

# **Resource Document on Newborn and Neonatal Care of Children**

**A Report**

**2016**



**National Institute of Public Cooperation and Child Development**

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Child Development  
New Delhi**



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**PART -I**

**National Institute of Public Cooperation and  
Child Development**

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## FOREWORD

It is estimated that around 260 lakh children are born every year in India. As per Census 2011, the share of children (0-6 years) accounted for 13 per cent of the total population in the country. An estimated 12.7 lakh children die every year before completing five years of age. However, 81 per cent of under-five child mortality takes place within one year of birth accounting for nearly 10.5 lakh infant deaths; while 57 per cent of under-five deaths take place within the first one month of life, accounting for 7.3 lakh neonatal deaths every year in the country.

In the last few years, India has shown strong political will to take on the complex and large-scale problem of newborn mortality. The government has made vital policy decisions to combat major causes of newborn deaths, providing special attention to sick newborns, babies born too soon (premature), and babies born too small (small for gestational age). In 2013, the government authorized Auxiliary Nurse Midwives (ANMs) to administer pre-referral dose of injectable antibiotics for suspected neonatal sepsis and complete the full course under specific situations when referrals were not possible. Further, ANMs were allowed to administer pre-referral doses of antenatal corticosteroids (ANCS) to women in pre-term labour, improving the chances of survival of premature babies. Kangaroo Mother Care (KMC), a proven and cost-effective practice that encourages mothers to keep their pre-term and low birth weight babies warm through early and prolonged skin-to-skin contact, is being scaled up both in health facilities and for post-discharge care at home.

On 18 September 2014, an India Newborn Action Plan (INAP) was launched in response to the Global Newborn Action Plan. INAP lays out a vision and a plan for India to end preventable newborn deaths, accelerate progress and scale up high-impact yet cost-effective interventions to work towards attainment of the goals of “Single Digit Neonatal Mortality Rate by 2030”. Every commitment to improve the health and wellbeing of a newborn is important and embodies the spirit of collective action. However, information about these interventions are scattered and not known to many of those involved in the care of newborn and neonates.

With the above in view, the present documentation project titled '*Resource Document on Newborn and Neonatal Care of Children*' was undertaken with an attempt to present information on the situation of newborn and neonates in the country. The Resource Document, particularly throws light on the initiatives undertaken by the Ministry of Health and Family Welfare (MOHFW) under

National Health Mission (NHM), and Ministry of Women and Child Development under the restructured Integrated Child Development Services (ICDS) scheme, to improve newborn and neonatal health and contains wealth of information to bridge the gap in the knowledge in the care of newborn and neonates in the country. This report would serve to be ready reckoner for planners, administrators, research scholars, and other stakeholders working in the area of newborn and neonatal health.

I would like to place on record my appreciation for the contribution and guidance given by Smt. Vandana Thapar, Joint Director. I acknowledge the painstaking efforts of Smt. Shanta Gopalakrishnan, Assistant Director and In-charge of the Project, in successfully completing the project in the stipulated time period with the able assistance of Dr Laitonjam Valentina and Ms. Parul Kalia, Project Assistants.

*Dinesh Paul*

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## LIST OF ABBREVIATIONS

A	Advanced	ECCD	Early Childhood Care and Development
AARR	Average Annual Rate of Reduction	EMRI	Emergency management and Research Centre
AHS	Annual Health Survey	ENAP	Every Newborn Action Plan
ANC	Ante Natal Care	FBNC	Facility Based Neonatal care
ANM	Auxiliary Nurse Midwifery	FNO	Facility Nodal Officer
APH	Ante Partum Haemorrhage	FRU	First Referral Unit
ARC	ASHA Resource Centre	GERD	Gastro- Oesophageal Reflex Disease
DRC	District Resource Centre	GMP	Growth Monitoring and Promotion
ARV	Anti Retroviral	HAART	Highly Active Anti Retroviral Therapy
ART	Anti Retroviral Therapy	HRH	Human Resource for Health
ASFR	Age Specific Fertility Rate	Hb	Haemoglobin
ASHA	Accredited Social Health Activist	HIV	Human Immuno-deficiency Virus
AWC	Anganwadi Centre	HMIS	Health Management Information System
AWW	Anganwadi Worker	IAP	Indian Academy of Pediatrics
AYUSH	Ayurved, Yoga and Naturopathy, Unani, Siddha and Homeopathy	ICDS	Integrated Child Development Scheme
BCG	Bacillus Calmette Guerin	ICTC	Integrated Counselling and Testing Centre
BCM	Block Community Mobiliser	IFA	Iron and Folic Acid
BeMOC	Basic Emergency Obstetric Care	IGMSY	Indira Gandhi MatritvaSahyogYojana
CEmOC	Comprehensive Emergency Obstetric Care	IMA	Indian Medical Association
CES	Coverage Evaluation Survey	IMR	Infant Mortality Rate
CHC	Community Health Centre	INAP	India Newborn Action Plan
C-IMNCI	Community-Integrated Management of Neonatal and Childhood Illness	IMS	Infant Milk Substitute
CMTC	Child Malnutrition Centre	IMNCI	Integrated Management of Neonatal and Childhood Illness
COIA	Commission on Information and Accountability	IUGR	Intra Uterine Growth Retardation
CPAP	Continuous Positive Airway Pressure	IV	Intravenous
CEmONC	Comprehensive Emergency Obstetric Care	IYCF	Infant and Young Child Feeding
DDK	Disposable Delivery Kit	JSSK	<i>Janani Shishu Suraksha Karyakaram</i>
DEIC	District Early Intervention Centre	JSY	<i>Janani Suraksha Yojna</i>
DH	District Hospital	KMC	Kangaroo Mother Care
DLCs	District Level Committees	LBW	Low Birth Weight
DLHS	District Level Household Survey Survey	LMP	Last Menstrual Period
DMC	District Community Mobiliser	LSAS	Life Saving Anaesthetic Skills
E	Essential	LSCS	Lower Segment Caesarean Section
EAG	Empowered Action Group	NMR	Neo-Natal Mortality Rate
EBF	Exclusive Breastfeeding	MCH	Maternal and Child Health

MDG	Millennium Development Goal	SAM	Severe Acute malnutrition
MOHFW	Ministry of Health and Family Welfare	SBA	Skilled Birth Attendant
MMR	Maternal Mortality Rate	SBR	Stillbirth Rate
MNH	Maternal and New Born Health	SC	Sub Centre
MNMR	Maternal Near Miss Review	SDH	Sub District Hospital
MTP	Medical Termination of Pregnancy	SGA	Small for Gestational Age
MWCD	Ministry of Women and Child Development	SIHFW	State Institute of Health and Family Welfare
NCMC	Nutrition Counselling cum Management Centre	SNCU	Special Newborn Care Unit
NICU	Newborn Intensive Care Unit	SNP	Supplementary Nutrition
NNF	National Neonatology Forum	SOP	Standard Operating Procedures
NVP	Nevirapine	SRS	Sample Registration System
NFHS	National Family Health Survey	STH	Soil Transmitted Helminthes
NHM	National Health Mission	STI	Sexually Transmitted Infections
NPP	National Population Policy	TBA	Traditional Birth Attendant
NRC	Nutrition Rehabilitation Centre	THR	Take Home Ration
NRHM	National Rural Health Mission	TT	Tetanus Toxoid
NSSK	<i>NavjaatShishu Suraksha Karyakaram</i>	U5MR	Under-Five Mortality Rate
OPD	Out Patient Department		
OPV	Oral Polio Vaccine	UNICEF	United Nations Children's Fund
PHC	Primary Health Centre	UTI	Urinary Tract Infection
PIH	Pregnancy Induced Hypertension	VDRL	Venereal Disease Research Laboratory
POC	Point of Care	VHND	Village Health and Nutrition Day
POG	Period of Gestation	VKDB	Vitamin K Deficiency Bleeding
PNC	Post Natal Care	VLBW	Very Low Birth Weight
PIP	Programme Implementation Plans	WASH	Water, Sanitation and Hygiene
PSBI	Possible Serious Bacterial Infection	WHO	World Health Organization
PPH	Post PartumHaemorrhage	WIFS	Weekly Iron and Folic Acid Supplementation
PPTCT	Prevention of Parent to Child Transmission	WRA	Women in Reproductive Age
PROM	Premature Rupture of Membrane	ZDU	Zidovudine
RBSK	Rashtriya Bal SwasthyaKaryakram		
RCH	Reproductive and Child Health		
RDA	Recommended Dietary Allowance		
RDS	Respiratory Distress Syndrome		
RF	Replacement Feeding		
RMNCH+A	Reproductive Maternal Newborn Child and Adolescent Health		
RPR	Rapid Plasma Reagin		
RTI	Reproductive Tract Infections		
S	Situational		

1

# INTRODUCTION



## CHAPTER 1

### INTRODUCTION

Globally more than 10 million children die each year from preventable diseases, which is 27,000 deaths per day. About 6 million children die per year worldwide, aged 1 month to 5 years and about 4 million newborn die in first month of life (40 % of all child deaths).

As it stands now, a quarter of all maternal and newborn deaths in the world occur in India. The **neo-natal mortality rate (NMR) accounts for 70 per cent of IMR and 57 per cent of under-five mortality rate (U5MR)**. There is also a wide state variation and rural-urban differentials in NMR. Also, MDG 4 had focused for a two third reduction in death rates for children under the age of 5 by 2015 and almost 40 per cent of these deaths occur in neonatal period.

It is estimated that an estimated 260 lakh of children are born every year in India. As per Census 2011, the share of children (0-6 years) accounts 13 per cent of the total population in the country. An estimated 12.7 lakh children die every year before completing 5 years of age. However, 81 per cent of under-five child mortality takes place within one year of the birth which accounts nearly 10.5 lakh infant deaths whereas 57 per cent of under-five deaths take place within first one month of life accounts 7.3 lakh neo-natal deaths every year in the country.

In 2000, 189 nations made a promise to free people from extreme poverty and multiple deprivations. This pledge became the eight Millennium Development Goals (MDGs) to be achieved by 2015.

The Reproductive and Child Health programme (RCH) II under the National Rural Health Mission (NRHM) comprehensively integrates interventions that improve child health and addresses factors contributing to 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 Eleventh Five Year Plan (2007-12) and National Rural Health Mission (NRHM - 2005 – 2012) have laid down the goals for child health (**Table 1**). Further, Twelfth Five Year plan (2012-2017) and National Health Mission (NHM) has laid down the Goal to Reduce Infant Mortality Rate (IMR) to 25 per 1000 live births by 2017.

**Table 1: Goals under NHM related to Child Health**

Child Health Indicator	Current status	RCH II/NHM 2010/2012	MDG 2015	NHM by 2017
IMR (Infant Mortality Rate)	40 (SRS, 2013)	<30	<28	25
Neonatal Mortality Rate	28 (SRS, 2013)	-	-	-
Under 5 Mortality Rate	49 (SRS, 2013)	-	<42	-

On 18 September 2014, **India Newborn Action Plan (INAP)** was launched in response to Global Newborn Action Plan. INAP lays out a vision and a plan for India to end preventable newborn deaths, accelerate progress and scale up high-impact yet cost effective interventions. INAP has a clear vision supported by goals, strategic intervention packages, priority actions and a monitoring framework. For the first time, INAP also articulates the Government of India's specific attention on preventing stillbirths. With clearly marked timelines for implementation, monitoring and evaluation and scaling-up of proposed interventions, it is expected that all stakeholders working towards improving newborn health in India will stridently work towards attainment of the goals of "*Single Digit NMR (Neonatal Mortality Rate) by 2030*" and "*Single Digit SBR (Stillbirth Rate) by 2030*".

With the view that an analysis of levels and trends on newborn and neonatal health available from the various surveys/ sources if made available at one place, would serve as a useful reference tool to appraise the progress, as also, facilitate academicians, administrators, policy makers and programme planners at the central and state level to be more focused and implement initiatives with proven success to improve the status of the newborn and neonatal health in India, a documentation project of preparing a Resource Book was undertaken.

This Resource Book provides information on the situation of newborn and neonates in the country and provides updates on the initiatives undertaken by the Government of India to reduce neonatal mortality thereby impacting on newborn and neonatal health. In the Resource Book, there is a particular focus on the initiatives undertaken by the Ministry of Health and Family Welfare (MOHFW) under National Health Mission (NHM) and Ministry of Women and Child Development under the restructured Integrated Child Development Services (ICDS) scheme, to improve newborn and neonatal health. The Resource Book contains wealth of information and is an attempt to bridge the gap in the knowledge in the care of newborn and neonates in the country.

## **Objectives**

The objectives of the documentation are to:

- i. Present the levels and trends in neonatal mortality in the country available from the various surveys/ sources in India; and
- ii. Collate the care of newborn and neonates at home and in health facility under NHM along the lines of existing guidelines and present the interventions in India with proven success to reduce neonatal mortality available from the various surveys/ sources to serve as a resource documentation.

## **Methodology**

The documentation is based on secondary data. The data on newborn and neonatal health available from the various surveys/ sources, such as the Sample Registration System (SRS); National Family Health Surveys (NFHS); District Level Household Surveys (DLHS), Annual Health Surveys (AHS); Coverage Evaluation Surveys (CES); etc. has been analyzed and presented state-wise. The various issues relating to newborn and neonatal care is presented in an easy-to-grasp manner, in line with the available guidelines on newborn and neonatal care.

## **Data Sources**

The major data sources of the study such as the Sample Registration System (SRS), NFHS (three rounds), District Level Household Surveys (DLHS), Coverage Evaluation Survey (CES), and Annual Health Surveys (AHS) have been used to examine the issues in depth. This apart the operational guidelines issued by the Ministry of Women and Child Development and National Rural Health Mission/ National Health Mission have been used for preparing the resource document. Though the major data has been presented in the following chapters, some of the detailed tables are presented in Part II of the document.



2

LEVELS AND TRENDS IN  
MATERNAL AND  
NEONATAL HEALTH

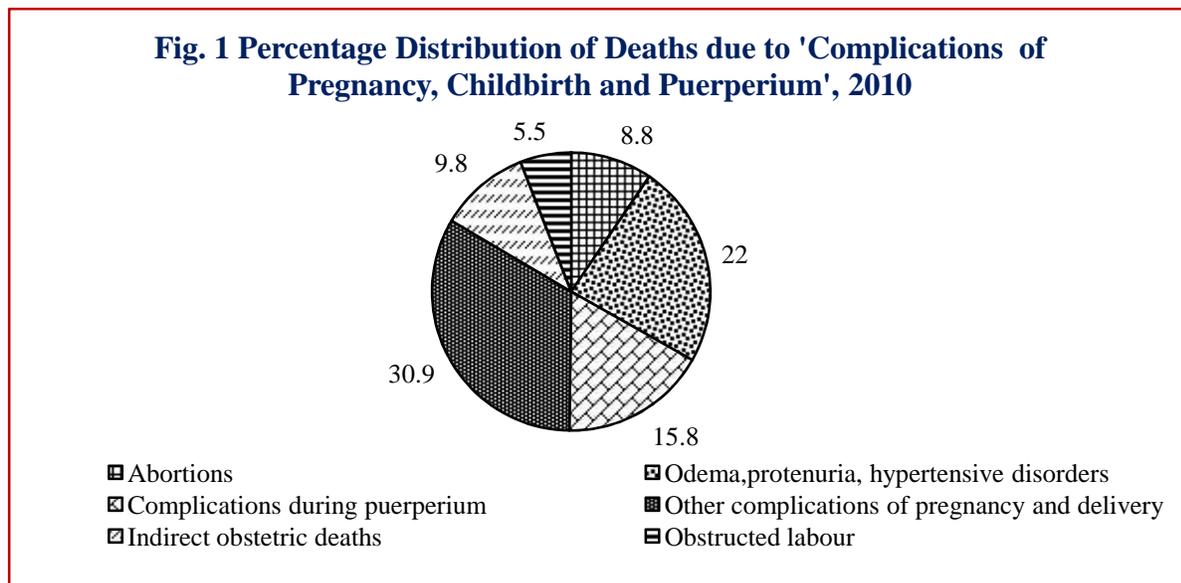


## CHAPTER 2

### LEVELS AND TRENDS IN MATERNAL AND NEONATAL HEALTH

#### Maternal Mortality

Maternal mortality is a key indicator for maternal health and reveals inequalities between and also within states that cannot be attributed to biological differences alone. Maternal mortality results from multiple reasons, which can broadly be classified as medical, socio-economic and health system-related factors. The medical causes can be direct or indirect. The most common direct medical causes of maternal death as per Medical Certification of Cause of Death, 2010 are abortions (pregnancies with abortive outcome) (8.8%), odema, proteinuria, hypertensive disorders (22%), complications during puerperium (15.8%), other complications of pregnancy and delivery (30.9%), obstructed labour (5.5%) and indirect obstetric deaths (9.8%) (**Fig.1**). These conditions are largely preventable and once detected, they are treatable. A significant proportion of maternal deaths are also attributed to 'indirect causes', the most common of which are anemia and malaria.



Source: Report on Medical Certification of Cause of Death, 2010

Social determinants for maternal and child mortality include marriage and childbirth at a very young age, less spacing between births and low literacy level among women, in particular those belonging to the urban, poor and rural settings, and socially-disadvantaged groups (such as scheduled castes and tribes). Access to and use of contraceptives, particularly modern, non-permanent contraceptives, and access to safe abortion services are also factors that influence maternal health and child survival.

India contributes to 17.5 per cent of the world’s population and nearly one-fifth of the total live births. Its contribution to the global burden of newborn deaths is higher when compared to that of maternal and under-5 deaths. India contributes to 16 per cent of global maternal death; and 21 per cent of under-5 deaths. When it comes to newborn mortality, the proportion increases to 27 per cent.

India has witnessed a significant reduction in the number of neonatal deaths (**Table 2**) - from 1.35 million in 1990, to around 0.76 million in 2012. Over that period, from 1990-2012, while neonatal deaths reduced by 44 per cent, child deaths (under 5 years) reduced by 59 per cent. As a result, the contribution of neonatal deaths to under-5 deaths increased from 41 per cent in 1990 to 56 per cent in 2012, which is higher when compared to the contribution observed globally (44%). During the same period, the global under-5 death rate reduced by 50 per cent, and the global neonatal mortality rate by only 37 per cent.

**Table 2: Estimates of Child Deaths in India for years 1990, 2000, and 2012**

<b>Deaths (in thousands)</b>	<b>1990</b>	<b>2000</b>	<b>2012*</b>	<b>Relative reduction from 1990 to 2000</b>	<b>Relative reduction from 2000 to 2012</b>	<b>Relative reduction from 1990 to 2012</b>
<b>Neonatal deaths</b>	1354	1118	758	17%	32%	44%
<b>Infant deaths</b>	2333	1751	1097	25%	37%	53%
<b>Under-5 child death</b>	3325	2414	1359	27%	44%	59%

*Source: UN inter-agency group \*Source: MOHFW estimates*

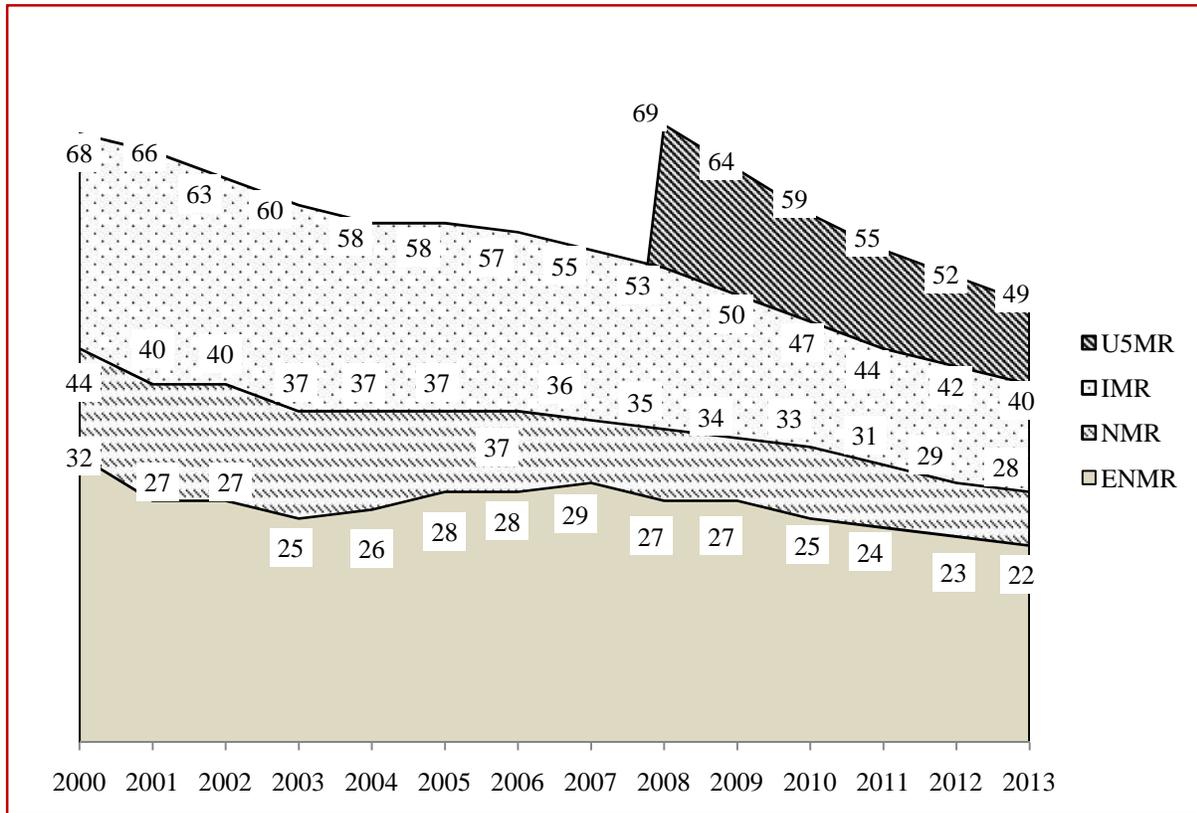
### **Stillbirth Rates**

The estimated Stillbirth Rate (SBR) in the country is 22 per 1000 livebirths (Lancet, 2011). The SBR estimates from the Sample Registration System (SRS) however require careful interpretation because of underestimation due to unavailable pregnancy history for women and misclassification of deaths.

### **Trends of Mortality Rates**

During the last 12 year period i.e. 2000-2012, the Average Annual Rate of Reduction (AARR) for Neonatal Mortality Rate (NMR) has been 3.4% per year (**Fig. 2**). After a period of stagnation (2003-2007), the decline in neonatal mortality gained pace with more than 6% annual decline recorded in the last 2 consecutive years.

**Fig. 2: Trends in Child Mortality Rates, SRS 2000-2013**



### Geographical Differences in Neonatal Mortality Rate

The neonatal mortality rate is not uniform across India. While the state of Kerala has already attained Single Digit NMR (7/1000 live births); Odisha, Madhya Pradesh, Uttar Pradesh, Rajasthan, and Chhattisgarh have a higher neonatal mortality rate at 30 or more per 1000 live births. In terms of absolute numbers, four states alone—Uttar Pradesh, Madhya Pradesh, Bihar, and Rajasthan—contribute to 56 per cent of total neonatal deaths in India and about 14 per cent of the global neonatal deaths that occur every year (Table 3).

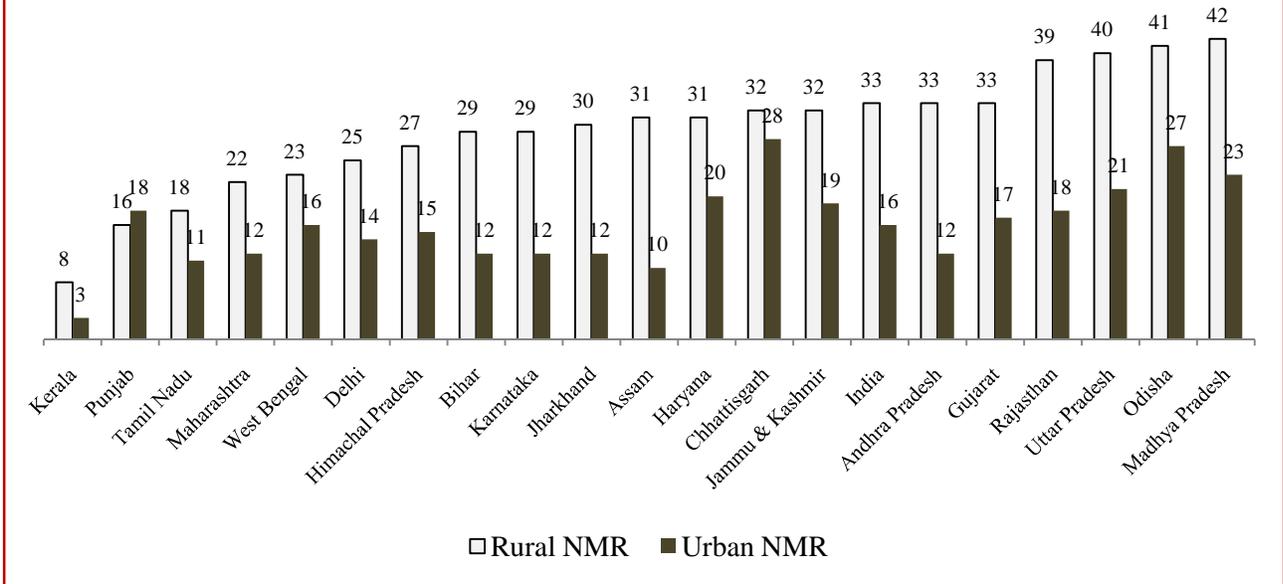
**Table 3: Neonatal Mortality Rate in India, SRS 2013**

<b>Less than 10</b>	<b>11-15</b>	<b>16-20</b>	<b>21-25</b>	<b>26-30</b>	<b>More than 30</b>	<b>Data not available</b>
<i>Kerala</i>	<i>Tamil Nadu</i>	<i>Maharashtra Punjab Delhi</i>	<i>Karnataka West Bengal Andhra Pradesh Himachal Pradesh</i>	<i>Assam Bihar Gujarat Haryana Jammu &amp; Kashmir Jharkhand</i>	<i>Chhattisgarh Madhya Pradesh Orissa Rajasthan Uttar Pradesh</i>	<i>Arunachal Pradesh Goa Meghalaya Manipur Mizoram Nagaland Sikkim Tripura Uttarakhand</i>

### **Rural-Urban Differentials in Neonatal Mortality Rate**

There are important rural-urban and socio-economic differences in the NMR. The NMR in rural areas is twice the NMR in urban areas (33 vs. 16 per 1,000 live births). The discrepancy is more marked in the states of Andhra Pradesh, Assam, Jharkhand, and Kerala where the rural NMR is 2.5 times or more than that of the urban areas (**Fig.3**). Also, urban poor newborns are more vulnerable to many more health problems than their non-poor urban counterparts. Evidence from NFHS-3 (2005-2006) indicates that neonatal mortality among urban poor (NMR 37/1000 live births) is higher than the urban average (NMR 29/1000 live births). It also shows that the NMR among the poorest 20 percent of the population is more than double the NMR of the richest 20 percent (NFHS-3). Although recent sex-differentiated NMR estimates are not available, it is likely that the rates for female neonates will be higher than those of male given the gender-based differences in care seeking in India.

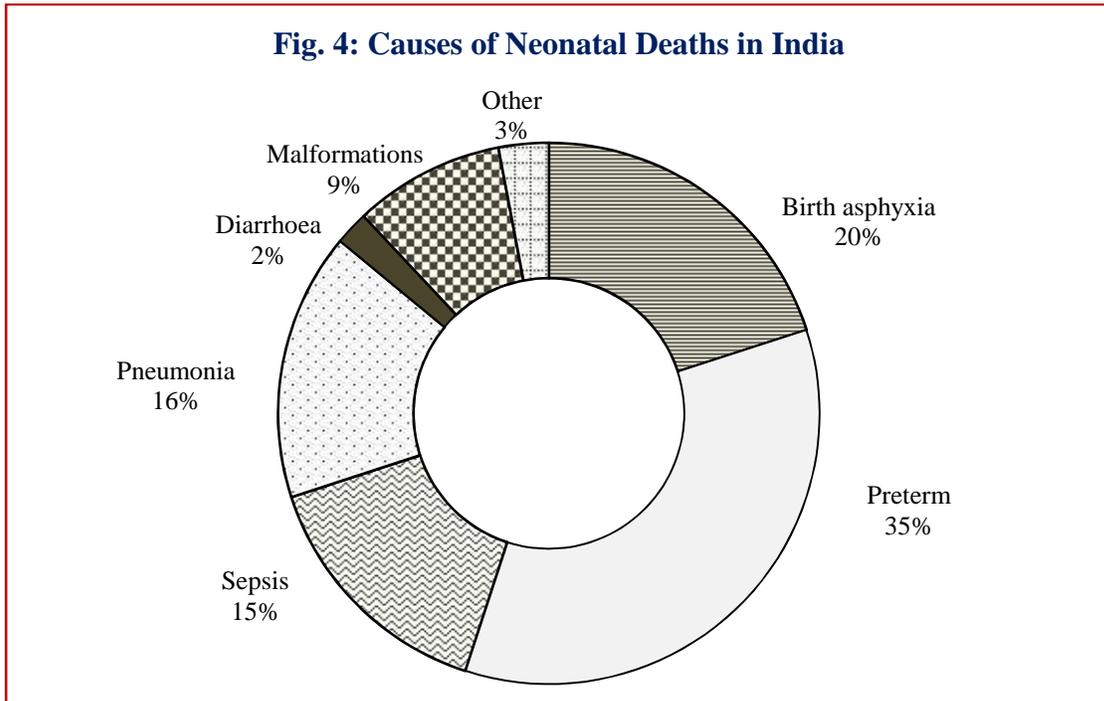
**Fig. 3: Rural and Urban Differentials in Neonatal Mortality Rate in India, (SRS 2013)**



**Causes of Neonatal Deaths in India**

The major causes of newborn deaths (**Fig. 4**) in India are pre-maturity/preterm (35%); neonatal infections (33%); intra-partum related complications/ birth asphyxia (20%); and congenital malformations (9%). (Liu et al, 2012)

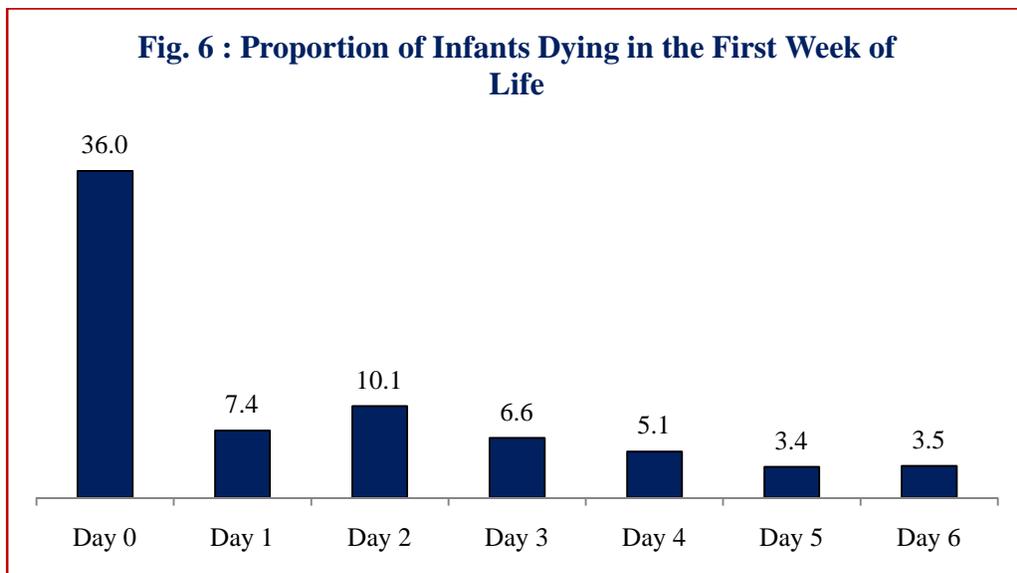
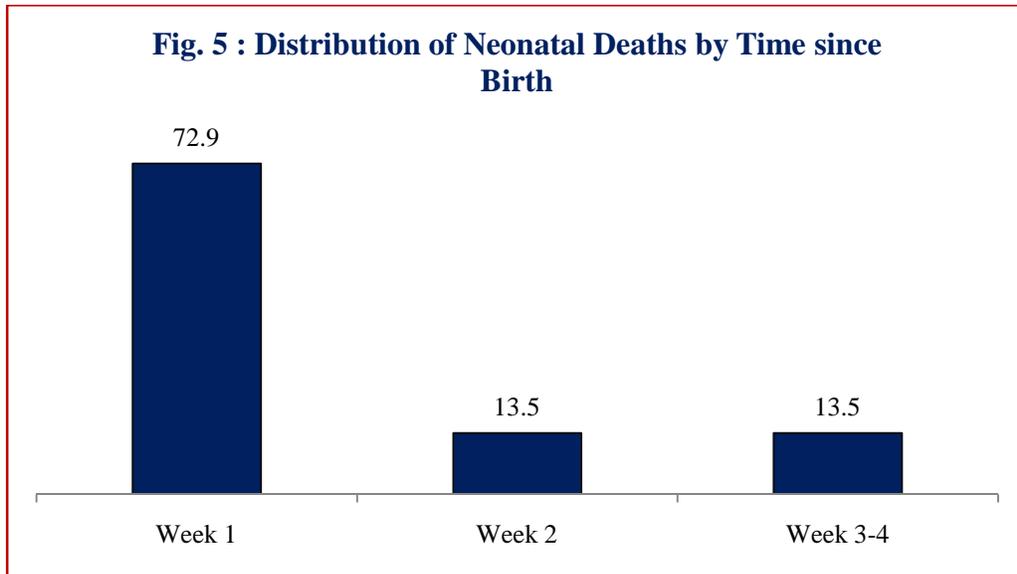
**Fig. 4: Causes of Neonatal Deaths in India**



Source: Liu et al, 2012, Lancet 2012, Statistical Report

### Timing of Neonatal Deaths

It is estimated that around 40 per cent of all still births and neonatal deaths take place during labour and the day of birth, i.e. approximately within 48 hours. About three-fourths of the total neonatal deaths occur in the first week of life, with the first 24 hours accounting for more than one-third (37%) of the deaths occurring during the entire neonatal period (**Fig.5 and Fig.6**). Notably, half of all maternal deaths also take place during this crucial period.



Source: Sankar MJ, 2014 (Systemic review – under publication)

## Prevalence of Low Birth Weight Babies

India accounts more than 40 per cent of the global burden of low birth weight babies with 7.5 million babies (or 30% of the country's total annual live births) being born with a birth weight less than 2500 grams. Of these 7.5 million babies, 60 per cent are born at term after fetal growth restriction, while the remaining 40 per cent are born preterm, constituting a quarter of the global burden of preterm births. Preterm babies, in addition to being at a higher risk of neonatal mortality, are at an increased risk of post-neonatal mortality, stunting, and long-term neuro-developmental impairment during childhood. The prevalence of birth defects in the country is 6-7 per cent which translates to around 1.7 million birth defects annually. The common birth defects include congenital heart disease (8-10 per 1000 live births), congenital deafness (5.6-10 per 1000 live births), and neural tube defects (4-11.4 per 1000 live births) (March of Dimes report, 2006).

## Social Determinants of Maternal and Neonatal Mortality

The underlying social, political and economic conditions also contribute to maternal and neonatal deaths, and these require a wider range of interventions, beyond the direct purview of the health sector.

**1. Economic and Social Status:** Women in poor households have reduced access to nutrition, rest, health education and healthcare – all of which are essential for safe pregnancy. Such women are also likely to be more malnourished and anaemic with greater risk of dying as a result of haemorrhage.

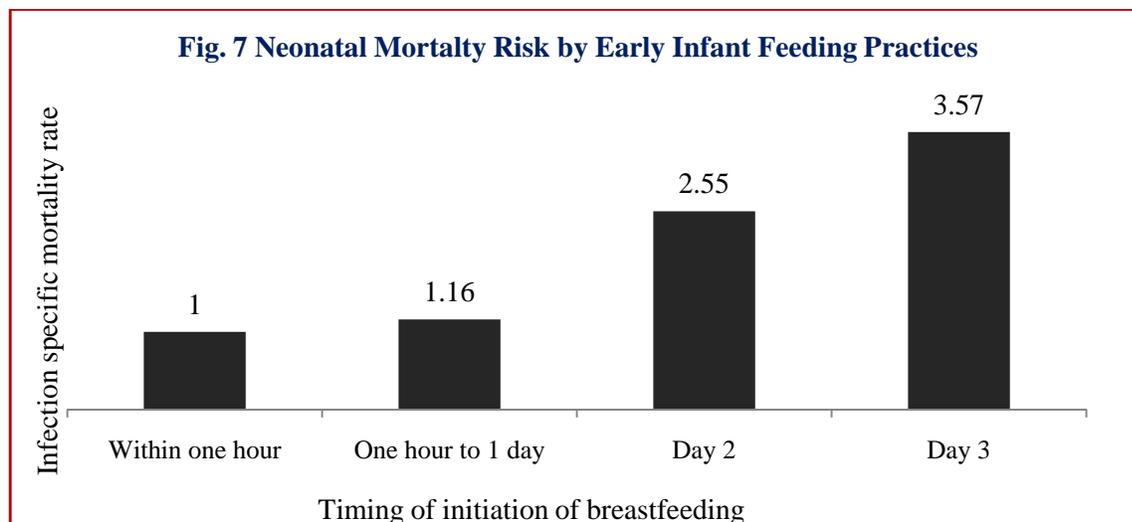
**2. Early Marriage and Childbearing:** Women who get pregnant young tend to develop more complications during pregnancy and delivery and are more likely to die. Neonatal mortalities also higher among young women. Risk of complications is also higher among women whose pregnancies are not adequately spaced, and where there is frequent childbearing.

**3. Public Infrastructure and Access to Care:** The lack of roads and public transport is a barrier to access. In such areas, the development and therefore density and functioning of both public and private health services is poor. This is a major contributor to maternal deaths.



### Initiation of Breastfeeding and Risk of Neonatal Death

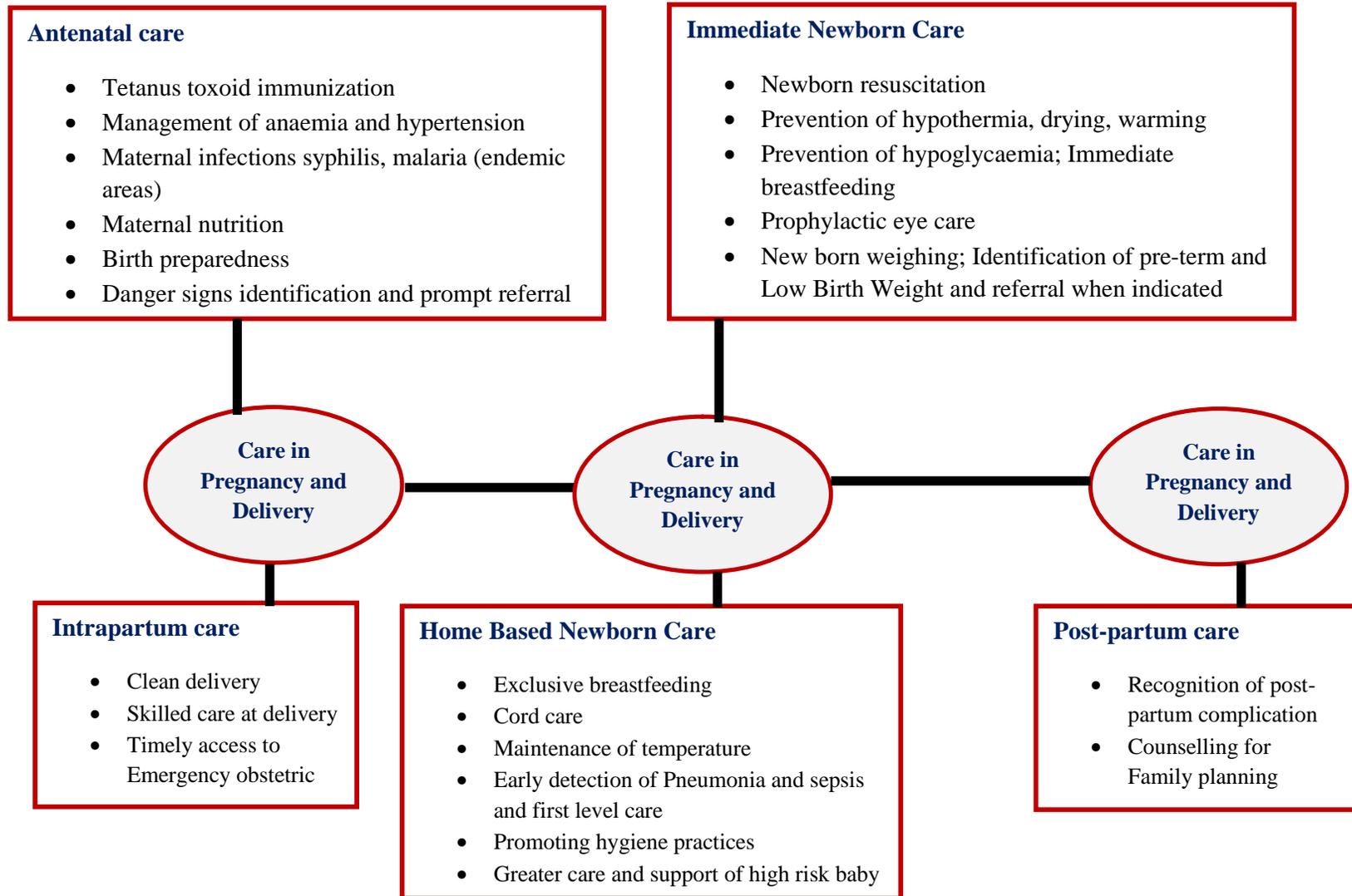
Strong evidence showed that risk of death as a result of infection increased as the delay in initiating breastfeeding increased. Overall, late initiation of breastfeeding (after day 1) was associated with a 2.6-fold increased risk of infection-specific neonatal mortality. Delaying the initiation of breastfeeding till day 3 increased the risk of infection-specific neonatal mortality by 3.6 fold (**Fig. 7**).

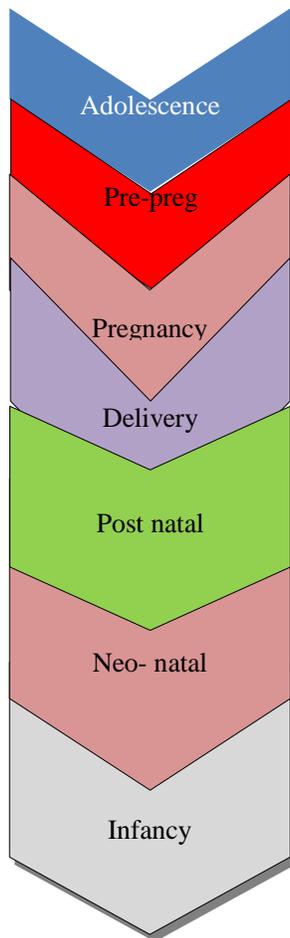


### Effective Technical Interventions to Reduce Neonatal Mortality

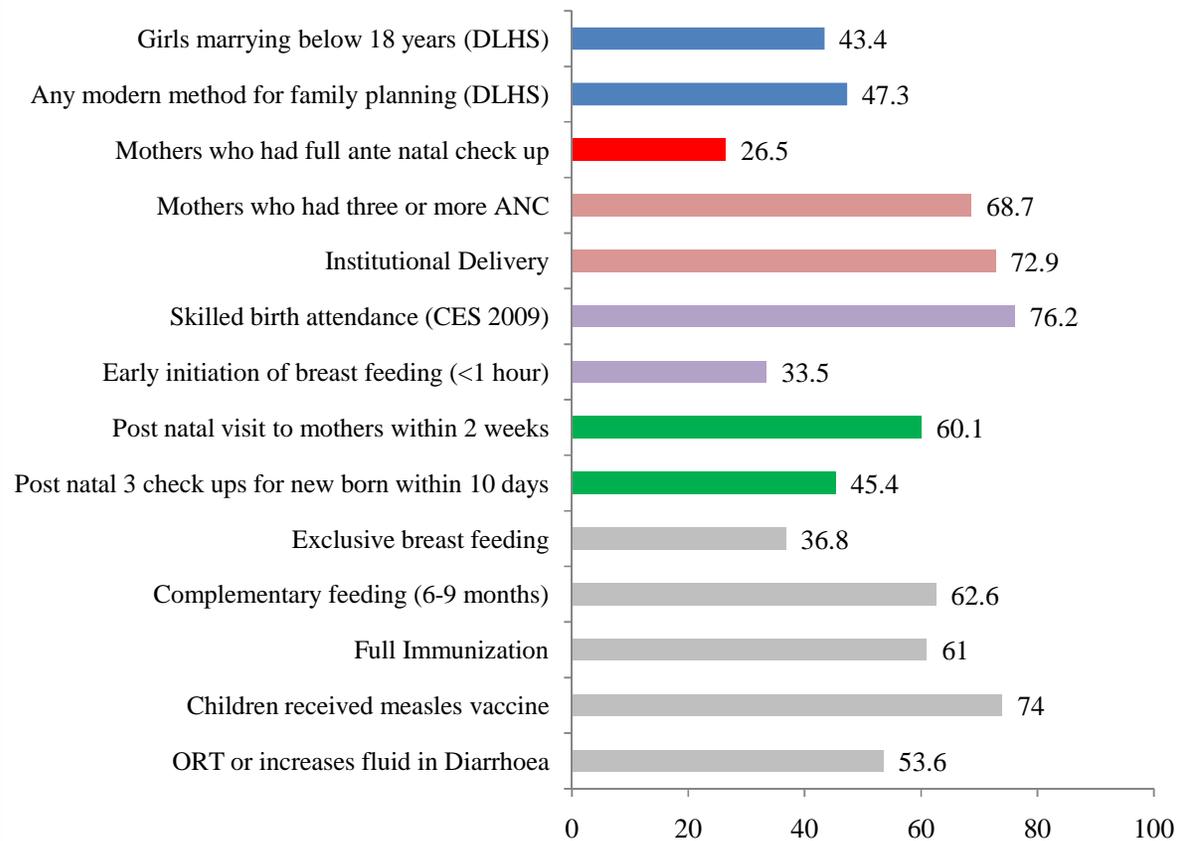
Effective interventions to reduce neonatal deaths span both maternal and neonatal care and encompass interventions for appropriate care during pregnancy, care for the mother and newborn during and immediately after delivery, and care for the newborn during the first weeks of life (**Fig. 8**).

**Fig. 8: Continuum of Care for Maternal and Newborn Survival**





**Fig.9 Coverage of Key Interventions across Life Stages**



Data source: CES 2009

**3**

**GUIDELINES ON MATERNAL  
AND NEWBORN HEALTH AND  
MANAGEMENT OF PRETERM  
BIRTH**



## CHAPTER 3

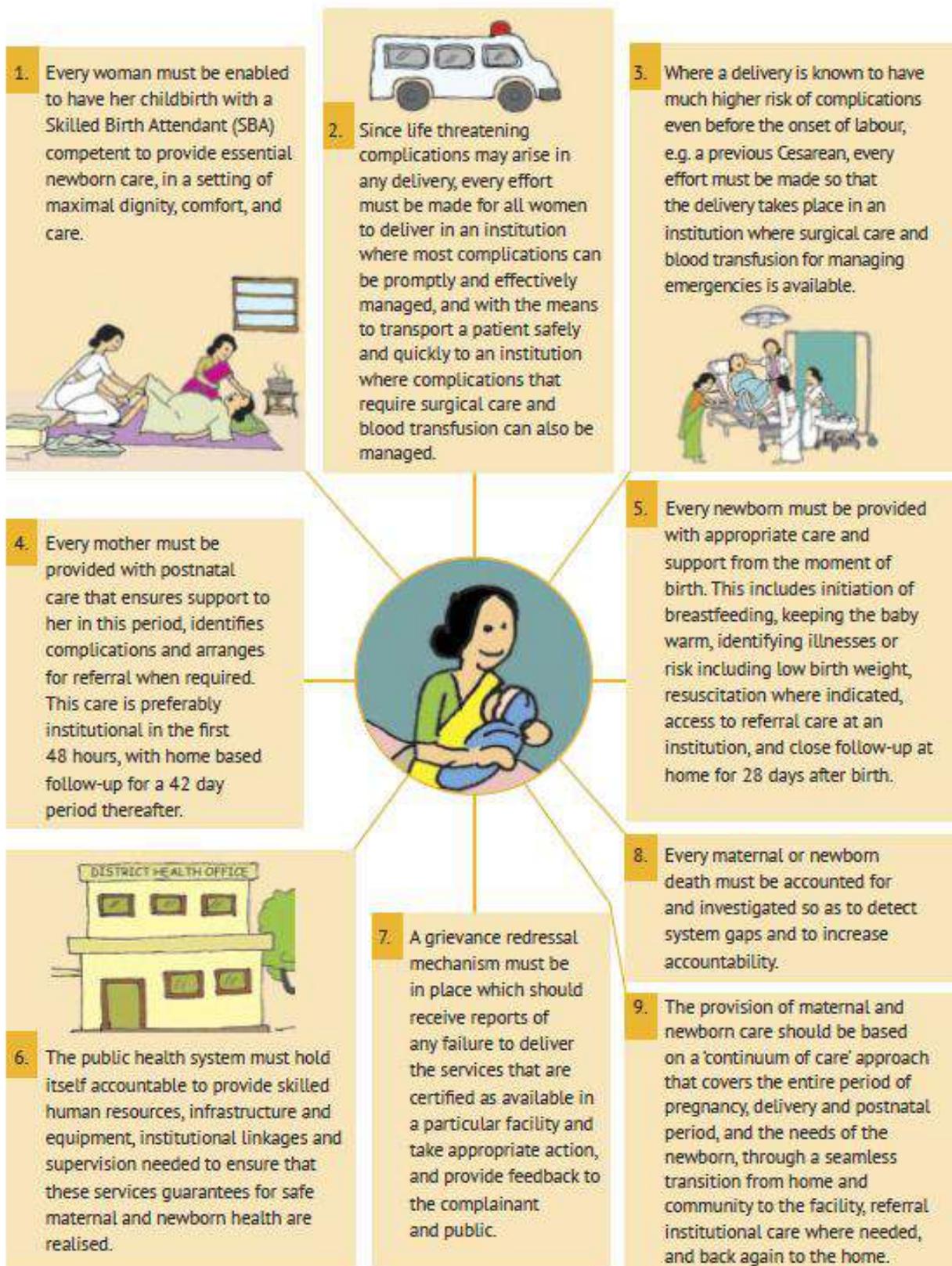
### I. GUIDELINES ON MATERNAL AND NEWBORN HEALTH AND MANAGEMENT OF PRETERM BIRTH

The guidelines are designed to help programme managers at district and state level, to plan, implement and supervise the delivery of services that would guarantee a safe childbirth for every mother.

They answer the following key questions:

- What are the principles underlying the provision of care for mothers and newborns?
- What are the key strategies to improve maternal and newborn health?
- What is the package of services to be made available to ensure safe pregnancy and childbirth, and care of the newborn?
- Where are these services to be made available?
- What are the human resources and skills needed for providing services at each level? How and where can these skills be built up?
- What infrastructure, equipment and supplies are needed to provide these services?
- What are the institutional linkages and community mobilization initiatives needed to support these services?
- How do we monitor and supervise these services?
- How do we certify each institution for the quality and package of services it provides?
- What are the financial packages available for the provision of services at each level?

## 1. Principles of Organizing Care for Maternal and Newborn Health



## 2. Strategies for Ensuring Improvements in Maternal and Newborn Health

The key strategy is to ensure care of the pregnant mother and newborn during the period from conception up to 42 days of delivery. A more comprehensive approach to reduce maternal and neonatal mortality also encompasses the period of adolescence among girls to ensure that they are well-equipped for pregnancy and childbirth and the provision of family planning to ensure that no pregnancy occurs before the age of 21 years.

The strategies for maternal and newborn health include:

### Provision of Quality Antenatal Care

All women must have access to a package of antenatal services provided in the community or at the facility by a provider who is skilled and who has the necessary equipment and supplies.

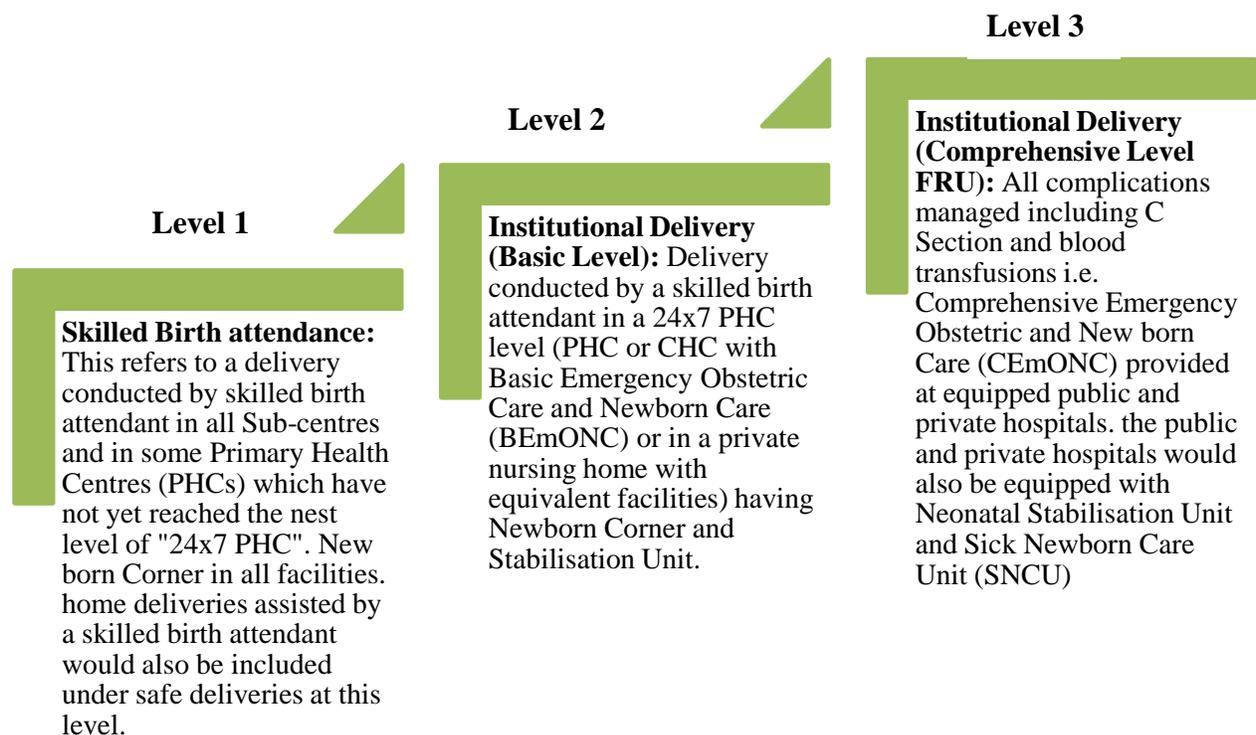
### Ensure Access to a Skilled Birth Attendant

A Skilled Birth Attendant (SBA) is a professionally qualified individual who can handle normal pregnancies and deliveries, equipped with skills to provide essential newborn care, identify obstetric and neonatal emergencies, manage complications as per their defined competencies, and undertake timely referral to a higher centre where comprehensive obstetric care can be provided.

### Functional Facilities to Provide Institutional Delivery

Care for pregnancy, childbirth and newborn can be provided at any of the three facility levels shown in the box:

#### 2.1 Definitions



*The point is simple – any delivery that happens within the four walls of a health institution is not to be called institutional. It must provide a level of care as specified. Private sector care should also be grouped along these categories.*

## **2.2 Facility Based Newborn Care**

This should be given at the time of birth as appropriate to each of the three levels – Sick Neonatal Care Unit at district hospitals, Newborn Stabilization Units at all institutional delivery facilities, whether comprehensive or basic, and Newborn Care Corner at other facilities.

## **2.3 Home Based Newborn Care and Postnatal Care**

This should be provided through a series of visits. (First two days of care should be given at the facility where institutional delivery took place.) At home, care should be provided within 24 hours of delivery for the newborn by a trained community health volunteer who may be an Accredited Social Health Activist (ASHA) or an Anganwadi Worker (AWW) or other health worker as appropriate to that context and who is a resident of that habitation.

## **2.4 Referral Linkage and Transport**

This is for access to emergency services. The ideal situation is where every mother delivers in an institution with access to a referral centre within one hour in case of complications, requiring surgery and blood transfusion. District health plans must conform to a roadmap to reach this ideal, respecting and supporting the wishes of families at every stage.

## **2.5 Behaviour Change Communication (BCC)**

This is carried out by ASHA and other health workers to ensure care in pregnancy and for the newborn, recognition of complications and their danger signs, birth planning, and choosing a safe site for delivery.

## **2.6 Involvement of Women’s Groups and Community Mobilization**

This is required to promote key messages for delaying age at marriage, spacing, delaying age at first birth, and ensuring gap of at least 3 years between pregnancies and management of unwanted pregnancies.

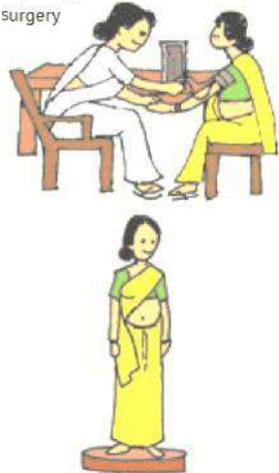
To ensure delivery of these services, the programme should define

- a) The package of services to be delivered at each level,
- b) The quality of standards and protocols for these services,
- c) The minimum skills the service providers would have to be certified for,
- d) The process of certification of both facility and of service provider, and
- e) The institutional linkages and community mobilization that is needed.

### 3. The Service delivery Framework

This service delivery framework is presented in the following table.

#### Antenatal care (minimum 4 ANC's including registration)

Level 1 SBA level	Level 2 Institutional ( Basic Level )	Level 3 Institutional ( Comprehensive Level )
Delivery by SBAs ( sub-centre, PHCs not functioning as 24x7 and home deliveries conducted by SBA)	PHC-Basic obstetric and neonatal care (24x7 PHCs, CHCs other than FRUs)	FRU-Comprehensive obstetric and Neonatal Care (DH, SDH, RH, CEmONC, selected CHCs)
<p>ANC session should include:-</p> <ul style="list-style-type: none"> <li>• Registration (within 12 weeks)</li> <li>• Physical examination + weight+ BP + abdominal examination</li> <li>• Identification and referral for danger signs</li> <li>• Ensuring consumption of at least 100 IFA tables (for all pregnant women)/200 (for anaemic women). Severe anaemia needs referral. Deworming should be done after the first trimester, preferably during 2<sup>nd</sup> trimester of pregnancy.</li> <li>• Essential lab investigations (HB%, urine for albumin/sugar, pregnancy test)</li> <li>• TT immunization (two doses at interval of one month)</li> <li>• Counselling on nutrition, birth preparedness, safe abortion and institutional delivery</li> </ul> <p>Assured referral linkages for complicated pregnancies and deliveries.</p>	<p><b>All in Level 1</b> + blood grouping &amp; Rh typing, Wet mount (saline/KOH),RPR/VDRL</p> <p>Management and provision of all basic obstetric &amp; newborn care including management of all complications other than those requiring blood transfusion or surgery.</p> <p>Linkages with nearest ICTC/ PPTCT centre for voluntary counselling and testing for HIV and PPTCT services</p> 	<p><b>All in Level 1</b> + blood cross matching+management of severe anaemia. Management of complications in pregnancy referred from <b>Levels 1 and 2</b></p> 

## Intranatal care

<b>Level 1 SBA Level</b>	<b>Level 2 Institutional (Basic Level)</b>	<b>Level 3 Institutional (Comprehensive Level)</b>
Delivery by SBAs (Sub-centre, PHCs not functioning as 24x7 and home deliveries conducted by SBA)	PHC-Basic Obstetric and Neonatal care (24x7 PHCs, CHCs other than FRUs)	FRU-Comprehensive Obstetric and Neonatal Care (DH, SDH, RH, CEmONC, selected CHCs)
<ul style="list-style-type: none"> <li>• Normal delivery with use of partograph</li> <li>• Active management of third stage of labour</li> <li>• Infection prevention</li> <li>• Identification and referral for danger signs</li> <li>• Pre-referral management for obstetric emergencies, e.g. eclampsia, PPH, shock</li> <li>• Assured referral linkages with higher facilities</li> </ul> <p><b>Essential newborn care will include:</b></p> <ul style="list-style-type: none"> <li>• Neonatal resuscitation</li> <li>• Warmth</li> <li>• Infection prevention</li> <li>• Initiation of breastfeeding within an hour of birth</li> <li>• Screening for congenital anomalies</li> <li>• Weighing of newborns</li> </ul>	<p><b>All in Level 1 +</b> Availability of following services round the clock</p> <ul style="list-style-type: none"> <li>• Episiotomy and suturing cervical tear</li> <li>• Assisted vaginal deliveries like outlet forceps, vacuum</li> <li>• Stabilization of patients with obstetric emergencies, e.g. eclampsia, PPH, sepsis, shock</li> </ul> <p>Referral linkages with higher facilities</p> <p><b>Essential newborn care as in Level 1+</b></p> <ul style="list-style-type: none"> <li>• Antenatal Corticosteroids to the mother in case of pre-term babies to prevent Respiratory Distress Syndrome (RDS)</li> <li>• Immediate care of LBW newborns (&gt;1800 gm)</li> <li>• Vitamin K for premature babies</li> </ul>	<p><b>All in Level 2 +</b> availability of following services round the clock:</p> <ul style="list-style-type: none"> <li>• Management of obstructed labour</li> <li>• Surgical interventions like Caesarean Section</li> <li>• Comprehensive management of all obstetric emergencies e.g. PIH/Eclampsia, Sepsis, PPH retained placenta, shock etc.</li> <li>• In-house blood bank/blood storage centre</li> <li>• Referral linkages with higher facilities including medical colleges</li> </ul> <p><b>Essential newborn care as in Level 2 +</b></p> <ul style="list-style-type: none"> <li>• Care of LBW newborns &lt;1800 gm</li> <li>• Care of sick newborns</li> <li>• Vitamin K for premature babies</li> </ul> <div style="text-align: right;">  </div>

## Postnatal and Newborn Care

<b>Level 1</b> <b>SBA Level</b>	<b>Level 2</b> <b>Institutional (Basic Level)</b>	<b>Level 3</b> <b>Institutional (Comprehensive Level)</b>
Delivery by SBAs (Sub-Centre, PHCs not functioning as 24x7 and home deliveries conducted by SBA)	PHC-Basic Obstetric and Neonatal Care (24x7 PHCs, CHCs other than FRUs)	FRU-Comprehensive Obstetric and Neonatal Care (DH, SDH, RH, selected CHCs)
<ul style="list-style-type: none"> <li>• Minimum 6 hours stay post delivery</li> <li>• Counselling for feeding, nutrition, family planning, hygiene, immunization and PN check-up</li> <li>• Home visits on 3rd, 7th and 42<sup>nd</sup> day, both for mother and baby, are needed. Additional visits are needed for the newborn on day 14, 21 and 28. Further visits may be necessary for LBW and sick newborns.</li> <li>• Timely identification of danger signs and complications, and referral of mother and baby</li> </ul> <p><b>Newborn Care</b></p> <ul style="list-style-type: none"> <li>• Warmth</li> <li>• Hygiene and cord care</li> <li>• Exclusive breastfeeding for 6 months</li> <li>• Identification, management and referral of sick neonates, low birth weight (LBW) and pre-term newborns</li> <li>• Referral linkages for management of complications</li> <li>• Care of LBW newborns&lt;2500 gm</li> <li>• Zero day immunization OPV, BCG, Hepatitis B</li> </ul>	<p><b>All in Level 1 +</b></p> <ul style="list-style-type: none"> <li>• 48 hours stay post-delivery and all the postnatal services for zero and third day to mother and baby</li> <li>• Timely referral of women with postnatal complications</li> <li>• Stabilization of mother with postnatal emergencies, e.g. PPH, sepsis, shock, retained placenta</li> <li>• Referral linkages with higher facilities</li> </ul> <p><b>Newborn Care as in Level 1 +</b></p> <ul style="list-style-type: none"> <li>• Stabilization of complications and referral</li> <li>• Care of LBW newborns&gt;1800 gm</li> <li>• Referral services for newborns&lt;1800 gm and other newborn complications</li> <li>• Management of sepsis</li> </ul>	<p><b>All in Level 2 +</b></p> <p>Clinical management of all maternal emergencies such as PPH, Puerperal Sepsis, Eclampsia, Breast Abscess, post-surgical complication, shock and any other postnatal complications such as RH incompatibility etc.</p> <p><b>Newborn Care as in Level 2 +</b> in district hospitals through Sick Newborn Care Unit (SNCU)</p> <ul style="list-style-type: none"> <li>• Management of complications</li> <li>• Care of LBW newborns&lt;1800 gm</li> <li>• Establish referral linkages with higher facilities</li> </ul> <div style="text-align: right; margin-top: 20px;">  </div>

### Safe Abortion Services as per MTP Act

Level 1 SBA Level	Level 2 Institutional (Basic Level)	Level 3 Institutional (Comprehensive Level)
Delivery by SBAs (Sub-Centre, PHCs not functioning as 24x7 and home deliveries conducted by SBA)	PHC-Basic Obstetric and Neonatal Care (24x7 PHCs, CHCs other than FRUs)	FRU-Comprehensive Obstetric and Neonatal Care (DH, SDH, RH, CEmONC, selected CHCs)
Counselling and facilitation for safe abortion services  	<b>Same as in Level 1 +</b> <ul style="list-style-type: none"> <li>• Essential – MVA up to 8 weeks</li> <li>• Desirable first trimester services (up to 8 weeks) as per MTP Act and Guidelines</li> <li>• Post abortion contraceptive counselling</li> <li>• Referral linkages with higher centre for cases beyond 8 weeks of pregnancy up to 20 weeks</li> <li>• Treatment of incomplete/inevitable/spontaneous abortions</li> <li>• Medical methods of abortion (up to 7 weeks of pregnancy) with referral linkages</li> </ul>	<b>Same as in Level 2 +</b> <ul style="list-style-type: none"> <li>• Second trimester MTP as per MTP Act and Guidelines</li> <li>• Management of all post abortion complications</li> </ul>

### Management of RTI/STIs

Counselling, prevention and referral	<b>All in Level 1 +</b> <ul style="list-style-type: none"> <li>• Identification and management of RTI/STIs</li> <li>• Referral linkages with ICTC</li> </ul>	<b>All in Level 2 + ICTC</b> (desirable) <ul style="list-style-type: none"> <li>• PPTCT at district hospitals</li> </ul>
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### Family Planning Services as per the FP guidelines

<ul style="list-style-type: none"> <li>• Emergency contraception pills</li> <li>• Counselling, motivation for small family norm,</li> </ul>	<b>All in Level 1 +</b> <ul style="list-style-type: none"> <li>• Desirable - Male Sterilization including Non-Scalpel Vasectomy +</li> </ul>	<b>All in Level 2 +</b> <ul style="list-style-type: none"> <li>• Male Sterilization including Non-Scalpel Vasectomy</li> <li>• Female Sterilization (Mini-</li> </ul>
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distribution of condom, oral contraceptive pills, IUD insertion • Follow-up services for contraceptive acceptors, including post sterilization acceptors	Tubectomy • Referral linkages for sterilization	Lap and Laparoscopic Tubectomy) • Management of all complications
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#### 4. Making Home Deliveries Safer

Even while we continue to promote institutional delivery, we have a “responsibility to help families choosing to give birth at home to have a safe and clean labour, delivery, and postpartum experience”. The single most important component of making a home delivery safe is ensuring that a SBA attends the delivery. The second most important component is to have a plan for referral if complications arise.

This birth preparedness plan must be made during Antenatal Care (ANC) visit. The birth plan includes contact information, knowledge of danger signs, transport arrangement, MCP Card, financial arrangements, potential last minute access to the referral facility etc. The plan is entered into the woman’s antenatal card.

#### I. Symptoms or signs that identify a woman at risk who should not deliver at home

##### Danger signs

- Any bleeding in pregnancy, generalised swelling of the body and seizures, high fever

##### During previous pregnancy

- Caesarean delivery, poor obstetric history with previous foetal loss; in this pregnancy, premature labour or malpresenting foetus, severe anaemia, medical disorders such as heart disease, diabetes, tuberculosis, hepatitis or jaundice.

#### Checklists for preparation of home birth

##### i) Checklist for Family:

Families of women who have made up their mind on a home delivery should be given a checklist, at least a month before the due date, to help ensure they have everything ready for a safe home birth. The nurse/midwife or ASHA should visit the home with the checklist at least two weeks before the expected date of delivery to make sure that the family is prepared. The family/ ASHA should call the ANM at the onset of labour.

##### ii) Checklist for the ANM:

The ANM must be informed and be present with her kit during labour and delivery to provide skilled attendance at birth, and ASHA to help provide care for the newborn.

##### iii) The Safe Home Delivery Protocol

Is described in the MoHFW Guidelines for ANM, LHV, and Staff Nurses.

## 5. The Infrastructure and Support Services

Level 1 SBA Level	Level 2 Institutional (Basic Level)	Level 3 Institutional (Comprehensive Level)
Delivery by SBAs (Sub-Centre, PHCs not functioning as 24x7 and home deliveries conducted by SBA)	PHC - Basic Obstetric and Neonatal Care (24X7 PHCs, CHCs other than FRUs)	FRU-Comprehensive Obstetric and Neonatal Care (DH, SDH, RH, selected CHCs)
<b>i) Minimum number of beds</b>		
Facility for staying at least 6 hrs: In home deliveries, SBA should be available for 4 hours after child birth.	Minimum 6 beds, stay - 48 hrs (uncomplicated delivery)	Minimum 30 beds, stay - 48 hrs (uncomplicated delivery), 3-7 days (complicated)
<b>ii) Human resource</b>		
<p>Minimum two ANMs (trained as SBA) of which one is available at the headquarters most of the time.</p> <p>(In PHC, it could be trained nurses)</p> <p><i>For home delivery, the SBA would need assistance of a team of two or three women of which at least one could be ASHA, dai, AWW or any community level health worker and another could be a Self-Help Group (SHG) member or any community volunteer, to help with ancillary functions.</i></p>	<ul style="list-style-type: none"> <li>• 1-2 MO with BEmOC training, trained in F-IMNCI</li> <li>• 3-5 Staff Nurses/ANM with SBA training and NSSK (round-the-clock presence)</li> <li>• Other supportive staff</li> </ul>	<p><b>As in Level 2 +</b></p> <ul style="list-style-type: none"> <li>• Obstetrician (degree/diploma/ MBBS with EmOC training)</li> <li>• An anaesthetist (degree/ diploma/MBBS with LSAS training)</li> <li>• Paediatrician (degree/diploma/ MBBS trained in F-IMNCI)</li> <li>• For blood transfusion services: A lab technician with skills in blood transfusion or a MO trained to provide these services</li> <li>• Nursing Care – At least 9 more nurses to work on 8 hour shift duties and provide quality nursing care, in labour room (3), neonatal stabilisation unit (3), OT and other areas of these hospitals (3). DH-SNCU would require even more.</li> </ul>
<b>iii) Labour room</b>		
Labour table and newborn care corner to provide immediate care for all newborns. For drugs,	<b>All in Level 1 +</b> Vacuum extractor + newborn corner + stabilisation unit where most sick and LBW newborns are	<b>Same as in Level 2 +</b> Special Newborn Care Unit equipped with drugs, equipment and essential drugs

equipment and essential drugs  At home – clean surface and surroundings	stabilised. For drugs, equipment and essential drugs	
<b>iv) Functional Operation Theatre (OT) and Blood Transfusion Facility</b>		
Not required	OT for minor procedures including for sterilisation and MVA	<ul style="list-style-type: none"> <li>• 24x7 functional OT with facility for C-section</li> <li>• Blood Bank/Blood Storage Unit</li> </ul>
<b>v) Drugs and equipment</b>		•
Refer to the appropriate GoI guidelines and protocols.	Refer to the appropriate GoI guidelines and protocols.	Refer to the appropriate GoI guidelines and protocols.
<b>vi) Diet provision</b>		
None: Clean safe drinking water. Boiled and cooled water. Home food brought by patient's family	Diet provided by facility – hot cooked meals	Diet provided by facility – hot cooked meals
<b>vii) Transport</b>		
<ul style="list-style-type: none"> <li>• Should be linked to a transport service that reaches within 30minutes and transport patient referral centre.</li> <li>• Transport may be needed for ANM to reach the home of pregnant women.</li> </ul>	<ul style="list-style-type: none"> <li>• Should have an ambulance that could transfer patient to referral centre within an hour.</li> <li>• Should be able to pick up patient from the village.</li> <li>• Should drop patient back home in specific category of cases.</li> </ul>	Should be able to pick up and drop patient as required. Should be available on 24x7 call basis.
<b>viii) Water and electricity</b>		
Assured water supply that can be drawn and stored locally. Electricity supply linked to mainline or adequate solar source, inverter or back-up generator as appropriate.	Piped 24 hour water supply and 24x7 electricity link with generator back-up	Same as in Level 2
<b>ix) Lighting, warmth and ventilation</b>		
No drafts; some simple ways of keeping room warm and ventilated. Insect proofing required.	Minimum required ventilation, lighting and warmth. Minimum lighting measured in lux. Insect proofing mandatory.	Same as in Level 2+ Controlled temperature in intensive setting such as SNCU and OT
<b>x) Security</b>		
Provided by family and attenders	One person on security duty at all times. No stray animals allowed in	Security round-the-clock through An outsourced or adequately staffed

	premises. Compound wall mandatory*.	internal arrangement. Compound wall mandatory.*
<b>xi) Sanitation and hygiene</b>		
One toilet for patient use that is kept clean at all times. Fresh sheet for every patient, fresh sheet for every day for every bed in use and as needed.	<ul style="list-style-type: none"> <li>• At least two toilets for patient use and two bathing and washing spaces.</li> <li>• Separate spaces for women</li> <li>• Fresh sheet for every patient, fresh sheet for every day. Laundry service desired.</li> </ul>	<ul style="list-style-type: none"> <li>• At least six toilets and three bathing spaces for patient use.</li> <li>• Rest same as in Level II, but assured laundry service must be in place.</li> </ul>
<b>xii) Infection prevention</b>		
Hand washing as per protocol. Use of disposable gloves, use of disinfectants, clean sheet, new blade for cord cutting, sterilised cord ties, In facility – boiling of instruments and colour coded bins.	Same as in Level 1 + Autoclave, colour coded bins	Same as in Level 2
<b>xiii) Waste management</b>		
Hub-cutter, puncture proof boxes for needle disposal, deep burial of placenta	Same as in Level 1 Deep burial of placenta and all blood and tissue fluid stained	Same as in Level 1
<b>xiv) Rest facilities</b>		
Not needed	<p>Relative/companion waiting and utility space needed</p> <p>Birth waiting homes in institutions for families residing in remote areas with poor road connectivity</p>	For ASHAs, birth companion and relatives; separate toilets/ kitchen, needed.

\*Overcrowding of wards to be prevented

## **6. Making Choices for Safe Delivery**

### **Choices for the District Planner**

Given below is an example of district planning for safe delivery for all pregnant women, applying the principles and strategies discussed:

District Population: 20, 00,000: Birth rate: 27/1000

Expected Annual deliveries: 54,000: Monthly Deliveries: 4,500

Blocks: 10 - One with DH, two with a CHC and seven with a block PHC

District Plan Target: 100% safe deliveries in a three year time period

### **Institutional Comprehensive Level (providing CEmONC services)**

- Strengthen the District hospital, to manage 800 deliveries per month of which 400 are expected to be complicated, referred from lower level institutions. The majority of the 400 normal deliveries come from the nearby peri-urban areas.
- This load of complicated and normal deliveries can also be shared by one private health facility that provides this level of service.
- Strengthen and upgrade two CHCs to this level of service provision. These could manage 200 deliveries each per month. About half are expected to be complicated cases.

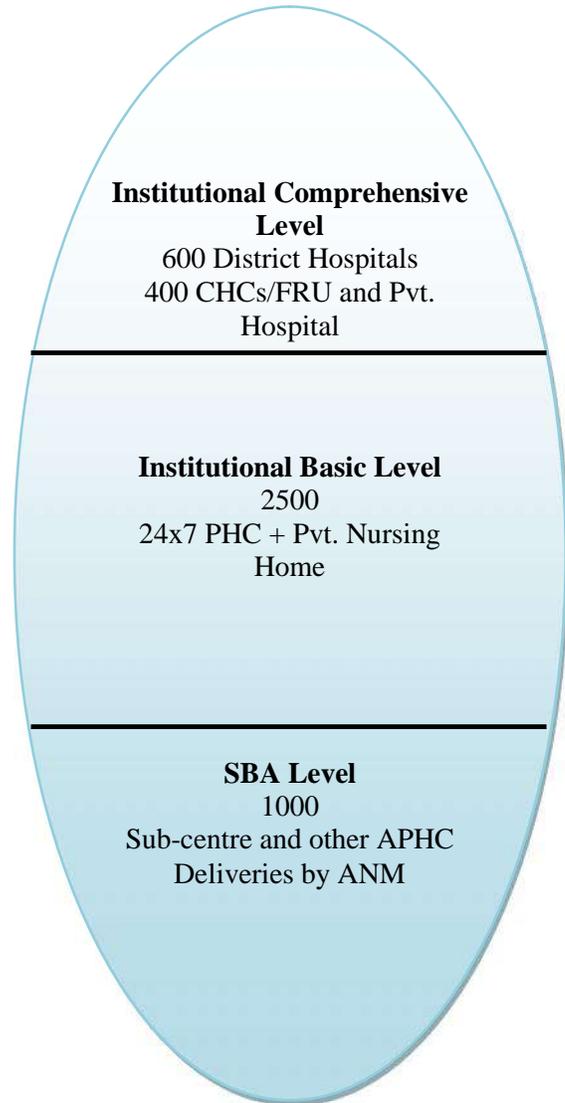
### **Institutional Basic Level (providing BEmONC services)**

- Strengthen the remaining seven block PHCs and upgrade 11 APHCs (out of about 40 in the district) to Institutional Basic level (24X7 PHCs)
- Potential to enter into partnerships with two private health facilities, which provide this level of service to share the caseload.
- These twenty institutions would manage a total of 2,500 deliveries per month, or about 125 deliveries each per month, which would be mostly normal deliveries.
- These institutions would have the capacity to manage selected complications and stabilise other complications for onward referral if C-section and blood transfusion are required.

of the ANM attending the delivery at the house could be planned for under appropriate circumstances.

### **SBA Level**

- Strengthen 50 of the 400 sub-centres of the district and some of the remaining APHCs to be able to attend to at least 1000 deliveries per month.
- These facilities would be selected from areas where the 24X7 PHC is distant or overcrowded or poor families in that area are not confident of traveling so far and would prefer the delivery to be nearer home.
- While a majority of the deliveries would take place in the facility, the alternative



**Depending upon the specific context in each district, the number of deliveries in each category and the choice of facilities to upgrade would differ.**

## 7. Supervision and Monitoring

In addition to the supervisory structure that exists in the state government system, the following need to be put in place. The supervision mechanisms should be organised at three levels: Block, District and State levels.

### Block Level Supervision

Designation	Responsibilities	Profile
Skills Supervisor	<ul style="list-style-type: none"> <li>Ensures that all nurse-midwife service providers have the necessary skills through on-the-job mentoring.</li> <li>Ensures that protocols of care built up for the services at each level are followed, and all service providers have necessary skills.</li> <li>Guides and ensures that all existing Lady Health Visitors (LHVs) undertake clinical supervision in accordance with protocols.</li> </ul>	<ul style="list-style-type: none"> <li>A nurse-practitioner or a nurse recruited and trained for the necessary competencies.</li> </ul>
Quality Supervisor	<ul style="list-style-type: none"> <li>Ensures that all facilities and institutions in the block are certified for quality which includes security, safety and comfort of pregnant women and newborns</li> <li>Provides the necessary logistic and organisational support to improve facility level quality and management processes.</li> <li>Builds up community level linkages to ensure demand generation.</li> <li>Trains all existing supervisors.</li> </ul>	<ul style="list-style-type: none"> <li>The existing supervisors (male or female), could be selected for this purpose.</li> <li>Alternatively, a fresh management graduate willing to be trained for the position could be selected.</li> </ul>
Block Level Accounts Manager	<ul style="list-style-type: none"> <li>Ensures that all payments made at block and sub-block levels are accounted for in a timely manner and open to public scrutiny.</li> <li>Ensures that all facilities and providers making payments maintain proper accounts.</li> </ul>	<ul style="list-style-type: none"> <li>Existing block accounts manager if in place.</li> <li>Alternatively, a contractual accountant could be recruited for this purpose.</li> </ul>

Supervisors would have a handbook with both checklists and protocols. A dynamic supervisory team would play a key role in changing the current work ethics and institutional culture.

## Main Indicators at Block and District Level

Pregnant Woman	Newborn
<ul style="list-style-type: none"> <li>• % of pregnancies registered as against expected</li> <li>• % of deliveries attended by SBA at each level</li> <li>• % of ANCs registered within 12 weeks</li> <li>• % of complicated deliveries attended</li> <li>• % of complications identified and appropriately treated by diagnosis: severe anaemia, haemorrhage, prolonged/obstructed labour, hypertension in pregnancy, puerperal sepsis</li> <li>• % complication referred</li> <li>• C-section rates</li> </ul>	<ul style="list-style-type: none"> <li>• % of newborns weighed</li> <li>• % of newborns who were LBW</li> <li>• % of newborns admitted and managed for complications</li> <li>• % of newborns breastfed within the first hour</li> <li>• % newborns resuscitated</li> <li>• % of stillbirths and neonatal deaths</li> </ul>

### Family Planning

Appropriate family planning indicators as per the HMIS

### Deaths

- Reports of still births, neonatal deaths, maternal deaths and causes
- Maternal and neonatal death autopsy reports

Note: Only those indicators required by the national level based on HMIS guidelines would be reported up. The remaining indicators are to be used for planning and Management purposes.

### District Level Supervision

The number of Supervisors needed at the block and district levels depend on the number of facilities providing delivery services. One skill Supervisor and one quality Supervisor for 10 facilities is adequate.

### Processes of Supervision

- Periodic review meetings
- Monthly analysis, validation and feedback of HMIS data
- Facility visits: using supervisory protocols
- Training: on-the-job, refresher and supplementary

If there are more than 50 facilities in a district, including sub- centres where institutional deliveries take place, then another set of district level supervisors will be required. This could be one full time nurse tutor or one full time quality Supervisor. In addition, the Assistant Chief Medical Officer or RCH officers could provide support.

The quality supervisors and programme officers would be responsible for the facility support and quality certification of each of these facilities. They would also manage the grievance redressal cell which would include non-official members.

## **State Level Supervision**

Quarterly review meetings would be held by the State Secretary or the Mission Director, with representative of Ministry of Health and Family Welfare (MoHFW) invited.

A quality certification body of five persons would organise and supervise the process of quality certification of facilities. This could be located in a Quality Assurance Cell, wherein professional bodies are represented.

The Training and Skills Coordination team located in the State Institute of Health and Family Welfare (SIHFW) or other suitable bodies with guidance from NIHFW would monitor, support and ensure the performance and outcomes of the nurse-supervisors in terms of skills in place and use of protocols.

## **8. Quality and its Certification**

### **Components**

- Standards of care for each service that meet quality requirements.
- An authorized certifying team charged with making the visit and certifying the institution.
- A process of verification of the facilities so certified.
- A process of withdrawal of certification if standards fall below the acceptable norms.
- A process of public announcement of certification or its withdrawal.

### **Standards of Care**

The areas that should be covered are given in the service delivery framework. The details of these would be given in the supervisor's handbook. Supportive supervision would be able to grade every facility in terms of the package of services it provides, the quantity of services it provides and the quality of each service provided. Once the service is ready for inspection and certification, the supervisors should inform the certifying authority.

### **Authorized Certification Team**

The current quality assurance body could be the certification team with one consultant added in by the Mission Director of the state and another nominated by the Mission Director at the national level. In the district quality assurance team, the district would specify three persons selected as per guidelines that are available and train them for this purpose. A checklist and guide manual for certification should be made available.

The members of this team should be paid on a per visit basis.

### **Verifying Process**

About 5% of facilities in each district should be verified by a second body. In case of gross errors in certification, the composition and conduct of the certification team should be reassessed and changed where needed.

### **Withdrawal**

Withdrawal can be initiated in response to a report from the facility itself, or from the supervisor, or the certifying or verifying team or in response to a public grievance of denial which was investigated and found to be valid. The same authority as signs the certification would sign its withdrawal.

## Public Announcement

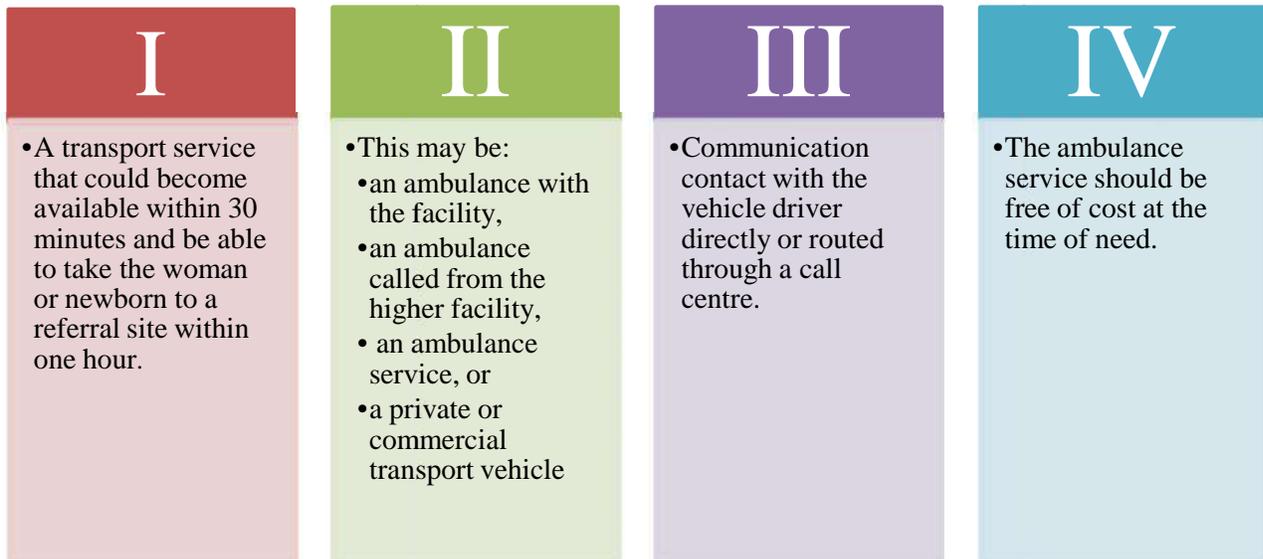
Notices would be put up in the facility and panchayat offices. Information must be passed on to the ASHAs and service providers of the facilities below the institution level who refer cases to it. In addition, it could be announced as a news item or advertisement in the local newspaper with the largest circulation in that district.

## 9. Institutional Support Systems and Linkages

### Referral Transport and Referral Facility Linkage

All health facilities accredited for safe delivery or institutional delivery should necessarily have an assured referral transport linkage and an assured referral facility linkage.

#### What is an Assured Referral Transport?



#### What is an Assured Referral Facility Linkage?

- An assured referral facility linkage is a facility which provides management of complications including surgical emergencies and blood transfusion (what is termed comprehensive emergency obstetric care) and which agrees to provide these services on a cashless basis to any patient referred from the referring facility. This may be a public hospital or an accredited private hospital through a public-private partnership arrangement.
- The effort should be to have a network of referral centres within one or two hours of any facility providing institutional delivery or any sort of skilled birth assistance.
- The facility referred to has been intimated by phone about the referral with a brief history of the patient, so that on arrival the woman is received and treatment started immediately.

## **Improved Logistics on Drugs and Supplies**

- All the drugs and supplies needed for provision of care in pregnancy, whether antenatal, intranatal or postnatal, and whatever the level of care, should be available as per the approved drugs and supplies list, without interruption in each and every facility.
- Warehouse: This primarily requires a district warehouse with a minimum stock of three months of all the drugs and supplies mentioned for each facility. The warehouse should have an adequate inventory management system. Minor equipment required for these facilities like blood pressure instruments and Sahle's haemoglobinometers should also be stocked at the district warehouse at a level of 25% of all the facilities requiring it, so that as and when they break or under repair, the facility has the required supplies.
- Every facility should indent when their stocks fall below an estimated three months requirement. Transport of supplies to the periphery should be assured by the district for Sub-centres and all facilities without a vehicle to transport the stocks immediately.
- Procurement systems must ensure that drugs and supplies and minor equipment at the district level are replenished as and when the stocks fall below a three month threshold.

## **Family Planning Programme Linkages**

All maternal healthcare providers should be able to counsel the new mothers and the families on how to plan their family size and the advantages of a small family. There is also a need to counsel for delaying the first child where the woman is in her teens or still young, and to space between children. Spacing should be advocated for its beneficial effect on the health of the mother and child and also on reduction of MMR and IMR. They should also counsel on contraceptive choices so that the family can make the most appropriate contraceptive choice for their context and need. There is also a need to counsel against son preference.

Since specialized service providers are few, SBAs must have adequate skills in family planning methods, especially for Intrauterine Device (IUD) insertion to space between children and while waiting for sterilization. IUD quality and effectiveness has now improved such that it could be the only contraception opted for. Similarly, doctors in institutional delivery settings must also be able to do female sterilization post-partum or by mini-lap procedure, or a non-scalpel vasectomy. To the extent that the service provider has won the confidence of the mother and her family, and established her credibility, her advice on family planning should be taken seriously and acted on.

