
- Affordability and financial sustainability of the vaccination program, even if the initial introduction is supported by the external funding agency;
- Program capacity to introduce a new antigen, including cold chain capacity;
- Availability of a domestic or external vaccine production capacity;
- The cost effectiveness of the vaccination program and also of the alternatives other than vaccination

Key Performance Indicators (KPI)

1. Number of newer vaccines that have been reviewed for introduction in UIP by NTAGI
2. Number of States showing Pentavent-3 coverage of >80%

The indicators will disaggregated by gender, geography (urban slum, urban, rural) and socio-economic parameters, where relevant

Expected Result 4.1: Set up and strengthen institutional mechanisms, framework and policies for newer and underutilized vaccine introduction

Strategies

1. Institutionalize mechanisms to guide the introduction of newer and underutilized vaccines in the country
The introduction of new vaccines involves reviewing all licensed vaccines in different parts of the world and identifying those that would be relevant to India in the context of the burden of disease in the country and prioritization of target vaccine preventable diseases in the country. There are several vaccines that are popular in the private market, and many of those are recommended by the Indian Academy of Pediatrics. Accurate information on which to base the decision of introducing a new vaccine to the UIP requires periodic review and assessment on an objective scale by all agencies concerned through strong coordination and collaboration.

In this regard, the immunization decision making process has been institutionalized by the establishment of an independent advisory body, the National Technical Advisory Group on Immunization (NTAGI) in 2001, comprising of independent experts from diverse fields such as immunology, community medicine and health economics; representatives from partner organizations like WHO, UNICEF, ICMR and DCGI as well as liaison officers from the government. The NTAGI has been reconstituted twice in 2008 and again in June 2013. The current reconstituted NTAGI comprise of a Standing Technical Sub-Committee (STSC) tasked with undertaking a detailed technical review of the issues highlighted above and a broader body with representations form all organizations mentioned above. In addition, a secretariat for this advisory body has been established by ministry under Immunization Technical Support Unit to facilitate technical and managerial support required for continuity and follow up to this body. However, the mandates of both the NTAGI and STSC are still work in progress. The spelling out of well-defined Standard Operating Procedures (SOPs) for the functioning and decision making of the NTAGI is necessary to institutionalize the evidence-based decision making process for the introduction of new and underutilized vaccines in the country. It is also imperative to adopt and standardize mechanisms to grade the quality of evidence available e.g. burden of disease, published literature, global data, cost effectiveness data etc. for the NTAGI to review and make evidence based recommendations.

2. Identify newer vaccines that will be introduced and/or expanded to use during the plan period
   There are several vaccines that are already licensed and available or soon to be licensed with expanded indications for particular groups in India. Unfortunately, access to the bulk of these vaccines is available only to the privileged few who have access to private health care. The NTAGI is the highest advisory body tasked to review the available evidence on disease burden, potential impact, safety, efficacy etc. to assess these vaccines and prioritize vaccines for inclusion in the program. Vaccines that can be potentially considered for review include the Injectable Polio Vaccine (IPV), rotavirus and pneumococcal vaccines

3. Assess disease burden for which vaccine are becoming available or will become available in the near future
   The absence of reliable baseline estimates for the burden of VPDs in India is a major obstacle in informed policy making process. Currently, there are multiple systems to measure different VPDs including antigen/disease specific sentinel surveillance network (eg. Indian Rotavirus Sentinel Surveillance Network, National Polio Surveillance Program (NPSP) network and Infectious disease surveillance eProgram (IDSP). With plans to expand the range of vaccines in the UIP and improve its reach (coverage), the surveillance of VPDs will be intensified and steps will be taken to establish stronger collaboration between the already established networks and the immunization program. At the national level, the newly formed STSC of the NTAGI has been tasked for undertaking critical review of disease burden data prior to recommending the introduction of a new vaccine in the UIP. The NTAGI secretariat at ITSU will collaborate closely with the disease surveillance centers in the country to collate the evidence for the review of the NTAGI and STSC.

4. Conduct operational research
Generate evidence for introducing new vaccine – including areas like vaccine safety, equity, vaccine ethics and financial sustainability, IPV as part of post-polio eradication

**Expected Result 4.2:** Scale up and sustain the implementation of JE vaccination in identified endemic districts as part of JE control

**Strategies**

1. **Identify disease burden and endemic districts for prioritization**
   In India there are 175 districts currently identified as being endemic for JE. Majority of cases occur in UP and Assam. Though any age group can be affected by JE, it is the children between 1 to 15 years of age that bear the brunt of the disease. A study carried out in South India showed JE incidence to be 15/10,000 children between 5-9 years. Mortality due to JE has been estimated to be between 20-30%. Recent studies under the WHO surveillance program in India undertaken in selected centers (Bellary, Dibrugarh, Madurai and Burdwan) show that about 10-20% of the total Acute Encephalitis Syndrome (AES) cases are JE.
   JE, at present like other vaccines in India’s UIP is restricted to children but there is an increasing demand for use of JE vaccine to protect the adult population in endemic districts of the country. The NTAGi will discuss the safety and immunogenicity data of the vaccine for use in the program. Since JE is a vector borne disease, immunizing adult populations will prove critical in breaking the transmission cycle and control of the disease.

2. **Continue JE campaign in the endemic districts**
   ICMR recommends that JE vaccination program should continue for another 5 years in endemic areas. It was suggested, that in view of low evaluated coverage with JE vaccine, the strategy in 2010 should be to re-immunization all children up to 15 years with high vaccine coverage in a campaign mode. Thereafter coverage should be sustained by immunization of children less than 2 years through routine immunization.  

3. **Expand training and advocacy on JE vaccination**
   Coverage survey conducted for JE vaccine suggests that overall community knowledge on JE vaccines is low. While some people are not convinced about the need for JE vaccination, others do not know where to access the vaccine from. Some pockets of communities have fear of side effects or have formed a negative opinion on the vaccine following some AEFIs in their area.  

   Information about JE vaccination has been incorporated in Immunization handbooks for Medical officers and health workers. Operational guidelines for JE vaccination program has been prepared and widely disseminated to ensure correct reporting and clarification on the role and responsibility of each health care provider in JE vaccination. Publicity around the JE vaccination will be made more intense prior to the campaign dates and respective States shall ensure that the IEC material reaches the target users well in time. Adverse publicity around the vaccine will need to be countered through appropriate messages.

4. **Introduction of JE vaccine in routine immunization program**

---

24 Minutes of the Meeting of ICMR Core Committee on Vaccines. 2010
The planned strategy was to complete SIAs for JE vaccine and subsequent introduction of the JE vaccine routine immunization program of endemic districts to ensure adequate vaccination coverage for new birth cohort. As from April 2013, the GoI has already introduced a 2-dose schedule for JE vaccines in the districts implementing JE routine immunization. The 1st dose is given at 9 months of age and the 2nd dose at 16 – 24 months of age.

5. **Roll out indigenously produced JE vaccine**
   In India, currently the SA-14-14-2 imported from China is being used in the national immunization program. Efforts will be made to ensure that JE vaccine is produced indigenously from local strains and introduced in the program.

**Expected Result 4.3:** Streamline and expand the use of Pentavalent vaccine to cover all the states

**Strategies**

1. **Nationwide scale up of Pentavalent vaccine to introduce HiB vaccine in other states of the country**
   As of 2012, the Haemophilus Influenzae b (HiB) vaccine has been introduced in 8 states of India (Tamil Nadu, Kerala, Karnataka, Puducherry, Goa, Gujarat, Jammu and Kashmir and Haryana) in the form of the combined pentavalent vaccine (DPT+ Hep B+ HiB). On September 23, 2013 the NTAGI endorsed the STSC’s recommendation for further scale-up of the vaccine in the remaining states of India in a logistically structured manner with simultaneous strengthening of the AEFI and sentinel surveillance systems in the country. Preparations for the expansion of vaccination to the other states are planned. The operational guidelines on HiB as part of pentavalent vaccine have been already been developed and will be useful for immunization program managers at state, district and sub-district level.\

2. **Conduct a revision of recording and reporting formats for improved surveillance and data management**
   Introduction of newer vaccines will accompany the revision of recording and reporting formats. Vaccination cards will also be revised and updated to include newer vaccines. The reporting system in the country will also have necessary column to collect information on newer vaccines.

3. **Conduct training of FHWs and their supervisors on newer vaccine**
   ANMs and their supervisors will be trained on newer vaccines and other related aspects including the vaccine administration and AEFI reporting as part of regular training. The DIOs and other Mid-level managers (MLM) will be specially trained prior to the new vaccine introduction in their respective states.

4. **Strengthen surveillance system for HiB and AEFI reporting**
   The surveillance system for newer vaccines will be further strengthened and expanded in India. Eleven sentinel sites for Hib meningitis in six different states have already started in 2013. These selected sites for bacterial meningitis surveillance (including HiB) will monitor the disease trends to measure impact trends of vaccination on the study populations. The surveillance sites for other newer vaccines are also likely to be introduced to cover additional states. Model AEFI systems are also being planned to ensure timely reporting and management of AEFIs before they snowball into a crisis.

**Expected Result 4.4:** Evaluate Rubella antigen for introduction in RI program

---

27 Operational Guidelines: Introduction of Haemophilus Influenzae b (HiB) as Pentavalent Vaccine in Universal Immunization Program (UIP) in India. MoHFW, Government of India. 2011
During the 66th SEARO regional committee meeting in New Delhi in 2013, India has committed to the elimination of measles and control of rubella and CRS by 2020.

**Strategies**

1. **Expansion of Congenital Rubella Syndrome (CRS) surveillance**
   The public health importance of rubella infection stems from the fact that rubella infection in pregnancy has the potential to cause Congenital Rubella Syndrome (CRS) in the new born. The risk of development of CRS is highest when infection is in the first trimester of pregnancy. While there is no hard data on CRS, the estimated incidence in India from modelling studies gives a range of around 123 per 100,000 live births. CRS results in a cumulative burden on the health system and families of affected children on account of the chronic sequelae (such as disability of sight, hearing or cardiovascular systems) and the economic burden in diagnosis, assessment and treatment of congenital malformations and challenges to providing education in an increasingly nuclear family structure in society. There are plans at national level to establish and expand CRS surveillance through partner agencies and existing surveillance programs. The Surveillance sites will be established in selected States for observing the trends in CRS, before and after vaccine introduction.

2. **Introduction and expansion of rubella vaccine in UIP**
   The strategy for introduction of the rubella vaccine in India’s UIP will be planned to fulfill the commitment the country has made to the SEARO declaration for control of rubella disease and CRS burden in the country. Since immunization program performance differs across states, expansion of rubella sentinel surveillance sites is also planned the specific strategy for phase wise implementation will be chalked out over the cMYP period. The STSC of the NTAGI shall play a crucial role in reviewing and recommending a potential strategy for implementation. The NTAGI has also recommended the establishment of a Measles & Rubella - India Expert Advisory Group (MR-IEAG) on the same lines as polio to develop a comprehensive strategy and monitor progress for rubella control and measles elimination in the country.

3. **Conduct Rubella surveillance through the existing systems**
   Existing measles surveillance system in India frequently report rubella outbreaks or mixed measles and rubella outbreaks. The existing measles network will continue to be utilized for identifying rubella outbreaks. It is envisaged that with introduction of rubella vaccine, cases of rubella will go down and, thereafter, a possibility and need for case based surveillance will be explored.

4. **Conduct research on CRS and trends**
   Once CRS surveillance system is established, the information collected from surveillance network will be utilized for assessing the trends in CRS in states and the country. Studies should be carried out to estimate incidence of CRS and the social and economic burden resulting from it.

**Expected Result 4.5:** Evaluate Rotavirus antigen for introduction in RI program

**Strategies**

1. **Assess disease burden due to rotavirus and the potential impact of a preventive vaccine**
Diarrheal diseases are one of the largest causes of childhood (under-5 years) deaths in India and rotavirus is the leading cause.\textsuperscript{28,29} WHO estimates that 23\% of the annual 527,000 deaths due to rotavirus occur in India. It is estimated that even with a vaccine with 50\% effectiveness, a rotavirus vaccination program in India would prevent 44,000 deaths, 293,000 hospitalizations, and 328,000 outpatient visits annually which would avert $20.6 million in medical treatment costs.\textsuperscript{30}

2. **Strengthen national level surveillance on rotavirus**
   The Indian Rotavirus Surveillance Network was set up on 2005 with four laboratories and ten hospitals in seven different parts of the country.\textsuperscript{31} The network provides valuable information on epidemiology of rotavirus that will underpin the policy decisions regarding the introduction of rotavirus vaccine in RI.

