

**CHILD  
HEALTH  
PROGRAMME**

**Chapter**

**4**

## 4.1 INTRODUCTION

The Child Health programme under the National Health Mission (NHM) comprehensively integrates interventions that improve child health and addresses factors contributing to neonatal, infant and under-five mortality. Reduction of infant and child mortality has been an important tenet of the health policy of the Government of India and it has tried to address the issue right from the early stages of planned development. The National Population Policy (NPP) 2000, the National Health Policy 2002 and the Twelfth Five Year Plan (2012-17) National Health Mission (NRHM - 2005 - 2017) and Sustainable Development Goals (2016-2030) have laid down the goals for child health.

### 4.1.1 Child Health Goal under NHM and SDG

Child Health Indicator	Current Status	NRHM 2017	SDG 2030
IMR (Infant Mortality Rate)	39 (SRS 2014)	25	--
Neonatal Mortality Rate	26 (SRS 2014)	-	<10
Under 5 Mortality Rate	45 (SRS 2014)		<25

Source: Sample Registration System (SRS) 2014

### 4.1.2 Progress on Child Health

<b>Infant Mortality Rate (IMR)</b>	<ul style="list-style-type: none"> <li>Decline from 58 per 1000 live births in 2005 to 39 per 1000 live births in 2014</li> </ul>
<b>Highlights</b>	<ul style="list-style-type: none"> <li>Neonatal deaths a matter of concern (6.61 lakh newborns die within the first 4 weeks of birth)</li> </ul>
<b>Interventions</b>	<ul style="list-style-type: none"> <li>Reducing neonatal mortality a thrust area</li> <li>661 Special Newborn Care Units (SNCUs) setup at district hospitals and medical colleges</li> <li>2321 Newborn Stabilization Units at CHCs</li> <li>18323 New Born Care Corners at delivery points</li> <li>Home Based New Born Care through ASHAs</li> <li>Capacity building of health care providers: Navjaat Shishu Suraksha Karyakram (NSSK) - 1.33 lakh health care providers trained</li> </ul>

### 4.1.3 Child Health and Malnutrition

- Malnutrition underlying cause of disease and death among children.
- 965 Nutritional Rehabilitation Centres established to treat severe acute malnutrition cases.

- Improving infant and young child feeding practices including breast feeding promoted through ASHA.
- Iron and folic acid tablets provided to all children and pregnant women.
- Nutritional counselling to mothers provided in Village Health and Nutrition Days (VHNDs) to improve nutritional practices.

### 4.1.4 Status of Child Mortality in India

#### Key Highlights:

- As per the SRS 2014, the under five mortality rate (U5MR) is 45 per 1000 live births which has sharply declined by 4 point from 2013.
- About 44% of under-five deaths take place within the first 7 days of birth.
- About 58% of under-five deaths take place within first one month of birth.
- Approximately 87% of under-five child mortality takes place within one year of the birth.
- An estimated 1,26,200 under five deaths are being

averted in 2014 as compared to 2013 whereas almost 89,500 under five deaths could be averted in 2013 as compared to 2012.

- Infant Mortality Rate (IMR) is 39 per 1000 live births in 2014.

- 56,000 infant deaths (as per estimates) are being averted in 2014 as compared to 2013.
- Neonatal Mortality Rate (NMR) in the country is 26 per 1000 live births.
- Almost 64, 850 newborn deaths are being averted in 2014 as compared to 2013 which is two-fold improvement in 2013 as compared to 2012.

#### RGI-SRS 2014

Indicators	Rate / 1000 live births	Estimated number of deaths
Early- NMR (within 1 week of birth)	20	5.1 lakhs
NMR (within 1 month of birth)	26	6.6 lakhs (5.1+1.5)
IMR (within 1 year of birth)	30	9.9 lakhs (5.1+1.5+3.3)
Under Five Mortality Rate	45	11.4 lakhs (5.1+1.5+3.3+1.5)

#### 4.1.5 Trends of Decline in Infant Mortality Rate in India:

- IMR has declined only 1 point in 2014 from 2013.
- Among the bigger States, IMR varies from 12 in Kerala to 52 in Madhya Pradesh and among the smaller States, IMR varies from 10 in Goa to 46 in Meghalaya.
- IMR has shown a marginal decline from 2013 to 2014, however NMR has shown 2 points decline in the same period. Thus, post-neonatal mortality is cause of concern and concentrated efforts are required to address post-NMR as well.
- Annual rate of decline of IMR is 4.3% during 2005-14 which is higher as compared to 3.1% during 2000-2005.
- 18 States/UTs have already achieved MDG 4 viz. Goa, Manipur, Kerala, Nagaland, Puducherry,

*State-wise status of Neonatal, Infant and Child Mortality Rate are shown in the table below:*

**Table No. 1**

*(in descending order of IMR)*

Sl. No.	States	Neonatal Mortality Rate (per 1000 *LB)	Infant Mortality Rate (per 1000 LB)	Under 5 Mortality Rate (Per 1000 LB)
	ALL INDIA	26	39	45
1	Madhya Pradesh	35	52	65
2	Assam	26	49	66
3	Odisha	36	49	60
4	Uttar Pradesh	32	48	57
5	Rajasthan	32	46	51
6	Meghalaya		46	
7	Chhattisgarh	28	43	49
8	Bihar	27	42	53
9	Andhra Pradesh	26	39	40
10	Haryana	23	36	40
11	Gujarat	24	35	41
12	Telangana	25	35	37
13	Jharkhand	25	34	44
14	Jammu & Kashmir	26	34	35
15	Uttarakhand	26	33	36
16	Himachal Pradesh	25	32	36

Sl. No.	States	Neonatal Mortality Rate (per 1000 *LB)	Infant Mortality Rate (per 1000 LB)	Under 5 Mortality Rate (Per 1000 LB)
17	Mizoram		32	
18	Arunachal Pradesh		30	
19	Karnataka	20	29	31
20	West Bengal	19	28	30
21	D&N Haveli		26	
22	Punjab	14	24	27
23	Chandigarh		23	
24	Maharashtra	16	22	23
25	A&N Islands		22	
26	Tripura		21	
27	Tamil Nadu	14	20	21
28	Delhi	13	20	21
29	Lakshadweep		20	
30	Sikkim		19	
31	Daman & Diu		18	
32	Nagaland		14	
33	Puducherry		14	
34	Kerala	6	12	13
35	Manipur		11	
36	Goa		10	