## II. OTHER GUIDELINES ON MATERNAL HEALTH

### 1. GUIDELINES FOR CONTROL OF IRON DEFICIENCY ANAEMIA

Anemia is a major public health challenge in India. Yet, a comprehensive plan of action to combat this problem has been missing. There are certain existing guidelines for control of iron deficiency anemia with regard to children and pregnant women and lactating mothers. However, many critical age groups have been missing from this strategy. For instance, adolescents have received no attention so far. There have also been crevices by way of actual administration of IFA to children with several operational issues constraining the prescribed interventions. The National Iron+ Initiative is an attempt to look at iron deficiency anemia comprehensively across all life stages including adolescents and women in reproductive age group who are not pregnant or lactating. The schedule of IFA supplementation has also been reviewed to make both administration and compliance much simpler

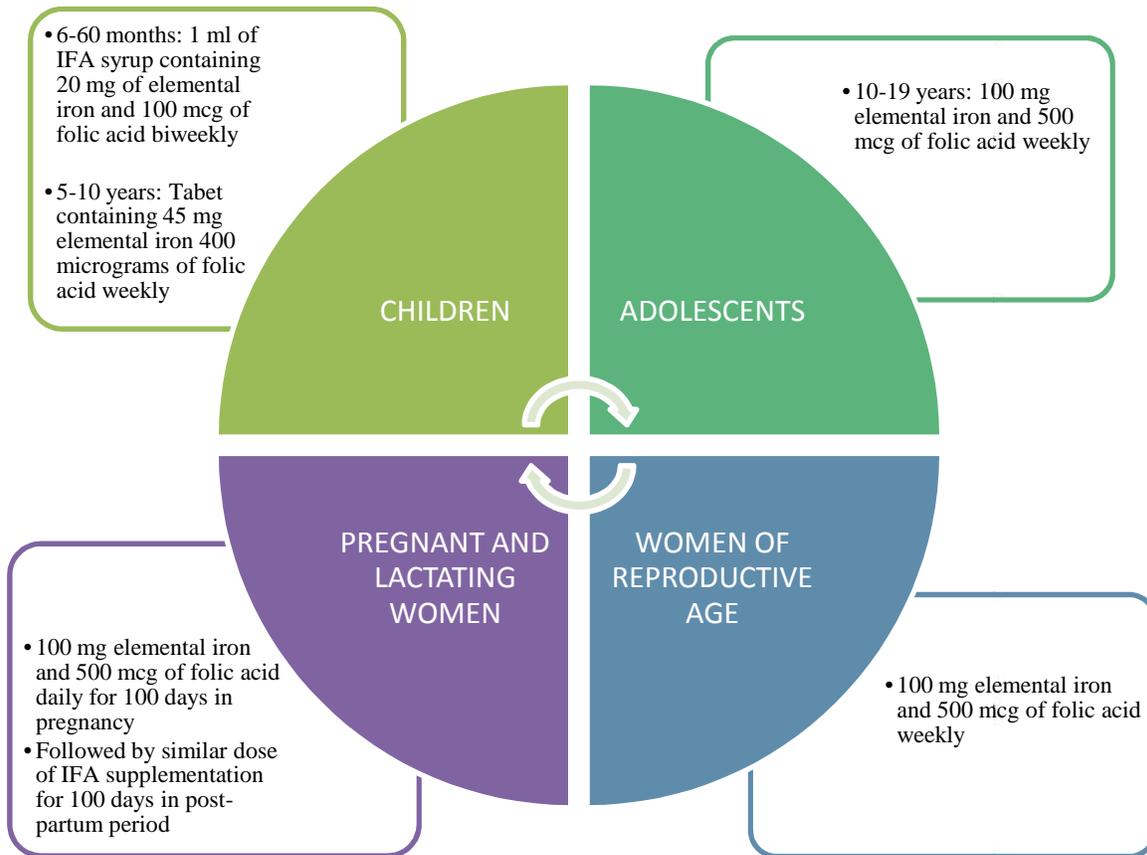
An anemia supplementation programme across the life cycle is proposed in which beneficiaries will receive iron and folic acid supplementation irrespective of their iron/Hb status. The age-specific interventions are based on WHO recommendations, synthesis of global evidence on IFA supplementation and the recommendations of national experts (**Table 4 and Fig. 10**).

**Table 12: IFA Supplementation Programme and Service Delivery**

Age group	Interventions/Dose	Regime	Service delivery
0-60 months	1ml of IFA syrup containing 20 mg of elemental iron and 100 mcg of folic acid	Biweekly throughout the period 6–60 months of age and de-worming for children 12 months and above.	Through ASHA Inclusion in MCP card
5-10 years	Tablets of 45 mg elemental iron and 400 mcg of folic acid	Weekly throughout the period 5–10 years of age and biannual de-worming	In school through teachers and for out of school children through Anganwadi centre (AWC) Mobilization by ASHA
10-19 years	100 mg elemental iron and 500 mcg of folic acid	Weekly throughout the period 10–19 years of age and biannual de-worming	In school through teachers and for those out-of-school through AWC Mobilization by ASHA
<b>Pregnant and lactating women</b>	100 mg elemental iron and 500 mcg of folic acid	1 tablet daily for 100 days, starting after the first trimester, at 14–16 weeks of gestation. To be repeated for 100 days post-partum.	ANC/ ANM /ASHA Inclusion in MCP card
<b>Women in reproductive age (WRA) group</b>	100 mg elemental iron and 500 mcg of folic acid	Weekly throughout the reproductive period	Through ASHA during house visit for contraceptive distribution

**ASHA to be suitably incentivized for provision IFA supplements to beneficiary**

**Fig. 10: IFA Supplementation Programme**



**Weekly Iron and Folic Acid Supplementation (WIFS) Programme for Adolescent Girls and Boys (10–19 Years)**

Adolescents (age 10–19 years) are at high risk of iron deficiency and anemia due to accelerated increase in requirements for iron, poor dietary intake of iron, high rate of infection and worm infestation as well as the social norm of early marriage and adolescent pregnancy. During this stage the requirement of nutrition and micronutrients is relatively high. Therefore, adolescents, especially girls, particularly those between the ages of 12–15 years, are vulnerable to iron deficiency mainly because requirements are at a peak. Evidence from many countries across the globe suggests that a weekly IFA supplement is as efficacious as daily supplements with a much lower rate of side effects.

For this target segment the following interventions are proposed:

- Administration of supervised weekly IFA supplementation (100 mg elemental iron and 500 mcg folic acid) throughout the calendar year, i.e., 52 weeks each year
- Albendazole (400 mg) tablets for biannual de-worming for helminthic control
- Screening of target groups for anemia and referring these cases to an appropriate health facility
- Information and counselling for improving dietary intake and for taking action for prevention of intestinal worm infestation

### **Implementation modalities for WIFS**

The WIFS programme will be implemented in urban and rural areas for adolescent boys and girls in school (10–19 years) through the platform of Government/Government aided/ municipal schools. WIFS will also reach out-of-school girls in the age group 10–19 years through the platform of Anganwadi Kendras.

The strategy involves a “fixed day – Monday” approach for IFA distribution. Teachers and AWWs will supervise the ingestion of the IFA tablet by the beneficiaries.

### **Pregnant Women and Lactating Mothers**

Iron and folic acid tablets are being distributed through sub-centres, primary health centres (PHCs), and community health centres (CHCs) and district hospitals (DHs) to all pregnant women and lactating mothers.

### **Dose and regimen**

IFA supplementation (100 mg elemental iron and 500 mcg of folic acid) every day for at least 100 days, starting after the first trimester, at 14–16 weeks of gestation followed by the same dose for 100 days in post-partum period. Nutrition counselling is being provided during antenatal/postnatal check-ups and during monthly Village Health & Nutrition Day (VHND) to pregnant women and lactating mothers.

In addition to this, all women in the reproductive age group in the pre-conception period and up to the first trimester of the pregnancy are advised to have 400 mcg of folic acid tablets to reduce the incidence of neural tube defects in the foetus.

### **Implementation**

Provision of IFA tablets to pregnant women will be during routine antenatal visits at sub-centre/ PHC/CHC/DH. ASHA to ensure provision of IFA supplements to pregnant women who are not able to come for regular antenatal checkups through home visits. She will also monitor compliance of IFA tablets consumption through weekly house visits.

### **Women in Reproductive Age Group (WRA) (15–45 Years)**

Women of reproductive age are at increased risk of anaemia because of chronic iron depletion during the menstrual cycle, inadequate dietary intakes and recurrent infections. Given the intensity of the problem in the country, intermittent IFA supplementation to all menstruating women would be a cost effective strategy to build up iron stores and prevent anaemia.

The following intervention is proposed for them:

- IFA supplementation (100 mg elemental iron and 500 mcg of folic acid) throughout the calendar year, i.e., 52 weeks, each year
- Albendazole (400 mg) tablets for biannual de-worming for helminthic control

ASHA to distribute IFA supplements to women in reproductive age group during doorstep distribution of contraceptives.

## 2. NATIONAL GUIDELINES ON DEWORMING IN PREGNANCY

Anaemia is a significant health problem in the country, especially in pregnant women. Although oral Iron and Folic Acid (IFA) supplementation is a part of the anaemia control programme for pregnant women since the last three decades, the desired reduction in anaemia has not been achieved so far by this single intervention. There is, thus, a need to address the contributing factors leading to anaemia especially among pregnant women. Considering the demonstrated benefits, variance in the use of de-worming, and the fact that sanitation and hygiene is suboptimal in most parts of the country, there was a felt need for framing clear guidelines for the use of anti-helminthic drugs during pregnancy.

### Technical Guidelines for Deworming during Pregnancy

#### Aim

To reduce maternal morbidity and mortality

#### Objective

- To reduce the incidence of anaemia in pregnancy by deworming during pregnancy
- To provide the protocol for deworming during pregnancy and operational details of this programme

#### Target population

All pregnant women in Soil Transmitted Helminthes (STH) endemic areas (prevalence more than 20%).



Considering the evidence around safety, efficacy, and tolerance, it is recommended that Benzimidazoles are the most suitable for deworming during pregnancy. However, Albendazole being a single dose drug is more cost effective and has better potential for compliance, and as such, is being recommended as the drug of choice under this programme.

#### Specifications of Albendazole

A single dose of 400 mg IP of Albendazole is recommended

### **Side effects and contraindications**

- There is no specific contraindication/side effect except nausea, vomiting, rash, and abdominal pain, urticaria in some cases
- It should not be used in the 1st trimester of pregnancy.

### **Counselling tips**

- All states should ensure adequate measures such as focused behaviour change communication (BCC) for improving sanitation and hygiene among pregnant women (PW)
- Counselling focused on improving sanitation and hygiene among pregnant women should be emphasized.
- WASH interventions, including social measures to curb unhealthy practices like open defecation etc., need to be addressed.

### **Other supportive measures:**

- The disposal of all human faeces (including that of young children) in water sealed latrines in order to minimize environmental contamination
- Use of footwear to prevent hookworm infestation
- Washing of fruits and vegetables before consumption
- Drinking safe potable water
- Personal hygiene and hand washing before meals and after using the toilet
- Environmental sanitation: Water stagnation and garbage free surroundings should be ensured in villages/towns. State specific action plans for liquid and solid waste management have to be implemented
- Accredited Social Health Activists (ASHAs) should follow all the processes of BCC to ensure the change in the behaviour of pregnant women.
- Village Health and Sanitation Committee (VHSC) forums should be used for disseminating information and ensuring the physical infrastructure required for establishing WASH measures.

### 3. NATIONAL GUIDELINES FOR CALCIUM SUPPLEMENTATION DURING PREGNANCY AND LACTATION

#### Introduction

The daily recommended dietary allowances (RDA) for calcium in pregnancy and lactation is 1200 mg per day. The National Nutrition Monitoring Bureau (NNMB) - 2012 data from 10 Indian states shows that the daily calcium intake during pregnancy and lactation for Indian women is less than 30 per cent of RDA (which means it is only 400 mg/d). This shows that most pregnant and lactating women in India have low dietary calcium intake.

Considering the poor dietary calcium intake among pregnant and lactating women in India, high prevalence of hypertensive disorders in pregnancy and to maintain uniformity in dosage of maternal calcium supplementation across the country, there was an urgent need to formulate our own guidelines for calcium supplementation during pregnancy. Moreover, there is ample universal evidence that calcium supplementation in pregnancy reduces incidence of pre-eclampsia and other hypertensive disorders in pregnancy.

#### Technical guidelines for Calcium supplementation in pregnancy

##### Target population

- All pregnant women in the community.
- Individual states are free to implement this programme across the states in a phased manner.
- All health facilities and outreach points in the state/district have to be covered.



#### Protocol for calcium supplementation

- All pregnant and lactating women to be counselled about intake of calcium rich foods.
- Oral swallowable calcium tablets to be taken twice a day (total 1g calcium/day) starting from 14 weeks of pregnancy up to six months post-partum.
- One calcium tablet should be taken with the morning/afternoon meal and the second tablet with the evening/night meal. It is not advisable to take both calcium tablets together as > 800 mg calcium interferes with iron absorption. Calcium tablets should not be taken empty stomach since it causes gastritis.

- Calcium and Iron Folic Acid (IFA) tablets should not be taken together since calcium inhibits iron absorption. IFA tablets should be taken preferably two hours after a meal.
- Each calcium tablet should contain 500 mg elemental calcium and 250 IU vitamin D3. The preferred formulation for calcium is calcium carbonate. The rationale for inclusion of Vitamin D is to enhance the absorption of calcium.

### Side effects & contraindications

- None, within the recommended limit (1gm/d).
- A small proportion of women may experience mild gastritis so calcium tablets should be taken with meals.
- Excessive consumption of calcium (>3 gm/d) may increase the risk of urinary stones and Urinary Tract Infection (UTI) and reduce the absorption of essential micronutrients.

### Strategy for implementation

It is recommended that calcium be given to all PW after the first trimester till six months after delivery.

- During pregnancy, 360 tablets are required per woman (@ 2 tablets per day from 14 weeks to 40 weeks = 26 weeks = 182 days) and 360 tablets in the first six months of the postnatal period (@ 2 tablets per day for 6 months).
- ANM to distribute calcium tablets along with IFA tablets to all pregnant women as per the following proposed schedule, which can be adapted to the state context:

When	How many	By whom	Where
 Second ANC	 12 strips (@ 15 tablets per strip)	ANM	ANC clinic/VHND
 Third ANC	 12 strips (@ 15 tablets per strip)	ANM	ANC clinic/VHND
 At the time of zero dose of polio for the infant	 12 strips (@ 15 tablets per strip)	ANM	Immunization clinic/VHND
 At the time of third dose of Diphtheria, Pertussis, and Tetanus (DPT) for the infant	 12 strips (@ 15 tablets per strip)	ANM	Immunization clinic/VHND

- If the woman delivers at home or doesn't come to the ANC clinic, the ASHA has the responsibility to deliver the calcium tablets at the beneficiary's home.
- Appropriate counselling of the target group to be done by the designated counsellor/staff/service provider at the time of distributing the tablets. Counselling must emphasize the benefits and protocol of calcium intake including the appropriate time at which to take calcium and iron tablets.
- The total number of calcium tablets required for a district should be calculated accordingly at the district level, after taking into account the total number of pregnant women registered for ANC and a 10 per cent add on.

#### 4. ADVANCE DISTRIBUTION OF MISOPROSTOL TO PREVENT POST PARTUM HAEMORRHAGE DURING HOME BIRTHS

The Ministry of Health and Family Welfare, Government of India (MoHFW, GoI) is committed to provide free of cost quality institutional care to mothers and their newborns during and just after childbirth under the Janani Suraksha Yojana and the Janani Shishu Suraksha Karyakram. However, there remain a number of pockets in the country where the coverage of institutional deliveries is still sub-optimal due to a variety of reasons like remoteness and inaccessibility. In these circumstances, where some of the women are not able to access institutional care and deliver at home, the ANMs are expected to provide quality intra- and immediate postpartum care to women and their newborns.

It is a well-known fact that haemorrhage is the largest contributor to maternal mortality in India and is responsible for almost 40 per cent of the maternal deaths in the country, the major part of these deaths being due to Postpartum Haemorrhage (PPH). GOI has authorized the ANMs to administer Misoprostol for prevention of PPH during home deliveries. However, administration of uterotonics currently requires the assistance of a skilled birth attendant (SBA), and therefore is not available to women experiencing unattended home births.

**Misoprostol** an oral prostaglandin E1 analogue that, **can be administered immediately following delivery**, offers an important alternative for PPH prevention in resource constrained settings and during home births, where Injection Oxytocin is not available or where its use is not feasible. Oral Misoprostol does not require provider skills of administering injections or the consumables for injections or refrigeration and can therefore be stored and used easily. These factors enable programs using misoprostol for the prevention of PPH to potentially achieve high coverage and use, particularly by women who live in the remote and more inaccessible areas where a health facility may be located at a prohibitively long distance.

As the ANMs may not be available to attend to the woman at the time of home delivery in a significant number of cases due to various factors, due consideration was given to the fact that ASHAs are available in the community who could give Misoprostol to women in late pregnancy, to prevent PPH. This was supported by the available body of global evidence on the effectiveness, feasibility and safety of advance distribution of Misoprostol to pregnant women for prevention of PPH. The overarching objective of introducing community-based distribution of Misoprostol to pregnant women by ANMs and ASHAs is to increase the accessibility of this life saving commodity by bringing it to the doorstep of pregnant women who are likely to deliver at their homes.

*Policy Decision: In the light of the rationale as explained above, the MoHFW, GoI has taken a policy decision to permit ASHAs to undertake advance distribution of Misoprostol to pregnant women who are likely to deliver at home, for prevention of PPH.*

*In India, Misoprostol, a Schedule "H" drug, has been permitted by the Drug Controller General of India for manufacture for use in postpartum hemorrhage. However, by virtue of the drug being authorized for use in the public health system, it is categorized as a schedule K drug and is exempt from the restrictions imposed on the schedule H drugs. Hence the drug is permitted for distribution by frontline health workers including Community Health Volunteers through the Government Health System.*

## *Conditionalities for Advance Distribution of Misoprostol for Prevention of Postpartum Haemorrhage (PPH)*

### **Advance distribution of Misoprostol: Key considerations**

All pregnant women should be counseled to deliver at the nearest health facility that can provide appropriate care for the mother and the newborn.

- In cases where, for some reason, the woman is unable to access the health facility at the time of delivery and home delivery is imminent, this should be attended by the ANM or any otherskilled birth attendant.
- For notified hilly and other remote and inaccessible areas with poor road connectivity, GoI has recommended incentives for ANMs to attend to home births.

a) *Criteria for selection of areas for implementation:* In the exceptional scenario where a pregnant woman is not likely to access a health facility for delivery and the ANM is also unlikely to attend to her during delivery at home, advance distribution of Misoprostol for prevention of PPH should be considered.

There are two additional special scenarios where Misoprostol may be given for self-administration or administration by ASHAs, for the prevention of PPH:

- Those women who intended to deliver at institutions but delivered at home instead.
- Those women who intended to deliver at institutions but delivered in transit to the health facility.

This policy decision will be applicable only to pre-identified areas of the country including remote and inaccessible areas which have low institutional delivery rates. The following areas have been identified for advance community based distribution of Misoprostol by ANMs and ASHAs:

- All districts of the high fertility states of Bihar, Uttar Pradesh, Madhya Pradesh, Jharkhand, Uttarakhand, Rajasthan, Chhattisgarh, Orissa, Assam, Himachal Pradesh, Jammu and Kashmir where home delivery rate is more than 20%.
- All 184 High Priority Districts.
- Hilly and tribal districts.
- Based on the experience of implementation of the intervention of allowing community based distribution of Misoprostol in the high focus states/districts as mentioned above, this can be scaled up to all those districts of the other states of the country where home delivery rates are more than 20 per cent.
- In districts where institutional delivery rate is more than 80 per cent (i.e. home delivery rate is less than 20%), states can identify additional blocks/areas which are hard to reach/remote/inaccessible throughout the year or for some parts of the year due to snow, floods, water logging etc. for implementation of this strategy.

b) *Steps for identification of pregnant women for community-based advance distribution of Misoprostol:*

- The ANMs and ASHAs are expected to enlist all the pregnant women in their respective catchment areas at any point of time. They (ANMs and ASHAs) are then supposed to counsel and

follow-up these women for undertaking timely ANC visits and encouraging them for delivering at the nearest appropriate level of health facility.

- This enlisting of the pregnant women and follow-up through their pregnancy will allow the ANMs and ASHAs to understand which pregnant women are likely to deliver at home.
- Additionally, ANMs and ASHAs can use the pre-identified criteria given below to identify women who are likely to deliver at home, for advance distribution of Misoprostol for prevention of PPH. This enlisting should be done for all women who are currently pregnant and who have completed 6 months of pregnancy.

#### **Criteria to identify the pregnant women who are likely to deliver at home:**

- Past history of one or more home deliveries in the house-hold.
- Families where women customarily deliver at home due to social/religious/cultural/ economic reasons.
- Number of ANCs: If the pregnant woman has undertaken less than two ANC visits by the end of the 6th month of the current pregnancy.
- No other care giver at home: Women who do not have anyone at home to take care of her other children/family if she goes to the facility for delivery.
- Choice of the woman/family: Cases where the woman/ her family has indicated that she may/would deliver at home, despite best counseling and advocacy for institutional delivery by the ANM and ASHAs.
- Women with disabled children, or from families where there is no other support from an adult.
- Women which, due to the location of their homes in the following hard to reach areas, are likely to deliver at home:
  - Remote villages/hamlets which do not have motorable road connectivity.
  - Remote villages/hamlets villages on hilltops or in the fields, or in the areas which are cutoff from mainland.
  - Snow bound/waterlogged areas/villages for the period the area/villages cut-off from the mainland for >1 month.
- Any other circumstances where the ANM and ASHA are convinced of the probability that the woman might deliver at home.

c) *Responsibility for advance distribution:* The ANM is the chosen health functionary for advance distribution of Misoprostol for prevention of PPH. However in the instances where the ANM is not able to distribute the Misoprostol tablets to the targeted women during the 8<sup>th</sup> month of pregnancy, the ASHA is the appropriate functionary to give these tablets to the pregnant women through home visits.

*Excluding multiple pregnancy: For all pregnancies where Misoprostol is to be distributed to pregnant women for prevention of PPH, it is mandatory that the ASHAs take these women to the ANM at the nearest sub-center or 24 X 7 PHC by the 8<sup>th</sup> month to rule out the presence of multiple pregnancy. In case multiple pregnancies is diagnosed, the pregnant woman should be referred to the appropriate level of facility for further care.*

*d) Process of distribution:*

- Time of distribution: Advance distribution of Misoprostol tablets would be made to those women who have been identified as likely to deliver at home and have reached the 8th month of their pregnancy. This is to ensure that the woman remembers the instructions for taking Misoprostol for PPH prevention.
- Counseling: Such identified women need to be counseled by the ANM and ASHA at least twice at one week's interval with detailed instructions on the self- administration of Misoprostol tablets.
- Dosage: As per the GoI's SBA guidelines, the recommended dose of Misoprostol for PPH prevention i.e. three tablets of 200 mcg each (total of 600 mcg) will be adhered to for the advance distribution of Misoprostol for prevention of PPH.
- Site of distribution: Advance distribution of Misoprostol for prevention of PPH, should preferably be done through home visits by the ANMs or ASHAs. As a woman in labor may not be in a position to take the Misoprostol tablet herself during the third stage, a female family member with whom she is living should be given the appropriate instructions for administration of the tablet.
- Special Cases: In cases where the ASHA is accompanying the woman to the facility for childbirth and the woman happens to deliver in transit, and in cases where women intended to deliver at a health facility but delivered at home, the ASHA/family member accompanying the woman should give 600 mcg of Misoprostol to the woman just after delivery of the baby.

e) *Adverse events:* Though adverse events following administration of Misoprostol are minor and rarely serious, the ANM and ASHA should record and report all cases of adverse events due to the intake of Misoprostol.

**Important Messages**

*Caution:*

1. The pregnant women with the following conditions should be referred for delivering at health facilities.
  - Previous Cesarean Section
  - Myomectomy
  - Malpresentation e.g. breech or transverse lie
  - Severe PIH/severe anemia
  - Cardiac disease or any other medical complications

**2. Misoprostol should not be taken during pregnancy/before delivery as it increases uterine tone and induces contractions which may cause partial or complete abortion and pre-term labour.** If taken during labour before delivery, there is a risk of rupture uterus. Its use in pregnancy has also been associated with birth defects.

*Side/Adverse Effects of Misoprostol:*

- Fever/chills and rigors
- Nausea/Vomiting
- Abdominal cramps
- Diarrhoea or constipation
- Headache
- Severe allergic reaction (rare)

### ***III. Supply and Storage of Misoprostol Tablets:***

Misoprostol will be distributed to the ASHAs by the ANMs and it will be the responsibility of the ANMs to ensure that the ASHAs have an adequate stock of Misoprostol tablets with them.

The calculation for doses of Misoprostol to be given to ASHAs by the ANMs should be based on the number of pregnant women enlisted as likely to deliver at home.

The ANM should ensure that, at any point of time, the ASHA should have the required number of doses of Misoprostol to cover all enlisted women expected to deliver at home, plus one/two additional doses to meet any other eventuality eg. an unexpected delivery at home or for emergency administration of Misoprostol to women who deliver during transportation to the facility.

*Number of doses of Misoprostol to be kept with ASHAs at any point of time = Number of women enlisted (women expected to deliver at home) + one or two emergency doses*

### ***IV. Training:***

The ANMs and ASHAs will be given a one day joint training in the advance distribution of Misoprostol for prevention of PPH.

### ***V. Recording and Reporting:***

The stock of Misoprostol will be distributed to the ANM by the pharmacist of the PHC preferably in the presence of the MO-PHC. The ANMs will, in turn, give the Misoprostol tablets to the ASHAs who will be responsible for distribution of the tablets in the community. Recording and reporting will be an essential component of this initiative.

### ***VI. Incentives:***

If all the conditionalities listed above have been fulfilled and certified by the ANM, the ASHAs will be suitably incentivized for each case where she has distributed a dose of Misoprostol for prevention of PPH. The conditionalities for distribution of incentives to ASHAs will include pre-identification of pregnant women likely to deliver at home, certification of ruling out multiple pregnancy or other contraindications by the ANM on the MCP card and proper instructions to the woman on the mode and dosage of administration of Misoprostol for prevention of PPH.

## 5. MATERNAL AND NEWBORN HEALTH TOOLKIT

Timely provision of emergency obstetric care and routine essential obstetric and newborn care are the key strategies for reduction of maternal and neonatal morbidity and mortality. Mother and newborn is a dyad, hence the service packages should be designed to provide care to the mother from antenatal to postnatal period. Essential newborn care should start soon after delivery and continue thereafter. However, it has been observed that there are weaknesses and substantial gaps in the type of care provided during pregnancy and childbirth.

The toolkit aims to provide knowledge/information on standardized maternal and neonatal care package across the country to provide quality services at public health institutions. Most of the information given in this toolkit has been taken out from various existing guidelines. The additions however are on making state of the art MCH wing, labour room, ward, and OT etc., with complete technical protocols in place.

**This toolkit provides answers to the following key questions:**

1. What are the underlying factors (e.g. delays) which can lead to maternal and neonatal deaths?
2. What are the benchmarks/signal functions to provide quality MNH services?
3. What are the standard, technical protocols for MNH services?
4. How to design, organize, and manage MNH services at various levels including specific requirements for infrastructure, equipment, supplies, human resources, capacity building, recording/reporting at L1, L2, L3 MCH centres?

## **6. GUIDELINES ON THE USE OF ANTENATAL CORTICOSTEROIDS IN PRETERM LABOUR (UNDER SPECIFIC CONDITIONS BY ANM): ESSENTIAL NEWBORN CARE AS IN LEVEL 1+**

Globally, every 10<sup>th</sup> baby is born preterm and India contributes to a quarter of all preterm burdens. Preterm birth is a major risk for mortality and morbidity. Those who survive without proper intervention end up having long term disabilities. A higher risk of adult chronic disease in those born preterm also leads to a major strain on families.

Effective interventions exist to reduce death and disability in premature babies, yet this care does not reach the poorest and most disadvantaged populations where the burden is the highest. Globally, evidence exists that deaths from preterm birth complications can be reduced by over three-quarters with simple, feasible, cost-effective interventions, such as use of antenatal steroids, kangaroo mother care, proper temperature regulation at birth and simple infection prevention measures.

As per World Health Organization (WHO), a preterm baby is defined as a baby who is born alive before 37 weeks of pregnancy are completed. The rate of preterm birth ranges from 5-18 per cent across 184 countries. India has the highest number of preterm births as well as neonatal deaths due to prematurity. Out of an estimated 2.6 crore live births in India each year, 35 lakh babies are born preterm, and out of these, 3.03 lakh babies (10% approximately) die due to complications of preterm births. Several survivors face a lifetime of disability, including learning, hearing and visual disabilities. Preterm birth is a risk factor in at least 50per cent of all neonatal deaths and is the second most common cause of death (after pneumonia) among children under the age of five.

Preterm newborns are classified on the basis of completed gestation period as:

**Extremely Preterm – Less than 28 weeks**

**Very Preterm – 28 to <32 weeks**

**Late and Moderate Preterm – 32 to <37 weeks**

The relative proportion of these groups is 5 per cent, 10per cent and 85per cent, respectively. The mortality rate among preterm newborns increases with decreasing gestational age. It may be noted that even the moderate and late preterm neonates have an increased mortality risk as compared to those born at term gestation. Extremely preterm babies require neonatal intensive care for survival. Most of the other preterm babies have a good chance of healthy survival with special newborn care envisaged at sub district, district and medical college hospitals, coupled with facility based kangaroo mother care and home based newborn care.

Preterm babies have numerous challenges including difficulty in feeding, maintaining body temperature and increased susceptibility to infections. Other serious complications which can develop are necrotizing enterocolitis (death of intestinal tissue) and intraventricular hemorrhage (bleeding into the brain). However, the most common cause of death among preterm babies less than 34 weeks is Respiratory Distress Syndrome (RDS). This is an acute lung disease due to surfactant deficiency in the lungs which leads to atelectasis and subsequent failure of gas exchange. Fortunately, RDS can be largely prevented by

administering injection Corticosteroids to the pregnant woman as soon as she is diagnosed with preterm labour.

Injection Corticosteroids (such as Dexamethasone or Betamethasone) when administered to the pregnant woman antenatally, cross the placenta and reach the foetal lung and stimulate surfactant synthesis and maturation of other systems. If this foetus is now delivered prematurely, s/he will have a low risk of developing RDS and, therefore, much higher chance of surviving with supportive care.

### **Recommendation**

Government of India recommends the following for the administration of Antenatal Corticosteroid in preterm labour:

**Single course of injection of Dexamethasone to be administered to women with preterm labour (between 24 and 34 weeks of gestation) at all levels of health facilities in the public as well as the private sector.**

1. To empower Auxiliary Nurse Midwives (ANMs) to administer intramuscular injection Dexamethasone, as a pre-referral dose to a pregnant woman in preterm labour (between 24 and 34 weeks of gestation) and appropriate referral to health facility utilizing the free referral transport. In case the referral is delayed, refused, or referral is not possible, ANM may complete the full course of treatment (4 doses 12 hours apart).
2. Appropriate and timely in-utero referral of pregnant women in preterm labour to facilities with provision of caesarean section and special care newborn units (e.g. District Hospitals/Medical Colleges) to promote adequate and quality care.
3. To recommend that as far as possible, all elective caesarean section or induction of labour in uncomplicated deliveries should be done at or after 39 weeks of gestation to ensure that the baby is mature and of normal weight.

Reduction in the morbidity and mortality in a preterm baby in addition to use of injection corticosteroid in pregnant women shall also be facilitated by:

1. Ensuring Skilled attendance at birth
2. Better Access to EMoC services
3. Provision of Kangaroo Mother Care and support for feeding
4. Ensuring protocols for Infection prevention and management
5. Special care newborn unit at district hospital
6. Adequate referral linkages to a tertiary care unit where ventilator support may be easily available in case of need.

Administration of Antenatal Corticosteroid (Dexamethasone) constitutes an integral part of standard treatment in preterm labour

Oral Preparations of steroids are not to be used

Repeated courses/more frequent doses are not useful. Multiple courses in fact could have harmful neuro-developmental effects in the baby

ANCs have a role even if surfactant replacement is available

## Preparation

*Injection Dexamethasone Sodium Phosphate is available in 4 mg per ml strength.*

### Dose and Route of Administration of Injection Dexamethasone

Dose	6 mg each
No. of Injections	4
Interval between Injections	12 hours
Route of administration	Deep intramuscular
Site of administration	Preferably antero-lateral aspect of thigh
Complete course	Four doses (equivalent to 24mg of total)
Logistics	2 ml disposable syringes and 22/23 gauze needles
Storage	No need to refrigerate

The 6 mg dose would require 1.5 ml of the preparation provided each ml has 4 mg of Dexamethasone.

### Indications and Contraindications for using Corticosteroids in Antenatal Period

	Indications	Contraindications
1	True preterm labour	Frank chorioamnionitis is an absolute contraindication for using antenatal corticosteroids. Following signs and symptoms in the mother suggests Frank amnionitis: 1. <b>History</b> of fever and lower abdominal pain 2. <b>On examination:</b> Foul smelling vaginal discharge, tachycardia and uterine tenderness 3. Fetal tachycardia
2	Following conditions that lead to imminent delivery: <ul style="list-style-type: none"><li>• Antepartum haemorrhage</li><li>• Preterm premature rupture of membrane</li><li>• Severe pre-eclampsia</li></ul>	
<b>Maternal diabetes, pre-eclampsia and hypertension are NOT contraindications for using injection corticosteroid in pregnant women. Dexamethasone can be administered if otherwise indicated with a careful watch on blood sugar and blood pressure [If chorio-amnionitis is suspected, consider delivering the baby].</b>		

### Role of Antenatal Care in Implementation

Early registration of every pregnancy within 12 weeks, followed by regular antenatal care visits till term should be ensured. Information to pregnant women would need to focus on early reporting to a health facility at the first signs of pregnancy complications such as preterm uterine contractions, premature rupture of membranes and symptoms of pre-eclampsia or any other complication. The pregnant woman and her family should be counseled by ANM/ASHA for birth preparedness, danger signs and to opt for institutional delivery.

## Role of ANM

This guideline enables ANM to give the pre-referral dose to pregnant women with preterm labour between 24 to 34 weeks of gestation. To avoid the misuse/overuse of the drug without compromising with the benefit the ANM needs to correctly assess gestational age and true labour pains in case any pregnant woman reports with labour pains. ANM will assess the gestation age as per SBA guidelines and true labour pains as elaborated in Table 15. In case the drug is to be given, safe injection practices for administering injections should be followed.

**Table 15: Assessing True Labour Pains**

S No.	True Labour Pain	False Labour Pain
1.	Begins irregularly but becomes regular and predictable	Begins irregularly and remains irregular
2.	Felt first in the lower back and sweeps around the abdomen in a wave pattern	Felt first abdominally and remains confined to the abdomen and groin
3.	Continues no matter what the woman's level of activity	Often disappears with ambulation or sleep
4.	Increases in duration, frequency and intensity with the passage of time	Does not increase in duration, frequency or intensity with the passage of time
5.	Accompanied by 'show' (blood-stained mucus discharge)	'Show' absent

Once the ANM confirms the diagnosis of true preterm labour between 24 and 34 weeks she will follow the instructions given in the box below:

<ol style="list-style-type: none"><li>1. If the mother is in true labour give recommended pre-referral dose of steroids as given in the flow chart*</li><li>2. Refer the pregnant women to higher centre where neonatal resuscitation facilities exist under Janani Shishu Sureksha Kayakaram (JSSK) Scheme</li><li>3. In case the referral is not possible complete the course of antenatal steroid and contact the nearest health facility</li><li>4. In case the delivery is imminent prepare for delivery and resuscitation of the baby</li><li>5. Refer neonate to the nearest SNCU after appropriate stabilization with a duly filled Referral slip. Ensure that the temperature of the newborn is maintained during transportation</li></ol> <p><b><i>It is to be always remembered that use of Antenatal Corticosteroid is only a part of comprehensive management protocol of preterm labour</i></b></p>
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As per BemOC training manual MoHFW, GoI if the medical officer at a referral facility plans to delay the labour to have adequate response of Antenatal Corticosteroid, should follow as below:

1. If possible delay labour for at least 24 hours for Dexamethasone to have effect or for a period in which the fetus gets maximum benefit of antenatal steroids (within 7 days).
2. Tocolysis (Delaying the labour) is to be done if gestation is more than 24 weeks upto 34 weeks after excluding risk factors like frank infection, pre-eclampsia and diabetes.
3. Labour is allowed to progress in conditions where delay in delivery may worsen the maternal medical status.

## Care during Referral of Pregnant Woman or Newborn

Referral of pregnant woman or preterm newborn becomes a critical activity under the management of preterm labour. Under Janani Shishu Suraksha Karyakaram (JSSK) zero expense treatment and referral is provided at all public health facilities to all sick infants up to 1 year of age and the mother even during antenatal period. The service provider must ensure all findings related to maternal morbidities are mentioned on the case sheet or on the referral slip if the patient is being referred to a higher facility. Recording of Blood Pressure and Urine sugar on the referral slip before giving the referral shot of ANCS should be considered as a mandatory activity. While referring a preterm newborn the service provider must ensure the full documentation both in the case sheet and referral slip. The provider also requires being aware of the following important aspects of referral:

- ✓ Provide relevant, immediate information regarding referral to parents/relatives in simple and practical language which may require repetition for the parents to understand.
- ✓ While taking the consent before referring, poor prognosis/adverse events etc. related to patient needs to be documented in the case sheet.
- ✓ Preferably a nurse/ANM/Doctor/ASHA should accompany the baby in the vehicle to facilitate transfer. Mother or any other relative should accompany the baby.

The ambulance (102/108) should have the following requirements if using transport incubator:

- ✓ Secure fixation for the transport incubator, oxygen and air tanks, monitoring equipment etc.
- ✓ Independent power source and necessary adapters for power source to supplement equipment batteries to ensure uninterrupted operation of the equipment.
- ✓ Equipments needed for thermal control, maintaining the airway, resuscitation, oxygen therapy, CPAP/mechanical ventilation, administration of IV fluids and monitoring should be available and be in working order. Availability of all essential medicines should be ensured.

## Role of AWW

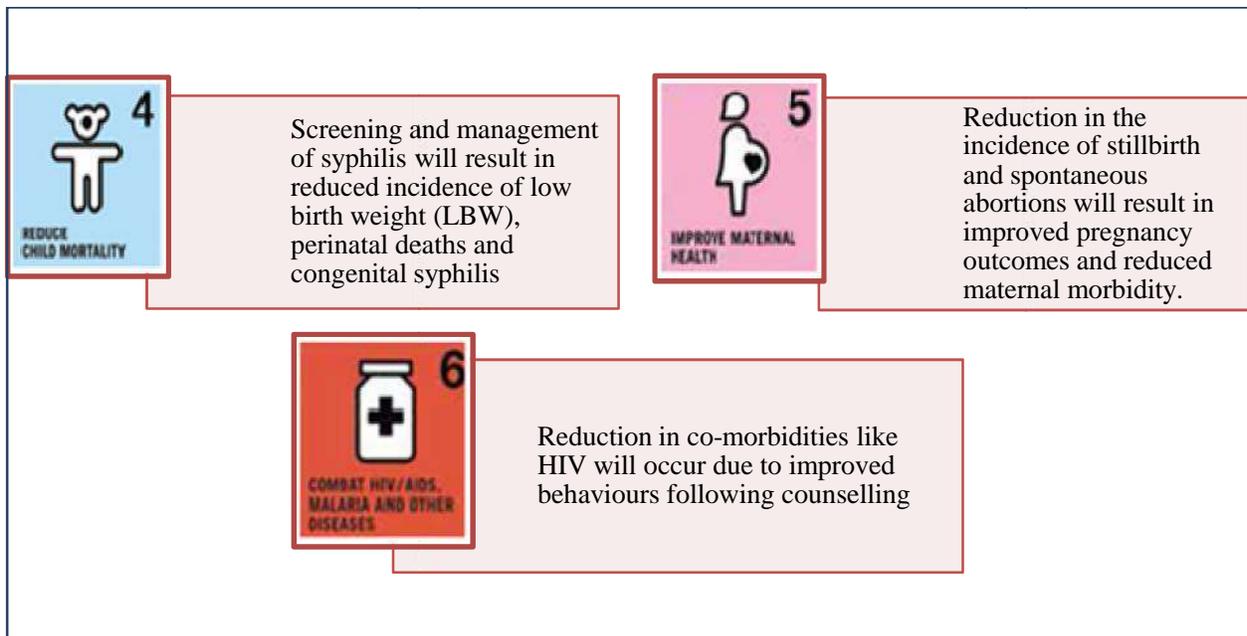
- Under Janani Shishu Suraksha Karyakaram (JSSK) zero expense treatment and referral is provided at all public health facilities to all sick infants up to 1 year of age and the mother even during antenatal period.
- AWW also requires to be aware of the following important aspects of referral:
  - ✓ Provide relevant, immediate information regarding referral to parents/relatives in simple and practical language which may require repetition for the parents to understand.
  - ✓ While taking the consent before referring, poor prognosis/adverse events etc. related to patient needs to be documented in the case sheet.
  - ✓ Preferably a nurse/ANM/Doctor/ASHA should accompany the baby in the vehicle to facilitate transfer. Mother or any other relative should accompany the baby.
- AWW should also ensure that the ambulance (102/108) should have all life saving equipment and supplies.

## 7. TECHNICAL GUIDELINES ON SCREENING FOR SYPHILIS DURING PREGNANCY

The global estimate of adverse outcomes of syphilis in pregnancy in 2008 was about 520,000. Of this large number, early foetal deaths/stillbirths are 215,000; neonatal deaths 90,000; pre-term/LBW 65,000 and congenital diseases 150,000. An estimated 96 per cent of maternal syphilis infection and 98 per cent of adverse outcomes occurred in low and middle-income countries. From 2008 to 2012, maternal syphilis infections and adverse pregnancy outcomes declined by 33 per cent; however the pace of decline needs to be accelerated.

### Impact on the Millennium Development Goals (MDGs)

The present international and national focus is on achieving the Millennium Development Goals (MDGs). Screening for and management of syphilis during pregnancy is the next step forward by the Government of India (GoI) in achieving MDGs 4, 5, 6.



As syphilis is known to cause adverse outcomes in pregnant women and newborns, these guidelines offer clear technical recommendations and operational framework for screening pregnant women and managing them when detected positive.

The goal of the **Technical Guidelines on Testing and Management of Syphilis during Pregnancy** is to reduce maternal and newborn morbidity and mortality and move towards detection and treatment of maternal syphilis and elimination of congenital syphilis.

**The objectives are:**

- To ensure early screening of all pregnant women for syphilis, preferably in the first trimester;
- To detect and manage syphilis infection in pregnant women and their partners;
- To ensure institutional delivery at (FRUs/higher level institutions) of all syphilis-positive pregnant women;
- To prevent the transmission of syphilis from mother to child.

**Target Population**

- All pregnant women and their newborns
- Partners of syphilis positive pregnant women

**Prerequisites for Testing and Management of Syphilis**

- Availability of Point-of-Care (POC) testing at Sub-centres (SC) and outreach sessions such as Village Health and Nutrition Days (VHNDs)
- Availability of POC test at any other facility where Rapid Plasma Reagin(RPR) testing is not available, including at centres where deliveries are conducted
- Availability of RPR testing facility at all the health facilities above sub-centre
- All commodities and human resource for management of syphilis, relevant to the level of facility
  - Availability of drugs, injectables and consumables required for the management of maternal and congenital syphilis
  - An emergency kit containing essential drugs, injections and supplies for managing anaphylactic shock
  - Trained human resource to provide the management to pregnant women after they test positive for syphilis
  - Appropriate referral linkages to First Referral Units (FRU)/ Emergency Obstetric Care (EmOC) centers for conducting the delivery of syphilis positive pregnant women
  - Availability of Ob-Gyn and pediatrician is mandatory at such FRUs

## **8. OPERATIONAL GUIDELINES: MATERNAL NEAR MISS (MNM) REVIEW**

Maternal mortality is a critical event to assess the quality of a health care system. The standard indicator for measuring this is the Maternal Mortality Ratio (MMR), defined as the ratio of the number of maternal deaths per 100,000 live births. Due to improved health care, there has been decline in MMR globally and in India as well MMR has declined steadily. There is a need to further accelerate this decline for achieving our national and international targets and goals.

Women who have survived complications during pregnancy and childbirth have been studied as surrogates of maternal deaths and been termed Maternal Near Miss. Reviews of such cases are considered a less threatening approach to improve maternal health care by the service providers.

### **Advantages of investigating near miss events**

- Near miss cases are more common than maternal deaths
- The major reasons and causes are the same for both MNM and MDR, so review of MNM cases is likely to yield valuable information regarding severe morbidity, which could lead to death of the mother, if not intervened properly and in time.
- Investigating the instances of severe morbidity may be less threatening to providers because the woman survived
- One can learn from the women themselves since they survived and are available for interview about the care they received
- All near misses should be interpreted as free lessons and opportunities to improve the quality of service provision

### **Purpose of the document**

The operational guidelines is designed for use by program managers at different levels of public health system to assist them in undertaking systematic MNM-R and use this information to bring health system improvements aimed at reduction of maternal morbidity and mortality.

- To identify the technical and non-technical causes of MNM
- To identify the health system response to maternal emergencies
- To identify the gaps and contextualise corrective measures to be taken in the health care system
- To provide regular feedback and response needed to achieve the goals
- Identify best practices

### **What is Maternal Near Miss (MNM)?**

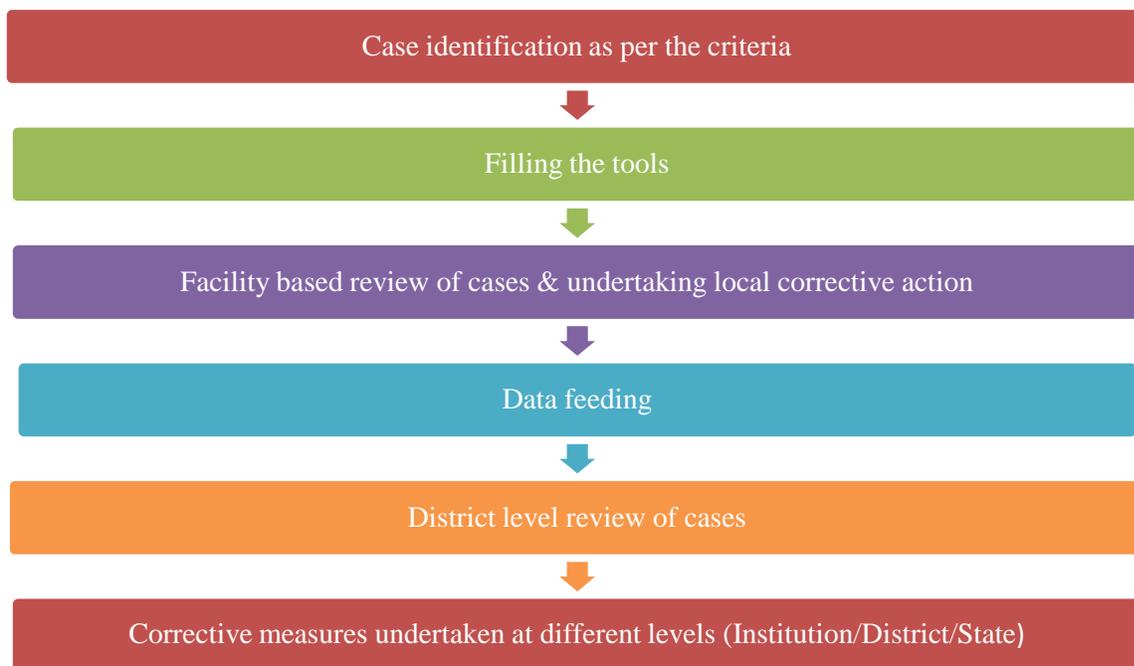
A woman who survives life threatening conditions during pregnancy, abortion, and childbirth or within 42 days of pregnancy termination, irrespective of receiving emergency medical/surgical interventions, is called maternal near miss.

**The process of MNM-R involves;**

- a) Notification (MO/HOD-if case meets inclusion criteria)
- b) Data Transmission (Institution to district to state)
- c) Review (Institutional & district level)
- d) Analysis & Feedback for initiating necessary action.

Once the MNM is confirmed using the tool given in the guideline for diagnosing MNM, the MO/HOD of OBGYN notifies it to Facility Nodal Officer (FNO) within 24 hours. There upon Facility Based Maternal Near Miss Review (FBMNM-R) is filled by MO/HOD with support from FNO and submitted to district within a week. A copy of the same is kept with the institution for records, The Medical Superintendent with support from FNO and taking inputs from HOD/MO of the department will review the case. In the monthly review meeting the MNM-R committee members will be invited. The review reports will be sent to the district for further action. A snap shot of the process is given in the flow chart below.

**Maternal Near Miss Review Process**





# 4

## **VARIOUS GUIDELINES ON BASIC NEWBORN CARE AND HOME BASED CARE OF NEWBORN**



## CHAPTER 4

### GUIDELINES ON BASIC NEWBORN CARE, KANGAROO MOTHER CARE, NEONATAL RESUSCITATION, USE OF GENTAMYCIN FOR THE MANAGEMENT OF SEPSIS, INJECTION VITAMIN K PROPHYLAXIS AT BIRTH AND HOME BASED CARE OF NEWBORN

#### 4.1 BASIC NEWBORN CARE

The first hour after birth have a major influence on the survival, future health and wellbeing of a newly born infant. The health workers have an important role at this time. The care they give during this period is critical in helping to prevent complications and ensuring intact survival. A normal newborn weighs more than 2500 grams, breathes normally and regularly, has warm trunk and soles (temperature 36.5-37.4° C), pink in colour (no central cyanosis) with spontaneous body movements and actively sucks on breast.

#### The Basic Needs of a Baby at Birth

The four basic needs of **all** babies at the time of birth (and for the first few weeks of life) are:

- i. Warmth
- ii. Normal breathing
- iii. Mother's milk
- iv. Protection from infection

As these basic needs indicate, a baby's survival is totally dependent upon her mother and other caregivers. Therefore, it is important to provide proper care to all the neonates immediately after birth. All newborns require essential newborn care to minimize the risk of illness and maximize their growth and development. This care will also prevent many newborn emergencies. For example, the umbilical cord may be the most common source of neonatal sepsis and also of tetanus infection, and good cord care can dramatically reduce the risks of these serious conditions. Breastfeeding has a significant protective effect against infections. Early breastfeeding and keeping the baby close to the mother also reduce the risk of hypothermia and hypoglycemia.

#### The basic needs of a baby at birth are

- warmth
- normal breathing
- mother's milk and
- protection from infections

#### Care of the Normal Newborn at the Time of Birth

The steps to be undertaken at the time of birth for all babies (including those who need resuscitation) are summarized in the box:

## **Immediate Care of a Normal Newborn at the Time of Birth**

- 1. Call out the time of birth.**
- 2. Deliver the baby onto a warm, clean and dry towel or cloth and keep on mother's chest and abdomen (between the breasts).**
- 3. Clamp and cut the umbilical cord in 1-3 minutes.**
- 4. Immediately dry the baby with a warm clean towel or piece of cloth; wipe the eyes.**
- 5. Assess the baby's breathing while drying.\***
- 6. Wipe both the eyes (separately) with sterile gauze**
- 7. Leave the baby between the mother's breasts to start skin-to-skin care.**
- 8. Place an identity label on the baby.**
- 9. Cover the baby's head with a cap. Cover the mother and baby with a warm cloth.**
- 10. Encourage the initiation of breastfeeding.**

**\* - if the baby is not crying or breathing well, the next steps of resuscitation have to be carried out (as explained in the lesson on 'Neonatal resuscitation').**

The individual steps are briefly explained below:

### ***Call out the time of birth***

It is important to tell loudly the time of birth – this helps in accurate recording of the time and more importantly, alerts other personnel in case any help is needed.

### ***Receive the baby onto a warm, clean and dry towel or cloth on a warm dry surface***

The baby should be delivered onto a warm and clean towel and kept on the mother's chest. If this is not possible, the baby should be kept in a clean, warm, safe place **close** to the mother.

### ***Clamp and cut the umbilical cord***

The umbilical cord should be clamped after 1 to 3 minutes using a sterile, disposable clamp or a sterile tie and cut using a sterile blade about 2 cm (1-inch) away from the skin.

### ***Immediately dry the baby with a warm clean towel or piece of cloth; wipe the eyes.***

The baby should be thoroughly dried to prevent from getting cold (this would be explained in the module on 'Thermal protection'). Blood or meconium on the baby's skin should be wiped away; however, the white greasy substance covering the baby's body (vernix) should not be wiped off. Because this vernix helps to protect the baby's skin and gets reabsorbed very quickly.

### ***Assess the baby's breathing while drying.***

At the time of drying itself, the baby's breathing should be assessed. A normal newborn should be crying vigorously or breathing regularly at a rate of 40-60 breaths per minute. If the baby is not breathing well, then the steps of resuscitation have to be carried out as explained in the lesson on 'Resuscitation'.

### ***Wipe both the eyes with sterile gauze***

Clean the eyes using sterile gauze/cotton. Use separate gauze for each eye. Wipe from the medial side (inner canthus) to the lateral side (outer canthus).

***Leave the baby between the mother's breasts to start skin-to-skin care***

Once the cord is cut, the baby should be placed between the mother's breasts to initiate skin-to-skin care. This will help in maintaining the normal temperature of the baby as well as in promoting early breastfeeding.

***Place an identity label on the baby***

This helps in easy identification of the baby, avoiding any confusion. The label should be placed on the wrist or ankle.

***Cover the baby's head with a cap. Cover the mother and baby with a warm cloth.***

Both the mother and the baby should be covered with a warm cloth, especially if the delivery room is cold (temperature less than 25<sup>0</sup>C). Since head is the major contributor to the surface area of the body, a newborn baby's head should be covered with a cap to prevent loss of heat.

***Encourage the initiation of breastfeeding***

Breastfeeding should be initiated within one hour of birth in all babies.

***Ensuring Warmth: 'Warm Chain'***

A baby's skin temperature falls within seconds of being born. If the temperature continues to fall, the baby will become ill and may even die. This is why a baby **MUST** be dried immediately after birth and delivered onto a warm towel or piece of cloth, and loosely wrapped before being placed (naked) between the mother's breasts.

Keeping the baby between the mother's breasts also ensures that the baby's temperature is kept at the correct level for as long as the skin contact continues. This first skin-to-skin contact should last uninterrupted for at least one hour after birth or until after the first breastfeed. The mother and baby should be covered with a warm and dry cover, especially if the room temperature is lower than 25<sup>0</sup>C. The steps of prevention of heat loss are explained in the lesson on '*Thermal protection*'.

For maintaining the temperature, it is important to understand the concept of 'Warm chain'. It means that the temperature maintenance should be a continuous process starting from the time of delivery and continued till the baby is discharged from the hospital. The components of warm chain are summarized below:

## Warm Chain



### After Delivery:

Keep the baby clothed and wrapped with the head covered.  
Minimize bathing especially in cool weather or for small babies.

Keep the baby close to the mother.

Use kangaroo care for stable LBW babies and for re-warming stable bigger babies.



### At delivery:

- Ensure the delivery room is warm (25° C), with no draughts.

Dry the baby immediately; remove the wet cloth.

Wrap the baby with clean dry cloth.

Keep the baby close to the mother (ideally skin-to-skin) to stimulate early breastfeeding.

Postpone bathing/sponging for 24 hours

## Helping to Establish Normal Breathing

The baby's breathing should be assessed at the time of drying. If the baby is crying vigorously or breathing adequately (chest is rising smoothly at a rate of 40 to 60 times per minute), then no intervention is needed.

However, if the baby is not breathing or gasping, then skilled care in the form of positive pressure ventilation might be required. These steps are already explained in the lesson on '*Neonatal resuscitation*'.

## Initiating Breastfeeding

During the initial skin-to-skin contact position after birth, the baby should be kept between the mother's breasts; this would ensure early initiation of breastfeeding.

Initially, the baby might want to rest and would be asleep. This rest period may vary from a few minutes to 30 or 40 minutes before the baby shows signs of wanting to breastfeed. After this period, (*remember*: each baby is different and this period might vary) the baby will usually open his/her mouth and start to move the head from side to side; may also begin to dribble. These signs indicate that the baby is ready to breastfeed.

The mother should be helped in feeding the baby once the baby shows these signs. Both the mother and the baby should be in a comfortable position. The baby should be put next to the mother's breast with his mouth opposite the nipple and areola. The baby should attach to the breast by itself when it is ready. When the baby is attached, attachment and positioning should be checked. The mother should be helped to correct anything which is not quite right.

## Prevention of Infections: ‘Clean Chain’

Babies are securely placed in their mothers’ womb. When they are born, they have to be protected from the adverse environment of the surroundings. Cleanliness at delivery reduces the risk of infection for the mother and baby, especially neonatal sepsis and tetanus. Cleanliness requires mothers, families, and health professionals to avoid harmful traditional practices, and prepare necessary materials. Hand washing is the single most important step to be emphasized to both family members and health care workers.

Similar to warm chain, ‘Clean chain’ has to be followed both at the time of delivery and then till the time of discharge to protect the infant from infections. The components of clean chain are summarized below:



### After Delivery

- All caregivers should wash hands before handling the baby.
- Feed only breast milk. Keep the cord clean and dry; do not apply anything.
- Use a clean cloth as a diaper/napkin.
- Wash your hands after changing diaper/napkin. Keep the baby clothed and wrapped with the head covered.

## Clean Chain

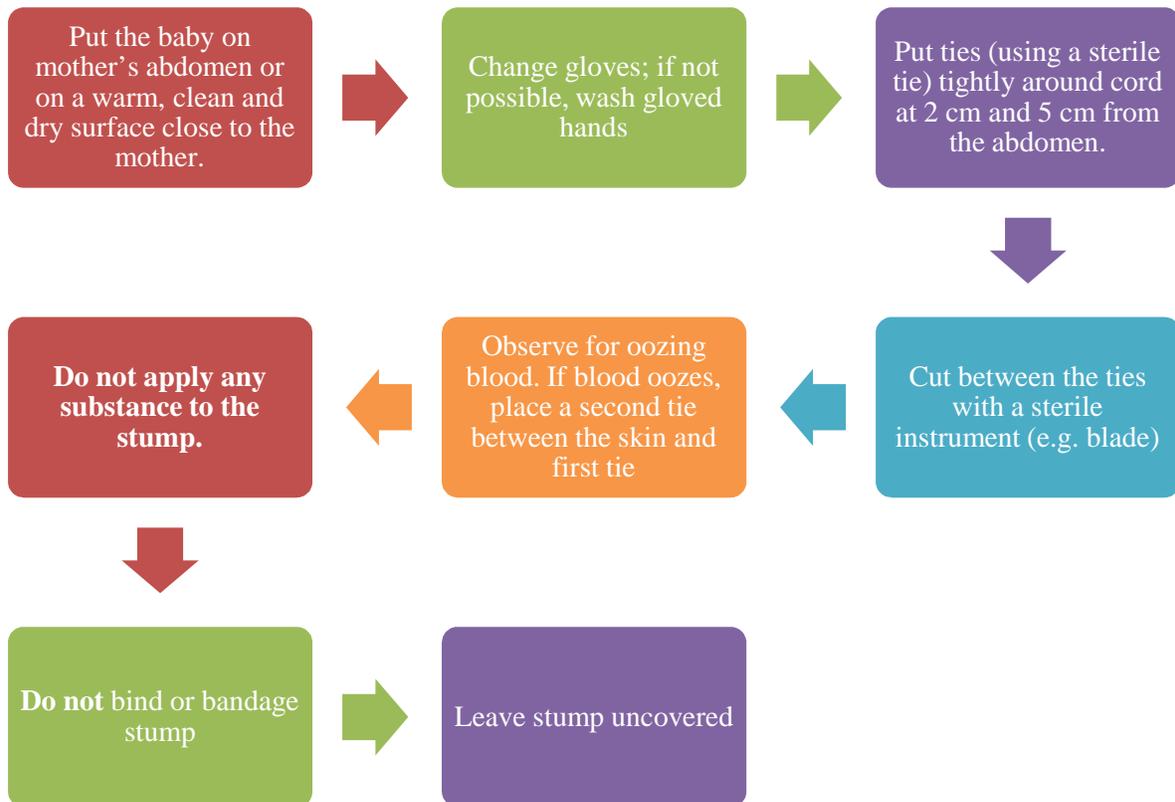
### Immediate Cord and Eye Care

#### *Immediate cord care*

The umbilical cord can be cut and clamped/tied (according to local custom) while the baby is on the mother’s abdomen or on a warm, clean and dry surface.

The steps of clamping, cutting the cord and its care after cutting are summarized in the box below:

## Immediate Care of the Umbilical Cord



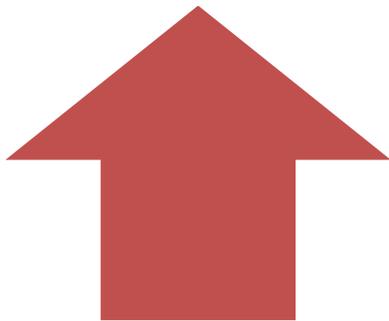
**Note:** - Applying traditional remedies to the cord may cause infections and tetanus.

### Eye Care

Eye care is given to protect a baby's eyes from infection. The baby's eyes should be **wiped as soon as possible after birth** - both eyes should be wiped gently with *separate* sterile swabs soaked in warm sterile water.

In areas with a high incidence of sexually transmitted diseases such as gonorrhoea, eye drops or ointment should also be instilled (as per local guidelines) **within one hour of delivery** of the placenta. This can be done after the baby has been dried or when he is being held by his mother. After instilling the eye drops, care should be taken so that the drug is not washed away.

## Eye Care



### Do's

- Clean eyes immediately after birth with swab soaked in sterile water using separate swab for each eye. Clean from medial to lateral side.
- Give prophylactic eye drops within 1 hour of birth as per hospital policy\*.



### Don'ts:

Putting anything else in baby's eyes can cause infection.

## Monitoring the Baby

During the first hour after delivery, the baby (and the mother) should be monitored every 15 minutes. Both of them should remain in the delivery room for the first hour to facilitate monitoring.

***DO NOT leave the mother and baby alone during the first hour after delivery***

The two most important parameters that need to be monitored are:

- Breathing** and
- Temperature** or warmth

## Monitoring the Baby in the First Hour after Birth

Parameter	What to look for?
Breathing	Listen for grunting; Look for chest in-drawing and fast breathing.
Warmth	Check to see if baby's feet are cold to touch (by using your hands)

## Prevention of Infection

## Importance of Sepsis

Sepsis is the most important cause of neonatal death in hospital.

Normally the newborn is free from harmful organisms for initial few hours after birth. Staff working in health facilities tends to transmit organisms during routine procedures, thus leading to colonization of organisms on surrounding skin of the abdomen, the perineum, groins and respiratory tract.

***Prevention of infection is more cost effective than treating infection in neonates.***

### **Asepsis Basics**

***Basic requirements for asepsis in a baby care area:***

- Running water supply
- Soap
- Elbow or foot operated taps
- Strict hand washing
- Avoid overcrowding, optimal number of health providers for care of more babies
- Plenty of disposals
- Strict adherence to good housekeeping and asepsis routines

***Guidelines for ENTRY into the baby care area:***

- Remove shoes, socks, woollens, watch, bangles, and rings. Roll up the full sleeves up to elbow.
- Put on new slippers, wash hands with soap and water for 2 minutes (follow six steps of hand washing).
- Put on sterile half sleeve gown.

### ***Sterile gloves***

- Always use sterile gloves for invasive procedures like sampling, starting intravenous lines, giving intravenous injections etc.
- Wash gloved hands to remove the blood stains and secretions. Remove gloves and put in the polar bleach bucket. Wash hands again with soap and water.
- Used gloves should be cleaned, dried, powdered and packed in a paper (e.g. a piece of newspaper) for re-autoclaving.
- Adequate number of pairs should be prepared every day. One can use disposable gloves, if available.

### **Hand Washing**

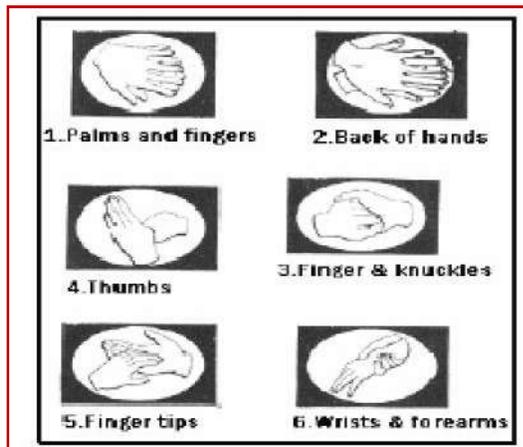
- It is the single MOST IMPORTANT means of preventing nosocomial infections.
- It is VERY SIMPLE and CHEAP.

### ***Hand washing norm***

- 2 MINUTES, hand washing (6 steps) to be done before entering the unit.
- 20 seconds hand washing to be done before and after touching babies.

### ***Steps of effective hand washing (Fig12)***

- Roll sleeves above elbow.
- Remove wrist watch, bangles, rings etc.
- Using plain water and soap, wash parts of the hand in the following sequence:
  1. Palms and fingers and web spaces
  2. Back of hands
  3. Fingers and knuckles
  4. Thumbs
  5. Finger tips
  6. Wrists and forearm upto elbow



Steps in hand washing

***Once you have washed your hands, do not touch anything e.g. hair, pen or any fomite till you carry out the required job.***

- Keep elbows always dependent, i.e. lower than your hands.
- Close the tap with elbow.
- Dry hands using single-use sterile napkin or autoclaved newspaper pieces.
- Discard napkin in the bin kept for the purpose, if newspaper pieces-in the black bucket.
- Do not keep long or polished nails.

***Remember - Rinsing hands with alcohol is not a substitute for proper hand washing***

### **Safe Disposal of Hospital Waste**

Proper disposal of hospital waste is important to keep the environment clean. To keep the environment clean, in each unit of ward, the waste should be disposed of in a proper way.

The following are different color drums with different color polythene for different type of waste, to be disposed of in a different way.

**a. Black drums / Bags**

Left-over food/fruits/feeds, vegetables, waste paper, packing material, empty box, bags, etc. This waste is disposed off by routine municipal council committee machinery.

**b. Yellow drums / Bags**

Infected non-plastic waste e.g. human anatomical waste, blood, body fluids, placenta, etc. This type of waste requires incineration.

**c. Blue drums / Bags**

Infected plastic waste such as used disposable syringes, needles (first destroy the needle in the needle destroyer).

Used sharps, blade and broken glass, etc. Patients IV set, BT set, ET tube, catheter, urine bag etc. should be cut into pieces and disposed in blue bag. This waste will be autoclaved to make it non-infectious. This is then shredded and disposed of.

## **Thermal Protection**

### **Importance of Temperature Regulation**

Warmth is one of the basic needs of a newborn baby; it is critical to the baby's survival and wellbeing. Unlike adults, newborn babies are often not able to keep themselves warm especially if the environmental temperature is low. This results in low temperature or hypothermia.

### **Handicaps of Newborn in Temperature Regulation**

A newborn is more prone to develop hypothermia because of a large surface area per unit of body weight. In addition, LBW babies have decreased thermal insulation due to less subcutaneous fat, and decreased heat production due to less brown fat.

Brown fat is the site of heat production. It is localized around the adrenal glands, kidneys, nape of neck, inter-scapular and axillary region. Metabolism of brown fat results in heat production. Blood flowing through the brown fat becomes warm and through circulation transfers heat to other parts of the body. This mechanism of heat production is called as non-shivering thermogenesis. LBW babies lack this effective mechanism of heat production.

#### **Why are newborns prone to develop hypothermia?**

- Larger surface area
- Decreased thermal insulation due to lack of subcutaneous fat
- Reduced amount of brown fat

## Consequences of Hypothermia

The body cannot function well when it is cold. Being too cold means that the baby has to use a lot of energy to keep herself warm. A cold baby

- is less active
- does not breastfeed well
- has a weak cry
- has respiratory distress

A small, preterm baby who is too cold (hypothermic) is also at increased risk of becoming hypoglycemic. If the baby continues to be cold, these symptoms become more severe and eventually the baby might die.

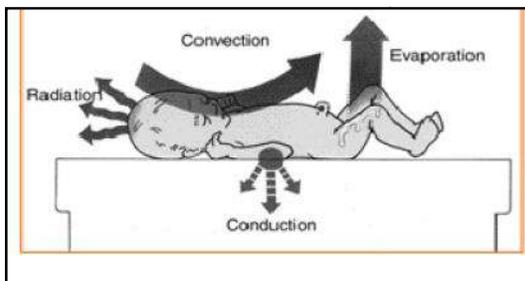
## Mechanism of Heat Loss and Heat Gain

It is very easy for a baby to get cold especially at the time of delivery when the baby is wet with amniotic fluid. The temperature inside the mother's womb is 38<sup>0</sup> C; once the baby is born it is in a much colder environment and hence starts to lose heat immediately.

Newborn loses heat by

1. Evaporation (particularly soon after birth due to evaporation of amniotic fluid from skin surface)
2. Conduction (by coming in contact with cold objects e.g. cloth, tray, etc.),
3. Convection (by air currents in which cold air from open windows replaces warm air around baby) and
4. Radiation (to colder solid objects in vicinity e.g. walls). (*Figure 13*)

The process of heat gain is by conduction, convection and radiation in addition to non-shivering thermogenesis.



### Four ways a newborn may lose heat to the environment:

- Radiation
- Conduction
- Convection
- Evaporation

Mechanisms of Heat Loss

## Temperature Recording

*Normal temperature in a newborn is 36.5-37.4° C.*

Accurate temperature recording is needed if a baby is:

- Preterm/low birth weight or sick
- Admitted to hospital, regardless of reason
- Suspected of being either hypothermic or hyperthermic (too hot)
- Being re-warmed during the management of hypothermia
- Being cooled down during the management of hyperthermia.

When an accurate temperature is needed, one should always use a thermometer. A temperature taken in the axilla (under the arm in the arm pit) is one of the safest methods of taking a baby's temperature.

Preferably a low reading thermometer that can measure temperatures as low as 30<sup>0</sup>C should be used in the newborn to record temperature (should be able to record between 30<sup>0</sup>C to 40<sup>0</sup>C).

***In normo thermic baby  
(baby with normal  
temperature), both abdomen  
and feet are warm to touch***

### ***Axillary temperature***

Axillary temperature is as good as rectal temperature but much safer (less risk of injury or infection). It is recorded by placing the bulb of thermometer against the roof of dry axilla free from moisture. Baby's arm is held close to the body to keep thermometer in place. **The temperature is read after five minutes.**

The steps of axillary temperature recording are summarized in the box below.

## **Recording the Axillary Temperature**

### ***Precautions***

- Wash your hands before taking a baby's temperature.
- Keep the baby warm throughout the procedure. He/she does not need to be in a special position for the temperature to be taken.

### ***Steps***

- Shake it down, so that it reads less than 35<sup>0</sup> C
- Place the silver/red/bulb end of the thermometer under the baby's arm, in the middle of the armpit
- Gently hold the baby's arm against the body.
- Keep the thermometer in place for 3 minutes.
- Remove the thermometer and read the temperature. **Do not** add 0.5 or 1<sup>0</sup>C to this.
- Keep thermometer in a sterile container after cleaning with spirit.
- Record the temperature in the baby's case notes.

### ***Skin temperature***

Skin temperature is recorded by a thermister. The probe of the thermister is attached to the skin over upper abdomen. The thermister senses the skin temperature and displays it on the panel.

### Assessment of Temperature by Touch

Baby's temperature can be assessed with reasonable precision by touching his/her abdomen, hands and feet with the dorsum of your hand. In newborns, abdominal temperature is representative of the core temperature.

When feet are cold and abdomen is warm, it indicates that the baby is in cold stress. In hypothermia, both feet and abdomen are cold to touch.

The assessment, clinical features and management of hypothermia are summarized in the following table.

<i>Category</i>	<i>Temp. range</i>	<i>Feel by touch</i>	<i>Clinical features</i>	<i>Action</i>
<b>Normal</b>	36.5 to 37.4°C	Warm trunk Warm extremities	Normal baby	<ul style="list-style-type: none"> <li>• Cover adequately with pre-warmed cloth</li> <li>• Keep the baby next to mother</li> <li>• Encourage breast feeding</li> </ul>
<b>Mild hypothermia (Cold stress)</b>	36 to 36.4°C	Warm trunk Cold extremities	Extremities bluish and cold Poor weight gain if chronic cold stress	<ul style="list-style-type: none"> <li>• Skin-to-skin contact</li> <li>• Cover adequately</li> <li>• Ensure room is warm</li> <li>• Provide warmth</li> <li>• Encourage breast feeding</li> </ul>
<b>Moderate hypothermia</b>	32 to 35.9°C	Cold trunk Cold extremities	Poor sucking Lethargy Weak cry Fast breathing	<ul style="list-style-type: none"> <li>• Cover mother and baby together using pre-warmed clothes</li> <li>• Cover adequately</li> <li>• Provide warmth Reassess every 15 minutes; if temperature doesn't improve, provide additional heat</li> <li>• Encourage breast feeding</li> </ul>
<b>Severe hypothermia</b>	Less than 32°C	Cold trunk & cold extremities	Lethargic Poor perfusion Fast or slow breathing Slow heart rate Hardening of skin with redness and edema Bleeding Low blood sugar	<ul style="list-style-type: none"> <li>• Rapid re-warming till baby is 34°C and then slow re-warming</li> <li>• Oxygen</li> <li>• IV fluids - dextrose (warm)</li> <li>• Inj .vitamin K</li> <li>• Reassess every 15 minutes; if temperature doesn't improve, provide additional heat</li> </ul>

## **Warm Chain**

The “warm chain” is a set of interlinked procedures carried out at birth and later which will minimize the likelihood of hypothermia in all newborns. Baby must be kept warm at the place of birth (home or hospital) and during transportation from home to hospital or within the hospital. Satisfactory control of baby’s temperature demands both prevention of heat loss and providing extra heat using an appropriate source.

### ***Common situations where cold stress can occur***

- i. At birth
- ii. After giving bath
- lii .During changing of nappy/clothes
- Iv .Malfunctioning heat source or removing the baby from heat source
- v. While transporting a sick baby

### ***Steps to prevent heat loss in labor room***

- i. Warm delivery room (25°C)
- ii. Newborn care corner temperature to be maintained at 30°C
- iii. Drying immediately. Dry with one towel. Remove the wet towel and cover with another pre-warmed towel
- iv. Skin-to-skin contact between mother and baby

**Use a wall-mounted thermometer to keep room temperature at 25°C**

### ***Steps to prevent heat loss in postnatal ward***

- i. Breastfeeding
- ii. Appropriate clothing, cover head and extremities
- lii. Keep mother and baby together
- Iv. Keep room warm
- v. Postpone bathing and weighing

### ***How to keep baby warm?***

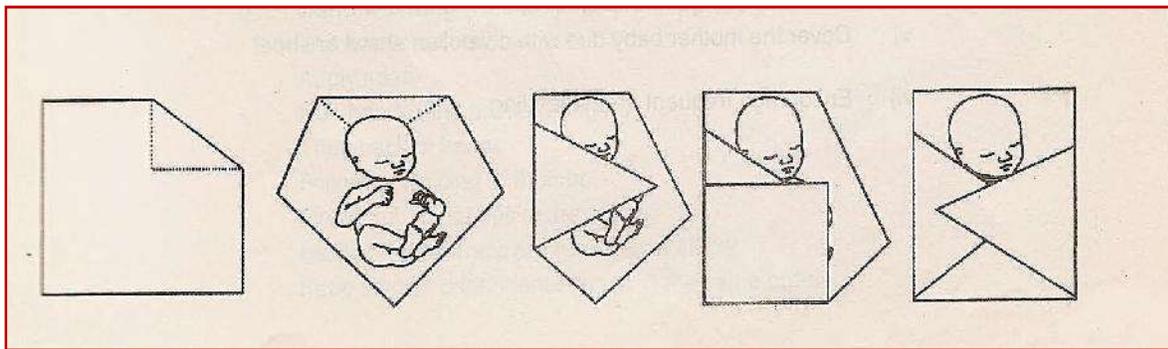
- i. Use dry, warm towel to hold the baby at birth. Remove wet towel after cleaning
  - ii. Adequate and appropriate clothing
  - iii. Skin-to-skin contact or next to mother (Rooming in)
  - iv .Radiant warmer in nursery
  - v. Keep the room temperature of baby care area 25°C
- \* Using a 200 watt bulb may not be sufficient to keep the baby warm. There is also a risk of breakage of bulb.*

### ***Wrapping and covering a baby***

Wrapping a baby soon after birth and thereafter is important for maintaining the baby’s temperature.

**Steps for wrapping and covering the baby (Fig.14):**

- Wrap the baby using a sheet, spread the sheet
- Fold one corner on itself- place the baby's head on the infolded corner so as to cover the head till the hair line on forehead
- Cover over the right shoulder and tuck on left side
- Fold from the foot end and tuck beneath the chin
- Finally cover the left shoulder and tuck on the right side



Steps for wrapping and covering the baby

**How to keep room warm?**

- i. Avoid using air conditioner even in summer
- ii. Don't use ceiling fan especially at high speed
- iii. Keep windows and doors closed in winter
- iv. Warm the room by convector/heater

**Transport of Neonates**

**I. Stabilize prior to transport**

- Warm the baby till hands and feet are warm to touch.
- Suction the airway if essential.
- Oxygenate if needed.
- Give/arrange medications as per physician's order (normal saline, dextrose, vitamin K, antibiotics, phenobarbitone and epinephrine).

**II. Communication**

- Explain condition and reasons for transport to family.
- Communication with referral unit regarding condition of baby, approximate time of arrival, working diagnosis, what has already been done etc.

- Arrange for referral note mentioning reasons for transfer, medications given along with dose and timings
- Communication to accompanying family members regarding need for transport, position of baby, clearing secretions, gentle stimulation and other instructions as applicable.

### ***III. Prevention of hypothermia: Maintenance of “Warm Chain”.***

- Warm baby before transport.
- Change soiled nappy and linen.
- Warm clothing (cover fully with cotton clothes) or cover head, wrap in blanket, include plastic sheet wrap between layers of clothing (if available);
- Other alternatives are:
  - Skin-to-skin contact with mother/accompanying person
  - Use of thermocol / cardboard box with holes for ventilation
  - DO NOT USE hot water bottles.

### ***IV. Prevention of hypoglycemia***

- Gavage feed / IV dextrose bolus prior to transport. (confirm with physician) followed by a constant drip.
- Instruct regarding feeding during transport.
- Ensure ‘Quick’ transport.
- Prevent hypothermia.

### ***V. Prevention of hypoxia***

- Clear airway.
- Consider use of oxygen cylinder with nasal cannula or mask during transport.
- Instruct regarding gentle handling.
- Instruct regarding gentle stimulation / clearing secretions / position during transport.

## 4.2 THERMAL PROTECTION: KANGAROO MOTHER CARE

### Introduction

Of the 20 million low birth weight infants born globally every year, about 8 million are in India. Over 80 per cent of neonatal deaths occur among small infants - 65 per cent are attributable to preterm infants and 19 per cent to term small for gestational age, (SGA) (Lawn Every Newborn Lancet Series 2014). India has the highest number of preterm births and also accounts for maximum number of neonatal deaths due to prematurity. Incidence of LBW in India is about 27 per cent of total live births.

### Kangaroo Mother Care (KMC)

Kangaroo Mother Care is a low resource, evidence based, high impact intervention and standardized care for low birth weight infants which, like breastfeeding, should be part of routine care. It can prevent up to half of all deaths in infants weighing <2000g (Lawn et al, 2010).

### Definitions

**Kangaroo Mother Care (KMC)** is a simple method of care for low birth weight infants that include early and prolonged skin-to-skin contact with the mother (or a substitute caregiver) and exclusive and frequent breastfeeding. This natural form of human care stabilizes body temperature, promotes breast feeding, prevents infection and other morbidities. This also leads to early discharge, better neurodevelopment and encourages bonding between mother and infant. KMC is initiated in the hospital and continued at home until the infant needs it and for optimum care a regular follow-up must be ensured. Kangaroo mother care has following components:

1. Skin-to-skin contact
2. Exclusive breast feeding

However, KMC should not be confused with routine skin-to-skin care at birth. World Health Organization (WHO) recommends skin-to-skin care immediately after delivery for every newborn, irrespective of the birth weight to ensure warmth and early initiation of breastfeeding in the delivery room KMC is meant for stable LBW infants and denotes a sustained, long duration skin-to-skin contact.

**Evidence of the effectiveness and safety of KMC for clinically stable preterm newborns, is now formally established.** In 2011, an updated Cochrane review (Conde-Agudelo, Diaz-Rossello, Belizan 2011) assessed 35 studies. Compared with conventional neonatal care, KMC was found to reduce:

- ✓ Mortality at discharge and at the latest follow-up,
- ✓ Severe infection/sepsis, nosocomial infections, lower respiratory tract disease,
- ✓ Hypothermia and length of hospital stay.

The 2011 review also revealed that KMC resulted in:

- ✓ Improved weight, length and head circumference,
- ✓ Increased breastfeeding rates,
- ✓ Better mother-infant bonding and maternal satisfaction with the method of care, as compared with conventional methods

Above review included seven trials that assessed mortality at discharge or 40–41 weeks and reported a statistically significant reduction in the risk of mortality among KMC infants (3.4%), compared with 5.7 per cent for infants receiving traditional care. **The review ultimately concluded that KMC should be used for all stabilized LBW infants.**

**There is now sufficient evidence to recommend the routine use of KMC for all low birth weight infants. However in our country newborn infants weighing less than 2,000 grams should be started on KMC, on priority in view of the high burden of LBW infants.**

### **Other benefits**

KMC is associated with reduced incidence of severe illness including pneumonia during infancy. In most of the studies KMC has been found to be more effective than incubator care for stable newborns in: providing adequate thermal care, reducing nosocomial infections, improving exclusive breastfeeding and weight gain, and fostering greater maternal and family involvement in care—all at a lower cost than incubator care.

**KMC satisfies all five senses of the infant. The infant feels the mother’s warmth through skin-to-skin contact (touch), listens to her voice and heartbeat (hearing), sucks breast milk (taste) has eye contact with her (vision) and smells her odour (olfaction).**

### **Kangaroo Mother Care (KMC) Implementation**

Even though KMC is simple, it needs to be initiated at the hospital under skilled supervision. The mother needs guidance by a health professional to provide KMC and optimally breastfeed the LBW infant, starting at the facility and continuing on her own at home. Once the mother goes home, it is important that the continuum of KMC is maintained; community health workers (ASHAs, ANMs, and AWWs) should ensure that the mother continues to provide kangaroo care at home. It is equally important that they should facilitate follow-up visits to the facility for review and problem solving as this support is crucial for the infant’s health after discharge.

### **What is required for implementing KMC?**

#### Duration of KMC

Short: 4 hours daily\* Extended: 5-8 hours daily\*

Long: 9-12 hours daily\*

Continuous: More than 12 hours daily\*

\*Documented on two consecutive days or more prior to discharge.

Duration to be counted as cumulative completed hours during a 24 hour period.

### **A. Infrastructure**

Dedicated space near Special Newborn Care Unit (SNCU), post-natal ward or neonatal ward/ NBSU which is furnished with comfortable reclining chairs & cots, provides privacy for expression of breast milk and is equipped with storage facility for expressed breast milk.

### **B. Human resources**

The availability of adequate number of trained and willing health service providers for 24x7 services is most crucial for assisting mothers in KMC practice and LBW feeding.

### **C. Information Education Communication (IEC)**

Ensure adequate IEC material, including video films on KMC in local language for mothers, families and community.

Counselling of the mothers, fathers and relatives by service providers is catalytic in ensuring KMC practice during their stay at the hospital and after discharge so that they can continue to practice KMC till the infant requires it. Community awareness activities should be conducted to maximize the benefits of KMC and breastfeeding.

### **D. Which infants should be provided KMC**

Though all LBW infants should be provided KMC but considering the huge burden at facilities, priority must be given to infants with birth weight less than 2000 grams.

The timing of initiation of KMC depends on the birth weight and stability of the infant.

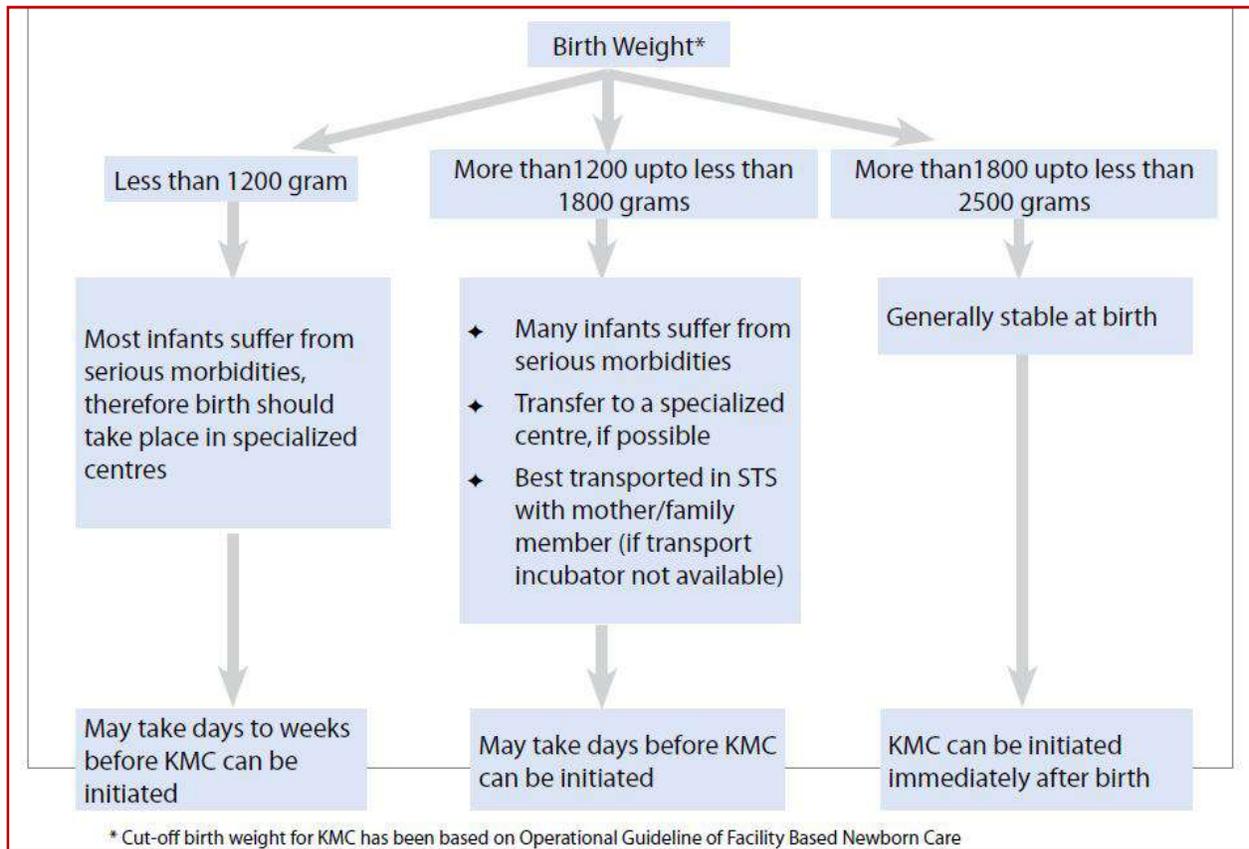
**1. Birth weight more than 1,800 grams and less than 2500 g:** These infants are generally stable at birth. Therefore, in most such cases KMC can be initiated soon after birth in the postnatal ward. The neonate weighing less than 2000g should be accorded priority for initiation of KMC considering the huge burden of LBW infants in the country.

**2. Birth weight more than 1,200 g and less than 1,800 g:** Many infants of this group have significant problems in the neonatal period. It might take a few days before KMC can be initiated. Such infants may need care in a Special Newborn Care Unit (SNCU) or a Newborn Intensive Care Unit (NICU). Intermittent KMC can be given to a hemodynamically stable infant receiving IV fluids, antibiotics and oxygen. KMC should be practiced under medical supervision. The duration may be gradually increased and thereafter the infant may be transferred to a dedicated KMC ward.

**3. Birth weight less than 1,200 g:** These infants frequently experience serious prematurity related morbidity often starting soon after birth. It may take days to weeks before the infant's condition allows initiation of KMC. Duration of KMC should be gradually increased based on the tolerance of infant.

## Who can provide KMC?

KMC can be provided by mothers, fathers and other adult family members. The KMC provider should be willing, in good health, free from serious illness and should maintain basic standards of hygiene such as hand washing, daily bath, clipped fingernails, tied up hair and clean clothes. It is recommended that jewellery, watches and sacred threads must be removed as they may be a barrier to maintain hygiene and might cause injury to the newborn.



### Time of Initiation of KMC

## How to Provide KMC?

### Counselling

Effective counselling for the initiation of KMC is a prerequisite to overcome socio-cultural barriers and anxiety regarding handling a LBW infant both by the mother and other care providers. When the infant is ready for KMC, the first counselling session should be organized at a time convenient to the mother. The first few sessions are important and require extended interaction to develop a rapport with the mother and to alleviate any fear. KMC procedure should be demonstrated to her explaining correct position in a caring, gentle manner and with patience. Her queries should be answered to allay her anxieties.

Encourage her to bring her mother/mother-in law, husband or any other member of the family. It helps in building a positive attitude of the family and ensuring family support to the mother who is particularly

crucial for post-discharge home based KMC. It is helpful that the mother and family members starting KMC interact with someone already practicing KMC for her infant.