3. **Develop the vaccine schedule in line with EPI schedule**
   NTAGI recommends that assuming several vaccines will be licensed and recommended for use in India, it would be preferable for each child to complete all doses using the same vaccine formulation. This could be facilitated by choosing a specific vaccine for national use or by ensuring that each region or state is supplied with only one specific rotavirus vaccine.\textsuperscript{32}

**KEY OBJECTIVE 5: Strengthen health system for immunization program**
A strong RI program will contribute to the overall health system strengthening both in the urban and rural areas. Four states with large populations - Uttar Pradesh, Bihar, Madhya Pradesh and Rajasthan, contribute approximately to 2/3rd of the unimmunized children in the country (CES 2009). In addition there are other states that are not performing up to the mark as shown in Annex 1. Future strategies for RI will need to be adapted and contextualized for these high priority states to increase the vaccination coverage levels and reduce VPD mortality and morbidity.

**Key Performance Indicators (KPI)**
1. \% of districts with full immunization coverage rate of >90%

The indicators will disaggregated by gender, geography (urban slum, urban, rural) and socio-economic parameters, where relevant

**Expected Result 5.1:** Increase the pool of skilled human resources to provide quality immunization services in an integrated manner

Lack of adequate numbers of trained and skilled human resources has been a major barrier in improving the overall quality and outreach of UIP. The Immunization Division at MoHFW is small with few technical officers to manage such a large program. GoI has addressed this capacity gap by setting up an Immunization Technical Support Unit (ITSU) in year 2012 with technical officers to support various components of UIP. In addition to the national level, there is a clear need to expand the HR capacity on UIP in the States. It is important to identify key functions within the UIP at state level also that would need full time positions to ensure a smoother functioning, improve institutional

\textsuperscript{30} Projected Impact and Cost-Effectiveness of a Rotavirus Vaccination Program in India. Douglas H. Esposito et al. Clinical Infectious Diseases. 2011:52 (15 January)
\textsuperscript{31} Multicenter, Hospital-Based Surveillance of Rotavirus Disease and Strains among Indian Children Aged <5 Years. Gagandeep Kang et al. Journal of Infectious Diseases. 2009:200 (Supplement 1)
\textsuperscript{32} Minutes of NTAGI meeting. 3\textsuperscript{rd} August 2009.
memory and enhance the overall coverage of immunization in the state. Under NRHM PIP, GoI has given the flexibility to the states to propose human resource augmentation plans at state and district level.

**Strategies**

1. **Increase the number of technical managers for immunization at national and state level and strengthen organizational capacity for to adequately perform strategic and technical functions under UIP**
   The strength and capacity of the national immunization division has been enhanced with the setting up of ITSU at MoHFW with recruitment of technical officers for key functions of UIP such as strategic planning and system designs, monitoring and evaluation, cold chain and vaccine logistics, strategic communication, vaccine safety and AEFI, and evidence to policy. This unit will help in the development of policies, procedures and guidelines to improve program management at national level. This setup will be further strengthened to augment the capacity for operational research and use of more technology in UIP. Similarly, a state level structure is also proposed that includes recruiting focal points for the Program management, Cold Chain, Vaccine Logistics, Management Information System (MIS), and Technology and research etc.

2. **Conduct relevant training and induction programs and develop need-based Immunization training materials**
   Relevant trainings will be carried out for new staff working in the immunization cell at all levels based on the existing training norms and guidelines under NRHM. Immunization-specific training norms will also be used, e.g. cold chain training norms. The training material for both medical officers and health workers in routine immunization has been revised/updated, printed and widely disseminated. This material is being utilized for conducting need based training.

3. **Strengthen training infrastructure**
   National Institute of Health and Family Welfare (NIHFW) is the national nodal agency for training activities including Immunization. The NIHFW, in coordination with Immunization and Training Divisions within MoHFW, will review the training plans from all states; conduct Training of Trainers courses, as well as monitor and evaluate the quality of trainings. The State Institute of Health and Family Welfare (SIHFW) is nodal agency at state level to plan, implement, monitor and evaluate the immunization training activities. A plan is being instituted to conduct induction training for new State Immunization Officers as per the need and refresher trainings on regular interval.

4. **Hire and train more field level staff under NRHM**
   There is need for strengthening the existing training infrastructure and also starting new facilities. The issues of shortage of health workers and their training needs can be addressed by institutionalizing training mechanism for this category of staff. This can be achieved by:
   - a) On-the-job refresher training every 2 years for every health functionary.
   - b) Each State will identify core district training teams for each district. This team will move to each block identifying gaps in knowledge and train appropriately,
   - c) Monthly block meetings will provide an opportunity for supervisors to help identify gaps in knowledge and provide some training.

   NRHM provides for hiring staff on contract basis. All staff members (medical officers, staff nurses, health workers including ANMs etc.) hired on contract basis will also be trained. ANM and ASHA vacancies will be filled up by the states on urgent basis.

5. **Promote integrated delivery of different health interventions through UIP**
   A stronger immunization program will also be used as a platform to deliver other child health services in an integrated manner. Preventive child health interventions like Vitamin A, deworming, ORS, growth
monitoring can also be given along with immunization. A well-functioning RI program will act as a catalyst in getting more people to use the health facility and contribute to overall demand generation and better address equity issues.

**Expected Result 5.2:** Ensure that adequate financial resources are available for UIP

**Strategies**

1. **Prepare a national financial sustainability plan**
   A core team for immunization financing named Financial Management Group (FMG) has been established within the MoHFW. Using tools that are already available, this team will analyze current and projected immunization costs factoring in the plan for scale up and introduction of newer vaccines in the coming years. These will be compared to projected finances available and funding gaps will be highlighted.

2. **Provide funding for laboratory strengthening and surveillance**
   The country will be expanding the VPD and AEFI surveillance, which will require a well-functioning laboratory network. A mechanism for the separate budgeting mechanism will be devised for the strengthening of the laboratory and surveillance mechanism in the country.

3. **Explore the possibility of setting up a Vaccine Fund** through innovative financing mechanisms

**Expected Result 5.3:** Improve program accountability, monitoring and reporting at all levels

**Strategies**

1. **Hold regular program reviews at all levels**
   Quarterly review meetings will be held at national and state level; and monthly meetings at district and block levels to track the progress in immunization program, to identify problems, analyze the issues and address them. State level meetings will be chaired by State Secretary/MD-NRHM and District level meetings will be chaired by the DM. Comprehensive EPI reviews will be held in the good and poor performing states to help prepare state specific action plan.

2. **Develop national monitoring and evaluation plan for immunization**
   MoHFW will develop a monitoring and accountability tracking framework for UIP that will identify key program indicators and assign responsibility of delivering results on specific individual or organizations.

3. **Formalize and make accountability mechanisms system-led as part of community participation**
   At the service-delivery level, more formal, institutionalized systems for complaint and redressal should be put in place. They must be supported by timely emergency response systems, such as telephone helplines and proper managerial authority should be granted so that structures are in place to rectify acute challenges related to referral and transportation or the mistreatment/exploitation of patients at the facilities. A formal system to lodge complaints and seek redress should also provide oversight to help protect women who register complaints, from future reprisals. The demonstrated initiatives/innovation for accountability, for instance call center for integrated grievance handling system, can be considered.
4. Expand the usage of Mother and Child Tracking System (MCTS) to all districts to help reduce the gap between reported and evaluated coverage

Mother and Child Tracking System (MCTS) is designed to collate information of all pregnant women and infants into a central database to ensure that all pregnant women and children receive full maternal and immunization services. This centralized database will enable functions like data analysis, report generation, and therefore contribute to greater strategic decision-making and need-based allocation of resources. It will act as a feedback system for health workers like Auxiliary Nurse Midwives, ASHAs, etc. and will enable better health service delivery by drawing out action plans for health workers for antenatal care, prenatal care and child immunization. MCTS will also generate reports such as facility service statistics, and Auxiliary Nurse Midwife monthly action plans. Currently the states aggregate the relevant data in an excel template available on the HMIS portal. MCTS has been fully operational since April 2010, and has picked up speed in terms of usage by states and union territories as of April 1, 2011. Under this system, SMS alerts are sent to pregnant women who are nearing the delivery date to remind them of the need to visit the PHC for pre-natal check-up and delivery. Women are also reminded over the cell phone on the due dates for immunization of their children to ensure follow through with RI. Bring out annual reports on UIP as part of a strengthened HMIS at state and district level.

5. Introduce the Quality Assurance (QA) system for immunization services as part of RMCH+A

The scope of the Quality Assurance (QA) system is now enhanced to include the full range of RMNCH+A services. For rolling out QA system, organizational arrangements will be set up at various levels with clearly defined roles and responsibilities for each level. These will include

(1) Central Quality Supervisory Committee;
(2) (2a) State Quality Assurance Committees, (2b) Quality Assurance Cell and (2c) Full time quality assessors;
(3) District Quality Assurance Committees; and
(4) Quality Circles at the District Hospital level.

The central QA team will comprise technical officers from the program divisions of the Ministry of Health and Family Welfare and counterparts working with technical support partners. The QA standards will be defined for each technical theme, categorized by the level of health facilities.

Expected Result 5.4: Strengthen RI program management and service delivery through field level supportive supervision in high priority states

To achieve immediate and sustainable improvement in RI coverage at national level, the Government of India needs to focus on high priority states i.e. Rajasthan, Madhya Pradesh, Uttar Pradesh and Bihar which have the maximum number of unimmunized and/partially immunized children. The RMNCH+A strategic approach recognizes the need to strengthen supportive supervision of frontline workers (ASHAs, ANMs) and service providers (Staff Nurses and Medical Officers) in order to bring about integration of primary care services, improve quality, enhance skills and skill application.

Strategies

1. Augment HR for supportive supervision and program management

To support the implementation and monitor the activities at the district level, there will be a State Level Supportive Supervision Team consisting of officers from the state health department, partners and students and Staff of Medical Colleges (Department. of Community Medicine). Each state officers or Medical College
team will support and monitor 4-5 districts for implementation through regular visits, and help establish a link between districts and the state. Establish State and district RI supportive supervision team. The mobility support will come from NRHM.

At the district level the supportive supervision team will consist of selected medical officers/senior supervisors/medical college staff, to support PHC/planning unit. Each member of supportive supervision team including medical college staff will be responsible for two PHC/planning units, and would visit each unit twice a month (total 4 visits in a month). S/he will provide regular supportive supervision services to the unit as well as the vaccinators in the area.

Skill building of ANMs should be considered for ensuring supportive supervision of ASHAs (and AWWs) is required. While ANMs do perform supervisory functions informally, their skills in supportive supervision are limited and need to be enhanced on this specific issue.

2. **Leverage expertise and experience of development partners and medical colleges**
   The supportive supervision by Institute of Child Health in Tamil Nadu has led to significant improvement in quality of maternal-newborn care in eight districts. A similar engagement of Medical College faculty in other districts and states would be a useful strategy. The technical expertise available with the partners will be utilized to impart knowledge to the state and district level staff

3. **Establish an institutional mechanism for program oversight and monitoring the implementation of supportive supervision model**
   State level mechanisms will be strengthened to monitor the program, and guide the districts to improve, implement and monitor the program.
   a) Quarterly review meeting will be held at the state for all DIOs and District RI managers
   b) Monthly meetings will be held between State and District Task Force meeting
   c) Monthly review meetings will be held at the district for all block/PHC MOI/c and RI coordinators
   d) All supportive supervision checklists will be collected at district level, and entered into a software. This data will be sent to the state for compilation and subsequently the state will send the data sheets to the national immunization division
   e) Data will be presented and feedback provided at all the levels (state, division, district and block level) for appropriate action

4. **Carry out capacity building and on job training of staff for strengthening RI supervision all level**
   State RI cell/RRT members will be trained through Training of Trainer (ToT) by national team once in a year. District RI team will be trained once a year by the state core team. District RI team shall be responsible for training, providing supportive supervision and implementation of RI activities at the block/PHC level. On-job regular capacity building will take during the visits of Support Team members from the state. District level immunization officers from partner organizations will also contribute to the capacity building process.

