STRENGTHENING MATERNAL NUTRITION SERVICES IN ANTENATAL CARE (8 CONTACTS)

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CONTENTS

1. Need for maternal nutrition algorithm

- India has shown a record 22% decline in maternal mortality ratio (MMR), from 167 (2011-2013) to 130 (2014-2016) deaths per 100,000 live births, primarily by increasing access to skilled care at birth[1].
- However, its progress on reducing all forms of maternal malnutrition and its related adversities- low birth weight and small for gestational age newborns, underweight and stunted children, poor cognitive development and increased life time risk of diabetes and heart disease, remains slow.
- India is faced with a unique problem where pregnant women enter pregnancy either short (11%) or thin (23%) or overweight/obese (21%) or with anemia (53%) or with combination of these nutrition problems. Further, about 8% of pregnant women are adolescents; too young (<18 years) to be mothers (NFHS-4, 2015–2016)[2].
- The World Health Organization (WHO) antenatal care (ANC) guidelines 2016 recommends 49 interventions of which the maximum, 14 are nutrition interventions[3].
- The WHO has placed substantial emphasis on nutrition assessment and provision of a set of nutrition interventions including provision of balanced energy protein supplementation, iron folic acid (IFA), and calcium supplementation, deworming, gestational weight gain monitoring and counselling on nutrition, family planning and breastfeeding coupled with efforts to prevent and treat maternal infections and anemia [3] (Box1).

In India, schemes to deliver the above-mentioned WHO recommendations exist; however, there are three main challenges.

1. **Ensuring early and regular contacts for ANC**
   Sixteen percent pregnant women don't receive any ANC, over 40% receive ANC after first trimester and 50% receive less than four ANC check-ups [2].
2. **Comprehensive maternal nutrition assessments to identify at nutritional risk**
   All nutritional risk factors are not consistently used for identifying at nutritional risk pregnant women. These include short stature (height<145 cm) [4], thinness (weight <45 kg [5-7], pre-pregnancy or less than 20 weeks pregnancy Body Mass Index-BMI <18.5 kg/m^2 [8]; mid upper arm circumference-MUAC<23 cm [9-11], overweight/obesity (pre-pregnancy or less than 20 weeks pregnancy BMI 23-24.9 kg/m^2 or ≥25 kg/m^2, respectively [5];MUAC ≥33 cm) [12], gestational weight gain (GWG) <1kg or >3kg after first trimester [13-15], moderate to severe anemia (Hemoglobin <10 g/dL) [16], any clinical signs of deficiencies or underlying disorders or confirmed medical condition like hypertensive disorders of pregnancy [17], gestational diabetes mellitus [18], malaria, tuberculosis, fluorosis, goitre,

hypothyroidism and hyperthyroidism, UTI/STI, heartburn/ nausea/ vomiting, constipation and HIV.

3. **Nutrition related counselling, and contextualizing counselling and services for each pregnant woman at nutritional risk**

   As comprehensive nutritional assessment for risk classification is not being undertaken in routine ANC, customized counselling is not provided. The latter being a recommended service along with nutrition assessment and others as per WHO ANC, 2016, guidelines.

Box 1. Evidence based maternal nutrition interventions [3, 19, 20]

1. Nutritional assessment of pregnant woman (measurement of weight, height, MUAC, gestational weight gain monitoring and testing for anemia).
2. Counselling on healthy eating and physical activity to stay healthy and prevent excessive weight gain.
3. Nutrition education on increasing daily energy and protein intake to reduce the risk of low-birth-weight neonates, in undernourished population.
4. Balanced energy and protein dietary supplementation, in undernourished population.
5. Folic acid supplementation (400 mcg only in 1st trimester)[16].
6. IFA supplementation(60mg elemental iron and 500 microgram folic acid, daily from 14 weeks onwards for 180 days and also 180 days postpartum)[16].
7. Calcium supplementation (500mg with250 IU VitaminD3 twice a day, from 14 weeks onwards for 180 days and also 180 days postpartum)[21].
8. Promotion of double fortified (iron and iodine)salt.
9. Prevention and management of infectious diseases such as soil-transmitted helminths and malaria (1. one tablet of 400 mg albendazole recommended in 2ndtrimester [22] and 2. provision of insecticide treated bed-nets for prevention of malaria in endemic areas)
10. Counselling and facilitate linkage to government schemes for access to free drugs, diagnostics, nutritional diet ,referral, institutional deliveries at all public health facilities
11. If daily caffeine intake is >300 mg, counselling to lower caffeine intake to reduce the risk of pregnancy loss and low-birth-weight neonates.
12. Counselling on early and exclusive breastfeeding and family planning.
13. Condition specific counselling, management and referral for those at nutritional risk.

2. Technical guidance

Maternal nutrition algorithm | Facility level

Services for all pregnant women (Service provider: Auxiliary Nurse Midwife-ANM)

1. Nutrition assessment

1.1 Ask

1st contact only (should be within 12 weeks of gestation)

- Age
- Obstetric history
- Last Menstrual Period
- Any medication
- Recurrent or prolonged illness
- Night blindness in previous pregnancy

Every contact (1st to 8th contact)

- Current symptoms

  Fever, cough, blood in sputum, morning sickness (nausea and vomiting), heartburn, constipation, increased urinary frequency/burning during urination, giddiness, fatigue, palpitations, shortness of breath, worm infestation, sudden weight loss, night blindness (especially in 3rd trimester)

- Eating habits and physical activity

  Number of meals consumed in a day, foods consumed in a day, snacking pattern, fasting days per week, type, duration and frequency of physical activity, consumption of caffeine, alcohol, tobacco and related products, food restrictions and allergies, if any

1.2 Measure

1st contact only (should be within 12 weeks of conception)

- Height
- Mid upper arm circumference (MUAC)
- BMI

(*BMI calculated only if pregnancy is <20 weeks*)

Every contact (1st to 8th contact)

- Weight
- Weight gain from previous month
- Blood pressure

1.3 Look for

Every contact (1st to 8th contact)

- Pallor (conjunctivae, tongue, oral mucosa and palms)
- Palpable goitre
- Dental and skeletal fluorosis
- Pedal edema or puffiness of face

1.4 Test

Every trimester (1st, 2nd or 3rd, 4th or 5th contact)

- Blood hemoglobin
- Urine albumin and sugar

First (<12 weeks) and third trimester (24-28 weeks) (1st and 3rd or 4th contact)

Oral glucose tolerance test (OGTT)