**A supportive family is a very important pre requisite for successful KMC.**

### **Clothing**

#### ***Mother:***

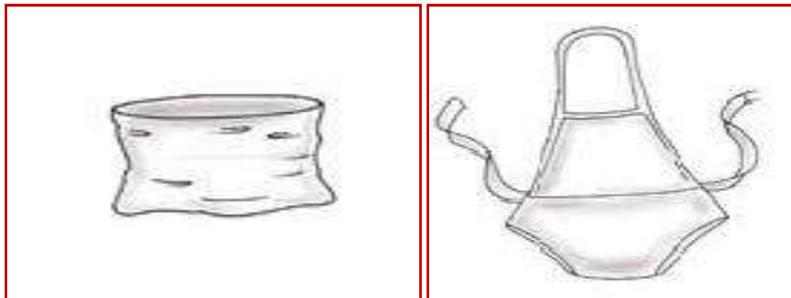
KMC can be provided using any front-open, light dress as per the local culture. KMC works well with sari-blouse, gown or shawl. A suitable apparel like Kangaroo bag, baby bag, sari, binder that can retain the infant for an extended period can be adapted locally.

#### ***Infant:***

The infant should be dressed in cap, socks, disposable diapers and front-open sleeveless shirt or 'jhabala' made of a soft natural fabric like cotton.

**It is not mandatory to have any special dress, garment or binder for KMC. It can be provided using any clothing that is acceptable to the mother and the family.**

**Fig.16: Examples of KMC supporter**

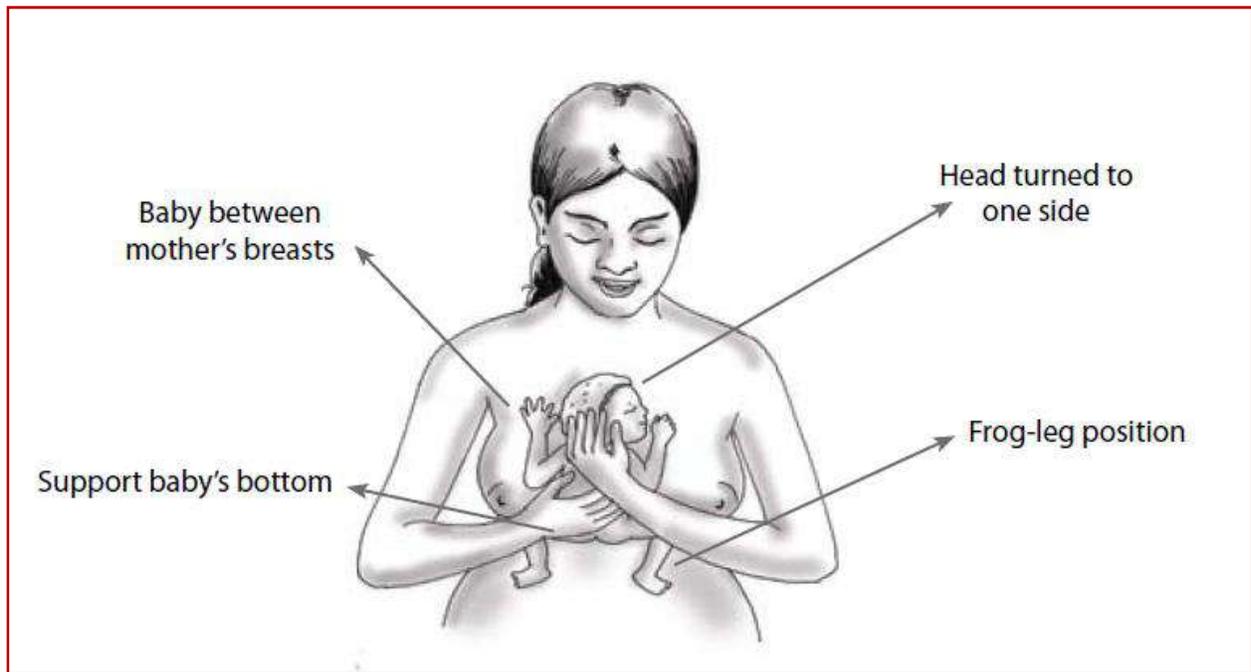


**Fig 17: Examples of Clothing for Infants**



**KMC Position**

**Fig.18: How to Hold the Infant in KMC**



The infant should be placed between the mother's breasts in an upright position. The head should be turned to one side and in a slightly extended position. This slightly extended head position keeps the air way open and allows eye to eye contact between the mother and her infant.

The hips should be flexed and abducted in a "frog" position; the arms should also be flexed. The infant's abdomen should be at the level of the mother's epigastrium. Mother's breathing stimulates the infant, thus reducing the occurrence of apnoea. Support the infant from the bottom with a sling/binder.



**Fig19: How to handle the baby**

Health provider should help the mother initiate KMC by assisting in positioning the infant and explaining how to handle the infant during KMC. Repeated training helps the mother overcome the fear of handling her newborn and improves her skill related to KMC.

### **Mother:**

A semi-reclining position (40°-45°) is to be adopted while sleeping. This can be achieved with the help of 3-4 pillows on the hospital bed or special semi-reclining chairs.



**The mother carrying an infant in the KMC position can walk, stand, sit, or engage in different activities. If comfortable, the mother can sleep with the infant in kangaroo position in a reclined or semi-recumbent position**

### **Duration of KMC**

Minimum duration of a KMC session should be one hour because frequent handling may be stressful for the infant. The duration of each KMC session should be gradually increased for as long as the mother can comfortably provide KMC. The infants in KMC need to be removed from skin-to-skin contact only for changing diapers and clinical assessment according to hospital schedules.

### **Monitoring of the Infant**

Infants receiving KMC should be monitored carefully especially during the initial stages to ensure that the infant's airway is clear, breathing is regular, colour is pink and s/he is maintaining temperature. All the above clinical observations and duration of KMC should be duly recorded in the newborn case-sheet being used in the unit. Mother should be trained to observe her infant for danger signs, like- hypothermia,

respiratory problems, feeding difficulty, change in colour during KMC so that she can continue monitoring at home.

## Feeding during KMC

Feeding and nutrition strategies during the postnatal period are very important for ensuring optimum growth and development of LBW infants. The nutritional needs of infants with similar birth weight may vary depending upon whether the baby is appropriate for gestational age (AGA) or small for gestational age (SGA). Initially, breastfeed is given at fixed intervals of two hours and not on demand, to ensure an adequate and assured minimal intake. The mother should be explained how to breastfeed while the infant is in KMC position. Holding the infant near the breast stimulates milk production. She may express milk while the infant is still in KMC position.

**(For details on feeding please see the next section on optimal feeding.)**

## Special Situations

There may be special situations where despite the newborn being sick KMC can be given with some precautions.

**Sick LBW infants:** KMC is recommended for stable LBW infants. However, it is beneficial even for sick LBW infants. In such cases kangaroo mother care may be given only under close and constant supervision in centres that are well versed with the practice of KMC. Hemodynamically stable preterm infants on prolonged ventilation or on Continuous positive airway pressure (CPAP) can also be given KMC. Treating MO should use her/his judicious discretion on case-to-case basis.

**Transport:** Ideally, transport incubators with appropriate monitoring equipment are the best method to transport sick infants. However, in case they are not available, the best method to keep a preterm/LBW infant warm during transport after initial stabilisation is by continuous skin-to-skin contact with the mother/family member.

**If some other family member is not available for KMC or KMC is not initiated:** Ensure the baby is kept in warm room 25°C-28°C, adequately covered or if below 1800 grams not able to maintain normal temperature under a warmer.

### Discharge from Hospital and Follow-up

The standard policy of the unit for discharge from the hospital should be followed. Generally, the following criteria are accepted at most centres.

#### The infant is:

- Stable and not on parenteral medication
- Maintaining temperature in mother's bed for 3 consecutive days at room temperature
- Gaining 15-20 grams per day for at least 3 consecutive days
- Accepting feeds directly from breast (preferable) or by spoon, paladai or cup

Usually, the infant's weight is around 1,500 to 1,600 grams at the time of discharge. Infants, who are above 1,800 grams birth weight, do not require admission into a nursery/SNCU, are given KMC soon after birth and can be sent home once adequacy of breastfeeding is established.

At discharge, the mother and family members must be taught to ensure that the infant is nursed in a warm room and is breastfed (Given expressed milk using paladai or cup). They should be adequately told about hygiene, danger signs, follow-up visits, immunisation and prompt care seeking at a health facility.

KMC should be continued as long as required and baby and mother should not be discharged in a hurry.

At the time of discharge, the infant should be taken home in KMC position by the mother or relatives so as to encourage continued KMC at home.

At the time of discharge, the family should be counselled and linked to the ASHA worker of the village who shall provide home based care and follow-up to the baby (as per protocol).

### **Follow-up**

Close follow-up is a fundamental prerequisite of KMC practice to make a regular assessment of growth, sensory functions, behaviour and neurodevelopment. During the follow-up visits anthropometric measurements (e.g., weight, length, head circumference) of the infant should be recorded to monitor the growth. More frequent visits should be made if the infant is not growing well or if her/his condition demands. ASHA will continue to provide care to the infant under home based newborn care in the community, following discharge.

First Follow-up should be at one week, followed by fortnightly follow-ups till next two visits. Additional follow-up visits may be done until s/he reaches 40 weeks of post-conception age or achieves a weight of 2,500 grams.

- ✓ If infant is receiving immunization at a facility where KMC services are available, a follow-up may be ensured.
- ✓ Infants discharged on KMC should be followed up in the regular follow-up OPD of SNCUs and linkage with District Early Intervention Centre (DEIC) under RBSK for screening of neuro-developmental morbidities should be established.
- ✓ SNCU discharged infants are to be followed up till one year while LBW infants are to be followed up at home for one year by ASHA as per HBNC guidelines.

### **Don'ts of Kangaroo Mother Care**

- Do not bathe till infant weighs 2,500 g, sponging may be done
- Do not handle infant too frequently
- Do not give bottle feed
- Do not allow infant to be in contact with sick people

### **When should KMC be discontinued?**

Often an infant is taken off Kangaroo Mother Care when gestation reaches term or the weight is around 2,500 grams. By this time the infant starts wriggling to show that he or she is uncomfortable, pulls out the limbs from the kangaroo garment and cries and fusses every time the mother tries to put the infant back in skin-to-skin contact. This is the time to wean the infant from KMC.

## 4.3 NEONATAL RESUSCITATION

### Introduction

India accounts for nearly 0.9 million newborn deaths per year that is 30 per cent of global neonatal deaths. Nearly half of under 5 deaths occur in neonatal period and most of these deaths occur within first few days of birth. Birth asphyxia and sepsis are the major causes of these deaths. The National Population Policy Goal of IMR below 30/1000 live births by 2010, mandates urgent measures to be put in place to prevent these deaths to reach the NPP Goal. One of the effective measures to prevent deaths is to have skilled birth attendants trained in resuscitation, prevention of infection and temperature management. Initiation of breastfeeding within one hour of life itself is estimated to save a number of new born lives.

“Navjaat Shishu Suraksha Karyakram (NSSK)” a new programme on Basic Newborn Care and Resuscitation, has been launched by the Ministry of Health and Family Welfare to address important interventions of care at birth i.e. prevention of hypothermia, prevention of infection, early initiation of breast feeding and basic newborn resuscitation. It is estimated that this skill based training when put in place in the States can prevent approximately 1- 2 lakh newborn deaths every year.

Newborn care and resuscitation is an important starting-point for any neonatal program that is required to ensure the best possible start in life. The objective of this new initiative is to have persons trained in Basic newborn care and resuscitation available at every delivery. The implementation of this programme will help prevent a significant number of newborn deaths and ensure newborn survival.

### Birth Asphyxia

Worldwide approximately one million babies die per year due to asphyxia out of which about one third (approximately 3 lakhs) is contributed by our country.

A single intervention - resuscitation - deals with the problem of birth asphyxia as it occurs.

The need for resuscitation should always be anticipated. Thus, every birth attendant should be skilled in newborn resuscitation, (including anticipation, preparation timely recognition and quick and correct action) and should have the necessary equipment and supplies-clean and functioning  
- to be able to respond quickly and correctly when needed.

Adequate ventilation is more important than additional oxygen; quick action with the bag and mask is more important than intubation. Therefore resuscitation can and should be initiated virtually anywhere, including those places where oxygen is not available. The choice of device for ventilation is not as important as how effectively it is used. The most common causes of failed resuscitation are failure to recognize the problem promptly, not reacting quickly enough and not ventilating effectively. Correct technique and assessment of the effectiveness of ventilation are critical.

Advanced procedures (chestcompression, intubation, use of drugs) are needed only in a small proportion of cases. These procedures have strict indications and are beneficial only in specific circumstances and if carried out by an experienced person.

In reality, even the simplest equipment is frequently not available and skilled health workers are lacking. In many places only one birth attendant is normally present at the birth, dividing her attention between the mother and the newborn.

Basic resuscitation, done correctly, will help most, even where only few resources and simple training are available.

***Any baby can have breathing difficulties at birth. It is important to anticipate and be prepared for this eventuality in all deliveries.***

### **What is Neonatal Resuscitation?**

Neonatal resuscitation means to revive or restore life to a baby from the state of asphyxia. The aim of neonatal resuscitation program is to teach the steps necessary to ventilate a newborn baby that is not breathing and protect the life of baby. Ninety per cent of newly born babies make the transition from intrauterine to extra uterine life without difficulty. They require little or no assistance to begin spontaneous and regular respirations. Approximately 10 per cent of newborn require some assistance to begin breathing a tbirth and only about 1 per cent may need extensive resuscitative measures to survive.

### **Key to Successful Resuscitation**

All health professionals who attend the mother at birth must be skilled at resuscitation and know how to recognise babies at risk. They must:

- anticipate
- be prepared
- know what to do
- in what order
- be able to work quickly in coordination

### **Key to Successful Resuscitation**

- Anticipation
- Preparation
- Call for help
- Document /record
- Fast
- Be gentle
- Provide warmth
- Maintain Hygiene

## Preparation for Birth

### *Prepare Personnel*

- **Birth attendant identifies a helper and explains roles:** According to the facility available choose a helper to assist you in neonatal resuscitation. Helper may be a qualified nursing staff, another untrained hospital staff or relative of mother. Explain the role to be played by helper before labor, helper is needed to help you to activate emergency plan. You should assign and explain the role to helper according to his/her skill.
- **Helper confirms understanding of role.**
- **Birth attendant describes the emergency plan:** According to the resources available at your facility make arrangements for any emergency during neonatal resuscitation. Make arrangements for calling doctor or another skilled person in resuscitation in case of emergency or make arrangement for shifting the baby to nearest referral unit.

### *Preparation in the delivery room*

Preparations should include having: warmth, place to do the resuscitation, and equipment and supplies. These are summarized in the box below:

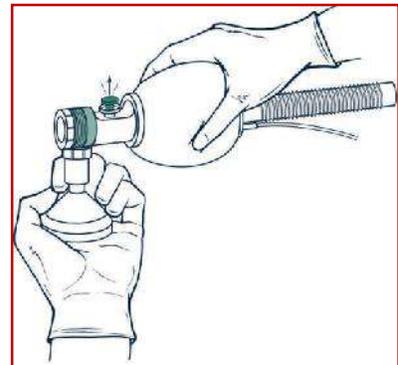
### Preparing for Birth

#### Essential

- A draught free, warm room with temperature  $\geq 25^{\circ}\text{C}$
- A clean, dry and warm delivery surface
- A radiant warmer / overhead lamp with 200 watt bulb if available
- Two clean, warm towels/clothes
- A folded piece of cloth (1/2 to 1" thick)
- A newborn size self inflating bag
- Infant masks in two sizes: size '1' for normal weight baby and '0' for small baby
- A suction device
- Oxygen (if available)
- A clock (with seconds hand)

### Important points about the equipment used for resuscitation:

- Equipment must be cleaned and checked after each delivery and checked again before the next delivery to ensure it is ready for use.
- Broken equipment is dangerous and should be replaced.
- Equipment must be of the appropriate size. Pediatric and adult bag and masks cannot be used on newborn babies who have small and fragile lungs.
- The volume of the bag should not be more than 250-500 mL and generate a pressure of at least 35 cm of water.



- If a mucus extractor is used the trap should be big enough (20 mL) to prevent aspirated fluid going into the resuscitator's mouth.  
Testing Bag and the Mask
- A mucus extractor with a bulb is NOT recommended because they are difficult to clean and might act as a source of cross infection.
- Suction should not exceed a negative pressure of 100 mmHg or 130 cm water.

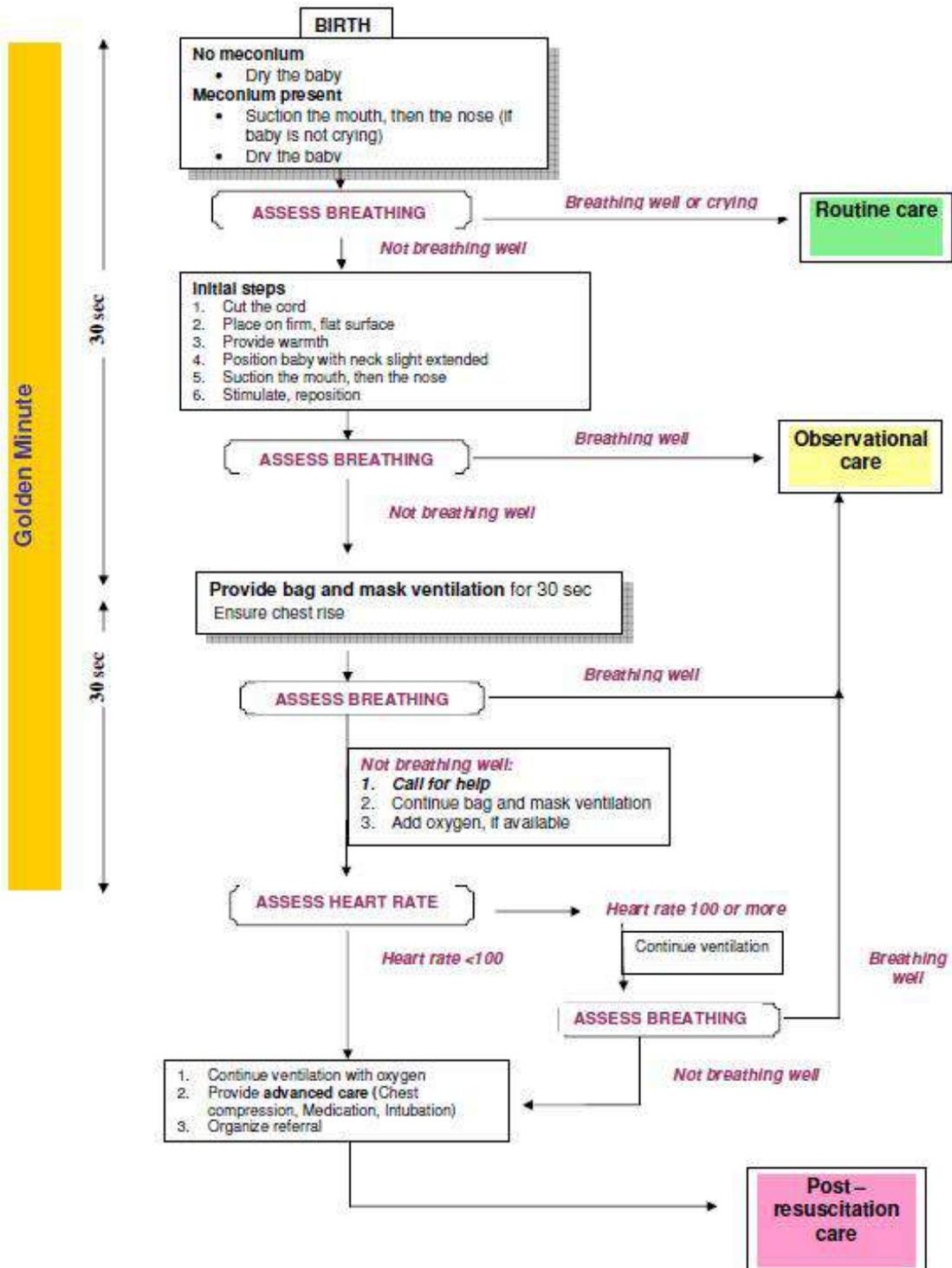
***Test the function of equipment***

- Before births check that all equipment and supplies are available and are in working condition.
- For warm environment, you have to switch on radiant warmer or overhead lamp at least half hour before anticipated time of delivery
- Close the windows and switch off fan to prevent drafts of air.

***Test the function of the bag and mask for ventilation***

- Fit mask on to the bag and deliver test breathes against the palm of the hand. You should feel pressure in the palm as the bag is squeezed.
- Form a seal between the mask and the palm of the hand. Squeeze the bag enough for the pop off (pressure release) valve to open and make a sound as the air escapes as shown in Fig. Check that the bag re-inflates quickly when you release after squeezing the bag.

## Flow Diagram for Basic Neonatal Resuscitation



### **Routine Care**

- Provide warmth
- Suction mouth & nose (if necessary)
- Cut cord in 1-3 minutes
- Keep baby with mother
- Initiate breastfeeding

### **Observational Care**

- Provide warmth
- Observe breathing and temperature
- Watch for complications\*; refer, if so
- Initiate breastfeeding, if well

### **Post-Resuscitation Care**

- Provide warmth
  - Observe breathing, temperature, color, CFT
  - Monitor blood sugar
  - Watch for complications\*; refer, if so initiate breastfeeding, if well
- \* convulsion, coma, poor feeding, lethargy, respiratory distress

## **Assessment at Birth**

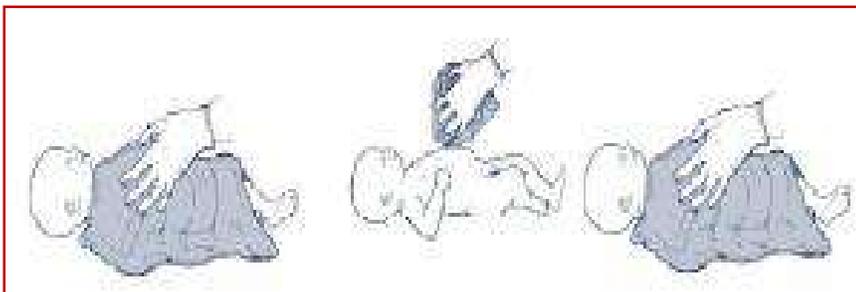
The steps to be taken at the time of birth are given below:

### **Deliver the baby on mother's abdomen**

A newborn baby should be delivered onto mother's abdomen. If the baby is not delivered onto his mother's abdomen, make sure there is a warm towel or cloth on the bed to place the baby on.

### ***Note the time of birth and dry the baby***

Keeping the baby warm at birth is a priority. The baby has to be dried with a warm towel. After drying, the wet towels or clothes should be replaced and the baby loosely wrapped in clean, dry and warm towels as shown in Fig 1.2.



Drying the Baby and Removing Wet Towel

### ***Why it is necessary to dry and remove wet cloth***

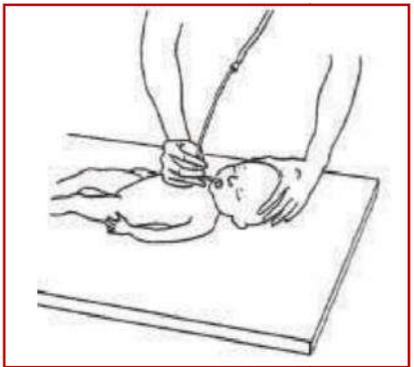
After birth the baby remains wet with amniotic fluid which if not dried immediately can lead to heat loss. This heat loss may result in rapid decrease in infant's body temperature.

Breathing and warmth go together and breathing should be assessed whilst drying the baby. Drying itself often provides sufficient stimulation for breathing to start in mildly depressed newborn babies.

### ***If meconium present***

Meconium is the faeces passed by fetus in utero; it is greenish to brownish in colour. If meconium is present and the baby is not crying you should **immediately** start suction.

First, do suction from mouth by inserting the tube of suction device no more than 5 cm beyond the lip. Apply the suction while withdrawing the tube. Then insert the suction tube 1-2 cm into each nostril and apply suction while withdrawing the tube. For suctioning attach the mucus trap to a suction machine or suck from your mouth. Stop suctioning when secretions are cleared, even if the baby does not breathe. Then dry the baby as described above.



S

Suction mouth first then nose

### **Points to remember**

- Always do suction first from mouth then nose.
- Be careful not to suction vigorously or deeply (more than 5 cm in mouth and more than 2cm in nose) as it can produce a vagal response, causing the heart rate to slow down or breathing to stop.

Apply suction while withdrawing the tube. Then do suction from both nostrils by placing the tube approximately 2cm inside each

### **Assess the baby's breathing**

The baby's breathing should be assessed whilst drying:

- Watch the way the baby's chest rises and falls.
- The chest should move equally on both sides with no difficulty, between 30 to 60 times in a minute.

When a baby's breathing is assessed one of four main behaviours may be seen. These are:

Assessment	Decision
Baby is crying	No need for resuscitation or suctioning. Provide routine care.
Baby is not crying, but his chest is rising regularly between 30 to 60 times in a minute	No need for resuscitation or suctioning. Provide routine care.
Baby is gasping	Start resuscitation immediately.
Baby is not breathing	Start resuscitation immediately.

### **Steps of Resuscitation**

If the baby needs resuscitation:

- Tie and cut the cord.
- Tell the mother that her baby is having difficulty beginning to breathe and that you are going to help him. Tell her quickly but calmly.
- Transfer the baby to a warm clean, flat and dry surface.
- Provide warmth
- Position the baby
- Clear the airway
- Stimulate and reposition

#### ***Provide warm environment***

To provide warm environment

- Place the newborn under overhead lamp with 200 watt bulb placed around 50-60cm above surface

OR

- Place the newborn under radiant warmer

To prevent drafts of air shut all windows and switch off fan before birth

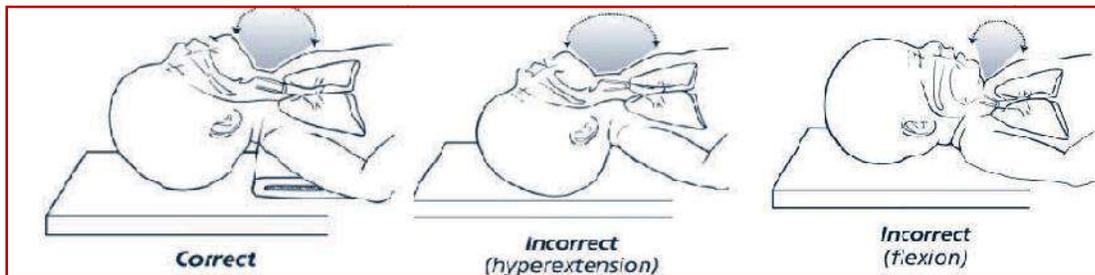


Methods to provide warmth

**Open the baby’s airway: position the head**

Do this by:

- Place the baby on its back.
- Position the head so that it is slightly extended (to open the airway).
- Place a folded piece of cloth under the baby’s shoulders to help maintain this position (the folded cloth should not be too thick or thin - this may cause overextension or flexion which will close the airway).



Correct and incorrect head positions for resuscitation

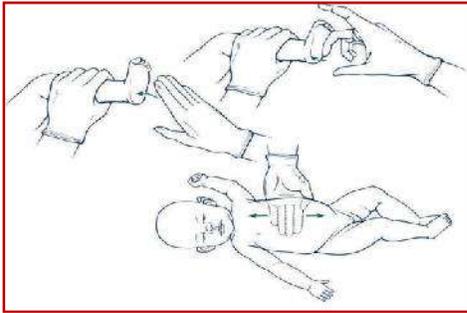
**Open the baby’s airway: suction the mouth and the nose**

- Suction first the mouth and then the nose (Remember ‘M’ comes before ‘N’) as described earlier.

***Stimulate to breath***

If the baby doesn’t cry after birth, wipe dry remove wet cloth, position the baby and clear airway then stimulate the baby for breathing. Safe and appropriate methods of providing tactile stimulation include:

- Slapping or flicking the soles of the feet
- Gently rubbing the newborn’s back or extremities



Acceptable methods of stimulating a baby to breathe

### **What forms of stimulation may be hazardous?**

**Certain actions that can harm a baby and should not be used are:**

#### **Harmful Actions**

- Slapping the back
- Squeezing the rib cage
- Forcing thighs into abdomen
- Dilating anal sphincter
- Using hot or cold compresses or baths
- Shaking

#### **Reassess the baby's breathing**

Suctioning may stimulate the baby to start breathing. If this happens (i.e. the baby is breathing), place the baby with mother and provide observational care.

#### ***Observational care***

Baby who breathes after initial steps of resuscitation requires ongoing observation for the well being of baby. Observational care comprises of:

- **Keep baby with mother:** Do not separate the mother and the newborn. Allow the newborn skin-to-skin contact with the mother.
- Observe breathing and temperature
- Watch for complications (convulsions, coma, etc.), refer, if so

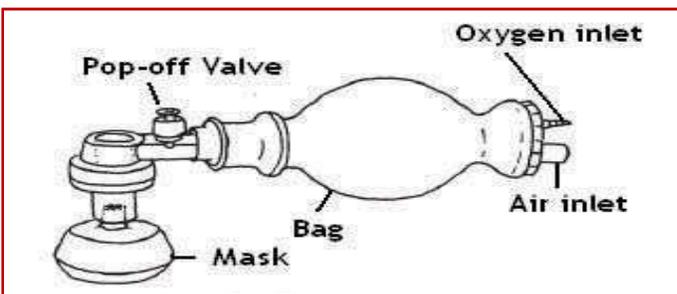
- Initiate breastfeeding, if well

### **If the Baby is still not Breathing: Ventilate**

#### ***Basic parts of Bag and Mask***

##### ***Bag***

It is a self-inflating bag, inflates automatically without a compressed gas source. It stays inflated at all times, unless being squeezed. Bags used for newborns should have a volume ranging from 240 to 500ml usually 500 ml capacity bag is used for resuscitation. The bag is made of silicon rubber, which can be easily cleaned and autoclaved for reuse.



**Fig 23:** Parts of bag and mask

##### ***Posterior part of bag***

The posterior part of bag consists of two inlet tubes smaller one is for oxygen and bigger one is for entry of air into the bag, oxygen reservoir if used is attached to air inlet tube.

##### ***Pop-off valve***

Pop-off valve is situated on front side of the bag. It is a pressure release valve, which opens if excessive pressure is generated, thus limiting the pressure being transmitted to the baby. If you ventilate with high pressure and/or rate, the lungs could become over inflated, causing rupture of the alveoli and a resulting air leak.

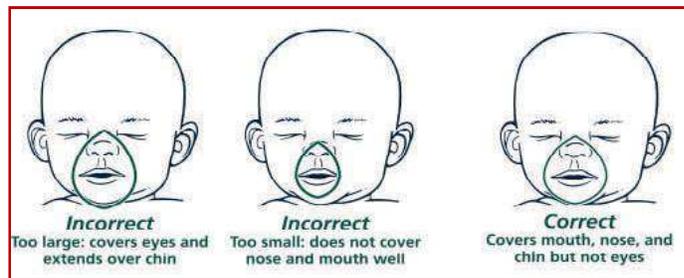
##### ***Mask***

Masks come in different sizes and shapes (round and anatomically shaped). Anatomically shaped masks are shaped to fit the contours of the face. They are made to be placed on the face with the pointed part of the mask fitting over the nose. Mask is attached at the anterior end of bag.

## Preparation for Ventilation with Bag and Mask

### *Selection of mask*

Selection of a mask for use with a particular newborn will depend on how well the mask fits the newborn's face. For the mask to be the correct size the rim should cover the tip of the chin, the mouth, and the nose but not the eyes. If the mask is too large it may cause possible eye damage and will not seal well, if the mask is too small it will not cover the mouth and nose and may occlude the nose .



Correct and incorrect mask sizes

### *Clear airway*

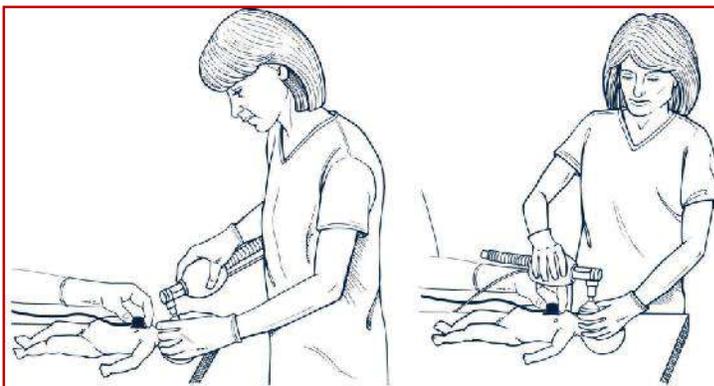
Be sure that the airway is clear; for this you may suction the mouth and nose one more time to assure there will be no obstruction to the assisted breaths that you will be delivering by bag and mask.

### **Position the baby's head**

The baby's neck should be placed in "sniffing position" to maintain an open airway. You may use shoulder roll for better positioning of head if required.

### *Position yourself at the bedside*

You should position yourself at the side or head of the baby to use the resuscitation bag effectively (Fig 25). Either position will allow you to hold the mask on the baby's face comfortably and allow you to have an unobstructed view of the abdomen and chest. If you are right-handed, you probably will feel most comfortable controlling the bag with your right hand and the mask with your left hand.



Correct positions to visualize chest movements

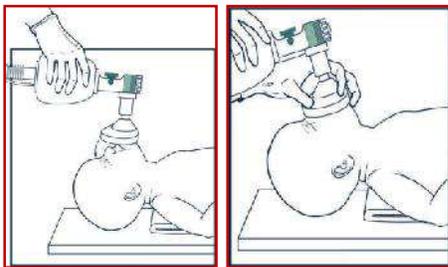
If you are left-handed, you will probably want to control the bag with your left hand and hold the mask with your right hand.

It is important that the bag is positioned so that it does not block your view of the baby's chest, since you need to be able to observe chest movement during ventilation.

### ***Positioning the bag and mask on the face***

The mask should be placed on the face that it covers the nose and mouth, and the tip of the chin rests within the rim of the mask. You should begin by cupping the chin in the mask and then covering the nose.

The mask usually is held on the face with the thumb, index, and/or middle finger encircling the rim of the mask in shape of letter 'C' while the ring and fifth fingers bring the chin forward to maintain a patent airway.



Positioning the baby and mask

Once the mask is positioned, using light downward pressure on the rim of the mask can form an airtight seal. Care should be taken in holding the mask.

### **Observe the following precautions:**

- Do not "jam" the mask down on the face. Too much pressure can mould (flatten) the back of the head and bruise the face.
- Be careful not to rest your fingers or hand on the baby's eyes.
- Make sure that adequate seal has been made between mask and face otherwise air would leak from the mask leading to ineffective ventilation.

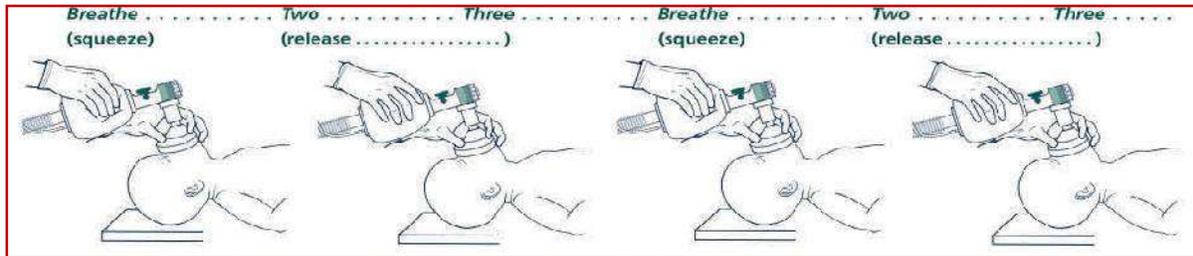
### ***Initiation of ventilation***

Start ventilation by squeezing the bag to deliver breath. Remember, the lungs of a fetus are filled with fluid, so the first few breaths will often require higher pressures and longer inflation times than will subsequent breaths. Adequate pressure required to squeeze the bag should be just enough to produce gentle chest rise as it happens in normal breathing.

Remember if the baby appears to be taking a very deep breath, the lungs are being over inflated. You are using too much pressure and there is danger of producing an air leak in the lungs

## How often should you squeeze the bag?

During the initial stages of neonatal resuscitation, breaths should be delivered at a rate of **40 to 60 breaths per minute**, or slightly less than once a second. To help maintain a rate of 40 to 60 breaths per minute, try saying to yourself as you ventilate the newborn: **“Breathe–Two– Three, Breathe–Two– Three”**. If you squeeze the bag on “Breathe” and release while you say “Two, Three”, you will probably find you are ventilating at a proper rate.



Counting out loud to maintain a rate of 40 to 60 breaths per minute

### ***Ensure chest rise***

After starting ventilation with bag and mask, you should look for chest movement after ventilating two to three times to ensure adequacy of ventilation. If the chest movement is absent or inadequate then you should immediately take **“Steps to improve ventilation”**.

Reasons for inadequate or absent chest movements are

- The seal is inadequate
- The airway is blocked
- Not enough pressure is being given

You should immediately take following **“Steps to improve the ventilation”**

- **Reapply the mask to the face and try to form a better seal**

Use a little more pressure on the rim of the mask and lift the jaw a little more forward. *Do not* press down hard on the baby’s face. The most common place for a leak to occur is between the cheek and bridge of the nose.

- **Check the baby’s position and extend the neck a bit farther.**

If chest movement inadequate or absent

- **Check the mouth, oropharynx and nose for secretions clear**

The mouth and nose if necessary.

- **Try ventilating with the baby’s mouth slightly open.**

If chest movement inadequate or absent

- **Increase the pressure to squeeze the bag until there is perceptible movement of chest.**

**After undertaking the steps to improve ventilation (if required) you should continue to ventilate the baby for 30 seconds and afterwards assesses the baby for signs of improvement and act accordingly**

## How do you evaluate the Success of Ventilation?

Improvement is indicated by:

- Spontaneous breathing

Some babies improve quickly and begin breathing well after 30 seconds of adequate ventilation. Some babies require prolonged ventilation with bag and mask. Evaluate the baby after 30 seconds of adequate ventilation by asking yourself: **Is the baby breathing spontaneously?**

**If yes** then gradually reduce the rate and volume of breaths and watch for the baby's breathing. A baby who is **breathing well** will be crying or breathing quietly and regularly (chest is rising symmetrically with frequency 30-60 /minute, and there is no chest indrawing and no grunting for one minute). If the baby is breathing well then stop the ventilation and provide observational care as described earlier.

A baby who is not breathing well (gaspings or not breathing at all) after 30 seconds of adequate ventilation needs continued ventilation and further evaluation.

- Call for help. A more skilled worker will be required to evaluate and assist in resuscitation.
- Continue bag and mask ventilation.
- Provide oxygen through bag and mask if available.
- Assess the heart rate.

## Evaluate Heart Rate

Evaluate the heart rate by feeling the umbilical cord pulse or listening to the heartbeat with stethoscope while you stop ventilation for 6 secs. Feel the pulse in the umbilical cord where it attaches to the baby's abdomen. If no pulse can be felt in the cord, you or your helper must listen over the left side of chest with the stethoscope and count the heartbeat. It may be necessary to stop ventilation for few seconds to listen with stethoscope.



Evaluate heart rate

Counting the number of beats in 6 seconds and multiplying by 10 can provide quick estimate of the beats per minute. (For example, if you count 8 beats in 6 seconds, announce the baby's heart rate as 80 beats per minute.)

A heart rate above 100 beats per minute is normal

A heart rate less than 100 beats per minute is slow.

If you are unable to count the heart rate then minimize the time without ventilation by listening to the heart rate as below:

If the heart rate sounds faster than your own pulse – probably the heart rate is normal

If the heart rate sounds slower than your own pulse- probably the heart rate is slow

***How does the heart rate change your further action?***

**If the heart rate is normal (above 100 bpm) but the baby is still not breathing well continue** to provide bag and mask ventilation and reassess after every 30 seconds until the baby is breathing well as majority of babies whose heart rate is above 100 bpm eventually start to breathe well. However, if the baby still does not breathe, continue ventilation and seek advanced care or organize referral.

**If the heart rate is slow** make sure that you have taken all the steps to improve the ventilation. The chest should move gently with each breath. Continue to do bag and mask ventilation and reassess heart rate approximately after every 30 seconds, in the meantime the more skilled healthcare provider (doctor) should provide advanced care if possible. The baby may need more advanced support such as endotracheal intubation; chest compressions and medications. Arrange for referral if advanced care is not available. Care in a specialty facility will be required. Ventilation should continue uninterrupted during the transport process.

The procedure of bag and mask ventilation should be continued until the baby establishes spontaneous breathing; however, if there are no signs of life (breathing / heart rate) even after 20 minutes of birth, ventilation may be stopped.

### **Post Resuscitation Care**

Babies who have received only brief ventilation can be given observational care. However, babies who require prolonged positive pressure ventilation are at risk for deterioration, and are at high risk for developing subsequent complications; so these babies need supervised medical care (post resuscitation care).

- Keep the baby warm
- Check breathing, temperature, colour and CFT
- Monitor blood sugar
- Watch for complications
- Initiate breastfeeding if well

### **Follow up Care after Successful Resuscitation**

Monitoring of a baby after successful resuscitation include:

#### **For the baby**

- The mother and baby should be kept together with the baby in skin-to-skin contact.

***Babies requiring chest compressions, intubation and medications often need presence of skilled healthcare provider (usually a Doctor).***

- Encourage the mother to breastfeed her baby as soon as it is ready. This will help to prevent hypoglycemia (a low blood sugar).
- Assess the baby's attachment at the breast, can you hear him swallow? Help the mother breastfeed if needed.
- Good suckling is a sign of recovery. If the baby is unable to suck effectively help the mother to express colostrum.

Record what has happened in the baby's notes and in the labour record

Newbornname:.....Dateof birth:.....Timeof birth .....

**Condition atbirth:**

Immediate cry/breathing Delayed cry/breathing

**Resuscitation initiated.**

•Describe procedures:.....

•When did spontaneous breathing begin?.....

•For how long(minutes)was ventilation needed?.....

•How was the condition (breathing, body temperature, suckling) of the newborn 30-60min after resuscitation?.....

•If no spontaneous breathing, when did ventilation stop?.....

How would you describe the outcome?

- a.Live born infant, resuscitation successful.
- b.Live born infant ,resuscitation not successful, the newborn died.
- c. Stillborn, resuscitation not successful.
- d. Stillborn, resuscitation not attempted.

**For the mother and family**

After resuscitation, explain to the mother and family what has happened and how the baby is now. Keep the mother and baby in the delivery room and **do not** separate them.

**NEVER** leave the woman and newborn alone. Monitor **them** every 15 minutes during the first hour.

**Record the Events**

Record what has happened as soon as possible after the baby is stable and with the mother. Keeping records of events which occur at the time of delivery and in the immediate period afterwards can be vital. The information is important if a baby needs to be referred or becomes sick in the next few days.

**Examine the Baby before Discharge**

The baby should be thoroughly examined before it is discharged from the delivery room. Tell parents that although the possibility of complications is low, there is still a small probability that the baby may have problems such as feeding difficulty or convulsions in the first few days. Instruct them to take the baby to the nearest hospital if these problems occur. Encourage the mother to maintain skin-to-skin contact as much as possible in the next few days.

## **MANAGEMENT OF SEPSIS IN YOUNG INFANTS: USE OF GENTAMICIN BY ANMS FOR MANAGEMENT OF SEPSIS IN YOUNG INFANTS UNDER SPECIFIC SITUATIONS**

“A Strategic Approach to Reproductive, Maternal, Newborn, Child and Adolescent Health (RMNCH+A)” in India has brought a paradigm shift in the approach to health services. However, neonatal mortality still remains a crucial challenge. While, there has been acceleration in the decline of the infant mortality rate in the last five years, reduction in neonatal mortality rate has been slow. Amongst the three major killers of newborns, neonatal sepsis accounts for 16 per cent of neonatal deaths.

Neonatal sepsis is associated with increased mortality and morbidity including neuro-developmental impairment and prolongation of hospital stay. Clinical features of sepsis are non-specific in neonates and a high index of suspicion is required for timely diagnosis and treatment with effective antibiotics. Effective Newborn care is a crucial challenge that is faced by every health care setting dealing in child health. A key component is to equip the staff with appropriate knowledge and skill to get the best care possible at the right time and in the right place. However, given the existing reality of the high mortality from sepsis and limited access to health facilities in many areas, the health workers need to be empowered to manage sepsis in young infants appropriately.

Early diagnosis and referral to an appropriate facility is crucial for the survival of the sick newborn. To address this, a decision to equip the Auxiliary Midwives (ANMs) with appropriate knowledge and skills to treat young infants with sepsis with injectable and oral antibiotics has been taken and Guidelines on use of Injection Gentamicin by ANMs for the management of Sepsis in Young Infants (upto 2 months of age) under specific situations have been developed. The guidelines provides a stepwise approach to initiate and implement these guidelines effectively and equip ANM to carry out the important task of managing sepsis in young infant under specific conditions. This decision has a potential to avert large number of neonatal deaths due to sepsis alone. The initiative urges maximum benefits to the remote and tribal populations.

### **Role of ANM**

Provision of injectable antibiotic is crucial in the management of systemic infections in young infants who fail to reach facilities despite best effort. Empowering Auxiliary Nurse Midwives (ANMs) to use injectable Gentamicin is vital towards the management of sick newborn.

Under the public health system, ANMs interact directly with the community and are the key front line health functionaries responsible for the delivery of Reproductive and Child Health Programme. They are well-versed with administering injections and in injection safety practices as they have been regularly giving injectable vaccines to infants, and emergency injectable medications (intramuscular injection magnesium sulphate, injection oxytocin, intravenous fluids, etc.) to mothers, moreover they have been trained under the IMNCI programme to detect young infants with Possible Serious Bacterial Infection (PSBI) or suspected sepsis using the features listed in **Box 1**.

**ANM assesses for the presence of following features (signs and symptoms) of PSBI using the Health Workers module of IMNCI**

- Not able to feed / no breast attachment at all / not suckling at all
- Less than normal movements
- Lethargic or unconscious
- Convulsions
- Fast breathing [60 breaths per minute or more]
- Severe chest in drawing
- Nasal flaring
- Grunting
- 10 or more skin pustules or a big boil
- Axillary temperature 37.5 C or above (or feels hot to touch) or temperature less than 35.5 C (or feels cold to touch)
- Blood in the stool

**Recommendation**

A combination of Injection Gentamicin with oral Amoxicillin is an appropriate choice of treatment for young infants with sepsis in a community setting where referral is not possible or is refused.

**Use of Injection Gentamicin by ANM under specific situations**

Under IMNCI, ANMs are well trained to recognize signs of suspected sepsis or PSBI in young infants and provide pre-referral treatment. Hence under the circumstances where referral is not possible or is refused, ANMs are best placed to be trained to administer appropriate antibiotic treatment to young infants with sepsis.

ANMs should administer Injection Gentamicin along with oral Amoxicillin to young infants [0 – 2 months] suspected with sepsis under the following situations;

- **Pre-referral dose** - The ANM will give the first dose of each antibiotic before referral to a health facility.
- **Completion of antibiotic treatment** - If the infant has not completed a course of either of the antibiotic following discharge from a health facility, the ANM will complete the course of the treatment as prescribed by the Medical Officer
- **Referral not possible or refused** - Under this special situation where referral is not possible or is refused, the ANM will continue to give treatment for 7 days .

## Dosage & Administration

### Injection Gentamicin

- **Dosage:** 5 mg/kg body weight once a day.
- **Route of administration:** intramuscular
- **Site of Injection:** Antero-lateral aspect of the thigh
- **Preparation:** Injection Gentamicin is available in two preparations – 20 mg/2 ml and 80 mg/2 ml. It is recommended that only 80 mg/2 ml preparation is used in young infants. This provides 40 mg Gentamicin per 1 ml. This preparation ensures that the volume of injection Gentamicin fluid for young infants does not exceed the safe limit of 1 ml.
- **Storage:** Gentamicin is a heat stable drug and can be maintained at room temperature. There is no need for refrigerator/cold chain maintenance for the storage of the drug.
- **Syringe and needle:** 1 ml disposable syringe with 23 Gauge needle should be used. Alternatively Insulin syringe could be used. Auto disposable syringes provided for immunization should not be used because of varying dosage marking.
- **Duration of treatment:** Total duration of treatment is 7 days. In cases of follow up treatment, the ANM may follow the advice as per the discharge ticket/ doctor's prescription.

**Gentamicin** is an aminoglycoside with excellent antimicrobial spectrum against Gram-negative bacteria. It is also active against *Staphylococcus aureus* when given in combination with one of the Penicillins.

**Amoxicillin** is an antibiotic of penicillin group active against Gram positive bacteria (such as *Staphylococci*) that cause sepsis in young infants. The antimicrobial profile is similar to that of Ampicillin.

### Syrup Amoxicillin

- **Dosage:** 15-25 mg/kg per dose given 12 hourly.
- **Route of administration:** Orally
- **Preparations:** Amoxicillin is available as Syrup [powder based/ ready to use] formulation and Dispersible tablets for pediatric use. Syrup formulations are available as 125 mg/5 ml [1 ml contains 25 mg].

- **Duration of treatment:** The treatment is to be given for a period of 7 days.

### Summary of Antibiotic Treatment for Sepsis in a Young Infant

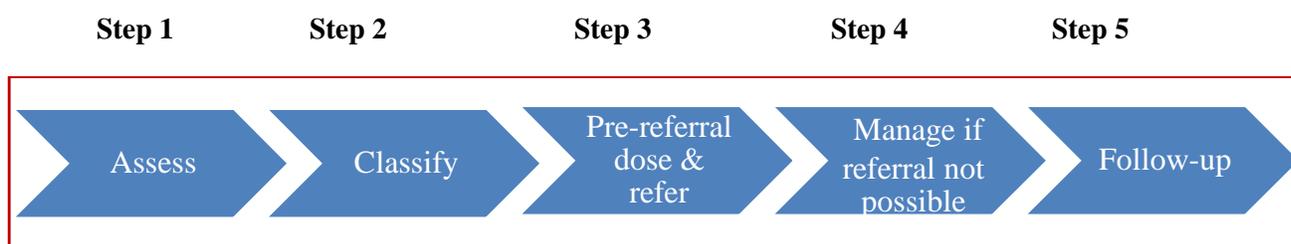
Young infant's weight	Amount of Gentamicin to be given intramuscularly as Injection (contains 80 mg in 2 ml vial)	Amount of Amoxicillin to be given per-orally as Syrup (contains 125mg / 5 ml)
<b>Less than 1.5 Kg</b>	To be referred to higher facility	
<b>Above 1.5 kg - upto 2.0 Kg</b>	0.2 ml	2 ml
<b>Above 2.0 kg - upto 3.0 Kg</b>	0.3 ml	2.5 ml
<b>Above 3.0 kg - upto 4.0 Kg</b>	0.4 ml	3 ml
<b>Above 3.0 kg - upto 4.0 Kg</b>	0.4 ml	3 ml
<b>Route of administration</b>	Intramuscular	Oral
<b>Dosage</b>	5 mg/kg/dose * Once a day	25 mg/kg/dose** Twice a day

\*Precaution: If the treatment is to be continued same vial can be reused for the entire course of 7days, provided it is stored properly and its contents do not change colour or have turbidity. In case of any doubt it is better to use a new vial

\*\*The ANM will instruct the mother how to reconstitute the syrup if it is in powder form

### Steps for Management of Sepsis in Young Infants by the ANM

The ANM should follow the following five (5) steps for diagnosing and treating sepsis in young infants



The ANM must make every possible effort to refer young infants with sepsis to a health facility for providing standard antibiotic treatment and supportive care. However if referral is not possible, she should start treatment for sepsis in this specific situation and make all efforts to communicate with the Medical Officer or Staff Nurse of nearest health facility on a daily basis. The Flow Chart (on next page) outlines the five steps in detail.

#### \*Steps to be taken by the ANM before and during referral to health facility

1. Warm the young infant by skin to skin contact with mother/care giver if temperature less than 35.5 (or feels cold to touch) while arranging referral and during transport.
2. Treat to prevent low blood sugar using Health Workers module of IMNCI
  - **If the child is able to breastfeed:** Ask the mother to breastfeed the child.

- **If the child is not able to breastfeed but is able to swallow:** Give 20-50 ml (10 ml/kg) expressed breastmilk or locally appropriate animal milk (with added sugar) before departure. If neither of these is available, give 20-50 ml (10 ml/kg) sugar water.
- **To make sugar water:** Dissolve 4 level teaspoons of sugar (20 grams) in a 200-ml cup of clean water.

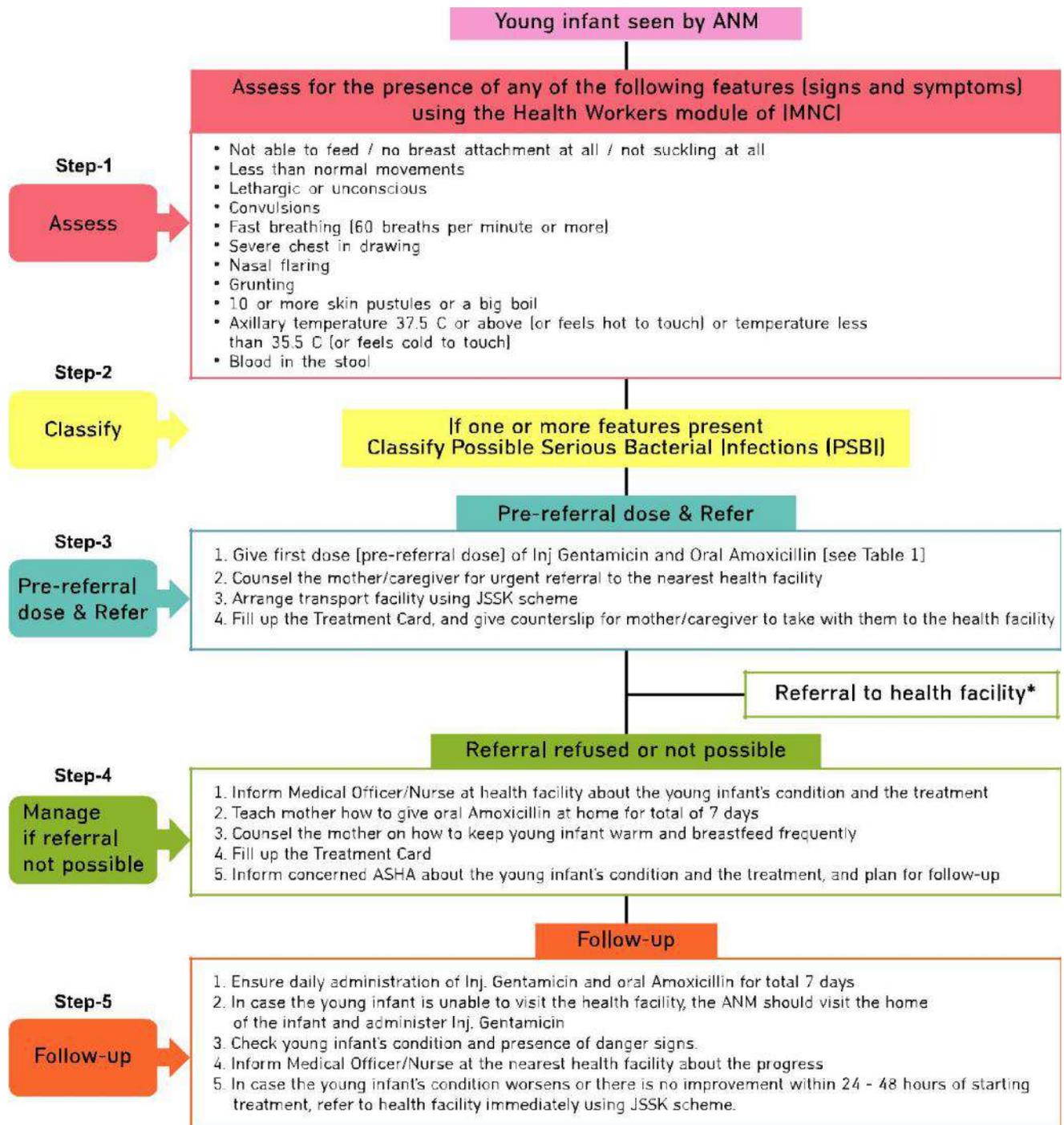
#### **Instructions to ANMs**

- This guideline allows the ANM to use Injection Gentamicin and Syrup Amoxicillin for the treatment of sepsis in young infants under specific situations.
- Wherever possible, ANM should make all efforts to ensure that a young infant with sepsis is referred to the nearest health facility for appropriate treatment after giving the first dose/pre-referral doses of Injection Gentamicin and Syrup Amoxicillin.
- Before and during referral, the ANM should advise the mother/caretaker on how to keep the young infant warm, and to continue breastfeeding during referral if the young infant is able to suck.
- The IMNCI guidelines should be adhered to and over-use and misuse of antibiotics should be avoided.

#### **Flow Chart: Management of Sepsis in Young Infants by the ANM**

- The ANM is expected to ensure the completion of the antibiotic treatment for the specified period. In case the mother/caretaker or the parents are unable to access the sub-center or the ANM goes for field visit, then the ANM must visit the young infant's home to ensure the scheduled dose of Injectable Gentamicin is not missed.
- In case the ANM has to provide the full course of antibiotic treatment (for 7 days), she should inform the MO/Nurse at the health facility about the young infant's condition and the treatment.
- She should also inform the concerned ASHA about the young infant's condition and ensure regular follow-up visits.
- The ANM should register all the young infants diagnosed with sepsis and fill up the Treatment Card. The daily treatment details should be entered in the Card to ensure record keeping and reporting.
- The ANMs should utilize all possible windows of opportunity for community contact including home visits by ASHAs (HBNC programme), Village Health and Nutrition Day (VHND), and Anganwadi Workers (AWW), to raise awareness about the need for early care seeking and appropriate treatment of young infants with suspected sepsis.
- During home visits, the ASHAs should identify young infants with danger signs and refer them to the ANM or the nearest health facility. She should support the ANM in ensuring treatment compliance and data collection.

*Source: India, Ministry of Health and Family Welfare, New Delhi. (2014). Operational Guidelines: Use of Gentamycin by ANMs for Management of Sepsis in Young Infants under Specific Situations. New Delhi, 27 pgs*



#### **4.5 VITAMIN K DEFICIENCY BLEEDING (VKDB) AND INJECTION VITAMIN K PROPHYLAXIS AT BIRTH (IN FACILITIES)**

The Government of India has given the 'call to action' on achieving the goals of reducing maternal, infant and neonatal mortality through the implementation of Reproductive, Maternal, Neonatal, Child and Adolescent Health (RMNCH+A) strategy. Keeping these goals in view, facility based newborn care gains great significance.

Vitamin K Deficiency Bleeding (VKDB) previously known as Haemorrhagic Disease of the Newborn (HDN), is a well-known clinical entity for over 100 years. Vitamin K is required for the synthesis of coagulation factors that prevent and control bleeding. All neonates have low levels of Vitamin K owing to poor transport of Vitamin K across placenta, low Vitamin K content in breast milk, and because gut colonization that is critical for its synthesis takes a few days to establish.

Vitamin K Deficiency Bleeding (VKDB) is of particular concern in neonates as they are born with low levels of vitamin K and the risk increases further in those who do not receive vitamin K prophylaxis at birth. Affected babies tend to have prolonged and excessive bleeding and in the serious cases, bleeding may occur in the brain which may be life threatening or may lead to long term morbidity.

Vitamin K prophylaxis at birth has sufficient evidence with respect to effectiveness and safety in preventing Vitamin K Deficiency Bleeding (VKDB). The cost for preventing one case is considerably smaller than those of treating the affected infant and looking after the survivors with lifelong disabilities. In view of this, Government of India has taken a decision to use injection Vitamin K for all facility births at all levels including Sub-centres. The guidelines regarding the operational issues and the key messages for the service providers are presented in the following paragraphs.

There are three forms of VKDB. Classical VKDB is the commonest and presents after 24 hours but within the first week of life. Incidence of classical VKDB varies from 0.01 to 1.5 per cent depending upon the feeding pattern and Vitamin K prophylaxis status. Bleeding sites include the umbilical stump and GI tract, or the surgical wound (e.g. following circumcision). Intracranial haemorrhage (ICH) is rare. The incidence is higher in breastfed babies than in those who are formula-fed. Neonatal Vitamin K prophylaxis is effective in preventing classical VKDB.

Vitamin K administration to infants soon after birth is an effective, safe, and sustainable approach to preventing VKDB and is possible to upscale it. The risk of a baby developing VKDB can be reduced to 1/1 million by the administration of Vitamin K after birth. Studies have shown a 27% relative risk reduction for classical Vitamin K deficiency bleeding with intramuscularly (IM) Vitamin K. The preferred method of Vitamin K prophylaxis is by intramuscular route.

Facility based newborn care training manual of MoHFW recommends that all newborns weighing more than 1000 gm should be given 1 mg of Vitamin K intramuscularly after birth (i.e. the first hour by which infant should be in skin-to-skin contact with the mother and breast feeding is initiated). For babies weighing less than 1000 gm, a dose of 0.5 mg is recommended.

**VKDB is a significant threat to neonates. However, it can be prevented almost entirely by Vitamin K administration soon after birth. A single dose of intramuscular Vitamin K is effective in the prevention of classic VKDB and in ameliorating late VKDB. Thus, Vitamin K prophylaxis would prevent morbidity and mortality due to bleeding in neonates.**

### **Recommendations**

- All newborns delivered in health facilities at all levels including a sub-centre should receive Vitamin K prophylaxis.
- Vitamin K prophylaxis is given as a single dose IM injection soon after birth. (Once the newborn is in skin-to-skin contact with the mother and breast feeding is initiated).
- All newborns with birth weight of 1000 gm or more should be administered 1 mg of Vitamin K IM while those weighing less than 1000 gm should receive 0.5 mg dose.
- Injection Vitamin K should be given IM on the antero-lateral aspect of the thigh using a 26 gauge needle and 1 ml syringe strictly following safe injection practices.
- In cases that need urgent referral, Vitamin K prophylaxis may be given at the health facility where referral is made and should be documented accordingly.
- It should be a routine practice to record the date and dose in the Labour Room/OT registers, neonatal case sheets, and referral/discharge slip.
- Facility in-charge should ensure that medical and nursing staff will administer and document the use of prophylactic Vitamin K to all newborns.
- All facilities will ensure regular supplies of Vitamin K preparation, syringes, etc.
- Records of Injection Vitamin K administration should be validated from delivery room registers, case sheets, discharge tickets, and referral registers during routine monitoring visits. This information will be finally transferred into MCTS.

**Bleeding in a newborn is a danger sign and may also occur due to causes other than Vitamin K deficiency. In case the newborn has any bleeding manifestation, appropriate referral and management should be instituted promptly as such cases may require blood products and supportive care.**

## **4.6 OPERATIONAL GUIDELINES ON HOME BASED CARE OF NEWBORN**

### **Objectives of HBNC**

The major objectives of HBNC are to decrease neonatal mortality and morbidity through:

- The provision of essential newborn care to all newborns and the prevention of complications
- Early detection and special care of preterm and low birth weight newborns
- Early identification of illness in the newborn and provision of appropriate care and referral
- Support the family for adoption of healthy practices and build confidence and skills of the mother to safeguard her health and that of the newborn.

### **Key activities in HBNC**

The key activities in HBNC constitute the provision of:

1. Care for every newborn through a series of home visits by a trained health worker in the first six weeks of life. In most state contexts this health worker is the ASHA.
2. Information and skills to the mother and family of every newborn to ensure better health outcomes.
3. An examination of every newborn for prematurity and low birth weight.
4. Extra home visits for preterm and low birth weight babies by the ASHA or ANM and referred for appropriate care as defined in the protocols.
5. Early identification of illness in the newborn and provision of appropriate care at home or referral is defined in the protocols.
6. Follow up for sick newborns after they are discharged from facilities.
7. Counselling the mother on postpartum care, recognition of postpartum complications and enabling referral
8. Counselling the mother for adoption of an appropriate family planning method

In case of those deliveries that occur on the way to the health institutions or at home out of choice, despite motivation for institutional delivery, the ASHA must be equipped with the skills and competencies required to provide appropriate newborn care.

### **Skills needed by the ASHA in the provision of HBNC**

1. Mobilise all pregnant mothers and ensure that they receive the full package of antenatal care
2. Undertake birth planning and birth preparedness with the mother and family to ensure access to safe delivery
3. Provide newborn care through a series of home visit which include the skills for:
  - a. Weighing the newborn
  - b. Measuring newborn temperature
  - c. Ensuring warmth
  - d. Supporting exclusive breastfeeding through proper positioning and attachment for initiating and maintaining breastfeeding
  - e. Diagnosing and counselling in case of problems with breastfeeding
  - f. Promoting hand washing
  - g. Providing skin, cord and eye care

- h. Health promotion and counselling mothers and families on key messages on newborn care which includes discouraging unhealthy practices such as early bathing, and bottle feeding
  - i. Ensuring prompt identification of sepsis or other illnesses.
4. Assessing if the baby is high risk (preterm or low birth weight), through the use of protocols and managing such LBW or preterm babies through
    - a) Increasing the number of home visits,
    - b) Monitoring weight gain,
    - c) Supporting and counselling the mother and family to keep the baby warm and enabling frequent and exclusive breastfeeding,
    - d) Teaching the mother to express breastmilk and feed baby using cup and spoon or paladai, if required.
  5. Detect signs and symptoms of sepsis, provide first level care and refer the baby to an appropriate center. If the family is unable to go, the ASHA should ensure that the ANM visits the sick newborn on a priority basis.
  6. Recognize postpartum complications in the mother and refer appropriately.
  7. Counsel the couple to choose an appropriate family planning method.
  8. Use the checklist for first visit to the newborn and Home visit form to remind her to ask the key questions and ensure that she follows the steps of examination and counselling the mother.
  9. Provide immediate newborn care, in case of those deliveries that do not occur in institutions (home deliveries/deliveries occurring on the way to the institutions)

### **Capacity Building of the ASHA**

The ASHA is trained through four rounds of training of five days each by ASHA trainers using a trainer module. All four rounds are expected to be completed within one year. After each round of training the ASHA is evaluated for knowledge and skills. This is followed by the process of certification of ASHA. There is a gap of about ten to twelve weeks between each round of training during which she is supported and mentored to practice the skills learnt during the training. The ASHA is to be provided on the job support and mentoring by the facilitators. Facilitators are trained in the use of supervisory checklists to ensure accurate application of skills by the ASHA to provide HBNC.

### **Support to the ASHA to ensure positive newborn health outcomes**

For the ASHA to be effective in providing HBNC and to enable reductions in neonatal mortality, the following support needs to be provided:

**1. Payments:** The ASHA is to be paid Rs 250 for conducting home visits for the care of the newborn and post-partum mother. The schedule of payment is as follows:

- Six visits in the case of institutional delivery (Days 3,7, 14, 21, 28 and 42)
- Seven visits in the case of home delivery (Day 1, 3, 7, 14, 21, 28 and 42)

The amount is to be paid based on the completed home visit form and first examination of the newborn, forms, validated by the facilitator. The payments to the ASHA should be made on time and with dignity. The payments are made on the 45<sup>th</sup> day (using the state mechanism for JSY payment) subject to the following:

- i. Ensuring that birth weight is recorded in the Maternal and Child Protection (MCP) Card

- ii. Ensuring that the newborn is immunized with BCG, first dose of OPV and DPT and entered into the MCP card
- iii. Ensuring Birth Registration
- iv. Both mother and newborn are safe until the 42<sup>nd</sup> day of delivery

**2. Ensuring field level support**

- The ASHA should be visited at least twice a month by the facilitator to provide on the job mentoring, monitoring and support
- Use of supervisory checklists by the facilitators is important to support the ASHA in providing HBNC
- Monthly review meetings at the level of PHC are to be held for problem solving and building the linkages for referral support
- Refresher trainings should be held at least once every three months to ensure knowledge and skill retention
- The ASHA's kit should be replenished regularly and the equipment should be reviewed and refurbished as required

**3. Enabling Health Promotion by the ANM:** The ASHA is expected to provide interpersonal one communication to the mother and health education to the family, and community to promote positive health practices for care of the newborn and postpartum mother. The ASHA is expected to be equipped with a communication package to enable such health education.

**4. Other forms of support:** At the village level the ASHA is to be supported by a functional Village Health, Sanitation and Nutrition Committee/Women's health committee. She also needs the encouragement and support from the ANM and the Medical officers particularly to ensure responsive referral which will add to her credibility and improve her performance. She is also to be provided with an ID card and there needs to be official acknowledgement of her contribution through the institution of awards, for specific outcomes, e.g. no newborn deaths in an entire year. Any grievances are to be addressed promptly through grievance redressal mechanisms.

**Actions at the state and district levels**

States will ensure that the scheme is widely publicized, that the drugs and consumables are available, that transport to an appropriate referral facility is readily available, and a grievance redressal facility is established at all health care institutions. The key steps to be taken at the state and district levels are listed below:

**1. Actions at State level:**

- Issue Government order on Home Based New Born Care and nominate a State Nodal Officer.
- Ensure that a state level resource centre/centres are created to provide the training support for district and block levels to ensure high quality training of ASHA and facilitators
- Ensure that training of ASHA in Modules 6 & 7 is completed within one year and that she is certifies to provide HBNC.
- Ensure support and supervisory mechanisms for the ASH to undertake HBNC with atleast two on site mentoring visits every month by a supervisor/facilitator

- Institute a grievance redressal mechanism for ensuring that the commitments are fulfilled in letter and spirit
- Ensure district wise assured referral linkages
- Provide required finances and necessary administrative steps/G.O s for the above activities.
- Financially empower the district and facility in charge for the above activities
- Regularly monitor and report on designated formats as specified periodicity.
- Review the implementation status during district CMOs meetings and quarterly review meetings of district nodal officers and district community mobilizers.

## **2. Actions at District Level:**

- Nominate a District Nodal Officer
- Ensure that the support system for ASHA: District Community Mobiliser, block community mobiliser and facilitators are in place
- Circulate the G.O on free entitlements to all facility in charges
- Widely publicize free entitlements in public domain
- Institute a grievance redressal mechanism for ensuring that the commitments are fulfilled in letter and spirit.
- Enable and monitor the quality of ASHA training in Module 6 and 7
- Regularly review the stocks of drugs & consumables for ensuring availability in the ASHA Kit and in public health institutions
- Review referral linkages and their utilisation by beneficiaries
- Provide required finances/empowerment for utilisation of funds to the Block MOs and facility in charges for the above activities, particularly in emergency situations/stock outs.
- Regularly monitor & report on designated formats at specified periodicity.
- Review the implementation status during Block MOs meeting

## **Implementation of the scheme is expected to ensure the following**

- i. Dissemination of the entitlements in the public domain**
  - Widely publicize these entitlements through print and electronic media
  - Display them prominently in all Government health facilities e.g. SCs, PHCs, CHCs, SDHs and DHs/FRUs (main entrance, neonatal wards and outside outpatient areas)
  - IEC budget sanctioned in the Project Implementation Plan (PIP) under RCH/NRHM can be utilised for this.
- ii. Ensure regular and timely supply of drugs and consumables:**
  - Ensure regular procurement, uninterrupted supply and availability of drugs & consumables and regular replenishments for ASHA drug kits.
  - Empower the head of the District/health facility to procure drugs & consumables in case of potential stock outs.
  - Ensure the quality and shelf life of drugs supplied to the ASHA
  - Ensure a proper inventory of drugs and consumables at each health facility for timely reporting on stock outs and export and a stock card with each ASHA
  - Ensure that first expiry drugs and consumables are used first at every level

**iii. Referral and Transport**

- Ensure universal reach (no area left uncovered) with 24x7 referral services for and providing assured referral transport
- State is free to use any suitable model of transportation e.g. Government Ambulances, EMRI, referral transport PPP model etc.
- Establish call centres with a single toll free number, at district or State level
- May provide ambulance/vehicles with GPS for effective tracking and management
- Establish linkages for the inaccessible areas (hilly terrain, flooded or tribal areas etc.) to the road head/pick up points.
- Widely publicize the free & assured referral transport through print and electronic media
- Monitor and supervise services at all levels, including utilization of each vehicle and number of cases transported

**iv. Grievance redressal**

- Prominently displayed the names, addresses, emails, telephones, mobile and fax numbers of grievance redressal authorities at health facility level, district level and state level, and disseminate them widely in the public domain.
- Set up help desks and suggestion/complaint boxes at Government health facilities
- Keep fixed hours (at least 1 hour) on any two working days per week, for meeting the complainants and redressing their grievances related to free entitlements.
- Take action on the grievances within a suitable time frame, and communicate to the complainants
- Maintain proper records of actions taken.

**v. Funds**

Reflect the requirement of funds in the state PIP under NHRM in addition to resources available from State budget.



# 5

## GUIDELINES ON FEEDING OF NORMAL BIRTH WEIGHT AND LOW BIRTH WEIGHT BABIES



## CHAPTER 5

### GUIDELINES ON FEEDING OF NORMAL BIRTH WEIGHT AND LOW BIRTH WEIGHT BABIES

#### 5.1 FEEDING OF NORMAL BIRTH WEIGHT BABIES

##### **Introduction**

The best milk for a newborn baby is unquestionably breast milk. All healthy normal weight babies must be exclusively breastfed till the age of 6 months. Health professionals must have the adequate knowledge and skills in order to support and help mothers in establishing breastfeeding successfully.

##### **Breastfeeding**

It is essential to help the mothers of healthy newborn babies to establish breastfeeding as soon as possible after delivery. Exclusive breastfeeding should be continued till 6 months of age. Health workers should know about the advantages of breast milk and the anatomy of breast and physiology of lactation so that they can teach and counsel the mothers with confidence.

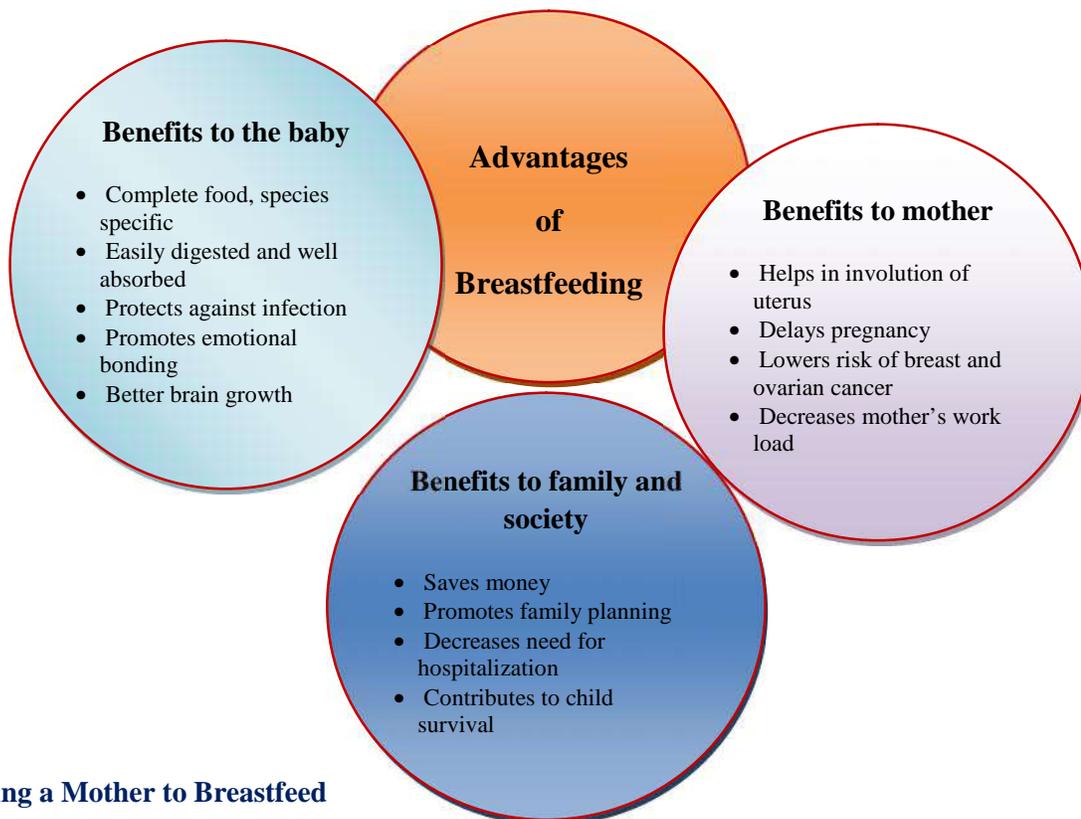
**Exclusive breastfeeding should be given for the first six months of life; complementary food should be started after six months of age.**

##### *Advantages of breastfeeding*

Exclusive breast fed babies are at decreased risk of

- Diarrhea
- Pneumonia
- Ear infection and
- Death in first year of life

**Fig.29: Advantages of Breastfeeding**



### **Helping a Mother to Breastfeed**

All mothers, particularly the first-time mothers would require some help to initiate breastfeeding. Hence it is important for the health care providers to help them to breastfeed their babies. The steps are summarized below.

#### **Step 1: Preparing the infant and the mother**

- Ensure that the infant is clinically stable
- Ensure that the infant is alert
- Make sure that the mother is comfortable and relaxed.
- She should sit down in a comfortable and convenient position.

**Step 2: Demonstrate various positions for breastfeeding a baby**

*Underarm position*



*Using the opposite arm*



*Mother in lying down position*



A mother can feed the infant in various positions as shown above. Whatever the position, it is important to remember that the baby has to be **supported** with her forearm and the hands.

**Step 3: Demonstrate the four key points in position**

The **four key points** in proper **positioning**:

- the baby's head and body should be straight;
- the baby's face should face mother's breast;
- the baby's body should be close to her body;
- she should support the baby's whole body

#### **Step 4: Show the mother how to support her breast with the other hand**

Explain the mother that she should

- put her fingers below her breast
- use her first finger to support the breast;
- put her thumb above the areola, helping to shape the breast.
- Not keep her fingers near the nipple

#### **Step 5: Showing the mother how to help the baby to attach**

Ask the mother to

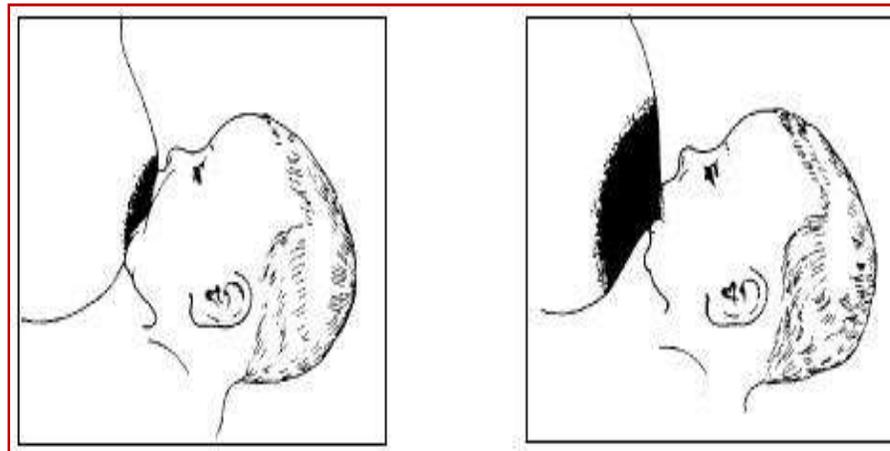
- express a little milk on to her nipple
- touch the baby's lips with her nipple
- wait until the baby's mouth is opening wide, and the tongue is down and forward;
- move the baby quickly onto her breast, aiming the nipple towards the baby's palate and his lower lip well below the nipple.

#### **Step 6: Look for signs of good attachment**

The **four key signs of good attachment** are:

- more areola is visible above the baby's mouth than below it
- the baby's mouth is wide open
- the baby's lower lip is turned outwards
- the baby's chin is touching the breast.

Examples of good and poor attachment are given in **Fig. 30**.



Good Attachment

Poor Attachment

The causes of poor attachment include:

- Use of feeding bottles.
- Inexperienced mother.
- Lack of skilled support.
- Inverted nipples.

Hence it is very important **not to introduce bottle feeds** at any point of time. Poor attachment usually leads to problems such as:

- Pain or damage to nipple or sore nipple.
- Breast milk not removed effectively thus causing breast engorgement.
- Poor milk supply hence baby is not satisfied after feeding.
- Breast produces less milk resulting in a frustrated baby and refusal to suck. This leads to poor weight gain.

*Correct positioning will ensure effective sucking and prevent sore nipples and breast engorgement.*

For an infant who shows signs of good attachment, the next step would be to assess if he/she suckles and swallows effectively:

Step 7: Assess if the infant is suckling and swallowing effectively	
Effective sucking	Ineffective sucking
<b>Infant takes several slow deep sucks followed by swallowing, and then pauses</b>	Infant suckles for a short time, but tires out and is unable to continue for long enough.

If an infant is not able to attach and suckle effectively at the breast, or is not able to suckle for long enough to complete a feed, he or she will need to be fed with a spoon or *paladai* until effective feeding ability develops.

### **How Frequently a Mother has to Breastfeed her Baby?**

A healthy newborn baby can be breastfed **on demand** i.e. whenever the baby cries for feeds. The usual time interval between each feed is about 2 to 3 hours. Mothers should be advised that they should feed their babies **at least** 8-10 times in 24 hours and importantly they should not vomit any night feeds.

### **Assessing the Adequacy of Breastfeeding**

After the mother has been counselled and helped in establishing breastfeeding successfully, ensure that the infant is getting enough breast milk. Often, mothers would be worried about the amount of milk secreted and whether it is sufficient for their babies. It is the duty of health personnel to assess and then reassure about the adequacy of breastfeeding.

Breastfeeding is considered adequate if the baby

- i. Passes urine 6-8 times in 24 hours.
- ii. Goes to sleep for 2-3 hrs after the feeds.
- iii. Gains weight @10-15 gm/kg/ day.
- iv. Crosses birth weight by 2 weeks.

**Breastfeeding is considered adequate if the infant passes urine 6-8 times in 24 hours, sleeps for 2-3 hrs after feeds and gains weight adequately.**

### **Promoting Exclusive Breastfeeding**

It is the duty of the health personnel to ensure exclusive breastfeeding in the postnatal wards and nurseries. All mothers should be helped and supported in establishing breastfeeding. If there are any problems, they must be attended to. Mothers should also be counseled regarding exclusive breastfeeding at the time of discharge.

#### **Key Messages to Promote Exclusive Breastfeeding**

1. Put baby to feed at breast as soon as possible after birth preferably in the delivery room. This is important for the mother, baby, and for milk production.
2. On the first day, breast milk is thick and yellowish (known as colostrum). Feeding this milk provides nutrition and prevents infections. **Do not discard colostrum.**
3. Keep baby close to mother. It is safe for baby to sleep with mother.

4. Mother may lie down, sit on a bed, chair or floor to breastfeed her baby.
5. Breastfeed during day and at night at least eight to ten times and whenever baby cries with hunger.
6. The more the baby sucks at breast the more milk the breast will produce and the healthier the baby becomes.
7. Allow baby to feed at one breast until he leaves the nipple on his own. Then feed him at the other breast if he continues to be hungry.
8. Give baby only breast milk for the first six months.
9. Don't give baby *ghutti* water, gripe water, honey, animal or powdered milk before six months.
10. **Never** use bottles or pacifier.

## **Issues in Breastfeeding**

### ***Inverted / flat nipples***

Flat or short nipples which protract well (become prominent or pull out easily) do not cause difficulty in breast feeding. Only inverted or retracted nipples make attachment to the breast difficult. They should be diagnosed in the antenatal period. These mothers need additional support to feed their babies.

Treatment is started after birth of the baby. Nipple is manually stretched and rolled out several times a day.

### ***Sore nipples***

A sore nipple is caused by incorrect attachment of the baby to the breast. A baby who sucks only at the nipple does not get enough milk so he sucks more vigorously resulting in a sore nipple. Frequent washing with soap and water and pulling the baby off the breast while he is still sucking may also result in sore nipple. Fungal infection may cause sore nipple after the first few weeks.

Treatment consists of correct positioning and attachment of the baby to the breast. Hind milk should be applied to the nipple after a feed and the nipples should be allowed to heal in between feeds. If fungal infection is there then apply medicine on the nipple and inside the mouth of the baby.

## Sore nipples

### *Causes*

- Incorrect attachment: Nipple sucking.
- Frequent use of soap and water.
- Fungal infection of nipple.

### *Treatment*

- Continue breastfeeding and change position.
- Attach baby to the areola while feeding.
- Apply hind milk to the nipple after breast feed.
- Expose the nipple to air between feeds. Do not wash each time before and after feed.
- If fungal infection apply medicine on the nipple and inside the mouth of the baby.

### *Breast engorgement*

Milk production increases during the second and third day after delivery. If feeding is delayed or infrequent or the baby is not well positioned at the breast, the milk accumulates in the alveoli. As milk production increases, the amount of milk in the breast exceeds the capacity of the alveoli to store it comfortably. Such a breast becomes swollen, hard, warm, and painful and is termed as an engorged breast.

**Treatment:** Breast engorgement can be prevented by early and frequent breastfeeds and correct attachment of the baby to the breast. Treatment consists of local warm water packs for not more than 15 minutes. Paracetamol can be given to the mother to relieve pain. Gently express the milk to soften the breast and then help the mother to correctly latch the baby to the breast.

### *Breast abscess*

If conditions like engorged breast, cracked nipple, blocked duct or mastitis are not treated early, then breast abscess may form. The mother may have high grade fever and pain in breast.

**Treatment:** Mother must be treated with analgesics and antibiotics. The abscess must be incised and drained. Breast feeding must be continued from the other breast.

### *Not enough milk*

Mothers often complain that they do not have enough milk. One has to make sure that her perception about adequacy of milk is true. Only reassurance is needed if baby is gaining weight and passing adequate amount of urine.

Common causes of not enough milk include - not breastfeeding frequently, too short or hurried breastfeeds, poor position, breast engorgement or mastitis (see table given below).

***Treatment:*** If baby is not gaining weight adequately, ask mother to feed the baby more frequently and feed especially during night. Make sure that attachment is proper. Any painful condition in mother such as sore nipple and mastitis should be taken care of. Back massages are especially useful for stimulating lactation.

## 5.2 INFANT AND YOUNG CHILD FEEDING TECHNICAL GUIDELINES

### 1. Breastfeeding

- (a) Breastfeeding should be promoted to mothers and other caregivers as the gold standard feeding option for babies.
- (b) Antenatal Counselling individually or in groups organized by maternity facility should contain messages regarding advantages of breastfeeding and dangers of artificial feeding. The objective should be to prepare expectant mothers for successful breastfeeding.
- (c) Breastfeeding must be initiated as early as possible after birth for all normal newborns (including those born by caesarean section) avoiding delay beyond an hour. In case of operative birth, the mother may need motivation and support to initiate breastfeeding within the first hour. Skin to skin contact between the mother and newborn should be encouraged by 'bedding in the mother and baby pair'. The method of "Breast Crawl" can be adopted for early initiation in case of normal deliveries. Mother should communicate, look into the eyes, touch and caress the baby while feeding. The new born should be kept warm by promoting Kangaroo Mother Care and promoting local practices to keep the room warm.
- (d) Colostrum, milk secreted in the first 2-3 days, must not be discarded but should be fed to newborn as it contains high concentration of protective immunoglobulins and cells. No pre-lacteal fluid should be given to the newborn.
- (e) Baby should be fed "on cues"- The early cues includes; sucking movements and sucking sounds, hand to mouth movements, rapid eye movements, soft cooing or sighing sounds, lip smacking, restlessness etc. Crying is a late cue and may interfere with successful feeding. Periodic feeding is practiced in certain situations like in the case of a very small infant who is likely to become hypoglycemic unless fed regularly, or an infant who 'does not demand' milk in initial few days. Periodic feeding should be practiced only on medical advice.
- (f) Every mother, especially the first time mother should receive breastfeeding support from the doctors and the nursing staff, or community health workers (in case of non-institutional birth) with regards to correct positioning, latching and treatment of problems, such as breast engorgement, nipple fissures and delayed 'coming-in' of milk.
- (g) Exclusive breastfeeding should be practiced from birth till six months requirements. Human milk provides sufficient energy and protein to meet nutritional requirements of the infant during the first 6 months of life. Therefore, no other food or fluids should be given to the infant below six months of age unless medically indicated. After completion of six months of age, with introduction of optimal complementary feeding, breastfeeding should be continued for a minimum for 2 years and beyond depending on the choice of mother and the baby. Even during the second year of life, the frequency of breastfeeding should be 4-6 times in 24 hours, including night feeds.
- (h) Mothers need skilled help and confidence building during all health contacts and also at home through home visits by trained community worker, especially after the baby is 3 to 4 months old when a mother may begin to doubt her ability to fulfill the growing needs and demands of the baby.
- (i) Mothers who work outside should be assisted with obtaining adequate maternity/ breastfeeding leave from their employers; they should be encouraged to continue exclusive breastfeeding for

6 months by expressing milk for feeding the baby while they are out at work, and initiating the infant on timely complementary foods. They may be encouraged to carry the baby to a work place crèche, wherever, such facility exists. The concept of “Hirkani’s room” may be considered at work places (Hirkani’s room is a specially allocated room at the workplace where working mothers can express milk and store in a refrigerator during their work schedule). Every such mother leaving the maternity facility should be taught manual expression of her breast milk.