   Block/PHC team members will be trained annually by the team comprising of members of the district team and one of the facilitators from the state. They will also receive on job training on a regular basis by district immunization facilitators during their visits and review meetings.

5. **Prepare integrated guidelines and checklists for supportive supervision linking UIP-MNCH (Universal Immunization Program and Maternal, Newborn And Child Health) supervisory mechanism**
   These guidelines will be developed as part of the RMNCH+A strategy to further augment the supportive supervision mechanisms.
**Result 5.5**: Build institutional capacity to promote operational and translational research for successful implementation of UIP

**Strategies:**
1. **Define areas for operational research and mechanisms for translating evidence based approaches into program service delivery**
   Areas for OR could include, but not be limited to, HR training in immunization, operational aspects of cold chain system, vaccine freezing, vaccine wastage, injection safety, barriers to service access and utilization.

2. **Evolve institutional mechanism for operational research**
   A leading research organization may be identified to work in collaboration with immunization division and other stakeholders.

3. **Ensure sufficient funding for operational research**
   Funds will be ear-marked, and the sufficient amount will be ensured for operational research and implementation in UIP.

4. **Ensure adequate knowledge management and translation for greater public good**
   National immunization cell will seek to avoid long time lag between conducting research and translating the findings for advocacy, communication and UIP interventions. Technical expertise of partners working on immunization shall be availed as and when required.

**KEY OBJECTIVE 6**: Contribute to global polio eradication, measles and maternal and neonatal tetanus elimination and rubella control

**Key Performance Indicators (KPI)**
1. No wild virus polio and circulating Vaccine Derived Poliovirus cases detected (cVDPV) in the country
2. Non Polio AFP rate is maintained or exceeds 2 per 100,000 children under 15 years
3. Reported AFP cases have two adequate stool specimens collected within 14 days of onset of paralysis in > 80% cases
4. % of districts with MCV 1 coverage of > 95%
5. % of districts having MCV-2 coverage of > 95%
6. % of districts with > 80% TT2+ booster coverage for pregnant women

The indicators will disaggregated by gender, geography (urban slum, urban, rural) and socio-economic parameters, where relevant.

**Expected Result 6.1**: Achieve country wide certification of polio eradication by 2014

**Strategies**
The polio eradication program and the polio end game strategy shall continue to be guided by India Expert Advisory Group constituted by the GoI.\(^3\)

\(^3\) http://www.npspindia.org/advisory.asp
The India Expert Advisory Group was established in May 1999 as a group of national and international experts on polio eradication, who would:
- Monitor progress toward polio eradication in India
1. **Maintain high level of population immunity**
   Conduct regular supplementary immunization activities (SIAs), ensure that the SIAs maintain good quality and conduct regular seroprevalence surveys to detect immunity levels. The plans for SIAs to be conducted in the coming two years are as below

**SIAs for the remainder of 2013**
As per current national plans, three large scale SNIDs with bOPV, targeting all of UP, Bihar, Delhi and associated high risk areas of Haryana, Rajasthan, and Uttarakhand, and migrant/high risk areas in Maharashtra, Punjab, Gujarat, Jharkhand, and West Bengal.

**Polio SIAs in 2014**
- Two NIDs with tOPV in all areas in 1st quarter of 2014
- Three SNIDs with bOPV, ideally one in each of quarters 2, 3, and 4 of 2014 targeting all of UP, Bihar, Delhi, and associated high risk areas of Haryana, Rajasthan, and Uttarakhand, and migrant/high risk areas in Maharashtra, Punjab, Gujarat, Jharkhand, and West Bengal.

**Polio SIAs in 2015**
- Two NIDs with tOPV in all areas in 1st quarter of 2014
- Two to three SNIDs with bOPV (depending on global epidemiology) targeting all of UP, Bihar, Delhi, and associated high risk areas of Haryana, Rajasthan, and Uttarakhand, and migrant/high risk areas in Maharashtra, Punjab, Gujarat, Jharkhand, and West Bengal.

The timing of sub-national rounds should be at the discretion of the national program and based on operational and epidemiological considerations

2. **Maintain the quality and effectiveness of the existing surveillance and laboratory systems to detect and respond to outbreaks**
   An extremely high level of vigilance will be maintained through to global certification of eradication, and through to cessation of use of oral poliovirus vaccines; this requires ensuring that adequate financial and human resources and attention are devoted to the surveillance and laboratory systems by the Government of India and partners.

   Regular field reviews of surveillance would continue to be conducted on a rotational basis and with particular attention to high risk areas as determined by epidemiological, surveillance or immunization indicators.

   Environmental surveillance for detection of polioviruses in the sewage would be expanded in other states of the country. All detected VDPVs would continue to be thoroughly investigated to determine any risk of circulation, and appropriate actions taken based on investigation findings.

3. **Augment the current response capacity by developing a national and state level emergency response preparedness plan and maintain a rolling stock of bOPV and tOPV**

   - Provide technical advice to the Ministry of Health & Family Welfare, Government of India, on immunization and surveillance activities for polio eradication and
   - Monitor the quality of immunization activities, AFP surveillance and laboratory performance.
The Emergency Preparedness and Response Plans (EPRPs) at national and state levels will be updated annually; the update will include a full new risk analysis to inform risk mitigation measures. See Annex 7 for EPRP details.

A simulation exercise (‘table top exercise’) for the emergency response plans at national and selected state levels will be conducted annually to maintain readiness and sharpness of response. GoI will ensure a rolling stock of 40 million doses of bOPV and 10 million doses of tOPV to enable response to any wild poliovirus or vaccine derived poliovirus detection.

4. **Reduce risks of polio importation based on WHO recommendations for travelers coming to or from endemic or infected areas**

   Immunization of travelers at land border crossing points from neighboring countries is the most significant risk reduction strategy and will continue until there is no longer an epidemiological risk. Particular attention should continue to be paid to border populations to ensure that they are effectively covered by SIAs and routine immunization.

   GoI will strongly promote implementation of the current WHO polio immunization advisory /recommendations for travelers to and from endemic or infected areas.

5. **Work towards the certification process**

   GoI will develop the inventory of all labs holding polio virus (phase 1) and securing the WPV (phase 2).

6. **Develop post eradication policy in preparation for the polio endgame**

   This includes planning for tOPV/bOPV shift, IPV introduction process, and operational assessments of the cold chain system.

7. **Conduct periodic seroprevalence studies in high priority areas.**

   These serosurveys will be conducted in the traditionally high risk areas of UP and Bihar and other regions with potential risk of wild poliovirus importation or emergence of circulating vaccine derived poliovirus. This will provide an epidemiological description of the trends on population immunity and possible reasons for these trends.

**Expected Result 6.2:** Achieve measles elimination and control for rubella/congenital rubella syndrome (CRS) by 2020.

**Strategies**

1. **Increase coverage with the first dose of measles vaccine for infants (9-12 months)**

   The first-dose Measles Containing Vaccine (MCV1) at 9-12 months is delivered through routine immunization. Efforts will be made to improve coverage with MCV1 by strengthening RI services with a target to reach all children. In addition follow up campaigns will be conducted in low coverage areas. It will be ensured that the coverage in every district is more than 90% and progress is sustained.

2. **Increase the coverage of second dose of measles vaccine (at 16-24 months of age) based on global guidelines**

   

---

Conduct measles SIAs in 14 states where MCV 1 coverage is below 80% vaccinating all children in age group of 9 months to 9 years. All states, where MCV1 coverage was >80% have already introduced MCV2 in routine immunization at the time of DPT booster 1.

3. **Strengthen and expand the laboratory surveillance for measles and rubella**
   Twice yearly state-by-state review of all measles data will be conducted. The laboratory based Measles and rubella surveillance has started in eight states namely Andhra Pradesh, Gujarat, Karnataka, Kerala, Tamil Nadu, West Bengal, Rajasthan, Madhya Pradesh, Bihar and Assam. The surveillance laboratory network will be further expanded with priority being given to the states with measles morbidity and mortality. In addition, surveillance data on measles outbreak from IDSP will also be collated and analyzed for action.

**Expected Result 6.3:** Eliminate maternal and neonatal tetanus by 2015

**Strategies**

1. **Strengthen service delivery and improve institutional deliveries**
   Promote institutional delivery and safe delivery by skilled birth attendants (SBA) under NRHM and ensure that TT is offered at all ante-natal clinics and routine immunization sessions. Provide 2 TT doses for the first pregnancy (with immunization card) and further doses according to the national schedule. The tetanus vaccine for pregnant mothers will also be ensured in all outreach sessions being conducted.

2. **Increased surveillance for tetanus cases**
   Establish MNT as a reportable disease and report MNT cases from every health facility. MNT will be included with weekly AFP in active surveillance and zero reporting. Case investigations for hospital-based cases and, the cases from low-risk areas are regularly done.

3. **Conduct targeted SIAs**
   Attempts to improve TT coverage through quality RI should be ensured in all areas. SIAs may be considered for those areas, where coverage with 2 doses of TT is poor. GoI will take need based decision to conduct targeted SIA for elimination of MNT. The mode and time for these SIAs will be decided by an expert group.

4. **Establish national MNT database**
   A national MNT database will be established with regular review of indicators and identifying high-risk districts within states. The high risk districts within states will be validated for elimination of NNT by Lot Quality Assurance Surveys (LQAS) and districts prioritized on the basis of this for targeted corrective action.

5. **Maintaining the elimination status**
   In the States where MNT has been validated to have been eliminated, efforts will be made to maintain the high coverage with TT2, and safe delivery practices to ensure the elimination status in those States.

15 states have validated MNT till 2008, and four more states have conducted MNT validation exercise in 2013. The remaining states/ UTs will be assessed in 2014-2015.
5. NATIONAL MONITORING AND EVALUATION PLAN FOR UIP

5.1 Rationale
The Universal Immunization Program (UIP) in India uses a set of indicators to measure the performance at national as well as other levels of program implementation. For this purpose, the country uses various data sources that include:

- Routine administrative reporting,
- Reports from various disease surveillance systems and field level monitoring by partners,
- Periodic Coverage Evaluation Surveys (CESs) at national and subnational level,
- Various assessment studies conducted from time-to-time by different organizations.

Despite the availability of multiple sources of data, there is no comprehensive independent UIP Monitoring & Evaluation (M&E) Plan in the country to systematically identify data needs as well as data sources to meet dynamic program requirements, review the process of data gathering, and conduct Data Quality Assessments (DQAs). In the absence of this plan, there is also no mechanism to identify information gaps, especially to measure process indicators, and plan targeted studies to inform the program. Though there are provisions for immunization program reviews at all levels, these are not regular and are not effective in the absence of a real time quality data.

5.2 Objective
The overall objective of this National Monitoring & Evaluation (M&E) Plan is to systematically generate, capture and disseminate knowledge to guide UIP implementation monitoring, and UIP impact evaluation.

5.3 Methodology
This monitoring and evaluation plan will work at three levels

I. Strengthen routine data reporting
Currently UIP does not have its own electronic data management system. The Health Management Information System (HMIS) captures immunization data from the health facility level and the Mother & Child Tracking System (MCTS) tracks antenatal and immunization services at the individual pregnant woman and child level. The National M & E Plan will aim to strengthen these existing data reporting systems through the following mechanisms:

a) Structured Review Mechanism
There is currently limited use of HMIS & MCTS data sets for analyzing and reviewing program implementation, and for providing feedback to the concerned districts or blocks. The proposed M & E plan will establish a structured review mechanism in the country to enhance the use of immunization data and to further improve data quality.

b) Human Resource & Capacity Building
A core part of the Plan is to improve M & E human resource capacity through trainings, supportive supervision, mentoring, and providing guidelines & tools.

c) Data Quality Assessments (DQA)
DQAs will be conducted on a regular basis in coordination with state governments and with the support of technical and development partners. State Immunization Managers will also be trained in conducting these DQAs by using WHO DQA tools.
**d) Feedback to program managers**

Data quality will be improved by examining the immunization information system in operation at all administrative levels— from data collection at the point of vaccination, to the periodic compilation of data at the national level. Practical feedback will be provided to managers on how to improve the quality of their administrative immunization reporting systems.