2. Micronutrient supplementation	**3. Counselling using flipbook (waiting area) and/or by month card (in consultation) on**	**4. Prevention and management of infectious diseases such as soil-transmitted helminths and malaria**	**5. Counsel/Manage/Refer**
1st contact only (should be within 12 weeks of gestation) ▪ Folic acid supplementation (400 mcg, daily only in 1st trimester) 2nd trimester onwards (2nd - 8th contacts) ▪ Iron-folic acid supplementation (60 mg elemental iron and 500 microgram folic acid, daily from 14 weeks onwards for 180 days and also 180 days postpartum) ▪ Calcium supplementation (500 mg with 250 IU Vitamin D3 twice a day, from 14 weeks onwards for 180 days and also 180 days postpartum) Every contact (1st- 8thcontact) ▪ Promotion of double fortified (iron and iodine) salt	Every contact (1st-8thcontact) ▪ Nutrition assessment at ANC contacts ▪ Nutrition relevant ANC services and maternity benefits ▪ Food security entitlements ▪ Diet diversity ▪ Meal frequency, quantity and options ▪ Consumption of IFA tablets ▪ Consumption of calcium tablets ▪ Personal cleanliness, use of toilets and safe drinking water ▪ Sleep, rest and work pattern ▪ Physical activity ▪ Restricting caffeine intake, avoiding alcohol, tobacco and other substances ▪ Sex during pregnancy and family planning ▪ Early and exclusive breastfeeding ▪ Nine danger signs during pregnancy ▪ Role of husband ▪ Common food related myths	1stcontact only (should be within 12weeks of gestation) ▪ Provision of insecticide treated bed-nets for prevention of malaria in endemic areas* 2nd trimester only (2nd or 3rdcontact) ▪ Maternal deworming (one tablet of 400 mg albendazole recommended in 2nd trimester)	Every contact (1st - 8th contact) ▪ As per nutritional risk classification

*reference number 23

Additional actions for pregnant women with nutritional risk (Service provider: ANM for classification; Medical Officer, MO; Community Health Officer in Health and Wellness Centre for Counsel/manage/refer)

5a. Classify	**5b. Counsel/manage/refer**
Age <20 years Height <145 cm	▪ Individual counselling on diet and family planning for 15 minutes using at-risk cards after ANC checkup ▪ Red mark on MCP card for fortnightly follow-up visits
BMI <18.5 kg/m^2 (<20 weeks of gestation) OR Weight <45 kg OR MUAC <23 cm OR GWG <1 kg/month (after 1sttrimester)	▪ Individual counselling on diet for 15 minutes using at-risk cards and *Thali* model after ANC checkup ▪ Check for co-existence of medical illness* and referral for appropriate medical care ▪ Red mark on MCP card for fortnightly follow-up visits
MUAC <21 cm	▪ Additional 700 kcal and 35 g protein** - In OPD, advise linkage for additional snack through state-specific schemes - Advise Accredited Social Health Activist (ASHA) to undertake additional follow-up fortnightly group meeting/home visits ▪ Check for co-existence of medical illness* and referral for appropriate medical care ▪ Red mark on MCP card for fortnightly follow-up visits
BMI ≥25 kg/m^2 (<20 weeks of gestation) OR MUAC ≥33 cm OR GWG > 3kg/month (after 1sttrimester)	▪ Individual counselling on diet and physical activity for 15 minutes using at-risk cards and *thali* model after ANC check up ▪ Check for co-existence of medical illness* and referral for appropriate medical care ▪ Red mark on MCP card for fortnightly follow-up visits
Hemoglobin: 7-9.9 g/dL Hemoglobin <7 g/dL	▪ Moderate anemia - Two IFA tablets daily - Individual counselling on diet, micronutrient supplementation and deworming ▪ Severe anemia to be treated using intravenous (IV) iron sucrose/Ferric carboxy maltose (FCM)/ blood transfusion ▪ Check for co-existence of medical illness* and referral for appropriate medical care ▪ Red mark on MCP card for fortnightly follow-up visits

*Hypertensive disorders of pregnancy, gestational diabetes mellitus, malaria, tuberculosis, fluorosis, goitre, hypothyroidism and hyperthyroidism, urinary tract infection (UTI)/sexually transmitted infection (STI), Heartburn/nausea/vomiting, constipation and Human immunodeficiency virus (HIV).
**Reference number 24-33

Maternal nutrition algorithm | Community level (Village Health Sanitation and Nutrition Day)

Services for all pregnant women (Service provider: ANM; provision of micronutrient supplements and selected counselling services through ASHA and AWW)

1. Nutrition assessment

1.1 Ask

1st contact only (should be within 12 weeks of gestation)

- Age
- Obstetric history
- Last Menstrual Period
- Any medication
- Recurrent or prolonged illness
- Night blindness in previous pregnancy

Every contact (1st to 8th contact)

- Current symptoms

  Fever, cough, blood in sputum, morning sickness (nausea and vomiting), heartburn, constipation, increased urinary frequency/burning during urination, giddiness, fatigue, palpitations, shortness of breath, worm infestation, sudden weight loss, night blindness (especially in 3rd trimester)

- Eating habits and physical activity

  Number of meals consumed in a day, foods consumed in a day, snacking pattern, fasting days per week, type, duration and frequency of physical activity, consumption of caffeine, alcohol, tobacco and related products, food restrictions and allergies, if any

1.2 Measure

1st contact only (should be within 12 weeks of conception)

- Height
- Mid upper arm circumference (MUAC)
- BMI

(*BMI calculated only if pregnancy is <20 weeks*)

Every contact (1st to 8th contact)

- Weight
- Weight gain from previous month
- Blood pressure

1.3 Look for

Every contact (1st to 8th contact)

- Pallor (conjunctivae, tongue, oral mucosa and palms)
- Palpable goitre
- Dental and skeletal fluorosis
- Pedal edema or puffiness of face

1.4 Test

Every trimester (1st, 2nd or 3rd, 4th or 5th contact)

- Blood hemoglobin
- Urine albumin and sugar

First (<12 weeks) and third trimester (24-28 weeks) (1st and 3rd or 4th contact)

Oral glucose tolerance test (OGTT)