- (j) Mothers who are unwell or on medication should be encouraged to continue breastfeeding unless it is medically indicated to discontinue breastfeeding.
- (k) At every health visit, the harms of artificial feeding and bottle feeding should be explained to the mothers. Inadvertent advertising of infant milk substitute in health facility should be avoided. Artificial feeding is to be practiced only when medically indicated.
- (l) Frontline health workers should be trained in various skills of counselling and especially in handling sensitive subjects like breastfeeding and complementary feeding.
- (m) If the breastfeeding is noted to be temporarily discontinued due to an inadvertent situation, “re-lactation” should be tried as soon as possible. Such cases should be referred to a trained lactation consultant/health worker. The possibility of “induced lactation” should be explored according to the needs of the specific case.
- (n) All efforts should be taken to provide appropriate facilities so that mothers can breastfeed babies with ease even in public places.
- (o) Adoption of latest WHO Growth Charts is recommended for growth monitoring.

## **2. Complementary Feeding**

- (a) Appropriately thick complementary foods of homogenous consistency made from locally available foods should be introduced at six completed months to all babies while continuing breastfeeding along with it. This should be the standard and universal practice. During this period breastfeeding should be actively supported and therefore the term “weaning” should be avoided.
- (b) To address the issue of a small stomach size which can accommodate limited quantity at a time, each meal must be made energy dense by adding sugar/ jaggery and ghee/butter/oil. To provide more calories from smaller volumes, food must be thick in consistency - thick enough to stay on the spoon without running off, when the spoon is tilted.
- (c) Foods can be enriched by making a fermented porridge, use of germinated or sprouted flour and toasting of grains before grinding.
- (d) Adequate total energy intake can also be ensured by addition of one to two nutritious snacks between the three main meals. Snacks are in addition to the meals and should not replace meals. They should not to be confused with foods such as sweets, chips or other processed foods.
- (e) Parents must identify the staple homemade food comprising of cereal-pulse mixture (as these are fresh, clean and cheap) and make them calorie and nutrient rich with locally available products.
- (f) The research has time and again proved the disadvantages of bottle feeding. Hence bottle feeding should be discouraged at all levels.

- (g) Population-specific dietary guidelines should be developed for complementary feeding based on the food composition of locally available foods. A list of appropriate, acceptable and avoidable foods can be prepared.
- (h) Iron-fortified foods, iodized salt, vitamin A enriched food etc. are to be encouraged.
- (i) The food should be a “balanced food” consisting of various (as diverse as possible) food groups/components in different combinations. As the babies start showing interest in complementary feeds, the variety should be increased by adding new foods in the staple food one by one. Easily available, cost-effective seasonal uncooked fruits, green and other dark colored vegetables, milk and milk products, pulses/legumes, animal foods, oil/butter, sugar/jaggery may be added in the staples gradually.
- (j) Junk food and commercial food, ready-made, processed food from the market, e.g. tinned foods/juices, cold-drinks, chocolates, crisps, health drinks, bakery products etc. should be avoided.
- (k) Giving drinks with low nutritive value, such as tea, coffee and sugary drinks should also be avoided.
- (l) Hygienic practices are essential for food safety during all the involved steps viz. preparation, storage and feeding. Freshly cooked food should be consumed within one to two hours in hot climate unless refrigerated. Hand washing with soap and water at critical times- including before and after preparing and feeding and after using the toilet. Hand washing should be ensured for the child as well before and after feeding and after using toilet.
- (m) Practice of responsive feeding is to be promoted. Young children should be encouraged to take feed by praising them and their foods. Self-feeding should be encouraged despite spillage. Each child should be fed under supervision in a separate plate to develop an individual identity. Forced feeding, threatening and punishment interfere with development of good / proper feeding habits. Along with feeding, mother and care givers should provide psycho-social stimulation to the child through ordinary age-appropriate play and communication activities to ensure early childhood development.
- (n) A skilled help and confidence building is also required for complementary feeding during all health contacts and also at home through home visits by community health workers.
- (o) Consistency of foods should be appropriate to the developmental readiness of the child in munching, chewing and swallowing. Foods which can pose choking hazard are to be avoided. Introduction of lumpy or granular foods and most tastes should be done by about 9 to 10 months. Missing this age may lead to feeding fussiness later. So use of mixers/grinders to make food semisolid/pasty should be strongly discouraged. The details of food including; texture, frequency and average amount are enumerated in **Table 5**. If baby is not breastfed, give in addition: 1-2 cups of milk per day, and 1-2 extra meals per day. The amounts of food included in the table are recommended when the energy density of the meals is about 0.8 to 1.0 Kcal/g. If the energy density of the meals is about 0.6 kcal/g, the mother should increase the energy density of the meal (adding special foods) or increase the amount of food per meal. For example:
  - for 6 to 8 months, increase gradually to two thirds cup
  - for 9 to 11 months, give three quarters cup
  - for 12 to 23 months, give a full cup.

The table should be adapted based on the energy content. Find out what the energy content of complementary foods is in your setting and adapt the table accordingly.

<sup>1</sup>Iron requirement is based on 5% bio-availability from cereal-pulse based diets.

<sup>2</sup>Green leafy vegetables like amaranth (chaulai sag/dantu), spinach (palak), turnip leaves (shalgamka sag), mint leaves (pudhina) and small amounts of lemon (nimbu) and tamarind (imli) added to the diet daily will sum up to provide the amount of iron recommended.

These are broad guidelines. Recipes should be adapted based on local customs. Additional pointers to improving quality of feeds:

- Complementary feeds containing a cereal pulse combination of rice/rice flakes (poha)/wheat and roasted bengal gram dhal/ soyabean/green gram dhal would increase intakes of iron, compared to other cereal: pulse combinations due to either higher absorption and/or higher iron content.
- Soaking, germination/sprouting of cereals and pulses will reduce their phytate content by about half. To do this, soak grains overnight, and then lay on a clean wet cloth for 1-2 days. After germination, the grains can be lightly dry roasted and powdered for cooking.
- If locally available fruits like guava (in children over 1 year of age), papaya, musambi (sweet lime), orange, and lime rich in ascorbic acid are provided as a freshly made mash along with the food, it will increase absorption of iron.
- If an iron supplement is to be given, it is best provided after meals. This will reduce the risk of adverse events. To improve bioavailability of iron taken after the meal, use grains that are less inhibitory for iron absorption. For this purpose, rice is most neutral, followed by wheat and lastly millets. Examples of rice based complementary foods with lower inhibitory effect are a cereal: pulse combination of rice: roasted Bengal gram or rice: sprouted and roasted green gram. These combinations can be made into local recipes like rice khichdi or rice pongal or idlis for younger children. For older children, poha with crushed groundnuts can also be given. It is important to remember that the foods listed here are specifically for the day on which iron is given.

### **3. Feeding in Other Specific Situations**

#### **(a) Feeding during Sickness**

Feeding during sickness is important for recovery and for prevention of undernutrition. Even sick babies mostly continue to breastfeed and the infant can be encouraged to eat small quantities of nutrient rich foods, but more frequently and by offering foods that a child likes to eat. After the illness (eg; diarrhoea) the nutrient intake of child can be easily increased by increasing one or two meals in the daily diet for a period of about a month; by offering nutritious snacks between meals; by giving extra amount at each meal; and by continuing breastfeeding.

#### **(b) Infant Feeding in Maternal Illnesses**

1. Painful and/or infective breast conditions like breast abscess and mastitis and psychiatric illnesses which pose a danger to the child's life e.g. postpartum psychosis, schizophrenia may need a temporary cessation of breastfeeding. Treatment of primary condition should be done and breastfeeding should be started as soon as possible after completion of treatment
2. Chronic infections like tuberculosis, leprosy, or medical conditions like hypothyroidism need treatment of the primary condition and do not warrant discontinuation of breastfeeding.
3. Breastfeeding is contraindicated when the mother is receiving certain drugs like antineoplastic agents, immuno-suppressants, antithyroid drugs like thiouracil, amphetamines, gold salts, etc.

Breastfeeding may be avoided when the mother is receiving following drugs atropine, reserpine, and psychotropic drugs. Other drugs like antibiotics, anaesthetics, antiepileptics, antihistamines, digoxin, diuretics, prednisone, propranolol etc. are considered safe for breastfeeding.

#### **(b) Infant Feeding in various conditions related to the Infant**

(i) Breastfeeding on demand should be promoted in normal active babies. However, in difficult situations like very low birth weight, sick, or depressed babies, alternative methods of feeding can be used based on neuro developmental status. These include feeding expressed breast milk through intra-gastric tube or with the use of cup and spoon. For very sick babies, expert guidance should be sought.

(ii) Gastro-Esophageal Reflux Disease (GERD): Mild GERD is a condition when a child regurgitates the feed soon after the feeding. It is often treated conservatively through thickening the complementary foods, frequent small feeds and upright positioning for 30 minutes after feeds.

(iii) Diarrhoea (Primary Lactose Intolerance): is congenital and may require long term lactose restriction. Secondary Lactose Intolerance is usually transient and resolves after the underlying gastro-intestinal tract condition has remitted.

(iv) During emergencies, priority health and nutrition support should be arranged for pregnant and lactating mothers. Donated or subsidized supplies of breast milk substitutes (e.g. infant formula) should be avoided, must never be included in a general ration distribution, and must be distributed, if at all, only according to well defined strict criteria. Donations of bottles and teats should be refused, and their use actively avoided. Infants born into populations affected by emergencies should normally be exclusively breastfed from birth to 6 months i.e. 180 days of age. Every effort should be made to identify alternative ways to breastfeed infants whose biological mothers are unavailable. Complementary foods should be prepared and fed frequently, consistent with principles of good hygiene and proper food handling. Safe drinking water supply should be ensured.

#### **4. Feeding in Preterm/Low Birth Weight Infants**

Low birth weight (LBW) has been defined by the World Health Organization (WHO) as weight at birth less than 2500 g. LBW can be a consequence of preterm birth (defined as birth before 37 completed weeks of gestation), or due to small size for gestational age (SGA, defined as weight for gestation <10th percentile), or both. LBW thus defines a heterogeneous group of infants: some are born early, some are born at term but are SGA, and some are both born early and SGA.

Being born with LBW is generally recognized as a disadvantage for the infant. LBW infants are at higher risk of early growth retardation, infectious disease, developmental delay and death during infancy and childhood.

Infant mortality rates can be substantially reduced by improving the care of LBW infants which includes feeding, temperature maintenance, hygienic cord and skin care, and early detection and treatment of complications and complete timely immunization. Interventions to improve feeding of

LBW infants can improve the immediate and longer term health and well-being of the individual infant and have a significant impact on neonatal and infant mortality levels.

Feeding recommendations for low birth weight infants :

1. All Low-birth-weight (LBW) infants, including those with very low birth weight (VLBW), should be fed breast milk.
2. LBW infants who are able to breastfeed should be put to the breast as soon as possible after birth (and when they are clinically stable). If unable to suckle, these babies should be fed with expressed breast milk using a katori and spoon.
3. LBW infants should be exclusively breastfed until 6 months i.e. 180 days of age.
4. LBW infants who cannot breastfeed and need to be fed by an alternative oral feeding method should be fed by cup or spoon or as prescribed by the pediatrician.
5. Very low birth weight infants should be given 10 ml/kg of enteral feeds preferably expressed breast milk, starting from 1st day of life with the remaining fluid requirement met by IV fluids.
6. LBW infants, including those with VLBW, who cannot be fed mother's own milk should be fed donor (non HIV infected) human milk. (This recommendation is relevant only to settings where safe and affordable milk banking facilities are available or can be set up such as SNCU).

**Table 5: Details of Food, its Texture, Frequency and Average amount to be Consumed by a Child (6-24 Months)**

<b>Age (months)</b>	<b>Energy needed per day in addition to breast milk (from WHO document) (Calories)</b>	<b>Texture</b>	<b>Frequency</b>	<b>Average amount of each meal</b>	<b>Iron requirement (mg/day)<sup>1</sup> (ICMR RDA)</b>	<b>Iron content (Assuming number of meals/day as advised in column 3)</b>	<b>Food Iron content gap (mg/day)</b>	<b>Amount of raw green leafy vegetables (to be cooked and added to food) (g/day)<sup>2</sup></b>
<b>6-8</b>	<b>200</b>	Start with thick porridge, well mashed food	2-3 meals per day plus frequent Breastfeeding. Depending on appetite offer 1-2 snacks	Start with 2-3 tablespoonfuls increasing to ½ of a 250 ml cup	<b>5</b>	<b>1.0-2.0 mg</b>	<b>3-4</b>	<b>25</b>
<b>9-11</b>	<b>300</b>	Finely chopped or mashed foods, and foods that baby can pick up	3-4 meals plus breastfeed. Depending on appetite offer 1-2 snacks	½ of a 250 ml cup/bowl	<b>5</b>	<b>2.0-2.5mg</b>	<b>2.5-3.0</b>	<b>25</b>
<b>12-23</b>	<b>550</b>	Family foods, chopped or mashed if necessary	3-4 meals plus breastfeed. Depending on appetite offer 1-2 snacks	¾ to one 250 ml cup/bowl	<b>9</b>	<b>2.5-3.5mg</b>	<b>5.5-6.5</b>	<b>40</b>

## 5. HIV and Infant Feeding

Principles of feeding HIV exposed and infected infants are as follows:

1. Exclusive breastfeeding is the recommended infant feeding choice in the first 6 months, irrespective of whether mother or infant is provided with ARV drugs for the duration of breastfeeding.
2. Mixed feeding should not be practiced.
3. Only in situations where breastfeeding cannot be done or on individual parents' informed decision, replacement feeding may be considered only if all the criteria for replacement feeding are met (see box in Situation 3).
4. Exclusive breastfeeding should be done for at least 6 months, after which complementary feeding may be introduced gradually, irrespective of whether the infant is diagnosed HIV negative or positive by early infant diagnosis.
5. Either mother or infant should be receiving ARV prophylaxis or ART during the whole duration of breastfeeding. ARV prophylaxis should continue for one week after the breastfeeding has fully stopped.
6. For breastfeeding infants diagnosed HIV negative, breastfeeding should be continued until 12 months of age
7. For breastfeeding infants diagnosed HIV positive, ART should be started and breastfeeding should be continued till 2 years of age.
8. Breastfeeding should stop once a nutritionally adequate and safe diet without breast-milk can be provided.
9. Abrupt stopping of breastfeeding should **not** be done. Mothers who decide to stop breastfeeding should stop gradually over one month. Determining the HIV status of mothers is important to make the best feeding choice for the infant. Women whose status is unknown should be offered HIV testing. Mothers who do not know their HIV status should know that exclusive breastfeeding will markedly reduce the risk of the infant being infected as compared to mixed feeding.

### **Infants (0-6 months) born to HIV infected women**

For all infants born to HIV-infected women, breastfeeding is strongly recommended as the feeding option of choice. This holds true irrespective of whether the mother is receiving ART, ARV prophylaxis during pregnancy and lactation, or neither. In view of emerging evidence, extended anti-retroviral (ARV) prophylaxis to infant and/or mother should be considered for preventing postnatal transmission of HIV.

### **Infants (0-6 months) born to HIV-infected women**

Breast feeding is the feeding option of choice

- ✓ Initiate breast feeding within one hour of birth
- ✓ Exclusively breast feed for the first six months
- ✓ Ensure correct attachment at the breast
- ✓ Prevent and treat breast conditions
- ✓ Look for and treat oral ulcers or candidiasis of infant
- ✓ Do not mix feed

### **Situation 1: Mother is on ART for her own health, started before/during pregnancy**

Maternal antiretroviral therapy significantly reduces the HIV transmission through breast feeding. Infants born to these mothers are advised 6 weeks of nevirapine (NVP) (for breastfeeding infants) or 6 weeks of zidovudine (ZDV)/ NVP (for non-breast feeding infants) to reduce the risk of early post-natal transmission as per the new WHO (2009) guidelines. Subsequently, no further prophylaxis needs to be given to the baby even if he/she is breastfed. In this group of infants, breastfeeding would provide all its benefits, while eliminating replacement feeding associated morbidity and mortality, with a highly reduced risk of infection transmission. No additional drugs/interventions are needed for these infants.

#### **Making Breastfeeding Safe**

- ✓ Exclusive breastfeeding for six months. Mixed feeding to be avoided at all costs
- ✓ Practice good breastfeeding techniques
- ✓ Recognize and promptly manage breast like mastitis, sore nipple and abscess. Do not
- ✓ breastfeed the infant from affected breast 55 Check for and promptly treat oral ulcers or candidiasis in infant
- ✓ Mothers should follow safe sex practices and avoid other high risk behaviour to prevent reinfection throughout the period of breastfeeding
- ✓ Seek medical help, if need arises
- ✓ Mothers should be evaluated for eligibility for highly active antiretroviral therapy(HAART) in the post - partum period

### **Situation 2: Mother is not on ART but has been started on ARV prophylaxis during pregnancy that is continued during lactation:**

For this group of infants, again, breastfeeding is associated with a reduced risk of HIV transmission by the ongoing ARV prophylaxis and is the feeding option of choice. WHO (2009) recommendations provide two alternative options for women who are not on ART and breastfeed in resource-limited settings:

1) If a woman received AZT during pregnancy, daily nevirapine is recommended for her child from birth until one week after the end of the breastfeeding period.

OR

2) If a woman received a three-drug regimen during pregnancy, starting from as early as 14 weeks of gestation, a continued regimen of triple therapy is recommended till one week after the end of the breastfeeding period.

For all HIV-infected pregnant women who are not eligible for ART, ARV prophylaxis for preventing HIV transmission through breast milk should continue until one week after all exposure to breast milk has ended.

### **Situation 3: If the ARV prophylaxis to cover period of lactation is not available to the HIV infected woman:**

Exclusive breastfeeding (EBF) is still recommended unless conditions suitable for replacement feeding are met with (**see box**). This recommendation is based on the evidence that EBF is associated with reduced

mortality over the first year of life in HIV-exposed as well as unexposed infants as compared to mixed and replacement feeding.

**Give Replacement Feeding (RF) only when ALL of the following conditions are met**

- ✓ safe water and sanitation are assured at the household level and in the community, and
- ✓ the mother or other caregiver can reliably afford to provide sufficient RF (milk), to support normal growth and development of the infant, and
- ✓ the mother or caregiver can prepare it frequently enough in a clean manner so that it is safe and carries a low risk of diarrhoea and malnutrition, and
- ✓ the mother or caregiver can in the first six months exclusively give RF, and the family is supportive of this practice and
- ✓ the mother or caregiver can health care that offers comprehensive child health services.

**Situation 4: When the infant is HIV-infected:**

If infants and young children are known to be HIV-infected, mothers are strongly encouraged to exclusively breastfeed for the first 6 months of life and continue breastfeeding as per the recommendations for the general population, that is, up to two years or beyond.

HIV-infected women who opt for replacement feeding or in situations where breast milk is not available for the infants e.g. maternal death, sickness, twins etc.

These babies should be given locally available animal milk. Animal milk (pre-packed processed milk or fresh animal milk) is easily available, economical and culturally acceptable in comparison to commercial feeding formulas. As per the Indian adaptation of IMNCI guidelines, it is also recommended for infants of mothers who are HIV-negative/ have unknown status and are not able to breastfeed for any reason. Animal milk is invariably boiled before consumption in India, a practice that improves its safety.

Commercial infant feeding formula, while offering the advantage of a standard composition, is expensive and often carries a higher risk of bacterial contamination. However, depending upon the individual circumstances, commercial infant formula may also be used for replacement feeding where it is preferred by the family and is feasible and affordable.

**Replacement Feeding Options**

- ✓ Locally available animal milk
- ✓ commercial infant feeding formula
- ✓ Wet nursing where culturally accepted and practiced

In certain areas of India where wet nursing is culturally accepted and practiced, counselor should discuss this with the family during the antenatal period. It is important to be sure that the lactating woman is HIV-negative, follows safe sexual practices throughout the period of lactation to avoid acquiring HIV infection, and is aware of the small but existing risk of reverse transmission of HIV infection to her in case the infant is infected.

**Advice to Mothers who opt for Replacement Feeding**

- ✓ Completely avoid breastfeeding at all times

- ✓ Practice safe replacement feeding including hygienic preparation and storage of replacement feeds and correct technique of feeding using cup/paladai/katori-spoon
- ✓ Left over milk at the end of a feeding session should not be used for refeeding the infant
- ✓ Regularly monitor for early detection of nutritional deficiencies, growth deviation and Infections among the infants
- ✓ Infants to be given multivitamin and iron supplementation
- ✓ Manage breast engorgement in the post-natal period
- ✓ Encourage physical contact with the baby for comforting the baby and development of mother-infant bonding
- ✓ Use suitable family planning measures

### **Infants (6-23 months) Born to HIV-infected Women**

For infants more than 6 months of age, complementary feeding should be started irrespective of HIV status and initial feeding options.

For situations 1 & 2, where ART or ongoing ARV prophylaxis is being administered to the mother or infant, breastfeeding should be continued for the first 12 months of life along with complementary foods. Breastfeeding should then be stopped only once a nutritionally adequate and safe diet without breast milk can be provided. Continuing breast feeding for 12 months is feasible in these situations since HIV transmission risk would be further reduced in presence of ARV interventions. This is a big advantage since stopping breast feeding soon after 6 months without ensuring adequate complementary feeding may lead to growth faltering.

Mothers or infants who have been receiving ARV prophylaxis should continue prophylaxis for one week after breastfeeding is fully stopped. Stopping breastfeeding abruptly is not advisable. Mothers known to be HIV-infected who decide to stop breastfeeding at any time should stop gradually within one month.

For situation 3, where ongoing ARV prophylaxis is not available and the mother had opted for exclusive breastfeeding, a re-evaluation is to be done at 6 months. If at this time, conditions suitable for replacement feeding are met, cessation of breastfeeding is recommended as quickly as possible taking into account the comfort level of both the mother and her infant. If replacement feeding is still not feasible at this stage, continuation of breastfeeding with additional complementary foods is recommended. All breastfeeding should stop only when a nutritionally adequate and safe diet without breast milk can be provided by complementary feeds including animal milk. For infants who were on replacement feeding, animal milk should be continued as before, in addition to complementary feeds. These infants should receive two additional complementary feeds as compared to babies who continue to receive breastfeeds.

### **Ten Steps to Successful Breastfeeding**

Every facility providing maternity services and care for newborn infants should:

1. Have a written Breastfeeding policy that is routinely communicated to all health care staff.
2. Train all health care staff in skills necessary to implement this policy.
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mothers initiate breastfeeding within a one-hour of birth.
5. Show mothers how to breastfeed, and how to maintain lactation even if they should be separated from their infants.
6. Give newborn infants no food or drink other than breast milk, unless medically indicated.
7. Practice rooming-in -- allow mothers and infants to remain together -- 24 hours a day.
8. Encourage breastfeeding on demand.
9. Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants.
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital.

### 5.3 GUIDELINES ON FEEDING OF LOW BIRTH WEIGHT INFANTS

Low birth weight (LBW) infants need optimal nutrition during the neonatal period for proper growth and development. Appropriate feeding of low birth weight and very low birth weight infants improves their chances of survival and is important for their optimum growth and development.

Breast milk is the ideal food for all infants including those who are LBW. WHO recommends that all LBW infants, irrespective of their gestation, be fed on breast milk. The goal is to enable every LBW infant to receive feeding directly and exclusively from her/his mother's breast at the earliest.

However, many preterm infants have feeding difficulties initially because of

- ✓ Inability to coordinate suck, swallow and breathing
- ✓ Immature and sluggish gut and
- ✓ Systemic illness.

Full term small-for-gestational-age infants because of being weak or sick may also experience.

- ✓ Poor attachment and sucking effort on the breast
- ✓ Poor swallowing
- ✓ Easy tiredness (and hence poor intake)
- ✓ Vomiting, regurgitation or abdominal distension

Lower the birth weight, greater is the likelihood of feeding difficulties. These infants may not be stable enough to tolerate enteral feeds and are therefore provided intravenous fluids till such time that enteral feeding can be established optimally. Direct feeding from the mother's breast may not be possible or may not be enough to fulfill the need in many others and in this situation, feeding may need to be provided by alternative feeding methods such as feeding tube, spoon, *paladai* or cup. LBW infants who are able to breastfeed should be put to the breast as soon as possible after birth when they are clinically stable, and should be exclusively breastfed until six months of age. Low-birth-weight infants, who are unable to take directly from the breast, should be fed by oro-gastric tube, feeding cup, *paladai* or spoon.

#### **What to feed the LBW infant?**

##### **Breastfeeding**

Mother's milk is best for LBW infants of all gestational ages. Breast milk and especially colostrum (the thick, yellowish milk which is produced in small quantities during the first few days after delivery) best assures the survival and well-being of LBW infants.

Breast milk is specially adapted to the nutritional needs of LBW infants; for example, the breast milk of a mother who delivers a preterm LBW infant contains extra protein that is necessary for the normal growth of such an infant.

**Breast milk is the ideal feed for all infants, including LBW infants**

**There is NO place for bottle feeding in the care of infants**

**Breastfeeding is contraindicated when the mother is receiving certain drugs like antineoplastic agents, immuno-suppressants, anti-thyroid drugs like thiouracil, mphetamines, gold salts, etc. Breastfeeding**

**may be avoided when the mother is receiving following drugs atropine, reserpine, and psychotropic drugs.**

In case mother's milk is not available, then the choices in the order of preference are:

**Expressed donor milk from other lactating mothers-** At times, breast milk output in the mother of the LBW infant may not be sufficient, especially in the first few days. Given the importance of breast milk to the infant, the use of breast milk obtained from other lactating women (donor milk) is recommended. Ideally, this should be organized in places where breast milk bank is established. Proper breast milk bank ensures that donated milk is safe and healthy.

**Formula milk-** When not enough breast milk is available to meet the needs of LBW infant, formula milk may be given with **proper preparation and hygiene**. For infants below 1,500 grams birth weight, a preterm formula is preferred. The formula milk should be given under the guidance of a pediatrician. It should be in compliance with IMS act (**Annexure IV**).

**Animal Milk-** Cow or buffalo milk are the **last choice** when all other options have been exhausted despite best efforts. Such milks are unsuitable and may be given with great caution without dilution with alternate methods of feeding.

#### **Alternative methods of feeding when direct breastfeeding is not possible**

Feeding tube, spoon, paladai or cup are the alternative methods of feeding when direct breastfeeding is not possible. Paladai is a shallow, steel bowl with a long beak.

#### **Deciding the initial method of providing fluids and feeding**

The choice of method of providing fluids and feeds is not only dependent on maturity or birth weight but also whether the infant is sick or not. The suck-swallow-breathing coordination develops by 34 weeks of gestation. Most infants above 34 weeks (about 1,800 grams birth weight) should be able to feed directly from the breast.

**Infants with a gestation of more than 30 weeks** (birth weight more than 1200 grams) can usually swallow well and coordinate breathing, but are not able to suck. They can therefore be fed with spoon, paladai or cup that is not dependent on sucking action.

Infants below 30 weeks of gestation (birth weight less than 1200 grams) are not in a position to take feeds even with spoon, paladai or cup. They may be fed with intra-gastric tube.

Furthermore, sick, unstable infants (of any gestation or weight) who do not tolerate enteral feeds will require administration of intravenous fluids.

## Feeding Progression

As an infant's feeding ability develops, he or she should progress from the initial method through the intermediate steps to feeding exclusively from the breast directly. The ultimate aim is to ensure direct, exclusive breastfeeding.

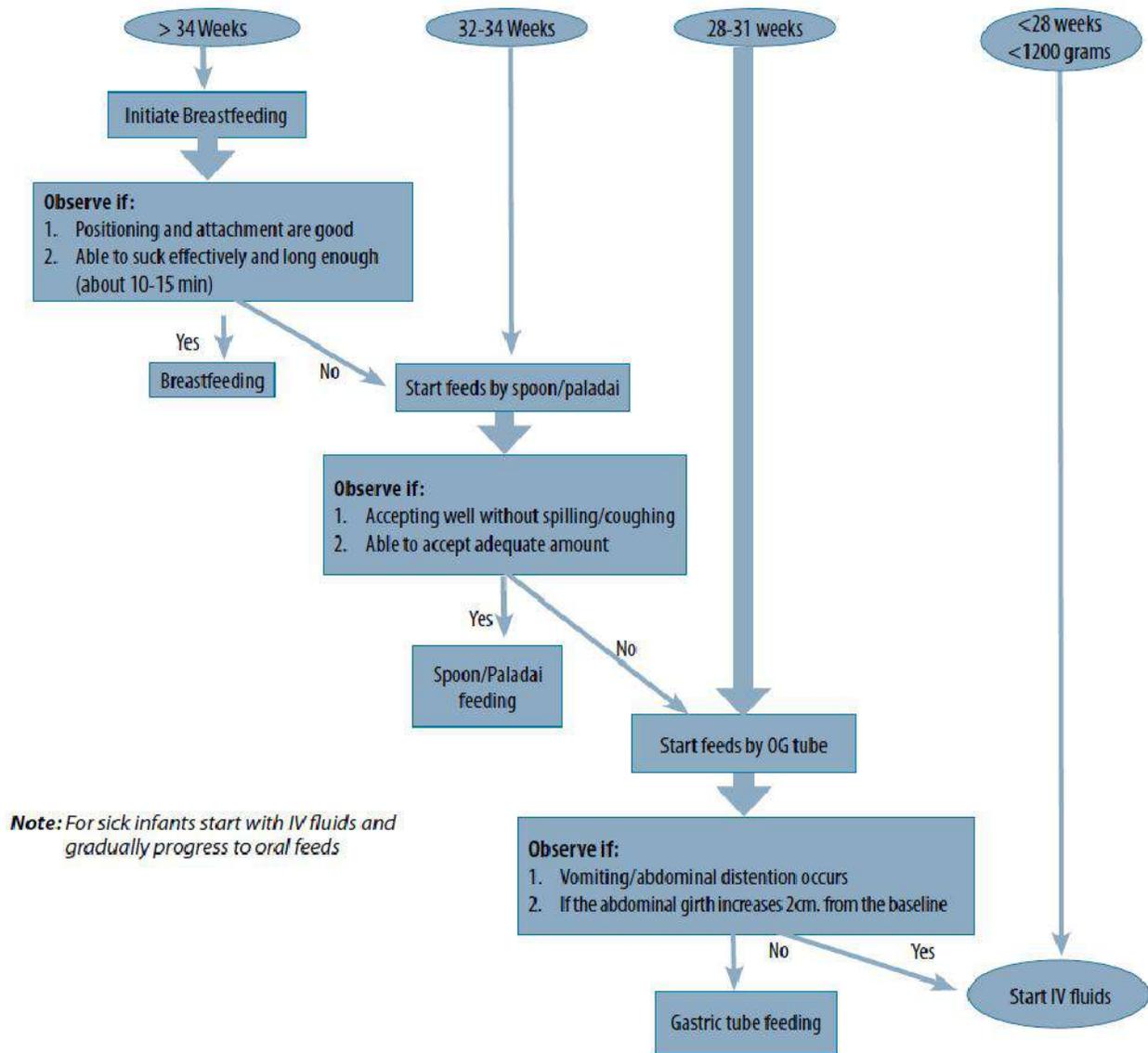
LBW infants would have different methods of initial feeding based on their weight, gestation and feeding readiness. For progression of feeding, it is essential to periodically assess the infant's ability to accept the next feeding method. *An infant breastfeeding effectively on the first day of life* should continue to breastfeed exclusively up to 6 months.

*An infant given alternative oral feeds (tube, spoon, paladai, cup)* should be given frequent opportunity to suckle at the breast before the next feed. When the infant can breastfeed effectively, other modes of feeding can be reduced gradually, over a few days, and discontinued.

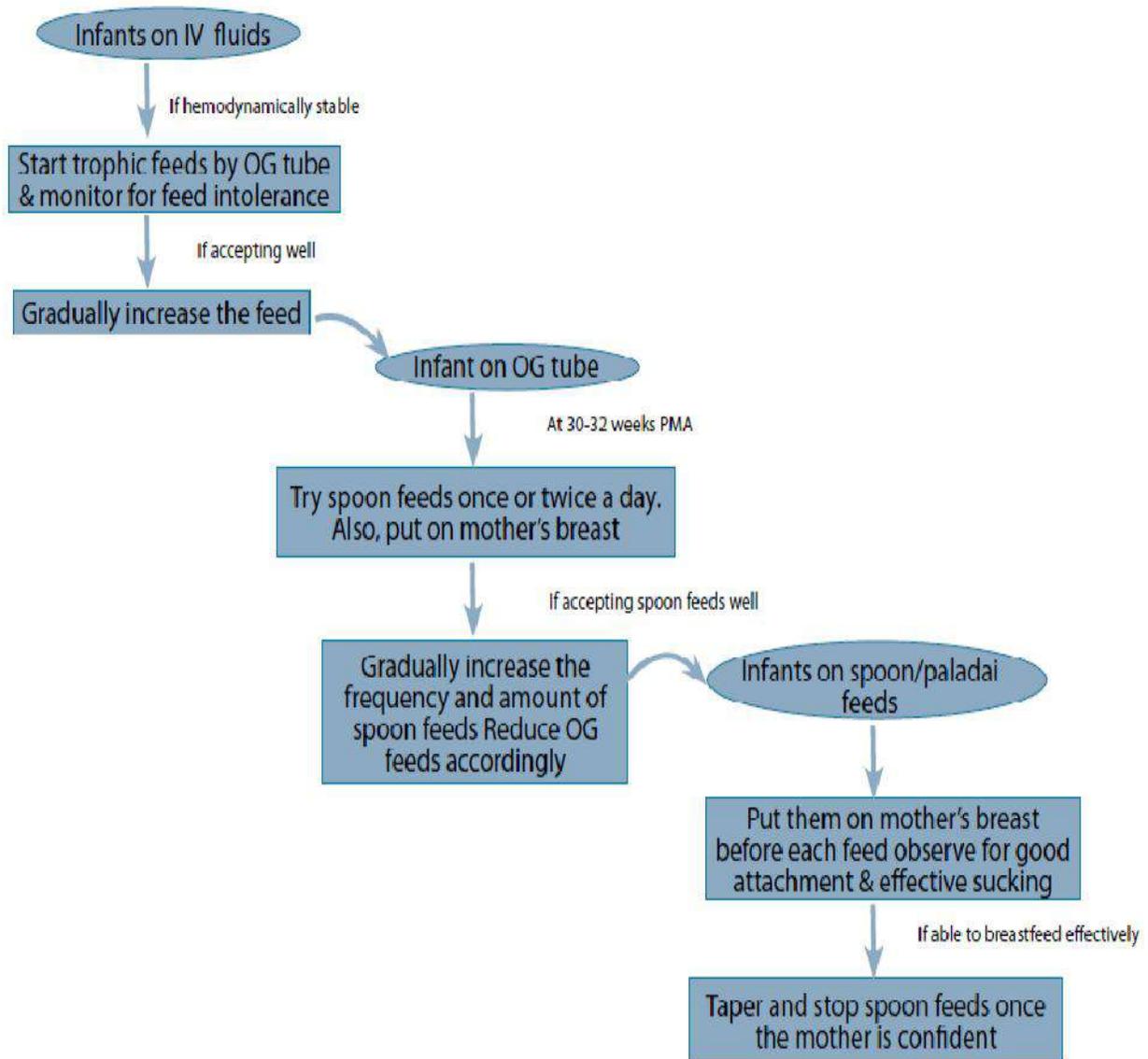
*An infant on IV fluids* should be given small intra-gastric feeds. If the infant tolerates these, the volume can be increased and intravenous fluids reduced. When two thirds of the daily requirement is tolerated as enteral feed, IV fluids can be discontinued and enteral feeds increased over the subsequent days. When the infant shows readiness for oral feeding, small amounts can be offered by an alternative oral feeding method. The infant then progresses to breastfeeding as above.

### How often and how much to feed?

LBW infants are usually fed **every 2 hours** at least 12 times in a day; the amount of each feed volume (to be given every 2 hour) is calculated on the basis of daily fluid requirements. It is usual clinical practice to provide LBW infants of 1500 grams or more about **60 ml/kg** fluids on the first day of life. Infants less than 1,500g are usually given about **80 ml/kg** fluids on the first day of life. The feeds/ fluids are increased by **15 ml/kg/day** to a maximum of 150 ml/kg/day by the end of the first week of life. In stable LBW infants who are tolerating feeds well, the feed intake may be raised cautiously and gradually from 150 ml/kg to 180 ml/kg after the first week of life (**Table 6**). The recommended micronutrient supplementation for infants is given in **Table 7**.



**Method of Providing Fluids and Feeds for Low Birth Weight Babies Infants**



### Principles of Advancing Feeding Modes

**Table 6: Fluid requirements for infants (ml/kg body weight/day)**

Day of Life	Fluid requirements (ml/kg body weight/day)	
	Birth weight 1,500 g	Birth weight < 1,500 g
1	60	80
2	75	95
3	90	110
4	105	125
5	120	140
6	135	150
7	150	150

*These needs are met by enteral feeds and/or by intravenous fluid administration or a combination of the two*

### **Special considerations for infants below 1200 grams**

Infants with birth weight less than 1,200g are usually born premature (before 30 weeks gestation) and often have various problems such as breathing difficulty, hypothermia, and hypoglycaemia. These infants need special care with regard to maintenance of temperature, prevention of infections, etc. They require constant monitoring to help in early identification of clinical instability.

These infants are initially started on intravenous fluids as discussed already. The constant flow of intravenous fluids must be ensured to prevent excess administration or abrupt stoppage of fluids. Also, strict aseptic precautions should be observed while giving intravenous fluids. They have to be gradually helped to initiate oral feeding so that ultimately they can receive direct, exclusive breastfeeding. Even while on intravenous fluids, they can be administered small amounts of intragastric tube feeds. This small amount of milk feeds is called *minimal enteral nutrition (MEN) or trophic feeds*. The purpose of trophic feeds is to help in the growth and maturation of the gastrointestinal tract. Infants started on MEN progress to full oral feeds faster.

**The usual total amount of breast milk given as minimal enteral or trophic feeds is only 12 – 24 ml/kg/day divided into 4 - 6 feeds given via the intragastric route. As the infant stabilizes, breast milk feeding is advanced to full requirements to meet her/his nutritional needs.**

**Table 7: Micronutrient Supplementation (as per WHO Recommendations)**

Micronutrient	Recommended Daily Dosage	Duration
<b>Vitamin D</b>	400-1000 IU/day(usually obtained from multivitamin drops and calcium and phosphorus supplement)	Six months (starting as soon as possible)
<b>Iron</b>	2 mg/kg/day	One year (starting at 2 weeks of age)
<b>Calcium*</b>	120 – 160 mg/kg/day	Till 40 weeks postmenstrual age
<b>Phosphorus*</b>	60 – 80 mg/kg/day	Till 40 weeks postmenstrual age

\*Infants below 32 weeks of gestation

### **Adequate Weight Gain**

Most LBW infants lose weight in the first few days of life. Usually this loss would not exceed 10-15 per cent of the birth weight. They regain their birth weight by about 2 weeks and then start gaining weight at the rate of 1.0 per cent to 1.5 per cent of body weight per day. Usually this corresponds to a gain of 15-20 grams per kilogram of their own body weight per day.

For small infants below 1,500 grams (less than 32 weeks), it is advisable to use a postnatal growth chart to plot weight every day until they are of 40 weeks PMA or 2500 grams. After that the MCP Card can be used to monitor growth.

If the infant has inadequate weight gain, the provider should check the amount of intake, and assess attachment (if taking direct breastfeeding), and spluttering / spillage (if on paladai / cup / spoon feeds). Nipple and breast problems in the mother should be looked for. Complications such as cold stress, sepsis, oral thrush, anaemia and late metabolic acidosis also lead to sub-optimal growth. The underlying reasons for inadequate weight gain should be addressed.

**Ensuring adequacy of nutrition is perhaps the most important aspect of their care by monitoring frequency of urine (8-12 times for day) and weight gain (15-20 grams per day)**

## Manual Expression of Breast Milk and Storage thereof

### For whom:

Infants, who cannot breastfeed effectively, are able to accept oral feeds by alternative feeding methods and for the purpose of storing breast milk.

### How often

- ✓ Within 6 hours of delivery to ensure that colostrum is available
- ✓ At least 6-8 times in 24 hours, i.e. every 3-4 hours, including at night to help ensure an adequate supply.

### Procedure

The salient steps of manual expression of breast milk are as mentioned in the following paragraphs.

If expressed breast milk (EBM) cannot be given to the infant soon after expression, it has to be stored and used when necessary. The expressed milk can be stored in one of the following ways:

**At room temperature:** EBM can be kept at room temperature for up to 6 hours without significant risk of bacterial growth. It should be kept in a covered container. Any milk not fed to the infant within 6 hours of expression should be discarded.

**In a refrigerator:** EBM can be stored in the main compartment of a regular refrigerator (2°C to 8°C) for 24 hours.

### Storage of expressed breast milk

At room temperature : 6 hours

In refrigerator (2°C to 8°C) : 24 hours

### *Expression of breast milk*

The steps are given in the box below:

#### *Step 1: Preparation of container*

1. Choose a cup, glass, jug or jar with a wide mouth.
2. Wash the cup with soap and water (she can do this beforehand)
3. Pour boiling water into the cup, and leave it for a few minutes. Boiling water will kill most of the germs.
4. When ready to express milk, pour the water out of the cup.

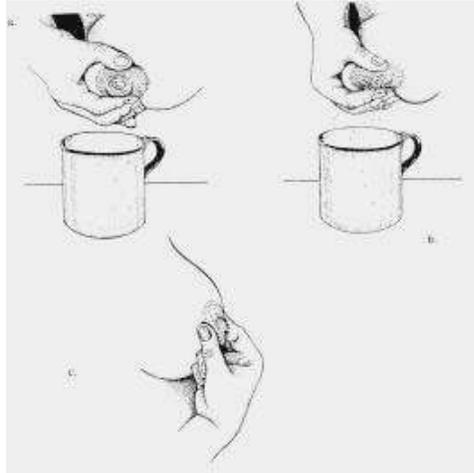
### ***Step 2: Massaging the breast before expression***

It is helpful to do simple massage before expression of milk.

1. Take a wet warm towel and wrap the breast in it. Let it be there for 5 min.
2. With two fingers, massage the breast using circular motion of fingers. Use pulp of fingers only with modest pressure. Alternately she can use knuckles of a fist. Massage the breast towards nipple as if kneading dough. Massage should not hurt her.
3. Provide massage for 5-10 minutes on each breast before expression of milk.

### ***Step 3: Expression of breast milk***

1. The mother should wash her hands thoroughly
2. She shall sit or stand comfortably and hold the container near her breast.
3. She should think lovingly of the baby or look at a picture of her baby.
4. Ask her to put her thumb **above** the nipple and areola, and her first finger **below** the nipple and areola opposite the thumb. She supports the breast with her other fingers.
5. Ask her to press her thumb and first finger slightly inward towards the chest wall. She should avoid pressing too far or she may block the milk ducts.
6. Press her breast behind the nipple and areola between her fingers and thumb.
7. Press and release, press and release. This should not hurt - if it hurts, the technique is wrong.



8. At first no milk may come; but after pressing a few times, milk starts to drip out.
9. Press the areola in the same way from the **sides**, to make sure that milk is expressed from all segments of the breast.
10. Avoid rubbing or sliding her fingers along the skin. The movement of the fingers should be more like rolling.
11. Avoid squeezing the nipple itself. Pressing or pulling the nipple cannot express the milk. It is the same as the baby sucking only the nipple.
12. Express one breast for at least 3-5 minutes until the flow slows; then expresses the other side; and then repeat both sides. She can use either hand for either breast or change when they tire.
13. Explain that to express breast milk adequately takes 20-30 minutes, especially in the first few days when only a little milk may be produced. It is important not to try to express in a shorter time.

## Alternative Feeding Methods (Cup/Spoon/Paladai Feeding)

### 1. Spoon Feeding

A spoon is appropriate for an infant who is stable and is able to co-ordinate breathing and swallowing.

#### How to spoon-feed an infant

1. The infant should be awake and held sitting semi-upright on the caregiver's lap.
2. Put a measured amount of milk in a wide necked container.
3. Take some milk from the container into the spoon.
4. Hold the spoon so that it rests lightly on the infant's lower lip.
5. Tip the spoon so that the milk reaches the infant's lips.
6. If possible allow the infant to take the milk by him or herself and do not pour it into the infant's mouth.
7. Feed the infant slowly, making sure that the milk already given has been swallowed before giving any more.
8. When the infant has had enough, he or she will close his or her mouth and will not take any more. Do not force-feed an infant.
9. Estimate the amount of milk taken in the same way as for cup feeding.

### 2. "Paladai" Feeding

A *paladai* is a small steel bowl with a long pointed tip traditionally used for feeding LBW infants in some cultures. It is appropriate for an infant who is stable and is able to coordinate sucking, breathing and swallowing. The advantages of this feeding method are that it is usually faster than spoon or even cup feeding and also that there is less spillage. It has become very popular in neonatal nurseries in all parts of the country.

The steps of '*paladai*' feeding are given in the box below:

#### How to feed an infant with a '*paladai*'

1. The infant should be awake and held sitting semi-upright on the caregiver's lap, and wrapped to provide support and to keep the arms out of the way, as for cup feeding.
2. Put a measured amount of milk in the *paladai*.
3. Hold the *paladai* so that the pointed tip rests lightly on the infant's lower lip.
4. Tilt the *paladai* to pour a small amount of milk into the infant's mouth gently.
5. Feed the infant slowly.
6. Make sure that the infant has swallowed the milk already taken before giving any more.
7. When the infant has had enough, she will close his or her mouth and will not take any more. Do not force-feed the infant.
8. Estimate the amount of milk taken.
9. Wash the *paladai* with soap in running water and air-dry it before and after each use.

### 3. Cup Feeding

It is appropriate for an infant who is stable and is able to coordinate sucking, breathing and swallowing. The advantages of this feeding method are that it enables an infant to control his own intake in time and quantity.

The cups used and the method of cup feeding is depicted in the figures below:

#### How to Cup Feed an Infant

1. The infant should be awake and held sitting semi-upright on the caregiver's lap. Wrap the infant in a cloth to provide support and to keep his or her arms out of the way, and put a small cloth on his or her front to catch drips of milk.
2. Put a measured amount of milk in the cup.
3. Hold the cup so that it rests lightly on the infant's lower lip.
4. Tilt the cup so that the milk reaches the infant's lips.
5. Allow the infant to take the milk himself. (A younger infant will initially lap the milk into his mouth with his tongue. A full term or older infant will suck the milk.)
6. Do not pour the milk into the infant's mouth. Hold the cup to the infant's lips so that he or she can take it himself or herself.
7. Feed the infant slowly. Some milk may spill from the infant's mouth. Spilling is commoner with more mature infants.
8. Make sure that the infant has swallowed the milk before offering more. When the infant has had enough, he or she will close his or her mouth and will not take any more. Do not force-feed the infant.
9. To estimate the amount of milk taken, subtract the milk left in the cup from the original amount. Also subtract the estimated spillage, if any.
10. Wash each utensil with soap in running water and air-dry it before and after each use.



**Fig.A: Feeding a LBW infant by *Paladai* and Cup**

#### 4. Intra -Gastric Tube Feeding

Intra-gastric feeding is provided to the stable infants who are not able to accept oral feeds (not able to coordinate breathing with swallowing). Intra-gastric tube feeding can be given by two routes, namely, naso-gastric or oro-gastric. Naso-gastric tube has the advantage that it is more easily fixed in place. But by blocking one nostril it may lead to apnoea or breathing difficulty. Oro-gastric tubes are preferred for smaller infants.

##### Procedure

##### *Selecting the correct tube size*

The correct tube size for intra-gastric feeding of small infants is shown in below:

Recommended Intra-Gastric Tube Sizes	
Weight	Tube Size
< 2000g.	French 6
>2000g.	French 8

##### *Inserting an intra-gastric tube*

##### Inserting an intra-gastric tube

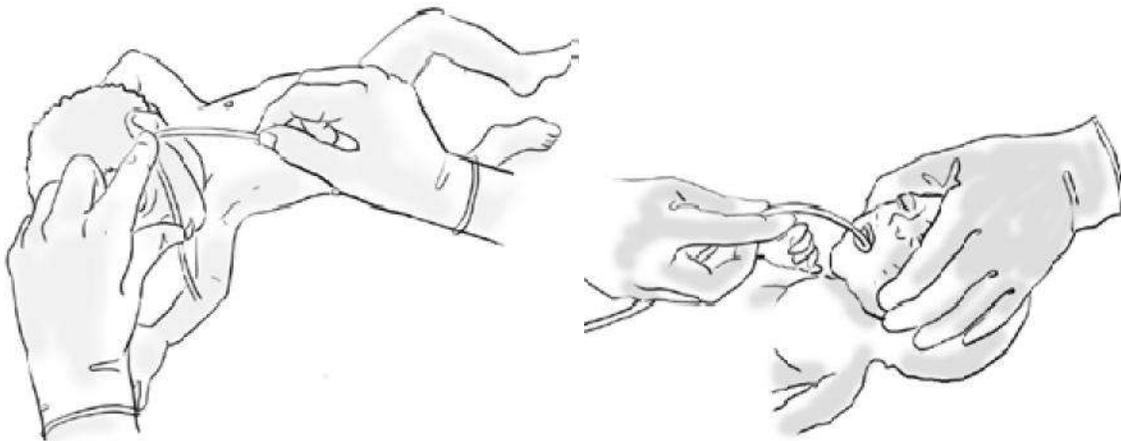
1. Estimate the length of gastric tube required
  - ✓ Hold the tip of the feeding tube at the tip of the infant's nose, then hold the length of the tube up to the ear lobe and then on to the infant's abdomen to a point between the xiphisternum and umbilicus.
  - ✓ Mark the measured length of the tube with a pen or piece of tape.
2. Inserting the gastric tube
  - ✓ Flex the infant's neck slightly and pass the tube gently through the mouth or one nostril to the required distance.
3. Checking the position of gastric tube
  - ✓ Take 1-2 ml of air into the syringe. Listen over the infant's stomach with a stethoscope while quickly injecting the air down the tube. If the end of the tube is in the stomach, you will hear a whistling sound as the air passes through.
  - OR
  - ✓ Attach a syringe to the open end of the tube and aspirate the contents of the stomach. The aspirate should look like curdled milk
4. Secure the tube on the infant's cheek with adhesive tape.

The steps of insertion and fixation of oro-gastric tube are illustrated in figure A and figure B respectively. The oro-gastric tube has to be replaced every 3 days or earlier if it is pulled or blocked. The procedure of giving a gastric tube feed is explained in the box below:

### Procedure for giving a Gastric Tube Feed

1. Remove the plunger of a 10 or 20 ml sterile syringe.
2. Connect the barrel of the syringe to the end of the gastric tube.
3. Fill the barrel of the syringe with the required volume of milk.
4. Let the milk run from the syringe through the gastric tube under gravity.
5. DO NOT force milk through the gastric tube by using the plunger of the syringe.
6. Hold the syringe 5-10 cm above the infant until the syringe is empty.
7. It should take a few minutes for the milk to flow into the infant's stomach. Changing the height of the syringe will also affect the speed of milk flow. Lowering the syringe slows the milk flow, raising the syringe makes the milk flow faster.
8. Observe the infant during the entire gastric tube feed. Do not leave the infant unattended. Stop the tube feed if the infant shows any of the following signs: breathing difficulty, color change (looks blue), becomes floppy or vomits.
9. Cap the end of the gastric tube after the milk has been instilled. **There is no need to rinse the tube with water.** Keep tube capped between feeds.

**Fig.B: Inserting an Oro-Gastric Tube**



**Fig.C: Fixing Oro-Gastric Tube**



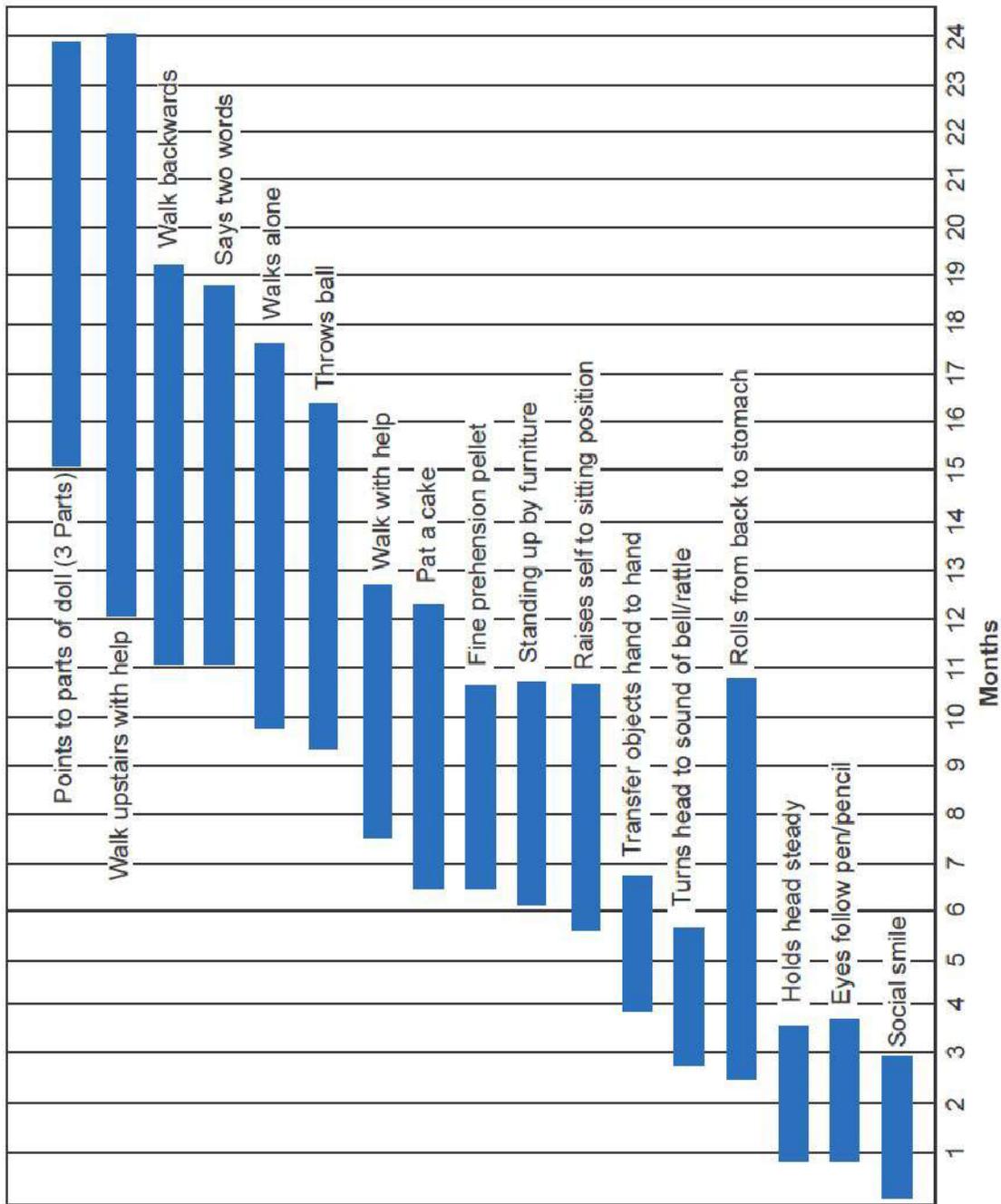
## Follow-up Protocol after Discharge of a High Risk Infant

S. No	Area	Frequency	Details	Remarks
A	Anthropometry	Every visit	Weight Head Circumference Length	Always estimate if the gain is adequate
B	Breastfeeding	Every visit	Attachment Positioning Problems	Observe a breastfeeding session if possible
C	Counselling	Every visit	Feeding Hygiene, KMC, Innocuous issues	Ask mother about her concerns
D	Development screening	3, 6, 9 , 12 months	Use TD screening chart	Fill up the chart and refer where needed for detailed developmental evaluation
E	Eye	1 month for infants <1750 grams to <2000 grams with stormy NICU course. Detailed examination at 9-12 months of age	Emphasize on getting a retinopathy (rop) screening from a skilled ophthalmologist	Review in next visit
F	Follow-up USG	At discharge and at 40 weeks PMA	To rule out PVL and other abnormalities	
G	Growth Monitoring	Every Visit	Plot the growth of the infant on the WHO growth charts	Use of the Fenton chart till the infant is 40 wks PMA and WHO charts thereafter
H	Hearing	At 40 wks PMA and in case questionable, at 6 weeks of age	One can use the OAE/BERA or combination as per the policy	
I	Immunization	As per schedule		
J	Others		Language/speech at 1,2 3 years Behavior at/after 1 year IQ testing at 3 years of age	Any delay detected should prompt early intervention



In 2013 WHO revised it and separate charts for boys and girls are available. To avoid confusion with the message in FBNC training module only single chart is being referred.

TD Screening Chart



A vertical line is down, or a pencil is kept vertically, at the level of the age of the child (in months) being tested. If the child achieve any item that falls short on the left side of the vertical line, the child is considered to have a developmental delay.

**Infant Milk Substitutes (IMS) Act**

The Infant Milk Substitutes, Feeding Bottles and Infant Foods (regulation of production, Supply and Distribution) Act 1992 and as amended act in 2003. This Act provides for the regulation of production, supply and distribution of infant milk substitutes, feeding bottles and infant foods with a view to the protection and promotion of breastfeeding and ensuring the proper use of infant foods and for matters connected to it. It extends to the whole of India. It also lays the responsibility of health workers and of the government to provide accurate information to people. Following are the basic provisions of the IMS Act.

**The IMS Act Provisions**

IMS act is violated if any baby Food Company, its distributor or supplier, or any person

1. Promotes any food by whatever name, for children up to two years.
2. Promotes use of infant foods before the age of six months.
3. Advertises by any means--television, newspapers, magazines, journals, through SMS, emails, radio, pamphlets etc.
4. Distributes the product or samples to any person.
5. Contacts pregnant or lactating mothers using any person.
6. Gives any kind of inducements like free gifts, tied sales, to anyone.
7. Distributes information and educational material to mothers, families etc. (They can give educational material to health professionals like doctors, nurses etc. provided it has information prescribed in clause 7 of the IMS Amendment Act, 2003. The education material should have only factual information and should not promote the products of the company).
8. Gives tins, cartons, accompanied leaflets of these products having pictures of mothers or infants, cartoons or any other such images to increase saleability.
9. Displays placards, posters in a hospital, nursing home, chemist shop etc. for promoting these products.
10. Provides direct or indirect inducements to health workers.
11. Demonstrates to mothers or their family members how to feed these products. However, a doctor can demonstrate this to the mother.
12. Gives benefits to doctors, nurses or associations like IAP, IMA, NNF etc. for example, funds for organizing seminars, meeting, conferences, contest, fee of educational course, sponsoring for projects, research work or tours.
13. Fixes commission of employees on the basis of volume of sales of these products.

**Highlights of the Act**

1. Prohibits all persons from any kind of promotion of infant milk substitutes, infant foods or feeding bottles
2. Prohibits the advertisement of infant milk substitutes and feeding bottles to” ensure that no impression is given that feeding of these products is equivalent to, or better than, breastfeeding.
3. Prohibits providing free samples and gifts to pregnant women, mothers of infants and members of the families.

4. Prohibits donation of free or subsidized supplies of products for health care institutions and prohibits incentives and gifts to health workers.
5. Prohibits display of posters at health care facilities / hospitals /health centres.
6. The Act also prescribes that all labels of IMS /Infant food, must say in English and local, languages that breastfeeding is the best. Also, the labels must not have pictures of infants or women or phrases designed to increase the sale of the product.
7. Prohibits any contact of employers manufacturing and distributing company with pregnant women, even for providing educational material to them.

## Orientation on Kangaroo Mother Care (KMC)

### Objective

By the end of this exercise the participant should be able to demonstrate Kangaroo Mother Care

### Steps for providing Kangaroo Mother Care

1	<b>Counsel the mother, provides privacy to the mother. Request the mother to sit or recline comfortably</b>
2	Undress the baby gently, except for cap, nappy and socks
3	Place the baby prone on mother's chest in an upright position with the head slightly extended, between her breasts in skin to skin contact in a frog like position; turn baby's head to one side to keep airway clear. Support the baby's bottom with a sling/binder.
4	Place the baby prone on mother's chest in an upright position with the head slightly extended, between her breasts in skin to skin contact in a frog like position; turn baby's head to one side to keep airway clear. Support the baby's bottom with a sling/binder.
5	Advise mother to breastfeed the baby frequently
6	Ensure warm room with room temperature maintained between 25 – 28° C.
7	Advise the mother to provide KMC for at least 1 hour per session. The length of skin-to-skin contact should be as long as possible

### Key Points

#### Eligibility criteria for KMC

- ✓ All LBW infants.
- ✓ Sick hemodynamically stable infants needing special care (even those on IV Fluid or on Oxygen)

#### The two components of KMC are:

- ✓ Skin-to-skin contact
- ✓ Exclusive breastfeeding

#### The two prerequisites of KMC are:

- ✓ Support to the mother in hospital and at home
- ✓ Post-discharge follow-up

#### Benefits of KMC

- ✓ Reduces risk of hypothermia
- ✓ Promotes lactation and weight gain
- ✓ Reducing infections and hospital stay
- ✓ Better bonding between mother and newborn

#### Points to Remember

1. Ensure room is warm (25-28° C)
2. Health professionals should be skilled for providing immediate emergency care, in case required



# 6

## GUIDELINES ON MOTHER AND CHILD PROTECTION CARD(MCPC) AND GROWTH MONITORING AND PROMOTION (GMP)



## CHAPTER 6

### GUIDELINES ON MOTHER AND CHILD PROTECTION CARD (MCPC) AND GROWTH MONITORING AND PROMOTION (GMP)

#### 6.1 MOTHER AND CHILD PROTECTION CARD

One major initiative for accelerating reduction in maternal, neonatal and infant mortality and child undernutrition has been the adoption of WHO Child Growth Standards, with effect from 15 August 2008 in both ICDS and NRHM, through a joint circular dated 6 August 2008, issued by both the Secretaries of Women and Child Development and Health and Family Welfare, Government of India. This initiative has been enriched and complemented by another decision of both the ministries by introducing a common Mother and Child Protection Card for both ICDS and NRHM, to strengthen the continuum of care for pregnant mothers and children under-three years of age, incorporating the new WHO Child Growth Standards ([www.wcd.nic.in](http://www.wcd.nic.in)).

The MCPC is a maternal and child care entitlement card, a counselling and family empowerment tool which would ensure tracking of mother child cohort for health purposes. It is unique in linking maternal, newborn and child care, and focuses on the child holistically by integrating health, nutrition and development. It links critical contact points for strengthening the continuum of care and improving utilisation of key ICDS, NRHM services, including immunisation and Janani Suraksha Yojna. Besides, it is meant to promote key family care behaviours, highlights danger signs and links families to the referral system. The MCPC would enable gender disaggregated tracking, to ensure optimal care of the girl child.

#### Different Sections of the MCP Card

##### *Maternal Care*

The various components under the maternal care include:

- Essential obstetric care: Essential obstetric care include three antenatal check-ups, recording of blood pressure and weight, administering 2 doses of TT injection and consumption of IFA tablets, one tablet a day for at least three months (100 days)
- Care during pregnancy: Care during pregnancy depicts message and illustrations related to nutritional needs and taking at least two hours of rest during the day;
- Danger signs during pregnancy, child birth and after delivery: Danger signs during pregnancy, child birth and after delivery includes bleeding during pregnancy, excessive bleeding during delivery or after delivery severe anaemia with or without breathlessness, high fever during pregnancy or within one month of delivery, convulsions or fits, blurring of vision, headache, vomiting, sudden swelling of feet, labour pain for more than 12 hours and bursting of water bag without labour pain;
- Preparation for delivery: Preparation for home delivery depicts the 5Cs i.e. clean hands, clean surface and surroundings, clean blade, clean umbilical cord, clean thread to tie the cord; after delivery, adoption of family planning; and dealing with an emergency, arranging for transport, and identifying hospital in advance, for taking the mother in case of an emergency.

## *Child Care*

The various components under the child care include:

- Newborn care: Messages on newborn care which include keeping the baby warm, starting breastfeeding immediately after birth and ensuring exclusive breastfeeding, not to bathe the child for 7 days, keeping the child away from people who are sick, weighing child at birth, and need for special care if the child is less than 2.5kg.
- Care during illness: Care during illness covers illnesses like diarrhoea, fever and Acute Respiratory Infection.
- Danger signs in a child: Danger signs in a child that need immediate attention of health workers such as weak suck or refusal to breastfed; baby unable to cry/ difficult breathing; yellow palm and soles; cold to touch and convulsions.
- Immunisation schedule: Immunisation schedule of Bacillus Calmette Guerin, Diphtheria Pertussis and Tetanus, polio, measles and hepatitis B vaccine and administration of vitamin A solution.
- Growth chart: Growth chart of boy and girl child.

## *Development Milestones and Care Practices*

- Care refers to the behaviour and practices of caregivers (mothers, siblings, fathers and family members) that provide food, health care, stimulation, and emotional support necessary for children's health growth and development. These practices translate food and healthcare resources in good nutrition, responsive psychosocial care and adequate health for a child. Not only the practices themselves, but also the way they are performed – with affection, with responsiveness and consistency – are critical to children's survival, growth and development. The 'care aspect' is a new addition in this card, compared to the other existing cards in the health and ICDS system.
- The illustration and messages on developmental milestones and care practices have been classified age-wise i.e. 0-6 months (0-3 months, 3-6 months); 6-12 months, 1-2 years and 2-3 years. It has messages on 'feeding behaviour', 'what mothers can do to promote growth and development in their child to develop to his/her full potential and what most children can do tells, what milestones children reach in that particular age.

## **How to Use the MCP Card**

A Mother and Child Protection Card should be duly completed for every woman registered by you. The case record should be handed over to the woman. She should be instructed to bring the record with her during all subsequent check-ups/visits and also to carry it along with her at the time of delivery. This card has been developed jointly by the Ministry of Health and Family Welfare (MoHFW) and Ministry of Women and Child Development (MoWCD) to ensure uniformity in record keeping. This will also help the service provider to know the details of previous ANCs/PNCs both for routine and emergency care. The information contained in the card should also be recorded in the antenatal register.

**The various sections of the MCPC have been detailed out in the following paragraphs.**

## Front Cover

It has space for recording the details of family, pregnancy record, birth record of the child and institutional identification.

Integrated Child Development Services  
National Rural Health Mission



**Mother and Child Protection Card**

Photograph of Mother & Child

**Family Identification**

Mother's Name \_\_\_\_\_ Age

Father's Name \_\_\_\_\_

Address \_\_\_\_\_

Mother's Education: illiterate/primary/middle/high school/graduate

**Pregnancy Record**

Mother's ID No. \_\_\_\_\_

Date of the last menstrual period  /  /

Expected date of delivery  /  /

No. of pregnancies/ previous live births  /

Last delivery conducted at: Institution  Home

Current delivery: Institution  Home

JSY Registration No. \_\_\_\_\_

JSY payment Amount  Date  /  /

### 1. Family identification

- Name of father/ mother & address
- Age of mother
- Mother's education
- Photograph of Mother & child

### 2. Pregnancy Record

- Mother's ID no.
- Date of last menstrual period
- Expected date of delivery
- No. of pregnancies/ previous live births
- Last delivery conducted at
- Current delivery conducted at
- JSY registration No.
- JSY payment amount

### 3. Birth Record

- Child's name
- Date of birth

- Birth weight
- Select the Gender of the child
- Birth Registration No.

4. **Institutional Identification**

- Names and address
- Anganwadi worker
- Angandiwadi block
- ASHA
- ANM
- SHC / Clinic
- PHC town
- Hospital FRU
- Contact no. of ANM
- Hospital
- Transport Arrangement
- AWC registration No.
- Sub centre registration No.

Birth Record					
Child's Name _____					
Date of Birth	<input type="text"/> / <input type="text"/> / <input type="text"/>	Birth Weight	<input type="text"/>	<input type="text"/>	<input type="text"/>
		kgs		gms	
Girl	<input type="checkbox"/>	Boy	<input type="checkbox"/>	Birth Registration No: <input type="text"/>	
Institutional Identification					
AWW _____		AWC/Block _____			
ASHA _____		ANM _____			
SHC / Clinic _____					
PHC / Town _____		Hospital / FRU _____			
Contact Nos. ANM _____		Hospital _____			
Transport Arrangement _____					
AWC Reg. No	<input type="text"/>	Date	<input type="text"/>	Sub-centre Reg. No	<input type="text"/>
Referral	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

## Details of Antenatal Check-up

What an ANM/AWW should record in the MCP Card about the check-ups and antenatal care is described in the following paragraphs:

**Regular checkup is essential during pregnancy**

		1st	2nd	3rd	4th	5th	6th	7th	8th	9th
Months										
<b>Registration</b>	Register with the health centre in the first trimester.									
<b>ANC</b>	Have at least 3 antenatal checkups, after registration									
<b>BP, Blood &amp; Urine</b>	Have blood pressure (BP) checked and blood and urine examined at each visit.									
<b>Weight</b>	Have weight checkup at each visit. Gain at least 10-12 kg. during pregnancy. Gain at least 1 kg every mth. during the last 6 mths. of pregnancy.									
<b>T.T. Injection</b>	Take two T.T. injections. T.T.1 when pregnancy is confirmed and T.T.2 after 1 month. (Fill in the date)									
<b>Iron Tablets</b>	Take one tablet of Iron and folic acid a day for at least 3 months. Take at least 100 tablets. (Fill in quantity and date issued)									

*Regular checkup is essential during pregnancy*

## Antenatal Care

Nine columns in the section across in the MCP Card depict nine months of pregnancy with pictures of pregnant women. The first column corresponds with the first month of pregnancy, the second with the second month of pregnancy and so on.

Six picture boxes downwards the section across in the MCP Card depict services that a woman must seek during a pregnancy. The columns alongside each picture are for recording the appropriate information. The worker should explain to the mother each picture box and column as she moves down the side. AWW should explain to the mother that a woman must register with the ANM and AWW within the first three months of the pregnancy. The ANM/AWW must explain the significance and relevance of all the headings in the card and encourage the woman and/or family members to ask questions and explain what is not clear.

Regular antenatal care during pregnancy helps to improve the health of the mother and the baby, it helps in early detection of complications, referral and treatment and helps in ensuring that the mother and the foetus in growing well or helps in ensuring a safe delivery with a healthy mother and healthy baby.

ANM/AWW should record the date of registration in the relevant column under the month of pregnancy. They also register the pregnant woman in their respective AWC, Sub-centre or PHC register.

### What an ANM/AWW should record?

- The date of registration in the relevant column under the month of pregnancy
- They also register the pregnant woman in their respective AWC, Sub-centre or PHC register.
- The date of the abdominal examination under the month of pregnancy column.
- The date and weight of the woman under the pregnancy month column.
- Date of TT injection under the month of pregnancy column.
- Date and number of Iron and Folic Acid tablets given under the month of pregnancy column.

## Nutritional Care during Pregnancy



**What AWW should explain to a pregnant woman?**

- Consume a variety of foods
- Consume more food – around ¼th times extra than the normal diet
- Consume SNP from the AWC regularly

A pregnant woman should consume more food, more often during the day. She should consume a variety of foods like cereals and whole grains, pulses, dark green leafy vegetables like spinach, amaranth, cholai, red & yellow fruits like papaya, mango and melon, lentils & beans, milk & milk products and fish, meat and eggs if acceptable and affordable. She should use only iodised salt.

***Iodised salt is important for the proper brain development for the unborn child and it prevents abortion, still and pre-term births.***

### **What Family should ensure?**

- The pregnant woman eats along with her family. She should not be the last one to eat/eat leftover.
- She does not avoid any food during pregnancy and also does not observe fast during pregnancy.
- Alcohol and tobacco are not be used during pregnancy.
- Medicines are taken only when prescribed by the doctor.
- The pregnant woman avails supplementary food and nutrition counselling services at the AWC every month.

### **Rest**

#### **What an ANM/AWW should explain?**

A pregnant woman should get at least two hours of rest during the day. Routine activities should be interspersed with short periods of rest throughout the day. While resting, she should always lie on the left side of the body.

### **What Family should ensure?**

**The pregnant woman avoids doing strainuous work in the home. Family members offer help in doing household chores.**

### **Obstetric Complication in Previous Pregnancy, Past History and Examination**

It is essential for the ANM to take the history of the pregnant woman. It is essential to ask a woman about her previous pregnancies or obstetric history. This is important especially if she had any complications in the previous pregnancies, as some complications may recur during the present pregnancy.

#### **Key question in history taking include:**

1. The date of last menstrual period
2. Her age
3. The order of pregnancy
4. No. of living children
5. Date of last delivery/abortion
6. Menstrual history and LMP
7. Any problem during the previous pregnancy/ delivery

8. History of any systemic illness, significant family history

9. Complication in the current pregnancy

- Be particular about asking for records to validate the history given of the previous pregnancy

**ANTENATAL CARE**

**OBSTETRIC COMPLICATION IN PREVIOUS PREGNANCY**  
(Please tick (✓) the relevant history)

A. APH	<input type="checkbox"/>	B. Eclampsia	<input type="checkbox"/>	C. PIH	<input type="checkbox"/>
D. Anaemia	<input type="checkbox"/>	E. Obstructed labor	<input type="checkbox"/>	F. PPH	<input type="checkbox"/>
G. LSCS	<input type="checkbox"/>	H. Congenital anomaly in baby	<input type="checkbox"/>	I. Others	<input type="checkbox"/>

Obtain information from the women about the following obstetric complications and events in the previous pregnancies and tick (-) in the relevant box:

- APH- Ante Partum Haemorrhage,
- Eclampsia,
- PIH- Pregnancy Induced Hypertension,
- Anaemia,
- Obstructed labour,
- PPH-Post Partum haemorrhage,
- LSCS- Lower segment caesarean section or abdominal surgery (for ectopic/perforation during MTP),
- Congenital Anomaly in baby- birth defects,
- Others

• History for any systemic or chronic illness is also very important. If there is a positive history of the illnesses such as:

- Tuberculosis,
- Hypertension,
- Heart disease,
- Diabetes,
- Asthma,
- Others

Put a tick mark in the box. It is important to refer the pregnant woman to a higher health facility where appropriate management of the condition can be done during the antenatal period. Examination for general condition, heart, lungs and breasts should be done and any complaint should be recorded in the box.

**PAST HISTORY**  
(Please tick (✓) the box of the appropriate response/s)

A. Tuberculosis     B. Hypertension     C. Heart Disease   
D. Diabetes     E. Asthma     F. Others

**EXAMINATION**

General Condition	Heart	Lungs	Breasts

**What an ANM/AWW should record?**

- Ticks (✓) the relevant history of obstetric complication in previous pregnancy and past history in the appropriate box & any abnormality during examination

**What family should ensure?**

- They comply with the referral made by the ANM in case of complications during previous pregnancies, bad obstetric history or chronic/systemic disease or any abnormal finding during the examination.

**ANTENATAL VISITS**

	1	2	3	4
Date				
Any complaints				
POG (Weeks)				
Weight (Kg)				
Pulse rate				
Blood pressure				
Pallor				
Oedema				
Jaundice				

**What an ANM/AWW should record?**

- The date and observation during each antenatal visit.
- ANM records observations in her register.

**What Family should ensure?**

- Pregnant woman comes for the antenatal visits within the stipulated period. MCP card is carried along for each visit and is produced at the time of delivery.
- Referral made by the ANM should be complied. Not doing so can prove to be harmful for the pregnant woman and/or foetus.

**ANM/AWW Explains**

- Each pregnant woman should get at least 4 antenatal check-ups including registration during pregnancy. It is important as many of the complications can be detected and managed on time.

- 4 antenatal visits are mandatory (including registration) for each pregnant woman.
- 1st visit within 12 weeks, 2nd visit between 14-26 weeks, 3rd visit between 28-34 weeks and 4th visit after 36 weeks
- During each antenatal visit, all the parameters need to be checked and recorded. The check-ups may be conducted as under:

**1st Visit (within before 12 weeks)**

1. Registration
2. History taking
3. Give tetanus toxoid (1st dose)

**2nd Visit (14 - 26 weeks)**

1. Screen for risk factors and medical conditions
2. Record BP, weight and height
3. Haemoglobin estimation/Screen for anaemia
4. Urine examination for albumin
5. Breast examination
6. Give tetanus toxoid first/second dose
7. Provide health and nutrition education
8. Develop individualized birth plan

**3rd Visit (28 - 34 weeks)**

1. Record BP, weight
2. Abdominal examination to assess for intrauterine growth retardation (IUGR), twins etc.
3. Haemoglobin estimation
4. Urine for albumin
5. Give tetanus toxoid (2nd dose)
6. Anaemia prophylaxis /treatment
7. Health education
8. Nutrition counselling
9. Danger signs during pregnancy

**4th Visit (after 36 weeks)**

1. Record BP, weight
  2. Detect - Pregnancy induced hypertension
  3. Abdominal examination to identify foetal lie / presentation to detect IUGR
  4. Check for pelvic adequacy to rule out if head is bigger than pelvis in primigravida (first pregnancy) after 37 weeks.
  5. Update individualized birth plan with the trained birth attendant and family.
  6. Health and nutrition counselling, diet, rest, IFA tablet consumption, danger signs and where to go when any complication arises.
- 

- A properly maintained MCP card helps in tracking progress of the baby and mothers condition.
- During VHND, special effort should be made to do a complete antenatal check-up for all the pregnant women who are due for it.

## Danger Signs during Pregnancy

- All pregnant women are at risk of developing complications. In some women these complications can occur without warning.
- It is important that the pregnant woman and her family be aware of the danger signs and be able to recognize these signs.
- Pregnant woman must also bring it to the notice of the family members, in case she develops any of the danger signs.
- The danger signs should be explained to all pregnant women and their families during the antenatal check-ups as well as during the group meetings.
- If timely treatment is not sought, it can result in death or disability of the woman or child or both.
- A pregnant woman with danger signs should be taken to the FRU/hospital immediately.



### **Bleeding during pregnancy or delivery**

#### **What an ANM/AWW should explain?**

A woman bleeding during pregnancy or delivery should be immediately taken to the hospital. Any bleeding during pregnancy or excessive bleeding during/after delivery can be fatal for mother and/or baby.

#### **What Family should ensure?**

- During transportation, the woman lies on her left side and is kept covered and warm.

### **Severe anaemia with or without breathlessness**

#### **What an ANM/AWW should explain?**

- A pregnant woman with severe anaemia must deliver in a hospital. Anaemia during pregnancy can lead to many other complications like heart failure at the time of childbirth, pre-term labour and infections during pregnancy. Women with severe anaemia have pale eyelids, nails and palms. They may or may not have breathlessness.

#### **What Family should ensure?**

- During the antenatal check-ups, it must be determined if the woman has severe anaemia. If so she must be referred to an appropriate health facility.

### **High fever during pregnancy or within one month of delivery**

#### **What an ANM/AWW should explain?**

- If a woman has high fever during pregnancy or within one month of delivery, she should be taken to hospital immediately. High fever is an indication of some infection in the woman. It can be harmful for the growing baby.

#### **What Family should ensure?**

- The woman is kept covered and warm during transportation.
- Wet, cold sponging is used to bring down the fever.

### **Convulsions or fits, blurring of vision, headache, sudden swelling of feet**

#### **What an ANM/AWW should explain?**

Convulsions or fits, blurring of vision, severe headache, sudden swelling of feet can occur during pregnancy, delivery or after delivery. A woman with these symptoms should be immediately taken to the hospital. Convulsions or fits, blurring of vision, severe headache, sudden swelling of feet can occur during pregnancy, delivery or after delivery. A woman with these symptoms should be immediately taken to the hospital.

#### **What Family should ensure?**

- If a woman has convulsions or fits, blurring of vision, headache sudden swelling of feet, she is taken to the hospital as early as possible.

### **Labour Pain for more than 12 hours**

#### **What an ANM/AWW should explain?**

- If the woman has been in labor pain for more than 12 hours, she should immediately be taken to the hospital. The woman should deliver in the presence of a doctor. In case the timely delivery is not performed, it can result in the death of the woman and the child.

#### **What Family should ensure?**

- The woman is immediately taken to the hospital

### **Bursting of water bag without labour pain**

#### **What an ANM/AWW should explain?**

In case the pregnant woman has bursting of water bag without labour pain, she should be immediately taken to the hospital. The delivery should be conducted in the presence of a doctor. The woman and the baby have greater chances of developing infection in case the water bag bursts. The woman and the baby have greater chances of developing infection in case the water bag bursts.

#### **What Family should ensure?**

- The woman is immediately taken to the hospital
- Danger signs are recognized during pregnancy, delivery and after delivery.
- Adequate money is saved in advance for meeting the cost of emergency.
- A nearest FRU/hospital is identified in advance.
- Fast means of transport is arranged in advance to take the woman to the hospital

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### **Transportation of Mother to hospital**

- Transport essential first aid to mother and control bleeding.
- Reassure her, if possible keep her warm.
- Arrange with the relatives for best possible means of transport.
- See that is well supported when being lifted.
- You must accompany the patient if possible. Take DDK with you if she is in labour. This is to enable you to conduct delivery on the way if required.
- Transport should be smooth and as speedy as possible.
- Referral form should be filled mother in the left lateral position.
- Give

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### **How to record details of Referrals in the New MIS?**

#### **Register 9: Referrals**

The purpose of this register is to record the names and details of people with illnesses whom you see and treat or refer; and to follow up children and mothers whom you refer to health facilities.

#### **How the register is organized and how long it will last?**

There are three sections in the register:

Section 1 is for recording details of children who fall sick

Section 2 is for recording the details of pregnant and lactating women who have health problems or complications

Section 3 is for recording details of any other persons who fall ill and report to you.

The register is expected to last about 5 years. Where C-IMNCI training has been completed, and separate printed registers are available, Section 1 of this register does not need to be used.

**What to fill in each column of the register?**

**Section 2: Referral Services– Pregnant and Lactating Women**

When a pregnant or lactating woman has a problem, you can record the details of the problem in this section.

**Column 1, Serial number:** Give a running serial number, starting with ‘1’ for each month.

**Column 2, 3, & 4:** Write as recorded in Register 1: Family Details register

**Column 5-10, Health Problem:** Put a tick mark (v) in the appropriate columns, as seen or told by the pregnant/ lactating woman.

**Column 11, Treatment details:** write the treatment given to the woman for the health problem. You will give treatment as per the training provided to you.

**Column 12, Referred to:** Put the type of health facility to which the woman was referred for her health problem

**Column 13, Referred on:** Write the date on which the woman was referred to the health facility

**Column 14, Whether reached a facility:** If the woman reached a health facility, write ‘Yes’, otherwise write ‘No’.

**Column 15-18, Status on next reporting date:** Put a tick mark (v) on the health status of the woman on next reporting date. The status of the woman can be - fully cured, partly recovered no change, or dead.

At the end of each month, for reporting in Section 10 of the MPR, you will use Section 1 and Section 2 to count the number of cases of different illnesses or problems in children and women whom you have referred during the month.

**Section 2: Case Management and Referrals - Pregnant and Lactating women**

1	2	3	4	5	6	7	8
SL. No.	SL. No. of family	SL. No. within family	Name of Pregnant / Lactating woman and phone no.	Health Problem			
				Bleeding	Convulsions	Prolonged labor	Abortion complications

9	10	11	12	13	14	15	16	17	18
Health Problem		Treatment details	Referred to 1. SHC 2. PHC 3. CHC 4. Private hospital	Referred on (Date of referral)	Whether reached a facility (Yes/No)	Status on next reporting date			
Fever/offensive discharge after delivery	Other					Fully cured	Partly recovered	No change	Dead

### To Sum Up: Important Health Problems of Mothers

There are just a few problems that lead to maternal death, and so these are considered dangerous. Bleeding during or immediately after delivery is often the commonest cause of death. Other problems that can kill are eclampsia (where the mother has convulsions or becomes unconscious), prolonged labor, problems related to abortions and severe infection of the internal genital organs soon after birth (which causes high fever, foul smelling discharge and painful urination after birth). Severe anemia, malaria and hepatitis (jaundice) also often cause death among pregnant women in our country. About one in ten pregnancies develops a complication like these.

Together, these illnesses are responsible for 8-9 out of every 10 maternal deaths, so if we are able to take care of these, we can save many lives. It is possible for you to save lives by recognizing and referring women with such problems to the nearest hospital where caesarean section operations and blood transfusion are available. The most important reason for death among these women is delay in recognizing the problem, or in seeking care or in getting care even after reaching the hospital. So, it is extremely important to make sure that everyone caring for the woman knows how to recognize a problem and act quickly to reach the correct hospital.

### Birth Preparedness for a Safe Delivery

Birth preparedness is a method of planning in advance by the pregnant women. **If there are any danger signs or complications then** identify the nearest institution (CHC/District Hospital) which has the staff and equipment to provide Comprehensive Emergency Obstetric and New-born Care (CEmONC), and counsel the mother and the family to go there. Help every family make this plan in consultation with the ANM.

#### What is Birth Preparedness?

This is a method of planning in advance by the pregnant women

#### What are the choices available to the mother?

##### 1. If there are any danger signs or complications:

Identify the nearest institution (CHC/District Hospital) which has the staff and equipment to provide Comprehensive Emergency Obstetric and New-born Care (CEmONC), and counsel the mother and the family to go there for a safe and comfortable delivery and for care after delivery. You should help every family make this plan in consultation with the ANM.

**2. If there are no complications:** Counsel the mother to go to the PHC which is open 24 X 7, where there is a team of doctors and nurses or ANMs to conduct the delivery and provide care for the mother and newborn. These institutions can manage some complications and transfer immediately to a higher facility if complications requiring surgery or blood transfusion develop. The list of such institutions can be obtained from the ANM. The place should be clean and safe and friendly and have a skilled nurse or doctor at all times. The woman would have to stay there for 48 hours after delivery.

**3. If there are no complications and mother and her family are reluctant or unable to go to the 24x7 PHC or if it is too far away:** Advise the mother could go the Sub-Centre, provided it is accredited as a delivery centre, which means the ANM has been trained as a Skilled Birth Attendant (SBA), and is available, and there are minimum facilities for delivery.

**4. If there are no complications or not a high risk case for developing complications and the mother and family insist on delivering at home, despite counselling:** You could work with the ANM to enable a delivery by SBA. This should be agreed to only if you are sure that the family can organise transport and funds at very short notice. The SBA should be able to arrive within 30 minutes of the onset of labour at the home/Sub-Centre and should be able to stay through the process of labour and for a few hours afterwards. A team of two or three women with experience in attending at labour would be helpful.

### **5. What does a birth preparedness plan contain?**

**Format for Individual Plan (Birth Preparedness) is as follows:**

Name: Age:

Husband's name:

HH income:

LMP:

EDD:

Past pregnancy history (Include abortion, if any):

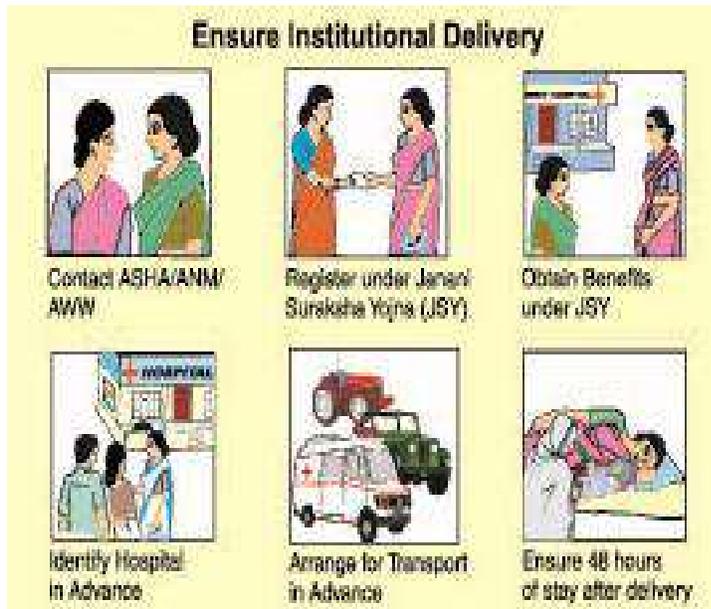
Order of Pregnancy	Date of Delivery (month and year)	Place of Delivery: Home, SC, PHC, CHC, DH, Private Nursing Home	Type of Delivery: Natural, Forceps, C-Section	Birth Outcome: Live Birth, Stillborn	Age and Status of Child Currently	Any other Complications: Fever, Bleeding
First						
Second						
Third						

- Any risk factors:
- Nearest SBA: Phone:
- Nearest 24X7 PHC: Distance: Time: Cost
- Nearest Sub-Centre with a Skilled Birth Attendant
- Nearest CHC with facilities to manage complications: Distance: Time: Cost
- Distance to District Hospital:
- How much is transport going to cost?
- Is the vehicle fixed: Owner: Phone No.:
- Will we need extra money for the treatment? How to organise it?
- Who will take care of the children when mother goes to the facility?
- Who will accompany her to the facility?
- Where will they stay?
- How will they finance their stay?
- Have they organised clothes and blankets for the baby?

**When should a birth preparedness plan be readied and what is the role of AWW in preparation birth preparedness plan?**

It should be ready as early as possible after confirming the pregnancy, and in consultation with the family (husband, mother-in-law, or other decision makers). Basically ASHA prepares this plan in consultation with ANM and AWW. ASHA reviews the plan in the third trimester (after seventh month) with the family and AWW and ANM. At this time, the choice of institution and the transport should be finalised.

## Preparation in Case of Home Delivery



### What an ANM/AWW should explain in Case of Home Delivery?

As far as possible, delivery should be conducted in a hospital. If delivery is conducted at home, it should only be conducted by a skilled birth attendant (SBA) or an ANM.

Women and newborn child can easily get infected during and after delivery. Pregnant woman/family should also try to get a disposable delivery kit (DDK) before delivery. DDK is available at all Government hospitals and health centres. If DDK is available, then it would contain clean blade and thread. ANM should follow five cleans.