**II. Conduct targeted studies and field assessments to fill knowledge gaps in the program**

Knowledge gaps identified through routine program monitoring & reporting will be filled by targeted studies and operational research. The results from these research activities can help the UIP in taking ongoing corrective measures for better outcomes. The M & E plan will also include regular audit at facility and service level using WHO tools and provide feedback to program managers for strengthening the facilities and services.

**III. Plan and conduct coverage evaluation studies**

Currently, evaluation surveys conducted in the country address all MCH services, and the immunization component is limited only to antigen-wise and full immunization coverage. Moreover, these surveys are done every three to four years, and do not provide latest coverage numbers on a yearly basis. The M & E plan will propose a yearly evaluation survey for routine immunization, focusing on outcome and impact indicators of all RI components. This can be done through external agencies, in line with NFHS and DLHS surveys.

**5.4 Process for National M & E Plan development**

The National M & E Plan will be developed under over all guidance of MOHFW. The M & E division of Immunization Technical Support Unit (ITSU) will coordinate the development of the plan. ITSU will hire a consultant to work on the plan after consultation with ministry and technical partners for the scope. The consultant will work closely with ITSU team and in consultation with all stakeholders including states with the aim of creating a realistic, expedient and effective National M & E Plan for the UIP.

**5.5 Components of National M & E Plan**

The National M & E plan will be developed in line with the cMYP, and five year plan of the country. The proposed National M & E Plan will cover all major areas for establishing and running an effective M & E system in the country. These include:

- Organizational structure along with roles & responsibilities for M & E at various levels
- Plan for capacity building of M & E staff on transmission, analysis and use of data at all levels
- Key coordination mechanisms for the country
- Immunization M & E Performance and accountability tracking framework and implementation plan at national and state level (see Annex 6)
ANNEX 1: List of States showing good performance on immunization coverage and other parameters

<table>
<thead>
<tr>
<th>States</th>
<th>Full immunization coverage (%)</th>
<th>Children aged 12-23 months having an immunization card (%)</th>
<th>No. of sub-centers without ANM/HW*</th>
<th>MOs trained (%)</th>
<th>Sessions held vs. planned (%)**</th>
<th>Dropout rates in age group 12-23 months for BCG-measles (%)</th>
<th>No. of severe AEFI cases reported***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andhra Pradesh</td>
<td>68.0%</td>
<td>64.9%</td>
<td>0</td>
<td>93.7</td>
<td>N/A</td>
<td>8.3%</td>
<td>21</td>
</tr>
<tr>
<td>Delhi</td>
<td>71.5%</td>
<td>50.7%</td>
<td>0</td>
<td>55.5</td>
<td>92.8%</td>
<td>6.5%</td>
<td>12</td>
</tr>
<tr>
<td>Goa</td>
<td>87.9%</td>
<td>60.6%</td>
<td>0</td>
<td>93.7</td>
<td>99.2%</td>
<td>1.4%</td>
<td>4</td>
</tr>
<tr>
<td>Haryana</td>
<td>71.7%</td>
<td>42.7%</td>
<td>N/A</td>
<td>72.8</td>
<td>93.9%</td>
<td>5.3%</td>
<td>10</td>
</tr>
<tr>
<td>Himachal Pradesh</td>
<td>75.8%</td>
<td>60.3%</td>
<td>178</td>
<td>4.0</td>
<td>98.2%</td>
<td>2.2%</td>
<td>3</td>
</tr>
<tr>
<td>Jammu &amp; Kashmir</td>
<td>66.6%</td>
<td>60%</td>
<td>N/A</td>
<td>7.3</td>
<td>90.5%</td>
<td>9.4%</td>
<td>N/A</td>
</tr>
<tr>
<td>Karnataka</td>
<td>78.0%</td>
<td>52%</td>
<td>N/A</td>
<td>44.8</td>
<td>95.4%</td>
<td>7.4%</td>
<td>9</td>
</tr>
<tr>
<td>Kerala</td>
<td>81.5%</td>
<td>78.9%</td>
<td>0</td>
<td>50.5</td>
<td>N/A</td>
<td>8.3%</td>
<td>1</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>78.6%</td>
<td>58.8%</td>
<td>N/A</td>
<td>51.8</td>
<td>80.2%</td>
<td>3.7%</td>
<td>71</td>
</tr>
<tr>
<td>Punjab</td>
<td>83.6%</td>
<td>53.2%</td>
<td>N/A</td>
<td>95.8</td>
<td>95.1%</td>
<td>9.6%</td>
<td>4</td>
</tr>
<tr>
<td>Tamil Nadu</td>
<td>77.3%</td>
<td>44.8%</td>
<td>140</td>
<td>82.2</td>
<td>99.1%</td>
<td>0.6%</td>
<td>5</td>
</tr>
<tr>
<td>Mizoram</td>
<td>73.7%</td>
<td>77.9%</td>
<td>N/A</td>
<td>48.3</td>
<td>66.7%</td>
<td>7.3%</td>
<td>N/A</td>
</tr>
<tr>
<td>Sikkim</td>
<td>85.3%</td>
<td>85.2%</td>
<td>0</td>
<td>75.0</td>
<td>N/A</td>
<td>0.1%</td>
<td>N/A</td>
</tr>
<tr>
<td>Tripura</td>
<td>66.0%</td>
<td>75.9%</td>
<td>0</td>
<td>30.0</td>
<td>92.9%</td>
<td>7.3%</td>
<td>4</td>
</tr>
<tr>
<td>Uttarakhand</td>
<td>71.5%</td>
<td>41.1%</td>
<td>34</td>
<td>19.5</td>
<td>91.8%</td>
<td>14.2%</td>
<td>1</td>
</tr>
<tr>
<td>West Bengal</td>
<td>64.9%</td>
<td>77.8%</td>
<td>N/A</td>
<td>19.7</td>
<td>91.6%</td>
<td>13.6%</td>
<td>28</td>
</tr>
</tbody>
</table>

* Collated data from state review meetings on immunization obtained from MoHFW, GoI.
** Data from the HMIS web portal April to October, 2011;
*** Severe AEFI cases reported to GoI by the states till mid-December, 2011;
ANNEX 2: List of States showing poor performance on immunization coverage and other parameters

<table>
<thead>
<tr>
<th>States</th>
<th>Full immunization coverage (%)</th>
<th>Children aged 12-23 months having immunization an card (%)</th>
<th>No. of sub-centers without ANM/HW*</th>
<th>MOs trained (%)</th>
<th>Sessions held vs. planned (%)**</th>
<th>Dropout rates in age group 12-23 months for BCG-measles (%)</th>
<th>No. of severe AEFI cases reported ***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arunachal Pradesh</td>
<td>24.8%</td>
<td>41.9%</td>
<td>N/A</td>
<td>43.8</td>
<td>81.5%</td>
<td>27%</td>
<td>N/A</td>
</tr>
<tr>
<td>Manipur</td>
<td>51.9%</td>
<td>55.6%</td>
<td>N/A</td>
<td>49.4</td>
<td>89.6%</td>
<td>12.9%</td>
<td>N/A</td>
</tr>
<tr>
<td>Meghalaya</td>
<td>60.8%</td>
<td>63.8%</td>
<td>0</td>
<td>93.4</td>
<td>80.8%</td>
<td>9.4%</td>
<td>3</td>
</tr>
<tr>
<td>Nagaland</td>
<td>27.8%</td>
<td>45%</td>
<td>0</td>
<td>40.1</td>
<td>93.7%</td>
<td>11.5%</td>
<td>N/A</td>
</tr>
<tr>
<td>Assam</td>
<td>59.1%</td>
<td>66.9%</td>
<td>0</td>
<td>84.7</td>
<td>97.4%</td>
<td>7.2%</td>
<td>7</td>
</tr>
<tr>
<td>Bihar</td>
<td>49.0%</td>
<td>43.1%</td>
<td>200</td>
<td>18.3</td>
<td>95.1%</td>
<td>29.3%</td>
<td>19</td>
</tr>
<tr>
<td>Madhya Pradesh</td>
<td>42.9%</td>
<td>45.8%</td>
<td>119</td>
<td>32.5</td>
<td>96.1%</td>
<td>24%</td>
<td>8</td>
</tr>
<tr>
<td>Orissa</td>
<td>59.5%</td>
<td>58.3%</td>
<td>535</td>
<td>44.9</td>
<td>96.0%</td>
<td>17.6%</td>
<td>5</td>
</tr>
<tr>
<td>Rajasthan</td>
<td>53.8%</td>
<td>24%</td>
<td>392</td>
<td>33.4</td>
<td>113.9%</td>
<td>20.6%</td>
<td>3</td>
</tr>
<tr>
<td>Uttar Pradesh</td>
<td>40.9%</td>
<td>35.9%</td>
<td>1,776</td>
<td>32.1</td>
<td>89.8%</td>
<td>30.9%</td>
<td>21</td>
</tr>
<tr>
<td>Chhattisgarh</td>
<td>57.3%</td>
<td>46.3%</td>
<td>458</td>
<td>8.7</td>
<td>90.3%</td>
<td>13.8%</td>
<td>N/A</td>
</tr>
<tr>
<td>Gujarat</td>
<td>56.6%</td>
<td>49.5%</td>
<td>488</td>
<td>24.7</td>
<td>97.2%</td>
<td>8.1%</td>
<td>3</td>
</tr>
<tr>
<td>Jharkhand</td>
<td>59.7%</td>
<td>63.1%</td>
<td>0</td>
<td>36.3</td>
<td>94.4%</td>
<td>22.8%</td>
<td>11</td>
</tr>
</tbody>
</table>

* Collated data from state review meetings on immunization obtained from MoHFW, Gol.
** Data from the HMIS web portal April to October, 2011;
*** Severe AEFI cases reported to GoI by the states till mid-December, 2011
ANNEX 3: NCCVMRC concept approved by MoHFW

ESTABLISHMENT OF
NATIONAL COLD CHAIN AND VACCINE MANAGEMENT RESOURCE CENTRE (NCCVMRC)
AT NATIONAL INSTITUTE OF HEALTH AND FAMILY WELFARE, NEW DELHI

PROPOSAL ESTIMATES
(With blueprint)

Submitted to
IMMUNIZATION DIVISION,
MINISTRY OF HEALTH AND FAMILY WELFARE, NEW DELHI

By

National Institute of Health and Family Welfare,
New Delhi
ESTABLISHMENT OF NATIONAL COLD CHAIN AND VACCINE MANAGEMENT RESOURCE CENTRE AND NIHFW, NEW DELHI

BACKGROUND
The Immunization Division, MOHFW, New Delhi has proposed to establish a National Cold Chain and Vaccine Management Resource Centre (NCCVMRC) at NIHFW, New Delhi and it has been approved by the competent authority of MoHFW, Government of India (Annexure A). Further it has been intimated that NIHFW may utilize any MOHFW, GoI funds available or the proposal estimates be provided for necessary approvals from the competent authority. MOHFW, GoI shall support the establishment of NCCVMRC, trainings of officials from Central/state Governments related to cold chain equipment, vaccine and logistics management, etc. and the human resources needed for the trainings on regular and/or contractual staff and all other expenses related to the Training Centre. The necessary technical support will be provided by UNICEF.

National Institute of Health and Family Welfare, New Delhi has on its part demarcated adequate space in the unused portion of the Animal House for the establishment of NCCVMRC. UNICEF has supported the establishment by hiring an architect to prepare the plans and estimates for remodeling of the existing building of the Animal House. Immunization Division has provided five tool kits for the training center. NIHFW has already conducted a six days pilot Training for Cold Chain Technicians in Repair and Maintenance of ILRs and DFs from 17-22 October 2011 using alternate temporary space made specifically available for the training.