2. Micronutrient supplementation	**3. Counselling using flipbook (waiting area) and/or by month card (in consultation) on**	**4. Prevention and management of infectious diseases such as soil-transmitted helminths and malaria**	**5. Counsel/Manage/Refer**
1st contact only (should be within 12 weeks of gestation) ▪ Folic acid supplementation (400 mcg daily, only in 1st trimester) 2nd trimester onwards (2nd- 8th contacts) ▪ Iron-folic acid supplementation (60 mg elemental iron and 500 microgram folic acid, daily from 14 weeks onwards for 180 days and also 180 days postpartum) ▪ Calcium supplementation (500 mg with 250 IU Vitamin D3 twice a day, from 14 weeks onwards for 180 days and also 180 days postpartum) Every contact (1st- 8th contact) ▪ Promotion of double fortified (iron and iodine) salt	Every contact (1st- 8th contact) ▪ Nutrition assessment at ANC contacts ▪ Nutrition relevant ANC services and maternity benefits ▪ Food security entitlements ▪ Diet diversity ▪ Meal frequency, quantity and options ▪ Consumption of IFA tablets ▪ Consumption of calcium tablets ▪ Personal cleanliness, use of toilets and safe drinking water ▪ Sleep, rest and work pattern ▪ Physical activity ▪ Restricting caffeine intake, avoiding alcohol, tobacco and other substances ▪ Sex during pregnancy and family planning ▪ Early and exclusive breastfeeding ▪ Nine danger signs during pregnancy ▪ Role of husband ▪ Common food related myths	1st contact only (should be within 12 weeks of gestation) ▪ Provision of insecticide treated bed-nets for prevention of malaria in endemic areas* 2nd trimester only (2nd or 3rd contact) ▪ Maternal deworming (one tablet of 400 mg albendazole recommended in 2nd trimester)	Every contact (1st- 8th contact) ▪ As per nutritional risk classification

*reference number 23

Additional actions for pregnant women with nutritional risk (Service provider: ANM; select counselling through ASHA and AWW)

5a. Classify	**5b. Counsel/manage/refer**
Age <20 years Height <145 cm	▪ Individual counselling on diet and family planning for 15 minutes using at-risk cards after ANC checkup ▪ Red mark on MCP card for fortnightly follow-up visits
BMI <18.5 kg/m^2 (<20 weeks of gestation) OR Weight <45 kg OR MUAC <23 cm OR GWG <1 kg/month (after 1sttrimester)	▪ Individual counselling on diet for 15 minutes using at-risk cards and *Thali* model after ANC checkup ▪ Check for co-existence of medical illness* and referral for appropriate medical care ▪ Special fortnightly group antenatal counselling using at-risk card for thin pregnant women and food demonstration sessions using standardized recipes by ASHA
MUAC <21 cm	▪ Advise linkage for additional snack (additional 700 kcal and 35 g protein) through state-specific schemes** ▪ Check for co-existence of medical illness* and refer to Primary Health Centre (PHC) or nearest health facility with an MO Special fortnightly group antenatal counselling using at-risk card for thin pregnant women and food demonstration sessions using standardized recipes by ASHA** ▪ Additional follow-up fortnightly home visits by ASHA** ▪ Red mark on MCP card for fortnightly follow-up visits
BMI ≥25 kg/m^2 (<20 weeks of gestation) OR MUAC ≥33 cm OR GWG >3 kg/month (after 1sttrimester)	▪ Individual counselling on diet and physical activity for 15 minutes using at-risk cards and *thali* model after ANC check up ▪ Check for co-existence of medical illness* and referral for appropriate medical care ▪ Special fortnightly group antenatal counselling using at-risk card for overweight and obese pregnant women and food demonstration sessions using standardized recipes by ASHA ▪ Red mark on MCP card for fortnightly follow-up visits
Hemoglobin: 7-9.9 g/dL Hemoglobin <7 g/dL	• Moderate anemia - Two IFA tablets daily - Individual counselling on diet, micronutrient supplementation and deworming - Check for co-existence of medical illness* and referral for appropriate medical care • Severe anemia - Refer to PHC or nearest health facility with an MO to treat severe anemia using IV iron sucrose/FCM blood transfusion • Special fortnightly group antenatal counselling using at-risk card for anemic pregnant women and food demonstration sessions using standardized recipes by ASHA Red mark on MCP card for fortnightly follow-up visits

*Hypertensive disorders of pregnancy, gestational diabetes mellitus, malaria, tuberculosis, fluorosis, goitre, hypothyroidism and hyperthyroidism, urinary tract infection (UTI)/sexually transmitted infection (STI), Heartburn/nausea/vomiting, constipation and Human immunodeficiency virus (HIV).
**Reference number 24-33

3. Operational guidance

The implementation of the maternal nutrition algorithm is primarily the responsibility of the ANM in the community and both ANM and MO in the facility. At Health and Wellness Centre, CHO will manage and/or refer pregnant women at nutritional risk. In the community the ANM will be supported by the *Anganwadi* worker (AWW) and the ASHA, while in secondary and higher level facilities (Community Health Centres-CHC and higher), more staff are available to provide maternal nutrition services (**Table 1**).

Table 1. Recommended numbers of staff as relevant to the maternal nutrition service delivery by type of facility [11]

	Health sub-centre (HSC)*	**PHC**	**CHC**	**District hospital (101 – 500 beds)****
Obstetrician & Gynecologist	-	-	1	2 to 6
Public health specialist	-	-	1	-
MO	-	2	2	11 to 23
Staff nurse (SN)	1 (Desirable)	3	10	45-225
Public health nurse	-	-	1	1***
Lady Health Visitor	-	1	-	1
ANM	1-2		-	-
Health worker (Male)	1	-	-	-
Lab technician		1	2	6 to 18
Pharmacist			1	4 to 12
Dietician		-	1 (Desirable)	1
Counselor			1	1 to 2
Health educator		1	-	-
Social worker		-	-	2 to 6
Medical records officer		-	-	1
Medical records assistant/ Data entry operator		-	2	1 to 3

* Type A (no deliveries undertaken), Type B (deliveries conducted)
**Grade I to V
*** For Sick Newborn Care Unit

Nutrition assessment (Service 1)

There are four components in nutrition assessment that is 1) Ask (taking history), 2) Measure (anthropometry and blood pressure), 3) Look for (clinical examination) and 4) Test (laboratory investigations) (**Table 2**).

Table 2. Nutrition assessment services, frequency, methods and responsibility

	Indicator	Measurement tool	Frequency	By whom (Community)	By whom (Facility)			
					HSC	PHC	CHC	Tertiary
		ASK						
1	Age	Not applicable	1st contact only	ANM	ANM	ANM/MO	SN/MO	SN/MO
2	Obstetric history							
3	Last menstrual period							
4	Any medication							
5	Recurrent or prolonged illness							
6	Night blindness in previous pregnancy							
7	Current symptoms*		Every contact					
8	Eating habits and physical activity**							
		MEASURE						
9	Weight (weight gain)	Digital weighing machine	Every contact	AWW	ANM	SN	SN	SN
10	Height	Stadiometer	1st contact only					
11	BMI	BMI chart	1st contact only	ANM				
12	MUAC	Non-stretchable in-elastic tape						
13	Blood pressure	Automated machine	Every contact					
		LOOK FOR (Clinical examination)						
14	Pallor (conjunctivae, tongue, oral mucosa and palms) Palpable goitre Dental and skeletal fluorosis Pedal edema or puffiness of face	Not applicable	Every contact	ANM	ANM	MO	MO	MO
		TEST						
15	Hemoglobin	At CHC and higher level: Semi-auto-analyzer At PHC, HSC, community: Digital Hemoglobinometers	Once per trimester	ANM	ANM	Lab-technician	Lab-technician	Lab-technician
16	Oral Glucose Tolerance Test	Plasma calibrated glucometer	1st ANC contact and at 24-28 weeks	ANM	ANM	Lab-technician	Lab-technician	Lab-technician
17	Urine (Albumin and Sugar)	Uri Stick	Once per trimester	ANM	ANM	Lab-technician	Lab-technician	Lab-technician