- (i) **Clean Hands**- Hands must be thoroughly washed with soap and water by the person before conducting the delivery. After washing, hands should be air dried and not wiped to avoid infection. Nails must be cut and bangles, rings etc. must be removed before washing hands.
- (ii) **Clean surface and surroundings:** a) **Clean Sheet**-The sheet on which woman plans to deliver must be washed with soap and water and dried in sun, b) **Clean Room**-The room in which delivery is planned should be freshly white-washed and cleaned thoroughly. Shoes/chappals should not be allowed inside.
- (iii) **Clean Blade**- The blade for cutting the cord must be new and unopened.
- (iv) **Clean Umbilical Cord**- Nothing should be applied to the cord to avoid risk of infection.
- (v) **Clean Thread**- This must be washed with soap and water, then boiled for 20 minutes and dried in sun.

***Ensure institutional delivery to prevent any complication at all cost.***

## Before Delivery



The delivery room should be cleaned before the delivery. If the delivery is happening at home, you should facilitate a clean delivery space.

Immediately after birth, if the baby remains naked, it may become cold. Hence, baby clothes should be kept ready before delivery.

### What the family can do before and during delivery?

- Contact ASHA/ANM/AWW after confirmation of pregnancy
- Ensure that the Mother and Child Protection Card provided to the pregnant woman should be kept safe and brought along with her during all check-ups/visits as also, at the time of delivery.
- Register under Janani Suraksha Yojna (JSY)
- Obtain benefits under JSY and IGMSY.
- Identify a nearest functional PHC, CHC, or a District Hospital in advance which has all the necessary facilities for safe delivery.
- Take support from the ASHA/ANM/AWW and the community resources to identify fastest means of transportation to the health facility. Make the necessary arrangements in advance.
- Ensure that the phone no. and contact details of the ANM are readily available.
- Contact the ANM as soon as possible to ensure safe delivery.
- Ensure hands of the ANM and helper are clean and washed with the soap and water.
- Ensure the place where the delivery is to be carried out and its surrounding areas are clean.
- The blade for cutting the cord should be new/clean (preferably wiped with a disinfectant)
- The umbilical cord should be cleaned, a clean, new thread should be tied to the cord before cutting it.
- The newborn should be wrapped in a clean (washed with soap and water and sundried) set of soft cotton clothes.
- Women will have vaginal discharge (bleeding) for few days after the delivery. Only clean pieces of cloth/sanitary pads (washed and dried in sun) should be used.
- The delivery is conducted by a skilled birth attendant/ ANM.
- For the safety of the mother and child ensure that the mother stays in hospital for 48 hrs after giving birth.

**Preparation in case of Home Delivery**



Ensure safe delivery by ANM

- ✓ Clean hands
- ✓ Clean surface & surroundings
- ✓ Clean blade
- ✓ Clean umbilical cord
- ✓ Clean thread to tie the cord
- ✓ Clean set of clothes for newborn



Ensure Family Care & Support

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**Emergency**                      **After Delivery**



Arrange Transport to Hospital



Initiated Breastfeeding within 1 Hour of Birth

Yes  No



Family Planning Counselling

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**Ensure early and exclusive breastfeeding 0-6 months**

### To Sum Up

- Many complications of childbirth can be avoided if delivery takes place in an institution. Hospitals and health centers are hygienic and therefore better for the health of the newborn and the mother. There are many deaths of newborns and mothers during delivery i.e. low survival can be avoided by going to a hospital.
- Birth preparedness plan should be ready as early as possible after confirming the pregnancy, and in consultation with the family (husband, mother-in-law, or other decision makers). Basically ASHA prepares this plan in consultation with ANM and AWW. ASHA reviews the plan in the third trimester (after seventh month) with the family and AWW and ANM. At this time, the choice of institution and the transport should be finalised.
- Family should ensure that the Mother and Child Protection Card provided to the pregnant woman is kept safe and brought along with her during all check-ups/visits as also, at the time of delivery.
- Family should ensure to register and obtain benefits under Janani Suraksha Yojna (JSY) and IGMSY.

### What an ANM/AWW should record?

- After delivery the worker fills in the space for the 'Birth Record' of the baby on the cover page.
- Whether breastfeeding was initiated within 1 Hour of birth or not?
- Whether counselling regarding family planning given or not?

## Postnatal Care

The first 42 days after the delivery are postnatal period. The first week are the most crucial for the health and survival of the mother and newborn. During the postnatal period, visits on stipulated time helps in detecting complications.

**POST NATAL CARE**

Date of delivery       Place of delivery \_\_\_\_\_ Type of Delivery

N.  Instr.  CS

Term/Preterm \_\_\_\_\_ If at institution period of stay post delivery \_\_\_\_\_

Complications, if any (Specify) \_\_\_\_\_

Sex of baby  M  F \*Weight of baby    kg.    gms

Cried immediately after birth  Y  N

Initiated exclusive breast feeding within 1 hour of birth  Y  N

\* (Three extra visits if birth weight < 2.5kg)

**POST PARTUM CARE**

	1 <sup>st</sup> Day	3 <sup>rd</sup> Day	7 <sup>th</sup> Day	6 <sup>th</sup> Week
Any complaints				
Pallor				
Pulse rate				
Blood pressure				
Temperature				
Breasts Soft/engorged				
Nipples Cracked/normal				
Uterus Tenderness Present/absent				
Bleeding P/V Excessive/normal				
Lochia Healthy/foul smelling				
Episiotomy/Tear Healthy/infected				
Family planning Counselling				
Any other complications and referral				

### Care of Mother

- First postnatal visit is on Day 1, second on Day 3, third on Day 7 and fourth at 6th week.
- In case of institutional delivery, first and second visit should ideally happen at the facility.
- ANM should take help of AWW and ASHA to carry out stipulated visits to the mother and baby.

#### What an ANM/AWW should record?

- All postnatal visits to be recorded as per the columns of the MCP card and appearance of danger signs in mother are mentioned in the relevant column.
- Ticks (✓) the relevant feature of baby in the appropriate box.

#### What Family should ensure?

- Danger signs in mother and baby are given immediate attention.
- Nutritious diet is provided to the mother.
- Clean sanitary pad are made available.

#### Roles and Responsibilities of AWW

- You should identify all pregnant women in your village.
- You should ensure that all pregnant women are registered at AWC and facilitate in getting their four ante-natal check-ups and ensure that the MCP Card is updated.
- To assist the ANM/ ASHA in the ANC & PNC check-ups.
- In the IGMSY districts you should also ensure that all the women are registered under IGMSY to avail all ANC and PNC services.
- Educate pregnant women about care in pregnancy, especially on the importance of increased nutrition, rest, and complete ANC services
- Emphasise the importance of a balanced and nutritious diet during pregnancy. The diet of the pregnant woman should contain a mix of cereals, pulses (including beans and nuts), and vegetables including greens, milk, eggs, meat and fish. If possible, the family should be encouraged to add oils, jaggery and fruits to the diet. Meat and nuts are especially good for anaemic women. You should explain to the mother and family that no foods should be forbidden during pregnancy.
- Ensure that all pregnant women, lactating mothers and children receive supplementary nutrition from AWC
- Ensure immunization of pregnant women and children in the AWC area in coordination with ANM/ASHA.
- Mobilize beneficiaries (with the AWH/ASHA) for the Village Nutrition and Health Day through SHGs, Mothers Committee, beneficiaries of the ICDS Scheme.
- Make Home Visits - Once a month during pregnancy, once in the first week of delivery. Second visit in second or third week as per the need.
- Refer sick children, pregnant/lactating mothers to sub-centre, PHC/CHCs
- Counsel/advise the pregnant women and their families for institutional delivery.
- Arrange for transport beforehand, in case there is an emergency
- Ensure that all pregnant women follow the above advice in practice

### Care of Baby

**Newborn care starts soon after the baby has been delivered**

### NEWBORN CARE

- ◆ Keep the child warm
- ◆ Start breastfeeding within 1 hour after birth.
- ◆ For the first 6 months, feed the baby only mother's milk.
- ◆ Do not bathe the child for the first 48 hours
- ◆ Keep the cord dry
- ◆ Keep the child away from people who are sick
- ◆ Weigh your child at birth
- ◆ Give special care if child weighs less than 2.5 kg. at birth

### CARE OF BABY

	1 <sup>st</sup> Day	3 <sup>rd</sup> Day	7 <sup>th</sup> Day	6 <sup>th</sup> Week
Urine passed				
Stool passed				
Diarrhea				
Vomiting				
Convulsions				
Activity (good /lethargic)				
Sucking (good/ poor)				
Breathing (fast/difficult)				
Chest indrawing Present/absent				
Temperature				
Jaundice				
Condition of umbilical stump				
Skin pustules Present/absent				
Any other complications				

- Baby must be breastfed exclusively and frequently.
- Difficulty in suckling needs immediate attention
- Hands and breasts should be cleaned before feeding the baby.
- Any abnormal/danger signs must be reported to the ANM/MO and care should be sought.
- During each visit, weight of the child should be monitored.
- The baby must be examined on 1, 3, 7, days and at 6 weeks
- Low birth weight babies should be visited additionally on Day 14, 21 and 28.
- During each visit, weight should be monitored and recorded on growth chart.
- At birth the child is given BCG, OPV + Hepatitis B vaccine. At birth or up to 14 days polio drops (called the zero dose which is given before the first dose).
- Any deviation from the normal must be noted and acted upon as per the protocols.
- ANM should take help of AWW and ASHA to provide care to the newborn.

## Danger Signs in Newborn



### What Family should ensure?

- Newborn is handled by only few people.
- Baby is not given anything by mouth except breast milk.
- Routine Immunisation is started as per schedule.
- Babies with low birth weight are given additional care.
- Baby is kept warm and cord is kept dry & clean.

## **How to record Referrals in the New MIS Register?**

### **Register 9: Referrals**

The purpose of this register is to record the names and details of people with illnesses whom you see and treat or refer; and to follow up children and mothers whom you refer to health facilities.

#### **How the register is organized and how long it will last?**

There are three sections in the register:

Section 1 is for recording details of children who fall sick

Section 2 is for recording the details of Pregnant and Lactating women who have health problems or complications

Section 3 is for recording details of any other persons who fall ill and report to you.

The register is expected to last about 5 years. Where C-IMNCI training has been completed, and separate printed registers are available, Section 1 of this register does not need to be used.

In this session we will learn about recording details of children who fall sick

#### **What to fill in each column of the register?**

##### **Section 1: Referral Services –Children**

When a child under 6 years old falls ill, you will record details in this register. Each row is for one episode of illness of a child. If a child falls sick again, use a separate row.

**Column 1, Serial no:** Write a running serial number, starting with '1' for each month.

**Column 2, 3, 4 & 6:** Write as recorded in Register 1: Family Details register

**Column 5, Age:** Write the age in completed years and months on the day when you first saw the child for the current illness.

**Column 7, Date first seen for the current illness:** Write the date of when this current illness was reported for the first time.

**Column 8-14, Health Problem:** After observing the child and talking to the parents, decide what problem the child has. Mark the health problems of the child with a tick mark (v) under the appropriate column.

**Column 15, Treatment Details:** Write the treatment given by you in brief. You will give treatment as per the training provided to you.

**Column 16, Referred to:** Put the type of health facility to which the child was referred for its health problem.

**Column 17, Referred on:** Write the date on which the child was referred to the health facility

**Column 18, Whether reached a facility:** If the child reached a health facility, write 'Yes', otherwise write 'No'.

**Column 19-22, Status on next reporting date:** Put a 'v' mark on health status of the child on next reporting date, that is, the date when you next see the child. The status of the child can be - fully cured, partly recovered no change, or dead.

## Section 1: Case Management and Referrals - Children

1	2	3	4	5	6	7	8	9	10	11	12
Sl. No.	Sl. No. of family	Sl. No. within family	Name of child and Name/phone no. of parents	Age	Sex M/F	Date first seen for current illness	Health Problem				
							Premature	Sepsis	Diarrhoea	Pneumonia	Fever

9	10	11	12	13	14	15	16	17	18
Health Problem		Treatment details	Referred to 1. SHC 2. PHC 3. CHC 4. Private hospital	Referred on (Date of referral)	Whether reached a facility (Yes/No)	Status on next reporting date			
Fever/offensive discharge after delivery	Other					Fully cured	Partly recovered	No change	Dead

**Weighing the Newborn(For details may refer to the Section 2 Growth Monitoring and Promotion in this chapter)**

### What an ANM/AWW should explain?

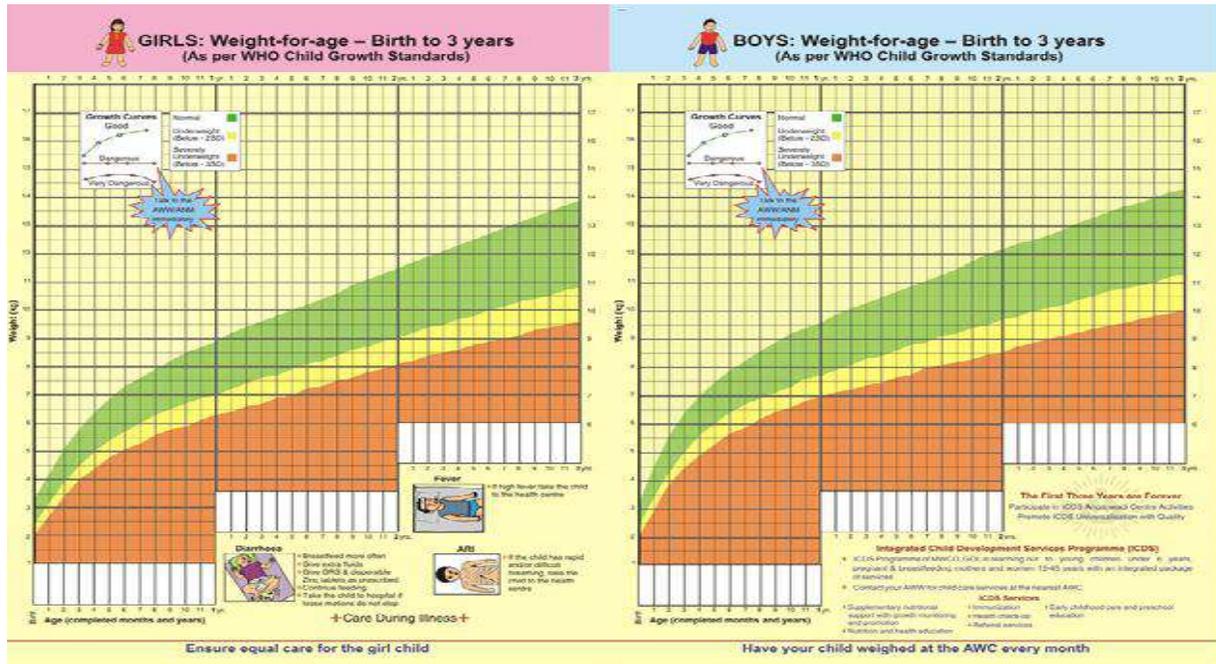
Growth Monitoring must start at an early age in the child's life, right from birth. The Anganwadi Worker (AWW) must explain to the mother, and other older persons in the house, the importance of weighing a new born baby preferably, same day of birth. Help of the village traditional birth attendant (TBA) and Accredited Social Health Activist (ASHA) can be taken, if need be, to convince the mother.

Children grow most rapidly from birth to 3 years, particularly in the first six months. In this age, they are also more vulnerable to diseases and inadequate nutrition which affect normal growth pattern. It is, therefore, essential to monitor growth of children in this age more frequently.

The AWW should weigh all newborns and children from birth- 1 month weekly, one month- 3 years every month and 3-5 years at every three months. The golden principle of New WHO Growth Standards i.e. weighing and plotting weight of children on the basis of completed weeks/months, it is advisable to conduct four weighing sessions in a month at the AWC so that all children are weighed every month. Those children who do not attend AWC should also be motivated to attend the weighing sessions, without fail.

The AWW should be aware of all the births taking place in her area. She can do this by keeping in constant contact with the pregnant women, who are her beneficiaries in the last trimester. She should note down the date of birth of a child as soon as the woman delivers the baby. Keeping in touch with the local traditional birth attendant (TBA) can also help her in knowing the births of new babies. The AWW should

immediately record the date of birth (day, month and year) of the child in her register. She should also start monitoring the growth of these children.



## Feeding



- Start breastfeeding immediately after birth and exclusively
- Exclusively breastfeed for 6 months – this means do not give any other foods, drinks, not even water
- Breastfeed as many times as the child wants
- Breastfeed as often as the child wants, day and night, at least eight times in 24 hours.
- Continue breastfeeding during illness. The child needs extra food after illness
- Caregiver should wash hands with soap and water before feeding the child.

- Caregiver should wash hand with soap or ash after washing baby who has defecated, and after baby's excreta has been disposed.

### Playing and Communicating with Children: Children 0-3 Months

This section has two components- 'what you can do' with your child to promote his development and 'what children can do', depicting the age related milestones in children's development.

Healthy babies can see, hear, and smell since birth. Right away they begin to recognize their mothers. They soon start to smile when people smile at them. Faces are particularly interesting. At this age, learning is through seeing, hearing, feeling, and moving. When they are shown a colourful object, they follow it with their eyes. After a few weeks/ months, the child will make effort to grab it.

### Feeding, playing and communicating with the children helps them grow and develop well

#### Development: Birth to 3 Months

#### What an ANM/AWW should explain?

#### What you can do...

Smile and laugh at your child, look into child's eyes and talk to your child

Hold the child gently, look into her/his eyes and smile. The infant will slowly notice you and learn to smile back at you. When you smile to your child, s/he learns to communicate.



#### Around 3 months what most children can do

- Smile in response  
Hold the infant on his/her back with your face about 12 inches above the infant's face. Now, look into infant's eyes and smile at him/ her. The infant will slowly notice you and learn to smile back at you.
- Track a ribbon bow

When the child is lying on the back, you can hold a small dangling object (like a ribbon bow), about 12 inches away from the child's face and slowly move it from one side to the other. By about three months, the child will follow the complete movement, with head and eyes, looking at the object.

- **Begin to make sounds**

When the child is lying on the back, you can hold a small dangling object (like a ribbon bow), about 12 inches away from the child's face and slowly move it from one side to the other. By about three months, the child will follow the complete movement, with head and eyes, looking at the object.

- If the child seems slow, increase feeding, talking and playing. If the child is still slow, take the child to a doctor.
- Mother has adequate time to breastfeed the baby and play with her/ him.
- While breastfeeding, mother looks into the baby's eyes and talks to her/him.
- Make available safe, clean and colourful objects (e.g. a rattle, plastic bowl, small doll)
- The father spends time with the child and gently cuddles and talks to her/ him.

### **What Family should ensure?**

- Mother has adequate time to breastfeed the baby and play with her/ him.
- While breastfeeding, mother looks into the baby's eyes and talks to her/him.
- Immediate response to the baby's cries. Gentle rocking and talking to baby will soothe the baby.
- Make available safe, clean and colourful objects (e.g. a rattle, plastic bowl, small doll).
- The father spends time with the child and gently cuddles and talks to her/ him.
- All family members can smile, laugh, and talk to the child, and "coo" in response to the child's sounds

**Feeding, playing and communicating with the children helps them grow and develop well.**

**It is important that the father also spends time with the child and plays with her/him and show his love.**

### What a Family should ensure?

Give special care if child is less than 2.5 kg.

#### • Provide extra warmth

- Baby is wrapped well with thin sheets and blankets.
- The head is covered to prevent heat loss.
- The baby is kept very close to the mother's abdomen and chest.
- Warm water filled bottle wrapped in cloth may be kept on either side of the baby's blankets

#### • Ensure adequate and frequent feeding

- Baby is put to the mother's breast within one hour after birth.
- Baby is breastfed very frequently in small amounts. A small baby has difficulty sucking at the breast and easily gets tired.
- In case the baby suckles extremely slowly at the breast, mother can express her breast milk into a clean container and feed the baby with a spoon and katori.

#### • Prevent infections

- People who have infections should keep away from the baby at least during the first month.
- In addition to this, not too many people should be allowed to handle the baby.
- People should wash their hands with soap and water before touching the baby.
- The room should also be clean and dust free.
- Footwear is kept outside the room.

If any danger sign is recognized, baby should be taken to hospital immediately.

### What an ANM/AWW should explain?

- Weigh the baby at birth.
- Baby should be weighed on the day of birth.
- If the baby's weight is in the **green zone** (as indicated in the colour coded Weight Chart), baby only requires the normal care.
- If the baby's weight is in the **yellow zone**, the baby can be managed at home with extra care as given below.
- It is important to weigh the baby after birth because low birth weight babies require special care.
- If the baby's weight is in the **orange coloured zone**, baby is very small and must be referred to the health centre to be examined by a doctor. These babies also need extra care as given below.
- Babies whose weight is in the yellow or orange zone are small and require extra care as follows:
  - Provide extra warmth
  - Ensure adequate and frequent feeding
  - Prevent infections
- Give special care if child is less than 2.5 kg.
  - Do not bathe the low birth weight baby for the first seven days.
  - Baby with normal birth weight should not be given bath for one day after birth. Bathing can expose the baby to cold which can be fatal.

### **To Sum Up**

- Mother and Child Protection Card should be duly completed for every woman registered by you. The case record should be handed over to the woman.
- She should be instructed to bring the record with her during all subsequent check-ups/visits and also to carry it along with her at the time of delivery.
- This card has been developed jointly by the Ministry of Health and Family Welfare (MoHFW) and Ministry of Women and Child Development (MWCD) to ensure uniformity in record keeping.
- This will also help the service provider to know the details of previous ANCs/PNCs both for routine and emergency care.
- The information contained in the card should also be recorded in your antenatal register.

During the postnatal period, visits on stipulated time helps in detecting complications.

### **Role of Family**

#### **Family should ensure that -**

- Danger signs in mother and baby are given immediate attention.
- Nutritious diet is provided to the mother.
- Clean sanitary pad are made available.
- Newborn is handled by only few people.
- Baby is not given anything by mouth except breast milk.
- Routine Immunization is started as per schedule.
- Babies with low birth weight are given additional care.
- Baby is kept warm and cord is kept dry & clean.

## Checklist of Messages for Age-appropriate Home Visits

S.no.	Contact Period	Messages / Points for discussion with mother and family
D	<b>First Week after birth:</b> (at least two more visits after the day of birth, many more if it is a weak newborn)	<ol style="list-style-type: none"> <li>1. Counseling for continued feeding, warmth, cleanliness</li> <li>2. Coounseling for early detection of sick newborn (deterioration of vigor of feeding and activity) and immediate referral to hospital</li> <li>3. Counseling for recognition and referral of maternal complications – fever, foul discharge, fresh bleeding</li> <li>4. Help manage weak babies:               <ol style="list-style-type: none"> <li>a. Frequent visits – twice a day until feeding is well established</li> <li>b. More efforts at cleanliness, feeding, warmth, including skin-to-skin care</li> <li>c. Expressed breast milk as needed</li> </ol> </li> </ol>
E	<b>8-30 days after birth:</b> (several visits necessary if the baby is a weak newborn; else, three visits may suffice)	<ol style="list-style-type: none"> <li>1. Counseling for continued feeding, warmth, cleanliness</li> <li>2. Counseling for early detection of sick newborn (as before)</li> <li>3. Identifying and managing breastfeeding problems</li> <li>4. Immunization</li> <li>5. Help manage weak babies (as before)</li> <li>6. Counseling for birth spacing (provide the list of choices and refer to the ANM)</li> </ol>

### To Sum Up

- Post-partum care is the period after delivery of the placenta up to six weeks after birth.
- Mothers and newborns need care from the time of birth to six weeks after the delivery. The recommendation for postnatal care is:
  - First postnatal visit is on Day 1, second on Day 3, third on Day 7 and fourth at 6th week.
  - In case of institutional delivery, first and second visit should ideally happen at the facility.
- ANM should take help of AWW and ASHA to carry out stipulated visits to the mother and baby.
- For the new-born, the recommendation is to visit on the 3rd day, 7th day, 14th day, 21st day and 28th day. After this period, visits are still needed once in two weeks till the child is two years old for nutrition advice, immunisation advice, and support for breastfeeding and complementary feeding, for illness prevention and just to remain in touch.
- Assess the mother for signs of complications and ensure appropriate referral.

## **6.2 GROWTH MONITORING AND PROMOTION**

### **New Child Growth Standards**

In ICDS, growth monitoring of children (weight-for-age) was done earlier using IAP Classification by modifying Harvard Standards (up to 80 per cent of median is normal; between 80 and 71 per cent is first degree malnutrition i.e. mild; between 70 and 61 per cent is second degree of malnutrition i.e. moderate; and under 60 per cent is third degree malnutrition i.e. severe).

Later it was recognised that the use of child growth standards is not consistent across the country, as different child growth reference values and different systems of classification are being used to assess nutritional status of young children.

Comprehensive review showed growth patterns of healthy breastfed infants are different from the existing national/international references. The availability of new child growth Standards and implementation of Eleventh FiveYear Plan provided an opportune moment to review the use of different child growth standards in India, different classifications used, and to analyse different options for updating and harmonising the use of child growth standards in both ICDS and NRHM.

A joint policy directive dated 6 August 2008 was issued by the Secretaries of MWCD and MoHFW, Government of India to the Secretaries of Women and Child Development and Health and Family Welfare of all the States that the new WHO child growth standards would be adopted in India with effect from 15 August 2008 by both ICDS and NRHM.

The new WHO child growth standards represent a shift from describing how children grow – to prescribing how they should grow – how they have a right to grow. They demonstrate for the first time ever that children born in different regions of the world and given the optimum start in life have the potential to grow and develop up to the same range of height and weight for age. The standards show that nutrition, environment and healthcare are stronger factors in determining growth and development than regional or ethnic background.

Details of these three factors are:

#### **Optimal Nutrition**

- Exclusive breastfeeding up to six months
- Appropriate complementary feeding

#### **Optimal Environment**

- No microbiological contamination
- No smoking

#### **Optimal Health Care**

- Immunization
- Pediatric routines

The standards describe normal child growth from birth to 5 years under optimal environmental conditions and can be applied to all children everywhere, regardless of ethnicity, socioeconomic status and type of feeding.

The new standards differ from any existing growth charts in a number of innovative ways. First the MGRS was designed to provide data that describe “how children should grow,” by including in the study’s selection criteria specific health behaviors that are consistent with current health promotion recommendations (e.g., breastfeeding norms, standard pediatric care, non-smoking requirements).

Another key characteristic of the new standard is that it makes breastfeeding the biological “norm” and establishes the breastfed infant as the normative growth model. The previous reference was based on the growth of artificially-fed children.

The pooled sample from the 6 participating countries will allow the development of a truly international standard (in contrast to the previous international reference based on children from a single country) and reiterate the fact that child populations grow similarly across the world’s major regions when their needs for health and care are met.

These standards also include new innovative growth indicators beyond height and weight that are particularly useful for monitoring the increasing epidemic of childhood obesity, such as the skinfold thickness.

Breastfeeding should be supported, protected, and promoted. For the first 6 months, mothers need to be informed and empowered to practice exclusive breastfeeding. Children should be provided safe, wholesome, and nutritionally appropriate foods during the period of complementary feeding and after the second year when breastfeeding has ceased. Sound nutritional practices are important throughout childhood. Vaccinations and good health care should be available and accessible to all infants and young children. Families and their communities should do all they can to insure that mothers have a good pregnancy.

**What is Growth?**

Growth is the regular increase in size or weight of any living thing, whether it is a plant, an animal, or a human being. Regular and continuous growth is the essence of health in early life of living objects. When a small baby gains weight, grows in height, begins to roll over, sit up and walk, we say that the child is growing. Optimal child growth occurs only with adequate food, a caring, nurturing, social environment and absence of illness, which provides full attention to the growing baby.

**Normal Weight Gain of Children from Birth to Three Years**

<b>Age</b>	<b>Average Weight Gain Per Month In Grams</b>
Birth to 2 months	800
3 months to 4 months	600
5 months to 6 months	400
7 months to 3 years	200

An infant grows rapidly, doubling its birth weight by 5 months and tripling it by 1 year of age. During the second year, the child increases not only in height by 7-8 cm but also gains 4times of its birth weight. When growth slows or stops, we say growth “falters”. This is a sign that something is wrong with the child and must be discovered at the earliest and set right. Growth Monitoring is done to monitor or measure growth regularly to see whether the child is growing properly. If the child is growing, we say she is healthy. If she is not growing, we must find out why and take action to restore growth. It can be said that “A GROWING CHILD IS A HEALTHY CHILD”, and equally true that, “A CHILD WHO IS NOT GROWING IS NOT HEALTHY”.

Growth of a baby can be observed in many ways: increase in size, height and weight, clothes becoming smaller than they used to be, a string on the waist becoming tighter etc. These all are signs of growth but they cannot tell us if the child is growing well enough for its age. There are many ways of measuring the growth of a child. The most accurate and sensitive measure of growth is weight gain. By weighing a child regularly, a change of even one to two hundred grams can be observed. This weight change is not visible by any other means of measuring growth. This is why children are weighed regularly to see how much weight they have gained.

### **What is Growth Monitoring?**

Weighing of the child at regular intervals, the plotting of that weight on a graph (called a growth chart) enables one to see changes in weight, and based on these changes in weight, giving advice to the mother is called ‘GROWTH MONITORING’. It must be done at regular intervals. For growth monitoring, it is the change in weight over a period of time which is most important, rather than the weight itself. It should be done more frequently, i.e. once every month, up to age of 3 years and at least once in 3 months, thereafter.

Monitoring the growth of a child every month enables us to see periods of no growth or weight loss even before a child starts appearing thin. This warns us to take early action to ensure that the child grows normally. Taking action on the first sign of growth faltering can easily restore health and proper growth of the child.

### **What is a Growth Curve?**

Each time a child is weighed, the weight is recorded by marking a point on the chart. These points are joined by a line. This line is called a growth curve. If a child is growing and there is regular weight gain, the line will move in an upward direction. Thus, the growth pattern becomes visible to the worker and the mother when the weight is plotted on a growth chart.

When growth falters, i.e. when weight does not increase as expected, the line on the growth chart does not go upward, but stays flat. The line on the growth chart may even go in a downward direction, when a child loses weight.

### **Steps of Growth Monitoring**

#### **Growth Monitoring involves five steps**

Step 1: Determining correct age of the child

Step 2: Accurate weighing of the child

Step 3: Plotting the weight accurately on a growth chart of appropriate gender

Step 4: Interpreting the direction of the growth curve and recognising if the child is growing properly

Step 5: Discussing the child's growth and follow-up action needed, with the mother

### **Importance of Starting Growth Monitoring of Children Right from the Time of Birth**

It is well documented that growth of children is most rapid from birth to 3 years, particularly in the first six months. During this period, children are also more vulnerable to diseases and inadequate nutrition which may affect normal growth pattern. It is, therefore, essential to monitor growth of children in this age more frequently. The AWW should weigh all new-borns and children from birth-1 month, weekly; one month- 3 years every month and 3-5 years at every three months. However, children who are severely underweight, or who have not gained weight for 2 months, or who are "at risk" of under nutrition, should be weighed frequently preferably every month. However, keeping in view the golden principle of New WHO Growth Standards i.e. weighing and plotting weight of children on the basis of completed weeks/months, it is advisable to conduct four weighing sessions in a month at the AWC so that all children are weighed every month. Those children who do not attend AWC should also be motivated to attend the weighing sessions.

### **Importance of Determining the Correct Age of the Child**

In the Integrated Child Development Scheme (ICDS) programme, growth monitoring is done by weight for age method comparing the weight of the child with his age. Therefore, the first step in growth monitoring is to know the correct age of the child up to nearest month. If the child's age is not known correctly, it is not possible to assess the growth of the child and have an accurate growth chart. An under or over estimate of even two or three months could result in the child being considered either healthy or undernourished than what he actually is. Therefore, knowing the correct age of the child is necessary to do accurate growth monitoring.

### **Determining the Correct Age of the Child**

The AWW should be aware of all the births taking place in her area. She can do this by keeping in constant contact with the pregnant women, who are her beneficiaries in the last trimester. She should note down the date of birth of a child as soon as the woman delivers the baby. Keeping in touch with the local trained birth attendant (TBA) can also help her in knowing the births of new babies. The AWW should immediately record the date of birth (day, month and year) of the child in her register. She should also start monitoring the growth of these children. However, if the mother comes to her present place of residence a few months or years after the child's birth, she may not remember the month of birth of the child. For these children, the AWW can consult the local official register of births with the village panchayat, and or hospital card (in case of urban projects or rural projects close to city). Keeping in view implementation of Janani Suraksha Yojana (JSY), number of institutional deliveries has been increased in our country. Therefore, date of birth

in case of large number of children would be available with the health centre. If, however, there are no such records of births in a given area, AWWs can assess the age of a child:

- ✓ with the help of Mother and Child Protection Card (MCPC)
- ✓ with the help of birth certificate

If there are no records of births in a given area, AWWs can assess the age of a child:

- ✓ From the mother, if she remembers the exact date of birth
- ✓ Using a local events calendar.

A local events calendar indicates all the dates on which important events took place during the past five years and can be used as a tool to correctly estimate the birth date of the child.

Such a calendar should show the following:

- a) the different seasons – summer, monsoon, autumn, winter and spring;
- b) important events in the agricultural cycle of the area, such as sowing and harvesting of rabi crops (wheat, barley, sarson) and kharif crops (jwar, bajra, maize) and the other crops;
- c) names of months – both Indian (Chaitra, Baisakhi, etc.) and Western (January, February etc.);
- d) local festivals, such as Lohri, Baisakhi, Ram Navmi, IdulFitar, etc.;
- e) phases of the moon, such as full moon (Poornima), new moon (Amavas), Ekadshi, etc.;
- f) national festivals, such as Republic Day, Independence Day, etc.; and
- g) other events of importance like general elections, panchayat elections, municipal elections, drought, floods or cyclones in the area, visits of very important persons etc.

This calendar is by definition ‘local’ in nature and will vary from locality to locality. Therefore, the AWW should make a calendar of local events for the last five years for her area. An example of such a local events calendar is given below:

After questioning the mother regarding the season, crop harvest, events, festivals, etc. which occurred soon before or after the birth of the child, the AWW should look up the local events calendar to find out the exact birth month.

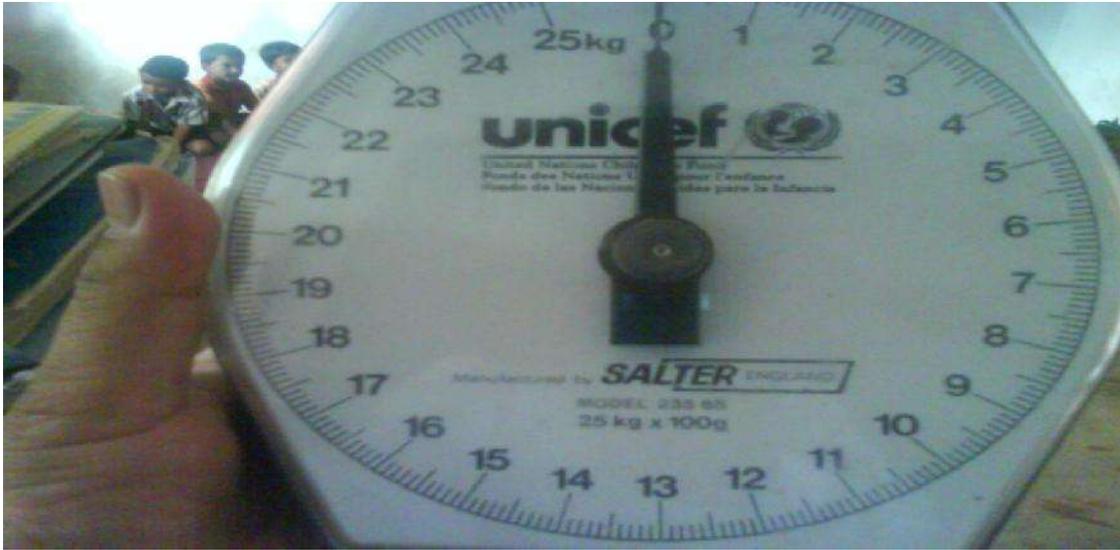
### **Weighing of Infants and Children**

Accurate weighing of children is the second step in growth monitoring. Regular weighing of the child is necessary for monitoring her/his growth. The two types of scales being used in ICDS for weighing children are the ‘Bar scale’ and the ‘Salter or Dial type scale’.

#### **Weighing using Salter Weighing Scale**

The Salter Weighing Scale is a reliable, light and portable scale, which can weigh children upto 25 kg. The Salter scale is round in shape, with the needle in the centre

Weights are marked in kilograms around the dial. There are two variations of the Salter scale. One type has only 500 gm markings between kilograms, and the other has 100 gm as well as 500 gm markings between kilograms. Salter scale with only 500 gm divisions is not used now-a-days. The Scale has a screw on top to make the zero adjustment so that the needle points to zero before the child is weighed.



### **Salter Scale**

The scale has two hooks. One on the top is used to hang the scale on a beam or branch of a tree with a rope. The other one is below the dial and is used to hang the sling or pants in which the child is placed for weighing.

Long line markings on the Salter Scale indicates = Kilogram

Medium line indicates 500 gm

Short line indicates 100 gm

### **Steps in Weighing the Child using Salter Scale**

Place the upper hook through the hole at the top of the scale.

- Put a rope through the upper hook of the scale and hang it from a beam or branch of a tree by tying the rope securely.
- Make sure the dial is at eye level so that the weight is read correctly, and not too high from the ground, to avoid injury to the child in case of accidental fall.
- Be sure there is room for the scale to hang freely.
- Pull down on the scale to make sure it is secure.
- Place the lower hook on the bottom of the scale.

### **For adjusting the needle:**

- Place the pants on the lower hook
- Then adjust the needle to zero ('0') the screw at the top of the scale in clock wise or anti clock wise direction
- Place the infant sling on the lower hook
- Then adjust the needle to zero ('0') by turning in clock wise or anti clock wise direction

### **For putting the child in the pants:**

- Remove the pants from the hook
- Carefully place the child in the pants
- Ask the child to hold the straps for support

- Make sure the straps are in front of the Child's arms. Hold the child securely under the pants and place the strap of the pants on to the lower hook
- Make sure the child's feet are not touching the ground and the child is not holding on to anything, other than straps of the sling
- No one should touch the child while the weight is being read
- Ask the mother to stand close by and talk to the child to prevent crying
- Read the weight when the child is calm and the needle stops moving
- Read the weight exactly opposite the scale; do not read the weight from the sides.

### Adjusting the Needle



### Putting the Child in the Pant



### Process of Weighing through Salter Scale

## Weighing using Bar Weighing Scale?

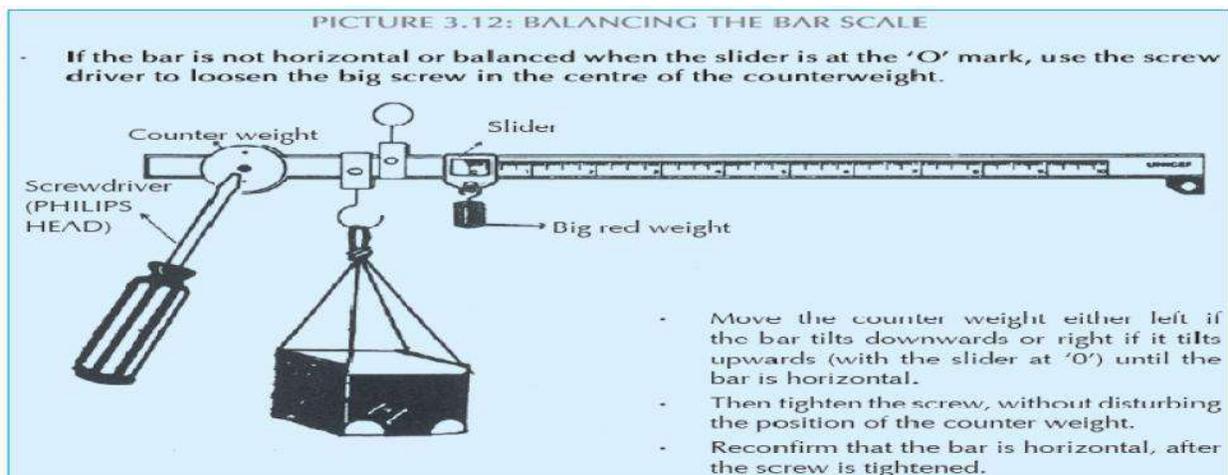
The Bar Scale is a light metal scale. It is reliable, sensitive and portable and can weigh children up to 20 kilograms.

The Bar Scale has two hooks. The upper hook is used to hang the scale from a beam or a branch of a tree, and the lower hook is used to hang a basket or sling in which the child is placed for weighing.

The Bar Scale is graduated from 0-10 kilograms. There are two types of Bar Scale. In one type of scale, each kilogram is divided into 100 grams divisions and in the other type, each kilogram is divided into 50 grams division.

Two weights are used with the Bar Scale. The big red weight is always used while weighing children and is attached to the movable slider which has a needle, pointing to reading.

The smaller blue weight is only used for children who weigh more than 10 kg. It is attached to the fixed bracket on the right end side of the scale. The left end of the scale is a counterweight with a screw in the centre. This is used for balancing the scale if the scale is not horizontal when the basket or sling is on the lower hook, and the slider is set at zero.



### For hanging the bar scale:

- Put a rope through the upper hook of the scale.
- Hang the scale from a beam or branch of a tree by tying the rope securely.
- Be sure there is room for the scale to hang freely.
- Pull down on the scale to make sure it is secure.
- The scale should be hung at eye level.

### For balancing the bar scale:

- Place the basket or infant sling
- Hold the end of the bar scale and place the big red weight on the slider.
- Gently slide the slider to the '0' mark and release the end of the bar.
- If the scale is balanced the bar will be horizontal to the floor.
- If the scale is not balanced, the bar will be tilting upwards or downwards when the Slider is at '0'.
- Remember the basket or sling must be on the hook while balancing the scale.

**If the bar is not horizontal or balanced when the slider is at the '0' mark, use the screw driver to loosen the big screw in the centre of the counterweight.**

- Move the counter weight either left if the bar tilts downwards or right if it tilts upwards (with the slider at '0') until the bar is horizontal.
- Then tighten the screw, without disturbing the position of the counter weight.
- Reconfirm that the bar is horizontal, after the screw is tightened.

**For putting the child in the basket:**

- Take the basket off the scale.
- Involve the mother in the weighing of her child.
- Help the mother place the child in the basket.
- Hold the child securely under the seat and lift towards the scale placing the strap on the hook.
- Hold the bar securely so it does not move and injure the child.

**For weighing a child:**

- Use your left hand to move the slider (with the big red weight on it) until the bar is balanced, and is horizontal to the floor.
- Be careful the bar does not fall and injure the child.
- Now remove your hands and read the child's weight.

**Weighing an Infant**

- If you use an infant sling, make sure the scale is balanced at the '0' mark, with the infant sling on the hook
- Place the infant in the sling and proceed to weigh the child

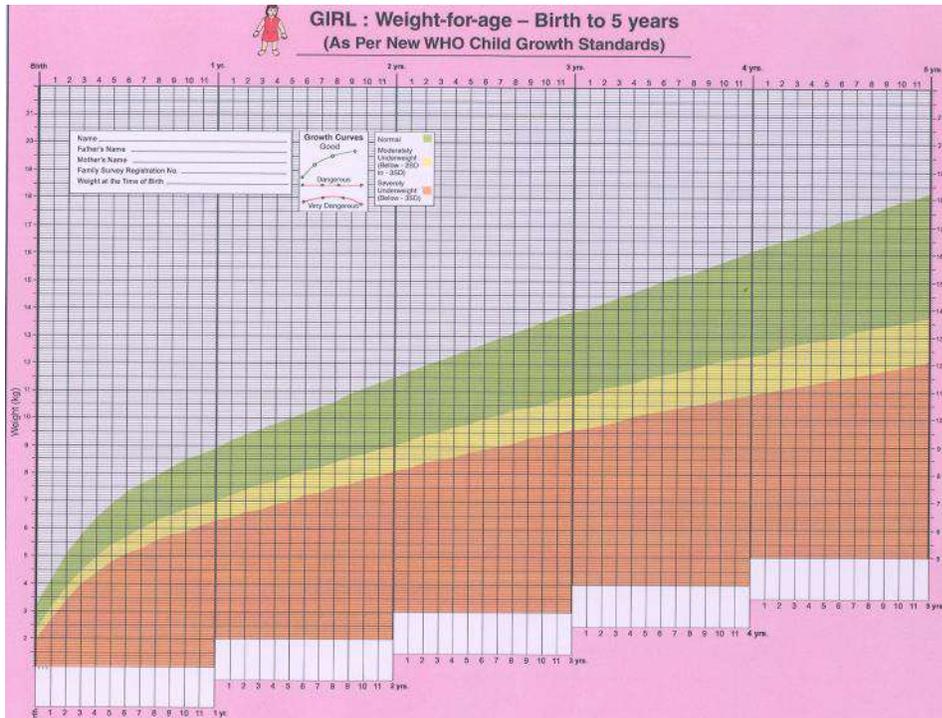
**What is a growth chart?**

Growth chart is a tool for assessing and monitoring the growth of a child. It is used for recording the weight of children as per their age up to 5 years. The chart contains weight-for-age growth charts based on new WHO Child Growth Standards. Growth monitoring chart register is a part of the Mother & Child Protection (MCP) Card Package, which also includes a Mother & Child Protection Card and a Guide Book. As per the new Standards, there are separate growth charts for girls and boys, as they have different weights and lengths beginning at birth and grow to different sizes related to their age. The new WHO growth chart used in the ICDS programme are pink and blue in colour for girls and boys respectively.

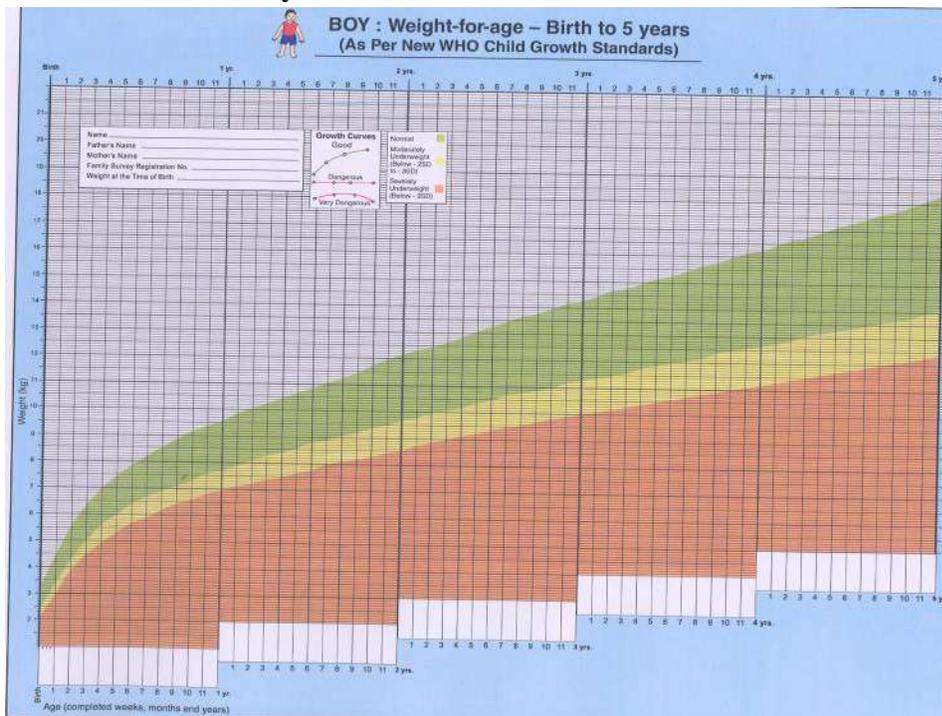
On the extreme top left of the chart a box has been given where the child's name, father's and mother's name, family survey register number and weight at the time of birth are to be filled. Each growth chart has two axes. The **horizontal line** at the bottom of the chart is the X Axis. This is for recording the age of the child for five years and is called '**month axis**'. The **vertical line** at the far left of the chart is the Y Axes. This is for recording the weight of the child from birth onwards and is called '**weight axis**'. The horizontal lines from bottom to top of the growth chart reflect the weights from 0 to 21 kg at 100 gm interval.

The vertical lines from left to right of the chart reflect age from 0 to 5 years at one month interval. Look at the vertical line on the extreme left of the growth chart. Along this line are weights written in kilograms, 1, 2, 3... 21 kg. The bold line in between the kilograms indicates 500 grams and the thin line 100 grams. At the bottom of the growth chart are five steps, each of which represents one year in the child's life. Each step has been further subdivided into boxes to write the twelve months of the year. The first box on the extreme left has a thick dark outline. This is for the birth month and year of the child.

## Growth Charts for Girls



## Growth Charts for Boys



### **What does direction of the growth curve reflects the growth in children?**

A growth curve is formed by joining the plotted points on a growth chart. Direction of the growth curve indicates whether the child is growing or not and is more important than the actual weight of the child at a given point of weighing.

On each growth chart, there are 3 printed growth curves. These are called Reference Lines or Z Score Lines and are used to compare and interpret the growth pattern of the child and assess her/his nutritional status.

The 1st top curve line on the growth chart i.e. upper border of green band is the median which is, generally speaking, the average.

Second line is the junction of green and yellow bands

3rd line is the junction of yellow and orange bands.

Weight of all normal and healthy children, when plotted on the growth chart, fall above 2nd curve (green band); weight of moderately underweight children fall below the 2nd curve to 3rd curve (yellow band); and weight of severely underweight children fall below the 3rd curve (orange band).

### **Steps in Filling up a Growth Chart**

Described below are steps in filling up a growth chart.

#### **a. Filling up the index of growth charts**

In the index of the growth chart register (as mentioned below), write down the name of the child and other relevant information such as Serial No, Name of the Child, Date, Month and Year of Birth D/M/Y, Birth Registration No., Father's Name, Mother's Name, Family Survey Registration No, and Page No. of Growth Chart in GM Register.



Where to put the date of Birth?

**Girls: Index of Growth Charts**

Serial No.	Name of the Child	Date, Month and Year of Birth D/M/Y	Birth Registration Number	Father's Name	Mother's Name	Family Survey Registration No.	Page No. of Growth Chart in GM Register

Now, turn to an empty growth chart, and choose appropriate growth chart (Pink or Blue) according to sex of the child.

**b. Filling up the information box**

Choose appropriate growth chart according to the gender of the child Write down the required information in the information box on the growth chart i.e. name of the child, father’s name, mother’s name, family survey registration number and weight at the time of birth.

**c. Filling up the month and year column**

Write the month and year during which the child was born in the first white rectangle at the bottom of the first column from the left hand side. In the subsequent boxes, you will write the month and year in sequence i.e. March 2009 (3/09), April 2009 (4/09) and May 2009 (5/09), until you reach the last small box in which you will write January 2014 (1/14).

**Steps for Plotting Weight on the Growth Chart**

- Use pink border chart for girls and blue border chart for boys.
- Fill up the ‘Information Box’ on the left hand side of each Growth Chart before using it
- Do the plotting with help of a HB pencil.

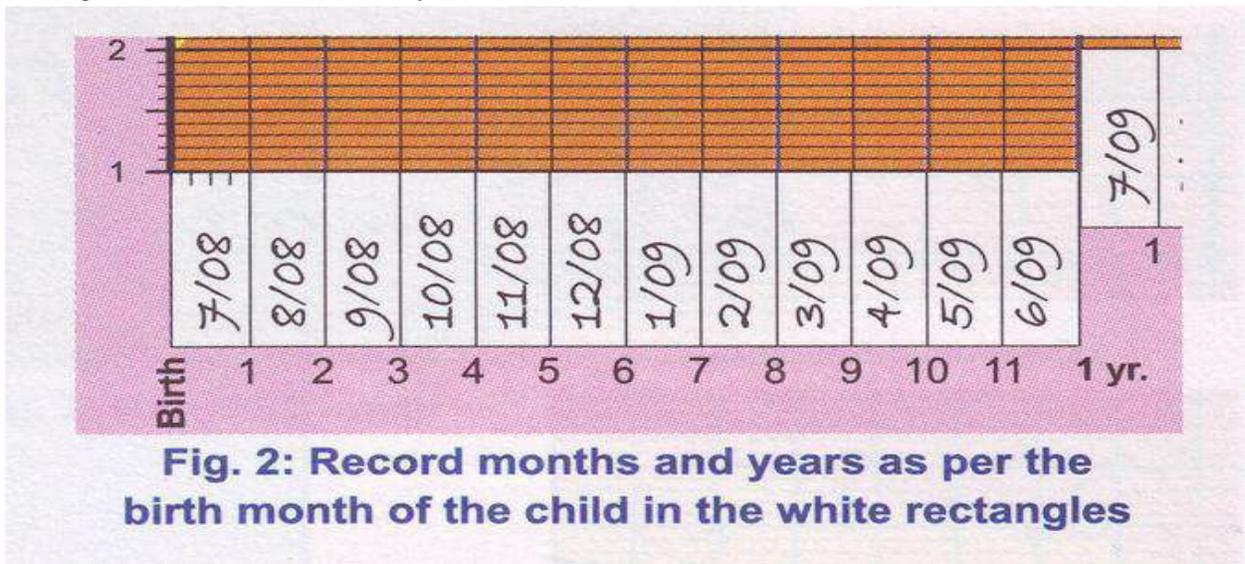
**Fig.37: Growth Curves**

The information box contains the following details:

Name	Nirjala
Father's Name	Ramesh Pande
Mother's Name	Geeta Pande
Family Survey Registration No.	328
Weight at the Time of Birth	3kg 200g

**Fig. 1: Information Box**

- Write the month and year during which the child was born in the first white rectangle at the bottom of the first column from the left hand side
- In the subsequent boxes, you will write the month and year in sequence say, March 2009 (3/09), April 2009 (4/09) and May 2009 (5/09), until you reach the last small box in which you will write January 2014. Plotting for 60th month i.e. February 2014 will be done on the last bold vertical line.



- Identify the 'month box', which identifies the present age of the child in completed weeks or months.
- Plotting has to be made at the junction of vertical line (not between vertical lines) of the identified 'month box', and line corresponding to weight.
- Plotting has to be done on the lines for completed weeks/months. Weekly plotting will be restricted to only initial 1st month from the birth and thereafter plotting will be done on completed months.

### **Golden Rules for Determining Completed Weeks**

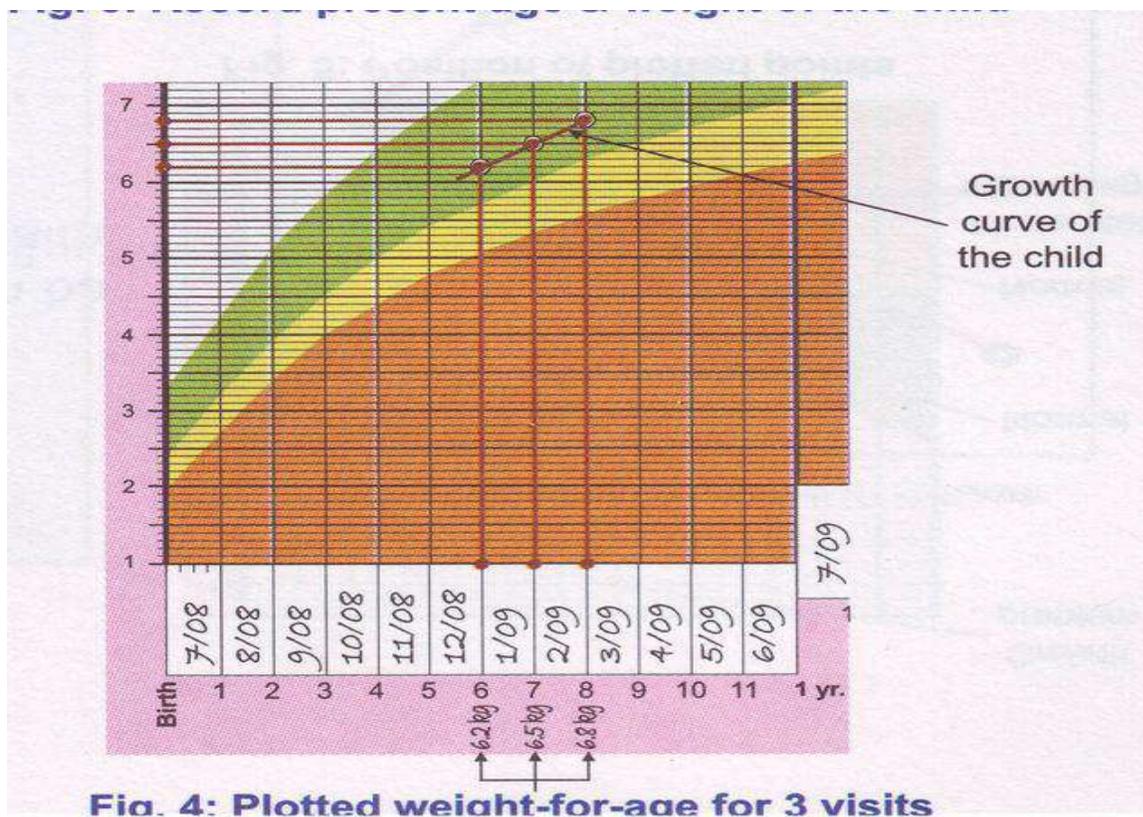
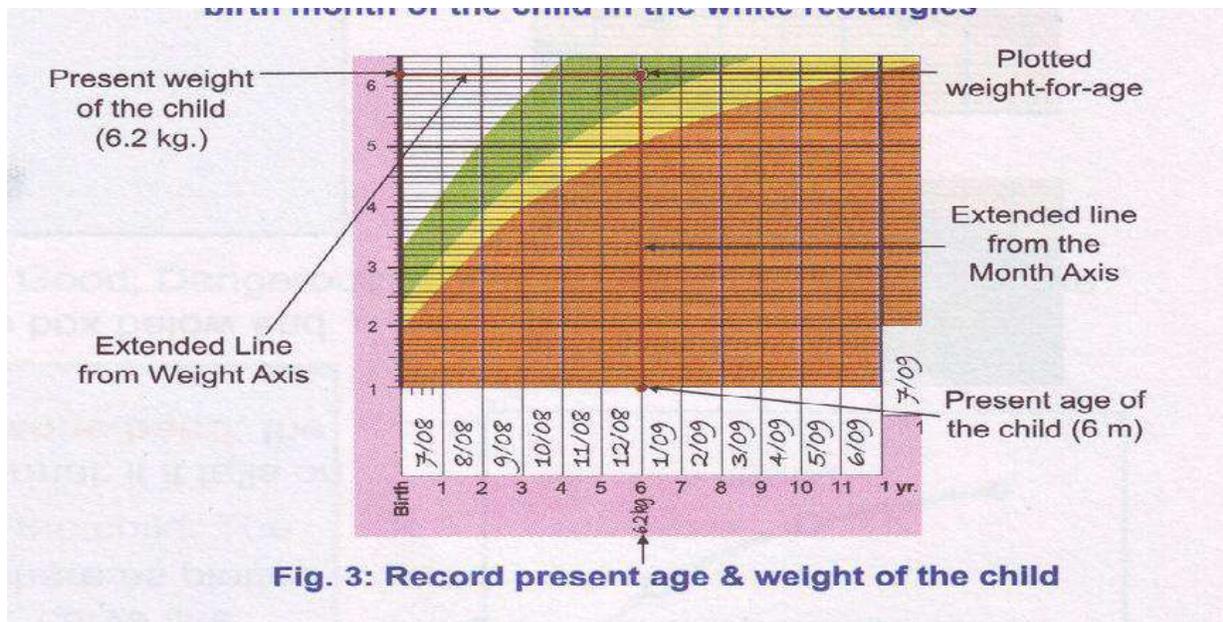
- If a child is weighed any day from birth till 6 days after birth, her weight would be plotted on the 1st week line, as she has not completed one week.
- If a child was weighed on any day from birth 7<sup>th</sup> till 13<sup>th</sup> day after birth her weight would be plotted on the 1st week line.
- If a child was weighed on any day from birth 14<sup>th</sup> till 20<sup>th</sup> day after birth her weight would be plotted on the 2<sup>nd</sup> week line.
- If a child was weighed on any day from birth 21<sup>st</sup> till one day less than a month her weight would be plotted on the 3<sup>rd</sup> week line.

Similarly, when she was weighed at 6½ months old, weight of the child was plotted on the line for completed months i.e. 6 months and not between the lines for 6 and 7 months.

### **Golden Rules for Determining Completed Month**

In order to determine completed month, an easy way may be adopted for example:

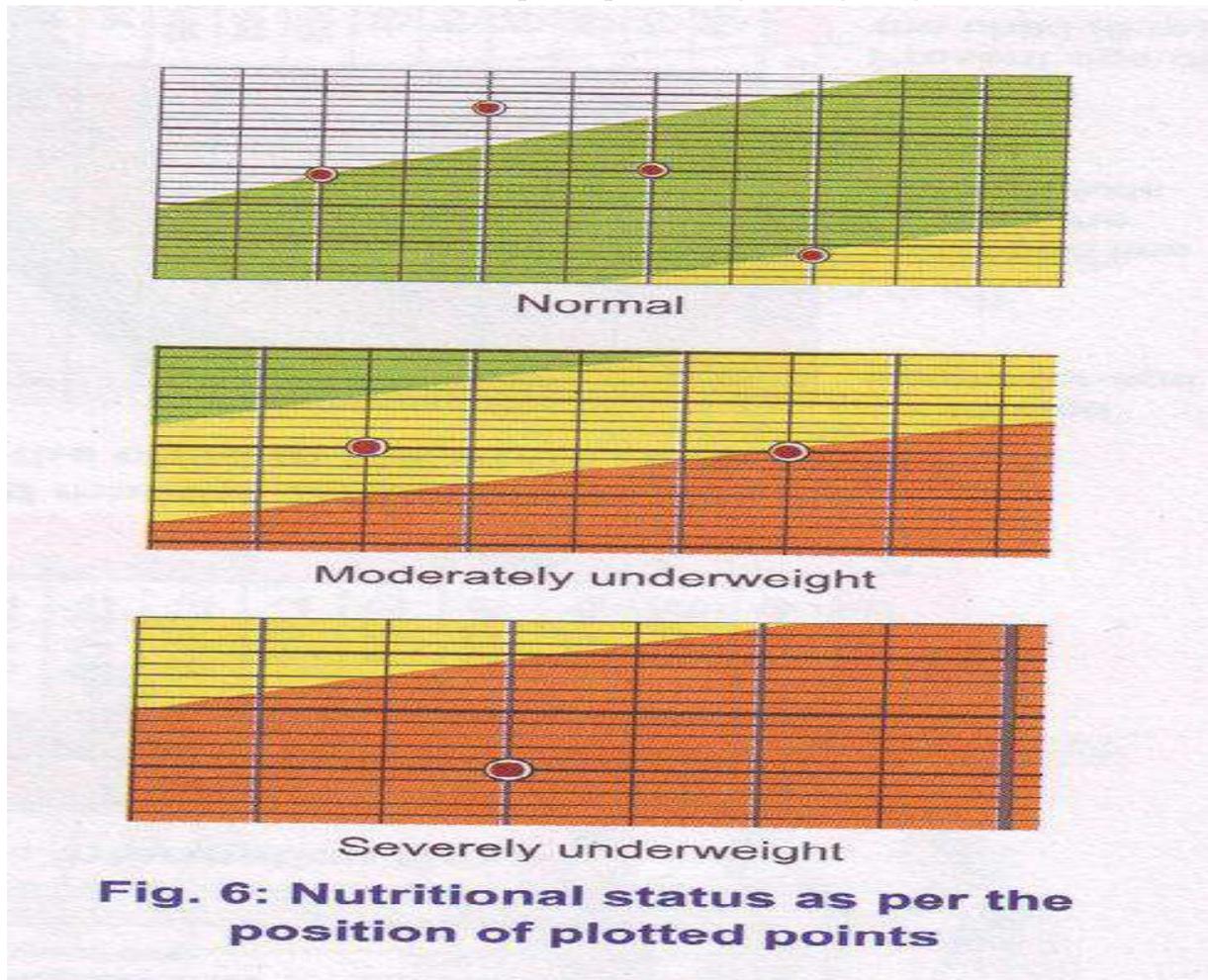
- A child born on 10th September would complete her months on 9th of every month.
  - In case of a child born on 29th, 30th, 31st January would complete her 1st month on the last day of February and 2nd month would be completed one day before the date of birth i.e. 28, 29 and 30 respectively and calculation of the completed months will be done in the preceding months accordingly.
  - The child born on 1st of any month would complete her month on the last day of respective month and so on during all the years.
- For plotting on completed weeks, small lines drawn in the birth month need to be followed/extended upward vertically till the plotting of actual weight of the child.
  - Identify the horizontal line which indicates the present weight of the child to the nearest 0.1 kg e.g. 6.2 kg.
  - Follow this horizontal line on the 'weight axis' towards right to the point where it intersects with the line which is extended from the vertical line from the 'month box' indicating the present age of the child.
  - Write the weight taken to the nearest 100 grams below the 'month box', which indicates the present age of the child.
  - Put a dot on the line where the two lines intersect. Draw a circle around the dot, so as to know the position of the plotted point for weight-for-age.
  - Do not plot any point in the space between the two vertical lines on a Growth Chart.
  - Record weight-for-age of the child by plotting a point on the Growth Chart, each time she/he is weighed.
  - Connect the points plotted for two or more months/weight, with a straight line to see form the Growth Curve and observe trends.



- Whenever there is a gap in monthly weighing or no information available about weight then that gap in growth chart needs to be joined with a dotted line

## Steps in Interpretation of Growth Curve

- Note the position of the plotted point with reference to printed Growth Curves.
- Interpret the position of the plotted points to identify normal growth or growth problems.
- If plotted weight of a child falls much above the 1st curve, the child has a growth problem, which can be overweight or obesity. This is better assessed from other indicators. Refer the child to the health centre.
- If plotted weight-for-age of a child falls exactly on the 1st or 2nd or 3rd printed growth curve line, then the child is in the less severe category of under-weight e.g. plotted point on the 2nd curve line indicates that the child's growth is normal, whereas plotted point below the 2nd curve line indicates that the child is moderately underweight. Similarly, plotted point on the 3rd curve line indicates that the child is moderately underweight and not severely underweight, whereas plotted point below the 3rd curve line indicates that the child is severely underweight.
- If plotted weight-for-age of a child falls on the green band, then the child's growth is normal; if it falls on the yellow band, child is moderately underweight, and if the plotted weight is on the orange band, the child is severely underweight.
- Assess the nutritional status of the child as per the plotted weight-for-age, as given in the box below.

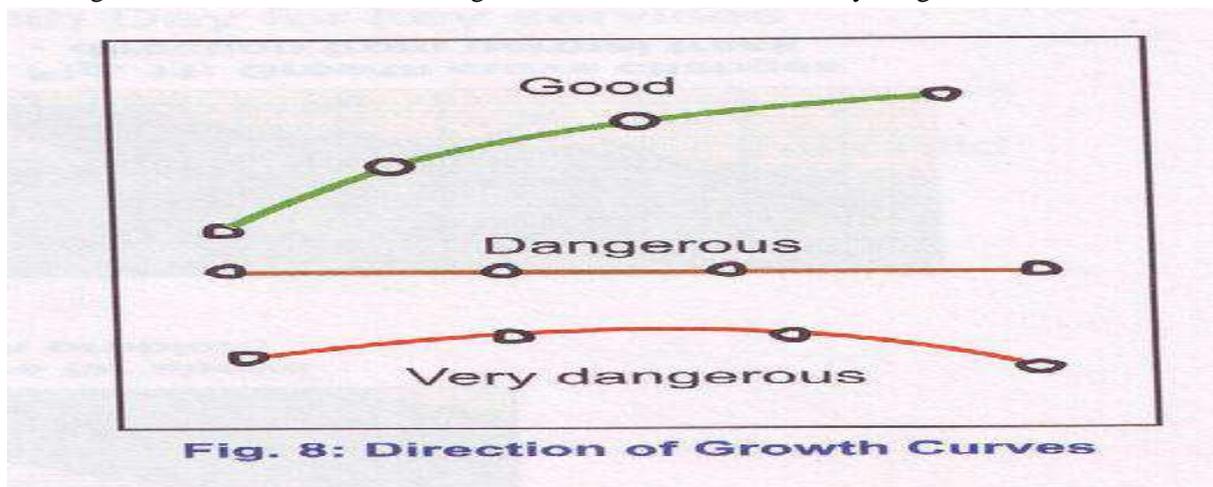


Position of the Plotted Point	Nutritional Status
Plotted point is	
Exactly on or just above the 1st curve(or) Between the 1st & 2nd curve	Child's growth is normal
Exactly on the 2nd curve	
Plotted point is:	
Between 2nd & 3rd curve	
Exactly on the 3rd curve	Child is moderately underweight
Plotted point is below the 3rd curve	Child is severely underweight

### Significance of Direction of Child's Growth Curve

Direction of the growth curve helps in determining the growth pattern of a child. It is very important to consider the child's whole situation while assessing the growth pattern. Interpreting trends on the growth chart or the growth pattern will indicate whether a child is growing normally, has a growth problem, or is at risk of a growth problem.

- ✓ The growth curve of a normally growing child usually follows a track that is roughly parallel to the 1ST or 2nd printed curve lines. The track may be below the 1st curve line or above the 1ST or 2nd curve line.
- ✓ Note the direction of the growth curve of the child, which can be upward, flat or downward
  - If the growth curve of a child is moving upward, it is considered good.
  - If the growth curve of a child is flat, it is considered dangerous.
  - If the growth curve of a child is moving downward, it is considered very dangerous.



Direction of Growth Curves	Growth Pattern
Upward Growth Curve	<b>Good</b> Indicates adequate weight gain for the age of the child. The child is growing well and is healthy.
Flat Growth Curve	<b>Dangerous</b> Indicates that the child has not gained weight and is not growing adequately. This is called stagnation. The child needs attention by the mother and the AWW. This needs to be investigated.
Downward Growth Curve	<b>Very dangerous</b> Indicates loss of weight. The child requires immediate referral and health care.

### Interpreting Growth Problems or Risk from the Child's Growth Curve

#### i) Child's growth curve is far above the first curve line

Child may have a growth problem. This is better assessed from other nutrition indicators at the health centre. However, it may be mentioned that a tentative principle has been followed to understand the growth curve above the green band that is a hypothetical line dividing green band into two equal parts may be drawn and one of the two equal parts may be pasted above the green band and the children whose plotting falls between this hypothetical line and the real green zone need not to be referred to health centre. However, children whose plotting falls above the hypothetical line actually have growth problem and need to be referred to health centre.

#### ii) Child's growth curve is far below the third curve line

Child may be severely underweight and she/he needs urgent specialised medical care.

#### iii) Any quick change or sharp incline or decline in the child's growth curve

When child's growth curve goes upward or downward from its normal track, this needs to be investigated to determine the cause and remedy of the problem.

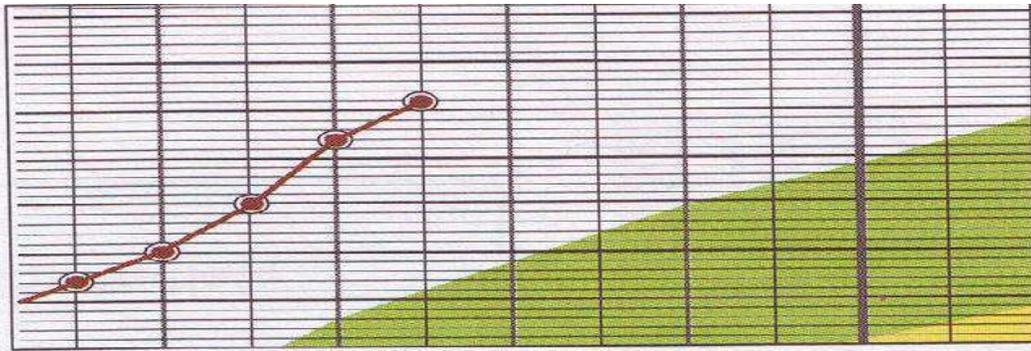
#### iv) Child's growth curve crosses a printed curve line

If a child's growth curve crosses a printed curve – either from above or below, it means there has been a significant change in the child's growth. This may indicate a good change or risk. An AWW can interpret it based on from where (relative to the 1st curve line) the change in the curve began and the rate of change as given below:

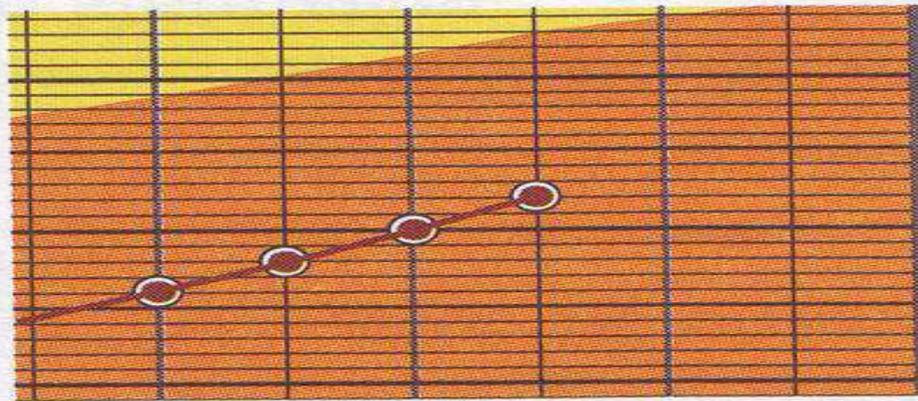
- If the shift is towards the 1st curve (green), this is probably a good change.
- If the child's growth curve line stays close to the 1st curve, occasionally crossing above and below it, this is fine.
- If the shift is towards 2nd curve (yellow) or 3rd curve (orange) this indicates a problem or risk of a problem. If it is noticed on time, it may be possible to intervene early and prevent a problem.

#### v) Child's growth curve remains flat

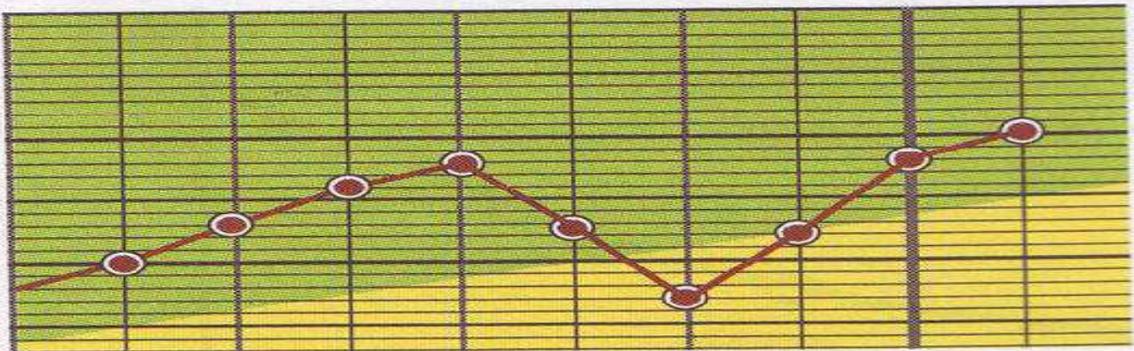
Child may have a growth problem if there is no gain in weight as the age increases. This is called stagnation. This needs to be investigated if the condition remains same for 2-3 months.



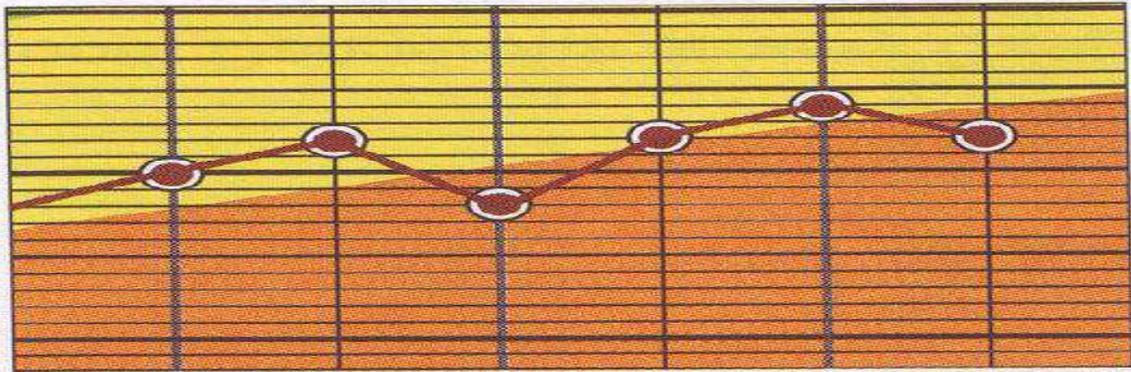
**Fig. 9: Growth curve far above 1<sup>st</sup> curve – Growth problem**



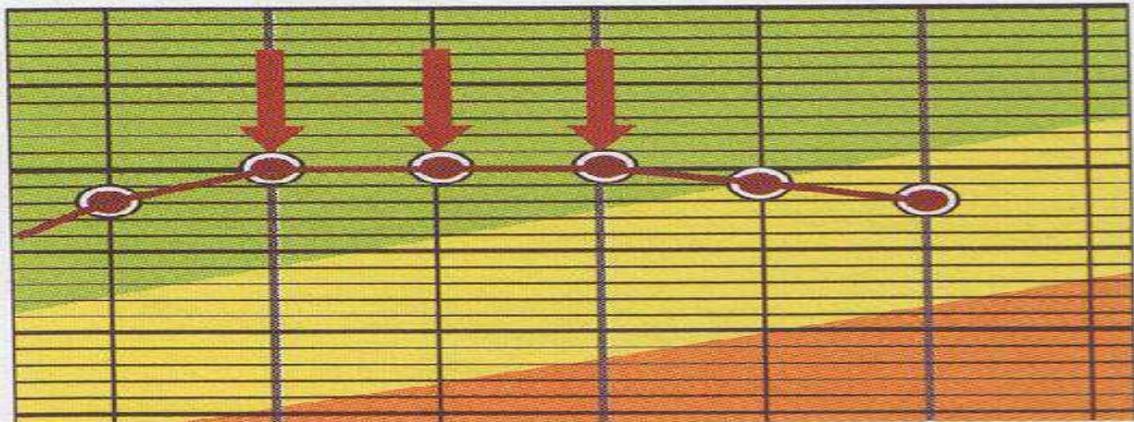
**Fig. 10: Growth curve far below 3<sup>rd</sup> curve – Severely underweight**



**Fig. 11: Growth curve changes direction from normal track**



**Fig. 12: Growth curve crosses a pre-printed curve line**



**Fig. 13: Growth curve remains flat – Stagnation**

### **Using the Information from Growth Curve for Advising Mother**

The most important step in growth monitoring is using the growth curve information of each child to give specific advice to mothers to make sure their children keep growing normally. The growth trend of the child should be discussed with the mother every month immediately after weighing.

The **First Step** in giving specific advice to mothers is to observe the growth curve of the child and determine the growth trend. See if the child has gained adequate weight, not gained weight or lost weight, as compared to the previous month's weight. The growth chart should be shown to the mother and growth trend discussed with her: whether the child is growing normally or not.

The **Second Step** is to ask the mother what has been happening to the child during the last month to make her child's growth pattern happen that way. Too often, we start telling the mother what to do without listening to her and finding out the reasons why the child is not growing. We must remember that the mother knows the most about her child, and she is the person who can make the changes to improve the

child's growth. LISTEN carefully to what the mother has to tell you about what the child has been eating and how much, if the child has been sick, if there has been any other problem.

The **Third Step** is to discuss with the mother specific action(s) she can take to promote her child's growth. This will depend on what the mother tells you, the trend of the growth curve and the age of the child.

Step wise basic principles to be followed in discussing child's growth with mother are as stated below:

- **Asking** the mother important questions and **listening** to her responses.
- **Praising** her when appropriate.
- **Advising** the mother, using simple language, and giving only relevant advice.
- **Checking understanding** to ensure that mother has understood the advice.
- **Follow-up** with mother to ensure and strengthen implementation of advice.

### **Points to be discussed with the Mother of a New Born Baby – 2 Months Old Child**

The mother should be advised that she should-

- put the child to breast as soon as possible, preferably within one hour of birth
- feed the yellowish first milk (colostrum) to give protection to the baby from diseases
- exclusive breastfeeding for 6 months; not to give any other food or drinks and not even water
- feed the breast milk whenever the child wants it, during day and night
- breastfeed till the child is satisfied and the child stops sucking
- continue breast feeding even if the child is sick
- lactating mother should drink plenty of fluids (water, soups, tea, milk, lassi, etc.)
- lactating mother should eat extra food – an extra snack / meal
- get the child immunized - BCG, DPT / Pentavalent , polio immunisation
- get the child weighed soon after birth within 24 hours thereafter every week in the first month and every month in the first three years; and every three months for a child 3-5 years.
- keep the baby and the surroundings clean.

#### **Norms of Supplementary Nutrition at the Anganwadi for Pregnant Women and Lactating Mothers**

Food supplement of 600 Kcal of energy and 18-20 gm of protein per beneficiary per day in the form of Micronutrient-Fortified Food and/or Energy-dense Food needs to be provided as THR. However, in addition to the current mixed practice of giving either dry or raw ration (wheat and rice), which is often consumed by the entire family and not the mother alone, it should be given in the form of Micronutrient-fortified food or Food that may be consumed by the pregnant and lactating mothers rather than the whole family.



# 7

## GUIDELINES ON INTEGRATED MANAGEMENT OF NEONATAL AND CHILDHOOD ILLNESS (IMNCI)



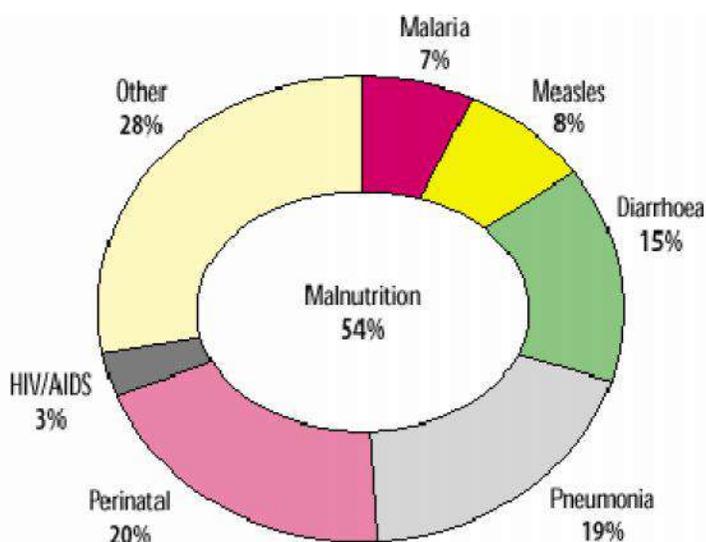
## CHAPTER 7

### GUIDELINES ON INTEGRATED MANAGEMENT OF NEONATAL AND CHILDHOOD ILLNESS (IMNCI)

#### Background

Over the last three decades the annual number of deaths among children less than 5 years of age has decreased by almost a third. However, this reduction has not been evenly distributed throughout the world. Every year more than 10 million children die in developing countries before they reach their fifth birthday. The most common causes of infant and child mortality in developing countries including India are perinatal conditions, acute respiratory infections, diarrhoea, malaria, measles and malnutrition (Fig.11). These are also the commonest causes of morbidity in young children. In India, the common illnesses in children younger than 5 years of age according to the National Family Health Survey III (NFHS-III) data include fever (15% prevalence in the previous 2-week period), acute respiratory infections (6%), diarrhoea (9%) and malnutrition (46%) - and often a combination of these conditions.

**Fig.38: Distribution of 10.5 million Deaths among Children Less than 5 Years Old in All Developing Countries**



Source: WHO World Health Report 1999: Making a difference, Geneva, WHO, 1999)

Infant Mortality Rate (IMR) in India continues to be high at 57/1000 live births and Under Five Mortality Rate (U5MR) at 74/1000 live births (NFHS-III). Neonatal mortality contributes to over 64 per cent of infant deaths and most of these deaths occur during first week of life. Mortality rate in the second month of life is also higher than at later ages. Any health program that aims at reducing IMR needs to address mortality in the first two months of life, particularly in the first week of life.

Projections based on the 1996 analysis *The Global Burden of Disease* indicate that common childhood illnesses will continue to be major contributors to child deaths through the year 2020 unless significantly greater efforts are made to control them. This assumption makes a strong case for introducing new strategies to significantly reduce child mortality and improve child health and development.

### **Rationale for an Evidence-based Syndromic Approach to Case Management**

Many well-known prevention and treatment strategies like UIP, Oral Rehydration and appropriate antibiotic therapy for pneumonia have already proven effective for saving young lives. Even modest improvements in breastfeeding practices have reduced childhood deaths. While each of these interventions has shown great success, accumulating evidence suggests that a more integrated approach to managing sick children is needed to achieve better outcomes. Child health programmes need to move beyond single diseases to addressing the overall health and wellbeing of the child. Because many children present with overlapping signs and symptoms of diseases, a single diagnosis can be difficult and may not be feasible or appropriate. This is especially true for first-level health facilities where examinations involve few instruments, little or no laboratory tests and no X-ray.

During the mid-1990s, the World Health Organization (WHO), in collaboration with UNICEF and many other agencies, institutions and individuals, responded to this challenge by developing a strategy known as the Integrated Management of Childhood Illness (IMCI). Although the major reason for developing the IMCI strategy stemmed from the needs of curative care, the strategy also addresses aspects of nutrition, immunization and other important elements of disease prevention and health promotion. The objectives of the strategy are to reduce death and the frequency and severity of illness and disability, and to contribute to improved growth and development. This strategy has been adapted for India as Integrated Management of Neonatal and Childhood Illness (IMNCI).

The IMNCI clinical guidelines target children less than 5 years old — the age group that bears the highest burden of deaths from common childhood diseases. The guidelines take an evidence-based, syndromic approach to case management that supports the rational, effective and affordable use of drugs and diagnostic tools. Evidence-based medicine stresses the importance of evaluation of evidence from clinical research and cautions against the use of intuition, unsystematic clinical experience and untested patho-physiologic reasoning for medical decision-making. **In situations where laboratory support and clinical resources are limited, the syndromic approach is a more realistic and cost-effective way to manage patients.** Careful and systematic assessment of common symptoms and well-selected clinical signs provides sufficient information to guide rational and effective actions.

An evidence-based syndromic approach can be used to determine the:

- Health problem(s) the child may have;
- Severity of the child's condition;
- Actions that can be taken to care for the child (e.g. refer the child immediately, manage with available resources, or manage at home).

In addition, IMNCI promotes:

- Adjustment of interventions to the capacity and functions of the health system; and
- Active involvement of family members and the community in the health care process.

Parents, if correctly informed and counselled, can play an important role in improving the health status of their children by following the advice given by a health care provider, by applying appropriate feeding practices and by bringing sick children to a health facility as soon as symptoms arise.

**An Orientation to Integrated Management of Neonatal Childhood Illness (IMNCI): Management of Young Infants upto 2 Months of Age**

This section of the module will describe the following tasks and allow you to practice some of them (some will be practiced in the clinic):

- assessing and classifying a young infant for possible bacterial infection
- assessing and classifying a young infant for jaundice
- assessing and classifying a young infant with diarrhoea
- checking for a feeding problem or malnutrition, assessing breastfeeding and classifying feeding, immunization

**Assessment of Sick Young Infants**

Young infants have special characteristics that must be considered when classifying their illnesses. They can become sick and die very quickly from serious bacterial infections. They frequently have only general signs such as few movements, fever or low body temperature. Mild chest indrawing is normal in young infants because their chest wall is soft. For these reasons, you will assess, classify and treat the young infant somewhat differently than an older infant or young child.

The assessment procedure for this age group includes a number of important steps that must be taken by the health care provider, including:

- (1) history taking and communicating with the caretaker about the young infant’s problem;
- (2) checking for possible bacterial infection / jaundice;
- (3) checking for diarrhoea;
- (4) checking for feeding problem or malnutrition;
- (5) checking immunization status; and
- (6) assessing other problems.

<b>Communicating- History Taking</b>	
Possible Bacterial Infection / Jaundice	
Diarrhoea	
Feeding Problem or Malnutrition	
Immunization Status	
Other problem	

## Communicating with the Caretaker

The steps to good communication are:

- ✓ **Listen carefully to what the caretaker says.** This will show them that you take their concerns seriously.
- ✓ **Use words the caretaker understands.** Try to use local words. Avoid medical terminology and unfamiliar words.
- ✓ **Give the caretaker time to answer questions.** S/he may need time to reflect and decide if a clinical sign is present.
- ✓ **Ask additional questions when the caretaker is not sure about the answer.** A caretaker may not be sure if a symptom or clinical sign is present. Ask additional questions to help her/him give clear answers.

When you see the mother and her sick infant:

**Greet the mother appropriately** and ask her to sit with her infant. You need to know the infant's age so you can choose the right case management chart. Look at the infant's record to find the infant's age.

If the infant is up to 2 months, assess and classify the young infant according to the steps on the **ASSESS AND CLASSIFY THE SICK YOUNG INFANT chart**.

- If the child is age 2 months up to 5 years, assess and classify the child according to the steps on the **ASSESS AND CLASSIFY THE SICK CHILD AGE 2 MONTHS UP TO 5 YEARS chart**.

- **Ask the mother what the young infant's problems are.** Record what the mother tells you about the infant's problems. An important reason for asking this question is to open good communication with the mother. Using good communication helps to reassure the mother that her infant will receive good care.
- **Determine if this is an initial or follow-up visit for this problem.** If this is the infant's first visit for this episode of an illness or problem, then this is an initial visit.

If it is an initial visit, follow the sequence of steps on the chart to assess and classify a sick young infant:

- \* Check for signs of possible bacterial infection and jaundice. Then classify the young infant based on the signs found.
- \* Ask about diarrhoea. If the infant has diarrhoea, assess the related signs. Classify the young infant for dehydration. Also classify for persistent diarrhoea and dysentery if present.
- \* Check for feeding problem or malnutrition. This may include assessing breastfeeding. Then classify feeding.
- \* Check the young infant's immunization status.
- \* Assess any other problems.