\*LB-Live Berths

Source: Sample Registration System, 2014

- Daman & Diu, Sikkim, Delhi, Lakshadweep, Tamil Nadu, Tripura, A & N Islands, Maharashtra, Chandigarh, Punjab, D & N Haveli, West Bengal and Karnataka.
- Assam, D & N Haveli, Haryana and Tripura have shown 5 point decline in IMR from 2013 to 2014. 9 States/UTs have shown 3 point decline and 9 States/UTs have shown only 1 point decline of IMR in 2014. There is no change in IMR during the same period in the States of Andhra Pradesh and Bihar.
  - Chandigarh, Uttarakhand, Manipur, Goa have shown an increase in IMR in 2014 as compared to 2013.
  - Rural-Urban differential is 17 points in 2014 which is the same as observed in 2013. Therefore, no reduction in rural-urban differential of IMR from 2013 to 2014 took place.
  - Assam and Rajasthan have highest rural-urban differential in IMR of 25 points followed by Madhya Pradesh (22 points).
  - Nagaland, Goa, Chandigarh, Tripura, Uttarakhand and Daman & Diu have shown higher IMR in Urban areas as compared to rural areas.
  - Gender differential has remained constant of 3 points at National level. Highest gender differential observed in Lakshadweep (12 point) followed by Chandigarh (8 point) and Bihar (7 point).
  - Female infants experienced a higher mortality than male infants in all States except Tamil Nadu and Assam where both are the same.

## Snap shot of IMR (Based on SRS, 2014)

Table No. 2

	More than National Average	Less than National Average
Name of the States <i>India (IMR: 39)</i>	Andhra Pradesh, Bihar, Chhattisgarh, Rajasthan, Meghalaya, Uttar Pradesh, Odisha, Assam, Madhya Pradesh	Goa, Manipur, Kerala, Nagaland, Puducherry, Daman & Diu, Sikkim, Tamil Nadu, Delhi, Lakshadweep, Tripura, Maharashtra, A & N Islands, Chandigarh, Punjab, D & N Haveli, West Bengal, Karnataka, Arunachal Pradesh, Himachal Pradesh, Mizoram, Uttarakhand, Jammu & Kashmir, Jharkhand, Gujarat, Telangana, Haryana

Table No. 3

	Name of the States/UTs
Increase in IMR	Chandigarh, Uttarakhand, Manipur, Goa
No Decrease/Increase (Stable)	Bihar, Andhra Pradesh, Kerala
1-3 Points Decrease in IMR	Rajasthan, Meghalaya, Gujarat, Tamil Nadu, Madhya Pradesh, Odisha, Uttar Pradesh, Arunachal Pradesh, Karnataka, Maharashtra, Punjab, A & N Islands, Daman & Diu, Chhattisgarh, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Mizoram, Sikkim, West Bengal, Puducherry
4 or more than 4 Points Decrease in IMR	Nagaland, Delhi, Lakshadweep, Assam, Tripura, Haryana, D & N Haveli

#### 4.1.6 Trend of decline in Under-5 Mortality Rate (U5MR) in India

- Under 5 Child Mortality has declined from 64 in 2009 to 45 in 2014 thus showing a 19 points drop in last six years.
- Compound annual rate of decline for U5MR is 6.8% during 2009-14.
- As per SRS 2014, 14 States have achieved MDG4 (<42 per 1000 live births) namely Andhra Pradesh, Delhi, Haryana, Gujarat, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Maharashtra, Punjab, Tamil Nadu, Telangana, Uttarakhand and West Bengal.
- Additionally, 4 States have also achieved SDG (<25 per 1000 live births) namely Delhi, Kerala, Maharashtra and Tamil Nadu
- 7 high focus States have higher Under 5 mortality rate than national average (45) namely Assam (66), Madhya Pradesh (65), Odisha (60), Uttar Pradesh (57), Bihar (53), Rajasthan (51) and Chhattisgarh (49).
- Maximum decline of U5MR was observed in

Assam and Uttar Pradesh which have shown 7 point decline in 2014 as compared to 2013, while Andhra Pradesh and Bihar have shown one point decline and Kerala has shown 1 point increase in U5MR.

- Andhra Pradesh has shown increase (+1 point) in NMR, stagnant IMR and one point decline in U5MR. However, it may be noted that the figures previously available were for undivided State of Andhra Pradesh.
- 58% of under five death is contributed by 4 States namely; Uttar Pradesh (3.1 lakhs), Bihar (1.4 lakhs), Madhya Pradesh (1.2 lakhs) and Rajasthan (0.87 lakh).
- Decline in Rural U5MR is higher to the decline in urban areas, thereby narrowing Rural - Urban Gap.
- Rural-Urban differential of under 5 mortality is much higher (43 points) in Assam however it has been observed that urban U5MR is higher (R: 36, U: 38) than rural areas in the State of Uttarakhand.
- Gender differential in U5MR is 7 (Male-42,



Female-49). Chhattisgarh and Uttar Pradesh have highest (11 point) gender differential of U5MR followed by Madhya Pradesh (10 points), Rajasthan (10 points) and Bihar (9 points).

- Gender differential in U5MR has either increased or stagnant in most of the States in 2014 as compared to 2013.
- All the bigger States have higher Under-five mortality rates of female than that of male except Tamil Nadu.

- Injuries (3%)
- Others (14%)

#### 4.2.2 Causes of Infant Deaths

The prominent causes of death among infants are perinatal conditions (46%), respiratory infections (22%), diarrhoeal disease (10%), other infectious and parasitic diseases (8%), and congenital anomalies (3.1%).