BRIEF ABOUT RESOURCE CENTRE
The Resource Centre will be set up to train cold chain mechanics in repair and maintenance of all electrical cold chain equipment (ILRs, DFs, WICs, WIFs and voltage stabilizers). In addition, it will also conduct trainings related to vaccine and logistics management for vaccine and logistics managers in the country. It is expected to make it a cold chain training center for other countries in South-east Asia. In addition to trainings, NCCVMRC will be a repository of documents such as guidelines, government orders/notifications and other resource materials related to cold chain and vaccine management. The soft copies will be on the resource centre website and hard copies will be maintained in a small library in the Centre.

The resource center will be set in the unused portion (earlier Primate Section) of the Animal House. There will be a Lecture Room, a work lab (for repair of ILRs and DFs) and a room for housing a Walk in Cooler and a Walk in Freezer. In addition, there will be an administrator’s room and a facilitator’s room as well as a Store room. The ingress will be separate from the Animal House with adequate accessibility for heavy vehicles (for loading and unloading of cold chain equipment).

A training coordinator, an assistant and a support staff are the human resources needed for the resource center. MoHFW has agreed to support in hiring of the training coordinator and support staff from NIHFW can be deputed to work in the resource center. UNICEF may also initially support the hiring of technical staff.

The following are the different types of trainings to be undertaken at the NCCVMRC, New Delhi:
1. Training for Cold Chain Technicians in Repair and Maintenance of ILRs and DFs
2. Training for Cold Chain Technicians in Repair and Maintenance of WICs and WIFs
3. Training on repair and maintenance of voltage stabilizers
4. Training on installation and repair of Solar cold chain equipment.
5. Training for Vaccine and Cold Chain Handlers
6. Training on Vaccine Management

There are more than 500 cold chain technicians and vaccine logistics managers in the country. Some of these are newly inducted have had no induction training. Many of the older refrigerator mechanics need refresher trainings for which such a course will be designed separately. Therefore the establishment of the NCCVMRC is justified.
ANNEX 4: Key Recommendations from Effective Vaccine Management Assessment Report 2013

The recommendations are categorized in to five broad categories "Management Policy, Human Resource and capacity building, Infrastructure, Planning and Documentation and improvement in practice and development of an improvement plan to implement these recommendations through NRHM state PIPs.

1. Management Policy
   • Introduce VAR for Vaccine stores up to Sub National level
   • Develop and implement real time MIS for Vaccine Logistic Management for 5 levels of supply chain.
   • Integrate vaccine management MIS with NCCMIS
   • Accelerate NCCMIS implementation for GMSDs
   • Segregate all SVSs attached to RVS and RVSs attached to DVS: Building, equipment, documents and Staff.
   • Develop National Cold Chain action Plan
     – Develop National standards for:
       • Vaccine store at all levels as per WHO standards
       • Cold Chain point expansion guidelines
       • Cold Chain Equipment plan for different level of vaccine stores
       • Quality maintenance of vaccine
       • Temperature Monitoring of cold chain system
       • Human resource for Cold Chain and VM
       • CCE Testing Lab
     – Procurement Policy for CCE
     – Institutional Capacity Building of NCCTC and NCCVMRC
     – Greater role of NCCTC and NCCVMRC for CCVLM
     – Review Mechanism of CCVLM
   • Induction Training of HR engaged for Cold Chain and VM
   • Improvement of management skills of program managers

2. Human Resource and capacity building
   • Dedicated staffs for CCL at all level (at least up to district)
   • Each GMSD and SVSs need to have VLM and CCT
   • Some of the existing staffs of GMSD can be profiled for Data management
   • Cold rooms should have some semiskilled helpers
   • Develop Training package for the VLMs and also for the Immunization program managers and house them in the institution to overcome attrition
   • Review of Knowledge (Training) to skills transformation barriers
   • Regular orientation, at least every 3 years for all staffs

3. Infrastructure
   A. Building
      • Dedicated stores for State, Division, District and Health Facilities (PHC),
      • Consider the future need, national standard
      • Greater collaboration with PWD, Electricity and Municipal corporation/bodies for regular maintenance
   B. Equipment
      • Equipment specification as per global standards
      • Minimize variety of equipment to reduce number of spare parts
      • All WIC/WIF with working hooters
      • Mapping of spare parts and ensuring availability to make nonfunctioning equipment (Solar, Haier, Blue star, others) functional

4. Planning and Documentation
• Define realistic stock level in months at five supply chain level
• Define, print and distribute standard vaccine stock registers
• Vaccine indent and distribution plans based on the required peak stocks.
• Preventive maintenance plan for technicians
• Regular data uploading in NCCMIS for performance assessment of CC at all level
• Establish a system for recording wastage in vaccine registers

5. Improvement in Practice
• Manual temperature monitoring and recording to be carried out 2 times daily, for all 7 days including holidays
• Maintain a service log sheet for each equipment. This can be done as part of the Temperature monitoring booklet.
• Diluents MUST be marked in supply voucher and should be recorded just like the vaccines in stock registers.
• At CHC and PHC the DF must be used exclusively to prepare ice packs. Vaccines must never be stored in the same unit.
  All vaccines should be kept in ILRs at the CHC and PHC.
• Always use standardized Ice Packs after conditioning

6. Improvement Plan
EVM is a diagnostic tool and it assess, 3 Ps like Process, Practices and Policies of health system requires for efficient cold chain and vaccine management.

Improvement Plan (IP )is the intervention for Strengthening of existing Cold Chain and Vaccine Logistics System to make it Reliable, Affordable and Efficient. Issues identified through EVM needs to be fixed and to be sustained success of the EVM initiatives lies in developing an implementable improvement plan and then actually implementing the IP and reviewing the IP on the regular basis for strengthening the Cold chain logistics system. While EVM is a diagnostic tool, IP lay down the treatment strategies for the gaps in the CCL system. Development of an improvement plan is the key output that comes from the EVM assessment and its recommendations. While a skilled facilitation is needed to make sure that the plan does indeed address key deficiencies, it should be possible to provide a menu of innovative approaches and technologies for consideration, guided by country realities. A menu of innovations approaches is included in the Improvement Plan to guide planning for future system design and to enhance monitoring of the implementation of the plan. While planning, guiding principles that need to be considered for an effective and implementable IP are:

• Government ownership
• Plan which need to be reviewed regularly for progress of implementation
• Engagement of all levels
• Disseminate widely , leveraging existing mechanisms
• Make IP foundational plan for improving immunization supply chain performance
  o Identifies priority action areas and establishes accountability for improving performance
  o Takes longer-term view and reflects future needs (NVI, population growth, etc.)
• Integration with other planning processes
• IP template should be adapted by government to align with existing planning and budgeting documents (see India example)
  o IP should be consistent with and input into other planning documents such as cMYP, national and sub-national annual work plans, etc.
• Dynamic and living document
• Plan that needs regular review and monitoring for implementations of recommendations IP need to be prepared through consultative process and it should be integrated annual health PIP.
ANNEX 5: National Open Vial Policy 2013

T-13011/4/2012-CC&V
Government of India
Ministry of Health & Family Welfare
Immunization Division

Nirman Bhawan, New Delhi
Dated: 15th February, 2013

To,
Mission Director (NRHM),
All States and UTs,

Subject: Open Vial Policy for DPT, TT, Hepatitis B, Oral Polio and Liquid Pentavalent vaccine

Sir/Madam,

You are aware that under the Universal Immunization Programme (UIP), Government of India supplies vaccines in multi-dose vials to all States/UTs. It has been observed and also supported by recent study on vaccine wastage that some proportion of doses from the multi-dose vial gets wasted as there is no re-use policy for an opened vial.

The matter of optimal vaccine utilization was examined it has been decided to implement open vial policy for DPT, TT, Hepatitis B, Polio and Liquid Pentavalent (where applicable) currently used under the National immunization program to reduced wastage for all immunization session.

Please find enclosed the detail guidelines for use of Open Vial Policy. There will be no open vial policy for BCG, Measles and JE vaccine and the vial needs to be discarded after 4 hours of reconstitution for BCG and Measles and 2 hours for JE vaccine.

Kindly ensure that open vial policy is widely circulated and implemented. All stake holders including immunization service provider are trained as per the guideline.

Yours faithfully,

(Dr. Pradeep Haldar)
Deputy Commissioner (Immunization)

Copy to:
1. State Immunization Officer, All States/UTs
2. PPS to AS & MD
3. PPS to JS (RCH)
4. DC (CH&I)
5. All Partners
GUIDELINES FOR USE OF OPEN VIAL IN IMMUNIZATION PROGRAM

1) This opened vial policy applies to multi-dose vials of the DPT, TT, Hepatitis B, Oral Polio Vaccine (OPV) and Liquid Pentavalent (where applicable). This policy does not apply to Measles, BCG, Japanese Encephalitis (JE) vaccines.

CONDITIONS THAT MUST BE FULFILLED FOR THE USE OF OPEN VIAL POLICY:

2) Use the DPT, TT, Hepatitis B, Oral Polio vaccine (OPV) and Liquid Pentavalent (DPT+HepB+Hib) (where applicable) vaccines opened in a fixed or outreach session can be used at more than one immunization session up to four weeks provided that:
   a) The expiry date has not passed.
   b) The vaccines are stored under appropriate cold chain conditions both during transportation and storage in cold chain storage point.
   c) The vaccine vial septum has not been submerged in water or contaminated in any way.
   d) Aseptic technique has been used to withdraw all doses.
   e) The vaccine vial monitor (VVM), has not reached the discard point.

3) Discard vaccine vial in case any one of the following conditions is met:
   a) If expiry date has passed.
   b) VVM reached discard point (for freeze dried vaccine, before reconstitution only) or Vaccine vials without VVM or disfigured VVM.
   c) No label or partially torn label or writing on label is not legible.
   d) Any vial thought to be exposed to non-sterile procedure for withdrawal.
   e) Open vials that have been under water or vials removed from a vaccine carrier that has water.
   f) If vaccine vial is frozen or contains floccules.

4) Health workers must be able to distinguish between vials that can be used in subsequent sessions and vials that must be discarded. Training and supervision materials should be revised to reflect the policy change.

COLD CHAIN MAINTENANCE AND VACCINE DISTRIBUTION

5) Maintain temperature of ILR between 2° to 8°C for storage of vaccines & diluents and monitor temperature twice daily regularly.

6) Note the manufacturer, batch and expiry date of the vaccine and diluent in the stock register.
7) Proper recording and reporting of vaccine distribution and usage has to be ensured.
8) Keep stock up to date, don’t over-stock or under-stock vaccines and diluents.
9) Multi-dose vials from which at least one dose has been removed may be at risk of contamination of the vial septum. These vials should therefore, never be allowed to be submerged in water (from melted ice for example) and the septum should remain clean and dry. NOTE: Well-sealed conditioned icepacks should be used in vaccine carriers and water should not be allowed to accumulate where the vials are stored. Vaccine vials must be transported in a plastic zipper bag.
10) Keep the “returned, partially used” vials in a separate box, and label it accordingly.
11) Observe earliest expiry first out (EEFO) policy for issuing vaccines. If the vaccines are of same expiry date, the partially used vaccine vials should be re-issued. The vial opened earlier, as recorded on the vial label, should be issued first.
12) Contingency plan has to be in place in case of any exigency like power failure, equipment breakdown, etc.

**AT AND DURING THE IMMUNIZATION SESSION**

13) Inspect for and discard vaccine vial with visible contamination (i.e. checking for any change in the appearance of vaccine or any floating particles) or breaches of integrity (e.g. cracks, leaks).
14) All vaccines vials must be marked with date & time of opening at first use.
15) Note the manufacturer, batch and expiry date of the vaccine and diluent in the tally sheet.
16) Always pierce the septum with a sterile needle for drawing vaccine from the multi-dose vials used. Except oral polio vaccine which is given 2 drops orally, cap needs to be closed after each use.