If you find a reason that a young infant needs urgent referral, you should continue the assessment. However, skip the breastfeeding assessment because it can take some time.

**\* Using the Young Infant Recording Form**

Record the information on Young Infant Recording Form.

The top lines are for recording name, age, weight, temperature, the infant's problems and whether this is an initial or follow up visit.

Below is part of a Young Infant Recording Form.

An example of completing the top of the Recording Form for Jatin is shown as follows:

**CASE:** Jatin is 6 weeks old. He weighs 4.5 kg. His temperature is 37°C. The physician asked "What are the infant's problems?" The mother said "Jatin has diarrhoea and a skin rash for the last 3days". This is the initial visit for this illness.

**MANAGEMENT OF THE SICK YOUNG INFANT AGE UP TO 2 MONTHS**

Name: \_\_\_Jatin\_\_\_\_\_ Age: 6 weeks Weight: 4.5 kg  
Temperature: 37°C

ASK: What are the infant's problems? Diarrhoea and rash Initial visit? ?  
Follow-up Visit?\_\_\_\_\_

## 2.2.2. Checking for Possible Bacterial Infection / Jaundice

Communicating- History Taking	
<b>Possible Bacterial Infection /Jaundice</b>	
Diarrhoea	
Feeding Problem or Malnutrition	
Immunization Status	
Other problem	

While the signs of pneumonia and other serious bacterial infections cannot be easily distinguished in this age group, it is recommended that *all* sick young infants be assessed first for signs of possible bacterial infection and jaundice.

In this step you are looking for signs of bacterial infection, especially a serious infection. A young infant can become sick and die *very quickly* from serious bacterial infections such as pneumonia, sepsis and meningitis.

It is important to assess the signs in the order on the chart, and to keep the young infant calm. The young infant *must be calm* and may be asleep while you assess the first five signs, that is, count breathing and look for chest indrawing, nasal flaring, grunting and bulging fontanelle.

To assess the next few signs, you will pick up the infant and then undress him, look at the skin all over his body and measure his temperature. By this time he will probably be awake. Then you can see whether he is lethargic or unconscious and observe his movements.

### Clinical Assessment

Many clinical signs point to possible bacterial infection in sick young infants. The most informative and easy to check signs are:

**Convulsions (as part of the current illness):** Convulsions may be associated with meningitis or other life-threatening conditions. All young infants who have had convulsions during the present illness should be considered seriously ill. Convulsion in young infants may not be characterized by tonic-clonic movements and up rolling of eyeballs, they may instead present as repetitive jerky movements of the eyes, lip smacking or a staring look.

**Fast breathing:** Count the breaths in one minute to decide if the young infant has fast breathing. The young infant must be quiet and calm when you look and listen to his breathing. If the young infant is frightened, crying or angry, you will not be able to obtain an accurate count of the infant's breaths. Tell the mother you are going to count her infant's breathing. Remind her to keep her infant calm. If the infant is sleeping, do not wake him. To count the number of breaths in one minute, use a watch with a second hand or a digital watch. Put the watch where you can see the second hand and glance at the second hand as you count the breaths the young infant takes in one minute. Look for breathing movement anywhere on the infant's chest or abdomen. Usually you can see breathing movements even on an infant who is dressed. If you cannot see this movement easily, ask the mother to lift the infant's shirt. If the young infant starts to cry, ask the mother to calm the infant before you start counting. If you are not sure

about the number of breaths you counted (for example, if the young infant was actively moving and it was difficult to watch the chest, or if the young infant child was upset or crying), repeat the count.

Young infants usually breathe faster than older children do. The cut-off rate to identify fast breathing in this age group is 60 breaths per minute or more. If the count is 60 breaths or more, the count should be repeated, because the breathing rate of a young infant is often irregular. The young infant may occasionally stop breathing for a few seconds, followed by a period of faster breathing. If the second count is also 60 breaths or more, the young infant

### **LOOK for severe chest indrawing.**

If you did not lift the young infant's shirt when you counted the infant's breaths, ask the mother to lift it now. Look for chest indrawing when the young infant breathes IN. Look at the lower chest wall (lower ribs). The young infant has chest indrawing if *the lower chest wall goes IN when the infant breathes IN*. Chest indrawing occurs when the effort the young infant needs to breathe in is much greater than normal. In normal breathing, the whole chest wall (upper and lower) and the abdomen move OUT when the young infant breathes IN. When chest indrawing is present, the lower chest wall goes IN when the young infant breathes IN.

If you are not sure that chest indrawing is present, look again. If the young infant's body is bent at the waist, it is hard to see the lower chest wall move. Ask the mother to change the infant's position so he is lying flat in her lap. If you still do not see the lower chest wall go IN when the infant breathes IN, the infant does not have chest indrawing. For chest indrawing to be present, it must be clearly visible and present all the time. If you only see chest indrawing when the young infant is crying or feeding, the young infant does not have chest indrawing.

If only the soft tissue between the ribs goes in when the infant breathes in (also called intercostal indrawing or intercostal retractions), the infant does not have chest indrawing. In this assessment, chest indrawing is lower chest wall indrawing. It does not include "intercostal indrawing."

Mild chest indrawing is normal in a young infant because the chest wall is soft. Severe chest indrawing is very deep and easy to see. Severe chest indrawing is a sign of pneumonia and is serious in a young infant.

**Nasal flaring:** Nasal flaring is widening of the nostrils when the young infant breathes in.

**Grunting:** Grunting is the soft, short sounds a young infant makes when breathing out. Grunting occurs when an infant is having difficulty in breathing.

**Bulging fontanelle:** Look at and feel the anterior fontanelle when the infant is not crying and held in an upright position. A bulging fontanelle may indicate that the young infant has meningitis, a possible serious bacterial infection.

**Pus draining from the ear:** Look for pus draining from either of the ears.

**Umbilicus red or draining pus:** There may be some redness of the end of the umbilicus or the umbilicus may be draining pus (The cord usually drops from the umbilicus by one week of age).

**Skin pustules:** Examine the skin on the entire body. Skin pustules are red spots or blisters that contain pus. Presence of 10 or more skin pustules or a large boil indicates a possible serious bacterial infection.

**Temperature:** A thermometer that measures to a minimum of 35 °C can be used to measure temperature. Keep the bulb of the thermometer high in the axilla and then hold the young infant's arm against his body for 5 minutes before reading the temperature. If you do not have a thermometer, feel the infant's abdomen or axilla (underarm) and determine if it feels hot or cold to touch.

Fever or hypothermia may both indicate bacterial infection. Fever (axillary temperature more than 37.5°C) is uncommon in the first two months of life. Fever in a young infant may indicate a serious bacterial infection, and may be the *only* sign of a serious bacterial infection. Young infants can also respond to infection by dropping their axillary temperature to below 35.5°C.

**Lethargy or unconsciousness:** Young infants often sleep most of the time, and this is not a sign of illness. Even when awake, a healthy young infant will usually not watch his mother and a physician/health worker while they talk, as an older infant or young child would. A lethargic young infant is not awake and alert when he should be. He may be drowsy and may not stay awake after a disturbance. If a young infant does not wake up during the assessment, flick the sole 2-3 times. Look to see if the child awakens and whether he stays awake. If the young infant shows no response or does not stay awake after some response, he is lethargic or unconscious.

**Less than normal movement** also indicates a serious condition. Observe the infant's movements. An awake young infant will normally move his arms or legs or turn his head several times in a minute if you watch him closely.

**Jaundice** is the visible manifestation of chemical bilirubinaemia. Yellow discoloration of skin is visible in a neonate when serum bilirubin is more than 5 mg/dl. Almost all neonates may have 'physiological jaundice' during the first week of life due to several physiological changes taking place after birth. Physiological jaundice usually appears between 48-72 hours of age, maximum intensity is seen on 4-5 day in term and 7 day in preterm neonates. Physiological jaundice does not extend to palms and soles, and does not need any treatment.

To look for jaundice, press the infant's skin over the forehead with your fingers to blanch, remove your fingers and immediately look for yellow discoloration under natural light. If there is yellow discoloration, the infant has jaundice.

**Yellow palms and soles:** Press the infant's palms with your fingers to blanch, remove your fingers and look for yellow discoloration under natural light. Repeat the process to look for yellow soles.

Occurrence of jaundice in the first 24 hours of life and yellow discoloration of palms and soles at any time is always pathological and requires urgent referral. Severe jaundice beyond the first week may be a result of cholestasis.

## CLASSIFICATION OF POSSIBLE BACTERIAL INFECTION/ JAUNDICE

All sick young infants should be classified for Possible Bacterial Infection/ Jaundice.

**All sick young infants are classified for Possible Bacterial Infection as follows:**

There are two possible classifications for Possible Bacterial Infection

A sick young infant with **POSSIBLE SERIOUS BACTERIAL INFECTION** is one with any of the following signs: convulsions, fast breathing, severe chest indrawing, nasal flaring, grunting, bulging fontanel, 10 or more many skin pustules or a big boil, fever, hypothermia, lethargy or unconsciousness, or less than normal movements. This infant should be referred urgently to the hospital after being given pre-referral treatment and advice to the mother on keeping the young infant warm while arranging referral, and on the way to the hospital.

<ul style="list-style-type: none"> <li>• Convulsions or</li> <li>• Fast breathing (60 breaths per minute or more) or</li> <li>• Severe chest indrawing or</li> <li>• Nasal flaring or</li> <li>• Grunting or</li> <li>• Bulging fontanelle or</li> <li>• 10 or more skin pustules or a big boil or</li> <li>• If axillary temperature 37.5<sup>0</sup>C or above (or feels hot to touch) or temperature less than 35.5 C (or feels cold to touch)) or</li> <li>• Lethargy or unconsciousness or</li> <li>• Less than normal movement</li> </ul>	<p><b>POSSIBLE SERIOUS BACTERIAL INFECTION</b></p>
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A sick young infant with **LOCAL BACTERIAL INFECTION** is the one with umbilicus red or draining pus or pus discharge from ear or less than 10 skin pustules. This infant may be treated at home with oral antibiotics but should be seen in follow-up after two days.

<ul style="list-style-type: none"> <li>• Umbilicus red or draining pus or</li> <li>• Pus discharge from the ear or</li> <li>• &lt; 10 skin pustules.</li> </ul>	<p><b>LOCAL BACTERIAL INFECTION</b></p>
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A sick young infant with no signs of Possible Serious Bacterial Infection and no signs of Local Bacterial Infection has no classification for Possible Bacterial Infection. In this case, the classification should be left blank.

**Additionally if the sick young infant has Jaundice, classify as follows:**

There are two possible classifications for jaundice.

- A sick young infant with **SEVERE JAUNDICE** is one who has yellow palms and soles or has jaundice at age < 24 hours or at age 14 days or more. This infant should be referred urgently to the hospital after being given treatment to prevent hypoglycemia and advice to the mother on keeping the young infant warm while arranging referral.

<ul style="list-style-type: none"> <li>• Yellow palms and soles or</li> <li>• Age &lt;24 hours</li> <li>• Age 14 days or more</li> </ul>	<b>SEVERE JAUNDICE</b>
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- Asick young infant with JAUNDICE is one who has jaundice but the palms and soles are not yellow and the age of the infant is 1-13 days. This infant should be given home care, but mother should be advised when to return immediately and should be seen in follow-up in two days.

<ul style="list-style-type: none"> <li>• Palms and soles not yellow and</li> <li>• Age 1- 13 days</li> </ul>	<b>JAUNDICE</b>
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**Additionally, sick young infants who have axillary temperature between 35.5-36.4°C(both inclusive) should also be classified as follows:**

There is only one classification.

- Asick young infant with **LOW BODY TEMPERATURE** is one who has temperature less than 36.5°C but above 35.4°C. This could be due to inadequate clothing in cold weather or be a sign of bacterial infection. This infant should be warmed using skin-to skin contact (Kangaroo Mother Care) for 1 hour and then reassessed. If the temperature is below 36.5°C even after 1 hour, the infant should be referred to the hospital. If the temperature becomes normal, this infant should be sent home after advising the mother on how to keep the young infant warm.

<ul style="list-style-type: none"> <li>• Temperature between 35.5- 36.4°C</li> </ul>	<b>LOW BODY TEMPERATURE</b>
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**How to use the classification table:** Whenever you use a classification table, start with the pink rows. If the young infant does not have the severe classifications, look at the yellow rows. For the classification tables that have a green row, if the young infant does not have any of the signs in the pink or yellow rows, select the classification in the green row.

In the classification table, a young infant receives classifications in one colour only. If the young infant has signs from more than one row, always select the most severe (pink) classifications. However, if the classification table has more than one arm, e.g. Possible Bacterial Infection and Jaundice, a young infant can have one classification under Possible Bacterial Infection and another under Jaundice ( if he has jaundice).

**Classify Young Infant for Possible Bacterial Infection/ Jaundice:**

**For all Young Infants:**

1. Look at the pink row:

Does the young infant have any of the signs of possible serious bacterial infection?

If the young infant has any of the signs of possible serious bacterial infection, select the severe classification, POSSIBLE SERIOUS BACTERIAL INFECTION.

2. If the young infant does not have the severe classifications, look at the yellow row. If the young infant has any of the signs in yellow row, select the classification LOCAL BACTERIAL INFECTION.
3. There is no green row under Possible Bacterial Infection.

***For Young Infant with Jaundice:***

1. Look at the pink row:  
If the young infant has any signs of severe jaundice, select the severe classification, SEVERE JAUNDICE.
2. If the young infant does not have any signs of severe classifications, look at the yellow row and select the classification JAUNDICE.
3. There is no green row under Jaundice.

***For Young Infant with Temperature between 35.5–36.4 °C:***

There is only yellow classification for temperature between 35.5–36.4°C, LOW BODY TEMPERATURE.

***Example of the top section of the young infant case recording form***

***CASE:***

Jatin is 6 weeks old. He weighs 4.5 kg. His temperature is 37°C. The physician asked “What are the infant’s problems?” The mother said “Jatin has diarrhoea and a skin rash for the last 3days”. This is the initial visit for this illness.

The physician checks the young infant for signs of possible bacterial infection/jaundice. His mother says that Jatin has not had convulsions. The physician counts 55 breaths per minute. He finds no chest indrawing or nasal flaring. Jatin has no grunting. The fontanelle does not bulge. There is no pus in his ears. The umbilicus is normal. The body temperature is normal. There are 6 skin pustules. Jatin is not lethargic or unconscious, and his movements are normal. He does not have jaundice.

**MANAGEMENT OF THE SICK YOUNG INFANT AGE UP TO 2 MONTHS**

Name: \_\_\_Jatin\_\_\_\_\_ Age: 6 weeks Weight: 4.5 kg

Temperature: 37 °C

ASK: What are the infant’s problems? diarrhoea and rash

Initial visit? Follow-up Visit?\_\_\_\_\_

ASSESS (Circle all signs present)

CLASSIFY

**CHECK FOR POSSIBLE BACTERIAL INFECTION / JAUNDICE**

<p>Has the infant had convulsions?</p>	<p>Count the breaths in one minute.  <u>55</u> breaths per minute            Repeat if elevated _____            Fast breathing?            Look for severe chest indrawing.            Look for nasal flaring.            Look and listen for grunting.            Look and feel for bulging fontanelle.            Look for pus draining from the ear.            Look at the umbilicus. Is it red or draining pus?            Look for <b>skin pustules</b>. Are there 10 or more pustules or a big boil?            Measure axillary temperature (if not possible, feel for fever or lowbody temperature): 37.5°C or above (or feels hot)?            Less than 35.5°C? (or feels cold to touch)            Between 35.5 – 36.4°C            See if young infant is lethargic or unconscious?            Look at young infant's movements. Are they less than normal?            Look for jaundice. Are the palms and soles yellow?</p>	<p>Local            Bacterial            Infection</p>
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**2.2.3. DIARRHOEA**

Communicating- History Taking	
Possible Bacterial Infection /Jaundice	
<b>Diarrhoea</b>	
Feeding Problem or Malnutrition	
Immunization Status	
Other problem	

A young infant is considered to have diarrhoea if the stools have changed from usual pattern and are many and watery (more water than faecal matter). The normally frequent or loose stools of a breastfed baby are not diarrhoea.

A young infant with diarrhoea can be placed in one of the following 3 categories: (1) acute watery diarrhoea; (2) dysentery (bloody diarrhoea); and (3) persistent diarrhoea (diarrhoea that lasts more than 14 days). All young infants with diarrhoea should be assessed for: (a) signs of dehydration; (b) duration of diarrhoea; and (c) blood in the stool.

### **Clinical Assessment**

*All* infants with diarrhoea should be assessed to determine the duration of diarrhoea, if blood is present in the stool and if dehydration is present. A number of clinical signs are used to determine the level of dehydration:

**Infant's general condition:** Depending on the degree of dehydration, an infant with diarrhoea may be lethargic or unconscious or look restless/irritable. Only infants who cannot be consoled and calmed should be considered restless or irritable.

**Sunken eyes:** The eyes of a dehydrated infant may look *sunken*. In a severely malnourished infant who is visibly wasted, the eyes may always look sunken, even if the infant is not dehydrated. Even though the sign "sunken eyes" is less reliable in a visibly wasted infant, it can still be used to classify the infant's dehydration.

**Elasticity of skin:** Check elasticity of skin using the skin pinch test. When released, the skin pinch goes back either *very slowly* (longer than 2 seconds), or *slowly* (skin stays up even for a brief instant), or *immediately*. In an infant with severe malnutrition, the skin may go back slowly even if the infant is not dehydrated. In an overweight infant, or an infant with oedema, the skin may go back immediately even if the infant is dehydrated.

After the infant is assessed for dehydration, the caretaker of an infant with diarrhea should be asked how long the infant has had diarrhoea and if there is blood in the stool. This will allow identification of infants with persistent diarrhoea and dysentery.

#### **Standard Procedures for Skin Pinch Test**

- Locate the area on the child's abdomen halfway between the umbilicus and the side of the abdomen; then pinch the skin using the thumb and first finger.
- Place your hand in such a way that when the skin is pinched, the fold of skin will be in a line up and down the child's body and not across the child's body.
- It is important to firmly pick up all of the layers of skin and the tissue under them for one second and then release it.

### **Classification of Dehydration**

Based on a combination of the above clinical signs, infants presenting with diarrhoea are classified into three categories:

- A young infant with **SEVERE DEHYDRATION** has any two of the following signs: is lethargic or unconscious, has a sunken eye, or a skin pinch goes back very slowly.

<p><b>Two of the following signs:</b></p> <ul style="list-style-type: none"> <li>• Lethargic or unconscious</li> <li>• Sunken eyes</li> <li>• Skin pinch goes back very slowly</li> </ul>	<p><b>SEVERE DEHYDRATION</b></p>
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Patients have severe dehydration if they have a fluid deficit equalling greater than 10 per cent of their body weight. Young infants with severe dehydration require immediate IV infusion, nasogastric or oral fluid replacement according to WHO treatment guidelines described in Plan C (under treatment procedures).

Those with **SOME DEHYDRATION** have any combination of two of the following signs: restless/irritable, sunken eyes, skin pinch goes back slowly.

<p><b>Two of the following signs:</b></p> <ul style="list-style-type: none"> <li>• Restless, irritable</li> <li>• Sunken eyes</li> <li>• Skin pinch goes back slowly</li> </ul>	<p><b>SOME DEHYDRATION</b></p>
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Infants with some dehydration have a fluid deficit equalling 5 to 10 percent of their body weight and require active oral treatment with ORS solution according to WHO treatment guidelines described in Plan B (under treatment procedures).

This classification includes both "mild" and "moderate" dehydration, which are descriptive terms used in some paediatric textbooks.

Those infants with diarrhoea who do not have enough signs to classify as severe or some dehydration are classified as **NODEHYDRATION**.

<p>Not enough signs to classify as some or severe dehydration</p>	<p><b>NO DEHYDRATION</b></p>
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Patients with diarrhoea but no signs of dehydration usually have a fluid deficit less than 5 percent of their body weight. Although these children lack distinct signs of dehydration, they should be given more fluid than usual to prevent dehydration

### **Classification of Persistent Diarrhoea**

Persistent diarrhoea is an episode of diarrhoea, with or without blood, which begins acutely and lasts at least 14 days. It accounts for up to 15 per cent of all episodes of diarrhoea but is associated with 30 to 50 per cent of deaths. Persistent diarrhoea is usually associated with weight loss and often with serious non-intestinal infections. Many infants and children who develop persistent diarrhoea are malnourished, greatly increasing the risk of death. Persistent diarrhoea is uncommon in infants who are exclusively breast-fed.

Diarrhoea lasting 14 days or more	<b>SEVERE PERSISTENT DIARRHOEA</b>
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All young infants with diarrhoea lasting for 14 days or more are considered 'severe' cases and there classified as SEVERE PERSISTENT DIARRHOEA. All young infants with persistent diarrhoea should be referred to hospital. As a rule, treatment of dehydration should be initiated first, unless there is another severe classification.

**Persistent diarrhoea accounts for up to 15 percent of all episodes of diarrhoea but is associated with 30 to 50 per cent of deaths.**

### **Classification of Dysentery**

The mother or caretaker of a child with diarrhoea should be asked if there is blood in the stool. All young infant with blood in the stools are considered 'severe' cases and there classified as SEVERE **DYSENTERY**. All young infants with blood in stool should be referred to hospital. Blood in the stool in a young infant may often be due to systemic or surgical causes rather than gastrointestinal infection.

Blood in the stool	<b>SEVERE DYSENTERY</b>
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### *Example of the top two sections of the young infant case recording form*

**CASE:** Jatin is 6 weeks old. He weighs 4.5 kg. His temperature is 37°C. The physician asked "What are the infant's problems?" The mother said "Jatin has diarrhea and a skin rash for the last 3days". This is the initial visit for this illness.

The physician checks the young infant for signs of possible bacterial infection. His mother says that Jatin has not had convulsions. The physician counts 55 breaths per minute. He finds no chest indrawing or nasal flaring. Jatin has no grunting. The fontanelle does not bulge. There is no pus in his ears. The umbilicus is normal. The body temperature is normal. There are 6 skin pustules. Jatin is not lethargic or unconscious, and his movements are normal. He does not have jaundice.

When the physician asks the mother about Jatin's diarrhoea, the mother replies that it began 3 days ago, and there is no blood in the stool. Jatin is crying. He stopped once when his mother put him to the breast. He began crying again when she stopped breastfeeding. His eyes look normal, not sunken. When the skin of his abdomen is pinched, it goes back slowly.

### **MANAGEMENT OF THE SICK YOUNG INFANT AGE UP TO 2 MONTHS**

Name:    Jatin    Age: 6 weeks Weight: 4.5 kg

Temperature: 37°C

ASK: What are the infant's problems? diarrhoea and rash Initial visit?

Follow-up Visit?           

**ASSESS** (Circle all signs present)

<b>CHECK FOR POSSIBLE BACTERIAL INFECTION / JAUNDICE</b>		
Has the infant had convulsions?	<p>Count the breaths in one minute. <b>55</b> breaths per minute  Repeat if elevated _____ Fast breathing?  Look for severe chest indrawing.</p> <p>Look for nasal flaring.  Look and listen for grunting.  Look and feel for bulging fontanelle.  Look for pus draining from the ear.  Look at the umbilicus. Is it red or draining pus?  Look for <b>skin pustules</b>. Are there 10 or more pustules or a big boil?  Measure axillary temperature (if not possible, feel for fever or low body temperature): 37.5°C or more (or feels hot)?  Less than 35.5°C? (or feels cold to touch)  Between 35.5 - 36.4°C  See if young infant is lethargic or unconscious.  Look at young infant's movements. Are they less than normal?  Look for jaundice. Are the palms and soles yellow?</p>	Local Bacterial Infection
<b>DOES THE YOUNG INFANT HAVE DIARRHOEA?</b>	YES _ NO ___	
?? For how long? <u>3</u> Days ???Is there blood in the stool?	Look at the young infant's general condition. Is the infant: Lethargic or unconscious? <b>Restless and irritable?</b> Look for sunken eyes. Pinch the skin of the abdomen. Does it go back: Very slowly (longer than 2 seconds)? <u>Slowly?</u>	Some Dehydration

#### 2.2.4. Checking for Feeding Problems & Malnutrition

Communicating- History Taking	
Possible Bacterial Infection /Jaundice	
Diarrhoea	
<b>Feeding Problem or Malnutrition</b>	
Immunization Status	
Other problem	

*All* sick young infants seen in outpatient health facilities should be assessed for weight and adequate feeding, as well as for breast-feeding technique.

#### Clinical Assessment

**Assessment of feeding and malnutrition:** Assessment of feeding in young infants has two parts. In the first part you ask the mother questions to determine if she is having difficulty feeding the infant, what the young infant is fed and how often. You also determine weight for age.

In the second part, if an infant has difficulty feeding, or is breastfed less than 8 times in 24 hours, or being given other foods or drinks, or low weight for age, then breastfeeding should be assessed. Assessment of breastfeeding in young infants includes checking if the infant is able to attach, if the infant is suckling effectively (slow, deep sucks, with some pausing), and if there are ulcers or white patches in the mouth (thrush).

#### Part 1

**Is there any feeding difficulty?** Any difficulty mentioned by the mother is important. This mother may need counselling or specific help with a difficulty. If a mother says that the infant is not able to feed, assess breastfeeding or watch her try to feed the infant with a cup to see what she means by this. An infant who is not able to feed may have a serious infection or other life-threatening problem and should be referred urgently to hospital.

**Is the infant breastfed? If yes, how many times in 24 hours?** The recommendation is that the young infant be breastfed as often and for as long as the infant wants, day and night. This should be 8 or more times in 24 hours.

**Does the infant usually receive any other foods or drinks? If yes, how often?** A young infant should be exclusively breastfed. Find out if the young infant is receiving any other foods or drinks such as other milk, juice, tea, thin porridge, dilute cereal, or even water. Ask how often he receives it and the amount. You need to know if the infant is mostly fed on other foods.

**What do you use to feed the infant?** If an infant takes other foods or drinks, find out if the mother uses a feeding bottle or cup.

**Determine weight for age.** Weight for age compares the young infant's weight with the infants of the same age in the reference population (WHO-NCHS reference). The **VERY LOW WEIGHT FOR AGE LINE** identifies children whose weight is –3 standard deviations below the mean weight of infants in the

reference population (Z score <-3). The *LOW WEIGHT FOR AGE LINE* identifies children whose weight is -2 standard deviations below the mean weight of infants in the reference population (Z score <-2).

Infants who are Very Low Weight for Age should be referred to a hospital. Infants who are Low Weight for Age need special attention to how they are fed and on keeping them warm.

The age of a young infant is usually stated in weeks; therefore an inset weight for age chart for young infants up to 2 months has also been given in weeks. To determine weight for age:

1. Calculate the infant's age in weeks.
2. Weigh the young infant if he has not already been weighed today. Use a scale which you know gives accurate weights. The infant should wear light clothing when he is weighed. Ask the mother to help remove any sweater or shoes.
3. Use the weight for age chart to determine weight for age.
  - Look at the left-hand axis to locate the line that shows the young infant's weight.
  - Look at the bottom axis of the chart to locate the line that shows the young infant's age in months.
  - Find the point on the chart where the line for the young infant's weight meets the line for the infant's age.
4. Decide if the point is **below** the Very Low Weight for Age line, **between** the Very Low and Low Weight for Age lines or **above** the Low Weight for Age line.
  - If the point is **below** the Very Low Weight for Age line, the young infant is **very low weight for age**.
  - If the point is **above** or on the Very Low Weight for Age line and below the Low Weight for Age line, the young infant is **low weight for age**.
  - If the point is **above** or on the Low Weight for Age line, the young infant is **not low weight for age**.

## ***Part 2***

### ***How to assess breastfeeding***

First decide whether to assess the infant's breastfeeding. Do not assess Breastfeeding, if the young infant

- is exclusively breastfed without difficulty and is not low weight for age
- is not breastfed at all.
- has a serious problem requiring urgent referral to a hospital

In these situations, classify that feeding based on the information that you already have.

If the mother's answers or the infant's weight indicates a difficulty, observe a breastfeed as described below. Low weight for age is often due to low birth weight. Low birth weight infants are particularly likely to have a problem with breastfeeding. Assessing breastfeeding requires careful observation.

### ***Has the infant breastfed in the previous hour?***

If yes, ask the mother to wait and tell you when the infant is willing to feed again. In the meantime, complete the assessment by assessing the infant's immunization status. If the infant has not fed in the previous hour, he may be willing to breastfeed. Ask the mother to put her infant to the breast. Observe a whole breastfeed if possible, or observe for at least 4 minutes. Sit quietly and watch the infant breastfeed.

### ***Is the infant able to attach?***

The four signs of good attachment are (If all of these four signs are present, the infant has good attachment:

- chin touching breast (or very close)
- mouth wide open
- lower lip turned outward
- more areola visible above than below the mouth

If a very sick infant cannot take the nipple into his mouth and keep it there to suck, he has no attachment at all. He is not able to breastfeed at all. If an infant is not well attached, the results may be pain and damage to the nipples. Or the infant may not remove breast milk effectively, which may cause engorgement of the breast. The infant may be unsatisfied after breastfeeds and want to feed very often or for a very long time. The infant may get too little milk and not gain weight, or the breast milk may dry up. All these problems may improve if attachment can be improved.

### ***Is the infant suckling effectively? (That is, slow deep sucks, sometimes pausing)***

The infant is suckling effectively if he suckles with slow deep sucks and sometimes pauses. You may see or hear the infant swallowing. If you can observe how the breastfeed finishes, look for signs that the infant is satisfied. If satisfied, the infant releases the breast spontaneously (that is, the mother does not cause the infant to stop breastfeeding in any way). The infant appears relaxed, sleepy, and loses interest in the breast.

An infant is not suckling effectively if he is taking only rapid, shallow sucks. You may also see indrawing of the cheeks. You do not see or hear swallowing. The infant is not satisfied at the end of the feed, and may be restless. He may cry or try to suckle again, or continue to breastfeed for a long time.

An infant who is not suckling at all is not able to suck breast milk into his mouth and swallow. Therefore he is not able to breastfeed at all. If a blocked nose seems to interfere with breastfeeding, clear the infant's nose. Then check whether the infant can suckle more effectively.

***Ulcers or white patches in the mouth (thrush)***

Look inside the mouth at the tongue and inside of the cheek. Thrush looks like milk curds on the inside of the cheek, or a thick white coating of the tongue. Try to wipe the white off. The white patches of thrush will remain.

**Classification of Feeding Problems and Malnutrition**

Based on an assessment of feeding and weight, a sick young infant may be classified into three categories:

**NOT ABLE TO FEED – POSSIBLE SERIOUS BACTERIAL INFECTION OR SEVERE**

**MALNUTRITION:** The young infant who is not able to feed, or not attaching to the breast at all or not suckling effectively at all or very low weight for age, has a life-threatening problem. This could be caused by a bacterial infection or another illness. A young infant who is very low weight for age is at a high risk of death. The infants who are not able to feed or have very low weight for age should be referred to a hospital after receiving the same pre-referral treatment as infants with **POSSIBLE SERIOUS BACTERIAL INFECTION**.

<ul style="list-style-type: none"> <li>• Not able to feed or</li> <li>• No attachment at all or</li> <li>• Not suckling at all or</li> <li>• Very low weight for age</li> </ul>	<p><b>NOT ABLE TO FEED – POSSIBLE SERIOUS BACTERIAL INFECTION OR SEVERE MALNUTRITION</b></p>
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Infants with **FEEDING PROBLEMS OR LOW WEIGHT** are those infants who are not attaching well to the breast, not suckling effectively, getting breast milk fewer than eight times in 24 hours, receiving other foods or drinks than breast milk, or thrush (ulcers/white patches in mouth) or those who have low weight for age or where the mother has breast or nipple problems.

<ul style="list-style-type: none"> <li>• Not well attached to breast or</li> <li>• Not suckling effectively or</li> <li>• Less than 8 breastfeeds in 24 hours or</li> <li>• Receiving other foods or drinks or</li> <li>• Thrush (ulcers or white patches in mouth)</li> <li>• Low weight for age</li> <li>• Breast or nipple problems</li> </ul>	<p><b>FEEDING PROBLEM OR LOW WEIGHT</b></p>
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Appropriate counselling of the mother should be based on the identified feeding problem. Ensure follow-up for any feeding problem or thrush in two days and follow up low weight for age in 14 days.

Infants with **NO FEEDING PROBLEM** are those who are breastfed exclusively at least eight times in 24 hours and whose weight is not classified as low weight for age. The young infant's weight is not necessarily normal for age but the infant is not in the high risk category.

• Not low weight for age and no other signs of inadequate feeding	<b>NO FEEDING PROBLEM</b>
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### 2.2.5 Checking Immunization Status

Immunization status should be checked in all sick young infants. A young infant who is not sick enough to be referred to a hospital should be given the necessary immunizations before s/he is sent home.

<b>IMMUNIZATION SCHEDULE:</b>	
<b>AGEVACCINE</b>	
Birth	BCG OPV 0
6 weeks	DPT 1 OPV 1 HEP- B 1

**Note: Do not give OPV 0 to an infant who is more than 14 days old. If an infant has not received OPV 0 by the time s/he is 15 days old, OPV should be given at age 6 weeks old as OPV 1.**

### 2.2.6 Assessing Other Problems

All sick young infants need to be assessed for other potential problems mentioned by the mother or observed during the examination. If a potentially serious problem is found or there is no means in the clinic to help the infant, s/he should be referred to hospital.

A recording form for sick young infant's age up to 2 months is shown on the next page.

**CASE:** Jatin is 6 weeks old. He weighs 4.5 kg. His temperature is 37°C. The physician asked "What are the infant's problems?" The mother said "Jatin has diarrhea and a skin rash for the last 3 days". This is the initial visit for this illness.

The physician checks the young infant for signs of possible bacterial infection/jaundice. His mother says that Jatin has not had convulsions. The physician counts 55 breaths per minute. He finds no chest indrawing or nasal flaring. Jatin has no grunting. The fontanelle does not bulge. There is no pus in his ears. The umbilicus is normal. The body temperature is normal. There are 6 skin pustules. Jatin is not lethargic or unconscious, and his movements are normal. He does not have jaundice.

When the physician asks the mother about Jatin's diarrhoea, the mother replies that it began 3 days ago, and there is no blood in the stool. Jatin is crying. He stopped once when his mother put him to the breast.

He began crying again when she stopped breastfeeding. His eyes look normal, not sunken. When the skin of his abdomen is pinched, it goes back slowly.

Jatin's mother says that she has no difficulty feeding him. He breastfeeds about 5 times in 24 hours. She gives him other foods and drinks. The physician uses the Weight for Age chart and determines that Jatin's weight (4.5 kg.) is not low for his age (6 weeks).

Since Jatin is feeding less than 8 times in 24 hours and is taking other foods or drinks, the physician decides to assess breastfeeding. Jatin's mother agrees to breastfeed now. The physician observes that Jatin's chin is touching the breast. His mouth is wide open and his lower lip is turned outward. More areola is visible above than below the mouth. His sucks are deep and slow. When Jatin stops breastfeeding, the physician looks in his mouth. He sees no ulcers or white patches in his mouth.

***EXAMPLE OF THE TOP THREE SECTIONS OF THE YOUNG INFANT CASE RECORDING FORM***

**MANAGEMENT OF THE SICK YOUNG INFANT AGE UP TO 2 MONTHS**

Name: *Jatin* Age: 6 weeks\_\_ Weight: 4.5 kg Temperature 37 °C **Date:**

ASK: What are the infant's problems? \_diarrhoea and rash\_\_\_\_\_ Initial visit? \_\_v\_ Follow-up Visit? \_\_\_\_\_

**ASSESS** (Circle all signs present)

**CLASSIFY**


## 2.3 Treatment of Sick Young Infants

The first step is to **IDENTIFY TREATMENT** required for the young infant according to the classification. All the treatments required are listed in the "Identify Treatment" column of the *ASSESS & CLASSIFY THE SICK YOUNG INFANT* chart. If a sick young infant has more than one classification, treatment required for all the classifications must be identified.

For some young infants, the *ASSESS & CLASSIFY THE SICK YOUNG INFANT* chart says "Refer **URGENTLY** to hospital." By hospital, we mean a health facility with inpatient beds, supplies and expertise to treat a very sick young infant. Referral may mean admission to the inpatient department of the same facility where the young infant has been examined as an outpatient.

### 2.3.1. Referral of Young Infants up to 2 Months of Age

*All infants and children with a severe classification (pink) are referred to a hospital* as soon as assessment is completed and necessary pre-referral treatment is administered.

**Note:** If an infant only has severe dehydration and no other severe classification, and IV infusion is available in the outpatient clinic, an attempt should be made to rehydrate the sick infant.

Successful referral of severely ill infants to the hospital depends on effective counselling of the caretaker. If s/he does not accept referral, available options (to treat the infant by repeated clinic or home visits) should be considered. If the caretaker accepts referral, s/he should be given a short, clear referral note, and should get information on what to do during referral transport, particularly if the hospital is distant.

#### **The Referral Note Should Include:**

- Name and age of the infant;
- Date and time of referral;
- Description of the child's problems;
- Reason for referral (symptoms and signs leading to severe classification);
- Treatment that has been given;
- Any other information that the referral health facility needs to know in order to care for the infant, such as earlier treatment of the illness or any immunizations needed.

The first step is to give urgent pre-referral treatment(s). Possible pre-referral treatments include:

- First dose of intramuscular or oral antibiotics
- Keeping the infant warm on the way to the hospital
- Prevention of hypoglycaemia with breast milk or sugar water
- Frequent sips of ORS solution on the way to the hospital

*Non-urgent treatments*, e.g. wicking a draining ear or applying gentian violet paint on skin pustules, should be deferred to avoid delaying referral or confusing the caretaker.

If an infant does not need *urgent* referral, check to see if the infant needs non-urgent referral for further assessment. These referrals are not as urgent. Other necessary treatments may be done before referral.

### 2.3.2. Counselling a Mother or Caretaker

#### Use Good Communication Skills

It is important to have good communication with the infant's mother or caretaker from the beginning of the visit.

- **Ask** and **Listen** to find out what the infant's problems are and what the mother is already doing for the infant.
- **Praise** the mother for what she has done well.
- **Advise** her how to care for her infant at home.
- **Check** the mother's understanding.

#### **Ask and listen to find out what the infant's problems are and what the mother is already doing for her child**

You have already learned the importance of asking questions to assess the infant's problems. Listen carefully to find out what the infant's problems are and what the mother is already doing for her child. Then you will know what she is doing well, and what practices need to be changed.

#### **Praise the mother for what she has done well**

It is likely that the mother is doing something helpful for the infant, for example, breastfeeding. Praise the mother for something helpful she has done. Be sure that the praise is genuine, and only praise actions that are indeed helpful to the infant.

#### **Advice the mother how to care for her child at home**

Limit your advice to what is relevant to the mother at this time. Use language that the mother will understand. If possible, use pictures or real objects to help explain. For example, show amounts of fluid in a cup or container.

Advice against any harmful practices that the mother may have used. When correcting a harmful practice, be clear, but also be careful not to make the mother feel guilty or incompetent. Explain why the practice is harmful.

Some advice is simple. For example, you may only need to tell the mother to return with the infant for follow-up in 2 days. Other advice requires that you teach the mother how to do a task. Teaching **how to do** a task requires several steps.

Think about how you learned to write, cook or do any other task that involved special skills. You were probably first given instruction. Then you may have watched someone else. Finally you tried doing it yourself.

When you teach a mother how to treat an infant, use 3 basic *teaching steps*:

1. Give **information**.
2. Show an **example**.
3. Let her **practice**.

**Give information:** Explain to the mother how to do the task. For example, explain to the mother how to prepare **ORS**

**Show an example:** Show how to do the task. For example, show the mother a packet of **ORS** and how to mix the right amount of water with **ORS**

**Let her practice:** Ask the mother to do the task while you watch. For example, have the mother mix **ORS** solution. It may be enough to ask the mother to describe how she will do the task at home.

Letting a mother *practice* is the most important part of teaching a task. If a mother **does** a task while you observe, you will know what she understands and what is difficult. You can then help her do it better. The mother is more likely to remember something that she has **practiced** than something that she has heard.

**When teaching the mother:**

- Use words that she understands.
- Use teaching aids that are familiar, such as common containers for mixing ORS solution.
- Give feedback when she practices. Praise what was done well and make corrections.
- Allow more practice, if needed.
- Encourage the mother to ask questions. Answer all questions.

**Check the mother’s understanding**

Ask questions to find out what the mother understands and what needs further explanation. Avoid asking leading questions (that is, questions which suggest the right answer) and questions that can be answered with a simple yes or no.

Examples of good checking questions are: “What foods will you give your child?” “How often will you give them?” If you get an unclear response, ask another checking question. Praise the mother for correct understanding or clarify your advice as necessary.

After you teach a mother how to treat her child, you want to be sure that she understands how to give the treatment correctly. Checking questions find out what a mother has learnt.

An important communication skill is knowing how to ask good checking questions. A checking question must be phrased so that the mother answers more than “yes” or “no”. Good checking questions require that she describe **why**, **how** or **when** she will give a treatment.

From her answer you can tell if she has understood you and learned what you taught her about the treatment. If she cannot answer correctly, give more information or clarify your instructions. For example, you taught a mother how to give an antibiotic. Then you ask:

*“Do you know how to give your infant his medicine?”*

The mother would probably answer “yes” whether she understands or not. She may be embarrassed to say she does not understand. However, if you ask a few good checking questions, such as:

“When will you give your infant the medicine?”  
 “How many tablets will you give each time?”  
 “For how many days will you give the tablets?”

You are asking the mother to repeat back to you instructions that you have given her. Asking good checking questions helps you make sure that the mother learns and remembers how to treat her infant.

The following questions check a mother’s understanding. “Good checking questions” require the mother to describe **how** she will treat her child. They begin with question words, such as **why, what, how, when, how many, and how much**. The “poor questions”, answered with a “yes” or “no”, do not show you how much a mother knows.

After you ask a question, pause. Give the mother a chance to think and then answer. Do not answer the question for her. Do **not** quickly ask a different question.

Asking checking questions requires patience. The mother may know the answer, but she may be slow to speak. She may be surprised that you really expect her to answer. She may fear her answer will be wrong. She may feel shy to talk to an authority figure. Wait for her to answer. Give her encouragement.

<b>Good Checking Questions</b>	<b>Poor Questions</b>
<b>How</b> will you prepare the ORS solution?	Do you remember how to mix the ORS?
<b>How often</b> should you breastfeed your child?	Should you breastfeed your child?
<b>On what part of the eye</b> do you apply the ointment?	Have you used ointment on your child before?
<b>How much</b> extra fluid will you give after each loose stool?	Do you know how to give extra fluids?
<b>Why</b> is it important for you to wash your hands?	Will you remember to wash your hands?

If the mother answers incorrectly or says she does not remember, be careful not to make her feel uncomfortable. Teach her to give the treatment again. Give more information, examples or practice to make sure she understands. Then ask her good checking questions again.

A mother may understand but may say that she cannot do as you ask. She may have a problem or objection. Common problems are lack of time or resources to give the treatment. A mother may object that her sick infant was given an oral drug rather than an injection, or a home remedy rather than a drug.

Help the mother think of possible solutions to her problems and respond to her objections. For example, if you ask:

“What container will you use to measure 1 litre of water for mixing ORS?” The mother may answer that she does not have a 1-litre container at home. Ask her what containers she does have at home. Show her how to measure 1 litre of water in her container. Explain how to mark the container at 1 litre with an appropriate tool or how to measure 1 litre using several smaller containers.

### **When checking the mother's understanding:**

- Ask questions that require the mother to explain what, how, how much, how many, when, or why. Do not ask questions that can be answered with just a "yes" or "no".
- Give the mother time to think and then answer.
- Praise the mother for correct answers.
- If she needs it, give more **information, examples or practice**

Counselling the mother or caretaker of a sick young infant includes the following essential elements:

- Teach how to give oral drugs (ANM to give medicines)
- Teach how to treat local infection. (ANM to give medicines)
- Teach correct positioning and attachment for breastfeeding.
- Teach how to manage breast or nipple problem
- Counsel on other feeding problems.
- Advise when to return.
- Counsel the mother about her own health.

### **Teach correct positioning and attachment for breastfeeding**

There are several reasons that an infant may be poorly attached or not able to suckle effectively. He may have had bottle feeds, especially in the first few days after delivery. His mother may be inexperienced. She may have had some difficulty and nobody to help or advise her. For example, perhaps the infant was small and weak, the mother's nipples were flat or there was a delay starting to breastfeed.

The infant may be poorly positioned at the breast. Positioning is important because poor positioning often results in poor attachment, especially in younger infants. If the infant is positioned well, the attachment is likely to be good.

Good positioning is recognized by the following signs:

- Infant's neck is straight or bent slightly back,
- Infant's body is turned towards the mother,
- Infant's body is close to the mother, and
- Infant's whole body is supported.

Poor positioning is recognized by any of the following signs:

- Infant's neck is twisted or bent forward,
- Infant's body is turned away from mother,
- Infant's body is not close to mother, or
- Only the infant's head and neck are supported

When the infant is suckling well, explain to the mother that it is important to breastfeed long enough at each feed. She should not stop the breastfeeding before the infant wants to.

*Baby's body close, facing breast*



*Baby's body away from mother, neck twisted*



If in your assessment of breastfeeding you found any difficulty with attachment or suckling, help the mother position and attach her infant better. Make sure that the mother is comfortable and relaxed, for example, sitting on a low seat with her back straight. Then follow the steps in the treatment box (see chart book page 8).

Always observe a mother breastfeeding before you help her, so that you understand her situation clearly. Do not rush to make her do something different. If you see that the mother needs help, first say something encouraging, like:

"She really wants your breast milk, doesn't she?"

Then explain what might help and ask if she would like you to show her. For example, say something like, "Breastfeeding might be more comfortable for you if your baby took a larger mouthful of breast. Would you like me to show you how?"

If she agrees, you can start to help her.

As you show the mother how to position and attach the infant, be careful not to take over from her. Explain and demonstrate what you want her to do. Then let the mother position and attach the infant herself.

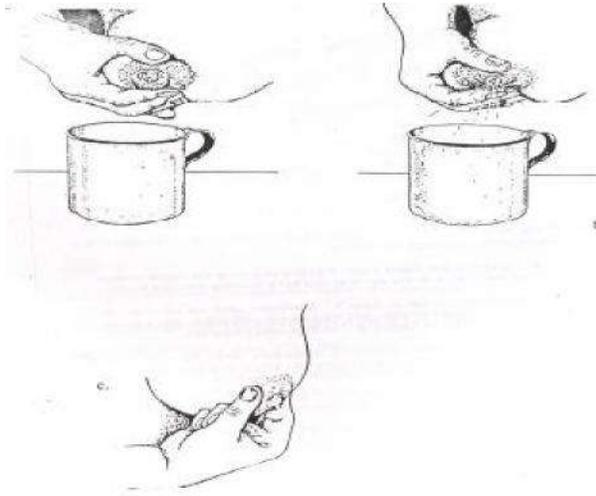
Then look for signs of good attachment and effective suckling again. If the attachment or suckling is not good, ask the mother to remove the infant from her breast and to try again.

### ***Teach the mother to express breast milk and feed with a cup and spoon***

Expression of breast milk is usually required for feeding infants who do not suck effectively but are able to swallow effectively (as in the case of low birth weight babies) or when there are breast or nipple problems. The expressed breast milk is usually fed with a cup and spoon.

The mother is made to sit comfortably and hold the cup near her breast with one hand. With the other hand, the mother is asked to place her thumb above and her first finger below the nipple and areola. Then she is asked to push her thumb and finger slightly inwards towards the chest wall and then press the

nipple between the thumb and finger. She must repeatedly press and release. This repeated action would allow milk to drip out. She must repeat this action also from the sides of the areola to make sure that milk is expressed from all quadrants. Expression must be continued for 3-5 minutes until the milk flow slows down. The mother must perform the expression form both breasts and it may take her about 15-20 minutes to express both breasts completely.



For feeding the baby small amounts of the expressed breast milk are taken into the spoon or paladai and directly poured from the angle of the mouth. One must wait for the baby to swallow the milk before more milk is poured into the mouth.

**Treat thrush with gentian violet.** Teach the mother to treat thrush with half -strength gentian violet (0.25%). Tell the mother that her infant will start feeding normally sooner if she paints the mouth ulcers in her infant's mouth. Ask her to use a clean cloth or a cotton-tipped stick to paint gentian violet on the mouth ulcers and put a small amount of gentian violet on the cloth or stick. Tell the mother the frequency and duration of treatment (see chart book page 7).

Show the mother how to paint half of the infant's mouth with half -strength gentian violet. Ask the mother to practice. Watch her paint the rest of the mouth with gentian violet. Comment on the steps she did well and those that need to be improved.

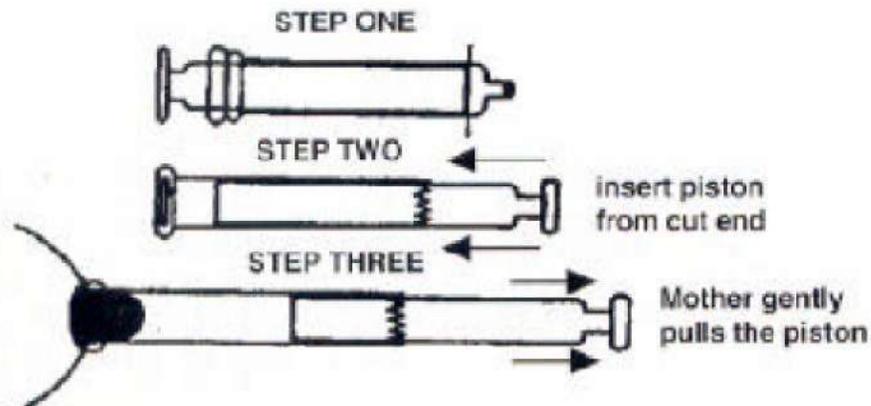
Give the mother a bottle of half-strength gentian violet to take home. Before the mother leaves, ask checking questions. If she anticipates any problems providing the treatment, help her to solve them.

### **Teach the mother to manage breast and nipple problems**

During the first few weeks after birth, breast and nipple problems can be important causes of feeding problems and poor growth in young infants. Some of the common problems are flat or inverted nipples, sore nipples or breast abscess in the mother.

**Flat or inverted nipples:** If the mother has flat or inverted nipples, the baby can have difficulty in attaching to the breast, which can result in decreased lactation and poor weight gain in the infant. The nipple should be everted with fingers before the infant is put to breast during a feed. This will help the infant to attach well onto the breast. After a few days the nipples will remain everted.

## Treatment of inverted nipple (using syringe method)



**Sore nipples:** Sore nipples are almost always due to faulty attachment of the infant onto the mother's breast. The mother should be helped to ensure that attachment and position are correct. To alleviate the discomfort due to soreness, the mother should be advised to apply breast milk on the affected nipple. If the baby's sucking causes a lot of discomfort to the mother in spite of correct positioning, the mother should be advised to express the breast milk and feed it with a cup and spoon to the infant, till she is able once again able to breast feed the infant without much discomfort (this would usually take about 1-2 days).

**Engorged breasts and Breast abscess:** Engorged breasts are swollen, hard and tender. Breast abscess is often due to breast engorgement and rarely due to primary infection of the breast. The mother should be encouraged to feed from the unaffected breast and referred to a health facility for treatment of the abscess. If the amount of milk from a single breast is inadequate, then undiluted animal milk with added sugar can be fed with cup and spoon.

### Counselling about Other Feeding Problems

- If a mother is breastfeeding her infant less than 8 times in 24 hours, advise her to increase the frequency of breastfeeding. Breastfeed as often and for as long as the infant wants, day and night.
- If the infant receives other foods or drinks, counsel the mother about breastfeeding more, reducing the amount of the other foods or drinks, and if possible, stopping altogether. Advise her to feed the infant any other drinks from a cup, and not from a feeding bottle.
- If the mother does not breastfeed at all, consider referring her for breastfeeding counselling and possible re-lactation. If the mother is interested, a breastfeeding counsellor may be able to help her to overcome
- Difficulties and begin breastfeeding again.

- Advise a mother who does not breastfeed about choosing and correctly preparing dairy/locally appropriate animal milk. Also advise her to feed the young infant with a cup, and not from a feeding bottle.
- Follow -up any young infant with a feeding problem in 2 days. This is especially important if you are recommending a significant change in the way the infant is fed.

**Advise when to return**

**A) IMMEDIATELY**

Advise to return immediately if the infant has any of these signs:

- Breastfeeding or drinking poorly
- Becomes sicker
- Develops a fever or feels cold to touch
- Fast breathing
- Difficult breathing
- Yellow palms and soles (if young infant has jaundice)
- Diarrhoea with blood in stool

**B) FOR FOLLOW-UP VISIT**

If the infant has:	Return for follow -up not later than
LOCAL BACTERIAL INFECTION JAUNDICE DIARRHOEA ANY FEEDING PROBLEM THRUSH	2 days
LOW WEIGHT FOR AGE	14 days

**C) NEXT WELL-CHILD VISIT**

Advise when to return for the next immunization according to immunization schedule.

**2.2.4. FOLLOW -UP CARE**

If the child *does not have a new* problem, use the IMNCI follow-up instructions for each specific problem:

- Assess the child according to the instructions;
- Use the information about the child's signs to select the appropriate treatment;
- Give the treatment.

IMNCI chart booklet contains detailed instructions on how to conduct follow –up visits for different diseases (see chart book page 11). Follow-up visits are recommended for young infants who are classified as:

- Local bacterial infection
- Feeding problem or low weight (including thrush)

### **To Sum up**

Child health programmes need to move beyond single diseases to addressing the overall health and wellbeing of the child. Because many children present with overlapping signs and symptoms of diseases, a single diagnosis can be difficult and may not be feasible or appropriate. This is especially true for first level health facilities where examinations involve few instruments, little or no laboratory tests and no X-ray.

The IMNCI strategy includes both preventive and curative interventions that aim to improve practices in health facilities, the health system and at home.



## WHEN TO RETURN IMMEDIATELY



**BRING ANY SICK CHILD**



High temperature



Frequent diarrhoea



Vomiting 4 times or more

**BRING CHILD WITH DIZZINESS**



Head in hand



Ironing posture

**BRING CHILD WITH COUGH**



Endless cough



Fast breaths

**BRING YOUR INFANT (6/12 months)**

From febrile or coughing more than 3 days  
 From loose stool  
 Develops a fever or high continuous fever  
 Vomiting 4 times or more  
 Vomiting 4 times or more  
 Yellow green stool or if stool is black  
 Dehydration (sunken fontanel)

**FLUIDS**

**FOR ANY SICK CHILD**

- Breastfeed frequently
- breastfeed OR soap rice water, porridge/soft or clear soup

**FOR CHILD WITH DIARRHOEA**

Give more fluid can be lifesaving!

- Give these extra fluids as much as the child will take:
  - ORS Solution
  - Food based fluids
  - soft ice
  - soup
  - rice water
  - yeast drink
  - Clear water
- Breastfeed more frequently and longer at each feeding
- Continue giving extra fluids until diarrhoea stops

**IMMUNIZATIONS, VITAMIN A & IFA SUPPLEMENTATION**

*(Based on Date)*

BCG	DPT 1	DPT 2	DPT 3	DPT Booster	DT
<input type="checkbox"/>					
OPV 0	OPV 1	OPV 2	OPV 3	OPV	IFA
<input type="checkbox"/>					
MR B-1	MR B-2	MR B-3	MEASLES	VITAMIN A	
<input type="checkbox"/>					

Return for next immunization or vitamin A or IFA supplementation on: \_\_\_\_\_

Name \_\_\_\_\_ Age \_\_\_\_\_ Date of Birth \_\_\_\_\_

Address \_\_\_\_\_

Always bring the card with you to the clinic.



# 8

## INTERVENTIONS TO PROMOTE MATERNAL, NEWBORN AND NEONATAL HEALTH



## CHAPTER 8

### INTERVENTIONS TO PROMOTE MATERNAL, NEWBORN AND NEONATAL HEALTH

#### 8.1 Interventions & Strategies under Ministry of Women and Child Development for Promoting Health of Newborn and Neonates

The various Ministries under the Government of India are implementing various child centric policies and programmes which vigorously attend to the issues related to child health.

**8.1.1 National Policy on Children 2013:** India is home to the largest child population in the world. Declaring its children as the nation's "supremely important asset" in the National Policy for Children, 1974, the Government of India reiterated its commitment to secure the rights of its children by ratifying related international conventions and treaties. The National Charter for Children, 2003 adopted on 9<sup>th</sup> February 2004, underlined the intent to secure for every child, its inherent right to be a child and enjoy a healthy and happy childhood, to address the root causes that negate the healthy growth and development of children, and to awaken the conscience of the community in the wider societal context to protect children from all forms of abuse, while strengthening the family, society and the Nation. To affirm the Government's commitment to the rights based approach in addressing the continuing and emerging challenges in the situation of children, the Government of India adopted the National Policy for Children, 2013. This policy affirmed that survival, health, nutrition, development, education, protection and participation are the undeniable rights of every child and are the key priorities of the policy. The policy emphasized that the right to life, survival, health and nutrition is an inalienable right of every child and will receive the highest priority.

**8.1.2 National Policy on Early Childhood Care and Education (ECCE):** The Ministry of Women and Child Development have formulated the National Early Childhood Care and Education (ECCE) policy and the same has been notified in October 2013. The policy lays down the way forward for a comprehensive approach towards ensuring a sound foundation for survival, growth and development of child with focus on care and early learning of every child. It recognizes the synergistic and interdependent relationship between the health, nutrition, psycho-social and emotional needs of the child.

#### 8.1.3 Integrated Child Development Services

**The Integrated Child Development Services (ICDS) Scheme:** The Integrated Child Development Services (ICDS) Scheme is one of the flagship programmes of the Government of India and represents one of the world's largest programmes for Early Childhood Development. The beneficiaries under the Scheme are children in the age group of 0-6 years, pregnant women and lactating mothers. This Scheme has

improved over the years and restructured to address the emerging issues and demands of the time, and has evolved as the foremost tool of to break the vicious circle of child morbidity and mortality along with other objectives. The objectives of the Scheme are:

- I. To improve the nutritional and health status of children in the age-group 0-6 years;
- II. To lay the foundation for proper psychological, physical and social development of the child;
- III. To reduce the incidence of mortality, morbidity, malnutrition and school dropout;
- IV. To achieve effective co-ordination of policy and implementation amongst the various departments to promote child development; and
- V. To enhance the capability of the mother to look after the normal health and nutritional needs of the child through proper nutrition and health education.

The components of Supplementary Nutrition, Immunisation, Health Check- up and Referral Services are targeting children less than 6 years along with pregnant and lactating mothers. The supplementary nutrition includes supplementary feeding and growth monitoring and prophylaxis against vitamin A deficiency and control of nutritional anaemia. Immunisation of pregnant women and infants protects children from six vaccine preventable diseases i.e. poliomyelitis, diphtheria, pertussis, tetanus, tuberculosis and measles. Immunisation of pregnant women against tetanus also reduces maternal and neo –natal mortality. Health check –ups include health care of children less than six years of age, in addition to the care to expectant and nursing mothers. The various health services provided for children by Anganwadi Workers and Primary Health Centre Staff include regular health check –up, recording of weight, immunisation, management of malnutrition, treatment of diarrhoea, de-worming and distribution of simple medicines, etc. During health check –ups and growth monitoring, sick or malnourished children, in need of prompt medical attention, are referred to the Primary Health Centre or its sub –centre. The Anganwadi Workers have also been oriented to detect disabilities in young children. She enlists all such cases in a special register and refers them to the Primary Health Centre/ Sub- Centre. At present, nearly 14 lakh Anganwadi Centres (includes a provision of 20,000 AWC on demand) have been approved.

### **8.2.2 Indira Gandhi Matritva Sahyog Yojana (IGMSY)**

The Ministry of Women and Child Development is implementing a Conditional Cash Transfer maternity benefit Scheme in 53 pilot districts of the Country since 2010. Under the Scheme, the pregnant and lactating women, 19 years and above, across all income groups are eligible to avail the maternity benefit, upto first two live births. Under IGMSY, maternity benefit of Rs.6000/- is provided in two equal instalments in second trimester of pregnancy till the child attains six months of age. The instalments are contingent upon fulfilment of certain health and nutrition conditions. The scheme is proposed to be

extended to all the districts of the country by the end of 2017. The maternity benefit is provided for two reasons: first, the beneficiary should consume nutritious food during pregnancy and lactation and second, money would partly compensate for their wage-loss and enable them to take adequate rest during pregnancy and after delivery.

The conditionality prescribed under the scheme includes registration of pregnancy, availing crucial services during pregnancy namely, antenatal care check –ups, iron folic acid tablets, and TT injections. After delivery, it focuses on registration of birth of the child, growth monitoring sessions immunization upto six months, and Infant and Young Child Feeding (IYCF) sessions. The IGMSY is contributing towards improving the nutritional status of pregnant and lactating mothers.

## **8.2 Interventions & Strategies under National Health Mission (NHM) for Promoting Health of Newborn and Neonates**

### **8.2.1 Central Government Initiatives**

**National Health Mission:** The child health programme under the **National Health Mission (NHM)** comprehensively integrates interventions that improve child survival and addresses factors contributing to infant and under-five mortality. It is now well recognised that child survival cannot be addressed in isolation as it is intricately linked to the health of the mother, which is further determined by her health and development as an adolescent. Therefore, the concept of ‘Continuum of Care’, that emphasises on care during critical life stages in order to improve child survival, is being followed under the national programme. Another dimension of this approach is to ensure that critical services are made available at home, through community outreach and through health facilities at various levels (primary, first referral units, tertiary health care facilities). The newborn and child health are now the two key pillars of the Reproductive, Maternal, Newborn, Child and Adolescent health (RMNCH+A) strategic approach, 2013.

### **Progress of Newborn Health Interventions**

In the last few years, India has shown strong political will to take on the complex and large-scale problem of newborn mortality. The government has made vital policy decisions to combat major causes of newborn deaths, providing special attention to sick newborns, babies born too soon (premature), and babies born too small (small for gestational age). In 2013, India authorized Auxiliary Nurse Midwives (ANMs) to administer pre-referral dose of injectable antibiotics for suspected neonatal sepsis and complete the full course under specific situations when referrals are not possible. Further to this, ANMs were allowed to administer pre-referral dose of antenatal corticosteroids (ANCS) to women in preterm labour, improving the chances of survival of premature babies. Kangaroo Mother Care (KMC), a proven and cost effective practice that encourages mothers to keep their preterm and low birth weight babies warm through early

and prolonged skin-to-skin contact, is being scaled up both in health facilities and for post-discharge care at home. Injection Vitamin K is being provided to all newborns at birth, in health facilities. Every commitment to advance the health and wellbeing of newborns is important and embodies the spirit of collective action. Moreover, it is important that the commitments are targeted strategically and to the areas of greatest need, and that increased and sustained investment in health systems is ensured to deliver basic services and essential interventions to mothers and newborns. National Rural Health Mission has directed efforts toward strengthening infrastructure and improving deployment of trained staff, backed by increased funding. Further, the RMNCH+A approach has helped identify gaps in providing skilled birth attendance, postnatal care for mothers and newborns, and specific interventions for managing childhood illnesses such as diarrhoea and pneumonia. The following table provides an overview of interventions that impact newborn health under the National Health Mission.

### Progress of Newborn Health Interventions

Programme (Year)	Objectives	Status
<b>Janani Suraksha Yojana</b>	Safe motherhood intervention to increase institutional delivery through demand-side financing and conditional cash transfer	<ul style="list-style-type: none"> <li>• Implemented in all States and Union Territories(UTs)</li> <li>• Special focus on Low-Performing States</li> </ul>
<b>Integrated Management of Neonatal and Childhood Illnesses(IMNCI) at the community level and F-IMNCI at health facilities (2007)</b>	Standard case management of major causes of neonatal and childhood morbidity and mortality	<ul style="list-style-type: none"> <li>• Operationalised in more than 500 districts</li> <li>• 5.9 lakhs health and other functionaries, including physicians, nurses, AWWs, and ASHAs trained under IMNCI</li> <li>• 26,800 medical officers and specialists placed at the CHCs/FRUs trained under F-IMNCI</li> </ul>
<b>NavjatShishu Suraksha Karyakram NSSK)(2009)</b>	Basic newborn care and resuscitation training programme	1.3 lakh health providers trained to date
<b>Janani Shishu Suraksha Karyakram (JSSK) (2011)</b>	Zero out-of-pocket expenditure for maternal and infant health services through free healthcare and referral transport entitlements	Implemented in all States and UTs <ul style="list-style-type: none"> <li>• Assured service package benefits extended to sick children up to age one</li> </ul>

<b>Facility Based Newborn Care (FBNC) (2011)</b>	Newborn care facilities at various levels of public health services that includes <i>Newborn Care Corners</i> (NBCCs) at all points of childbirth to provide immediate care; <i>Newborn Stabilization Units</i> (NBSUs) at CHC/FRUs for management of selected conditions and to stabilize sick newborns before referral to higher centres; and <i>Special Newborn Care Units</i> (SNCUs) at district/sub-district hospitals to care for sick newborns (all types of care except assisted ventilation and major surgeries)	14,135 NBCCs established at delivery points to provide essential newborn care <ul style="list-style-type: none"> <li>• 1,810 NBSUs established at CHCs/FRUs</li> <li>• 548 SNCUs established at district/sub-district hospitals or medical colleges</li> <li>• More than 6,300 personnel provided FBNC training</li> <li>• Online reporting system adapted and scaled up in seven states with 245 SNCUs made online and more than 2.5 lakhs newborns registered in the data base</li> </ul>
<b>Home Based Newborn Care (HBNC) (2011)</b>	Provision of essential newborn care to all newborns, special care of preterm and low-birth-weight newborns; early detection of illness followed by referral; and support to family for adoption of healthy practices by ASHA worker	Implemented in all States and UTs <ul style="list-style-type: none"> <li>• Most of the ASHAs trained in newborn care</li> <li>• ASHAs visited more than 12 lakhs newborn in 2013</li> </ul>
<b>Rashtriya Bal Swasthya Karyakram(RBSK) (2013)</b>	Screening of children with birth defects, diseases, deficiencies, and developmental delays (including disabilities)	All children, ages 0 to 18 years targeted <ul style="list-style-type: none"> <li>• More than 8 crore children screened and more than 10 lakhs children identified for tertiary care in 2013</li> </ul>

### **India Newborn Action Plan (INAP)**

On 18th Sept 2014, India Newborn Action Plan was launched in response to Global Newborn Action Plan. INAP lays out a vision and a plan for India to end preventable newborn deaths, accelerate progress, and scale up high-impact yet cost-effective interventions. INAP has a clear vision supported by goals, strategic intervention packages, priority actions, and a monitoring framework. For the first time, INAP also articulates the Government of India's specific attention on preventing still births. With clearly marked timelines for implementation, monitoring and evaluation, and scaling-up of proposed interventions, it is expected that all stakeholders working towards improving newborn health in India will stridently work

towards attainment of the goals of “**Single Digit Neonatal Mortality Rate by 2030**” and “**Single Digit Still Birth Rate by 2030**”.

India envisions a health system that eliminates preventable deaths of newborns and stillbirths and where every pregnancy is wanted, where every birth is celebrated, and *where women, babies, and children survive, thrive, and reach their full potential*.

The commitments in the India Newborn Action Plan (INAP) were developed to align with the global ENAP. India however aspires to achieve the global ENAP targets by 2030—five years ahead of the global deadline—with all the states to individually achieve the targets by the end of 2035. The targets proposed in the INAP—reducing preventable newborn deaths and preventable stillbirths to single digits, i.e., fewer than 10 per 1,000 live births by 2030, with intermediate targets for 2017, 2020 and 2025—require universal, equitable, and high-quality coverage of comprehensive care for every woman and newborn in the country.

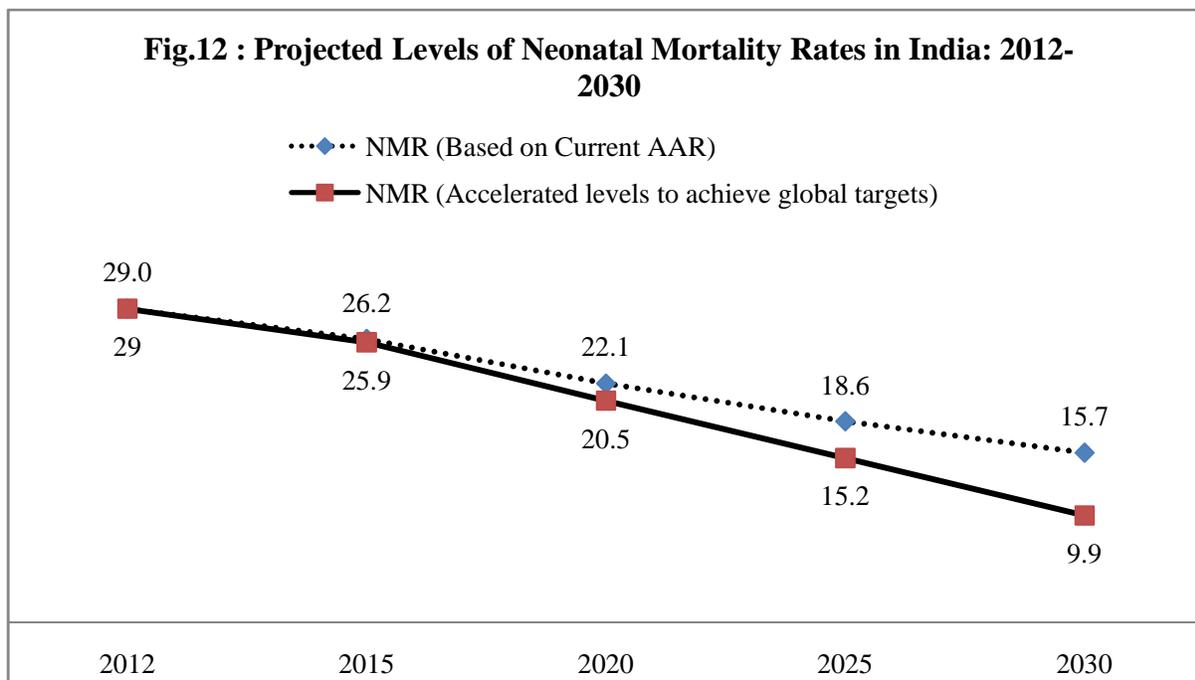
The INAP is expected to serve as a roadmap that redefines and focuses national and sub-national strategies and actions until 2020, when India will review the progress achieved and revise its strategy accordingly.

## **Goals**

The two specific goals of INAP are:

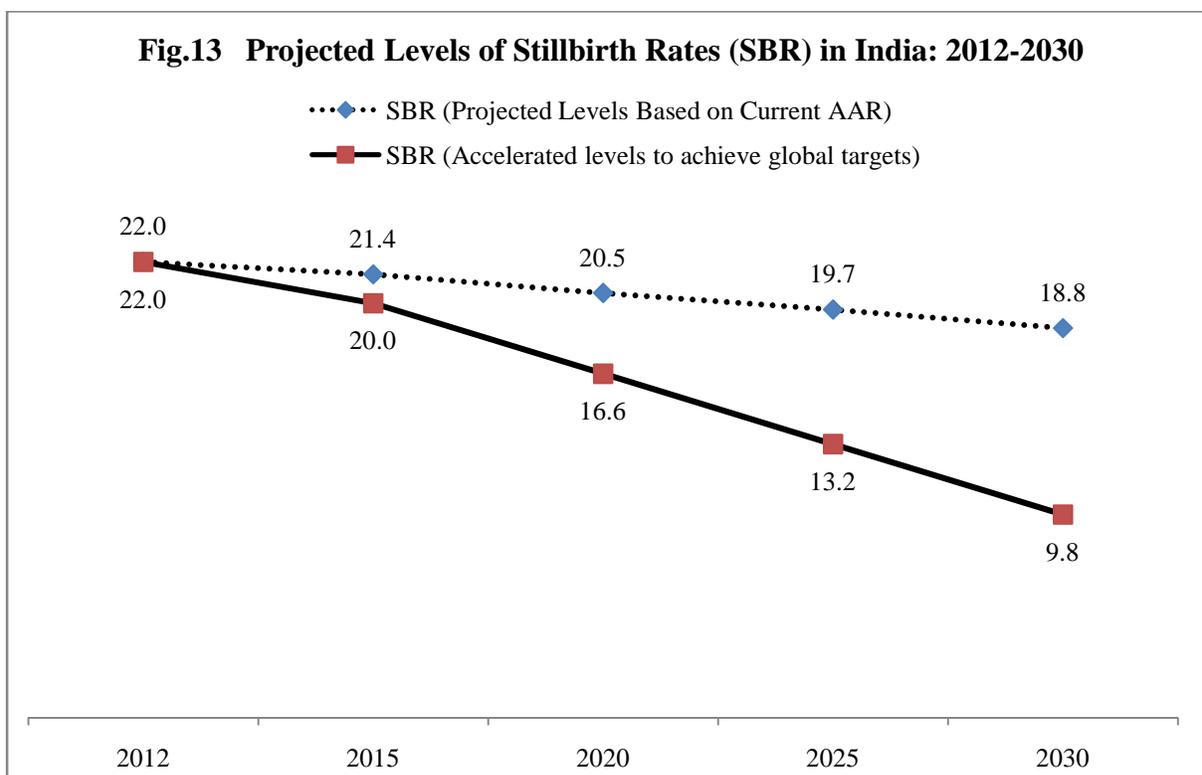
### **Goal 1: Ending Preventable Newborn Deaths to achieve “Single Digit NMR” by 2030, with all the states to individually achieve this target by 2035**

India will achieve the target of Single Digit NMR (NMR less than 10) by 2030. **Fig. 12** outlines the NMR projections<sup>2</sup>, based on the current level of AAR in the country, and shows the accelerated levels required to achieve this target. With the current AAR of 3.4 per cent, the NMR would be around 15.7 per 1000 live births by 2030. In order to achieve the target of Single Digit NMR by 2030, a stimulated effort of 5.8 per cent AAR will be required.



**Goal 2: Ending Preventable Stillbirths to achieve “Single Digit SBR” by 2030, with all the states to individually achieve this target by 2035**

India used the estimates provided by the Lancet Stillbirth Series (SBR of 25 per 1000 births in 1995, and SBR of 22 per 1000 births in 2009) as a target-setting exercise for SBR. With the current level of AAR which is less than 1 per cent, India is expected to reach SBR of 19 per 1000 births by 2030. With an accelerated effort of 4.4 per cent, India will reach the target of Single Digit SBR by 2030 (**Fig. 13**). As with NMR, the SBR projections do not take into account future demographic and development scenario. It is imperative that the country prioritizes strengthening mechanisms to establish a sound surveillance system for tracking stillbirths.



Guided by its two-fold goals, INAP has set out specific outcomes and selected coverage targets (Table 10). These include:

**Table 10: India Newborn Action Plan (INAP)– National targets**

Targets	Current	2017	2020	2025	2030
<b>Impact targets</b>					
NMR (per 1000 live births)	29	24	21	15	<10
SBR (per 1000 live births)	22	19	17	13	<10
<b>Coverage targets</b>					
Safe delivery (institutional + home delivery by SBA (%))	76	90	95	95	95
Initiation of breastfeeding within one hour of birth (%)	-	75	90	90	90

Women with preterm labour receiving at least one dose of antenatal corticosteroids	-	75	90	95	95
Babies born in health facilities with birth asphyxia received resuscitation (%)	-	75	90	95	95
Babies received complete schedule of home visits under HBNC by ASHA (%)	-	50	75	95	95
Newborn with sepsis in the community received Gentamicin by ANM (%)	-	50	75	75	75
Newborn discharged from SNCU followed until age one (%)	-	35	50	75	75
Newborn with low birth weight/ Prematurity managed with KMC at facility (%)	-	35	50	75	90

### **The Guiding Principles**

Evidence from across the globe and from within India is indicative of the fact that various proximal and distant determinants shape the health outcomes of a newborn. They range from individual community health systems to larger socio-economic and structural factors. These factors not only affect access to health and preventive services but also impact intermediary and proximate determinants, including living conditions, healthcare systems, and behavioural factors. In order to address various determinants of health which impact newborn health, integrated service delivery through RMNCH+A has been articulated as the overarching principle.

### **Integration: The Overarching Principle**

The RMNCH+ an approach recognizes that newborn health and survival is inextricably linked to women's health across all life stages. It emphasizes inter-linkages between each of the five life stages, with newborn health as a distinct life stage, and it connects community outreach and facility-based services. The six key principles that guide INAP are:

### ***Equity***

India has adopted policies that eliminate disparities in healthcare access and reduce both out-of-pocket expenditure for the most vulnerable populations and differential planning and financial allocation for 184 priority districts. There is, however, a need to conduct systematic analysis of gaps and challenges to achieve high rates of coverage of intervention packages for quality care, both within the rural and the urban health system. Equity would be strengthened by community strategies to improve demand for services, birth preparedness, and essential newborn care practices, including home visits by community health workers and participatory women's groups, especially in the urban slums. There is also a need to collect and utilize equity disaggregated data for all health programmes.

### ***Gender***

Gender-based differences in decision-making, power, and resource-access have consequences for the quality of life of the populations, including its health. In evaluating sex ratios in terms of relative female or male deficits at birth, the trends and surveys provide strong evidence of declines in the sex ratio at birth and sex ratio of the population age 0-6. Females are under-represented among births and over-represented among infants that die (Kishor & Gupta, 2009). Strategies and actions are required to ensure that the girl child's survival and health is managed well by providing her access to life-sustaining resources, including nutrition and health care.

A disaggregated data at all levels, as well as assessments and evaluation exercises that provide information and evidence on uptake of the benefits of the various national programmes/ schemes for the girl child need to be worked out.

### ***Quality of Care***

Care around the time of birth saves not only mothers and their newborn babies, but also prevents stillbirths and disabilities, thereby yielding triple returns on investment. In India, a lot of work has been done, especially with regards to three domains—regulation and standards, organizational capacity, and model of care. However, there is a need for concerted action to ensure implementation of these processes. It is important not only to strengthen quality assurance cells at state and district levels, but also to enforce regulations in private sector hospitals for quality standards and minimum service assurance. Quality of care is largely affected by issues related to human resources at both the facility- and community/outreach-level. Formulation of comprehensive Human Resource for Health (HRH) policy in concurrence with NHM, strengthening capacities for task-shifting and multi-skilling, ensuring quality for trainings and supportive supervision, and building the programme management capacity of the recruits to handle technical issues like neonatal health require focused attention.

### ***Convergence***

The cosmos in which a newborn thrives is rather wide. There are some determinants that have an immediate effect on survival. These can be classified under socio-cultural, community, individual, and structural attributes. Socio-cultural and community attributes—e.g., status of women, gender and equity influenced by caste, class, geography, residence, income, etc.—affect newborn outcomes. Similarly, individual attributes—sex of a child, birth order, previous birth intervals, mother's age at marriage, conception and size at birth—are also important. As to structural attributes, in about 200 endemic districts in India, malaria is an important cause of maternal and child morbidity and mortality, while HIV/AIDS also contributes towards increasing newborn morbidity. Hence, intra-departmental convergence with National Vector Borne Disease Control Programme (NVBDCP) and National AIDS Control Programme (NACP) is vital to reduce disease-specific burden.

In order to address newborn health, the Ministry of Health & Family Welfare needs to work in synergy with eight different departments in India: the Department of Women and Child Development, Panchayati Raj, Social Justice & Empowerment, Water and Sanitation, Rural Development, Urban Development, Food and Civil Supplies & Public Distribution, and Education.

### ***Partnerships***

It is important to establish institutional mechanisms to scale up successful partnership models. Partnership with academic institutions and professional bodies (National Neonatology Forum, Indian Academy of Paediatrics, etc.) can play a key role in advancing knowledge through the study and practice of evidence-based newborn interventions. Partnerships with Panchayati Raj Institutions (PRIs) and Self-Help Groups (SHGs) have a critical role in implementing National Health Mission at the cutting edge both in rural and urban areas. PRIs can be trained and supported in their functions so that they can assume a larger role in day-to-day monitoring of services. Also of significance is mapping areas where private sector interventions are required in partnership with government to develop guidelines, norms, standards and regulatory framework; mapping of the existing private sector presence and its contribution in improving coverage is required.

### ***Accountability***

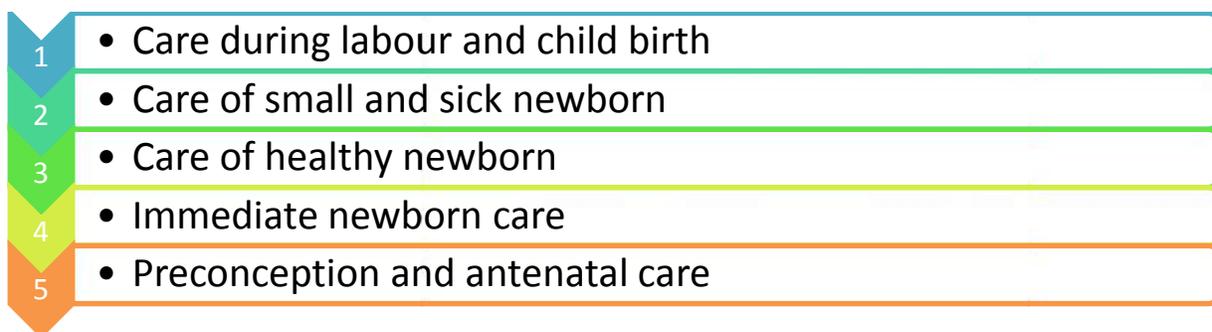
Strong governance can ensure accountability and transparency in health systems. Measuring impact of governance on newborn health outcomes is difficult, but there are processes that can be measured for good governance, such as community participation in decision-making process, regular audits of clinical services, deaths, and adverse outcomes. All supply-side efforts made by the providers need support at the individual and community level for efficient delivery and effective utilization of health services. In line with

commitments under **Commission on Information and Accountability for Every Woman Every Child Strategy (COIA)**, Civil Registration and Vital Statistics (birth and death registration with cause of death assignment) would be progressively strengthened for counting every newborn.

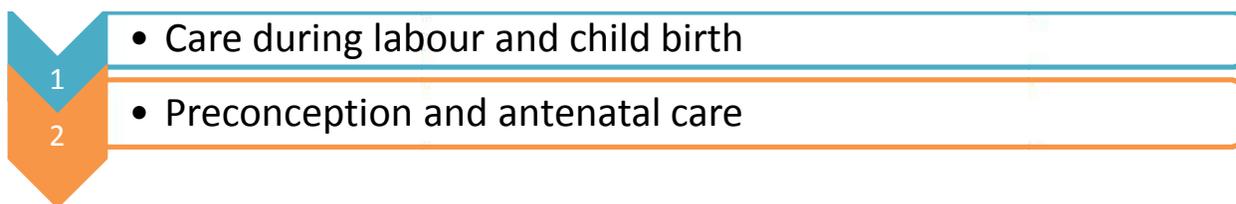
### Strategic Intervention Packages

A modelling exercise conducted for the recently launched Lancet Every Newborn series assessed the potential impact of scaling up evidence-based interventions within the health systems of the high burden countries. These interventions have been grouped into six packages corresponding to the various life stages of newborn. It is estimated that high coverage of available intervention packages by 2025 could prevent almost three-quarters of the newborn deaths, one-third of stillbirths, and half of maternal deaths. The packages with the greatest impact on neonatal mortality (in decreasing order) include: Care during Labour and Childbirth, Care of Small and Sick newborn, Care of Healthy Newborn especially in the first week, and Immediate Newborn care. For the reduction of stillbirths, Care during Labour and Childbirth and Antenatal Screening for high risk pregnancies/complications and their management are the two packages with the maximum impact. (Lancet EN series, Article 3, 2014)

#### Intervention packages in descending order of impact on neonatal mortality



#### Intervention packages in descending order of impact on stillbirths



The development of INAP has provided an opportunity to review the specific newborn health intervention listed under the RMNCH+A approach and bring them in sync with the recent evidence from the Lancet Every Newborn Series (2014). The RMNCH+A approach recognizes the strategic importance of newborn health and survival and its inextricable linkages with reproductive, maternal, and adolescent health. RMNCH+A 7×5 matrix, a management tool for programme managers, brings into focus key interventions within the defined framework. In addition, India has made the decision to give equal importance to strategies for improving quality of life beyond survival for those newborns with birth defects/disabilities and for those who develop neuro-developmental delay following sickness.

Under INAP, the newborn care/postnatal care component of the RMNCH+A continuum (for high impact interventions and commodities) has been further delineated into four distinct categories: Immediate Newborn Care, Care of Healthy Newborn, Care of Small and Sick Newborn, and Care of Newborn beyond Survival. Further, Pre-Conception and Antenatal Care and Care during Labour and Childbirth—the two stages impacting newborn outcomes including stillbirths—have been included. As a result, six pillars of intervention packages have been identified.

The interventions under each of the six pillars have been described below in detail including the strategic/priority actions required to deliver high-impact interventions for achieving effective coverage. (The following pages provides the summary of all key interventions under each of six distinct life stages of newborn and grouping them according to the levels of health system). The states are primarily responsible for implementation of interventions and their packages. Considering wide inter-state and intra-state variation in health system capacity and their supporting mechanisms, a scenario-based approach has been suggested to support the states, taking their institutional capacity into cognizance. As such, the interventions have been categorized as:

- Essential [E], to be implemented universally
- Situational [S], implementation dependent on epidemiological context
- Advanced [A], implementation based on health-system capacity of the state/district. The states are urged to develop their action plan based on the Six Packages described below.

**All the interventions that are delivered at the family and community level are also available at the outreach/ Sub Centre level. All the interventions that are delivered at the outreach/Sub Centre level are also delivered at the health facility level. This rule of thumb is applicable to all the six intervention packages.**

## Package 1: Pre-Conception and Antenatal Care

Adolescent pregnancies have a higher risk of adverse birth outcomes, with a 50 per cent increased risk of stillbirths and neonatal deaths. Adolescents are also prone to complications during labour and delivery, such as obstructed and prolonged labour. Maternal under-nutrition is a risk factor for infants being small for gestational age. In addition to iron-deficiency anaemia, other micro-nutrient deficiencies in women, such as calcium, increase the risk of pre-term births. In addition, inter-pregnancy intervals less than 12 months or longer than 60 months have been linked to adverse perinatal outcomes.

Health interventions must start well before conception and their impact on the neonatal and stillbirth outcome requires equivalent consideration. The importance of antenatal care for improved neonatal and perinatal outcome is well established; however, coverage of a few salient interventions needs increased attention (e.g., use of long lasting insecticide treated nets and intermittent preventive treatment of malaria, antenatal syphilis screening combined with treatment and increased emphasis on early detection, and prompt treatment of complications in pregnancy such as pre-eclampsia, type-2 diabetes).

The strategic interventions for pre-conception and antenatal care for newborns are given below.

Pre-conception and Antenatal Care Interventions Package		
Family and Community	Outreach/Sub Centre	Health Facility
1. Reproductive Health & Family Planning [E] <i>- Adolescent reproductive health</i> <i>- Delaying age of marriage and first pregnancy</i> <i>- Birth spacing</i>	5. Antenatal screening for Anaemia and Hypertensive disorders of pregnancy ( <i>PIH, Preeclampsia, Eclampsia</i> ) [E]  6. Antenatal screening for Malaria [S]	11. Antenatal screening & management of Severe anaemia, Hypertensive disorders of pregnancy ( <i>PIH, Preeclampsia, Eclampsia</i> ), Gestational Diabetes, Syphilis [E]
2. Nutrition related interventions [E] <i>- Balanced energy protein</i> <i>- Peri-conceptional folic acid</i> <i>- Maternal calcium supplementation</i> <i>- Multiple micronutrient supplementation (Iron, Folic Acid &amp; Iodine)</i> <i>- Nutrition Counselling</i>	7. Prevention and management of mild to moderate anaemia [E]  8. Maternal tetanus immunization [E]	12. Antenatal screening & management of Hypothyroidism, Hepatitis B, HIV, Malaria[S]
3. Counselling & birth preparedness [E]	9. Adolescent friendly health services ( <i>nutrition and reproductive health counselling</i> ) [E]	13. Adolescent friendly health clinics (as per RKSK guidelines) [E]
4. Prevention against Malaria [S]	10. Interval IUCD [E]	14. Post-partum family planning services including PPIUCD insertion [E]
		15. Prevention of Rh disease using anti D immunoglobulin [S]

## **Priority Actions**

1. Prioritize actions for delaying age at 1st pregnancy in convergence with stakeholders and other departments with special focus on teenage pregnancy
2. Train an adequate number of service providers for Family Planning Services and ensure availability of commodities, as per FP 2020
3. Saturate high caseload facilities to provide PPIUCD
4. Train an adequate numbers of ANMs in SBA (including ANC component)
5. Scale up nutritional interventions of peri-conceptual folic acid, maternal calcium supplementation, and iron folic acid supplementation (NIPI/WIFS)
6. Strengthen convergence with related departments for nutrition counselling
7. Screening of high-risk pregnancies and their management as per protocols
8. Accelerate implementation of preventive measures against malaria for pregnant women in endemic area
9. Promote counselling and birth preparedness

## **Package 2: Care during Labour and Childbirth**

Quality care during labour, childbirth, and in the immediate postnatal period not only prevents the onset of complications, it also enables their early detection and prompt management. Even with the increased coverage of institutional births, the overall quality of care in this period is one of the key factors accounting for current rates of newborn mortality. Institutional births have provided an opportunity to reduce the neonatal infections; however, deaths due to intra-partum complications and preterm births remain a challenge to the neonatal survival. Care during labour and childbirth have the potential to reduce stillbirths by a third. It is important to emphasize that BEmOC can reduce intra-partum-related neonatal deaths by 40 per cent and CEmOC can also reduce newborn mortality by 40 per cent, whereas skilled attendance at birth alone without access to the emergency component has a smaller effect at 25 per cent. Care at childbirth also has additional benefits on child survival, improved growth, reduced disability, and non-communicable diseases.