#### Snap shot of U5MR (Based on SRS, 2014)

Table No. 4

	More than National Average	Less than National Average
Name of the States <i>India (U5MR: 45)</i>	Chhattisgarh, Rajasthan, Bihar, Uttar Pradesh, Odisha, Madhya Pradesh, Assam	Kerala, Delhi, Tamil Nadu, Maharashtra, Punjab, West Bengal, Karnataka, Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Telangana, Andhra Pradesh, Haryana, Gujarat, Jharkhand

Table No. 5

	Name of the States/UTs
Increase in U5MR	Kerala
1-3 Points Decrease in U5MR	Andhra Pradesh, Bihar, Tamilnadu, Maharashtra
4-5 Points Decrease in U5MR	Chhattisgarh, Delhi, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Karnataka, Madhya Pradesh, Punjab, West Bengal
More than 5 Points Decrease in U5MR	Odisha, Rajasthan, Assam, Uttar Pradesh

Note: Only Kerala has shown 1 point increase in U5MR whereas rest of the States have shown 1 to 7 points decrease in 2014 as compare to 2013.

(Child Mortality Statistics, Infant Mortality and State-wise trend of Under 5 Mortality Rate shown in Annexure-I, Annexure-II and Annexure-III respectively.)

## 4.2 CAUSES OF MORTALITY

### 4.2.1 Causes of Child Mortality

➤ As per WHO 2012 estimates, the causes of Child Mortality in the age group 0-5 years in India are as below:

- Neonatal causes (53%)
- Pneumonia (15%)
- Diarrhoeal disease (12%)
- Measles (3%)

### 4.2.3 Causes of Neonatal Mortality

The major causes of neonatal deaths are infections (33%) such as Pneumonia, Septicemia and Umbilical Cord infection; Prematurity (35%) i.e. birth of newborn before 37 weeks of gestation and Asphyxia (20%) i.e. inability to breathe immediately after birth leading to lack of oxygen.

Factors contributing to above causes are as under :

- Home delivery by unskilled persons
- Lack of essential new born care for asphyxia and

hypothermia

- Poor child care practices
- Lack of early detection of sick newborn
- Inadequate/Delayed referral mechanisms
- Inadequate infrastructure at health care facilities for specialized care of sick newborn

### 4.3 PROGRAMME INTERVENTIONS

The Health of the mother has an important bearing on the health of the child. Thus interventions for improvement of maternal health are critical for improving survival of newborn and are deemed to be intervention for both maternal and child health. Additionally interventions for reducing child mortality are as under:

#### 4.3.1 Emphasis is being laid on facility based newborn care at different levels to reduce neonatal Mortality

**Special New Born Care Units (SNCUs)** are being setup at district hospitals and medical colleges:

- SNCU is 12-20 bedded unit and requires 4 trained doctors and 10-12 nurses for round the clock services.
- The cost of setting up SNCU is Rs. 41 lakhs and operational cost is Rs. 10 lakhs per annum.
- 661 SNCUs are functional till date.

**NewBorn Stabilization Units (NBSUs)** are being established at community health centres /FRUs:

- These are 4 bedded units with trained doctors and nurses for stabilization of sick newborns.
- The cost of setting up of NBSU is Rs. 5.75 lakhs and operational cost is 1.75 lakhs per annum.
- There are at present 2321 NBSUs in the country.

**Newborn Baby Care Corners (NBCCs)** are being setup in all facilities where deliveries are taking place:

- These consist of an earmarked area (radiant warmer) within the labour room and Operation Theatre (OT) for provision of essential newborn care including resuscitation.
- The unit cost for establishing NBCC is Rs. 85,000 and operational cost is Rs. 20,000.

- There are 18323 functional NBCCs.

#### 4.3.2 Capacity building of health care providers

Various trainings are being conducted under NRHM to train doctors, nurses and ANM for early diagnosis and case management of common ailments of children. These trainings are :

- Integrated Management of Neonatal and Child Illness (IMNCI):
  - ◆ A total of 505 districts and 5.96 lakh health care providers have been trained in IMNCI.
  - ◆ 31071 health care providers have been trained in facility based IMNCI training.
- Navjat Shishu Suraksha Karyakram (NSSK):
  - ◆ The purpose of the training is to train all health care providers in essential newborn care.
  - ◆ About 1,33,177 health care providers have been trained in NSSK.

Funds and technical support are provided by Government of India under NHM to the States for conducting these trainings.

#### 4.3.3 Management of Malnutrition

- As malnutrition reduces resistance of children to infections thus increasing mortality and morbidity among children, emphasis is being laid under NHM for management of malnutrition.
- 965 Nutritional Rehabilitation Centres (NRCs) have been established for management of severe acute malnutrition.
- As breastfeeding reduces neonatal mortality, exclusive breastfeeding for first six months and appropriate infant and young child feeding practices are being promoted in convergence with Ministry of Woman & Child Development. Ministry of Health & Family Welfare launched "MAA-Mothers' Absolute Affection" programme in August, 2016 for improving breastfeeding practices (Initial Breastfeeding within one hour, Exclusive Breastfeeding up to six months and complementary Breastfeeding up to two years) through mass media and capacity building of health care providers in health facilities as well as in communities.
- To address anaemia in children, Biweekly IFA

supplements is provided to children aged 6-59 months through ASHAs and Weekly IFA supplements to children of 5-10 years age group. Bi-annual Vitamin A Supplementation is being done for all children below five years of age.

- Village Health and Nutrition Days (VHNDs) are also being organized for imparting nutritional counselling to mothers and to improve child care practices.

#### 4.3.4 Home Based Newborn Care (HBNC)

- As 57 % of child deaths take place in the first 28 days of birth, home based newborn care through ASHA is being provided.
- The purpose of Home Based Newborn Care is to improve newborn practices at the community level and early detection and referral of sick newborn babies.
- The schedule of ASHA for Home Based Newborn Care consists of six visits in case of institutional deliveries on days 3, 7, 14, 21, 28 & 42 and one additional visit within 24 hours of delivery in case of home deliveries. Additional visits will be made for babies who are pre-term, low birth weight or ill.
- ASHA is paid Rs. 250 for conducting home visits for the care of the newborn baby. Additional visits for SNCU discharges and LBW babies are done quarterly after the HBNC schedule is over, beginning third month. ASHA is paid an incentive of Rs. 50/Visit (Total of 200 for 4 quarterly visits) for these additional visits.
- Out of 9.37 lakh ASHAs in the country, 6.96 lakh (74%) have been trained in Module 6 & 2.81 lakh (30%) on Module 7, which provide necessary skills to assess newborns.
- Currently, Home Based Newborn Care has rolled out in 33 States/UTs except for Puducherry, Chandigarh (through link workers) and Goa.
- More than 65 lakhs newborn were visited by ASHAs in 2014-15 whereas 98.25 lakh newborns were visited by ASHAs in 2015-16.
- In FY 2016-17 (Up to June, 2016), 18.23 lakhs newborn were visited whereas 59,665 sick newborns were referred to the facilities by ASHAs.