* Fever, cough, blood in sputum, morning sickness (nausea and vomiting), heartburn, constipation, increased urinary frequency /burning during urination, giddiness, fatigue, palpitations, shortness of breath, worm infestation, sudden weight loss, night blindness (especially in 3rd trimester)

** Number of meals consumed in a day, foods consumed in a day, snacking pattern, fasting days per week, type, duration and frequency of physical activity, consumption of caffeine, alcohol, tobacco and related products, food restrictions and allergies, if any.

NOTE

- *There are 17 indicators for assessment, of which nine (nearly 50%) are to be measured/enquired once (first contact only). These are: Age, obstetric history, last menstrual period, any medication, recurrent or prolonged illness, night blindness in previous pregnancy, height, BMI and MUAC.*
- *Findings from all assessments and laboratory investigations should be entered in the Mother and Child Protection (MCP) Card and Reproductive and Child Health (RCH) register by the ANM or SN.*

Micronutrient supplementation (Service 2)

ANM should provide folic acid (400 mcg) for daily consumption to all pregnant women in first trimester. All pregnant women should receive 30 tablets of IFA (60 mg elemental iron and 500 mcg folic acid) and 60 tablets of calcium (500 mg with 250 IU Vitamin D3) every month, after 14 weeks of pregnancy. Supplementation has to be accompanied with counselling on intake. In community, ASHA may provide these supplements with counselling if pregnant woman is unable to have a contact with the ANM [12,13].

Counselling using flipbook and/or by gestational month cards (Service 3)

Two counselling aids are available for use by ANM (with support of ASHA and AWW in community) with all pregnant women, their husband and other family members in facility and community. The "Maternal nutrition for safe motherhood" flipbook provides key messages on 16 themes and is meant to be used in the ANC OPD waiting area and during VHSND (**Table 3**).

Table 3. Themes covered in the "Maternal nutrition for safe motherhood" flipbook

Number	Theme
1	Nutritional assessments at ANC contacts
2	Nutrition relevant ANC services and maternity benefits
3	Food security entitlements
4	Diet diversity
5	Meal frequency, quantity and options
6	Consumption of IFA tablets
7	Consumption of calcium tablets
8	Personal cleanliness, use of toilets and safe drinking water
9	Sleep, rest and work pattern
10	Physical activity
11	Restricting caffeine intake, avoiding alcohol, tobacco and other Substances
12	Sex during pregnancy and family planning
13	Early and exclusive breastfeeding

14	Nine danger signs during pregnancy
15	Role of husband
16	Common food related myths

The second counselling aid is the "Maternal nutrition for safe motherhood" by-gestational month cards, which provides important information for each month of pregnancy and is meant to be used during the ANC consultation with ANM or MO. The information links the stage of foetal development with important nutrition actions for a particular month. In addition to the 9 cards with information relevant to the pregnancy month, the counselling aid carries two common cards with key messages relevant to pregnant women in any month of pregnancy. Both aids include instructions on use. The key messages on 16 themes and important information for each month of pregnancy are available in Annex 5.1 and 5.2, respectively.

Prevention and management of infectious diseases such as soil-transmitted helminths and malaria (Service 4)

In order to prevent and treat helminthic infections, ANM should administer single dose albendazole (400 mg) tablet in second trimester. If feasible, she should administer it under her observation rather than dispensing it for home consumption. Also, in malaria endemic areas all pregnant women should receive insecticide treated bed-nets and advised on all precautions to prevent malaria. ASHA and AWW may provide these with counselling if pregnant woman is unable to have a contact with the ANM.

Counsel/manage/refer as per risk classification (Service 5)

ANM should review the nutrition assessment findings in the MCP card to classify pregnant women meeting the following criteria as being at nutritional risk:

1. Age <20years
2. Height < 145cm
3. Weight < 45kg
4. BMI <18.5 kg/m^2 or ≥25 kg/m^2 (at <20 weeks of gestation)
5. MUAC <23 cm OR ≥33 cm (further classification of women with MUAC<21cm)
6. GWG <1 kg or >3 kg/month (after 1sttrimester)
7. Hb <10 g/dL (further classification as moderate anemia Hb 7 to 9.9 g/dL and severe anemia Hb <7g/dL)

Finally, MO (CHO in Health and Wellness Centre) should screen for and diagnose any underlying medical illness such as hypertensive disorders of pregnancy, gestational diabetes mellitus,

malaria, tuberculosis, fluorosis, goitre, hypothyroidism and hyperthyroidism, UTI/STI, heartburn/nausea/vomiting, constipation and HIV. All cases identified at nutritional risk should carry a red flag on the MCP card.

Age < 20 years, height <145cm

For pregnant women <20 years of age and height <145 cm, individual counselling on diet and family planning for 15 minutes using at-risk cards after ANC checkup are recommended. The key messages from the at-risk card are presented below:

Age <20 years	**Height <145 cm**
1. Eat at-least one food item from all 5 groups in the daily diet, in order to meet energy, protein and nutrient requirements for proper growth and development of the developing fetus 2. Eat at least 3 main meals and 3 nutritious snacks in a day 3. Consume supplementary food/meal provided by *Anganwadi* centres regularly along with daily diet to meet the additional nutrient requirements of pregnancy 4. Consume one IFA tablet daily with water or lemon water 5. Consume 2 calcium tablets daily after meals 6. Drink plenty of water and fluids 7. Child spacing of at least 3 years is desirable to restore health and to avoid malnutrition in mother and child due to repeated pregnancies. Family planning methods such as condoms, intra-uterine devices, contraceptive pills, contraceptive injections etc. are available free of cost at any public health facility 8. Thirty minutes of moderate exercise or brisk walking everyday.	1. Eat at-least one food item from all 5 groups in the diet, in order to meet energy, protein and nutrient requirements for proper growth and development of the developing fetus 2. Eat at least 3 mains meals and 2 nutritious snacks in a day 3. Consume supplementary food/meal provided by *Anganwadi* centres regularly along with daily diet to meet the additional nutrient requirements of pregnancy 4. Consume one IFA tablet daily with water or lemon water 5. Consume 2 calcium tablets daily after meals 6. Drink plenty of water and fluids 7. Avoid consumption of fatty foods and sweetened beverages to prevent excessive weight gain 8. Child spacing of at least 3 years is desirable to restore health and to avoid malnutrition in mother and child due to repeated pregnancies. Family planning methods such as condoms, IUDs, contraceptive pills, contraceptive injections etc. are available free of cost at any public health facility 9. Thirty minutes of moderate exercise or brisk walking everyday 10. Prefer institutional delivery to avoid complications during labour.