**AFTER IMMUNIZATION SESSION IS OVER**

17) Ensure that the vaccine vials are returned inside a vaccine carrier from the session site to cold chain point immediately after session ends, using the alternate vaccine delivery mechanism in the reverse cold chain.
18) Under no circumstance the vaccine carrier/vaccines will be kept in the field, in case of such an event, the vaccines in such vaccine carriers should be discarded and not used for subsequent sessions.
19) Storage of vaccines at any place other than a designated cold chain point will not be allowed. No vaccines should be stored at ANM/LHV or other health worker/ASHA house.
SPECIFIC ATTENTION WHILE IMPLEMENTING OPEN VIAL POLICY

20) This policy is NOT applicable to opened reconstituted vials of Measles, BCG and JE vaccine, which will be used as per following instructions and discarded immediately after use:

a) Before reconstitution check that vaccine is within expiry date and the VVM has not reached the discard point. Reconstitute the vial ONLY with diluent provided by manufacturer for that batch of the vaccine.

b) Date and time of reconstitution must be mentioned on the label vial at the beginning of session.

c) Reconstituted vials will only be used for a single session; they will not be carried from one session to another, even if the session is close by.

d) BCG and Measles must be discarded within four hours of reconstitution or at end of session whichever is earlier.

e) JE to be discarded after two hours of reconstitution or at end of session whichever is earlier.

21) All vaccines are supplied with VVM. Please note that the VVM has only three status ie (i) start point (ii) end point (iii) end point exceeded. The vaccine has to be use before reaching the end

<table>
<thead>
<tr>
<th>Start point</th>
<th>![Image] Square lighter than circle. If the expiry date has not passed, USE the vaccine.</th>
</tr>
</thead>
<tbody>
<tr>
<td>End point</td>
<td>![Image] Square matches the circle. Do NOT use the vaccine.</td>
</tr>
<tr>
<td>End point exceeded</td>
<td>![Image] Square darker than the circle. Do NOT use the vaccine.</td>
</tr>
</tbody>
</table>
### ANNEX 6: Monitoring Framework

**cMYP (2013-17) – Reaching Every Child Monitoring and Accountability Tracking Framework**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Indicator Definition (&amp; unit of measurement)</th>
<th>Baseline value</th>
<th>Target</th>
<th>Data Collection Methods and Sources</th>
<th>Frequency &amp; Schedule</th>
<th>Responsibilities</th>
<th>Information Use/Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 % of districts where &gt; 90% sessions were held as planned</td>
<td>Aggregate the district data State-wise for national level comparison</td>
<td></td>
<td>80%</td>
<td>HMIS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. % of districts having &gt; 80% full immunization coverage</td>
<td>Indicator will disaggregated by gender, geography (urban slum, urban, rural) and wealth</td>
<td></td>
<td>80%</td>
<td>HMIS, Periodic surveys including DLHS, CES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. % of districts having less than 10% dropout from DPT1-DPT3 (or Pentavalent)</td>
<td>Indicator will disaggregated by gender, geography (urban slum, urban, rural) and wealth</td>
<td></td>
<td>80%</td>
<td>HMIS, Periodic surveys including DLHS, CES</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**GOAL:** Reduce mortality and morbidity due to vaccine preventable diseases through high quality immunization services

**KEY OBJECTIVE 1:** Improve program service delivery for equitable and efficient immunization services by all districts

**EXPECTED RESULT 1.1:** Strengthen the national cold chain management system

1. Number of States/UTs where the cold chain sickness rate meets the national standard of < 2% | All States/UTs (35) |
2. Number of States/UTs where all cold chain staff are trained in cold | All States/UTs (35) |
<table>
<thead>
<tr>
<th>Indicator</th>
<th>Indicator Definition (&amp; unit of measurement)</th>
<th>Baseline value</th>
<th>Target</th>
<th>Data Collection Methods and Sources</th>
<th>Frequency &amp; Schedule</th>
<th>Responsibilities</th>
<th>Information Use/Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>chain and vaccine management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Number of States/UT where temperature monitoring is being done with wireless data loggers for all functional electrical cold chain equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**EXPECTED RESULT 1.2:** Strengthen vaccine and syringe logistics management across the country including forecasting and procurement at central level

1. Number of districts where real time vaccine stock monitoring system is implemented

<table>
<thead>
<tr>
<th>Baseline value</th>
<th>Target</th>
<th>Data Collection Methods and Sources</th>
<th>Frequency &amp; Schedule</th>
<th>Responsibilities</th>
<th>Information Use/Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>80%</td>
<td>ITSU</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Number of districts not reporting stock out for any antigen in UIP

   | | | Online vaccine management report | | | |

3. Number of States/UTs that are using computer simulation model for vaccine supply chain capacity planning

   | | All States/UTs (35) | | | | |

**EXPECTED RESULT 1.3:** Ensure safer injection practices and reduced vaccine wastage

65
<table>
<thead>
<tr>
<th>Indicator</th>
<th>Indicator Definition (&amp; unit of measurement)</th>
<th>Baseline value</th>
<th>Target</th>
<th>Data Collection Methods and Sources</th>
<th>Frequency &amp; Schedule</th>
<th>Responsibilities</th>
<th>Information Use/Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. % of sessions where ANM are found using the hub cutter</td>
<td></td>
<td>95%</td>
<td></td>
<td>Coverage surveys</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. % of districts reporting no stock outs of AD syringes during last 12 months</td>
<td></td>
<td>85%</td>
<td></td>
<td>Coverage surveys</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. % of cold chain points having functional safety pits as per the Central Pollution Control Board (CPCB) guidelines</td>
<td></td>
<td>100%</td>
<td></td>
<td>Coverage survey</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**EXPECTED RESULT 1.4: Ensure that regular immunization sessions are planned and held and coverage increased**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Indicator Definition (&amp; unit of measurement)</th>
<th>Baseline value</th>
<th>Target</th>
<th>Data Collection Methods and Sources</th>
<th>Frequency &amp; Schedule</th>
<th>Responsibilities</th>
<th>Information Use/Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. % of districts where updated RI micro plans are available</td>
<td></td>
<td>80%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. % of session sites where the vaccines were delivered through AVD</td>
<td>Any person other than ANM can deliver the vaccine</td>
<td>90%</td>
<td></td>
<td>Coverage surveys</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. % of sessions where Due List is available with the FHW</td>
<td></td>
<td>90%</td>
<td></td>
<td>Coverage surveys</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**EXPECTED RESULT 1.5: Improve program coordination at all levels**
<table>
<thead>
<tr>
<th>Indicator</th>
<th>Indicator Definition (&amp; unit of measurement)</th>
<th>Baseline value</th>
<th>Target</th>
<th>Data Collection Methods and Sources</th>
<th>Frequency &amp; Schedule</th>
<th>Responsibilities</th>
<th>Information Use/Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Number of States where &gt;90% districts conduct DTFI meetings every month</td>
<td></td>
<td>All States/UTs (35)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**KEY OBJECTIVE 2: Increase demand and reduce barriers for people to access immunization services through improved social mobilization**

1. % of caregivers who are aware about next due vaccination

<table>
<thead>
<tr>
<th>Key Objective 2.1: Develop and implement a multi-pronged national communication strategy with a focus on priority states</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Number of State/UT PIPs which have communication action plan for RI</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>2. Number of states where 80% of health HR are trained on BCC</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Indicator</td>
</tr>
<tr>
<td>-----------</td>
</tr>
<tr>
<td>Should be stand-alone BCC training</td>
</tr>
</tbody>
</table>

**EXPECTED RESULT 2.2: Effective communication channels are set up with the community for better acceptance of vaccines**

1. % caregivers who reported that they got information about immunization from ANM/ASHA/AWW.

<table>
<thead>
<tr>
<th>Baseline value</th>
<th>Target</th>
<th>Data Collection Methods and Sources</th>
<th>Frequency &amp; Schedule</th>
<th>Responsibilities</th>
<th>Information Use/Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;90%</td>
<td></td>
<td>Coverage Surveys</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. % of sessions where ANM are communicating all four key messages to the caregivers

<table>
<thead>
<tr>
<th>Baseline value</th>
<th>Target</th>
<th>Data Collection Methods and Sources</th>
<th>Frequency &amp; Schedule</th>
<th>Responsibilities</th>
<th>Information Use/Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;90%</td>
<td></td>
<td>Coverage Survey at facility</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**EXPECTED RESULT 2.3: Evidence based and contextually relevant communication messages are disseminated in the community**

1. Number of states that have a defined media tracking and assessment plan.

<table>
<thead>
<tr>
<th>Baseline value</th>
<th>Target</th>
<th>Data Collection Methods and Sources</th>
<th>Frequency &amp; Schedule</th>
<th>Responsibilities</th>
<th>Information Use/Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. % of caregivers who can recall new immunization messages

<table>
<thead>
<tr>
<th>Baseline value</th>
<th>Target</th>
<th>Data Collection Methods and Sources</th>
<th>Frequency &amp; Schedule</th>
<th>Responsibilities</th>
<th>Information Use/Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Should be able to recall the tagline</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**KEY OBJECTIVE 3: Strengthen and maintain robust surveillance system for vaccine preventable diseases (VPDs) and adverse events following immunization (AEFI)**

1. Number of States with >80% districts providing timely reports on VPDs

<table>
<thead>
<tr>
<th>Baseline value</th>
<th>Target</th>
<th>Data Collection Methods and Sources</th>
<th>Frequency &amp; Schedule</th>
<th>Responsibilities</th>
<th>Information Use/Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indicator</td>
<td>Indicator Definition (&amp; unit of measurement)</td>
<td>Baseline value</td>
<td>Target</td>
<td>Data Collection Methods and Sources</td>
<td>Frequency &amp; Schedule</td>
</tr>
<tr>
<td>-----------</td>
<td>------------------------------------------------</td>
<td>---------------</td>
<td>--------</td>
<td>------------------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>2. % Increase in the number of notified serious AEFI cases above the 2012 baseline value</td>
<td></td>
<td></td>
<td>50%</td>
<td>FIR, PIR, DIR</td>
<td></td>
</tr>
</tbody>
</table>

**EXPECTED RESULT 3.1: Institutionalize and strengthen surveillance mechanisms for VPDs**

1. Number of VPD surveillance workshops conducted at sentinel site

2. Number of States that have 80% districts that have an operational VPD Surveillance system in place

- Includes RRT

**EXPECTED RESULT 3.2: Institutionalize and strengthen surveillance mechanisms for AEFIs**

1. Number of States/UTs with all DIOs trained on national AEFI guidelines

2. % of serious AEFI cases notified in a timely manner

- Numerator: Serious AEFI cases notified on time
- Denominator: All notified serious AEFI cases
- ‘Timely notification’ is defined as submission of notification form

- All States/UTs (35)
- 80%

- FIR

- DIO, SIO
<table>
<thead>
<tr>
<th>Indicator</th>
<th>Indicator Definition (&amp; unit of measurement)</th>
<th>Baseline value</th>
<th>Target</th>
<th>Data Collection Methods and Sources</th>
<th>Frequency &amp; Schedule</th>
<th>Responsibilities</th>
<th>Information Use/Audience</th>
</tr>
</thead>
</table>
| 3. % of Serious AEFI cases investigated timely as per national guidelines | Numerator: Serious AEFI cases investigated on time  
Denominator: All notified serious AEFI cases  
‘Timely investigated’ is defined as submission of AEFI investigation form by the district to State and National level within 7 days of notification | 80% | FIR, PIR | | | DIO/SIO | |
| 4. % of Serious AEFI cases timely classified by State AEFI committee as per national guidelines | Numerator: Serious AEFI cases classified on time  
Denominator: All notified serious AEFI cases with complete DIR | 100% | DIR | | | SIO, State AEFI committee | |

**KEY OBJECTIVE 4:** Introduce and expand the use of new and underutilized vaccines and technology in UIP

1. Number of newer vaccines that have been reviewed for introduction in UIP by NTAGI  
Vaccines for review include, but not limited to, IPV, Pneumococcus, Rotavirus, Rubella

2. Number of States showing Pentavent-3 coverage of >80%  
All States/UTs  
HMIS

**EXPECTED RESULT 4.1:** Set up and strengthen institutional mechanisms, framework and policies for newer and underutilized vaccine introduction
<table>
<thead>
<tr>
<th>Indicator</th>
<th>Indicator Definition (&amp; unit of measurement)</th>
<th>Baseline value</th>
<th>Target</th>
<th>Data Collection Methods and Sources</th>
<th>Frequency &amp; Schedule</th>
<th>Responsibilities</th>
<th>Information Use/Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Number of NTAGI meetings in a year</td>
<td></td>
<td>At least two meetings per year</td>
<td></td>
<td>Annual report</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**EXPECTED RESULT 4.2**: Scale up and sustain the implementation of JE vaccination in identified endemic districts as part of JE control