#### 4.3.5 National Deworming Day (NDD)

Ministry of Health & Family Welfare had adopted a single day strategy called National Deworming Day (NDD) in 2015 to combat Soil Transmitted Helminths (STH) infections in the children. During NDD, a single dose of Albendazole is administered to the children by school teachers and anganwadi workers. As the largest preschool and school-based deworming programme in the world, India's National Deworming Day has reached to millions of children in last three rounds. National Deworming Day 2015 covered 9 crore children in 11 States/UTs and in 2016 NDD was scaled up across the country reaching to 25 crore children in 34 States/UTs.

MoHFW has also established STH surveillance mechanism across the country under the aegis of National Centre for Disease Control. Based upon STH prevalence data, MoHFW has made informed decision of conducting 2nd round of deworming in 27 States/UTs where STH prevalence is high. The 2nd round was also implemented successfully in August 2016 covering 15 crore children.

#### 4.3.6 Intensified Diarrhoea Control Fortnight (IDCF)

Childhood diarrheal diseases continue to be a major killer among under-five children in many States contributing to 12 percent of under-five deaths in the country. Almost all the deaths due to diarrhoea can be averted by preventing and treating dehydration by use of ORS (Oral Rehydration Solution) and administration of Zinc tablets along with adequate nutritional intake by the child with diarrhoea. Diarrhoea can be prevented with safe drinking water, hand-washing, sanitation, immunization and breastfeeding/appropriate nutrition.

To combat diarrheal mortality in children with the ultimate aim of zero child deaths due to childhood diarrhoea, Intensified Diarrhoea Control Fortnight (IDCF) is being implemented as a campaign in the month of July, since 2014 for control of deaths due to diarrhoea across all States & UTs. It includes awareness generation on use of ORS and zinc during diarrhoea, bringing together multiple departments and also to reach each under-five child with one packet of ORS to be used when diarrhoea begins. Main activities include intensification of advocacy activities, awareness generation activities, diarrhoea



management service provision, establishing ORS-zinc demonstration sites, ORS distribution by ASHA through home visitation, detection of undernourished children and their treatment, promotion of Infant and Young Child Feeding activities by home visits by ASHA and establishing IYCF corners.

Around 1.9 crore and 6.34 Crore Under-five children were reached by ASHAs during IDCF 2014 and 2015 respectively and prophylactic ORS packets were distributed to them with counselling for care during diarrhoea.

#### Programme Achievements:

	2014-15	2015-16
States implemented IDCF	All 36 States and UTs	All 36 States and UTs
No. of under-five children visited by ASHA for Prophylactic ORS	1.9 Crores	6.3 Crore
No. of Children treated with both Zinc and ORS during the Fortnight	9.6 Lakhs	21.5 Lakhs
No. of ORS and Zinc Corners established in the States	1.9 Lakhs	3.4 Lakhs
PRI meetings held	49,932	3.23 Lakhs

- From 11-23 July, 2016, with an aim of achieving improved coverage of essential life-saving commodity of ORS, zinc dispersible tablets and practice of appropriate child feeding practices during diarrhoea, ORS was pre-positioned in houses of 5.4 crore children (provisional data), and 3.8 lakh ORS-Zinc corners were established.

#### 4.4 MANAGEMENT OF ANAEMIA IN CHILDREN

- In 2013, National Iron Plus Initiative (NIPI) was launched which was based on the life-cycle approach and covers all age-groups. The National average for anaemia prevalence in children 6 to 59 months is 70% (NFHS-3).
- The NIPI child health components are constituted of Biweekly IFA supplementation for children 6 to 59 months by providing 1 ml IFA syrup containing 20 mg elemental iron and 100 mcg folic acid using an auto-dispenser and Weekly IFA supplementation for children 5 to 10 years using a pink coloured sugar coated IFA tablet containing 45 mg Iron and 400 mcg folic acid.
- 23 States/UTs have implemented Biweekly IFA supplementation and 17 States/UTs have implemented WIFS junior.
- States/UTs which initiated Bi-weekly IFA for

6-59 months children- Andman and Nicobar Islands, Andhra Pradesh, Assam, Chandigarh, Chhattisgarh, Dadar and Nagar Haveli, Daman and Diu, Delhi, Gujarat, Haryana, Jharkhand, Karnataka, Lakshadweep, Madhya Pradesh, Manipur, Mizoram, Nagaland, Odisha, Puducherry, Rajasthan, Telangana, Tripura, West Bengal.

- States/UTs which initiated WIFS junior- Andaman and Nicobar Islands, Andhra Pradesh, Dadar and Nagar Haveli, Delhi, Gujarat, Jharkhand, Karnataka, Lakshadweep, Madhya

Pradesh, Manipur, Mizoram, Odisha, Puducherry, Punjab, Rajasthan, Telangana, Tripura.

#### 4.5 UNIVERSAL IMMUNIZATION PROGRAMME (UIP)

Immunization Programme is one of the key interventions for protection of children from life threatening conditions, which are preventable. Immunization Programme in India was introduced in 1978 as Expanded Programme of Immunization. This gained momentum in 1985 as Universal Immunization Programme (UIP) and implemented in phased manner to cover all districts in the country by 1989-90. UIP become a part of Child Survival and Safe Motherhood Programme in 1992. Since, 1997, immunization activities have been an important component of National Reproductive and Child Health Programme. Immunization is one of the key areas under National Rural Health Mission (NRHM) launched in 2005 and now it is under the umbrella of National Health Mission (NHM).

Under the Universal Immunization Programme, Government of India is providing vaccination to prevent ten vaccine preventable diseases i.e.:

- Diphtheria, Pertussis, Tetanus, Polio, Measles, Hepatitis B, severe form of Childhood Tuberculosis, and Pneumonia and Meningitis

due to Hemophilus influenza b.

- Vaccination against Rotavirus diarrhea is provided in four States i.e. Andhra Pradesh, Haryana, Himachal Pradesh and Odisha; and Japanese Encephalitis vaccination is provided in selected endemic districts.