BMI <18.5 kg/m^2 (<20 weeks of gestation) or weight <45 kg or MUAC <23 cm or GWG <1 kg/month after 1st trimester

Pregnant women with BMI <18.5 kg/m^2 (<20 weeks of gestation) or weight <45 kg orMUAC <23 cm or GWG <1 kg/month after 1st trimester face similar risks of having low birth weight or small for gestational age baby in addition to other longer term consequences. The recommended interventions are to provide individual counselling on diet for 15 minutes using at-risk cards and *thali* model after ANC checkup and check for co-existence of medical illness

and referral for appropriate care. In community setting ASHA should hold special fortnightly group counselling using at-risk card and food demonstration sessions using standardized recipes. Pregnant women with MUAC <21 cm need additional snack (700 kcal and 35 g protein) which is available through state-specific schemes under *Anganwadi* services or National or State Rural Livelihood Missions. In community, additional fortnightly home visits for follow-up by ASHA are also recommended. The key messages from at-risk card are presented below:

BMI <18.5 kg/m^2 (<20 weeks of gestation) or weight <45 kg or MUAC <23 cm or GWG <1 kg/month after 1sttrimester

Do's:

1. All pregnant women should eat at least 3 main meals and 2 small nutritious snacks daily second trimester onwards
2. In the second and third trimesters, severely malnourished pregnant women should also eat an additional extra nutritious snack
3. Consume milk and milk products (curd, cheese and *lassi*) and pulses every day. Women who eat non-vegetarian food should consume fish, eggs, meat in their daily diet.
4. Include all five food groups in your diet such as:-
   - ✓ Cereals- wheat, rice, *bajra*, maize, millets and *ragi*
   - ✓ Pulses, nuts & oilseeds, milk and its products, eggs, meat, chicken and fish
   - ✓ Green leafy vegetables and yellow-orange colored fruits
   - ✓ Sugar
   - ✓ Fats and oils
5. Continue consumption of IFA and calcium tablets daily
6. Consume one deworming tablet in the second trimester (at 4 months) of pregnancy
7. Maintain personal hygiene and sanitation to prevent infections.

MUAC <21cm

Nutritious snack include food items such as a Sweet *mathri*, Cereal-pulse premix, Sweet *daliya*, *Murmura-besan ladoo*etc. or the supplementary nutritious diet available under the Government Schemes

Don'ts: Consumption of tea and coffee with meals

When and what to get examined? At each antenatal contact, get your weight checked and undergo medical examination for underlying illness as advised by doctor

Adverse health effects

- Complications in childbirth
- Child malnutrition
- IUGR and LBW baby

Standardized recipes are also available for community food demonstration sessions.

Contents
Recommended dietary allowances

Instructions

5 freshly prepared recipes

8 ready-to-eat recipes

Nutritive value, serving size and preparation time for each recipe

BMI ≥25 kg/m^2 (<20 weeks of gestation) or MUAC ≥33 cm or GWG >3 kg/month after 1sttrimester

Pregnant women with BMI ≥25 kg/m^2 (<20 weeks of gestation) or MUAC ≥33 cm or GWG >3 kg/month after 1sttrimester are likely to face risks related to maternal obesity. The intervention package for these women includes individual counselling on diet and physical activity for 15 minutes using at-risk card and *thali* model after ANC checkup, in addition to check up for co-existence of medical illness and referral for appropriate medical care. In community, setting ASHA should hold special fortnightly group counselling using at-risk card and food demonstration sessions using standardized recipes. The key messages from at-risk card are presented below:

BMI ≥25 kg/m^2 (<20 weeks of gestation) or MUAC ≥33 cm or GWG >3 kg/month after 1sttrimester

Do's:

1. Small meals throughout the day
2. Plenty of green leafy vegetables, fibre rich fruits and vegetables, whole cereals like *bajra* and *ragi*, and whole pulses like *rajma* and soyabean etc.
3. Fat free or low fat milk
4. Tea and coffee without sugar
5. 8-10 glasses of water daily
6. Light exercise or brisk walking for 30 minutes
7. Replace any one big meal with recipes such as *jowar-chanapulao*,vegetable *seviyan*,soya*poha*,soya *uttapam, daliya pulao* or *paushtik roti*
8. Replace any two small meals with nutritious snacks like *chhach*, vegetable soup, fruit *raita*,vegetable *idli*, *chana dal kebab*, *ankurit chana chaat*, *haryali khaman dhokla*or *murmura chaat.*

Don'ts:

1. Don't eat fried and sweetened items like chips, *pakora*, sweets, cold drinks etc.
2. Don't consume refined wheat flour items like pizza, burger, cake, bakery items etc.
3. Don't have excessive intake of outside food items
4. Don't use of excessive oil/ghee while cooking meals.

When and what to get examined? At each antenatal contact weight and blood pressure should be measured

Adverse health effects: Diabetes, High blood pressure and complications during delivery.

Standardized recipes are also available for community food demonstration sessions.

Contents
Recommended dietary allowances

Instructions

8 snack replacement recipes

6 meal replacement recipes

Nutritive value, serving size and preparation time for each recipe

Moderate and severe anemia

Mild and moderate anemia in pregnant women can be managed by double dose of IFA, individual counselling on diet, micronutrient supplementation and deworming and appropriate care or referral for any underlying medical illness. However, severe anemia requires treatment with IV iron sucrose/Ferric carboxy maltose (FCM)/blood transfusion.