Antenatal corticosteroids use to manage preterm labour not only reduces neonatal deaths by 31 per cent, but this intervention is also associated with reduced need of specialized care for newborns, such as ventilators, etc. Antibiotics administration for pre-mature rupture of membranes (PROM) reduces early-onset postnatal sepsis. Clean birth practices especially hand-washing with soap and water by birth attendant has been found to reduce mortality due to sepsis in births at home (15%), facilities (27%), and during postnatal period (40%).

The table below lists interventions for care during labour and child birth.

Care During Labour and Childbirth		
Family and Community	Outreach/Sub Centre	Health Facility
1. Skilled birth attendance [E] 2. Clean birth practices [E]	3. Identification of complications and timely referral [E]  4. Pre-referral dose by ANM [E] - Antenatal corticosteroids in preterm labour - Antibiotics for premature rupture of membranes	5. Emergency obstetric care [E] - - Basic and Comprehensive Management of preterm labour [E] - Antenatal corticosteroids in preterm labour - Antibiotics for premature rupture of membranes

### Priority Actions

1. Prioritize and strengthen public health facilities at all levels (L1, L2, L3) for conducting safe delivery, including provision of emergency obstetric care as per the norms of MNH Toolkit
2. Provision of dedicated MCH wings in facilities with high caseload, including functional WASH facilities
3. All delivery points to be saturated with adequately trained health workers: Ensure trained and skilled staff at all designated delivery points: L1 delivery point should have SBA trained ANMs/SNs, L2 delivery point to have at least one BEmOC trained MO, and L3 delivery point must have at least four obstetrician & gynaecologist /CEmOC trained MOs and four Anaesthetist/ Life Saving Anaesthetic Skills (LSAS) trained MOs
4. Expand the availability of SBA-trained birth attendants. In addition to ANM, SBA training to be rolled out for AYUSH doctors (as per state-specific need)
5. Establish Quality Assurance mechanism at each level, like- use of safe birth checklist and regular quality audits including perinatal death audits
6. Institutionalize referral mechanism to ensure to-and-fro referral, including inter-facility referral, as and where required
7. Accelerate scale-up of new policy decisions on management of preterm labour through use of antenatal corticosteroids and antibiotics for premature rupture of membranes
8. Develop a mechanism of supportive supervision through existing systems or through partnerships (with professional organizations, medical colleges, and private hospitals) at the regional and state level
9. Generate awareness on JSSK entitlements, promote community participation, and demand for safe institutional delivery
10. Establish a sound surveillance system for tracking stillbirths

### Package 3: Immediate Newborn Care

Immediate care is the basic right of every newborn baby. This package includes interventions such as immediate drying and stimulation, provision of warmth, hygienic care, early initiation of breastfeeding, and administration of vitamin K. For babies who do not breathe at birth, neonatal resuscitation is a crucial lifesaving intervention. Resuscitation training of providers in facilities reduces intrapartum-

related neonatal deaths and early neonatal deaths substantially. Hypothermia is a risk factor for neonatal mortality, especially in cases of preterm and low birth weight babies. All steps should be taken to prevent and manage hypothermia and rooming-in of babies with mother must be universally practiced. Delayed cord clamping in newborns, including pre-term babies is associated with decreased risk of anemia and intra-ventricular hemorrhage. Administration of vitamin K at birth prevents hemorrhagic disease of newborn.

Listed below are the interventions for immediate newborn care.

Immediate Newborn Care		
Family and Community	Outreach/Sub Centre	Health Facility
1. Delayed cord clamping [E] 2. Interventions to prevent hypothermia [E] <ul style="list-style-type: none"> <li>• Immediate drying</li> <li>• Head covering</li> <li>• Skin-to-skin care</li> <li>• Delayed bathing</li> </ul> 3. Breastfeeding [E] 4. Hygiene to prevent infection [E]	5. Vitamin K at birth [E] 6. Neonatal Resuscitation [E]	7. Advanced neonatal resuscitation [E]

### Priority Actions

1. Establish fully functional NBCCs at all facilities conducting deliveries, according to the norms prescribed in the MNH toolkit
2. Saturate all facilities conducting deliveries with NSSK-trained staff
3. Implement standardized clinical protocols for essential newborn care, including resuscitation
4. Develop Quality Assurance mechanisms/cells to monitor training quality and adherence to standard protocols
5. Regular quality audits of facilities, including death audits
6. Ensure availability of Injection Vitamin K at all delivery points and its inclusion in the state's Essential Drugs List
7. Develop a mechanism of ongoing supportive supervision at the facility level
8. Strengthen counselling for breastfeeding, postnatal care, and community and home care practices
9. Focus on community strategies to promote demand for essential newborn care

### Package 4: Care of Healthy Newborn

Evidence shows that community-based interventions can significantly improve child survival. A large number of ASHAs have been trained to perform various preventive and promotive health activities, such as counselling of mothers on breastfeeding, complementary feeding, immunization, care-seeking, promoting nutrition, sanitation, and safe drinking water, etc. Despite the significant increase in institutional deliveries, home deliveries persist to about 25 per cent to 40 per cent in pockets across states. Even in cases of institutional deliveries, most women tend to return home within a few hours after delivery. For women who stay at the institution for 48 hours or more, it is also important to provide care

to the neonate at home for the remaining critical days of the first week and up to the 42<sup>nd</sup> day of life. Home visitation by ASHAs can contribute significantly to delivery of interventions with focus on the newborn period. Regular and timed contacts with the newborn are essential for ensuring continued exclusivebreastfeeding, appropriate immunization, and care-seeking of children with danger signs.

The interventions for Care of Healthy Newborn are as provided in the table below:

Care of Healthy Newborn		
Family and Community	Outreach/Sub Centre	Health Facility
1. Home visits till six weeks by trained ASHA [E] <ul style="list-style-type: none"> <li>• Counselling</li> <li>• Prevention of hypothermia, cord care</li> <li>• Early identification of danger signs</li> <li>• Prompt and appropriate referral</li> </ul> 2. Exclusive breastfeeding [E] 3. Clean postnatal practices [E]	4. Immunization [E] <ul style="list-style-type: none"> <li>• BCG</li> <li>• OPV</li> <li>• Hepatitis B</li> </ul>	All the interventions (except home visits)

### Priority Actions

1. Recruitment and rational deployment of ASHAs as per the population norm
2. Capacity-building of ASHAs to provide newborn care at the community level
3. Ensure uninterrupted supply of ASHA HBNC kits and replenishment thereof, from PHC inventory
4. Ensure timely payments of HBNC incentives for ASHAs
5. Set up mechanisms for monitoring of HBNC visits, with regards to quality and coverage
6. Ensure implementation of standardized training norms and uniform mechanism (formats, checklist) for quality of home visits
7. Strengthen and revitalize the role of ANM as supervisor cum mentor to ASHA
8. Institutionalize a framework for supportive supervision and mentoring of ASHAs (ARC, DRC, DCM, BCM, Supervisor/Facilitator)
9. Build responsive referral system – easy access health facilities for all sick / high-risk newborns referred by ASHAs
10. Strengthen counselling for breastfeeding, postnatal care, entitlements, and home care practices using counsellors and audio-visuals
11. Ensure availability of vaccines and logistic support for immunization at all delivery points.

## Package 5: Care of Small and Sick Newborn

Small babies, due to preterm birth or small for gestation age (SGA) or a combination of both, face the highest risk of death in utero, during neonatal period, and throughout childhood. In preterm babies, the risk of mortality is inversely proportional to the gestational age, and the highest risk is seen in those born very early (< 28 weeks) as nearly 95 per cent of these babies die without specialized newborn care. In case of SGA babies, those born at term have a nearly two times higher chance of mortality, while those born prematurely have a nearly 15 times higher chance of dying.

Specific interventions for small and sick newborns also include Kangaroo Mother Care (KMC). KMC involves package of early and continuous skin-to-skin contact, breastfeeding support, and supportive care in stable newborns weighing less than 2000 gm<sup>3</sup>. KMC can be practiced even at home, thus improving chances of newborn survival.

Strategic interventions for care of small and sick newborn include:

Care of Small and Sick Newborn		
Family and Community	Outreach/Sub Centre	Health Facility
1. Thermal care and feeding support (for home deliveries) [E]	2. Integrated management using IMNCI and use of oral antibiotics [E]  3. Injectable Gentamicin by ANMs for sepsis [E] <ul style="list-style-type: none"> <li>• Pre referral</li> <li>• Completion of antibiotic course in case referral is refused/ not possible "OR" as advised by treating physician</li> </ul>	4. Kangaroo mother care at facility [E]  5. full supportive care at block and district level [E] <ul style="list-style-type: none"> <li>• NBSU at block level</li> <li>• SNCU at district level</li> <li>•</li> </ul> 6. Intensive care services (NICU) at regional level [A]for <ul style="list-style-type: none"> <li>• Assisted ventilation</li> <li>• Surfactant use</li> <li>• Surgery</li> </ul>

### Priority Actions

1. Ensure dissemination of guidelines at all levels of facilities with priority to high caseload facilities and High Priority Districts (HPDs)
2. Establish fully functional NBSUs, SNCUs with the requisite HR in blocks/districts with priority to High Priority Districts (HPDs) and scale up KMC unit/wards on the existing FBNC system
3. Saturate all districts in the state with fully functional SNCUs followed by all facilities with >3000 deliveries/year
4. Upgrade NICUs at the medical colleges/tertiary care facilities to provide referral services for advanced newborn care support (ventilation, surgery) at regional level, and to strengthen linkages with SNCUs and NBSUs
5. Operationalize SNCU monitoring software across all SNCUs / NICUs

6. Institutionalize network of Regional/State FBNC collaborating centres and Medical Colleges to:
  - a. Accelerate capacity building of MOs/Staff Nurses/ANMs posted in NBSUs, SNCUs and KMC units, and of ANMs for IMNCI
  - b. Develop an integrated framework for supportive supervision
7. Ensure mechanisms for timely procurement and supply chain management of equipment, drugs, and laboratory reagents as per the defined norms and technical specifications
8. Regularly monitor quality of trainings
9. Develop Quality Assurance mechanisms/cells to ensure compliance with norms for quality of care for small and sick newborns, including tools for adherence to admission and discharge criteria, SOPs for clinical management, infection prevention and control
10. Conduct regular quality audits of facilities including death audits
11. Scale up new operational guidelines, allowing ANMs to administer injectable antibiotics for neonatal sepsis

### Package 6: Care beyond Newborn Survival

This is a new package considering the burden of birth defects and development delays in newborns. It is of particular significance for SGA and preterm newborns, as well as newborns discharged from SNCUs.

The table below lists the interventions to care for newborns beyond their survival.

Care beyond Newborn Survival		
Family and Community	Outreach/Sub Centre	Health Facility
1. Screening for birth defects, failure to thrive and developmental delays [E]  2. Follow up visit of [E] <ul style="list-style-type: none"> <li>– SNCU discharge babies till 1 year of age</li> <li>– Small and low birth weight babies till 2 years of age</li> </ul>	3. As before	4. Newborn screening [A]  5. Management of birth defects [E] <ul style="list-style-type: none"> <li>– Diagnosis</li> <li>– Treatment, including surgery</li> <li>–</li> </ul> 6. Follow-up of high risk infants (discharged from SNCUs, and small newborns) for <ul style="list-style-type: none"> <li>– Developmental delays</li> <li>– Appropriate management</li> </ul>

### Priority Actions

1. Train all levels of service providers engaged in screening of birth defects and developmental delays.
2. Deploy trained mobile health teams for screening
3. Establish fully functional District Early Intervention Centres (DEICs)
4. Institutionalize a robust referral mechanisms between screening points and District Early Intervention Centres (DEICs)
5. Establish centres of excellence at tertiary care hospitals for management of conditions, especially the birth defects requiring surgical correction

6. Screen birth defects by the service providers at the facility and in community by ASHAs during home visits
7. Facility-based follow-up of small and sick babies for developmental delay and appropriate management
8. Follow up of all sick/high-risk newborns discharged from the SNCU for a period of one year by ASHAs
9. Develop resource network, including private practitioners, to provide specialized care for identified cases

### Monitoring and Evaluation Framework

It is imperative to have a better comprehensive information system for monitoring and assessing progress towards the targets identified under INAP. The Government of India has established a web-based tracking system (Mother and Child Tracking System) to track every pregnant woman and child till the age of 2 years. States have taken steps to improve quality of data for vital events including causes of death, as it provides crucial information for policy making, planning, and evaluation across all the sectors of development. Further, a web-based Health Management Information System (HMIS) data on a range of outputs and service delivery indicators at the facility level has been initiated. The Government of India has also set up an online, real-time data monitoring system, which records vital information on the performance of SNCUs in the country, as well as the long term outcomes of discharged neonates, for guiding policy and initiating action for improving perinatal care.

The India Newborn Action Plan (INAP) is about taking action to achieve ambitious mortality and coverage targets to end preventable newborn deaths and stillbirths. Achieving the goals, and mortality and coverage targets outlined in the INAP requires measurable indicators to track progress and inform health policy and programmes. The milestones will form the starting point for accountability and independent oversight and the basis for monitoring progress in implementation. The pathway to impact will be marked by milestones, which are defined at national level for the period 2014–2020 (**Table 11**).

**Table 11: National Milestones to Monitor INAP**

Year	National Milestones
<b>2014</b>	National launch- India Newborn Action Plan
<b>2015-2016</b>	<ul style="list-style-type: none"> <li>• State Newborn Action Plans developed</li> <li>• Reporting by states on Dashboard Indicators</li> <li>• Quality assurance mechanisms strengthened at national and state level</li> <li>• Institutional mechanisms established for research and knowledge management</li> <li>• Gender and disaggregated data available and monitored for various interventions</li> </ul>
<b>2017</b>	Mid- course review
<b>2018-2019</b>	<ul style="list-style-type: none"> <li>• Stillbirth tracking mechanism strengthened</li> <li>• Accountability framework developed and operationalised at the levels of health care</li> <li>• Equity disaggregated data available and monitored for all interventions</li> </ul>
<b>2020</b>	Review and update action plan

A comprehensive assessment of targets would be done in 2020, which will help plan course corrections, if any, in on-going interventions. Further, from the year 2020, the milestones will be reviewed every five years keeping in sync with ENAP—i.e., 2025, 2030, and 2035.

Following core indicators (dashboard indicators) have been selected for monitoring, based on direct relevance to the action plan framework, targets, goals, and review of current data availability (**Table 12**).

**Table 12: Dashboard Indicators to Monitor INAP**

<b>Level and Focus Areas</b>	<b>Indicators</b>
<b>Impact Level Indicators</b>	<ul style="list-style-type: none"> <li>– Birth registration</li> <li>– Stillbirth rate</li> <li>– Early neonatal mortality rate</li> <li>– Percentage of neonatal deaths to under-5 deaths</li> <li>– Survival rate of newborns discharged from SNCU/NICU at one year of age</li> <li>– Cause-specific neonatal mortality</li> </ul>
<b>Pre –Conception &amp; Antenatal Care</b>	<ul style="list-style-type: none"> <li>– Birth to women aged 15-19 years out of total births (Teenage pregnancy)</li> <li>– Percentage of pregnant women who received full ANC</li> <li>– Percentage of pregnant women detected and treated with severe anaemia</li> <li>– Percentage of pregnant women detected and treated with PIH</li> </ul>
<b>Care during Labour and Child Birth</b>	<ul style="list-style-type: none"> <li>– Percentage of safe deliveries (Institutional + home deliveries by SBA)</li> <li>– Percentage of preterm births</li> <li>– Caesarean section rate</li> <li>– Percentage of women with preterm labour (&lt;34 weeks) receiving at least one dose of antenatal corticosteroids</li> <li>– Intra- partum stillbirth rate</li> </ul>
<b>Immediate Newborn Care</b>	<ul style="list-style-type: none"> <li>– Percentage of newborns breast fed within one hour of birth</li> <li>– Percentage of newborns delivered at health facility receiving vitamin K at birth</li> <li>– Percentage of labour room staff trained in NSSK</li> <li>– Percentage of newborns weighed at birth</li> <li>– Percentage of low birth weight babies</li> </ul>
<b>Care of Healthy Newborn</b>	<ul style="list-style-type: none"> <li>– Percentage of newborns received complete schedule of home visits under HBNC by ASHAs</li> <li>– Percentage of sick newborns identified during home visits by ASHAs</li> <li>– Exclusive breastfeeding rate</li> <li>– Percentage of mothers stayed for 48 hrs in the facility</li> <li>– Percentage of newborn received birth dose of Hepatitis B, OPV, and BCG</li> </ul>

<b>Care of Small and Sick Newborn</b>	<ul style="list-style-type: none"> <li>– Percentage of district hospitals with functional SNCU</li> <li>– Percentage of facility with SNCUs having functional KMC units</li> <li>– Percentage of female admissions in SNCU</li> <li>– Mortality rate in newborn with admission weight &lt;1800gm</li> <li>– Percentage of newborns with suspected sepsis receiving pre-referral dose of gentamicin by ANM</li> </ul>
<b>Care beyond Survival</b>	<ul style="list-style-type: none"> <li>– Percentage of newborns screened for birth defects (Facility+ community)</li> <li>– Percentage of newborns with any defect seen at birth</li> <li>– Percentage of newborns discharged from SNCU followed up till one year of age</li> <li>– Percentage of districts with functional District Early Intervention Centre (DEIC)</li> </ul>

### **Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA)**

Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA), an initiative of the Narendra Modi Government, was launched in June 2016. The scheme aims at boosting the health care facilities for the pregnant women, especially the poor. It also seeks to protect pregnant ladies from infectious diseases.

Under the scheme, the pregnant ladies will be given free health check-up and required treatment for free on 9th of every month. The scheme will be applicable for pregnant women to avail in every government hospitals across India.

#### **Objectives of PMSMA**

Normally, when a women gets pregnant, she suffers from various kinds of diseases and health issues such as blood pressure, high sugar and hormonal diseases. The scheme thus will provide free checkup to the pregnant women assuring their good health and birth of a healthy child. Below are some of the main objectives of the scheme.

- Provide a healthy life to the pregnant women.
- Lowering the maternity mortality rate.
- Making pregnant women aware of their health issues/diseases.
- Making sure safe delivery and healthy life of the baby

#### **Key features of PMSMA**

- All kinds of medical checkups under the scheme will be completely free.
- Tests will take place at the medical centres, government and private hospitals and private clinics across the country.
- Women will be marked differently based on their health problems so that doctors can easily detect the problem.
- The scheme is applicable only to the women in their pregnancy period of 3 to 6 months.
- The women belonging to semi urban, poor and rural areas will be given preferences.

## **8.2.2 Few State Initiatives for Promoting Health of Newborn and Neonates**

### **I ASSAM**

#### **1 Nutrition Counselling Cum Management Centre (NMC)- A Community Focused Approach to Combat Malnutrition and Under Five Mortality**

Assam has a population of about 32 million, of which 4.5 million are infants and young children. Prevalence of under-nutrition is high in Assam with 41.1 per cent of children under three years stunted, 35.8 per cent underweight, and 16.7 per cent wasted with 4 per cent children severely wasted. The proportion of infants who initiate breastfeeding within one hour of birth is 76 per cent; however the proportion of children who are exclusively breastfed for six months is only 40 per cent. Timely introduction of complementary foods (with continued breastfeeding) in infants 6-8 months old is 60 per cent.

#### **Programme Description**

Nutrition Counselling-cum Management Centre (NMC) is a unique initiative of Assam, implemented by National Health Mission. Presently 25 NMCs are functional in Assam. NMCs are set up at different levels as per the health needs and where large proportion of marginalized people resides. Each NMC has a full time nutrition counsellor who provides nutrition counselling to pregnant women and mothers of young children (<5 yrs. of age) in the OPDs, prenatal, post-natal ward and children's ward. They also provide community outreach services at VHND once in a week for nutrition counselling and identification of children with SAM.

The outreach of NMCs have been increased by organizing screening camps in areas with a high proportion of undernourished children as well as in the remote and interior areas that do not have a PHC or an NRC in its neighbourhood. The screening camps were organized on a priority basis at the sub-centre level jointly by the dietitians, nutrition counsellors and ASHA supervisors in different blocks of the district. About 11,000 frontline health workers have been trained by the dietitian and nutrition counsellors on identification and referral of children with SAM through use of MUAC tapes and have been provided with it.

#### **Programme Outcomes**

- The percentage of SAM cases referred to NRC has been increased from 41 per cent in 2013-14 to 66.5 per cent in 2014-15.
- It is evident from AHS that breastfeeding rates within 1 hr of birth increased from 69.6% (2010-11) to 75.6% (2012-13).
- It is evident from AHS that exclusive breastfeeding rates up to 6 months of age increased from 39.2% (2010-11) to 40.4% (2012-13).
- The percentage of counselling sessions given to pregnant and lactating mothers has also increased by 30-50 per cent from the previous year.
- Credible weighing efficiency: AWWs feel accountable for weighing and correct plotting, identifying undernourished children and take corrective actions to reduce under-nutrition.
- Inter-departmental cooperation and team work achieved: AWWs, ASHA and ANM are required to verify each other's actions and work together to provide counselling, immunization and take the severely undernourished child to NMC/PHC/NRCs.

- Mothers feel more aware, involved and responsible: a constant line of communication has opened up between government functionaries and mothers, generating awareness, information and responsibility.
- Increased detection and treatment of severely acute malnourished children: The initiative has led to more NCMC screening camps being organized for SAM detection. The increase in the number of SAM children has led to the creation of multiple NRCs.

## **II. GUJARAT**

### **1. Mamta Ghar-Birth Waiting Home**

Mamta Ghar is the key element to ‘bridge the geographical gap’ obstetric care in rural areas, with poor access to medical facilities. The purpose of Mamta Ghar is to provide a setting where high-risk women or women from remote areas can be accommodated during the last 7-10 days of pregnancy, or even longer if need be, near a hospital where obstetric and newborn-care facilities are available. Here additional emphasis is put on education and counselling regarding pregnancy, delivery and care of the newborn infant and family.

#### **Objectives of Mamta Ghar**

- Increase the utilisation of the hospital by women from remote areas for delivery and care.
- Enable high-risk women or women from remote areas to access medical care during delivery period.
- Increase percentage of women delivered a baby with trained providers at health facility.
- Promote early and exclusive breast-feeding.
- Promote minimum 48 hours of post-partum stay in the institutions.

#### **Programme Description**

The following services is being provided in Mamta Ghar:

##### **Health Services**

- Routine antenatal examination.
- Nearby 24hr on-call availability of skilled birth attendant.

##### **Health Education**

- On childbirth and post-natal care.
- Birth-spacing and family planning.
- Newborn care.
- Kangaroo mother care for pre-term or low birthweight babies.
- Early and exclusive breast-feeding.
- Vaccination
- Nutrition

##### **Other Related Services**

- Food facilities: To beneficiary and one attendant.
- Child care.
- Ambulance service.

##### **Administration and Staffing**

- Each Mamta ghar is to be managed and administered by the Facility incharge.

- To facilitate beneficiaries in the Mamta Ghar, 3 Caretakers, one Sweeper and one Security person are sanctioned for each *Mamta Ghar*.

## 2. *Khilkhilat*

Though after the implementation of JSSK, out of pocket expenditure has been reduced significantly but still stay at hospital for 48 hours after delivery is a major change.

### **Programme Description**

As a measure to reduce the out of pocket expenditure and to promote 48 hours of stay after delivery, the government of Gujarat has come out with a cost-effective initiative. Accordingly, the already available recycled fleet of Emergency Management and Research Institute (EMRI) 108 vehicles are utilised for dropping home all mothers and new-born infants after 48 hrs of delivery. This is supported by JSSK and the State budget.

This initiative was named “*khilkhilat*”. Each *khilkhilat* van is expected to be operational for drop-back services for about 2, 00,000 km and/or three years of services, whichever is early. This is supplemented with small body new vans procured from the State budget:

- Drop-back provided to all pregnant and delivered women and children under 1 year of age from enlisted government facilities.
- A token packet of nutritious food packet (Sukhadi) is given to delivered women.
- IEC kit in vernacular language (Gujarati) is given for awareness regarding Home Based Newborn Care (HBNC).
- The van is equipped with AVLTS (Automatic Vehicle Location Tracking System) with GPS Monitoring and Real-time Reports.
- The service has been operationalised with GVK EMRI vans in tandem with 108 services utilising their existing call-centre for fleet management.

The JSSK Help desk is established at district hospitals with high delivery workload wherein a Helpdesk coordinator is appointed for:

- Motivating beneficiaries for a 48-hours stay.
- Ensuring that beneficiaries of JSSK gets all the entitlements.
- Co-ordinating between *khilkhilat* and Hospital so as to provide drop-back to each and every beneficiary.
- To provide the beneficiary list to *Khilkhilat* pilot well in advance.

### **Programme Outcomes**

- About 168 *Khilkhilat* vans are functional in the State covering 187 government health facilities with high delivery points and extended to 58 pickup points.
- Till November 2,42,086 Mothers, 2,33,832 Infants and 4,33,938 Companions have been provided with dropback service, which amounts to about 9,15,306 total beneficiaries.
- Out of 2,42,096 Mother beneficiaries, 155950 (65%) of drop-backs were in rural areas and 86146 (35%) of drop-backs were in urban areas.
- More than 16000 drop-backs in 2014 were provided in the months of September, October and November.
- On an average each *khilkhilat* van provides a dropback to 2 beneficiaries and has a maximum capacity to carry 4 beneficiaries including relatives.

- 5.40 per cent of drop-back services was provided to beneficiaries living more than 200 km from the base i.e. Hospital.

### **3. Nutrition Rehabilitation Centre (NRC) for Malnourished Children**

Severe malnutrition is the underlying cause of almost one-third of under-five deaths in children in Gujarat. Around 44.6 per cent of Gujarat's children are underweight, 51.7 percent are stunted and 18.7 percent of children are wasted as per the NFHS-3 report.

#### **Programme Description**

The "Mission Balam Sukham" was hence conceptualised to provide an enabling mechanism to the different key departments in the State to converge together under one umbrella and undertake concerned efforts to address and improve the nutritional status of the targeted population in Gujarat. The "Mission Balam Sukham" is expected to focus on both i.e. preventive and curative aspects, preventive aspects are looked after by Department of Women and Child Development (DWCD) whereas curative aspect by Health Department.

The programme was launched on 18th September 2012 with an aim to combat malnutrition across the State. The State has initiated a 3-tier approach for the management of children with SAM through the establishment of Nutrition Rehabilitation Centres (NRCS) at the district level, Child Malnutrition Centres (CMTCs) at the sub-district level, and Village Child Nutrition Centres (VCNCs) at the village/community level.

Since 2013, "Mission Balam Sukham" has been handed over to the WCD Department. The curative aspect of this mission CMTC/NRC is run by the Health Department, which focuses on a 2-tier approach for integrated management of malnutrition through Facility base management at different levels (NRC/CMTC). Community base management at anganwadi level has been done by the WCD Department.

Gujarat has 124 Balsanjivani Kendras(NRC)/Balseva Kendras (CMTC) to treat the malnourished and severely malnourished children at the facility level. The focus is now on rolling out of IYCF practices – Nation Iron Plus initiative (Life cycle approach to combat anaemia) and strengthening of Facility-based management of children with Severe Acute Malnourishment (SAM) children.

### **III. KERALA**

#### **1. Newborn Screening Programme**

There was no detailed study of inborn error of metabolism in kerala. Congenital Hypothyroidism was present in the community and it was necessary to ensure that the excellent work undertaken by the Health Services department is in pace with the best international practices for early detection and intervention of selected disorders to prevent serious consequences like mental retardation.

#### **Programme Description**

newborn screening test aims at the early detection of disorders to prevent serious consequences by timely

interventions. The current NBS programme of Kerala provides screening tests for congenital hypothyroidism, congenital adrenal hyperplasia, phenyl ketonuria and glucose-6 phosphate dehydrogenase deficiency which are carried out through the four PH labs. (State PH Lab and three Regional PH Labs).

#### **Programme Outcomes**

During the period from March 2013 to Feb 2015, a total of 115279- cases have been screened.

#### **Financial Investment**

The required funds are provided through the State plan as well as NRHM and the programme is implemented free-of -cost to the beneficiaries.

## **IV MADHYA PRADESH**

### **1. Daksh Skill Labs**

The need of time is to expedite the pace of decline in MMR and IMR with special focus on quality parameters. This requires capacity building of health care providers so as to make them proficient in technical skills and knowledge entailed for key intervention to ensure desired outcome.

In spite of various types of training imparted to the service care providers, it is observed that the providers are less confident in applying skills.

#### **Programme Description**

Comprehensive Skill Lab with skill stations is designed with the aim for up-grading and acquisition skills of health care providers to enhance their capacity to provide quality RMNCH services leading to the improved health outcomes.

The objective of Skill Lab is to facilitate reinforcement of key standardized technical skills and knowledge to health care providers for RMNCH services thus ensuring availability of trained skilled personnel at health facilities.

#### **Programme Outcomes**

In Madhya Pradesh, two Skill labs (Bhopal and Gwalior) are providing training to the health care providers posted at Delivery points since March 2014. Till April 2015, a total of 40 batches of staff were trained involving 494 health care providers of districts of Sagar and Rewa division; where MMR is highest among the State. There are 39 skills that are imparted to the trainees, which include plotting and interpreting Partograph, managing normal delivery, preparation and method of using injection MgSo<sub>4</sub> in prevention and management of eclampsia, active management of third stage of labor, initial management of post partum haemorrhage (PPH) and shock by using Inj. Oxytocin, putting IV line and Circulation Airway Breathing (CAB) approach, New born resuscitation and essential new born care.

After each batch the trainees have to provide feedback about the training content and their confidence level to practice the skill acquired. All the participants felt that the course content was sufficient and was helpful in upgrading skill. All the participants were confident in using the skill acquired. Only twelve of the participants were less confident about executing standard precautions in infection prevention and use of personal protective equipments.

## **2. Using Data for Action: Facility Based Newborn Care Database**

Madhya Pradesh developed its first SNCU in 2007 and universal coverage of units across the districts was achieved in 2013. It was an achievement for the State that Special New Born Care Unit (SNCUs) were established with a rapid pace but State lacked strong data management and monitoring system. With manual reports, chances of errors were very common.

The lack of credible data made it difficult to justify the continued investments on establishing SNCUs amongst other competing priorities and interest in health sector. Additionally, newborns discharged from the SNCU were untraceable after the discharge, due to absence of follow up and feedback system. There was no follow up system for these newborns leading to nearly 10 per cent newborns deaths after discharge within first year of life.

To address these gaps Government of Madhya Pradesh and UNICEF took a lead to develop an online data management and follow up tracking system, which can be used in SNCUs across the State and country.

### **Programme Description**

UNICEF has piloted desktop version of SNCU database management system in 2011 in Guna and Shivpuri. Government of Madhya Pradesh and UNICEF developed an online data management and follow up tracking system, which can be used in SNCUs for data entry and analysis at a click.

### **Description of Intervention**

SNCU online data management and monitoring system was scaled up in all the SNCUs in 2012. The application consists of two main utilities, one of which is a repository for facility based newborn care and contains prototypes for designs of SNCU, training material, operational guidelines on facility based newborn care, government circulars, data recording formats and teaching aids.

The second utility is the online data application, which permits generation of reports and graphs on various parameters stratified by gender, caste, admission weight, maturity, cause of death and other critical parameters.

### **Other Implementing Partners**

Technical support and initial funding from UNICEF were vital for development and scale up of software across the SNCUs of the State.

### **Programme Outcomes**

- Each unit is monitored online from the State and National level.
- The follow up tracking has been integrated in the system with system generated SMS being sent to the community worker and family and the follow up status is entered at the end of the visit.
- Software has influenced policy decisions such as introduction of SNCU follow-up, both community and facility, introduction of antenatal steroids, C-PAP and ventilators.
- Software is helping the State to improve quality by providing performance of different districts on several parameters.

### **Evaluation**

Based on the capability of the database in providing quality data with ease, FBNC database is declared winner in "Best use of ICT for e-Governance" category of MAPIT award.

### **Financial Investment**

Initial commissioning was supported by the UNICEF, which was followed by NHM funding to support the FBNC database. Every year Rs. 50,000/- is sanctioned in programme implementation plan of the State to support the successful functioning of the database with its utility.

### **3. Mamta Rath - Health Communication For All**

*Mamta Abhiyaan*, a massive historic and ambitious effort to reduce mother and child deaths (IMR, MMR) and reduce TFR in the State of Madhya Pradesh, focuses on 12 simple life-saving practices and increasing those behaviours in the population.

*Mamta Rath* is the vehicle of this ambitious *Mamta Abhiyaan*. *Mamta Rath* is not just a communication outreach – it is community mobilisation and dialogic communication linked to services. *Mamta Rath* is currently running in all 313 blocks in 51 districts. It has covered 21,500 villages and 16,91,150 beneficiaries in a span of 90 days. The plan is to cover all the villages on a six-monthly basis. At the district level, the district IEC coordinator/MEIO/Dy MEIO/Designate IEC officer; at the block level BEE/Designated BEE and at the village level Supervisor/ MPW is the nodal person for successful roll-out of *Mamta Rath*. As innovative tools for Mamta abhiyaan – *Mamta Geet*/Anthem has been created to salute mothers, 12 TV spots featuring the life-saving behaviours ranging from 45 seconds to 60 seconds are effectively intertwined with messages from the Honorable Chief Minister directly appealing to his people to ensure healthcare for their women and children, 35 *Mamta* Videos of 20 minutes each about the 12 key life-saving behaviours in an edutainment format have been prepared. Health Camps by Sector Medical Officers are being organised simultaneously with the *Rath* in each village.

#### **Programme Outcomes**

**Social Mobilization:** 16,91,150 beneficiaries covered that include adolescents, mothers and men have been mobilised till date for dialogic communication across 12 life-saving critical behaviours.

Counselling sessions held with audiences in villages across the issue of routine immunisation, ANC check-up, anemia in adolescents and women, hand-washing and menstrual hygiene through use of interpersonal communication (IPC) and group counselling.

**Service delivery:** approximately 85,780 women have been given IFA tablets.

66,120 children received ORS packets; 1,66,644 couples counselled for adoption of family planning methods and received contraceptives; 10,350 high risk pregnant women were counselled and referred to medical facilities.

### **4. Scaling Up Special Newborn Care Units (SNCUS)**

The State of Madhya Pradesh (MP) with a population of 73 million and an annual birth cohort of 1.9 million has the highest infant mortality rate (IMR) in the country. To address the issue of high and stagnant neonatal mortality and use the opportunity of increasing institutional delivery for improving new born survival rate, the government of MP with technical support of

UNICEF has put a strong focus on strengthening facility based new born care by establishing special newborn care units (SNCUs) to complement ongoing community based strategies.

#### **Programme Description**

SNCUs are primarily meant to provide specialised care to small and sick new borns who account for 80 per cent of newborn deaths. The State initiated simultaneous steps to develop infrastructure, ensure

availability of equipment and attract adequate human resources to facilitate rapid scale-up of SNCUs from the initial two units in Guna and Shivpuri in 2007-08 to achieving State-wide scale-up across all 50 districts by 2013. This made MP the first State in the country to achieve universal coverage of SNCUs at district level as per the norms recommended by Government of India (GOI), with 270,000 newborns treated in last six years.

The need of a robust real-time data management system to monitor the performance and long term outcomes of newborns discharged from SNCUs was addressed in 2012 by piloting an online data monitoring system which was developed by UNICEF, and realising the relevance it was subsequently taken up by goi for national level scale-up. All these initiatives coupled with increase in institutional deliveries have contributed to the State showing 20 per cent decline in the neonatal mortality rate in the last five years (2007-2012). SRS 2013 revealed the highest drop of 3 points in neonatal Mortality in Madhya Pradesh, the national decline in neonatal mortality being 1 point.

### **Programme Outcomes**

- MP registered the highest decline in neonatal mortality rate in the country (SRS 2013). The achievement is largely due to improved survival of neonates because of successful treatment of sick newborn through SNCUs.
- State-wide scale-up in five years with 53 SNCUs and 270,000 newborns treated MP has become the first State in the country to achieve universal scale-up of SNCUs covering all 50 districts in the State. The scale-up has been fast and methodical without compromising on the quality and has benefitted more than 270,000 newborns in the last six years with an overall mortality rate of 12.4 per cent during treatment. Average Bed Occupancy in the year 2013 for SNCUs in Madhya Pradesh was 106.4 per cent.
- Utilisation of services across all caste categories including the most vulnerable: The services in the SNCUs have been kept free for beneficiaries across all castes, to reduce out-of-pocket expenses and remove cost barriers in access to care.
- Standardisation of quality of care and accreditation of SNCUs: In order to have standardised certification of quality of care, National Neonatology Forum which is the apex professional body of neonatologists of India has been assigned the task of accreditation of SNCUs in India.
- Ripple effect on care in labour room and at birth: Analysis of SNCU data showed prematurity, birth asphyxia and neonatal sepsis as the three major causes for admission and deaths in SNCUs. MNH wings have been sanctioned for all 50 districts of the State and several of them have been made functional.
- Special care for low birth weight and pre-term Baby–Kangaroo Mother Care Ward 48 districts have sanction for Kangaroo Mother Care Wards to provide special care to Low Birth Weight babies. Till 2015, 22 kangaroo Mother Care Wards have been made functional.

## **5. Nutrition Rehabilitation Centres of Madhya Pradesh – Innovations for Replication**

Madhya Pradesh has 12.6 lakhs severely-wasted children, the highest in the country. As per national data, Madhya Pradesh is home to about 1.89 lakhs children with medically complicated SAM. Since the mortality rate for these children is approximately 9 times higher than that of healthy children, it becomes imperative to provide them with immediate medical treatment and nutritional rehabilitation.

### **Programme Description**

Bal Shakti Yojana was launched in October 2005, whereby Nutrition Rehabilitation Centres (NRC) were established in District Hospitals and later on scaled-up across the State. There are 314 NRCs in Madhya Pradesh, with a minimum of one NRC per block:

- Promoting maternal health and nutrition: Mothers are provided with a free balanced and nutritive diet. The daily menu is planned keeping in view the RDA of an adult pregnant/lactating mother. Maternal micronutrient supplementation, is ensured alongwith examination of co-existent medical ailments.
- Linking of family planning service and catering to unmet need: About 54% i.e. 12,367 eligible mothers have accepted some form of family planning method during their NRC stay.
- Promoting standardised counselling through use of counselling tools for NRCs: An illustrative flip book guide was developed on an essential nutrition package, which equipped the feeding demonstrators/ ANMs/ grass root level health volunteers with the required IPC knowledge and skills.
- Promoting Infant and Young Child Feeding (IYCF) practices in NRCs through Supplementary Suckling Technique (SST): ‘Mother’s Milk Insufficiency’ (MMI) is addressed by supporting the mother to breastfeed while simultaneously administering supplemental milk via an oro-pharyngeal gastric tube attached to the breast.
- Development of training modules on facility-based management of SAM for medical personnel, staff and
- other front line functionaries: The F-SAM training modules have been developed in both English and Hindi, in consultation with national stalwarts.
- Strengthening convergence with line department viz. DoWCD for improved identification and referral of SAM: The frontline functionaries of ICDS i.e. AWWs have been trained and provisioned with MUAC tapes for early identification and referral of SAM.

### **Programme Outcomes**

Out of 1, 28,000 SAM children treated in 2014-15 in the entire country, 73200 were treated in Madhya Pradesh.

## **V MAHARASHTRA**

### **1. *Mahila Arogya Abhiyan***

The socio-cultural inequality offers subordinate status to women. This affects the decision-making power of women as well as healthcare seeking. This programme symbolises the scope to enhance women’s healthcare.

### **Programme Description**

In order to bring women’s health into focus and provide them with specialised services, the Department of Public Health, government of Maharashtra decided to observe “*Mahila Arogya Abhiyan*”, a Healthcare awareness drive for 15 days in all the healthcare facilities. The abhiyan began with Women’s Health Day (26th February 2015) and was extended to 12th March 2015, with special camps being held on the international Woman’s Day (8th March 2015). The major objective was to improve the health of women by providing better access to healthcare delivery and quality services at their doorstep. The tag-line for the Abhiyan was “Save Girl Child, Safe Delivery, Clean and Well-equipped Hospitals”.

A series of innovative programmes were launched:

- The drop-back service vehicle for Mother and child was named “Vatsalya”.
- Toll-free mental health Help line 104.
- Inauguration of unique logo for the Public Health Department of Maharashtra.
- Inauguration of skill lab – “kaushalya”.
- Camps for screening women, especially of the reproductive age group, for various types of cancer.
- Guidelines for Surakshit Matrutva i.e. Safe Motherhood.
- ASHA diary.

The services in the abhiyan include:

- Organising comprehensive camps for anemia detection for women in the age group of 15-49 years, especially for pregnant women.
- Screening of High Risk Pregnancy cases, Pick-up and Drop-back referral services for ANC and PNC patients.
- Organising NCD camps for screening women for various types of cancer such as oral cancer, cervical cancer and breast cancer. also screening for Hypertension and Diabetes Mellitus with the help of
- IDA, IMA and NGOs working for healthcare.
- Beti Bachao Abhiyan, Safe Motherhood, blood donation camps and organ donation drives.
- Organisation of camps for detection of sickle cell and Thalassemia, RKSK, RBSK and AYUSH camps, organization of special surgery camps under RGJY.
- Inauguration of OPD token system in various health institutes.
- *Kayapalat* (face-lifting of various PHCs).
- ASHAs felicitation, sensitising them and also arranging their medical checkups.
- Implementation of the We-care concept.

Outreach camps were also organised in urban slum areas of all 95 cities under the *Mahila Arogya Abhiyan*.

### **Programme Outcomes**

- 5396 severely anemic mothers were identified (38%). around 71000 mothers underwent PnC checkups. About 13079 pregnant mothers were given pick-up service through referral transport and 14382 were given drop-back referral services.
- Out of 7.6 lakhs females screened in NCD camps, 2600 females were suspected for oral cancer, 6200 females suspected for cervical cancer, 2300 females suspected for breast cancer, 44000 females suspected for Hypertension (6%) and 25500 females suspected for Diabetes Mellitus (3.4%).
- There were 650 confirmed cases of cancer, approximately 9600 confirmed cases of Diabetes Mellitus and 15000 confirmed cases of Hypertension up till 16th March 2015. Oral pre-cancerous lesions were found in 1650 females and 532 females had oral cancer.
- RKSK Helpline-DILASA was inaugurated on 8<sup>th</sup> March 2015. About 3000 RKSK camps were held.
- Inauguration of OPD Token Systems was carried out in about 1100 Health institutes.
- Over 2900 institutes carried out condemnation drives and about 12500 institutes carried out cleanliness drives. In all, 80% ASHAs, 100% ANMs and 89% staff nurses were felicitated for their outstanding performance.

## **VI. MEGHALAYA**

### **Meghalaya Maternity Benefit Scheme (MMBS)**

Reduction of maternal and infant mortality in Meghalaya is a major challenge. The objective of the innovation is to reduce maternal and infant mortality.

#### **Programme Description**

Meghalaya Maternity Benefit Scheme was launched in 2011-12. It provides coverage to all pregnant women (19 years and above) belonging to BPL families. The scheme is limited for the first two children. It can be availed after the mother completes 3 ANC check-ups, TT injections and IFA tablets. Financial assistance of Rs. 4000 is provided to the mother for antenatal care and post-natal care. ASHA receives an incentive of Rs. 1000 for promoting antenatal care and institutional delivery.

The services can be availed at the government hospitals and accredited private hospitals. To avail the benefits each beneficiary registered should have a MMBS card along with an M&CP Card. A grievance redressal cell supported by the DPMU has been set up at district level.

#### **Conclusions/Lessons Learnt**

There's a reduction in maternal mortality rate and increase in the institutional deliveries.

## **VII. PUNJAB**

### **CHILD HEALTH ACTION PLAN**

Though the State of Punjab has better health indicators as compared to many other States of the country, the Government of Punjab is committed to raising the health status of the people of the State. The rate of decline of infant and child mortality has not been comparable to the development of the State. The current IMR of 26/1000 (SRS 2013) and under-5 mortality rate of 34/1000 (SRS 2013) are still very high. The child action plan (2014-2017) – part of Mother and Child Health action plan is one cogent step in that direction.

#### **Programme Description**

The Mother and Child Health action Plan is a comprehensive document that lays out steps to improve maternal and child health in consonance with the RMNCH+A Strategy.

The plan lays out specific activities for the same:

- a. Care of the mother during pregnancy and delivery.
- b. Special care of the newborn child through Essential newborn Care.
- c. Care of the children through infancy up to 5 years of age, during school going period and care of adolescents.
- d. Care of pre-pregnant women is also an important component of the Mother and Child Health action plan.
- e. Emphasis has been laid on the care of the sick newborn, Home-based newborn Care, infant and Young Child Feeding, immunization, care of the sick child especially those suffering from pneumonia and diarrheal diseases.
- f. Provision of free drugs and diagnostics for all infants and for girl children up to 5 years of age.
- g. Free Diagnosis and treatment of 30 diseases in children has been provided under the Mother and Child Health action plan.

- h. Prevention of anemia with iron folic acid supplementation and biannual dose of Tab Albendazole are important components.
- i. Free treatment is provided to school children suffering from heart diseases like RHD/CHD, Cancer and Thalassaemia at government and empanelled private super specialty hospitals.
- j. Rational deployment of Human Resources and training of Human Resources for multitasking are an important part of the action plan.
- k. Up-gradation of infrastructure, including establishment of SNCUs, NBSUs and NBCCs at different levels and construction of Mother and Child Health Hospitals throughout the State are being taken up to improve healthcare services for children.

#### **Programme Outcomes**

Under-5 Mortality Rate has reduced from 38 (SRS 2013) to 34 (SRS 2013) while iMR has come down from 28 (SRS 2012) to 26 (SRS 2013) and NMR from 24 (SRS 2011) to 17 (SRS 2012).

### **VIII. TAMIL NADU**

#### **1. Dr. Muthulakshmi Reddy Maternity Benefit Scheme (MRMBS)**

To reduce the incidence of maternal and infant deaths in the State.

##### **Programme Description**

Muthulakshmi Reddy Maternity Benefit Scheme was implemented in 2006. It provides coverage to all pregnant women (18 years and above) belonging to BPL families. The objective is to provide financial support, compensate for wage loss and avoid maternal anemia during pregnancy (up to two children). Also to ensure a minimum 2.5 kg birth weight and immunization of infants. The scheme extends to Sri Lankan refugees and women members of Farmers Social Security Scheme. In the year 2011 the financial assistance received under the scheme increased to Rs. 12000 from Rs. 6000. This amount is disbursed in three equal installments to support for nutrition and referral transport. Amount is transferred to beneficiaries account from the treasuries through RECS. The beneficiaries are required to get themselves registered by opening a saving account in any nationalized Bank. They are then allotted with a unique ID called PICME number which stores all the details of the beneficiary. All the details are entered online using the systems of browsing centre.

##### **Financial Investment**

In 2014-15, Rs. 716 crores were provided by the Government for a smooth functioning of the scheme.

#### **2. Birth Companion Programme**

Birth Companions provide emotional support (continuous reassurance), information about labour progress and advice regarding coping techniques, comfort measures (comforting touch, massages, promoting adequate fluid intake and output), and advocacy (helping the woman articulate her wishes to others). Studies and reviews show that continuous support leads to slightly shorter labour, greater likelihood of spontaneous vaginal birth and reduced need for intra-partum analgesia. In addition, women who receive continuous support are less likely to report dissatisfaction with their childbirth experience.

The Birth Companion programme was launched by the Honourable Minister of Health and Family Welfare, Tamil Nadu on 25th August 2004, at Chennai. It is being implemented in all the public healthcare facilities in the State.

### **Pre requisites for a birth companion**

- Only female companions are allowed.
- She should have undergone the process of labour.
- She should not suffer from any communicable diseases.
- She should wear clean clothes.
- She should be willing to stay with the mother throughout the process of labour.
- She should not interfere in the work of hospital staff and the treatment procedures.
- She should not attend to other women in the labour room.

### **Programme Outcomes**

During the eleven years since the introduction of the programme:

- There were no adverse effects of allowing a companion during labour.
- All the mothers who have had a birth companion were very much contented and welcomed the opportunity of someone known to them being there in an alien atmosphere during the period of stress.
- The companions are able to understand the efforts put in by the medical professional at all times and more so during an emergency situation.
- Even in the event of any adverse outcome to the mother or child, they act as a witness to the efforts put in by the healthcare providers and help in making the relatives understand the situation.

## **IX TELANGANA**

### **1. Birth Preparedness and Parental Education for Better Materno-fetal Outcomes**

Poor and inadequate preparation of the mother and family is one of the major causes of all preventable maternal and infant deaths (as observed during project period Medak district) including female infanticides in the Indian situation.

It is a series of planned and structured informative sessions given according to the trimester, on specific, set days to all expectant mothers and their important family members, like mother-in-law/mother and husband, so that they become partners with the providers to help the mother enjoy a healthy pregnancy, pleasant childbirth and a healthy child, ultimately leading to a reduction in MMR and IMR.

#### **Methodology**

- A specific day (Friday) was allotted exclusively for conducting antenatal clinic – the second Friday and third Friday of every month were allotted for second trimester and third trimester mothers consecutively.
- A series of informative sessions were planned and prepared according to the trimester of pregnancy. Thus every mother who attends the antenatal clinic receives uniform information through group-teaching/discussion and demonstration, and posters.
- Birth preparedness and Parental Education was conducted for ten to fifteen minutes and mothers were taken to already improved and set Labour Rooms and shown the facilities that are available for them when they come to PHC for safe delivery.

- Feedback from mothers in reference to Birth preparedness and Parental education – comments and feedback to be written in the parental education book that had to be maintained by the staff nurse or Headquarters ANM.
- Initiation of Birth preparedness and Parental Education Sessions.
- Training of master trainers at Sweden, Karolinska Institute.
- Piloted in one district as one of the components of Medak Modal Project.
- Five levels of interventions were implemented – Facility level, Provider level, Community level, Programme level, Policy level.
- Operationalising Midwifery services in 36 round the clock PHCs, and 10 FRUs.
- Parental education was taught in “Midwifery Skill Enhancement Trainings” (a three-day training programme for staff nurses and Head Quarters/OP ANMs).
- Parental education was initiated at the provider level through PHC/Head quarters sub-centre at PHC kondapur in July 2007.
- Champions identified, rewarded and programme disseminated to other PHCs 18 out of 36 24x7 PHCs in Medak districts.

*Population Covered:* Since 2007, 1119 mothers attended the birth preparedness sessions.

### **Programme Outcomes**

Improved set up labour rooms, organized antenatal clinics and parental education gradually increased the number of deliveries in round the clock PHCs.

## **2. Labour Room Mandatory Protocols and Quality Practices: Safe Childbirth Checklist**

### **Problem Statement**

- Most mothers dying in postnatal period – 48.2%.
- 21.4% mothers Maternal Deaths in labour.
- 28.6% in Antenatal period.
- 1.8% deaths due to Abortion.

### **Programme Description**

The project was started on 11th March, 2014. Under the project all delivery points covering 10 HPDs were covered. Geographical area of TS 114,840 sq.kms/44,360 sq.miles and 6.7 lakhs expected deliveries in public health facilities.

### **Methodology: Strategy for rollout**

- State Level Sensitisation Workshop and TOT for creating State resource pool.
- District level trainings for service providers.
- Rapid assessment of Delivery points prior to implementation.
- Preparation of score cards and dissemination workshop focusing on complete gap filling.
- Implementation of labour room mandatory protocols and practices.
- Review and gap analysis by identified monitoring teams.
- Evaluation and discussion of findings at State level.
- Monitoring and supportive supervision.
- The monitoring team in the districts visit the facilities quarterly for supportive supervision.

### **Programme Outcomes**

- 154 master trainers and monitors trained.
- District level TOT conducted training a pool of 10-12 master trainers per district.
- Rapid assessment of Delivery points in a phased manner covering high load conducted in 2014-15; gaps identified and dissemination of gap filling exercises conducted.
- Gap analysis presented and discussed in presence of State level highest authorities.
- On duty job aid.
- Memory tool.
- Uniform standards and evidence of implementation/gap (checklist).
- Checklist audits analysis is constant reminder of the gaps in infrastructure/drugs/consumables/adherence to protocols/best practices status.
- Minimising errors during the crucial period so as to reduce MMR and ENMR rapidly and significantly.

## **First 1000 Days Programme: Global Initiative to Promote Health of Newborn and Neonates**

The 1,000 days between pregnancy and a child's 2<sup>nd</sup> birthday are the most critical time for positive impact on a child's cognitive and physical development. The health and well-being of a pregnant and lactating woman is directly connected to the growth and health of her infant. The right nutrition for the mother and for the child during this time can have a profound impact on the child's growth and development and reduce disease risk, as well as protect the mother's health. Undernutrition during pregnancy, affecting fetal growth, is a major determinant of stunting and can lead to consequences such as obesity and nutrition-related non-communicable diseases in adulthood.

Focusing multi-sectoral nutrition efforts on evidence-informed interventions targeting this critical window can have lasting implications across the lifecycle. The combination of good health and reduced disease risk for both mothers and their children can also have a powerful, lasting effect on a country's prosperity.

The *Lancet Maternal and Child Nutrition Series* (2013) ends its first paper with a reconfirmation of the focus on "pregnancy and the first 2 years of life, the crucial 1,000 days," called for in the previous (2008) series. Based on new evidence, the 2013 paper adds more emphasis to the "nutritional conditions in adolescence, at the time of conception, and during pregnancy as important for maternal health and survival, fetal growth, and subsequent early childhood survival, growth, and development. Fetal growth restriction and poor growth early in infancy are now recognized as important determinants of neonatal and infant mortality, stunting, and overweight and obesity in older children and adults. Preventive efforts should continue to focus on the 1,000 days, while therapeutic efforts continue to target severe wasting.

### **Multi-Sectoral Nutrition Strategy**

The goal of the U.S. Agency for International Development's (USAID's) nutrition-related efforts is "to improve nutrition to save lives, build resilience, increase economic productivity, and advance development." To realize this vision, we are building a world where countries sustain healthy, well-nourished populations and every child has the potential for a healthy and productive life. One important target toward this goal is to reduce chronic malnutrition, which can lead to stunting, by 20 per cent over 5 years in the areas of focus where we work. It is widely recognized that the "window of opportunity" for reducing stunting is the first 1,000 days from pregnancy to a child's 2<sup>nd</sup> birthday.

Approximately one-third of stunting is manifested as small for gestational age and preterm babies, which reflects the importance of targeting women during pregnancy and the pre-pregnancy period. Recent studies show the importance of diet and energy expenditure and seasonality during pregnancy for healthy birth outcomes. In addition to a variety of factors such as reducing infections and improving birth spacing, sufficient food, and rest for pregnant women, especially those engaged in agriculture and other strenuous jobs, should be important components of programs that support healthy pregnancies.

It is important to integrate maternal and newborn care as the health outcomes for mothers and their newborns and children are inextricably linked; maternal deaths and morbidities have an impact on newborn and child survival, growth, and development.<sup>4</sup> Therefore, an integral part of 1,000 days nutrition programming is to protect and support the mother-baby relationship and to encourage integrated strategies

and service delivery for both<sup>5</sup>; for example, preparation for immediate and exclusive breastfeeding should begin during prenatal care.

Pregnancy and infancy are critically important periods for brain development for a child. Mothers and babies need good nutrition to lay the foundation for the child's future cognitive, motor and social skills, school success, and productivity. Children with restricted development of these skills during early life are at risk for later neurological problems, poor school achievement, early school drop-out, low-skilled employment, and poor care of their own children, thus contributing to the intergenerational transmission of poverty and malnutrition.

It is widely recognized that the "window of opportunity" for reducing stunting is the 1,000 days from pregnancy through 2 years of age. Assuring adequate maternal nutrition prior to pregnancy is also likely to be important.

Although stunting reduction activities generally target children under 5 years of age, a large proportion of the linear growth deficits that make up the under-5 stunting burden are accumulated in the first 1,000 days. Similarly, acute malnutrition (caused by an illness and/or a recent and severe decrease in food consumption) peaks within this period before 24 months as a result of inadequate infant and young child feeding practices and high risk of exposure to infections.

Timely **nutrition-specific** interventions, at critical points in the lifecycle, can have a dramatic impact on reducing malnutrition globally if taken to scale in high-burden countries. If scaled to 90 per cent coverage, it is estimated that evidence-based, nutrition-specific interventions could reduce stunting by 20 per cent and severe wasting by 60 per cent. In addition, effective prevention and management of infectious diseases can also decrease the harmful effects of illness on nutritional status.

Nutrition-specific interventions alone will not eliminate undernutrition; however, in combination with **nutrition-sensitive** interventions, there is enormous potential to enhance the effectiveness of nutrition investments worldwide.

# 9

# REFERENCES



## REFERENCES

1. India, Ministry of Health and Family Welfare, New Delhi. (2013). A Strategic Approach to Reproductive, Maternal, Newborn Child and Adolescent Health (RMNCH+A) in India. New Delhi, 83 pgs
2. India, Ministry of Health and Family Welfare, New Delhi. (2014). INAP: India Newborn Action Plan. New Delhi, 84 pgs.
3. India, Ministry of Health and Family Welfare, New Delhi. (2015). Making a Difference: Good, Replicable and Innovative Practices. New Delhi, 165 pgs.
4. India, Ministry of Health and Family Welfare, New Delhi. (2014). Operational Guidelines : Use of Gentamycin by ANMs for Management of Sepsis in Young Infants under Specific Situations. New Delhi, 27 pgs
5. India, Ministry of Health and Family Welfare, New Delhi. (2014). Steps for Management of Sepsis in Young Infants by ANMs. New Delhi, 1 pg
6. India, Ministry of Health and Family Welfare and National Health Mission, New Delhi. (2014). Home Based Newborn Care: Operational Guidelines (Revised 2014). New Delhi, 40 pgs.
7. India, Ministry of Health and Family Welfare, Adolescent Division, New Delhi. Guidelines for Control of Iron Deficiency Anaemia: National Iron + Initiative (2013). New Delhi, 54 pgs.
8. India, Ministry of Health and Family Welfare, Child Health Division and National Health Mission, New Delhi. (September 2014). Kangaroo Mother Care & Optimal Feeding of Low Birth Weight Infants: Operational Guidelines for Programme Managers & Service Providers. New Delhi, 68 pgs.
9. India, Ministry of Health and Family Welfare, Child Health Division and National Health Mission, New Delhi. (June 2014). Use of Antenatal Corticosteroid in Preterm Labour (Under Specific Conditions by ANM). New Delhi, 34 pgs.
10. India, Ministry of Health and Family Welfare, Child Health Division and National Health Mission, New Delhi. (2014). Injection Vitamin K Prophylaxis at Birth (in Facilities). New Delhi, 20 pgs.
11. India, Ministry of Health and Family Welfare, Child Health Division and National Rural Health Mission, New Delhi. (2013). Guidelines for Enhancing Optimal Infant and Young Child Feeding Practices. New Delhi, 76 pgs.
12. India, Ministry of Health and Family Welfare, Child Health Division and National Rural Health Mission, New Delhi. (2010). Operational Guidelines on Maternal and Newborn Health. New Delhi, 57 pgs.
13. India, Ministry of Health and Family Welfare, Child Health Division; National Rural Health Mission, New Delhi; Indian Academy of Pediatrics; and WHO-CC for Training and Research in Newborn Care, AIIMS, New Delhi. Navjaat Shishu Suraksha Karyakram: Basic Newborn Care and Resuscitation Program Manual (2010). Operational Guidelines on Maternal and Newborn Health. New Delhi, 93 pgs.
14. India, Ministry of Health and Family Welfare, Maternal Health Division, New Delhi. Maternal and Newborn Health Toolkit (2013). New Delhi, 196 pgs.
15. India, Ministry of Health and Family Welfare, Maternal Health Division, New Delhi. Maternal Near Miss Review: Operational Guidelines (2014). New Delhi, 46 pgs.

16. India, Ministry of Health and Family Welfare, Maternal Health Division, New Delhi. National Guidelines for Calcium Supplementation during Pregnancy and Lactation (2014). New Delhi, 36 pgs.
17. India, Ministry of Health and Family Welfare, Maternal Health Division, New Delhi. National Guidelines for Deworming in Pregnancy (2014). New Delhi, 40 pgs.
18. India, Ministry of Health and Family Welfare, Maternal Health Division, New Delhi. Operational Guidelines and Reference Manual for Advance Distribution of Misoprostol to Prevent Postpartum Hemorrhage during Home Births (2013). New Delhi, 44 pgs.
19. India, Ministry of Health and Family Welfare, Maternal Health Division, New Delhi. Screening for Syphilis during Pregnancy (2014). New Delhi, 56 pgs.
20. India, Ministry of Health and Family Welfare and International Institute of Population Sciences, Mumbai (2010). District Level Household Survey and Facility Survey (DLHS-3)- 2007-08: India. Mumbai, IIPS. pp 17-134.
21. India, Ministry of Health and Family Welfare and National Rural Health Mission, New Delhi. (2010). Operational Guidelines on Maternal and Newborn Health. 57 pgs.
22. India, Ministry of Home Affairs, Office of Registrar General and Census Commissioner, New Delhi (2014). Sample Registration System Statistical Report 2013: Report No. 1 of 2014. New Delhi. 225 p.
23. India, Ministry of Home Affairs, Office of Registrar General and Census Commissioner, New Delhi (2013). Sample Registration System Statistical Report 2012: Report No. 1 of 2013. New Delhi. 225 p.
24. India, Ministry of Home Affairs, Office of Registrar General and Census Commissioner, New Delhi (2013). Sample Registration System Statistical Report 2011: Report No. 1 of 2013. New Delhi. 225 p.
25. India, Ministry of Home Affairs, Office of Registrar General and Census Commissioner, New Delhi (2012). Sample Registration System Statistical Report 2010: Report No. 1 of 2012. New Delhi. 225 p.
26. India, Ministry of Home Affairs, Office of Registrar General and Census Commissioner, New Delhi (2011). Sample Registration System Statistical Report 2009: Report No. 1 of 2011. New Delhi. 225 p.
27. India, Ministry of Home Affairs, Office of Registrar General, New Delhi (2008). Sample Registration System Statistical Report 2007: Report No. 2 of 2007. New Delhi. 211 p.
28. India, Ministry of Home Affairs, Office of Registrar General, New Delhi (2007). Sample Registration System Statistical Report 2006: Report No. 4 of 2007. New Delhi. 211 p.
29. India, Ministry of Home Affairs, Office of Registrar General, New Delhi (2006). Sample Registration System Statistical Report 2005: Report No. 2 of 2006. New Delhi. 210 p.
30. India, Ministry of Home Affairs, Office of Registrar General, New Delhi (2006). Sample Registration System Statistical Report 2004: Report No. 1 of 2006. New Delhi. 198 p.
31. India, Ministry of Home Affairs, Office of Registrar General, New Delhi (2005). Sample Registration System Statistical Report 2003: Report No. 2 of 2005. New Delhi. 173 p.
32. India, Ministry of Home Affairs, Office of Registrar General, New Delhi (2004). Sample Registration System Statistical Report 2002: Report No. 3 of 2004 New Delhi. 173 p.
33. India, Ministry of Home Affairs, Office of Registrar General, New Delhi (2004). Sample Registration System Statistical Report 2001: Report No. 1 of 2004 New Delhi. 173 p.

34. India, Ministry of Home Affairs, Office of Registrar General, New Delhi (2003). Sample Registration System Statistical Report 2000: Report No. 5 of 2003. New Delhi. 176 p.
35. India, Ministry of Programme Implementation, Social Statistics Division, New Delhi (2014). Millennium Development Goals: India Country Report 2014. New Delhi. pp. 78-93.
36. India, Ministry of Women and Child Development, Rapid Survey on Children, 2013-14, Fact Sheets. New Delhi. 10 p
37. National Institute of Public Cooperation and Child Development (NIPCCD), New Delhi (2015). An Analysis of Levels and Trends in Maternal Health and Maternal Mortality Ratio in India: A Report, 182 p
38. National Institute of Public Cooperation and Child Development (NIPCCD), New Delhi (2014). An Analysis of Levels and Trends in Infant and Child Mortality Rates in India. 228 p
39. National Institute of Public Cooperation and Child Development (NIPCCD), New Delhi (2013). Statistics on Children in India : A Handbook. 460 p
40. National Institute of Public Cooperation and Development, New Delhi. (2010). Growth Monitoring Manual. New Delhi. 179 p.
41. National Institute of Public Cooperation and Development, New Delhi. (2013). Guide Book: Mother and Child Protection Card. New Delhi. 125 p.
42. UNICEF, New Delhi (2010). Coverage Evaluation Survey 2009: All India Report. New Delhi. pp 67-131.
43. World Health Organization, Save the Children, The Partnership for Maternal, Newborn & Child Health and March of Dimes. (2012). Born Too Soon: The Global Action Report on Preterm Birth. Geneva. 126 p.
44. [www.wcd.nic.in](http://www.wcd.nic.in). Mother and Child Protection Card under ICDS and MRHM. Secretary's Letter. 2010, March. 2 pgs
45. <http://censusindia.gov.in/>
46. [www.pradhanmantriyojana.co.in](http://www.pradhanmantriyojana.co.in)
47. <http://nrhm.gov.in/>
48. <http://wcd.nic.in/>



**PART II**  
**DETAILED TABLES ON**  
**MATERNAL AND CHILD**  
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**Table 1: Maternal Mortality Ratio (MMR) India, EAG & Assam, South and Other States, (SRS 2004-06 to 2011-13)**

	2004-06	2007-09	2010-12	2011-13	% of Change during 2004-13
<b>INDIA TOTAL</b>	254	212	178	167	-34.25
<b>EAG AND ASSAM</b>	375	308	257	246	-34.40
<b>SOUTH</b>	149	127	105	93	-37.58
<b>OTHER</b>	174	149	127	115	-33.91

**Table 2: Maternal Mortality Ratio (MMR) India, EAG & Assam, South and Other States (SRS 2004-06 to 2011-13)**

Sl. No	India & Major States	2004-06	2007-09	2010-12	2011-13	% of Change during 2004-13
1	Assam	480	390	328	300	-37.5
2	Bihar/Jharkhand	312	261	219	208	-33.3
3	Madhya Pradesh/Chhattisgarh	335	269	230	221	-34.0
4	Orissa	303	258	235	222	-26.7
5	Rajasthan	388	318	255	244	-37.1
6	Uttar Pradesh/Uttarkhand	440	359	292	285	-35.2
	<b>EAG AND ASSAM SUB-TOTAL</b>	375	308	257	246	-34.4
7	Andhra Pradesh	154	134	110	92	-40.3
8	Karnataka	213	178	144	133	-37.6
9	Kerala	95	81	66	61	-35.8
10	Tamil Nadu	111	97	90	79	-28.8
	<b>SOUTH SUB-TOTAL</b>	149	127	105	93	-37.6
11	Gujarat	160	148	122	112	-30.0
12	Haryana	186	153	146	127	-31.7
13	Maharashtra	130	104	87	68	-47.7
14	Punjab	192	172	155	141	-26.6
15	West Bengal	141	145	117	113	-19.9
16	Other	206	160	136	126	-38.8
	<b>OTHER SUB-TOTAL</b>	174	149	127	115	-33.9
	<b>INDIA TOTAL</b>	<b>254</b>	<b>212</b>	<b>178</b>	<b>167</b>	<b>-34.3</b>

Source: Office of Registrar General of India

**Table 3: Mean Age at Effective Marriage of Females by Residence, India and Bigger States, SRS 2013**

India and bigger states	Age at effective marriage											
	Total				Rural				Urban			
	<18	18-20	21+	All ages	<18	18-20	21+	All ages	<18	18-20	21+	All ages
<b>India</b>	<b>16.5</b>	<b>19.2</b>	<b>23.6</b>	<b>21.3</b>	<b>16.5</b>	<b>19.1</b>	<b>23.3</b>	<b>21.0</b>	<b>16.6</b>	<b>19.3</b>	<b>24.1</b>	<b>22.5</b>
<b>Andhra Pradesh</b>	16.8	19.2	22.8	20.7	16.8	19.1	22.6	20.3	16.8	19.4	23.2	21.8
<b>Assam</b>	16.2	19.0	24.1	21.4	16.2	19.0	23.9	21.1	16.0	19.2	25.3	23.4
<b>Bihar</b>	16.4	19.1	23.4	21.1	16.4	19.1	23.2	21.0	16.2	19.2	24.6	22.4
<b>Chhattisgarh</b>	16.8	18.9	23.4	20.3	16.8	18.9	23.2	20.0	17.0	19.2	24.0	21.7
<b>Delhi</b>	16.8	19.3	24.1	22.8	17.0	19.2	23.1	21.8	16.5	19.3	24.2	23.0
<b>Gujarat</b>	16.6	19.4	23.5	21.6	16.7	19.3	23.0	21.0	16.5	19.5	24.1	22.7
<b>Haryana</b>	16.1	19.3	23.1	21.1	16.0	19.3	22.7	20.7	16.8	19.3	23.8	22.4
<b>Himachal Pradesh</b>	17.0	19.6	23.3	22.5	17.0	19.6	23.2	22.4	17.0	19.5	24.5	24.0
<b>Jammu &amp; Kashmir</b>	16.3	19.5	25.1	24.4	16.4	19.6	24.9	24.1	16.0	19.3	26.1	25.8
<b>Jharkhand</b>	16.6	19.2	23.3	20.5	16.6	19.2	23.0	20.2	17.0	19.3	24.0	21.9
<b>Karnataka</b>	16.7	19.1	23.8	21.3	16.7	19.1	23.5	20.9	16.6	19.0	24.2	22.2
<b>Kerala</b>	16.5	19.2	24.6	23.1	16.6	19.2	24.6	22.9	15.0	19.3	24.8	23.8
<b>Madhya Pradesh</b>	16.8	19.0	23.2	20.6	16.8	19.0	22.7	20.2	16.7	19.2	24.0	22.2
<b>Maharashtra</b>	16.7	19.1	23.3	21.1	16.8	19.1	22.5	20.4	16.7	19.1	24.3	22.5
<b>Odisha</b>	16.4	19.1	24.0	21.4	16.4	19.1	23.8	21.2	16.4	19.2	24.7	22.9
<b>Punjab</b>	17.0	19.4	23.6	22.7	17.0	19.4	23.5	22.5	17.0	19.4	23.7	22.9
<b>Rajasthan</b>	16.5	19.2	22.8	20.7	16.5	19.2	22.6	20.4	16.5	19.4	23.2	21.6
<b>Tamil Nadu</b>	16.7	19.3	23.8	22.4	16.5	19.3	23.6	22.1	16.9	19.4	24.1	22.8
<b>Uttar Pradesh</b>	16.3	19.3	23.7	21.6	16.4	19.2	23.6	21.4	15.3	19.4	24.2	22.9
<b>West Bengal</b>	16.7	19.0	23.5	20.7	16.7	19.0	22.9	20.2	16.9	19.1	24.4	22.1

**Table 4: Percentage of Currently Married Women Aged 20-24 Years Married before Legal Age (18 Years) AHS 2010-11, 2011-12 and 2012-13**

State	2010-11			2011-12			2012-13		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
Assam	39.4	40.2	34.1	36.7	37.5	31.8	35.0	35.8	29.5
Bihar	54.6	55.7	44.8	52.4	53.5	42.4	49.2	50.3	39.7
Chhattisgarh	38.4	40.7	27.9	34.7	36.5	26.0	33.1	34.8	23.9
Jharkhand	51.8	55.1	39.1	48.3	51.6	35.1	45.2	48.4	32.1
Madhya Pradesh	48.1	53.2	33.1	46.1	50.8	31.2	42.0	46.5	27.7
Odisha	30.9	31.6	27.3	28.8	29.3	25.6	25.9	26.3	22.9
Rajasthan	57.1	60.7	43.3	54.1	57.6	40.6	51.2	54.7	36.9
Uttar Pradesh	39.2	41.7	27.0	35.8	38.2	23.9	32.6	34.8	21.4
Uttarakhand	25.2	26.6	20.1	22.7	23.9	18.6	18.5	19.6	15.1

**Table 5: Percentage Distribution of Second and Higher Order Live Births by Interval, India and Bigger States, (SRS, 2013)**

India and bigger States	Interval between current and previous live birth (in months)			
	10 to 12	12 to 24	24 to 36	36+
India	1.8	28.0	29.5	40.7
Andhra Pradesh	0.9	33.3	31.0	34.8
Assam	1.5	17.8	22.9	57.8
Bihar	1.4	32.6	30.8	35.2
Chhattisgarh	2.9	26.0	33.5	37.7
Delhi	0.6	22.2	23.5	53.7
Gujarat	2.6	26.8	29.4	41.2
Haryana	1.8	29.9	31.0	37.4
Himachal Pradesh	1.9	30.9	27.3	39.9
Jammu & Kashmir	1.3	22.3	27.0	49.4
Jharkhand	2.5	24.1	29.4	44.0
Karnataka	0.6	31.3	33.7	34.3
Kerala	0.2	12.0	21.9	65.9
Madhya Pradesh	2.2	30.9	35.9	31.0
Maharashtra	1.1	28.8	30.2	40.0
Odisha	0.9	16.6	26.8	55.7
Punjab	1.7	26.8	28.6	42.9
Rajasthan	2.8	32.8	29.0	35.5
Tamil Nadu	0.8	26.6	30.4	42.2
Uttar Pradesh	2.2	29.2	28.2	40.4
West Bengal	1.1	17.8	24.5	56.5

**Table 6: Total Fertility Rate (TFR) by Residence, India and Bigger States, (SRS 2013)**

<b>India and bigger states</b>	<b>Total</b>	<b>Rural</b>	<b>Urban</b>
India	<b>2.3</b>	<b>2.5</b>	<b>1.8</b>
<b>Andhra Pradesh</b>	1.8	1.9	1.7
<b>Assam</b>	2.3	2.4	1.5
<b>Bihar</b>	3.4	3.5	2.5
<b>Chhattisgarh</b>	2.6	2.8	1.8
<b>Delhi</b>	1.7	1.8	1.7
<b>Gujarat</b>	2.3	2.5	2.0
<b>Haryana</b>	2.2	2.3	2.0
<b>Himachal Pradesh</b>	1.7	1.7	1.2
<b>Jammu &amp; Kashmir</b>	1.9	2.0	1.3
<b>Jharkhand</b>	2.7	2.9	2.0
<b>Karnataka</b>	1.9	2.0	1.6
<b>Kerala</b>	1.8	1.9	1.8
<b>Madhya Pradesh</b>	2.9	3.1	2.0
<b>Maharashtra</b>	1.8	1.9	1.6
<b>Odisha</b>	2.1	2.2	1.5
<b>Punjab</b>	1.7	1.7	1.6
<b>Rajasthan</b>	2.8	3.0	2.3
<b>Tamil Nadu</b>	1.7	1.7	1.7
<b>Uttar Pradesh</b>	3.1	3.3	2.5
<b>West Bengal</b>	1.6	1.8	1.2

**Table 7: TFR (Total Fertility Rate) by Residence, India and Bigger States (SRS 2012, 2011, 2010, 2009, 2005, 2000)**

India and bigger states	2012			2011			2010			2009			2005			2000		
	Total	Rural	Urban															
<b>India</b>	<b>2.4</b>	<b>2.6</b>	<b>1.8</b>	<b>2.4</b>	<b>2.7</b>	<b>1.9</b>	<b>2.5</b>	<b>2.8</b>	<b>1.9</b>	<b>2.6</b>	<b>2.9</b>	<b>2.0</b>	<b>2.9</b>	<b>3.2</b>	<b>2.1</b>	<b>3.2</b>	<b>3.5</b>	<b>2.3</b>
<b>Andhra Pradesh</b>	1.8	1.9	1.7	1.8	1.9	1.7	1.8	1.9	1.6	1.9	2.0	1.6	2.0	2.2	1.7	2.3	2.5	2.0
<b>Assam</b>	2.4	2.5	1.5	2.4	2.6	1.5	2.5	2.7	1.6	2.6	2.8	1.6	2.9	3.1	1.6	3.1	3.3	1.8
<b>Bihar</b>	3.5	3.6	2.5	3.6	3.7	2.6	3.7	3.8	2.7	3.9	4.0	2.8	4.3	4.4	3.2	4.5	4.7	3.4
<b>Chhattisgarh</b>	2.7	2.9	1.8	2.7	2.9	1.9	2.8	3.0	1.9	3.0	3.2	2.0	3.4	3.7	2.2			
<b>Delhi</b>	1.8	1.9	1.8	1.8	1.9	1.8	1.9	2.1	1.9	1.9	2.0	1.9	2.1	2.2	2.1			
<b>Gujarat</b>	2.3	2.5	2.0	2.4	2.6	2.0	2.5	2.7	2.1	2.5	2.8	2.1	2.8	3.1	2.3	2.9	3.2	2.3
<b>Haryana</b>	2.3	2.4	2.0	2.3	2.4	2.0	2.3	2.5	2.0	2.5	2.6	2.2	2.8	3.0	2.3	3.2	3.4	2.6
<b>Himachal Pradesh</b>	1.7	1.7	1.2	1.8	1.8	1.2	1.8	1.9	1.3	1.9	1.9	1.3	2.2	2.2	1.5	2.3	2.3	1.8
<b>Jammu &amp; Kashmir</b>	1.9	2.0	1.3	1.9	2.1	1.3	2.0	2.2	1.4	2.2	2.4	1.4	2.4	2.6	1.6			
<b>Jharkhand</b>	2.8	3.0	2.0	2.9	3.2	2.1	3.0	3.2	2.1	3.2	3.4	2.2	3.5	3.9	2.3			
<b>Karnataka</b>	1.9	2.0	1.7	1.9	2.0	1.7	2.0	2.1	1.7	2.0	2.2	1.7	2.2	2.5	1.8	2.4	2.6	2.0
<b>Kerala</b>	1.8	1.9	1.8	1.8	1.9	1.8	1.8	1.8	1.8	1.7	1.7	1.8	1.7	1.7	1.7	1.9	1.9	1.8
<b>Madhya Pradesh</b>	2.9	3.1	2.0	3.1	3.3	2.1	3.2	3.5	2.2	3.3	3.6	2.3	3.6	4.0	2.5	4.0	4.5	2.6
<b>Maharashtra</b>	1.8	2.0	1.6	1.8	1.9	1.6	1.9	2.0	1.7	1.9	2.1	1.8	2.2	2.4	1.9	2.5	2.6	2.2
<b>Odisha</b>	2.1	2.2	1.5	2.2	2.3	1.5	2.3	2.4	1.6	2.4	2.5	1.6	2.6	2.7	1.7	2.8	2.9	2.1
<b>Punjab</b>	1.7	1.7	1.6	1.8	1.8	1.7	1.8	1.8	1.7	1.9	1.9	1.7	2.1	2.2	1.9	2.4	2.6	2.1
<b>Rajasthan</b>	2.9	3.1	2.3	3.0	3.2	2.4	3.1	3.3	2.4	3.3	3.6	2.5	3.7	4.0	2.7	4.1	4.4	2.9
<b>Tamil Nadu</b>	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.6	1.7	1.8	1.7	1.7	1.8	1.6	2.1	2.2	1.8
<b>Uttar Pradesh</b>	3.3	3.4	2.5	3.4	3.6	2.6	3.5	3.7	2.7	3.7	3.9	3.0	4.2	4.5	3.3	4.7	5.0	3.5
<b>West Bengal</b>	1.7	1.8	1.2	1.7	1.9	1.3	1.8	2.0	1.3	1.9	2.1	1.3	2.1	2.4	1.4	2.4	2.7	1.6

**Table 8: Total Fertility Rate, AHS 2010-11, 2011-12 and 2012-13**

State	2010-11			2011-12			2012-13		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
Assam	2.6	2.7	1.9	2.4	2.6	1.8	2.4	2.5	1.7
Bihar	3.7	3.9	2.8	3.6	3.8	2.6	3.5	3.7	2.5
Chhattisgarh	2.9	3.1	2.3	2.8	3.0	2.2	2.7	2.9	2.1
Jharkhand	3.1	3.3	2.4	2.9	3.1	2.3	2.7	2.9	2.2
Madhya Pradesh	3.1	3.5	2.4	3.1	3.4	2.3	3.0	3.3	2.3
Odisha	2.3	2.4	1.9	2.3	2.3	1.9	2.2	2.3	1.8
Rajasthan	3.2	3.4	2.5	3.1	3.3	2.5	2.9	3.1	2.4
Uttar Pradesh	3.6	3.9	2.7	3.4	3.7	2.5	3.3	3.6	2.4
Uttrakhand	2.3	2.4	2.0	2.1	2.3	1.6	2.1	2.3	1.8

**Table 9: Unmet Need for Family Planning among Currently Married Women, NFHS, 3, 2005-06**

Background characteristic	Unmet need for family planning		
	For spacing	For limiting	Total
<b>Age</b>			
15-19	25.1	2.0	27.1
20-24	14.9	6.2	21.1
25-29	6.0	9.9	16.0
30-34	2.1	9.0	11.0
35-39	0.5	6.9	7.4
40-44	0.1	4.2	4.3
45-49	0.1	1.8	1.9
<b>Residence</b>			
Urban	4.5	5.2	9.7
Rural	6.9	7.2	14.1
<b>Mother's education</b>			
No education	5.5	8.1	13.6
<5 years complete	5.2	5.2	10.4
5-7 years complete	7.3	5.2	12.5
8-9 years complete	7.7	5.7	13.5
10-11 years complete	7.0	5.2	12.1
12 or more years complete	6.0	4.7	10.7
<b>Religion</b>			
Hindu	5.8	6.1	11.9
Muslim	8.6	10.2	18.8
Christian	6.4	6.1	12.5
Sikh	2.3	4.1	6.4
Buddhist/Neo-Buddhist	5.6	3.8	9.5
Jain	3.0	4.2	7.3
Other	10.3	14.6	24.9
<b>Caste/Tribe</b>			
Scheduled caste	6.3	7.1	13.4
Scheduled tribe	6.8	7.1	13.9
Other backward class	6.7	6.7	13.4

Other	5.2	6.1	11.3
<b>Wealth Index</b>			
Lowest	7.7	10.5	18.2
Second	7.3	7.5	14.8
Middle	6.5	6.3	12.8
Fourth	5.7	5.0	10.6
Highest	3.9	4.1	8.1
<b>Total</b>	<b>6.2</b>	<b>6.6</b>	<b>12.8</b>

Table 10: Total Unmet Need for Family Planning, AHS 2010-11, 2011-12 and 2012-13

State	2010-11			2011-12			2012-13		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
Assam	24.0	25.0	19.6	15.9	17.0	11.3	13.1	13.7	10.3
Bihar	39.2	40.6	30.0	33.5	34.7	25.2	31.5	32.4	25.2
Chhattisgarh	26.4	27.1	23.7	24.8	24.8	24.6	24.4	24.1	25.9
Jharkhand	30.5	33.6	21.5	22.6	24.8	16.1	22.3	24.9	14.8
Madhya Pradesh	22.4	23.3	20.6	21.6	21.8	21.2	21.6	21.5	21.8
Odisha	23.2	23.5	21.7	19.1	19.0	19.9	18.9	19.0	18.2
Rajasthan	19.6	20.5	16.9	12.6	13.1	10.9	13.0	13.5	11.6
Uttar Pradesh	29.7	31.5	23.2	24.1	26.0	17.1	20.7	22.3	15.1
Uttarakhand	23.2	24.7	19.5	18.1	18.2	17.6	15.3	14.7	16.4

Table 11: Trends in Maternal Care Indicator, (NFHS 3, 2005-06)

Indicator	NFHS-3 (2005-06)	NFHS-2 (1998-99)	NFHS-1 (1992-93)
<b>URBAN</b>			
Percentage who received antenatal care <sup>1</sup>	90.7	86.5	<b>83.0</b>
Percentage who had at least three ante natal care visits <sup>1</sup>	73.8	70.1	<b>66.8</b>
Percentage who received antenatal care within the first trimester of pregnancy <sup>1</sup>	63.0	55.8	<b>40.9</b>
Percentage of births delivered in a health facility <sup>2</sup>	69.4	65.1	<b>58.4</b>
Percentage of deliveries assisted by health personnel <sup>2,3</sup>	75.3	73.3	<b>66.4</b>
<b>RURAL</b>			
Percentage who received antenatal care <sup>1</sup>	72.2	59.9	<b>59.2</b>
Percentage who had at least three antenatal care visits <sup>1</sup>	42.8	36.9	<b>37.3</b>
Percentage who received antenatal care within the first trimester of pregnancy <sup>1</sup>	36.1	26.7	<b>20.2</b>
Percentage of births delivered in a health facility <sup>2</sup>	31.1	24.7	<b>16.7</b>
Percentage of deliveries assisted by health personnel <sup>2,3</sup>	39.9	33.5	<b>25.9</b>
<b>TOTAL</b>			
Percentage who received antenatal care <sup>1</sup>	76.9	65.8	<b>64.6</b>
Percentage who had at least three antenatal care visits <sup>1</sup>	50.7	44.2	<b>43.9</b>
Percentage who received antenatal care within the first trimester of pregnancy <sup>1</sup>	43.0	33.1	<b>24.9</b>

<b>Percentage of births delivered in a health facility<sup>2</sup></b>	<b>40.8</b>	<b>33.6</b>	<b>26.1</b>
<b>Percentage of deliveries assisted by health personnel<sup>2,3</sup></b>	<b>48.8</b>	<b>42.4</b>	<b>35.1</b>

1 Based on the last birth to ever-married women in the three years preceding the survey.

2 Based on the last two births to ever-married women in the three years preceding the survey.

3 Doctor, auxiliary nurse midwife, nurse, midwife, lady health visitor, or other health personnel

**Table 12: Components of Antenatal Care, DLHS 3, 2007-08 (in percentages)**

Background characteristic	Women who received TT			Women who consumed IFA tablets/syrup		
	No TT	1	2+	No IFA/syrup	for 90 days or more	Full ANC <sup>b</sup>
<b>Age (in years)</b>						
<b>15-19</b>	25.7	6.2	67.7	20.2	19.1	14.4
<b>20-24</b>	22.9	6.2	70.5	16.7	25.2	19.4
<b>25-29</b>	24.9	6.1	68.4	15.5	27.2	20.9
<b>30-34</b>	30.4	6.0	63.1	16.2	24.3	18.2
<b>35+</b>	41.6	6.7	51.3	16.4	17.4	12.9
<b>No. of living children</b>						
<b>0</b>	26.4	6.5	67.0	21.3	20.5	16.8
<b>1</b>	16.3	4.6	78.6	15.4	33.2	26.6
<b>2</b>	20.3	6.8	72.3	14.6	30.4	23.6
<b>3</b>	28.8	7.2	63.7	17.3	20.8	15.2
<b>4+</b>	44.5	6.6	48.5	18.8	11.0	7.0
<b>Residence</b>						
<b>Rural</b>	31.5	6.5	61.7	16.3	20.2	14.7
<b>Urban</b>	14.4	5.5	79.5	16.6	36.0	29.5
<b>Education</b>						
<b>Non-literate<sup>a</sup></b>	43.0	5.7	51.0	19.4	10.7	6.9
<b>Less than 5 years</b>	27.7	8.1	63.7	16.3	20.2	14.4
<b>5-9 years</b>	17.8	7.1	74.5	15.5	28.5	21.8
<b>10 or more years</b>	6.6	5.2	87.6	11.8	48.1	39.6
<b>Religion</b>						
<b>Hindu</b>	26.7	5.6	67.3	15.7	25.0	18.8
<b>Muslim</b>	27.1	5.4	67.1	22.5	21.1	18.1
<b>Christian</b>	27.8	16.9	54.2	12.8	29.4	24.0
<b>Sikh</b>	15.6	2.1	82.2	18.2	24.1	16.2
<b>Buddhist/Neo Buddhist</b>	18.4	14.1	66.4	8.8	34.5	21.9
<b>Jain</b>	4.2	4.1	91.7	17.2	42.9	41.2
<b>No religion</b>	50.8	6.1	42.4	4.2	18.3	9.2
<b>Other</b>	44.1	6.9	48.5	6.5	17.9	8.5
<b>Caste/Tribe</b>						
<b>Scheduled caste</b>	29.0	5.7	65.0	16.4	20.4	15.1
<b>Scheduled tribe</b>	36.8	10.5	52.0	10.1	22.0	14.7
<b>Other backward class</b>	27.0	5.2	67.4	19.0	24.0	19.2
<b>Other</b>	17.6	5.2	76.7	16.6	30.4	23.7
<b>Wealth index</b>						

<b>Lowest</b>	47.2	6.0	46.5	15.7	10.6	6.0
<b>Second</b>	38.4	6.1	55.2	18.3	13.6	9.0
<b>Middle</b>	27.7	7.4	64.5	16.8	21.0	15.9
<b>Fourth</b>	17.4	6.8	75.2	16.8	29.7	23.5
<b>Highest</b>	7.5	4.8	87.2	14.6	44.4	36.2
<b>India (15-49)</b>	<b>26.7</b>	<b>6.2</b>	<b>66.6</b>	<b>16.4</b>	<b>24.6</b>	<b>18.8</b>
<b>India (15-44)+</b>	<b>26.6</b>	<b>6.6</b>	<b>66.8</b>	<b>16.4</b>	<b>27.3</b>	<b>18.8</b>

Note: <sup>a</sup>Literate but did not attend school, are also included. <sup>†</sup> Represents figures for currently married women aged 15-44 years.