#### 4.5.1 National Immunization Schedule

#### 4.5.2 Pentavalent Vaccine :

The Pentavalent vaccine contains five antigens i.e. Hepatitis B, Diphtheria + Pertussis + Tetanus (DPT - current trivalent vaccine) and Haemophilus influenza b (Hib) vaccine. Pentavalent vaccination is provided to the children at the age of 6, 10 and 14 weeks as primary dose. The vaccine has replaced DPT and Hep B vaccine in the immunization schedule. However,

Sl. No.	Vaccine	Protection	Number of doses	Vaccination Schedule
1	BCG (Bacillus Calmette Guerin)	Childhood Tuberculosis	1	At birth (up to 1 year if not given earlier)
2	Pentavalent [Diphtheria, Pertussis, Tetanus (DPT), Hepatitis B and Haemophilus influenza b (Hib)]	Diphtheria, Pertussis, Tetanus, Hepatitis B, Haemophilus influenzae type B associated Pneumonia and Meningitis	3	Three doses at 6, 10 & 14 weeks.
3	DPT (Diphtheria, Pertussis and Tetanus Toxoid)	Diphtheria, Pertussis and Tetanus	2	Two booster doses at 16-24 month and 5 years of age. Three primary doses at 6, 10 & 14 week are part of <i>Pentavalent vaccine</i> .
4	Hepatitis B	Hepatitis B	1	Birth dose for institutional deliveries within 24 hour. Three primary doses at 6, 10 & 14 week are part of <i>Pentavalent vaccine</i> .
5	OPV (Oral Polio Vaccine)	Polio	5	Birth dose for institutional deliveries. Three primary doses at 6, 10 & 14 week and one booster dose at 16-24 month of age. Given orally.
6	IPV (Inactivated Polio vaccine)	Polio	1	Two fractional doses at 6 and 14 weeks in Andhra Pradesh, Karnataka, Kerala, Maharashtra, Odisha, Puducherry, Telangana, Tamil Nadu, Goa, Haryana, Rajasthan, Lakshadweep, Jharkhand, Madhya Pradesh, West Bengal and Uttar Pradesh. In rest of the country, one dose at 14 weeks, along with OPV3. Injectable dose given.

Sl. No.	Vaccine	Protection	Number of doses	Vaccination Schedule
7	Japanese Encephalitis#	Japanese Encephalitis	2	9-12 months of age and 2 <sup>nd</sup> dose at 16-24 months
8	Measles	Measles	2	9-12 months of age and 2 <sup>nd</sup> dose at 16-24 months
9	Vitamin A	Night Blindness	9	- 1 <sup>st</sup> dose at 9 months - 2 <sup>nd</sup> dose at 18 months - 3 <sup>rd</sup> to 9 <sup>th</sup> dose given at 6 monthly interval upto 5 years.
10	RotaVirus*	Rotavirus diarrhoea	3	Three doses at 6, 10 & 14 week. Given orally.
11	TT (Tetanus Toxoid)	Tetanus	2 2	- 10 years and 16 years of age - For pregnant woman, two doses given (one dose if previously vaccinated within 3 years)

# In endemic districts,

\* Phased introduction, at present in Andhra Pradesh, Haryana, Himachal Pradesh and Orissa from 2016.

birth dose of Hep B and two booster doses of DTP (at 16-24 month and 5 years of age) will continue to be given. India introduced pentavalent vaccine initially in two States viz. Kerala and Tamil Nadu under routine immunization programme in December, 2011 and vaccine was expanded to entire nation by December, 2015.

#### 4.5.3 Measles Vaccine:

Nationwide coverage of Measles first dose was started in 1985 in routine immunization (RI). 2<sup>nd</sup> dose of Measles was introduced in 2010 in 22 States in RI at 16-24 months and in remaining 14 States in RI after a supplementary immunization activity (SIA) covering 12 crore children. In 2013, Government of India, along with 10 other SEAR countries resolved to eliminate measles and control rubella/congenital rubella syndrome in the South East Asia Region of WHO by 2020.

#### 4.5.4 Japanese Encephalitis (JE) Vaccine:

Japanese Encephalitis (JE) is an acute viral illness with high case fatality and long term complications. JE vaccination was started in 2006. Due to limited availability of vaccines initially 113 endemic districts were identified across 15 States by National Vector Borne Disease Control Programme (NVBDCP). JE

campaigns were then planned in a phased manner among identified 113 districts from 2006 to 2011. Currently 216 districts have been identified as JE endemic districts across 20 States of the country.

Strategy for JE campaign is one time campaign with a single dose of live attenuated JE vaccine for children aged 1-15 year age group in endemic districts of the country. Immediately following campaigns, integration into the Routine immunization in the district - 1<sup>st</sup> dose in the target group of infants aged 9-12 months and 2<sup>nd</sup> dose in infants aged between 16-24 months.

So far 198 out of 216 JE endemic districts as identified by NVBDCP have been covered under Japanese Encephalitis campaign with a single dose of JE vaccine. During these campaigns, JE vaccine was administered to around 14.6 crore children. Subsequent to the campaign, JE vaccine has been included in routine immunization in these districts.

#### 4.5.5 New Vaccines

- Inactivated Polio Vaccine (IPV): As a part of polio endgame strategy, IPV was introduced initially in six States (Assam, Bihar, Gujarat, Punjab, Madhya Pradesh and Uttar Pradesh) in November, 2015 and expanded to all States/UTs



by June, 2016. Till October, 2016, a total of 1.2 crore children have been vaccinated with IPV.