In community setting, both groups should be counselled using at-risk card and food demonstration sessions held using standardized recipes. The key messages from at-risk card are presented below:

Any anemia

Do's

- All pregnant women should consume 1 IFA tablet daily with water or lemon juice
- One deworming tablet should be taken in the second trimester (at 4 months)of pregnancy
- For mild and moderate anemia (Hb 7-10.9 g/dl), take 2 IFA tablets
- For severe anemia, meet the doctor for treatment and get advice immediately
- Consume IFA tablets 2 hours before meals. In case of problems such as indigestion, vomiting or nausea, constipation etc. Consume the tablet 1hour after meals. Do not stop taking the tablets

Special items to be included in diet:

- Eat green leafy vegetables (*bathua*, fenugreek leaves, *cholai ka saag*(amaranth leaves)), whole grains and pulses, organ meat, lean meats including fish, egg, nuts and oilseeds, raisins
- Eat Vitamin C rich fruits and vegetables (lemon, guava, orange, *amla*, sweet lime) and sprouted pulses
- Consume folate rich foods such as whole pulses, green leafy vegetables (spinach, mustard leaves), fish; vitamin B12 rich foods such as chicken, fish, egg, milk; zinc rich foods such as oyster mushroom, whole cereals and pulses, green leafy vegetables, egg, oilseeds

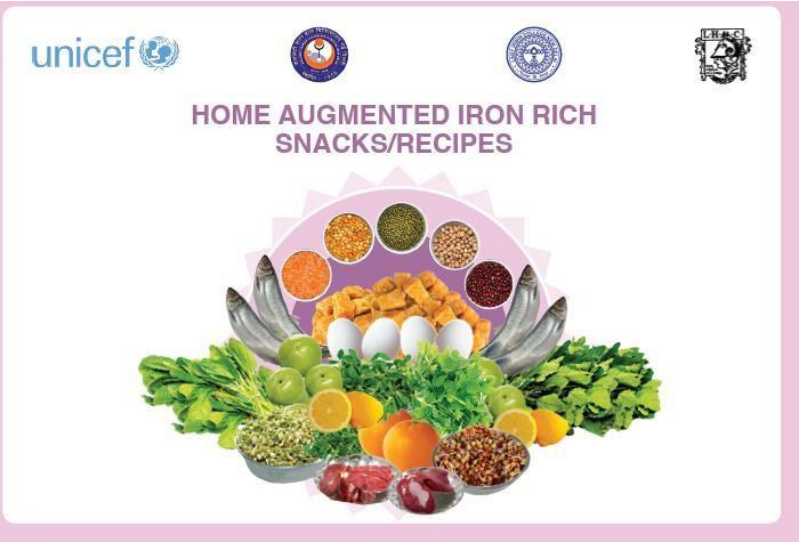
Don'ts

- Drink tea and coffee, especially with or after meals
- Taking IFA and Calcium tablets together

When and what to get examined? At each antenatal contact, examination of pallor (conjunctivae, tongue, oral mucosa and palms) should be done. Blood hemoglobin should be measured once per trimester

Adverse health effects: Blood loss, fatigue, weakness, and complications of delivery

Standardized recipes are also available for community food demonstration sessions.



Contents
Recommended dietary allowances

Instructions

5 freshly prepared recipes

7 ready-to-eatrecipes

Nutritive value, serving size and preparation time for each recipe

In addition at-risk cards are also available for medical conditions of constipation, fluorosis, gestational diabetes mellitus, goitre, heartburn/nausea/vomiting, HIV, hypertensive disorders of pregnancy, malaria, tuberculosis, thyroid disorders and UTI/STI in pregnancy. The key messages from these cards are available in annex 5.3.

Recording maternal nutrition services data

Primary responsibility: ANM (Community, HSC, PHC), SN (CHC and higher facilities)
Recording formats: ANC register. Noted in MCP card for pregnant women
Frequency: Daily

Based on current requirements of Reproductive and Child Health (RCH) and Health Management Information System (HMIS) portals and observations made during the operational feasibility of the algorithm, most of the information points for screening nutritional risk among pregnant women are already included in the recording formats (**Table 4**). Only two new information points should be added in the ANC register and MCP card- height and MUAC. Both are **one-time** measurements. MUAC is important, as generally weight before conception or within 20 weeks of pregnancy is not available.

Table 4. Existing and new information points for individual cases in ANC register

Identification	Health and nutrition status	Service use
1. Name	1. Last Menstrual Period	1. Registration trimester(date)
2. Husband's name	2. Expected Date of Delivery (EDD)	2. 180 IFA given
3. Age	3. Gravida	3. 360 Calcium tablets given
4. Address	4. Blood Pressure	4. Albendazole given
5. Facility address	5. Weight	5. Tetanus-Diphtheria (Td) administered
	6. Height*	6. Hemoglobin test
	7. MUAC*	7. Urine albumin and sugar test
	8. Hb level	8. Referral/treatment if high risk case
	9. GDM	
	10. Any other problem based on clinical examination	

*To be added

A line list of high risk pregnancies prepared at each health facility should include age (<20 years), weight (<45 kg), height (<145 cm), MUAC <23 cm or ≥33 cm and weight gain <1 kg or >3 kg since last month (after first trimester), moderate or severe anemia, hypertension, GDM, in addition to any other medical risks. These cases should be closely followed up by ANM/SN with support from ASHA through home visits and ensured services as per maternal nutrition algorithm for facility and community.

Reporting maternal nutrition services data

Primary responsibility: ANM (Community, Health Sub-Centre, PHC), Medical records officer/data entry operator (CHC and higher facilities)
Recording formats: HMIS and RCH formats
Frequency: Monthly

Most of the information points for screening nutritional risk among pregnant women and services are already being reported through the HMIS and RCH formats for each type of facility. Only two new reporting indicators may be added that is – number of pregnant women with height <145 cm, and number of pregnant women receiving counselling on increasing energy-protein intake, healthy eating, physical activity, family planning and early and exclusive breastfeeding. For malaria endemic areas stocks for insecticide treated bed-nets should also be included (**Table 5**).

Table 5. Existing and new reporting indicators on maternal nutrition

Nutrition status	Coverage	Supply chain
Number of pregnant women having Hb<10 g/dL	Number of pregnant women given 180 IFA tablets	Stocks available for IFA tablets (Red)– Adult (%)
Number of pregnant women having Hb<7 g/dL	Number of pregnant women given 360 calcium tablets	Stocks available for calcium tablet– Adult (%)
Number of pregnant women with height <145 cm*	Number of pregnant women given one albendazole tablet	Stocks available for albendazole tablets – Adult (%)
Number of pregnant women with MUAC <23 cm	Number of pregnant women having severe anemia (Hb<7 g/dl) who are treated	Stocks available for insecticide treated bed-nets (%)**
	Number of pregnant women counselled on increasing energy-protein intake, healthy eating, physical activity, family planning and early and exclusive breastfeeding*	

* Not currently in HMIS or RCH portal ** only in malaria endemic area

Reviewing maternal nutrition services

Reviewers: Members of state and district quality assurance committees (external)
Chief Medical Officer and/or administrator (DH and CHC, internal)
MO (PHC and attached Health Sub-Centres, internal)
Frequency: Internal (monthly), External (Biannual)

The review of maternal nutrition services will be aligned to the review mechanisms already in place under the National Health Mission. State and district quality assurance committees have been constituted and tools for reviewing health facilities are available. Similarly, states have checklists for review of VHSNDs. List of observations below may be used to complement observation points already in the available tools for external review of public health facilities (**Table 6**). Maternal nutrition status and services should be an agenda item in monthly internal review meetings.