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Indicator Definition (&amp; unit of measurement)</th>
<th>Baseline value</th>
<th>Target</th>
<th>Data Collection Methods and Sources</th>
<th>Frequency &amp; Schedule</th>
<th>Responsibilities</th>
<th>Information Use/Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. % of newly identified JE-endemic districts where JE vaccine has been introduced in UIP</td>
<td>JE vaccine is introduced 6 months following the mass JE campaign</td>
<td></td>
<td>100%</td>
<td>HMIS</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**EXPECTED RESULT 4.3**: Streamline and expand the use of Pentavalent vaccine to cover all the states

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Indicator Definition (&amp; unit of measurement)</th>
<th>Baseline value</th>
<th>Target</th>
<th>Data Collection Methods and Sources</th>
<th>Frequency &amp; Schedule</th>
<th>Responsibilities</th>
<th>Information Use/Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Number of states/UTs that have introduced pentavalent vaccines in their UIP schedule</td>
<td></td>
<td>All States/UT</td>
<td></td>
<td>HMIS</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**EXPECTED RESULT 4.4**: Evaluate Rubella antigen for introduction in RI program

**EXPECTED RESULT 4.5**: Evaluate Rotavirus antigen for introduction in RI program

**KEY OBJECTIVE 5**: Strengthen health system for immunization program
<table>
<thead>
<tr>
<th>Indicator</th>
<th>Indicator Definition (&amp; unit of measurement)</th>
<th>Baseline value</th>
<th>Target</th>
<th>Data Collection Methods and Sources</th>
<th>Frequency &amp; Schedule</th>
<th>Responsibilities</th>
<th>Information Use/Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Number of districts with full immunization coverage rate of &gt;85%</td>
<td><strong>Full immunization coverage</strong> is defined as infants who have received all relevant doses in the first year of life <strong>Numerator:</strong> Districts that show full immunization coverage rates &gt; 85% <strong>Denominator:</strong> Total districts in the country</td>
<td></td>
<td>90%</td>
<td>Coverage surveys, Data will be aggregated by priority (NRHM focus states) and other states</td>
<td></td>
<td></td>
<td>• Annual report prepared for MoHFW • Annual report prepared by district and state governments • Accountability to donors/partners through sharing of reports and information • Dissemination to policy planners, administrators, stakeholders, general public via internet, local media and publications.</td>
</tr>
</tbody>
</table>

**EXPECTED RESULT 5.1:** Increase the pool of skilled human resources to provide quality immunization services in an integrated manner

1. Number of States where all MO are trained on RI MO handbook in last three years

2. Number of States/UTs with no vacant positions for refrigerator mechanics

**EXPECTED RESULT 5.2:** Ensure that adequate financial resources are available for UIP
<table>
<thead>
<tr>
<th>Indicator</th>
<th>Indicator Definition (&amp; unit of measurement)</th>
<th>Baseline value</th>
<th>Target</th>
<th>Data Collection Methods and Sources</th>
<th>Frequency &amp; Schedule</th>
<th>Responsibilities</th>
<th>Information Use/Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Number of States/UTs utilizing &gt;90% of the allocated fund for UIP</td>
<td>All immunization high priority States</td>
<td></td>
<td></td>
<td></td>
<td>Annual</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**EXPECTED RESULT 5.3: Improve program accountability, monitoring and reporting at all levels**

1. Number of States/UTs utilizing MCTS data for RI planning

Utilizing MCTS data is defined as – MCTS data is used for estimating vaccine requirements, make costing projections in State PIP

All States/UTs (35)

State PIP

**EXPECTED RESULT 5.4: Strengthen RI program management and service delivery through field level supportive supervision in high priority states**

1. Number of states where State Task Force on Immunization (STFI) conducted 12 monthly meetings during the reporting year

All States/UTs

NPSP

**EXPECTED RESULT 5.5: Build institutional capacity to promote operational and translational research for successful implementation of UIP**

1. National level framework for operation research on RI is developed

MoHFW annual report

**KEY OBJECTIVE 6: Contribute to global polio eradication, measles, maternal and neonatal tetanus elimination**

1. No wild virus polio and circulating Vaccine Derived Poliovirus cases
<table>
<thead>
<tr>
<th>Indicator</th>
<th>Indicator Definition (&amp; unit of measurement)</th>
<th>Baseline value</th>
<th>Target</th>
<th>Data Collection Methods and Sources</th>
<th>Frequency &amp; Schedule</th>
<th>Responsibilities</th>
<th>Information Use/Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>detected (cVDPV) in the country</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Non Polio AFP rate is maintained or exceeds 2 per 100,000 children under 15 years</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Reported AFP cases have two adequate stool specimens collected within 14 days of onset of paralysis in &gt; 80% cases</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. % of districts with MCV 1 coverage of &gt; 95%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. % of districts having MCV-2 coverage of &gt; 95%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. % of districts with &gt; 80% TT2+ booster coverage for pregnant women</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**EXPECTED RESULT 6.1: Achieve country wide certification of polio eradication by 2014**

1. % AFP cases with adequate stool

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Indicator Definition (&amp; unit of measurement)</th>
<th>Baseline value</th>
<th>Target</th>
<th>Data Collection Methods and Sources</th>
<th>Frequency &amp; Schedule</th>
<th>Responsibilities</th>
<th>Information Use/Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>detected (cVDPV) in the country</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Non Polio AFP rate is maintained or exceeds 2 per 100,000 children under 15 years</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Reported AFP cases have two adequate stool specimens collected within 14 days of onset of paralysis in &gt; 80% cases</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. % of districts with MCV 1 coverage of &gt; 95%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. % of districts having MCV-2 coverage of &gt; 95%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. % of districts with &gt; 80% TT2+ booster coverage for pregnant women</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**EXPECTED RESULT 6.1: Achieve country wide certification of polio eradication by 2014**

1. % AFP cases with adequate stool

80%
<table>
<thead>
<tr>
<th>Indicator</th>
<th>Indicator Definition (&amp; unit of measurement)</th>
<th>Baseline value</th>
<th>Target</th>
<th>Data Collection Methods and Sources</th>
<th>Frequency &amp; Schedule</th>
<th>Responsibilities</th>
<th>Information Use/Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>specimen collection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**EXPECTED RESULT 6.2: Achieve measles elimination and control for rubella/congenital rubella syndrome (CRS) by 2020**

1. Number of States that have established laboratory supported measles surveillance systems

| | | | NPSP |

| | | |

**EXPECTED RESULT 6.3: Eliminate maternal and neonatal tetanus by 2015**

1. Number of States validated as NNT eliminated during the plan period

| | All States/UTs | MoHFW NNT validation report |

| | |

75
ANNEX 7: Emergency Preparedness and Response Plan 2011

T-13020/02/2010-Imm
Government of India
Ministry of Health and Family Welfare
Immunization Division

Dated 1st April, 2011

To
Principal Secretaries
Government of all States/UTs

Subject: Emergency Preparedness and Response for Polio Eradication

Sir/Madam,

The polio eradication initiative has shown tremendous progress with only 42 polio cases due to wild poliovirus reported in 2010 in the country as compared to 741 cases in 2009. However, as long as wild polio virus transmission continues in any part of the country or elsewhere in the world, the possibilities of virus importation into polio free areas remains. It is, therefore, critical to ensure adequate preparedness and response to an event of importation of wild poliovirus anywhere in the country now onwards.

Following a recommendation of the India Expert Advisory Group on polio eradication, the Ministry of Health and Family Welfare has prepared a strategic plan for protecting the polio free areas of India from WPV introduction and for implementing high quality mopping up operations, in the event of an importation. I am directed to enclose a copy of the plan with this letter. As highlighted in the plan, every wild poliovirus in the country should be treated as a public health emergency now onwards and high quality mop ups should be conducted urgently following the detection of any wild poliovirus.

I hope that the actions listed in the plan will be implemented fully at the appropriate time so that the goal of a polio free India can be achieved at the earliest.

Yours faithfully,

(Dr. Pradeep Haldar)
Assistant Commissioner (Immunization)

Encl : A/a

Copy to:
1 EPI Officers of State/UTs,
2 DC (CHI)
Achieving Polio Eradication in India

Emergency Preparedness and Response Plan
2011
Emergency Preparedness and Response Plan 2011

The Emergency Preparedness and Response Plan has been developed at the request of the Honorable Minister of Health & Family Welfare to ensure adequate preparedness and response to an event of importation of poliovirus anywhere in India during 2011.

1. Background

India has made remarkable progress towards polio eradication in 2010. Only 42 wild poliovirus (WPV) cases have been detected in the country, compared to 724 cases detected during the same period in 2009. The progress in polio eradication was reviewed during the India Expert Advisory Group (IEAG) meeting held in November 2010. At this meeting the IEAG concluded that “the epidemiologic, genetic, serologic, operational & technical evidence show that India is on the right path to achieve eradication”. However, the IEAG identified certain risks to the polio eradication programme in India. One of the major risks identified includes continued transmission of poliovirus within the mobile / migrant populations, resulting in re-introduction and spread of the virus in Uttar Pradesh (UP) and Bihar or in areas outside these historically core endemic states that are at high risk of importation and further spread of polio. The IEAG highlighted the fact that as long as virus transmission continues in any part of India or elsewhere in the World, the possibility of virus importation to polio free areas in India remains.

In view of these risks, the IEAG recommended that while intensive efforts should continue to stop transmission in areas with recent WPV transmission and the traditionally endemic areas of UP and Bihar, the program in India should:

a. make efforts to protect polio free areas from importation of virus from within or outside India and

b. rapidly respond to any WPV detected anywhere in India during 2011 with an aggressive mop up vaccination campaign to stop any further circulation of the virus.

The IEAG recommended that “From now, any WPV from any source should be considered a public health emergency and responded to with urgent mop-ups; government & partners must deploy additional, highly experienced human resources to ensure that mop-up rounds are of the highest quality. Mop-ups should target both the area of detection of the virus in a case or in the environment and, if there is a clear genetic link, the area of origin of the virus”. Thus any isolation of WPV requires a rapid high quality mopping up response as an utmost priority to stop circulation and spread.

This document is a strategic plan for protecting the polio free areas of India from WPV and for implementing high quality mopping up operations with the aim of stopping the final chains of WPV transmission.
2. Immediate actions - Preparedness for virus importation and response

2.1 National level Actions

The Government of India will have a “Central Emergency Preparedness and Response Group” to ensure adequate preparedness for a rapid response and manage the actual response to the detection of a wild poliovirus anywhere in India during 2011. The group will be chaired by the Joint Secretary, Health & Family Welfare, Government of India and comprise of senior officials from Ministry of Health and Family Welfare (GoI), and representatives of National Polio Surveillance Project (NPSP) – WHO, UNICEF and Rotary. The key responsibilities of the group will include:

- Identification and Training of Rapid Response Team (RRT) members at the national level. The RRT members will include experienced, government and partner agency staff from the fields of epidemiology, public health, management and communication (including a media specialist).

- Follow up with State Governments to ensure that a Rapid Response Team, headed by an Officer of the rank of a Principal Secretary, is constituted in each state. The state RRT should include at least 2-4 well performing Medical Officers from within the state who have at least 5 years’ experience in dealing with senior district level officials and a familiarity with the basic principles of mass vaccination campaign implementation. The RRT members will be trained by MoHFW, GoI with assistance from WHO NPSP and UNICEF. In the event of WPV detection, it will be necessary to assign the RRT members full time duty by the state governments to provide support to mop up vaccination campaigns.

- Develop a media response plan to be used in the event of detection of WPV.

- Review the availability of buffer stocks of oral polio vaccines to manage mop up vaccination campaigns.