- **Rotavirus vaccine (RVV):** RVV was launched on 26<sup>th</sup> March, 2016 in 4 States initially (Andhra Pradesh, Odisha, Haryana and Himachal Pradesh) using domestic funds. John Snow Inc is providing technical assistance for Rotavirus expansion through financial support of BMGF. Till October, 2016, a total of 23.59 lakh doses of rotavirus vaccine have been administered in these 4 States. Rotavirus vaccine expansion to 5 more States (Madhya Pradesh, Assam, Rajasthan, Tripura and Tamil Nadu) have been planned in 2016-17 and Uttar Pradesh in 2017-18.
- **Adult JE vaccine:** Japanese Encephalitis vaccination is expanded in adult population of districts with high disease burden of adult JE. A total of 21 districts have been identified for adult JE vaccination (5 districts in Assam, selected blocks of 7 districts in UP and selected blocks of 9 districts in West Bengal). Adult JE vaccination campaign has been completed in all the districts during which 2.6 crore adults were vaccinated with JE vaccine.
- **Measles Rubella (MR) campaign:** A wide age range MR campaign targeting children aged 9 months upto 15 years of age is to be conducted in a phased manner over a period of two to three years. Subsequently, Rubella vaccine will be introduced as MR vaccine in routine immunization as two doses, replacing the currently given measles vaccine 1 & 2 at 9-12 months and 16-24 months, respectively.
- **Pneumococcal vaccine (PCV):** PCV will be introduced in five States (Uttar Pradesh, Bihar, Rajasthan, Madhya Pradesh & Himachal Pradesh) in a phased manner starting from 2017. In the 1<sup>st</sup> year of introduction PCV will be introduced in Uttar Pradesh, Bihar & Himachal Pradesh. PCV will be administered as two primary doses at 6 & 14 weeks followed by a booster dose at 9 months.

#### 4.5.6 Status of Universal Immunization Programme

The achievements in terms of immunization coverage is improving over the years, however, there is need for further improvement especially in DPT3 & OPV3

coverage and reducing drop outs. Following table outlines achievements as per evaluated coverage:

**Table No. 6**

Source	Rapid Survey on Children (RSOC)	Coverage Evaluation Survey (CES)		District Level Household Survey (DLHS)	
		2006 (%)	2009 (%)	DLHS 2 (2002-04) (%)	DLHS 3 (2007-08) (%)
Time Period	2013-14 (%)				
Full Immunization	65.2	62.4	61.0	45.8	54.0
BCG	NA	87.4	86.9	75.0	86.7
OPV3	NA	67.5	70.4	57.7	66.0
DPT3	74.7	68.4	71.5	58.2	63.5
Measles	78.8	70.9	74.1	56.1	69.5

- In the last 21 years, the immunization coverage in India has increased to 65.2% as per Rapid Survey on Children (RSOC 2013-14) from 35.5% as per National Family Health Survey (NFHS 1992-93).
- The vaccine-wise and State/UT-wise children immunized under Universal Immunization Programme (UIP) as reported in the recent NFHS-4 (2015-16) is given below:

**Table No. 7**

National Family Health Survey- 4 (NFHS 2015-16)							
Sl. No.	State/UT Name	BCG	OPV3	DPT3	Measles	Hep-B3	Full Immunized
1.	A&N Island	87.4	83.9	83.5	76.4	83.1	73.2
2.	Andhra Pradesh	97.3	72.3	89	89.4	68.8	65.3
3.	Assam	82.3	56.0	66.5	71.4	52.0	47.1
4.	Bihar	91.7	72.9	80.2	79.4	65.5	61.7
5.	Goa	100	92.9	94.2	96.5	85.2	88.4
6.	Haryana	92.8	75.3	76.5	79	54.3	62.2
7.	Karnataka	92.5	74.6	77.9	82.4	58.9	62.6
8.	Madhya Pradesh	91.6	63.6	73.4	79.6	56.3	53.6
9.	Maharashtra	90.0	67.0	74.9	82.8	60.8	56.3
10.	Manipur	91.2	76.6	77.8	74.2	69.9	65.9
11.	Meghalaya	86	71	74	71.9	62.9	61.5
12.	Puducherry	99.9	95.4	96	95.4	89.4	91.3
13.	Sikkim	98.9	87.7	93	93.3	84.1	83
14.	Tamil Nadu	94.9	82.3	84.5	85.1	68.2	69.7
15.	Telangana	97.4	75.4	87.9	90.6	70.6	68.1
16.	Tripura	82.4	70.1	71.1	69.7	54.4	54.5
17.	Uttarakhand	92.9	68	80	80.6	59.4	57.7
18.	West Bengal	97.5	87.9	92.7	92.8	86.4	84.4



- **Maternal and Neonatal Tetanus Elimination (MNTE):** WHO had set the global target date of December, 2015 for MNTE validation. However, India validated Maternal & Neonatal tetanus elimination in May, 2015, well before the target date.

#### 4.6 PULSE POLIO IMMUNIZATION (PPI)

With the global initiative of eradication of polio following World Health Assembly resolution in 1988, Pulse Polio Immunization programme was launched in India in 1995. Children in the age group of 0-5 years were administered polio drops during National and Sub-national immunization rounds (in high risk areas) every year. There are 24 lakh vaccinators and 1.5 lakh supervisors involved in the successful implementation of the Pulse Polio Programme across the country. About 172 million children are immunized across the country during each National Immunization Day (NID) and 77 million in SNIDs.

##### 4.6.1 Progress

On 24<sup>th</sup> February 2012, WHO removed India from the list of countries with active endemic wild polio virus transmission after reporting of last case of poliovirus in country in January, 2011, On 27<sup>th</sup> March, 2014, India along with 10 other countries of South East Asia Region, was declared polio-free by the Regional Certification Commission (RCC) of WHO. The issued certificate stated that "The Commission concludes, from the evidence provided by the National Certificate Committees of the 11 Member States, that the transmission of indigenous wild

poliovirus has been interrupted in all countries of the Region"

India has achieved the goal of polio eradication as no polio case has been reported for more than 5 years after last case reported on 13<sup>th</sup> January, 2011.

##### 4.6.2 Steps taken to achieve target of polio eradication

- To maintain the polio-free status, the immunity against poliovirus infection is maintained through National and Sub National Polio rounds apart from routine immunization. In 2016, 2 NIDs and 2 SNIDs were conducted. As per IEAG recommendations 2 NIDs and 2 SNIDs are planned for 2017.
- All States and Union Territories in the country have developed a Rapid Response Team (RRT) to respond to any polio outbreak in the country. An Emergency Preparedness and Response Plan (EPRP) have also been developed by all States indicating steps to be undertaken in case of detection of a polio case.
- To prevent poliovirus importation in the country, Government of India issued guidelines effective from 1<sup>st</sup> March 2014 wherein oral polio vaccination (OPV) was made mandatory for travellers between India and eight other countries namely Afghanistan, Nigeria, Pakistan, Ethiopia, Kenya, Somalia, Syria and Cameroon.
- To further reduce risk of importation, international border vaccination is being provided to all eligible





children round the clock. These are provided through special booths set up at the international borders that India shares with Pakistan, Bangladesh, Bhutan, Nepal and Myanmar.