Table 6. Observation points for review of maternal nutrition services

Observations	Y/N	Remarks
Equipment		
Digital weighing machine		
Stadiometer		
MUAC tape (non-stretchable, in-elastic)		
Blood Pressure equipment		
Digital hemoglobinometers		
Plasma calibrated glucometers		
Uri stick		
Supplies		
Required IFA (red) tablets stock		
Required calcium tablets stock		
Required deworming tablets stock		
Insecticide treated bed-nets		
Tools and counselling materials		
BMI chart		
Maternal nutrition for safe motherhood flipbook		
Maternal nutrition for safe motherhood by gestational month card		
At-risk cards for individual counselling		
Recipe book (special conditions) and *thali* models		
Anthropometry		
Height measured and recorded		
Weight measured and recorded		
BMI calculated in recorded		
MUAC measured and recorded		
Examination and tests		
BP measured and recorded		
Hemoglobin levels tested, pregnant women informed		
Glucose levels tested, pregnant women informed		
Urine sample taken		
Counselling		
Individual counselling for at nutritional risk cases		
Counselling aids used		
All messages covered		

Records
High risk pregnancy line list includes height, MUAC and weight gain in addition to moderate or severe anemia and medical risks

Training plan

Duration

- One-day training will be done for ANMs, SNs and MOs and district and block level programme officers/managers.

Content

- The orientation programme will have two components:
    1. Orientation on the algorithm at facility and community level
    2. Practice sessions
- The following sessions will be conducted:
    - Anthropometric measurements (weight, height, MUAC, computation of GWG, use of BMI charts) and practice clinics
    - Identification of clinical signs
    - Counselling skills and messages (group and individual counselling)
    - Record keeping
    - Data entry in register and uploading on HMIS and RCH portal
    - Reviewing and reporting

Methodology

- A cascade model will be used to train state, district, block and village level health and management staff and health workers.
- A resource pool of master trainers will be created through national and regional trainings, who will then train state, district, and block level functionaries and stakeholders.
- Batch size of training will be no more than 30.
- ANMs will be trained to support and guide AWWs and ASHAs in taking anthropometric measurements, conducting counselling sessions on health and nutrition and provision of take home ration/nutritious meals to pregnant women.
- Trainers and facilitator's guide will be made available for this cascade training.

Sample agenda for one-day training (Table 7)

Objectives

1. Understand the technical algorithm

2. Skill Up-gradation on Anthropometry and blood pressure, Clinical signs and symptoms, data entry and reporting
3. Gain understanding on (a) counseling, (b) monitoring and evaluation
4. Demonstration of measurement techniques
5. To clarify issues for common understanding

Table 7. Sample agenda for one-day training

Time (hours)	Sessions	Resource Person(s)
8:30-8:45	Registration	
8:45-9:00	Welcome address and Introduction	Master trainer(s)
9:00-9:10	Brief introduction & status of maternal nutrition in the state	Representative from state government/master trainer
9:10- 9:30	Technical and Operational protocol: Maternal nutrition ANC package for Facilityand Community (VHSND) level	Master trainer(s)
9:30-10:30	Anthropometry (Height, weight, computation of BMI using field chart, MUAC, computation of gestational weight gain) and Blood Pressure A1 Introduction and calibration of equipment A2 Measurement errors A3 Technique B. Demonstration and hands-on training	Master trainer(s)
10:30-10:45	**Tea Break**	
10:45-11:00	Clinical signs and symptoms - Anemia - Fluorosis (skeletal and dental) - Goiter(visible) - Pedal edema	Master trainer(s)
11:00-12:00	**Counseling messages** ***Flipbook and by-gestational month cards*** ***At-nutritional risk:*** short, young, underweight, overweight and obesity, Anemia, Fluorosis, Importance of Iodine, High blood pressure, GDM, Malaria, Tuberculosis, UTI/STI, heartburn, nausea, vomiting, constipation, HIV, hyperthyroidism and hyperthyroidism	Master trainer(s)
12:00-12:30	Recipe books and *thali* models	Master trainer(s)
12:30-13:00	Question and Answer session	
13:00-14:00	**Lunch**	
14:00-14:30	Measurement techniques - Point of care testing for hemoglobin - Urine albumin and sugar - Blood glucose using Oral Glucose Tolerance Test	Master trainer(s)
14:30-15:00	Recording, reporting and reviewing data	Master trainer(s)
15:00-15:45	CS Pro training and demonstration on tablet	Master trainer(s)
15:45-16:15	Monitoring and evaluation	Master trainer(s)
16:15-16:45	Question and Answer session	
16:45-17:00	Concluding note	Master trainer(s)

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5. Annex

Annex 5.1 Key messages in "Maternal nutrition for safe motherhood" flipbook.

- **Who is the user of this flipbook?**

Auxiliary Nurse Midwife (ANM) in health facility and during outreach activities like Village Health Sanitation Nutrition Days (VHSNDs). To be used with pregnant women, their husband or other family members

** In situations where ANMs are unable to provide counselling services, a trained ASHA or AWW or other nurses should provide the counselling*

- **How much time is needed to go through this flipbook with a group?**
  20 minutes

- **How to use this flipbook?**

1. The flipbook consists of 16 thematic cards with key messages relevant for pregnancy and post-pregnancy nutrition
2. Front of each card has illustrations with its explanation and key messages on the reverse
3. Pregnant women, their husband and family members should be asked to sit in semi-circle on the floor or on chairs. ANM should sit having the same eye level as the audience
4. The ANM should hold the flipbook by inserting her left hand through this book. It should be held in such a manner that the front side which has illustration is towards the audience and explanatory text is faced towards the ANM, so that she can refer to it when needed
5. The ANM should go through each card. At the end of the counselling session, any queries or doubts should be cleared by the ANM
6. ANM should repeat and reinforce the messages
7. It is very important for the ANM to familiarise with the content of the flipbook before conducting the counseling session
8. This book is designed for group counselling but may be used for individual counselling if it is not possible to form a group

CARD1

Nutritional assessments at ANC contacts

Key messages

All pregnant women should undergo nutritional assessments and be informed about the results.
Nutritional assessments include four components 1. Ask 2. Measure 3. Test 4. Clinical examination

- **Ask**
  - **At first contact-** 1. Age 2. Obstetric history 3. Last menstrual period 4. Recurrent or prolonged illness 5. Night blindness in previous pregnancy
  - **At every contact-** 1. Current symptoms 2. Eating habits 3. Physical activity
- **Measure**
  - **At first contact**
    1. Height - to check for short stature <145cm
    2. Mid-Upper Arm Circumference (MUAC) **-** to check for thinness (MUAC<23 cm) or thinness requiring additional food supplementation (MUAC<21 cm) or obesity (MUAC≥33cm)
    3. Body Mass Index (BMI) – to check for thinness (BMI <18.5 kg/m^2) or obesity (BMI≥25 kg/m^2), both cut-offs applicable at <20 weeks of gestation
  - **At every contact**
    1. Weight - to check for thinness <45kg
    2. Weight gain - to check for <1kg/month or >3kg/month after first trimester