Summary of the National actions with the proposed timeframe:

- Constitute the “Central Emergency Preparedness and Response Group” by mid April 2011.
- Write to state governments & partners, in the second week of April 2011, for identification of RRT members in each state by the end of April 2011.
- Organize a training of the RRT members jointly with NPSP and UNICEF by the second week of May 2011.
- Monitor the identification and training status of the RRT members.
- Procure sufficient buffer stocks of bOPV, tOPV and mOPVs to manage the mop ups.
- Develop a media response plan by end of April 2011 that includes mechanisms of harmonizing messages from Union and State Governments to the detection of any polio cases.
2.2 State level

2.2.1 States at risk of importation

The following states have been identified at a high or medium risk of importation based on past epidemiology of polio: Haryana, Delhi, Uttarakhand, Maharashtra, Punjab, Rajasthan, West Bengal, Gujarat, Jharkhand, Madhya Pradesh, Assam, Orissa, Andhra Pradesh, Himachal Pradesh, Jammu & Kashmir and Karnataka.

Risk Categorization of States based on history of polio importations during last 5 years

*High risk of Importation: > 8 importations and > 5 years with importations*

*Medium Risk of Importation: > 5 importations and 3 - 4 years with importations*

2.2.2 State Level Actions:

Each state at high or medium risk should undertake the following actions in preparation for the emergency response:

- Constitute a State Emergency Preparedness and Response Group chaired by the Secretary (Health & Family Welfare) and comprised of senior officials from the State Government such as the Director Health Services, State EPI Officer and other nominated senior government officials. State representatives of WHO- NPSP, UNICEF and Rotary should also be a part of the group. This group should monitor the preparedness and implementation of the mop up.

- Undertake a risk analysis, in coordination with WHO- NPSP officials, to identify districts/ blocks/urban areas at high risk of importation and spread of poliovirus.
This analysis should include identification of areas that have had repeated importations of polio viruses during previous years or a recent clustering of polio compatible cases in time and space, or are hard-to-reach areas or have demographic/environmental factors that would facilitate the spread of wild poliovirus following an introduction (such as high population density, poor sanitation etc). Special focus should be on the identification of areas with low routine immunization coverage and areas with migratory/mobile populations in each state as per guidelines issued by GOI in 2010. This risk analysis should be completed at the earliest by each state and the lists of all high-risk areas and populations shared with GOI.

- Undertake a communication risk analysis in coordination with UNICEF/WHO-NPSP and based on the analysis develop a communication plan for issues related to non compliance/resistance to administration of polio vaccines.
- Develop a media response plan to be used in the event of detection of a virus.
- Develop and implement a plan to increase polio SIA coverage and RI coverage in these high-risk areas/populations to achieve high immunity against polioviruses in these areas, which in turn will prevent spread and establishment of circulation of any imported wild polioviruses. These areas should be targeted for better planning, training, social mobilization and monitoring efforts during the SIAs in 2011-12. The states should also begin the process of harmonizing the polio microplans with Routine Immunization plans in the high-risk areas.
- Identify and nominate 2-4 experienced medical officers to be a part of the Rapid Response Teams (RRTs).
- Review the surveillance quality in these areas with the district and block officials in coordination with NPSP officials to identify actions to strengthen surveillance sensitivity in these areas, which in turn will assist with early detection and response following any importation.
- Assign Senior State Govt officials to visit high risk districts and blocks to review progress in updating and implementation of microplans for improving immunization coverage and surveillance sensitivity.

Summary of the State actions with the proposed timeframe:
- Constitute a State Emergency Preparedness and Response group by end of April 2011.
- Identify RRT members by end of April 2011.
- Identify high-risk districts and high-risk areas within districts by mid May 2011.
- Identify and assign senior officials to high-risk districts by third week of May 2011.
- The above items should be reported back to the Central Emergency Preparedness and Response Group by the end of May 2011.
3. Response and actions following the detection of Wild Poliovirus

3.1 Key steps in the planning phase of the mopping up vaccination campaign

3.1.1 National Level Actions:

- The Ministry of Health and Family Welfare will be informed about the detection of the virus without delay.

- The Ministry of Health and Family Welfare will inform the Chief Secretary of the affected state of the detection of the polio case in the state.

- The Central Emergency Preparedness and Response Group will meet within 24 hours of receipt of information. The Group will review and analyze, in detail, the field epidemiological investigation findings pertaining to the polio case. Based on the above findings, the areas and populations at risk of poliovirus circulation will be identified and a SIA response within the broad strategic framework recommended by the IEAG will be decided. The group will make specific recommendations on:
  - Timing of the response
  - Area(s) to be covered during the response
  - Type of vaccine to be used during the response
  - Number of proposed rounds
  - Additional investigations and analyses to be conducted

- Members from the Central Emergency Preparedness and Response Group will visit the concerned state to meet the state health secretary and other state officials. The members of the National and State Emergency Preparedness and Response groups will subsequently visit the concerned districts accompanied by the state RRT members to review planning for an emergency response.

- The Central Emergency Preparedness and Response Group will meet on a weekly basis to review the planning and implementation of the response and provide recommendations to the immunization division and state authorities to make improvements.

- Vaccine will be mobilized to reach the State/Districts undertaking the mop up at least 3 days before the start of the campaign.

- MoHFW shall seek support from other Govt departments such as Social Welfare, Railways, Panchayati Raj, Urban Development, Education, for the emergency mop up operation.

3.1.2 State level Actions:

- The State Emergency Preparedness and Response Group should be activated within 24 hours of receipt of information to initiate the following actions:
  - Inform the Divisional Commissioners and the District Magistrates of the areas undertaking the mop-up within 24 hours of receipt of information.
Allocate geographical areas and operational responsibilities to all RRT members ensuring an appropriate distribution of human resource within 72 hours of receipt of information.

Assign senior state officials to the districts and members of the State Emergency Preparedness and Response Group to visit and mobilize the districts within 72 hours of confirmation of case.

- The currently existing State level Steering/Coordination Committee for polio eradication should be requested to organize a meeting within 5 days of case confirmation to seek support and coordinate activities with other Government departments and NGOs.

**3.1.3 District level Actions:**

- The district level officials from health and administration should begin mobilizing the block officials to start preparations within 48 hours of identification of importation.

- District Task Force (DTF) meetings should be organized in the district with RRT members, NPSP, UNICEF staff and key government officials to allocate specific responsibilities within the district and ensure participation of all sectors for a successful implementation of the mop up. The first DTF to be conducted within 5 days of confirmation of the case. Subsequently there should be a weekly DTF to take stock of the situation and address requirements of the response activities.

- Divisional Commissioners should review the preparedness through participation in DTFs and field visits.

- Tehsil/Block Task force meetings should be organized at sub‐district level in all urban and rural areas within 7 days of the confirmation of the case.

- All existing micro plans should be reviewed as per operational guide for mop up with special emphasis to ensure no areas are missed, there is high coverage of high risk areas and migratory populations. All micro plans should be reviewed and modified within 10 days of confirmation of the case.

- All vaccinators should be retrained on operational and IPC skills in the week before the start of the mop up.

- The district and block in consultation with UNICEF and other social mobilization partners should plan and initiate IEC and social mobilization measures based on solid data collected through standardized data tools.

- Develop a media response plan to be used in the event of detection of a virus.

- In consultation with government NPSP should develop a monitoring plan for intensive monitoring and mid course corrections during the activity. Additional independent monitors should be deployed by NPSP in addition to the existing NPSP and UNICEF staff present in the district.
3.2 Key actions during the mopping up vaccination campaign

3.2.1 National level Actions

- Members from the Central Emergency Preparedness and Response Group will monitor the activity in the highest risk blocks.
- The Central Emergency Preparedness and Response Group will meet to review the feedback from its members, States, RRTs and provide directions for corrective actions.

3.2.2 State level Actions

- Members of the State Emergency Preparedness and Response Group and the State monitors should visit high risk blocks to monitor the activity and provide feedback to the State Principal Secretary (H & FW).
- The State Emergency Preparedness and Response Group should meet daily to review feedback from the districts and plan corrections.

3.2.3 District/ Sub District level Actions:

- The district should implement the SIA activity under the direct oversight of the District Magistrate (DM) and supervision of the Chief Medical Officer/Civil Surgeon. The DMs should report on the quality of the activity to the State Principal Secy (H & FW).

- Daily monitoring and review of activity to plan for corrective actions over subsequent days
  - Senior District level officials from health and administration (Divisional Commissioner/DM/ADM/CMO/DPO/Dy CMO/BDOs) should monitor the implementation of the activity and attend evening meetings at the high risk blocks.
  - A daily evening review meeting should be organized at the district under the chairmanship of the District Magistrate.

4. Key Actions at the end of the activity

- The District Magistrate should send a report of the completed activity to the State Emergency Preparedness and Response Group for review and corrective actions.
- The State Emergency Preparedness and Response Group should meet to review this and forward the report to the Central Emergency Preparedness and Response Group.
- The Central Emergency Preparedness and Response Group will review the activity and inform the Union Minister who, at his discretion, will inform the Chief Minister of the concerned state about the quality of response activities and ongoing risk assessment.
5. Role of Partners:
Partners should participate in the Central and State Emergency Preparedness and Response Groups. The key role of the partners will be as follows:

- NPSP: provide surveillance data, epidemiologic analysis and strategic planning and other technical support to the group as well as support monitoring of the preparedness and response at the district, State and National levels.
- UNICEF: provide support to the communication/social mobilization and media strategies and their implementation and monitor their impact.
- Rotary International: provide support to the advocacy at the state and district levels and to the communication strategy and social mobilization activities.

6. States at low risk of importation of poliovirus

- Undertake a risk analysis, in coordination with WHO-NPSP officials, to identify districts/blocks/urban areas at higher risk of importation and spread of poliovirus. This analysis should include identification of areas that have had importations of polio viruses during previous years or a recent clustering of compatibles in time and space, or are hard-to-reach areas or have demographic/environmental factors that would facilitate the spread of wild poliovirus following an introduction (such as low routine immunization coverage, high population density, migrant sites, poor sanitation etc). Special focus should be on the identification of areas with migratory/mobile populations in each state as per guidelines issued by GOI in 2010. This risk analysis should be completed at the earliest and the lists of all high risk areas and populations shared by each state with GOI.
- The state should assign Senior State Govt officials to visit high risk districts and blocks to review progress in updating and implementation of micro plans prior to the 2011 NIDs for improving immunization coverage and surveillance sensitivity.

7. Strategy for Mop ups
The basic aim of the mop up would be to vaccinate all under 5 children in the mop up area. Each household in the mop up area will be visited by vaccination teams to vaccinate all under 5 children. The duration of the house-to-house (h-t-h) search and vaccination would be decided by the number of available vaccination teams in the area. In principle, there would be a minimum of 2-5-day h-t-h activity in all areas to ensure a rational workload for each vaccination team. Additional 1 to 2 days of h-t-h activity will be undertaken in special areas with lesser number of available teams e.g. in large urban areas. B team activity will continue in UP and Bihar. Transit teams and Mobile teams will be deployed to cover migrant and mobile populations.
In areas that have used booths during the SNID/NID, booths will also be setup on day 1 of the mop up campaign because of their IEC/SM value.

The mop ups shall be implemented as per the Operational Guide for SIAs published by Government of India in 2006.

7.1 General principles for mopping up operations

The following guidelines as recommended by the WHA & IEAG should be followed:

- **Speed of response:** as early as possible but no later than 2 weeks from confirmation of the case.
- **Extent of mop ups:** The response should consist of at least 3 large scale, house-to-house rounds of immunization. The World Health Assembly Resolution (59.1) calls for coverage of 2-5 million children in each round. Mop-ups should cover at a minimum the infected district and all districts contiguous with it, across state boundaries if necessary. Where there is a clear genetic link of the virus to the strains in another area, the area of origin should also be included. In the demographic context of India and considering that this is the final stage of polio eradication, the 18th IEAG has recommended the appropriate target population for mop-ups around 5 million children per round.
  - In high risk areas: SNID rounds may constitute one or more of the 3 rounds, but in principle at least one additional round should be carried out in an appropriate area using a short interval approach – *all rounds must be of the highest possible quality!*
  - In non-high risk areas: mop-ups should consist of a minimum of 3 high quality rounds, using a short interval approach (minimum interval of 2 weeks but within 4 weeks) – *all rounds must be of the highest possible quality!*
- **Vaccine of choice for mop-ups** is mOPV appropriate to the local epidemiology or bOPV; a rolling stockpile of 30 million doses of bOPV and 10 million doses of mOPV1 should be maintained to allow for rapid implementation of mopping up vaccination with the appropriate vaccine.

****