- An extremely high level of vigilance through AFP surveillance across the country for any importation or circulation of poliovirus and VDPV is being maintained. To supplement AFP surveillance, Environmental surveillance is established at 30 sites spread over in 7 States (in Mumbai, Delhi, Patna, Kolkata, Punjab, Hyderabad and Ahmedabad) which acts as surrogate indicator for polio virus transmission.
- As per the global polio eradication endgame strategy and Strategic Advisory Group of Experts for Immunization (SAGE) recommendations, all 156 trivalent OPV (tOPV) using countries were to switch from tOPV to bivalent OPV (bOPV) both in routine immunization and polio campaigns between 17<sup>th</sup> April, 2016 to 1<sup>st</sup> May, 2016. The tOPV to bOPV switch in India was done on 25<sup>th</sup> April 2016. The country was validated free of tOPV by National Certification Commission for Polio Eradication.
- As a risk mitigation measure for switch and to provide double protection against polio, IPV was introduced initially in six States (Assam, Bihar, Gujarat, Punjab, Madhya Pradesh and Uttar Pradesh) in Nov, 2015 and has been expanded to all States & UTs by June, 2016.
- The lessons learnt from polio programme is being implemented for strengthening of routine immunization by carrying out Immunization weeks and also the same learning will be used for implementing "Mission Indradhanush" - A drive toward 90% full immunization coverage of India by year 2020.

#### 4.6.3 Vaccine Preventable Diseases (VPDs) Surveillance

Following surveillance systems are currently adopted for VPD surveillance:-

##### Polio Surveillance:

- AFP (Acute Flaccid Paralysis) surveillance is the gold standard for detecting cases of poliomyelitis. This is done to identify all reservoirs of wild poliovirus and vaccine derived polio virus

transmission. This includes reporting of all AFP cases, investigating them and laboratory testing of all stool specimens collected from such cases for polioviruses in specialized laboratories. Nearly 40,000 health facilities report children with paralysis to the AFP surveillance system and 50,000 paralysed children are investigated annually in the country.

- There are 8 WHO accredited laboratories in India for primary isolation of polio virus (wild poliovirus and vaccine derived polio virus), followed by Intratypic differentiation (ITD) of isolates from AFP cases if indicated.
- These laboratories are: BJMC Ahmedabad, NIV Bangalore, ERC Mumbai, IoS Kolkata, NCDC Delhi, CRI Kasauli, KIPM Chennai, and SGPGI Lucknow.
- Currently, India is maintaining highest standards as indicated by AFP rate of 10.51 (against the global minimum recommendation of 2) and for total of 87% of AFP cases, two stool collections were done timely (against the global minimum recommendation of 80%).
- To supplement AFP surveillance, Environmental surveillance is established at 30 sites across 7 States.

##### Measles-Rubella surveillance:

- AFP-linked laboratory supported measles-rubella surveillance system was initiated in 2005 and has been scaled up across the country by May, 2015, based on the AFP surveillance network.
- There is weekly MR surveillance reporting. Based on the serological confirmation, it classifies outbreaks as 'measles', 'rubella', 'mixed' and 'non-measles, non-rubella'.
- The 'suspected measles with fever and rash' surveillance is outbreak based surveillance with 14 WHO accredited laboratories in its network. These are: PGI Chandigarh, SGPGI Lucknow, PMC Patna, NCDC Delhi, SMS Jaipur, GMC Bhopal, BJMC Ahmedabad, NIV Pune, NIV Pune, KIPM Chennai, IPM Hyderabad, IoS Kolkata, MCG Guwahati and ERC, Mumbai.
- To increase the sensitivity of the system, guidelines have been revised to carry out lab

confirmation of cases that are reported before an outbreak is flagged. Training workshop has been carried out in Karnataka, Tamil Nadu and Puducherry.

- Facility-based surveillance for Congenital Rubella Syndrome (CRS) in selected medical colleges/hospitals is being established.

#### **Laboratory supported vaccine preventable diseases (VPD) surveillance :**

- With the help of WHO-NPSP, VPD surveillance is being established in country in order to assess the progress and impact of vaccination programme. This would be in collaboration with other surveillance systems like IDSP and CBHI.
- WHO has established a national reference laboratory for standardization of laboratory procedures and quality assurance, identification and strengthening of laboratories across nation for diagnosis of Diphtheria, Pertussis and Neonatal Tetanus.
- As of now, the Laboratory supported VPD surveillance has been initiated in the States of Haryana, Kerala, Bihar and Uttar Pradesh.
- For this purpose CMC Vellore has been designated as reference laboratory for VPD surveillance. In addition, 7 network laboratories have been established. These are: AIIMS Bihar, SPHL Chennai, KMC Kozhikode, KGMC Lucknow, IDH Delhi, NCDC Delhi and PGI Chandigarh.

#### **AEFI Surveillance :**

- AEFI surveillance monitors immunization safety, detects and responds to adverse events following immunization; corrects unsafe immunization practices, reduces the negative impact of the event on health and contributes to the quality of immunization activities.
- There has been improved reporting due to strengthening of AEFI monitoring including revision of guidelines for AEFI in 2015, their dissemination to all the programme officers in the States and districts and training of various categories of primary health care staff with a view to improve reporting. The District/State AEFI committees have been constituted to regularly review and analyse all the reported AEFI cases.

- National AEFI committee is headed by an independent expert outside the government and regularly reviews AEFI status.
- Besides, a National AEFI secretariat has been established and national level Causality Assessment workshops are being conducted to review all the AEFI cases. The AEFI secretariat is also collaborating with Indian Pharmacopoeia Commission (IPC) the pharmaco-vigilance centre of CDSCO, which has network of more than 90 regional centres for reporting of adverse drug reactions including AEFIs.