**Table 13: State-wise Distribution of Women by Antenatal Care, TT Injections and IFA Tablets, (CES, 2009)**

States/UTs	Received Antenatal Checkups				TT injections			IFA tablets/syrup for 100+ days		Full ANC*
	0	Atleast one	3+	4+	0	1	2+	Received	Consumed	
Andhra Pradesh	0.5	99.5	97.0	92.9	4.4	1.7	93.9	56.4	49.1	46.2
Arunachal Pradesh	30.2	69.8	50.4	29.9	25.4	10.5	64.1	28.2	23.2	16.3
Assam	10.4	89.6	66.4	33.5	6.7	3.2	90.1	47.9	29.9	21.3
Bihar	15.7	84.3	33.8	14.7	4.8	9.3	85.9	8.4	6.7	4.5
Chhattisgarh	1.3	98.7	71.4	41.6	3.2	8.5	88.4	31.0	26.9	19.9
Delhi	4.1	95.9	83.4	73.9	2.9	4.7	92.4	60.2	47.0	41.6
Goa	0.8	99.2	97.7	95.5	5.1	7.5	87.4	64.9	55.3	53.4
Gujarat	5.2	94.8	83.2	73.1	8.0	12.4	79.7	53.3	48.6	45.7
Haryana	10.6	89.4	68.6	57.2	4.2	6.8	88.9	56.8	49.1	42.9
Himachal Pradesh	8.7	91.3	67.4	44.6	2.8	14.1	83.1	65.7	49.2	39.2
Jammu & Kashmir	6.2	93.8	87.0	76.3	3.6	2.0	94.5	53.1	46.6	43.5
Jharkhand	12.4	87.6	57.5	25.7	4.9	5.3	89.8	30.1	14.0	10.9
Karnataka	2.5	97.5	91.3	78.1	3.8	4.9	91.3	52.7	43.9	40.2
Kerala	2.6	97.4	90.8	90.1	7.0	3.0	90.0	87.4	83.4	77.9
Madhya Pradesh	7.7	92.3	60.0	36.0	5.8	7.0	87.2	20.0	14.3	11.1
Maharashtra	2.7	97.3	82.6	69.1	5.1	15.5	79.4	36.7	29.2	27.0
Manipur	6.3	93.7	85.0	61.1	5.6	7.5	86.9	37.3	31.0	28.4
Meghalaya	4.9	95.1	71.0	42.9	5.8	17.7	76.6	55.6	35.5	28.1
Mizoram	8.1	91.9	79.0	65.7	7.4	19.0	73.7	34.8	25.5	21.7
Nagaland	46.3	53.7	29.4	11.8	37.3	16.2	46.6	8.7	5.4	3.5
Orissa	2.0	98.0	77.0	58.9	4.0	0.8	95.2	61.0	46.8	37.5
Punjab	4.7	95.3	73.4	48.1	3.0	4.4	92.6	41.3	33.9	29.4
Rajasthan	13.2	86.8	55.2	27.8	11.1	7.9	81.0	28.5	22.0	14.6
Sikkim	8.1	91.9	87.3	83.8	11.5	2.1	86.5	49.7	29.5	27.7
Tamil Nadu	1.5	98.5	92.6	89.0	4.4	3.1	92.5	55.1	48.0	44.1
Tripura	9.1	90.9	83.1	80.9	8.1	1.1	90.9	37.1	22.3	21.5
Uttar Pradesh	28.4	71.6	38.2	23.4	12.1	7.3	80.6	34.1	19.5	12.4
Uttarakhand	25.4	74.6	54.8	39.4	10.0	5.1	84.9	33.0	19.4	17.0
West Bengal	1.0	99.0	83.2	66.8	2.6	2.9	94.6	38.5	19.5	17.4
UTs combined	9.8	90.2	82.8	74.5	5.3	2.8	91.9	55.0	45.5	41.0
<b>Total</b>	<b>9.6</b>	<b>89.6</b>	<b>68.7</b>	<b>53.1</b>	<b>6.4</b>	<b>6.7</b>	<b>86.9</b>	<b>40.6</b>	<b>31.0</b>	<b>26.5</b>

\* Percentage of women who received 3+ ANC checkups, 1+ TT injection and consumed 100+ IFA tablets.

**Table 14: Percentage of Women by Antenatal Care, TT Injections and IFA Tablets received according to Selected Background Characteristics, CES, 2009**

Background characteristics	Received Antenatal Check ups				TT injections			IFA tablets/syrup for 100+ days		Full ANC
	0	Atleast one	3+	4+	0	1	2+	Received	Consumed	
<b>Whether received IFA tablets or syrup bottles or both</b>										
<b>Age group (in years)</b>										
<b>15-19</b>	8.2	91.4	72.7	55.7	5.2	4.4	90.5	37.2	25.1	21.6
<b>20-24</b>	8.3	91.0	71.8	56.5	5.6	6.4	88.0	40.6	30.7	26.1
<b>25-34</b>	9.7	89.2	67.3	51.5	6.7	7.1	86.2	42.4	33.3	28.7
<b>35-44</b>	22.9	75.7	45.1	30.7	14.4	7.5	78.2	25.1	17.8	14.7
<b>45+</b>	31.3	67.8	20.6	24.5	0.5	54.5	45.0	45.2	26.1	2.6
<b>Residence</b>										
<b>Rural</b>	11.7	87.7	63.3	46.3	7.0	7.1	85.9	37.5	27.6	22.8
<b>Urban</b>	4.2	94.4	82.7	70.6	4.8	5.8	89.4	48.5	39.7	36.1
<b>Mother's Education</b>										
<b>No education</b>	20.3	79.2	45.8	27.7	11.3	8.6	80.1	25.3	17.2	12.0
<b>&lt;5 years completed</b>	7.0	92.4	71.3	51.3	6.6	9.4	84.0	35.2	26.0	22.1
<b>5-7 years completed</b>	6.3	92.8	74.8	58.4	4.7	6.4	88.9	39.1	28.7	25.2
<b>8-9 years completed</b>	4.0	95.2	77.5	59.8	3.1	6.9	89.9	41.8	31.8	27.0
<b>10-11 years completed</b>	2.2	96.4	85.9	73.7	3.8	4.8	91.4	54.6	43.7	39.8
<b>12 or more years completed</b>	1.9	96.8	98.2	80.8	2.7	3.3	94.0	65.4	54.9	50.5
<b>Religion</b>										
<b>Hinduism</b>	9.2	90.1	69.4	53.9	5.9	7.0	87.2	41.5	31.7	27.0
<b>Islam</b>	12.5	86.2	62.6	46.4	8.4	5.6	86.0	33.6	25.5	22.0
<b>Sikhism</b>	5.4	94.2	74.8	55.4	5.6	2.3	92.1	43.5	34.7	29.5
<b>Christianity</b>	8.0	88.1	74.9	64.2	10.2	7.1	82.7	49.1	40.5	36.6
<b>Other religious groups</b>	4.9	93.6	79.7	57.5	10.7	8.3	81.0	41.6	24.7	22.3
<b>Social group</b>										
<b>Scheduled caste</b>	10.2	89.3	65.6	49.3	6.8	8.1	85.1	37.2	27.4	22.7
<b>Scheduled tribe</b>	13.0	85.8	61.4	40.4	12.1	8.0	79.9	33.2	23.5	18.9
<b>Other backward class</b>	11.6	87.5	66.0	51.8	6.1	6.2	87.7	39.1	30.8	26.7
<b>Others</b>	5.1	93.9	77.2	61.4	4.9	6.1	89.0	47.5	36.1	31.2
<b>BPL status</b>										

<b>Have BPL card</b>	8.9	90.2	68.7	53.7	5.9	5.7	88.4	39.9	30.7	26.6
<b>Don't have BPL card</b>	10.0	89.2	68.7	52.7	6.7	7.4	85.9	40.9	31.1	26.4
<b>Wealth Index</b>										
<b>Lowest</b>	18.7	80.9	46.7	27.2	9.3	8.5	82.1	26.3	16.5	11.5
<b>Second</b>	8.1	91.2	71.1	53.2	6.2	5.8	88	39.1	29.3	25.1
<b>Middle</b>	5.1	93.9	78.7	65.9	4.9	6.8	88.3	45.1	35	31.4
<b>Fourth</b>	4.2	94.5	83.5	71.1	4.9	6.4	88.7	50.4	40.6	36.5
<b>Highest</b>	1.7	97	88.5	78.9	3.2	4.1	92.7	60.4	52.3	47.4
<b>Total</b>	<b>9.6</b>	<b>89.6</b>	<b>68.7</b>	<b>53.1</b>	<b>6.4</b>	<b>6.7</b>	<b>86.9</b>	<b>40.6</b>	<b>31</b>	<b>26.5</b>

**Table 15: Mothers who had Full Antenatal Check-up (%), AHS 2010-11, 2011-12 and 2012-13**

State	2010-11			2011-12			2012-13		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
Assam	11.9	10.5	18.5	13.3	12.1	21.7	18.4	17.0	27.3
Bihar	5.9	4.7	17.2	6.1	5.0	15.7	7.8	6.8	16.1
Chhattisgarh	19.5	18.0	26.5	20.2	19.0	25.4	22.5	21.2	28.5
Jharkhand	13.1	10.4	22.3	14.4	11.5	24.8	13.6	10.4	25.2
Madhya Pradesh	13.3	10.9	20.0	15.3	12.8	22.0	16.2	14.0	21.9
Odisha	18.6	16.9	28.9	22.7	21.3	31.6	27.8	26.8	34.5
Rajasthan	8.5	6.1	17.4	9.2	6.6	18.9	9.5	6.7	19.4
Uttar Pradesh	3.9	2.8	9.1	5.0	3.8	10.5	6.8	5.4	13.0
Uttarakhand	11.1	8.3	19.0	16.0	12.8	24.8	17.1	13.6	26.7

**Table 16: Mothers who received 3 or More Ante Natal Care (%), AHS 2010-11, 2011-12 and 2012-13**

State	2010-11			2011-12			2012-13		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
Assam	61.0	58.7	72.9	60.2	57.8	75.3	66.2	64.0	79.4
Bihar	34.0	32.1	52.3	34.2	32.3	51.2	36.7	35.1	51.5
Chhattisgarh	57.1	53.4	74.2	64.2	61.0	77.6	65.9	62.8	79.9
Jharkhand	56.3	50.3	76.7	59.0	53.7	77.2	60.2	55.2	78.3
Madhya Pradesh	68.1	64.4	78.2	70.7	67.2	79.9	71.7	68.8	79.3
Odisha	76.0	74.2	86.8	78.5	77.1	87.1	81.9	81.0	87.6
Rajasthan	47.5	41.7	69.0	51.5	46.1	71.7	55.0	49.9	73.6
Uttar Pradesh	29.6	25.9	46.8	32.5	28.9	49.0	37.8	33.9	55.3
Uttarakhand	52.3	44.2	74.8	56.6	49.8	76.4	58.9	52.6	76.7

**Table 17: Mothers who received atleast One Tetanus Toxoid Injection (%), AHS 2010-11, 2011-12 and 2012-13**

State	2010-11			2011-12			2012-13		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
Assam	91.0	89.9	96.0	92.0	91.3	96.4	94.5	94.0	97.8
Bihar	84.4	84.1	87.4	84.8	84.4	88.6	84.6	84.1	89.5
Chhattisgarh	90.1	89.6	92.2	91.1	90.6	93.4	90.8	90.4	92.5
Jharkhand	85.7	83.3	93.6	89.0	87.3	94.7	91.8	90.6	96.3
Madhya Pradesh	94.8	93.9	97.3	90.6	88.9	95.2	91.8	90.5	95.1
Odisha	95.1	94.8	97.1	96.6	96.5	97.5	97.6	97.6	97.8
Rajasthan	84.3	81.8	93.2	86.1	84.0	94.1	87.8	86.0	94.2
Uttar Pradesh	80.9	79.8	86.1	82.0	81.2	86.0	84.1	83.2	88.0
Uttarakhand	83.6	80.4	92.5	85.6	83.0	93.0	88.0	85.8	94.0

**Table 18: Mothers who Consumed IFA Tablets for 100 Days or More (%), AHS 2010-11, 2011-12 and 2012-13**

State	2010-11			2011-12			2012-13		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
Assam	15.3	14.1	21.4	17.3	16.0	25.1	23.1	21.8	31.4
Bihar	10.0	8.8	21.5	10.2	9.1	20.3	12.7	11.7	21.3
Chhattisgarh	23.8	22.7	29.0	24.9	24.0	28.6	28.1	27.4	31.6
Jharkhand	15.1	12.6	23.8	17.6	14.9	27.0	16.9	13.9	27.5
Madhya Pradesh	17.5	15.1	24.0	18.9	16.5	25.3	19.5	17.5	24.8
Odisha	21.6	20.0	31.3	26.0	24.7	34.0	31.2	30.3	36.9
Rajasthan	12.3	9.9	21.4	12.8	10.2	22.6	12.7	10.1	22.3
Uttar Pradesh	6.5	5.3	12.1	8.1	6.9	13.6	9.7	8.3	16.0
Uttarakhand	14.9	12.6	21.4	20.0	17.4	27.2	21.4	18.4	29.8

**Table 19: Mothers who underwent Ultrasound (%), AHS 2010-11, 2011-12 and 2012-13**

State	2010-11			2011-12			2012-13		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
Assam	37.1	33.3	55.8	34.6	30.9	58.3	38.9	35.1	62.6
Bihar	16.4	14.6	33.5	21.2	19.4	37.1	24.8	23.1	40.0
Chhattisgarh	22.1	16.5	48.0	31.1	25.7	54.2	32.9	27.7	56.6
Jharkhand	19.2	11.9	44.6	23.6	16.5	48.5	27.3	20.2	53.0
Madhya Pradesh	30.7	22.1	53.9	36.8	28.8	57.9	41.5	34.5	59.7
Odisha	32.4	28.3	57.4	39.1	35.6	60.8	46.8	43.7	66.6
Rajasthan	38.8	30.4	69.7	44.8	37.2	73.1	53.5	46.8	78.1
Uttar Pradesh	19.9	15.3	41.8	26.4	22.0	46.9	30.8	26.0	52.1
Uttarakhand	43.9	35.3	68.0	48.1	39.6	72.0	52.0	43.4	76.0

**Table 20: Prevalence of Anaemia in Women by State, NFHS 3, 2005-06**

State	Women			
	Mild anaemia (10.0-11.9 g/dl) <sup>1</sup>	Moderate anaemia (7.0-9.9 g/dl)	Severe anaemia (<7.0 g/dl)	Any anaemia (<12.0 g/dl) <sup>2</sup>
<b>India<sup>3</sup></b>	38.6	15.0	1.8	55.3
<b>North</b>				
Delhi	35.2	8.8	0.2	44.3
Haryana	37.6	16.7	1.7	56.1
Himachal Pradesh	31.6	10.5	1.2	43.3
Jammu and Kashmir	37.3	13.1	1.6	52.1
Punjab	26.2	10.4	1.4	38.0
Rajasthan	35.2	15.4	2.5	53.1
Uttaranchal	40.4	13.3	1.5	55.2
<b>Central</b>				
Chhattisgarh	39.9	15.7	1.9	57.5
Madhya Pradesh	40.8	14.1	1.0	56.0
Uttar Pradesh	35.1	13.2	1.6	49.9
<b>East</b>				
Bihar	50.5	15.9	1.0	67.4
Jharkhand	49.6	18.6	1.3	69.5
Orissa	44.9	14.9	1.5	61.2
West Bengal	45.8	16.4	1.0	63.2
<b>Northeast</b>				
Arunachal Pradesh	36.6	12.5	1.6	50.6
Assam	44.8	21.2	3.4	69.5
Manipur	30.1	5.1	0.5	35.7
Meghalaya	32.8	12.6	1.8	47.2

**Table 21: Percentage of Women Age 15-49 with Anaemia by States, NFHS-3, 2005-06**

India & States	Mild anaemia	Moderate anaemia	Severe anaemia	Any anaemia
	(10.0-11.9 g/dl) <sup>1</sup>	(7.0-9.9 g/d)	(<7.0 g/d)	(< 12.0 g/d) <sup>2</sup>
<b>India<sup>3</sup></b>	38.6	15	1.8	95.3
Delhi	35.2	8.8	0.2	44.3
Haryana	37.6	16.7	1.7	56.1
Himachal Pradesh	31.6	10.5	1.2	43.3
J & k	37.3	13.1	1.6	52.1
Punjab	26.2	10.4	1.4	38
Rajasthan	35.2	15.4	2.5	53.1
Uttaranchal	40.4	13.3	1.5	55.2
Chhattisgarh	39.9	15.7	1.9	57.5
Madhya Pradesh	40.8	14.1	1	56
Uttar Pradesh	35.1	13.2	1.6	49.9
Bihar	50.5	15.9	1	67.4
Jharkhand	49.6	18.6	1.3	69.5
Orissa	44.9	14.9	1.5	61.2

West Bengal	45.8	16.4	1	63.2
Arunachal Pradesh	36.6	12.5	1.6	50.6
Assam	44.8	21.2	3.4	69.5
Manipur	30.1	5.1	0.5	35.7
Meghalaya	32.8	12.6	1.8	47.2
Mizoram	29.1	8.8	0.7	38.6
Sikkim	42.1	16.2	1.7	60
Tripura	49	14.8	1.3	65.1
Goa	29.6	7.8	0.6	38
Gujarat	36.2	16.5	2.6	55.3
Maharashtra	32.8	13.9	1.7	48.4
Andhra Pradesh	39	20.6	3.3	62.9
Karnataka	34.4	15.1	2	51.5
Kerala	25.8	6.5	0.5	32.8
Tamil Nadu	37.4	13.6	2.2	53.2

**Table 22: Average Intake of Nutrients (per day) among Pregnant women ( 18 years) - Sedentary Workers, NNMB 2012**

STATE		Protein (g)	Total Fat (g)	Energy (Kcal)	Calcium (mg)	Iron (mg)	Vit.- A (µg)	Thiamin (mg)	Riboflavin (mg)	Niacin (mg)	Vit.-C (mg)	Free Folic Acid (µg)
<b>Kerala (n=34)</b>	Median	50.1	27.1	1764	435	10.4	103	1.1	0.8	13.6	30	84.7
	Mean	54.7	32.5	1739	570	11.4	279	1.1	0.8	14.2	59	103.7
	SD	27.7	17.1	676	452	5.6	409	0.5	0.4	6.3	74	67.0
<b>Tamil Nadu (n=38)</b>	Median	41.7	25.0	1742	413	8.2	203	1.2	0.8	14.0	39	118.6
	Mean	42.6	27.9	1670	469	9.0	348	1.1	0.8	14.5	58	130.6
	SD	12.1	13.3	448	362	3.6	436	0.4	0.2	5.2	50	67.3
<b>Karnataka (n=47)</b>	Median	47.2	26.9	1882	349	11.7	151	1.2	0.8	10.8	25	104.2
	Mean	47.2	30.1	1842	435	12.7	324	1.1	0.8	11.5	39	112.7
	SD	20.5	17.1	535	274	6.7	471	0.4	0.3	5.1	48	59.6
<b>Andhra Pradesh (n=29)</b>	Median	39.6	24.8	1735	306	6.3	149	0.7	0.7	8.9	28	67.9
	Mean	40.8	28.3	1806	389	8.0	203	0.7	0.7	9.5	35	89.2
	SD	16.9	18.8	658	257	8.9	334	0.3	0.3	3.8	30	64.4
<b>Maharashtra (n=34)</b>	Median	36.2	21.4	1267	166	10.2	49	0.9	0.5	9.0	13	81.7
	Mean	34.8	23.2	1264	229	10.9	128	0.9	0.5	9.2	21	89.5
	SD	11.0	9.1	335	165	4.3	184	0.4	0.2	3.3	22	44.5
<b>Gujarat (n=22)</b>	Median	62.1	43.8	2029	425	14.9	156	1.5	0.8	11.8	19	167.1
	Mean	61.4	51.8	2081	505	17.4	260	1.6	0.9	13.3	28	180.9
	SD	21.9	31.7	710	301	8.9	346	0.8	0.4	6.2	23	96.2
<b>Madhya Pradesh (n=26)</b>	Median	63.7	23.6	1992	345	19.5	106	1.9	0.9	16.7	29	156.6
	Mean	61.4	26.8	2011	333	19.6	187	1.9	0.9	17.5	34	160.1
	SD	14.5	12.1	433	103	7.4	272	0.8	0.2	5.9	26	73.7
<b>Orissa (n=22)</b>	Median	48.0	19.0	2018	259	12.3	147	1.3	0.7	19.7	61	120.3
	Mean	48.3	20.2	2012	480	14.9	777	1.3	0.7	19.0	87	139.3
	SD	10.0	7.4	303	489	8.2	1095	0.2	0.2	3.3	72	82.1
<b>West Bengal (n=25)</b>	Median	35.6	15.9	1491	246	12.2	171	0.9	0.5	14.5	61	90.7
	Mean	35.7	15.9	1492	370	13.2	502	1.0	0.5	15.0	68	103.1
	SD	7.8	7.4	274	259	7.2	547	0.3	0.2	2.8	37	52.7
<b>Uttar Pradesh (n=45)</b>	Median	58.1	22.6	1671	285	16.0	88	1.7	0.8	16.1	16	159.7
	Mean	59.4	26.2	1929	406	20.2	119	1.8	0.9	16.6	25	185.1

	SD	29.7	14.6	818	295	15.5	153	1.0	0.5	8.8	26	127.5
<b>Pooled (n=322)</b>	Median	44.5	23.5	1736	334	11.3	124	1.1	0.7	12.9	28	109.0
	Mean	48.6	28.1	1773	418	13.7	291	1.3	0.8	13.8	43	129.0
	SD	21.5	17.5	604	321	9.3	480	0.7	0.3	6.3	48	84.5
	RDA	78.0	30.0	2250	1200	35.0	800	1.2	1.4	14.0	60	500.0

**Table 23: Average Intake of Nutrients (per day) among Lactating women ( 18 years) - Sedentary Workers, NNMB, 2012**

STATE		Protein (g)	Total Fat (g)	Energy (Kcal)	Calcium (mg)	Iron (mg)	Vit.-A (µg)	Thiamin (mg)	Riboflavin (mg)	Niacin (mg)	Vit.-C (mg)	Free Folic Acid (µg)
<b>Kerala (n=56)</b>	<b>Median</b>	42.7	28.3	1433	386	10.1	111	0.9	0.6	11.9	30	80.4
	<b>Mean</b>	48.8	31.2	1573	461	11.0	327	0.9	0.7	12.8	59	102.5
	<b>SD</b>	25.1	23.2	624	333	6.1	571	0.4	0.3	4.9	71	73.7
<b>Tamil Nadu (n=55)</b>	<b>Median</b>	44.1	22.7	1930	358	9.3	181	1.2	0.8	16.7	41	140.0
	<b>Mean</b>	45.7	26.8	1912	426	10.5	248	1.3	0.9	17.1	46	141.1
	<b>SD</b>	14.1	15.7	492	342	6.1	221	0.4	0.3	4.6	28	52.1
<b>Karnataka (n=79)</b>	<b>Median</b>	47.6	26.6	1947	292	12.1	137	1.1	0.8	11.9	21	100.3
	<b>Mean</b>	53.8	31.2	2113	415	16.0	207	1.3	0.9	13.0	29	116.2
	<b>SD</b>	22.7	24.5	728	355	17.1	268	0.7	0.4	5.5	28	60.7
<b>Andhra Pradesh (n=59)</b>	<b>Median</b>	44.6	25.6	2001	352	7.5	144	0.8	0.8	10.9	31	102.5
	<b>Mean</b>	44.7	31.5	1919	422	8.3	199	0.8	0.8	10.6	41	114.1
	<b>SD</b>	15.5	22.7	647	323	4.1	237	0.3	0.3	3.8	35	57.0
<b>Maharashtra (n=81)</b>	<b>Median</b>	46.4	25.6	1658	245	13.4	101	1.2	0.7	11.6	17	138.3
	<b>Mean</b>	47.2	30.3	1691	293	15.1	202	1.3	0.8	12.9	28	143.7
	<b>SD</b>	19.4	20.0	598	174	8.0	293	0.7	0.3	5.9	27	83.8
<b>Gujarat (n=53)</b>	<b>Median</b>	62.4	37.0	2068	396	16.3	174	1.8	0.8	13.0	25	175.7
	<b>Mean</b>	62.6	45.3	2086	491	20.5	263	1.7	1.0	13.9	38	192.2
	<b>SD</b>	19.5	23.7	610	318	10.5	301	0.7	0.5	5.1	41	98.3
<b>Madhya Pradesh (n=48)</b>	<b>Median</b>	66.4	27.4	2099	376	23.8	112	2.3	1.0	19.5	24	196.9
	<b>Mean</b>	67.8	35.0	2166	425	24.2	180	2.1	1.0	19.4	34	186.9
	<b>SD</b>	14.1	23.4	499	211	10.2	231	0.8	0.3	5.0	35	89.8
<b>Orissa (n=78)</b>	<b>Median</b>	48.7	20.7	2135	326	14.0	102	1.3	0.7	20.9	53	132.0
	<b>Mean</b>	51.5	22.6	2116	475	17.4	680	1.3	0.7	20.2	87	135.3

	<b>SD</b>	14.2	11.9	323	432	12.7	1345	0.3	0.2	3.9	82	60.7
<b>West Bengal (n=75)</b>	<b>Median</b>	34.5	12.1	1419	203	10.7	46	1.0	0.5	13.7	35	63.4
	<b>Mean</b>	36.8	15.2	1455	310	11.7	307	1.0	0.5	14.7	63	78.3
	<b>SD</b>	19.5	9.7	318	277	6.5	576	0.3	0.3	3.3	61	44.9
<b>Uttar Pradesh (n=109)</b>	<b>Median</b>	55.5	25.7	2157	365	19.2	110	1.7	0.9	17.0	33	144.5
	<b>Mean</b>	63.1	32.1	2169	432	21.3	325	2.0	1.0	18.8	45	168.6
	<b>SD</b>	28.2	21.3	856	263	10.6	954	1.0	0.5	9.0	42	94.7
<b>Pooled (n=693)</b>	<b>Median</b>	48.1	24.8	1859	327	12.9	117	1.2	0.8	14.5	30	122.8
	<b>Mean</b>	52.2	29.6	1927	411	15.8	304	1.4	0.8	15.5	47	137.1
	<b>SD</b>	22.3	21.1	657	314	11.2	680	0.7	0.4	6.4	52	81.1
	<b>RDA</b>	71.0	30.0	2460	1200	21.0	950	1.25	1.45	15.5	80	300.0

**Table 24: Assistance at Delivery by Birth Order, NFHS 1 (1992-93), NFHS 2 (1998-99) and NFHS 3 (2005-06)**

Birth Order	Doct or			ANM/nurse/ midwife/LHV			Other health personnel			percentage delivered by a skilled provider		
	NFH S-1	NFH S-2	NFH S-	3NF HS-	1NFH S-2	NFH S-	NFHS- 1	NFHS -2	NFH S-3	NFH S-1	NFH S-2	NFHS -3
	(1992 -93)	1998 -99	(2005 -06)	(1992 -93)	1998 -99	(2005 -06)	(1992 -93)	1998- 99	(2005 -06)	(1992 -93)	1998- 99	(2005- 06)
1	33.6	46.1	52.2	14.4	13.7	12	-	0.7	1	28.9	25.2	65.2
2-3	22.3	30.1	35.8	13.6	11.9	10.7	-	0.6	1.2	34.4	35	47.7
4-5	11.7	15.9	17.5	10.7	9	8.7	-	0.7	1.1	41	44.3	27.3
6+	6.9	10.5	9.7	8	6.8	5.8	-	0.6	1	43.7	46.7	16.5

**Table 25: Any Check Up after Delivery by Background Characteristics (%), DLHS 3, 2007-08**

Background characteristic	Check up within 2 weeks after delivery	Check up within 48 hours after delivery
<b>Age (in years)</b>		
15-19	48.5	46.1
20-24	52.4	50.1
25-29	51.3	49.3
30-34	47.2	45.5
35+	37.3	35.7
<b>No. of living children</b>		
0	51.0	49.8
1	63.1	61.0
2	56.1	53.9
3	43.8	41.6
4+	30.6	28.9
<b>Residence</b>		
Rural	41.7	39.6
Urban	69.7	68.0
<b>Education</b>		
Non-literate <sup>a</sup>	31.5	29.7
Less than 5 years	43.3	40.5
5-9 years	56.2	53.8
10 or more years	77.9	76.0
<b>Religion</b>		
Hindu	49.2	47.1
Muslim	50.2	48.4
Christian	44.8	41.8
Sikh	78.4	77.5
Buddhist/Neo Buddhist	54.7	51.3
Jain	83.7	83.2
No religion	32.0	28.0
Other	29.4	27.2

<b>Caste/Tribe</b>		
<b>Scheduled caste</b>	45.7	43.6
<b>Scheduled tribe</b>	36.1	33.2
<b>Other backward class</b>	50.4	48.7
<b>Other</b>	60.2	58.3
<b>Wealth index</b>		
<b>Lowest</b>	24.8	22.7
<b>Second</b>	33.1	31.0
<b>Middle</b>	45.4	43.0
<b>Fourth</b>	59.3	57.2
<b>Highest</b>	78.9	77.2
<b>India (15-49)</b>	<b>49.5</b>	<b>47.5</b>
<b>India (15-44)<sup>†</sup></b>	<b>49.7</b>	<b>47.6</b>

<sup>a</sup>Literate but did not attend school are also included.

<sup>†</sup>Represents figures for currently married women aged 15-44 years.

**Table 26: Distribution of Women by Place of Institutional Delivery (in percentages) according to States/UTs – Total (CES, 2009)**

States/UTs	Institutional Delivery		
	Public	Private	Total
<b>Andhra Pradesh</b>	44.5	49.8	94.2
<b>Arunachal Pradesh</b>	64.6	5.3	69.9
<b>Assam</b>	55.5	8.9	64.4
<b>Bihar</b>	35.5	12.8	48.3
<b>Chhattisgarh</b>	30.3	14.6	44.9
<b>Delhi</b>	45.8	37.8	83.6
<b>Goa</b>	45.9	53.9	99.8
<b>Gujarat</b>	34.2	43.9	78.1
<b>Haryana</b>	39.0	24.3	3.3
<b>Himachal Pradesh</b>	37.8	12.5	50.3
<b>Jammu &amp; Kashmir</b>	70.6	10.3	80.9
<b>Jharkhand</b>	17.4	22.7	40.1
<b>Karnataka</b>	62.9	23.5	86.4
<b>Kerala</b>	49.3	50.6	99.9
<b>Madhya Pradesh</b>	71.1	9.9	81.0
<b>Maharashtra</b>	40.5	41.4	81.8
<b>Manipur</b>	49.1	30.9	80.0
<b>Meghalaya</b>	52.9	10.8	63.6
<b>Mizoram</b>	56.3	26.7	83.0
<b>Nagaland</b>	25.9	4.5	30.4
<b>Orissa</b>	61.9	13.6	75.5
<b>Punjab</b>	21.8	38.5	60.3
<b>Rajasthan</b>	55.3	15.1	70.5
<b>Sikkim</b>	67.2	1.7	68.9
<b>Tamil Nadu</b>	62.9	35.5	98.4
<b>Tripura</b>	80.3	2.3	82.6

<b>Uttar Pradesh</b>	40.8	21.3	62.1
<b>Uttarakhand</b>	33.3	20.2	53.5
<b>West Bengal</b>	54.2	15.3	69.5
<b>UT Combined</b>	59.5	28.6	88.1
<b>Total</b>	<b>47.0</b>	<b>25.9</b>	<b>72.9</b>

**Table 27: Percentage of Women by Place of Delivery and Assistance during Delivery, (CES, 2009)**

Responses	Rural	Urban	Total
<b>Place of Delivery</b>			
<b>Institutional deliveries</b>	68.0	85.6	72.9
<b>Govt. hospital</b>	26.0	37.2	29.1
<b>Dispensary</b>	0.1	0.4	0.2
<b>UHC/UHP/UFWC</b>	0.1	0.8	0.3
<b>CHC/Rural Hospital</b>	8.3	2.7	6.7
<b>PHC</b>	11.0	3.0	8.8
<b>Sub-center</b>	1.6	0.3	1.2
<b>AYUSH hospital</b>	0.1	0.2	0.1
<b>NGO/Trust Hospital/Clinic</b>	0.5	0.6	0.5
<b>Private hospital/Clinic</b>	20.2	40.3	25.8
<b>Private AYUSH hospital/clinic</b>	0.0	0.2	0.1
<b>Non-institutional deliveries</b>			
<b>On the way to hospital</b>	0.2	0.1	0.2
<b>At home</b>	31.7	14.2	26.8
<b>Others</b>	0.1	0.1	0.1
<b>Assistance during delivery</b>			
<b>Doctor</b>	44.7	67.1	50.9
<b>ANM/Nurse/LHV</b>	26.4	20.5	24.7
<b>Skilled worker</b>	71.1	87.9	76.2
<b>Reponses</b>			
<b>Dai</b>	20.5	9.8	17.5
<b>Relative/Friends</b>	7.6	2.1	6.1
<b>Others</b>	0.5	0.2	0.4
<b>None</b>	0.3	0.3	0.3
<b>Persons who facilitated/motivated for institutional delivery</b>			
<b>Doctor</b>	26.7	35.1	29.5
<b>ANM/Nurse/LHV</b>	21.5	12.4	18.6
<b>Skilled Birth Attendant</b>	48.2	47.5	48.1
<b>Anganwadi worker</b>	8.8	3.0	6.9
<b>ASHA</b>	19.2	2.7	13.8
<b>NGO/CBO</b>	1.5	1.5	1.5
<b>Husband, mother-in-law, mother</b>	48.7	63.1	55.9
<b>Relatives, Friends</b>	25.9	31.5	27.7
<b>Self</b>	16.4	28.4	20.3
<b>None</b>	0.1	0.3	0.2
<b>Others</b>	0.8	0.6	0.7
<b>Nature of last delivery</b>			

<b>Normal</b>	87.5	73.5	83.6
<b>Assisted delivery</b>	1.0	2.2	1.4
<b>Caesarean section</b>	11.5	24.3	15.1

**Table 28: Institutional Delivery by Means of Transport at the Time of Delivery, (CES, 2009)**

<b>Responses</b>	<b>Rural</b>	<b>Urban</b>	<b>Total</b>
<b>Mode of transport used to reach the health facility</b>			
<b>Ambulance</b>	8.1	3.4	6.5
<b>Jeep/Car</b>	33.1	26.3	30.9
<b>Motorcycle/Scooter</b>	7.5	7.4	7.5
<b>Bus/Train</b>	7.6	4.5	6.6
<b>Tempo/Auto/Tractor</b>	30.2	42.3	34.1
<b>Cart</b>	1.4	1.1	1.3
<b>On foot</b>	4.4	5.7	4.8
<b>Others</b>	7.9	9.3	8.4
<b>Distance to health facility (in kms)</b>			
<b>&lt;=1</b>	11.4	30.0	17.5
<b>2-5</b>	27.8	37.7	31.0
<b>6-10</b>	19.6	9.9	16.5
<b>11-20</b>	16.3	5.6	12.8
<b>20-30</b>	6.9	2.1	5.3
<b>30+</b>	5.7	1.3	4.3
<b>Don't know/Can't say</b>	12.2	13.4	12.6
<b>Mean distance from house (in kms)</b>	11.2	4.9	8.1
<b>Time taken to reach the facility (in minutes)</b>			
<b>&lt;=30</b>	64.2	85.2	71.0
<b>31-60</b>	24.8	11.1	20.3
<b>61-90</b>	3.6	1.1	2.8
<b>&gt;90</b>	7.4	2.6	5.9
<b>Mean time taken (in minutes) to reach the facility</b>	39.2	24.3	31.8
<b>Cost incurred on transport (Rupees)</b>			
<b>&lt;=200</b>	40.6	56.2	45.7
<b>201-400</b>	13.2	5.3	10.6
<b>401-600</b>	9.5	4.1	7.7
<b>601-800</b>	2.7	0.7	2.0
<b>801-1000</b>	2.6	1.0	2.1
<b>&gt;1000</b>	1.8	0.9	1.5
<b>No cost paid</b>	20.5	22.0	21.0
<b>Don't know</b>	9.3	9.8	9.5
<b>Mean cost on transport (in rupees)</b>	243	140	192

**Table 29: Institutional Delivery (%), AHS 2010-11, 2011-12 and 2012-13**

State	2010-11			2011-12			2012-13		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
Assam	57.7	53.9	76.4	60.8	57.6	81.5	65.9	62.9	84.5
Bihar	47.7	45.6	67.3	51.9	49.9	70.1	55.4	53.6	71.5
Chhattisgarh	34.9	29.8	58.3	40.4	35.7	60.5	39.5	35.4	58.4
Jharkhand	37.6	28.4	69.2	41.2	32.5	71.4	46.2	38.3	74.9
Madhya Pradesh	76.1	71.6	88.4	79.7	76.0	89.6	82.6	79.9	89.9
Odisha	71.3	69.2	84.0	77.7	76.4	85.5	80.8	79.8	86.9
Rajasthan	70.2	66.2	84.6	74.4	71.2	86.6	78.0	75.2	88.3
Uttar Pradesh	45.6	42.9	58.3	51.7	49.6	61.2	56.7	54.8	64.9
Uttarakhand	50.5	43.2	71.1	54.6	47.7	73.8	58.3	52.1	75.6

**Table 30: Delivery at Home (%), AHS 2010-11, 2011-12 and 2012-13**

State	2010-11			2011-12			2012-13		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
Assam	41.8	45.6	23.0	38.8	42.0	18.2	33.6	36.6	15.2
Bihar	52.0	54.1	32.5	47.0	49.1	28.9	42.1	43.9	25.8
Chhattisgarh	65.0	70.1	41.5	59.4	64.1	39.4	59.4	63.7	39.6
Jharkhand	62.0	71.2	30.3	58.4	67.1	28.1	53.4	61.3	24.5
Madhya Pradesh	23.5	28.0	11.3	20.0	23.7	10.2	17.1	19.9	9.5
Odisha	28.1	30.2	15.7	21.7	22.9	14.0	18.7	19.6	12.6
Rajasthan	29.5	33.4	15.1	25.2	28.4	13.1	21.5	24.2	11.3
Uttar Pradesh	53.8	56.4	41.3	46.9	48.8	37.9	42.1	43.9	34.4
Uttarakhand	49.0	56.4	28.4	44.9	51.7	25.8	40.9	47.1	23.8

**Table 31: Mothers who received Postnatal Check-up within 48 hours of Delivery (%), AHS 2010-11, 2011-12 and 2012-13**

State	2010-11			2011-12			2012-13		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
Assam	57.0	53.1	76.6	59.6	56.4	80.1	66.2	63.4	83.9
Bihar	60.8	59.3	74.9	59.7	57.9	75.4	60.9	59.2	76.4
Chhattisgarh	64.8	60.9	82.6	69.5	66.0	84.5	70.3	66.9	85.8
Jharkhand	59.1	53.3	79.1	64.6	59.8	81.2	68.4	64.1	84.1
Madhya Pradesh	74.2	69.3	87.5	77.8	73.7	88.7	80.5	77.1	89.4
Odisha	74.5	72.6	85.9	80.0	78.9	87.0	82.8	82.1	87.7
Rajasthan	73.3	70.0	85.4	76.6	73.9	86.9	79.6	77.3	88.1
Uttar Pradesh	68.4	67.0	74.9	71.4	70.3	76.6	77.6	76.8	81.7
Uttarakhand	59.1	51.0	81.5	61.7	54.6	81.8	64.3	57.8	82.6

**Table 32: Timing of First Postnatal Check-Up, NFHS 3, 2005-06**

Background characteristic	Time between delivery and mother's first postnatal check-up				No postnatal check-up
	Less than 4 hours	4-23 hours	1-2 days	3-41 days	
Age at birth					
<20	24.7	5.1	5.1	3.7	60.5
20-34	28.6	5.0	5.2	4.1	55.8
35-49	16.0	2.9	4.2	2.0	73.9
Birth order					
1	36.9	7.8	6.5	3.6	43.3
2-3	30.6	4.8	5.5	4.3	53.7
4-5	15.8	2.4	3.3	4.4	73.3
6+	7.1	1.9	2.8	2.6	85.0
Residence					
Urban	45.2	8.1	7.7	2.7	34.3
Rural	20.8	3.7	4.1	4.4	66.1
Education					
No education	13.4	2.4	3.3	3.9	76.4
< 5 years complete	23.7	4.5	5.4	5.3	60.2
5-7 years complete	32.8	5.4	5.6	4.4	50.3
8-9 years complete	36.0	7.4	6.9	4.2	44.0
10-11 years complete	48.6	8.5	8.0	3.3	29.7
12 or more years complete	59.2	10.2	8.1	2.9	17.2
Religion					
Hindu	27.7	4.8	5.1	4.1	57.1
Muslim	21.9	5.1	5.0	3.0	64.1
Christian	41.3	6.3	6.5	4.5	39.4
Sikh	50.7	6.7	7.0	2.2	32.0

<b>Buddhist/Neo-Buddhist</b>	36.0	5.0	6.3	5.8	45.7
<b>Jain</b>	53.6	11.8	4.8	0.0	26.0
<b>Other</b>	7.8	2.5	2.1	3.7	83.1
Caste/tribe					
<b>Scheduled caste</b>	23.7	3.9	4.8	3.8	62.9
<b>Scheduled tribe</b>	16.3	2.3	4.4	7.4	68.6
<b>Other backward class</b>	26.4	4.5	4.7	3.7	59.8
<b>Other</b>	34.5	7.0	6.1	3.3	47.4
Wealth index					
<b>Lowest</b>	9.9	2.0	2.5	4.5	80.7
<b>Second</b>	16.4	2.6	3.8	4.2	72.3
<b>Middle</b>	27.3	4.5	5.0	5.0	57.1
<b>Fourth</b>	37.7	7.3	7.1	3.1	43.2
<b>Highest</b>	55.9	10.1	8.6	2.4	20.7
Place of delivery					
<b>Public sector health facility</b>	53.1	11.1	8.8	1.7	23.5
<b>NGO or trust hospital/clinic</b>	57.6	15.2	8.3	0.8	15.4
<b>Private sector health facility</b>	61.9	10.2	7.8	1.9	15.4
<b>Own home</b>	5.3	0.7	2.7	4.9	86.0
<b>Parents' home</b>	7.1	1.2	3.9	8.3	79.2
<b>Other home</b>	10.6	0.4	0.9	7.0	81.2
<b>Other<sup>1</sup></b>	8.1	0.4	0.4	2.6	69.3
Total	27.3	4.9	5.1	3.9	57.6

Note: Postnatal check-ups are checks on the woman's health within 42 days of the birth. Total includes women with missing information on education, religion, and caste/tribe, who are not shown separately. NGO = Nongovernmental organization

<sup>1</sup> Includes missing.

**Table 33: Percentage of Currently Married Women (Aged 15-49) by Any Check Up after Delivery according to Background Characteristics, DLHS 3, 2007-08**

<b>Background characteristic</b>	<b>Check up within 2 weeks after delivery</b>	<b>Check up within 48 hours after delivery</b>
Age (in years)		
<b>15-19</b>	48.5	46.1
<b>20-24</b>	52.4	50.1
<b>25-29</b>	51.3	49.3
<b>30-34</b>	47.2	45.5
<b>35+</b>	37.3	35.7
No. of living children		
<b>0</b>	51.0	49.8
<b>1</b>	63.1	61.0
<b>2</b>	56.1	53.9
<b>3</b>	43.8	41.6
<b>4+</b>	30.6	28.9
Residence		

<b>Rural</b>	41.7	39.6
<b>Urban</b>	69.7	68.0
Education		
<b>Non-literate<sup>a</sup></b>	31.5	29.7
<b>Less than 5 years</b>	43.3	40.5
<b>5-9 years</b>	56.2	53.8
<b>10 or more years</b>	77.9	76.0
Religion		
<b>Hindu</b>	49.2	47.1
<b>Muslim</b>	50.2	48.4
<b>Christian</b>	44.8	41.8
<b>Sikh</b>	78.4	77.5
<b>Buddhist/Neo Buddhist</b>	54.7	51.3
<b>Jain</b>	83.7	83.2
<b>No religion</b>	32.0	28.0
<b>Other</b>	29.4	27.2
Caste/Tribe		
<b>Scheduled caste</b>	45.7	43.6
<b>Scheduled tribe</b>	36.1	33.2
<b>Other backward class</b>	50.4	48.7
<b>Other</b>	60.2	58.3
Wealth index		
<b>Lowest</b>	24.8	22.7
<b>Second</b>	33.1	31.0
<b>Middle</b>	45.4	43.0
<b>Fourth</b>	59.3	57.2
<b>Highest</b>	78.9	77.2
India (15-49)	<b>49.5</b>	<b>47.5</b>
India (15-44) <sup>†</sup>	<b>49.7</b>	<b>47.6</b>

<sup>a</sup>Literate but did not attend school are also included.

<sup>†</sup> Represents figures for currently married women aged 15-44 years.

**Table 34: Women by Postnatal Care, Place of Check-Up and Type of Care Received (in percentages), (CES, 2009)**

<b>Responses</b>	<b>Rural</b>	<b>Urban</b>	<b>Total</b>
<b>Percentage of women who reported check-up within first ten days</b>	54.6	74.4	60.1
Number of check-ups done during 3-7 days after delivery			
<b>1</b>	12.0	12.4	12.1
<b>2</b>	11.4	14.2	12.2
<b>3</b>	7.4	11.9	8.6
<b>4+</b>	18.1	30.7	21.6
<b>None</b>	51.1	30.9	45.5
Place of checkup during 3-7 days			
Government facility			
<b>Government Hospital</b>	39.2	41.0	39.8

<b>Dispensary</b>	0.2	0.5	0.3
<b>UHC/UHP/UFWC</b>	0.1	1.1	0.5
<b>CHC/ Rural Hospital</b>	7.8	2.2	5.9
<b>PHC</b>	10.5	2.9	7.9
<b>Sub-centre</b>	2.2	0.4	1.5
<b>ICDS Centre</b>	0.2	0.0	0.1
<b>AYUSH Hospital/Clinic</b>	0.0	0.1	0.0
Responses			
Private facility			
<b>NGO/Trust Hospital/Clinic</b>	0.9	0.5	0.7
<b>Private Hospital/Clinic</b>	31.7	46.9	36.9
<b>Private AYUSH Hospital/Clinic</b>	0.3	0.7	0.5
Home care			
<b>Doctor at home</b>	3.9	2.2	3.3
<b>ANM/Nurse at home</b>	1.9	0.9	1.6
<b>ASHA at Home</b>	0.2	0.0	0.2
<b>AWW at home</b>	0.1	0.0	0.1
<b>Others</b>	0.7	0.6	0.7
Type of check-ups done			
<b>Abdomen examined</b>	84.7	87.1	85.5
<b>Vulva and perineum examined</b>	51.7	62.0	55.3
<b>BP and pulse measured</b>	73.1	79.5	75.3
Post-natal advice given			
<b>Advice on breastfeeding</b>	76.2	81.2	78.0
<b>Advice on baby care</b>	73.4	78.0	75.0
<b>Advice on family planning</b>	52.8	59.1	55.0
<b>Advice on nutrition</b>	70.4	74.8	71.9
<b>Others</b>	34.9	42.0	37.3

**Table 35: Selected Breastfeeding Indicators by States, DLHS-3 (2007-08)**

<b>State</b>	<b>Children received Colostrum</b>	<b>Percentage started breastfeeding within one hour of birth.</b>	<b>Percentage started breastfeeding within 24 hour of birth.</b>	<b>Percentage started breastfeeding After 24 hour of birth.</b>
<b>Andaman &amp; Nicobar islands</b>	95.3	76.1	94.2	5.8
<b>Andhra Pradesh</b>	89.7	47.5	75.6	24.4
<b>Arunachal Pradesh</b>	83.4	38.2	83.6	16.4
<b>Assam</b>	86.7	64.9	92.9	7.1
<b>Bihar</b>	69	16	56.6	43.4
<b>Chandigarh</b>	94.2	50.3	90.3	9.7
<b>Chhattisgarh</b>	87.2	49.6	80.6	19.4
<b>Dadra &amp; Nagar Haveli</b>	75.6	52.2	92.4	7.6
<b>Daman &amp; Diu</b>	71.9	38.6	68.7	31.3
<b>Delhi</b>	85.2	29.1	68.1	31.9

Goa	85.8	60.9	84.2	15.8
Gujarat	76.1	48	77.8	22.2
Haryana	80.8	16.5	55.4	44.6
Himachal Pradesh	92.3	56.5	89.8	10.2
Jammu & Kashmir	90	54.1	89.5	10.5
Jharkhand	84.4	34.5	81.1	18.9
Karnataka	87	46.5	73.2	26.8
Kerala	97	64.6	96.8	3.2
Lakshadweep	98.1	69.7	98	2
Madhya Pradesh	83	42.7	72.3	27.7
Maharashtra	86.1	52.5	80.3	19.7
Manipur	94.5	56.8	89.5	10.5
Meghalaya	87.9	73.6	97.8	2.2
Mizoram	96.3	77.5	96.4	3.6
Orissa	87.1	63.2	88.9	11
Puducherry	95.6	69.6	96	4
Punjab	89.9	44.1	80.6	19.4
Rajasthan	91.4	41.4	80	20
Sikkim	74.5	63.6	93.5	6.5
Tamil Nadu	94.2	76.1	93.4	6.6
Tripura	78.1	40.8	83.3	16.7
Uttar Pradesh	58.7	15.1	33.6	66.4
Uttarakhand	85.2	63.5	86.1	13.9
West Bengal	80.4	38.5	80.5	19.5
India (15-49)	80.1	40.5	70.9	29.1
India (15-44) <sup>1</sup>	80.1	40.5	70.9	29.1

Table 36: Selected Breastfeeding Indicators by States/UTs, CES 2006 and 2009

States	CES 2006			CES 2009		
	Percentage who started breastfeeding within one hour of birth	Percentage who started breastfeeding within one day of birth	Percentage of mothers who fed colostrum to the child	Percentage who started breastfeeding within one hour of birth	Percentage who started breastfeeding within one day of birth	Percentage of mothers who fed colostrum to the child
Andhra Pradesh	39.6	89.6	81.7	27.2	66.6	74.1
Arunachal Pradesh	57.8	94.7	81	55.6	91	95.3
Assam	43.3	90.7	78.7	46.1	94.3	94.4
Bihar	3.4	47.7	74.8	16.5	50.5	77.4
Chhattisgarh	35.9	79	87.3	44.4	80	87.9
Delhi	15.6	77.7	88.8	28.5	80.4	88.6
Goa	20.6	75.1	89.4	66.3	87.2	97.6

<b>Gujarat</b>	19.5	81.7	76.5	50	74.9	80
<b>Haryana</b>	6.6	95.4	88.9	51	86.5	90.8
<b>Himachal Pradesh</b>	31.4	77.3	92.9	38.8	76.3	93.8
<b>Jammu &amp; Kashmir</b>	36.7	93.7	86.9	20.4	77.6	93.5
<b>Jharkhand</b>	17.5	71	69.1	15.6	57.7	84.7
<b>Karnataka</b>	45.7	91.1	90.2	38.2	77.5	90
<b>Kerala</b>	48.7	97	95.9	66	92.7	96.8
<b>Madhya Pradesh</b>	23.5	79.8	80.9	31.2	73.2	85.3
<b>Maharashtra</b>	60.3	98.1	92.6	51.3	77.7	91.2
<b>Manipur</b>	35.1	78.3	93	75.1	92.4	99
<b>Meghalaya</b>	27	97.5	90.9	67.7	95.8	93.4
<b>Mizoram</b>	43.4	97.5	93.2	56.5	90.3	99.3
<b>Nagaland</b>	46.1	92	83.2	49.4	87.8	84
<b>Orissa</b>	44.4	90.5	89.2	63.7	88.6	93.9
<b>Punjab</b>	9.9	75.4	83	16.4	54.6	95.1
<b>Rajasthan</b>	14.9	76.1	83.9	27.7	75.5	90.6
<b>Sikkim</b>	29	98.8	95.5	55.7	93.1	95.4
<b>Tamilnadu</b>	67.9	89.6	87.8	39.1	87.7	96.4
<b>Tripura</b>	27.9	88.8	88	7.1	90.2	99.2
<b>Uttar Pradesh</b>	13.3	51.5	69.1	15.6	55.4	75.1
<b>Uttarakhand</b>	27	74.5	83.3	24.9	60.7	68.2
<b>West Bengal</b>	26.8	85.8	79.5	29.2	77.8	87.7
<b>UTs Combined</b>	37.9	89.7	83.3	42.9	79.1	86.9
<b>Total</b>	29.4	77.6	81.3	33.5	73.1	85.3

**Table 37: Children Breastfed Within One Hour of Birth (%),AHS 2010-11, 2011-12 and 2012-13**

State	2010-11			2011-12			2012-13		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
<b>Assam</b>	69.6	70.2	66.3	75.6	75.9	74.0	75.6	75.9	74.0
<b>Bihar</b>	30.3	30.3	30.5	37.0	36.7	38.9	37.0	36.7	38.9
<b>Chhattisgarh</b>	63.9	63.1	67.8	65.7	64.8	69.5	66.3	65.6	69.6
<b>Jharkhand</b>	37.9	37.0	40.6	41.2	40.7	42.6	43.3	43.2	43.9
<b>Madhya Pradesh</b>	61.5	61.7	60.9	65.0	64.8	65.4	66.8	66.6	67.2
<b>Odisha</b>	71.5	71.2	73.3	74.3	74.3	74.1	78.7	79.1	76.4
<b>Rajasthan</b>	48.6	46.4	56.5	50.1	48.7	55.3	54.1	53.9	54.9
<b>Uttar Pradesh</b>	32.9	32.4	34.9	36.0	35.6	37.8	39.4	38.9	41.4
<b>Uttarakhand</b>	63.2	66.0	55.2	63.7	66.6	55.6	65.1	68.0	56.9

<b>Table 38: Percentage of Children Weighed At Birth and Incidence of Low Birth Weight</b>			
Sl. No.	States/UTs	Percentage of children weighed at birth <sup>#</sup>	Percentage of children with low birth weighed (below 2.5 kg)
1	Andhra Pradesh	91.2	6.9
2	Arunachal Pradesh	48.9	4.8
3	Assam*	65.5	23.3
4	Bihar*	42.9	21.9
5	Chhattisgarh*	67.9	13.2
6	Goa	88.9	4.5
7	Haryana	63.9	12.7
8	Himachal Pradesh	73.5	13.8
9	Jharkhand*	47.7	28.1
10	Karnataka	91.4	7.6
11	Kerala	97.4	9.0
12	Madhya Pradesh*	75.5	26.5
13	Maharashtra	91.9	12.8
14	Manipur	62.8	7.1
15	Meghalaya	47.1	8.3
16	Mizoram	82.9	2.9
17	Nagaland	35.6	4.2
18	Odisha*	86.5	21.6
19	Punjab	78.1	10.8
20	Rajasthan*	65.6	36.3
21	Sikkim	94.7	6.5
22	Telangana	90.9	8.6
23	Tamil Nadu	95.7	11.4
24	Tripura	71.2	13.8
25	Uttar Pradesh*	33.6	24.8
26	Uttarakhand*	46.3	24.6
27	West Bengal	82.0	11.5
28	A&N Islands	96.0	12.0
29	Chandigarh	84.7	n.a.
30	Puducherry	95.8	8.1

\* AHS States

# For DLHS 4 the information collected for children below 36 months and for AHS (2012-13) live births during 2009-11

Source : (i) District Level Household and Facility Survey-4 (DLHS-4) 2012-13, Fact Sheets, Ministry of Health and Family Welfare, Govt. of India, New Delhi and International Institute of Population Sciences, Mumbai.

(ii) Annual Health Survey, 2012-13, Fact Sheets, Office of the Registrar General and Census Commissioner, India, Ministry of Home Affairs, Govt. of India, New Delhi.

**Table 39: Percentage of Children Aged 0-35 months Weighed At Birth and Low Birth Weight, RSOC, 2013-14**

Sl. No.	States	Weighed with 24 hours of birth			With birth weight less than 2500 grams		
		Total	Rural	Urban	Total	Rural	Urban
		<b>India</b>	68.7	64.1	79.7	18.6	18.7
<b>1</b>	Andhra Pradesh	91.8	91.8	91.7	18.4	18.4	18.6
<b>2</b>	Assam	73.0	71.0	86.6	13.6	13.1	16.0
<b>3</b>	Bihar	46.0	44.9	54.9	15.0	15.2	13.5
<b>4</b>	Chhattisgarh	67.6	64.3	79.8	16.9	17.4	15.6
<b>5</b>	Gujarat	87.9	87.4	88.7	19.5	19.4	19.7
<b>6</b>	Haryana	73.9	74.1	73.5	20.9	22.6	17.2
<b>7</b>	Jharkhand	55.9	51.7	71.4	14.7	14.6	15.0
<b>8</b>	Karnataka	89.5	86.8	93.9	17.2	17.2	17.3
<b>9</b>	Kerala	98.2	97.5	99.1	13.0	12.6	13.4
<b>10</b>	Madhya Pradesh	61.0	56.6	74.2	23.1	23.3	22.7
<b>11</b>	Maharashtra	88.4	87.4	89.5	20.6	21.9	19.1
<b>12</b>	Odisha	85.2	83.7	92.6	18.9	18.5	20.8
<b>13</b>	Punjab	65.3	63.6	68.3	20.7	21.2	20.0
<b>14</b>	Rajasthan	57.8	53.2	72.1	23.2	24.5	20.3
<b>15</b>	Tamilnadu	97.8	98.2	97.3	16.7	15.6	18.0
<b>16</b>	Uttar Pradesh	28.2	26.4	35.0	22.5	22.9	21.6
<b>17</b>	West Bengal	77.4	74.9	82.7	16.9	17.1	16.6
<b>18</b>	Arunachal Pradesh	65.1	57.9	86.9	11.5	14.2	6.0
<b>19</b>	Delhi	76.4	74.7	76.4	21.9	23.4	21.9
<b>20</b>	Goa	94.7	93.9	95.2	16.7	17.7	16.2
<b>21</b>	Himachal Pradesh	74.9	74.2	82.5	17.7	18.1	13.4
<b>22</b>	Jammu and Kashmir	45.9	38.3	67.5	16.2	17.0	15.0
<b>23</b>	Manipur	67.0	58.1	85.8	7.3	7.6	6.7
<b>24</b>	Meghalaya	64.6	58.9	87.9	10.4	9.8	12.1
<b>25</b>	Mizoram	91.7	86.8	95.7	2.2	1.1	3.0
<b>26</b>	Nagaland	16.5	11.0	32.2	18.9	24.4	13.5
<b>27</b>	Sikkim	87.8	86.3	93.3	10.0	10.4	8.9
<b>28</b>	Tripura	78.1	73.1	93.7	18.5	20.2	14.4
<b>29</b>	Uttarakhand	47.1	38.7	66.4	14.2	15.2	12.9

Source : India, Ministry of Women and Child Development, Rapid Survey on Children, 2013-14, Fact Sheets. New Delhi.

**Table 40: Trends in Infant and Child Mortality as per NFHS-1 (1992-93), NFHS-2 (1998-99) and NFHS-3 (2005-06)**

Data Source	Neonatal Mortality (NN)	Post Neonatal mortality(PNN)	Infant Mortality(1q0)	Child Mortality(4q1)	Under-5 Mortality(5q0)
NFHS-1	48.6	29.9	78.5	33.4	109.3
NFHS-2	43.4	24.2	67.6	29.3	94.9
NFHS-3	39	18	57	18.4	74.3

**Table 41: Immunization Status of children age 12-23 months by States, NFHS 1 (1992-93), NFHS-2 (1998-99) and NFHS-3 (2005-06)**

State	NFHS-1		NFHS-2		NFHS-3	
	All Basic Vaccinations <sup>1</sup>	No Vaccination	All Basic Vaccinations <sup>1</sup>	No Vaccination	All Basic Vaccinations <sup>1</sup>	No Vaccination
India	35.4	30	42	14.4	43.5	5.1
Delhi	57.8	6.7	69.8	5.1	63.2	9.1
Haryana	53.5	17.5	62.7	9.9	65.3	7.8
Himachal Pradesh	62.9	8.7	83.4	2.8	74.2	1.9
Jammu & Kashmir	65.7	16.2	56.7	10.4	66.7	4.5
Punjab	61.9	17.5	72.1	8.7	60.1	6.6
Rajasthan	21.1	48.5	17.3	22.5	26.5	5.5
Uttaranchal	-	-	-	-	60	9.1
Chhattisgarh	-	-	-	-	48.7	2.5
Madhya Pradesh	29.2	34.4	22.4	13.9	40.3	5
Uttar Pradesh	19.8	43.3	21.2	29.5	23	2.7
Bihar	10.7	53.5	11	16.8	32.8	7
Jharkhand	-	-	-	-	34.2	4.4
Orissa	36.1	28	43.7	9.4	51.8	11.6
West Bengal	34.2	22.4	43.8	13.6	64.3	5.9
Arunachal Pradesh	22.5	47.5	20.5	28.7	28.4	24.1
Assam	19.4	43.6	17	33.2	31.4	15.2
Manipur	29.1	32.3	42.3	17.2	46.8	6.5
Meghalaya	9.7	54.9	14.3	42.3	32.9	16.5
Mizoram	56.4	14.5	59.6	10.5	46.5	7
Nagaland	3.8	75	14.1	32.7	21	18.4
Sikkim	19	42.1	47.4	17.6	69.6	3.2
Tripura	-	-	-	-	49.7	14.7
Goa	74.9	5.4	82.6	0	78.6	0
Gujarat	49.8	18.9	53	6.6	45.2	4.5

<b>Maharashtra</b>	64.1	7.5	78.4	2	58.8	2.8
<b>Andhra Pradesh</b>	45	17.5	58.7	4.5	46	3.8
<b>Karnataka</b>	52.2	15.2	60.0	7.7	55	6.9
<b>Kerala</b>	54.4	11.4	79.7	2.2	75.3	1.8
<b>Tamil Nadu</b>	64.9	3.3	88.8	0.3	80.9	0

**Table 42: Immunization status by Birth Order of the Child, NFHS 1 (1992-93), NFHS-2 (1998-99) and NFHS-3 (2005-06)**

Birth Order	NFHS-1		NFHS-2		NFHS-3	
	All Basic Vaccinations	No Vaccination	All Basic Vaccinations	No Vaccination	All Basic Vaccinations	No Vaccination
1	45.5	21.2	54	9.8	54.6	3.7
2-3	38.3	26.6	48.9	9.1	45.3	4.7
4-5	26.1	37.6	38.8	15	29.9	7
6+	15.2	51.7	24.1	24.4	18.5	8.6

**Table 43: Immunization Status by Child's Sex, NFHS1 (1992-93), NFHS-2 (1998-99) and NFHS-3 (2005-06)**

Sex of the child	NFHS-1		NFHS-2		NFHS-3	
	All Basic Vaccinations	No Vaccination	All Basic Vaccinations	No Vaccination	All Basic Vaccinations	No Vaccination
Male	36.7	27.8	43.1	13.5	45.3	4.3
Female	34.1	32.3	40.9	15.3	41.5	6

**Table 44: Percentage of children aged 12-23 months received Vaccination by States, India DLHS-1, DLHS-2 and DLHS-3**

State	DLHS-1 (1998-99)		DLHS-2 (2002-04)		DLHS-3 (2007-08)		
	full Vaccination <sup>1</sup>	None	full Vaccination <sup>1</sup>	None	Vaccination card seen	full Vaccination <sup>1</sup>	None
<b>Andaman &amp; Nicobar islands</b>	77.4	1.8	69.3	1.2	84.6	83.6	2.8
<b>Andhra Pradesh</b>	74.5	2.4	62.7	2.7	44.1	66.7	1.1
<b>Arunachal Pradesh</b>	30.6	22.9	21.6	27.5	35.4	13.3	12
<b>Assam</b>	46.7	11.6	17.2	22.9	59.1	50.7	11.3
<b>Bihar</b>	22.4	48.8	23	49.4	44.6	41.4	1.6
<b>Chandigarh</b>	61.5	1.8	52.4	-	52.1	73	4.6
<b>Chhattisgarh</b>	-	-	58.1	8.2	36.8	59.3	2.3
<b>Dadra &amp; Nagar</b>	77.5	2.7	84.6	2.1	34.3	57.9	2.7

<b>Haveli</b>							
<b>Daman &amp; Diu</b>	68.7	4.2	56.1	4.4	68.6	85.7	1.1
<b>Delhi</b>	84.8	2.4	59.2	4.7	45.7	67.3	2.1
<b>Goa</b>	88.6	0	76.9	1.8	81	89.8	0
<b>Gujarat</b>	58.1	10.2	54	7.3	33.6	54.8	6.7
<b>Haryana</b>	66	10.4	59.2	11.9	38.8	59.6	1.9
<b>Himachal Pradesh</b>	74.4	2.4	79.3	2.1	56.1	82.2	0.9
<b>Jammu &amp; Kashmir</b>	52.9	1	32	2.6	56.8	62.2	4.6
<b>Jharkhand</b>	-	-	26.6	44.5	42.8	54	9.1
<b>Karnataka</b>	71.8	5.7	71.3	4.7	53.7	76.7	0.7
<b>Kerala</b>	84	1.8	78.6	0.7	76	79.6	0.5
<b>Lakshadweep</b>	94.5	0.3	64.7	0	75.4	86.2	0
<b>Madhya Pradesh</b>	48.4	13.2	30.2	17.2	26.5	36	9.6
<b>Maharashtra</b>	79.7	1.9	70.9	2.2	46.4	69	1
<b>Manipur</b>	51.1	20.5	34.4	9.6	49.8	47.4	10.8
<b>Meghalaya</b>	32.7	18	13.7	18	36.5	33.1	14.7
<b>Mizoram</b>	68.4	5.7	32.6	14.5	47.2	54.2	4.2
<b>Nagaland</b>	26.1	8.8	13.1	13.5	-	-	-
<b>Orissa</b>	57.8	10	53.6	5.5	61.9	62.3	2.1
<b>Puducherry</b>	54.2	0.1	89.3	0.1	55.9	80.2	1
<b>Punjab</b>	72.9	9.7	72.9	9.4	52.4	79.8	4
<b>Rajasthan</b>	37.1	33.6	24.7	29	24.5	48.7	12.1
<b>Sikkim</b>	65.6	4.2	53.1	0.8	66.3	76.8	0.5
<b>Tamil Nadu</b>	51.5	0.4	91.4	0.5	38	81.6	0.2
<b>Tripura</b>	46.3	16.9	31.3	8.6	56.6	38.2	20.7
<b>Uttar Pradesh</b>	43.7	28.9	26.4	36	29	30.2	3.4
<b>Uttarakhand</b>	-	-	44.3	23.4	35.8	62.9	7.1
<b>West Bengal</b>	51.5	14	50.4	7.1	81.5	75.7	1.6
<b>India (15-49)</b>	54.2	18.8	45.8	19.8	42.7	53.5	4.6
<b>India (15-44)<sup>1</sup></b>	-	-	-	-	42.9	54	4.5

Note: Table based on youngest living child born since 01.01.2004.

<sup>1</sup> BCG, three injections of DPT, three doses of polio (excluding polio 0) and measles.

<sup>1</sup> Represents figures for currently married women aged (15-44)

years. Source: District Level Household Survey (DLHS-1, DLHS-2 and DLHS-3)

**Table 45: Immunization Status by States, CES 2005, 2006 and 2009**

States	CES-05		CES-06		CES-09	
	Full Immunization	No Immunization	Full Immunization	No Immunization	Full Immunization	No Immunization
Andhra Pradesh	70.3	-	80.1	1.8	68	0.2
Arunachal Pradesh	-	-	44.9	14.2	24.8	25.7
Assam	22.9	-	38.9	20.6	59.1	8.1
Bihar	17.6	-	37.7	19.4	49	15.2
Chhattisgarh	43.5	-	57.3	1.7	57.3	4.8
Delhi	66.2	-	84.6	2.4	71.5	7.3
Goa	90.7	-	94.3	0.8	87.9	3.1
Gujarat	65.2	-	71.9	7.5	56.6	2.6
Haryana	56.3	-	74.9	14.9	71.7	4.3
Himachal Pradesh	90	-	91.4	2.4	75.8	0.4
Jammu & Kashmir	80.6	-	81.8	6.4	66.6	11.7
Jharkhand	40.4	-	52.1	13.9	59.7	5.4
Karnataka	84.3	-	84	2.3	78	1
Kerala	84.7	-	87.9	0.5	81.5	1.8
Madhya Pradesh	36.9	-	55.9	6.4	42.9	5.9
Maharashtra	53.9	-	72.7	7.7	78.6	2.1
Manipur	-	-	64.8	7.3	51.9	11.9
Meghalaya	-	-	40.4	24.4	60.8	9.3
Mizoram	-	-	71.9	1.7	73.7	7.2
Nagaland	-	-	32.5	30.9	27.8	31.6
Orissa	54	-	74.8	0.9	59.5	5.8
Punjab	81.9	-	75.3	3.5	83.6	2.4
Rajasthan	47.4	-	47.8	15.4	53.8	15.6
Sikkim	-	-	81.5	1.3	85.3	3
Tamilnadu	77.4	-	89.9	0.1	77.3	3.9
Tripura	-	-	60.6	12.2	66	1.8
Uttar Pradesh	29.1	-	37.2	24	40.9	17.8
Uttarakhand	58.8	-	72.2	6.3	71.5	9.1
West Bengal	52.9	-	71.2	1.6	64.9	4.8
Uts Combined	88.7	-	88.5	1.3	71.3	3.5
<b>Total</b>	47.4	-	62.4	10.1	61	7.6

**Table 46: Children Aged 12-23 months Fully Immunized (%), AHS 2010-11, 2011-12 and 2012-13**

State	2010-11			2011-12			2012-13		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
Assam	59.0	58.2	63.7	61.4	61.0	64.2	64.4	63.8	68.4
Bihar	64.5	64.3	66.1	65.6	65.4	67.5	69.9	69.7	72.1
Chhattisgarh	74.1	73.0	78.7	74.1	73.2	78.5	74.9	73.9	79.4
Jharkhand	63.7	61.1	71.4	69.1	67.7	73.7	69.9	68.5	75.4
Madhya Pradesh	54.9	51.1	64.9	59.7	56.2	69.2	66.4	63.5	73.8
Odisha	55.0	54.3	59.5	62.3	62.0	64.1	68.8	68.9	68.2
Rajasthan	70.8	69.0	77.3	69.2	67.6	75.3	74.2	72.6	80.1
Uttar Pradesh	45.3	44.7	48.1	48.1	47.1	52.7	52.7	51.6	57.8
Uttarakhand	75.4	73.8	79.9	77.9	76.3	82.3	79.6	78.1	83.7

**Table 47: Infant Mortality Rates in Major States, SRS 2000, 2005, 2010-2013**

States	2000	2005	2010	2011	2012	2013
India	68	58	47	44	42	40
Andhra Pradesh	65	57	46	43	41	39
Assam	75	68	58	55	55	54
Bihar	62	61	48	44	43	42
Chhattisgarh	-	63	51	48	47	46
Delhi	-	35	30	28	25	24
Gujarat	62	54	44	41	38	36
Haryana	67	60	48	44	42	41
Himachal Pradesh	51	49	40	38	36	35
Jammu & Kashmir	-	50	43	41	39	37
Jharkhand	-	50	42	39	38	37
Karnataka	57	50	38	35	32	31
Kerala	14	14	13	12	12	12
Madhya Pradesh	87	76	62	59	56	54
Maharashtra	48	36	28	25	25	24
Odisha	95	75	61	57	53	51
Punjab	52	44	34	30	28	26
Rajasthan	79	68	55	52	49	47
Tamil Nadu	51	37	24	22	21	21
Uttar Pradesh	83	73	61	57	53	50
West Bengal	51	38	31	32	32	31

**Table 48: Infant Mortality Rates (Male) in Major States, SRS 2000, 2005, 2010-2013**

State	2000	2005	2010	2011	2012	2013
India	67	56	46	43	41	39
Andhra Pradesh	66	56	44	40	40	39
Assam	66	66	56	55	54	53
Bihar	62	60	46	44	42	40
Chhattisgarh	-	63	48	47	46	45
Delhi	-	33	29	25	24	23
Gujarat	59	52	41	39	36	35
Haryana	63	51	46	41	41	40
Himachal Pradesh	57	47	35	36	35	33
Jammu & Kashmir	-	47	41	40	38	36
Jharkhand	-	43	41	36	36	35
Karnataka	65	48	37	34	30	30
Kerala	15	14	13	11	10	10
Madhya Pradesh	81	72	62	57	54	52
Maharashtra	46	34	27	24	24	23
Odisha	98	74	60	55	52	50
Punjab	45	41	33	28	27	25
Rajasthan	76	64	52	50	47	45
Tamil Nadu	49	35	23	21	21	20
Uttar Pradesh	81	71	58	55	52	49
West Bengal	54	38	29	30	31	30

**Table 49: Infant Mortality Rates (Female) in Major States, SRS 2000, 2005, 2010-2013**

State	2000	2005	2010	2011	2012	2013
India	69	61	49	46	44	42
Andhra Pradesh	64	58	47	46	43	40
Assam	83	69	60	56	57	55
Bihar	61	62	50	45	45	43
Chhattisgarh	-	64	54	50	47	47
Delhi	-	37	31	31	26	25
Gujarat	67	55	47	42	39	37
Haryana	71	70	49	48	44	42
Himachal Pradesh	44	51	47	39	38	36
Jammu & Kashmir	-	55	45	41	40	38
Jharkhand	-	58	44	43	39	38
Karnataka	47	51	39	35	34	32
Kerala	13	15	14	13	13	13
Madhya Pradesh	93	79	63	62	59	55

<b>Maharashtra</b>	50	37	29	25	26	25
<b>Odisha</b>	92	77	61	58	54	52
<b>Punjab</b>	61	48	35	33	29	27
<b>Rajasthan</b>	81	72	57	57	51	49
<b>Tamil Nadu</b>	54	39	24	24	22	21
<b>Uttar Pradesh</b>	86	75	63	60	55	52
<b>West Bengal</b>	47	39	32	33	33	32

**Table 50: Infant Mortality Rate (IMR), AHS 2010-11, 2011-12 and 2012-13**

State	2010-11			2011-12			2012-13		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
<b>Assam</b>	60	64	35	55	59	60	55	59	31
<b>Bihar</b>	55	56	44	48	49	50	48	49	41
<b>Chhattisgarh</b>	53	55	40	50	53	56	46	48	34
<b>Jharkhand</b>	41	45	26	38	42	42	36	40	22
<b>Madhya Pradesh</b>	67	72	50	65	70	73	62	68	47
<b>Odisha</b>	62	65	44	59	62	66	56	59	37
<b>Rajasthan</b>	60	64	43	57	61	66	55	59	38
<b>Uttar Pradesh</b>	71	74	54	70	73	74	68	72	51
<b>Uttarakhand</b>	43	46	33	41	44	46	40	42	31

**Table 51: Neo-Natal Mortality Rate in Major States, SRS 2000, 2005, 2010-2013**

States	2000	2005	2010	2011	2012	2013
<b>India</b>	44	37	33	31	29	28
<b>Andhra Pradesh</b>	45	35	30	28	27	25
<b>Assam</b>	47	33	33	30	29	27
<b>Bihar</b>	42	32	31	29	28	28
<b>Chhattisgarh</b>	-	45	37	34	31	31
<b>Delhi</b>	-	20	19	18	16	16
<b>Gujarat</b>	42	36	31	30	28	26
<b>Haryana</b>	38	35	33	28	28	26
<b>Himachal Pradesh</b>	31	33	31	28	26	25
<b>Jammu &amp; Kashmir</b>	-	36	35	32	30	29
<b>Jharkhand</b>	-	28	29	29	27	26
<b>Karnataka</b>	40	28	25	24	23	22
<b>Kerala</b>	10	11	7	7	7	6
<b>Madhya Pradesh</b>	59	51	44	41	39	36
<b>Maharashtra</b>	33	25	22	18	18	17
<b>Odisha</b>	61	53	42	40	39	37

<b>Punjab</b>	29	30	25	24	17	16
<b>Rajasthan</b>	49	43	40	37	35	32
<b>Tamil Nadu</b>	36	26	16	15	15	15
<b>Uttar Pradesh</b>	53	45	42	40	37	35
<b>West Bengal</b>	31	30	23	22	22	21

**Table 52: Neo-Natal Mortality Rate (Rural) in Major States, SRS 2000, 2005, 2010-2013**

<b>States</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
<b>India</b>	49	41	36	34	33	31
<b>Andhra Pradesh</b>	51	43	36	34	33	25
<b>Assam</b>	49	35	36	32	31	27
<b>Bihar</b>	44	34	32	31	29	28
<b>Chhattisgarh</b>	-	46	38	34	32	31
<b>Delhi</b>	-	17	17	25	25	16
<b>Gujarat</b>	48	40	36	35	33	26
<b>Haryana</b>	40	38	36	32	31	26
<b>Himachal Pradesh</b>	32	35	32	29	27	25
<b>Jammu &amp; Kashmir</b>	-	37	37	34	32	29
<b>Jharkhand</b>	-	30	32	31	30	26
<b>Karnataka</b>	48	34	31	31	29	22
<b>Kerala</b>	10	11	8	8	8	6
<b>Madhya Pradesh</b>	63	54	47	44	42	36
<b>Maharashtra</b>	39	30	27	22	22	17
<b>Odisha</b>	63	56	43	42	41	37
<b>Punjab</b>	32	33	27	26	16	16
<b>Rajasthan</b>	52	47	45	41	39	32
<b>Tamil Nadu</b>	41	31	18	18	18	15
<b>Uttar Pradesh</b>	56	48	45	43	40	35
<b>West Bengal</b>	33	32	24	23	23	21

**Table 53: Neo-Natal Mortality Rate (Urban) in Major States, SRS 2000, 2005, 2010-2013**

States	2000	2005	2010	2011	2012	2013
<b>India</b>	27	23	19	17	16	15
<b>Andhra Pradesh</b>	26	11	13	13	12	10
<b>Assam</b>	26	18	13	10	10	10
<b>Bihar</b>	29	18	13	12	12	11
<b>Chhattisgarh</b>	-	36	32	31	28	26
<b>Delhi</b>	-	21	19	17	14	15
<b>Gujarat</b>	26	27	19	19	17	16
<b>Haryana</b>	27	27	24	18	20	19
<b>Himachal Pradesh</b>	17	14	19	15	15	11
<b>Jammu &amp; Kashmir</b>	-	31	25	19	19	18
<b>Jharkhand</b>	-	16	14	13	12	12
<b>Karnataka</b>	17	15	14	12	12	12
<b>Kerala</b>	9	10	5	3	3	3
<b>Madhya Pradesh</b>	40	36	30	24	23	23
<b>Maharashtra</b>	24	19	15	13	12	11
<b>Odisha</b>	42	32	32	27	27	26
<b>Punjab</b>	19	23	22	21	18	16
<b>Rajasthan</b>	32	25	23	19	18	17
<b>Tamil Nadu</b>	24	19	13	12	11	11
<b>Uttar Pradesh</b>	39	33	27	23	21	20
<b>West Bengal</b>	21	20	19	17	16	15

**Table 54: Early Neo-Natal Mortality Rate in Major States, SRS 2000, 2005, 2010-2013**

States	2000	2005	2010	2011	2012	2013
<b>India</b>	32	28	25	24	23	22
<b>Andhra Pradesh</b>	35	26	24	24	22	21
<b>Assam</b>	31	25	27	25	23	21
<b>Bihar</b>	31	28	27	25	23	23
<b>Chhattisgarh</b>	-	36	26	25	25	24
<b>Delhi</b>	-	16	16	12	11	11
<b>Gujarat</b>	33	28	24	22	21	20
<b>Haryana</b>	24	24	25	24	21	19
<b>Himachal Pradesh</b>	26	19	25	23	20	17
<b>Jammu &amp; Kashmir</b>	-	29	30	26	24	24
<b>Jharkhand</b>	-	22	26	25	23	22
<b>Karnataka</b>	31	23	22	20	20	18
<b>Kerala</b>	6	9	5	5	4	4

<b>Madhya Pradesh</b>	44	38	34	32	29	27
<b>Maharashtra</b>	23	20	17	15	14	13
<b>Odisha</b>	45	41	33	30	29	28
<b>Punjab</b>	18	18	19	18	13	11
<b>Rajasthan</b>	33	33	33	29	27	26
<b>Tamil Nadu</b>	25	19	13	11	11	11
<b>Uttar Pradesh</b>	41	32	30	30	28	27
<b>West Bengal</b>	21	23	19	18	17	16

**Table 55: Peri-Natal Mortality Rate in Major States, SRS 2000, 2005, 2010-2013**

<b>States</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
<b>India</b>	40	37	32	30	28	26
<b>Andhra Pradesh</b>	48	37	31	30	28	27
<b>Assam</b>	43	34	35	34	31	28
<b>Bihar</b>	34	30	28	28	25	23
<b>Chhattisgarh</b>	-	53	37	36	36	33
<b>Delhi</b>	-	25	22	19	16	17
<b>Gujarat</b>	37	36	32	29	28	24
<b>Haryana</b>	37	30	34	32	30	28
<b>Himachal Pradesh</b>	35	38	35	33	31	28
<b>Jammu &amp; Kashmir</b>	-	36	35	34	32	29
<b>Jharkhand</b>	-	22	27	26	23	22
<b>Karnataka</b>	50	36	35	33	33	30
<b>Kerala</b>	12	17	12	10	10	9
<b>Madhya Pradesh</b>	52	45	42	38	35	33
<b>Maharashtra</b>	30	31	24	21	19	18
<b>Odisha</b>	60	54	41	38	37	35
<b>Punjab</b>	40	32	25	25	20	18
<b>Rajasthan</b>	39	44	39	34	33	29
<b>Tamil Nadu</b>	39	30	23	20	19	18
<b>Uttar Pradesh</b>	47	41	35	35	31	29
<b>West Bengal</b>	29	31	28	24	22	20

**Table 56: Still Birth Rate in Major States, SRS 2000, 2005, 2010-2013**

<b>States</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
<b>India</b>	8	9	7	6	5	4
<b>Andhra Pradesh</b>	13	11	7	6	6	6
<b>Assam</b>	13	9	9	9	8	7
<b>Bihar</b>	3	2	1	3	1	0
<b>Chhattisgarh</b>	-	18	12	12	11	9
<b>Delhi</b>	-	10	6	7	6	6
<b>Gujarat</b>	5	8	8	7	7	4
<b>Haryana</b>	<b>13</b>	<b>7</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>8</b>
<b>Himachal Pradesh</b>	9	19	10	10	12	11
<b>Jammu &amp; Kashmir</b>	-	7	5	8	8	5
<b>Jharkhand</b>	-	1	1	1	1	0
<b>Karnataka</b>	19	13	14	14	14	12
<b>Kerala</b>	6	9	7	6	6	5
<b>Madhya Pradesh</b>	8	8	8	7	6	5
<b>Maharashtra</b>	7	12	7	6	6	6
<b>Odisha</b>	15	14	8	8	8	7
<b>Punjab</b>	22	14	6	7	7	7
<b>Rajasthan</b>	6	11	6	5	6	4
<b>Tamil Nadu</b>	15	11	10	9	8	7
<b>Uttar Pradesh</b>	7	10	5	5	3	1
<b>West Bengal</b>	8	9	9	6	5	3

**Table 57: Early Childhood Mortality Rate by State, NFHS-1 (1992-93), NFHS-2 (1998-99) and NFHS-3 (2005-06)**

India & States	Neonatal Mortality			Postnatal mortality			Infant Mortality			Child Mortality			Under-5 Mortality		
	NFHS 1	NFHS 2	NFHS 3	NFHS 1	NFHS 2	NFHS 3	NFHS 1	NFHS 2	NFHS 3	NFHS 1	NFHS 2	NFHS 3	NFHS 1	NFHS 2	NFHS 3
<b>India</b>	48.6	43.4	39	29.9	24.2	18	78.5	67.6	57	33.4	29.3	18.4	109.3	94.9	74.3
<b>Delhi</b>	34.9	29.5	29.3	30.5	17.4	10.5	65.4	46.8	39.8	19	9	7.3	83.1	55.4	46.7
<b>Haryana</b>	38.4	34.9	23.6	34.9	21.9	18.1	73.3	56.8	41.7	27.4	21.2	11.1	98.7	76.8	52.3
<b>Himachal Pradesh</b>	34.2	22.1	27.3	21.7	12.3	8.9	55.8	34.4	36.1	14.1	8.3	5.6	69.1	42.4	41.5
<b>Jammu &amp; Kashmir</b>	31.9	40.3	29.8	13.5	24.7	14.9	45.4	65	44.7	14.3	16.1	6.8	59.1	80.1	51.2
<b>Punjab</b>	31.2	34.3	28	22.5	22.8	13.7	53.7	57.1	41.7	15	15.9	10.8	68	72.1	52
<b>Rajasthan</b>	37.2	49.5	43.9	35.4	30.9	21.4	72.6	80.4	65.3	32.3	37.6	21.5	102.6	114.9	85.4
<b>Uttaranchal</b>	-	-	27.6	-	-	14.3	-	-	41.9	-	-	15.5	-	-	56.8
<b>Chhattisgarh</b>	-	-	51.1	-	-	19.7	-	-	70.8	-	-	21	-	-	90.3
<b>Madhya Pradesh</b>	53.2	54.9	44.9	32	31.2	24.7	85.2	86.1	69.5	49.3	56.4	26.5	130.3	137.6	94.2
<b>Uttar Pradesh</b>	59.9	53.6	47.6	40	33.1	25	99.9	86.7	72.7	46	39.2	25.6	141.3	122.5	96.4
<b>Bihar</b>	54.8	46.5	39.8	34.4	26.4	21.9	89.2	72.9	61.7	42	34.7	24.7	127.5	105.1	84.8
<b>Jharkhand</b>	-	-	48.6	-	-	20.2	-	-	68.7	-	-	26.1	-	-	93
<b>Orissa</b>	64.7	48.6	45.4	47.4	32.3	19.3	112.1	81	64.7	21.3	25.5	27.6	131	104.4	90.6
<b>West Bengal</b>	51.8	31.9	37.6	23.5	16.8	10.4	75.3	48.7	48	26	19.9	12.2	99.3	67.6	59.6
<b>Arunachal Pradesh</b>	17.5	41.8	34	22.5	21.3	26.7	40	63.1	60.7	33.3	37.4	28.8	72	98.1	87.7
<b>Assam</b>	50.9	44.6	45.5	37.8	24.9	20.6	88.7	69.5	66.1	58.7	21.4	20.2	142.2	89.5	85
<b>Manipur</b>	25.1	18.6	18.7	17.3	18.4	11.1	42.4	37	29.7	20.2	19.9	12.6	61.7	56.1	41.9
<b>Meghalaya</b>	37.8	50.7	23.6	26.3	38.3	21	64.2	89	44.6	24.3	36.2	27.1	86.9	122	70.5
<b>Mizoram</b>	8.3	18.8	16.3	6.3	18.2	17.7	14.6	37	34.1	14.9	18.4	19.5	29.3	54.7	52.9

<b>Nagaland</b>	10	20.1	19.8	7.2	22	18.5	17.2	42.1	38.3	3.6	22.7	27.5	20.7	63.8	64.7
<b>Sikkim</b>	43.6	26.3	19.4	32.3	17.6	14.3	75.8	43.9	33.7	31.2	28.4	6.7	104.6	71	40.1
<b>Tripura</b>	-	-	33.1	-	-	18.3	-	-	51.5	-	-	8.2	-	-	59.2
<b>Goa</b>	20.6	31.2	8.8	11.3	5.5	6.5	31.9	36.7	15.3	7.2	10.5	5	38.9	46.8	20.3
<b>Gujarat</b>	42.3	39.6	33.5	26.4	23	16.2	68.7	62.6	49.7	37.9	24	11.9	104	85.1	60.9
<b>Maharashtra</b>	36.4	32	31.8	14	11.7	5.7	50.5	43.7	37.5	20.9	15	9.5	70.3	58.1	46.7
<b>Andhra Pradesh</b>	45.3	43.8	40.3	25	22.1	13.2	70.4	65.8	53.5	22.4	21	10.2	91.2	85.5	63.2
<b>Karnataka</b>	45.3	37.1	28.9	20.2	14.4	14.3	65.4	51.5	43.2	23.5	19.3	12.1	87.3	69.8	54.7
<b>Kerala</b>	15.5	13.8	11.5	8.2	2.5	3.8	23.8	16.3	15.3	8.4	2.6	1	32	18.8	16.3
<b>Tamil Nadu</b>	46.2	34.8	19.1	21.5	13.3	11.2	67.7	48.2	30.4	20.1	15.9	5.3	86.5	63.3	35.5

**Table 58: Neo-Natal Mortality Rate, AHS 2010-11, 2011-12 and 2012-13**

State	2010-11			2011-12			2012-13		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
Assam	39	42	22	37	40	21	37	40	21
Bihar	35	36	27	32	32	26	32	32	26
Chhattisgarh	35	37	29	35	36	27	32	34	25
Jharkhand	26	29	17	24	27	15	23	26	14
Madhya Pradesh	44	49	32	43	47	31	42	46	30
Odisha	40	42	28	39	41	26	37	39	23
Rajasthan	40	43	30	38	41	28	37	40	26
Uttar Pradesh	50	53	36	50	52	37	49	52	35
Uttarakhand	30	32	23	29	31	24	28	30	23

**Table 59: Post Neo-Natal Mortality Rate, AHS 2010-11, 2011-12 and 2012-13**

State	2010-11			2011-12			2012-13		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
Assam	20	22	12	18	19	10	18	19	10
Bihar	19	19	17	16	16	16	16	16	16
Chhattisgarh	17	18	12	16	17	10	14	15	9
Jharkhand	15	16	9	13	15	9	13	14	8
Madhya Pradesh	22	24	18	21	23	17	21	22	16
Odisha	22	23	16	21	21	15	19	20	14
Rajasthan	20	21	14	19	20	12	18	19	12
Uttar Pradesh	21	22	18	20	21	16	19	20	15
Uttarakhand	13	14	10	12	14	9	12	13	8