#### **4.6.4 Vaccine Logistics and Cold Chain Management**

- **National Cold chain Management Information System (NCCMIS):** NCCMIS is an online portal capturing real time data related to cold chain management including breakdown, human resource, maintenance etc. The system is used in 36 States/UTs and monthly reporting feedbacks are sent from ministry. The wi-fi temperature data loggers are installed at 4 GMSDs and 10 States and real time data is captured and monitored at NCCVMRC on daily basis, the breach alerts are shared on monthly basis. The wi-fi logger has also sensor for monitoring humidity of dry storage as well.
- **Electronic Vaccine Intelligence Network (eVIN):** The Government of India has rolled out an Electronic Vaccine Intelligence Network (eVIN) system that digitizes the entire vaccine stock management, their logistics and temperature tracking at all levels of vaccine storage - from national to the sub-district (last cold chain point). This enables programme managers to have real time view of the vaccine stock position and their storage temperature at all the cold chain points in a district. State program managers are able to visualize this information across all cold chain points whilst the national managers can have a detailed overview of the vaccine cold chain logistics system across the entire country.

With funding support from Gavi, eVIN system is getting rolled out across all the 370 districts of 12 States - Uttar Pradesh, Madhya Pradesh, Rajasthan, Odisha, Bihar, Jharkhand, Chhattisgarh, Assam,

Manipur, Nagaland, Gujarat and Himachal Pradesh. Nearly 17,000 vaccine cold chain handlers in all the 10,000 cold chain points in these States will have been trained on the eVIN by November, 2016. Real time vaccine stocks are already visible live in over 10,000

of these cold chain points. Over 6,500 digital temperature loggers have been installed in all the cold chain equipment of Uttar Pradesh, Madhya Pradesh and Rajasthan with another 8,000 loggers to be installed in the remaining 9 States in 2017.



## Annexure-I

## Child Mortality Statistics

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Early NMR (Deaths in 1 <sup>st</sup> week)	26	28	28	29	27	27	25	24	23	22	20
NMR (Deaths below 1 month)	37	37	37	36	35	34	33	31	29	28	26
IMR (Deaths below 1 year)	58	58	57	55	53	50	47	44	42	40	39
U5MR (Deaths below 5 years)	N.A.	N.A.	N.A.	N.A.	69	64	59	55	52	49	45

Source: Office of the Registrar General of India 2014 (all figures are per 1000 live births)

Data on U5MR is being collected by Registrar General of India in SRS from 2008 onwards only.

## Annexure-II

## Infant Mortality Rate per 1000 live births

Sl.No.	States	Infant Mortality Rate (SRS 2014)									
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
	ALL INDIA	58	57	55	53	50	47	44	42	40	39
1	Andhra Pradesh	57	56	54	52	49	46	43	41	39	39
2	Assam	68	67	66	64	61	58	55	55	54	49
3	Bihar	61	60	58	56	52	48	44	43	42	42
4	Chhattisgarh	63	61	59	57	54	51	48	47	46	43
5	Gujarat	54	53	52	50	48	44	41	38	36	35
6	Haryana	60	57	55	54	51	48	44	42	41	36
7	Jharkhand	50	49	48	46	44	42	39	38	37	34
8	Karnataka	50	48	47	45	41	38	35	32	31	29
9	Kerala	14	15	13	12	12	13	12	12	12	12
10	Madhya Pradesh	76	74	72	70	67	62	59	56	54	52
11	Maharashtra	36	35	34	33	31	28	25	25	24	22
12	Odisha	75	73	71	69	65	61	57	53	51	49
13	Punjab	44	44	43	41	38	34	30	28	26	24
14	Rajasthan	68	67	65	63	59	55	52	49	47	46
15	Tamil Nadu	37	37	35	31	28	24	22	21	21	20
16	Telangana										35
17	Uttar Pradesh	73	71	69	67	63	61	57	53	50	48
18	West Bengal	38	38	37	35	33	31	32	32	31	28
19	Arunachal Pradesh	37	40	37	32	32	31	32	33	32	30
20	Delhi	35	37	36	35	33	30	28	25	24	20
21	Goa	16	15	13	10	11	10	11	10	9	10
22	Himachal Pradesh	49	50	47	44	45	40	38	36	35	32
23	Jammu & Kashmir	50	52	51	49	45	43	41	39	37	34
24	Manipur	13	11	12	14	16	14	11	10	10	11
25	Meghalaya	49	53	56	58	59	55	52	49	47	46
26	Mizoram	20	25	23	37	36	37	34	35	35	32
27	Nagaland	18	20	21	26	26	23	21	18	18	14
28	Sikkim	30	33	34	33	34	30	26	24	22	19
29	Tripura	31	36	39	34	31	27	29	28	26	21
30	Uttarakhand	42	43	48	44	41	38	36	34	32	33
31	A&N Islands	27	31	34	31	27	25	23	24	24	22
32	Chandigarh	19	23	27	28	25	22	20	20	21	23
33	D&N Haveli	42	35	34	34	37	38	35	33	31	26
34	Daman & Diu	28	28	27	31	24	23	22	22	20	18
35	Lakshadweep	22	25	24	31	25	25	24	24	24	20
36	Puducherry	28	28	25	25	22	22	19	17	17	14

## Annexure-III

## State wise trend of Under 5 Mortality Rate

States	2008	2009	2010	2011	2012	2013	2014
India	69	64	59	55	52	49	45
Andhra Pradesh	58	52	48	45	43	41	40
Assam	88	87	83	78	75	73	66
Bihar	75	70	64	59	57	54	53
Chhattisgarh	71	67	61	57	55	53	49
Delhi	40	37	34	32	28	26	21
Gujarat	60	61	56	52	48	45	41
Haryana	65	60	55	51	48	45	40
Himachal Pradesh	50	51	49	46	43	41	36
Jammu & Kashmir	55	50	48	45	43	40	35
Jharkhand	65	62	59	54	50	48	44
Karnataka	55	50	45	40	37	35	31
Kerala	14	14	15	13	13	12	13
Madhya Pradesh	92	89	82	77	73	69	65
Maharashtra	41	36	33	28	28	26	23
Odisha	89	84	78	72	68	66	60
Punjab	49	46	43	38	34	31	27
Rajasthan	80	74	69	64	59	57	51
Tamil Nadu	36	33	27	25	24	23	21
Telangana							37
Uttar Pradesh	91	85	79	73	68	64	57
Uttarakhand							36
West Bengal	42	40	37	38	38	35	30