3. Blood Pressure (BP) - for detection of high blood pressure ≥140/ 90 mmHg at any time in pregnancy

- **Test**
  - **Once per trimester**
    1. Blood hemoglobin (Hb)- to diagnose anemia Hb level<11 g/dl at any time in pregnancy
    2. Urine albumin and sugar-indicative of hypertensive disorders and high blood sugar level
  - **Twice in pregnancy (at first contact <12 weeks and at 24-28weeks)**
    1. Oral Glucose Tolerance Test- to diagnose gestational diabetes mellitus blood sugar level ≥140 mg/dl at each test
- **Clinical examinations**
  - Pallor (conjunctivae, tongue, oral mucosa and palms)
  - Palpable goiter (on the neck)
  - Dental and skeletal fluorosis
  - Pedal edema or puffiness of face

CARD2

Nutrition relevant ANC services and maternity benefits

Key messages

All pregnant women should be informed about government's nutrition relevant ANC services and maternity benefits. These are listed below

1. Nutrition relevant ANC services

- **In community**
  - ASHA informs about services and facilitate access to public health facilities
  - ASHA undertakes home visits for follow-up and counselling
  - ASHA accompanies pregnant women requiring treatment/admission to the nearest health facility
  - ASHA has stock of IFA tablets, calcium tablets, chloroquine, condoms, oral contraceptives, sanitary napkins
  - Services should also be accessed at fixed health, nutrition and sanitation day (VHSND)organized monthly
- **In facility**
  - Timely identification and treatment of pregnancy related problems
  - Provision of folic acid, IFA, Calcium tablets and administration of Deworming tablet and tetanus diphtheria (Td) vaccination
  - Counselling services
  - Early registration is essential for availing entitlements under various government schemes

2. Maternity benefits

- **Janani Shishu Suraksha Karayakram (JSSK)**
  - Free normal or C-Section delivery, drugs and consumables, diagnostics, hospital diet during stay in the health facility, provision of blood in emergency and transport
  - Ensuring 48 hours post-partum stay at health facility

- **Janani Suraksha Yojana(JSY)**
  - For institutional delivery cash assistance of Rs 1400/- in rural areas and Rs 1000/- in urban areas in low performing states, whereas Rs 700/- in rural areas and Rs 600/- in urban areas in high performing states
  - For home delivery cash assistance of Rs 500/- in rural and urban areas in low and high performing states
  - Beneficiary registration and completion of the JSY card should be done by 4thmonth of pregnancy

- Mandatory documents for registration are bank statement or any other proof of bank account number, Aadhaar card and MCP card. In high performing states BPL card/SC/ST certificate are also needed (only in high performing states)

**Low performing states: Assam, Bihar, Chhattisgarh, Jharkhand, Jammu and Kashmir, Madhya Pradesh, Orissa, Rajasthan, Uttar Pradesh, Uttarakhand*

- **Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA)**
  - Facility based free ANC services on 9th day of every month
  - Special screening of high risk pregnancies
- **Pradhan Mantri Matru Vandana Yojana (PMMVY)**
  - Direct cash transfer to mother (Rs 5000/- distributed in three installments as Rs 1000/- on early registration, Rs 2000/- on receiving at least one ANC within 6 months of pregnancy and Rs 2000/- after birth registration and completion of first cycle immunization for first living child of the family)
  - Registration should be done within 5 months(150days)to avail the benefits
  - Mandatory documents are *Aadhaar* card, proof of bank or post office account in pregnant woman's name, MCP card. Photocopy of the birth certificate and MCP card with immunization details needed (for the third installment)

CARD3

Food security entitlements

Key messages

All pregnant women should be informed about government's special programmes for food security, to have access to healthy and nutritious diet. These include:

- **Anganwadi Services**
  - One free meal throughout pregnancy and six months after child birth in the form of hot cooked meal or take home ration as add on to daily diet
  - Outreach health and nutrition services (immunization, health check-ups, micronutrients supplementation, nutrition and health related counseling and referral services)
- **Public Distribution Services (PDS)**
  - The entitlement is 5kg of food grains/person/month at subsidized prices (Rs 3 per/kg for rice, Rs 2/kg for wheat and Rs 1/kg for coarse grains)
  - Through Antodaya Anna Yojana, poorest of the poor are entitled to 35kg of food grains/family/month
  - In selected States/Union Territories, pulses, edible oils, iodized salt, spices, etc. are also available
  - Mandatory documents for registeration are Aadhaar card and proof of residential address (electricity bill/self-undertaking application form, duly signed with photograph/telephone bill/ water bill/ voter ID, PANcard/passport)
- **National Rural Livelihood Mission (NRLM)**
  - Representatives from Self Help Groups (SHGs) mobilize community for accessing health and nutrition services at VHND or health facility
  - SHG members can avail loans for establishing nutrition linked livelihoods
  - In some states SHG members also support special nutrition service packages for women and adolescent girls at nutritional risk (home visits, food demonstrations)

CARD4

Diet diversity

Key messages

- Diet diversity means that there should be variety of food items in the diet by which the daily requirements of all nutrients can be met

- All pregnant women should be counselled to consume at least one food item from all listed food groups daily to ensure proper growth and development of the fetus and maintaining her own nutrient reserves

Consume variety of foods daily with wheat/millet roti or rice. This will ensure you get important nutrients everyday

Food groups	Food items	Nutrients
Pulses (Non-vegetarians may include meat products)	• Whole cereals and pulses*, arhar,* lentil, *chana*, kidney beans etc. • Meat, egg, fish,chicken	• Protein • Energy • Iron • Vitamin A
Milk and milk products	*Paneer,* curd, sweet *lassi*, buttermilk etc.	• Calcium • Protein • Vitamin A • Fat
Fresh dark green leafy vegetables	Spinach, fenugreek, mustard, amaranth, *Bathua* etc.	• Vitamin A • Iron • Calcium • Vitamin C
Yellow/ orange pulpy fruits and vegetables	Papaya, pumpkin, carrot, mango etc.	• Vitamin A
Citrus fruits Other vegetables	• Lemon, *amla*, guava, orange, sweet lime etc. • Capsicum, tomato etc.	• Vitamin C

Fats/oils and honey/jaggery/sugar should be included in the daily diet

Use double fortified (iron and iodine) salt

- **Calcium–** helps in preventing pre-eclampsia/eclampsia (high blood pressure, convulsion). **Vitamin D** helps in regulation of calcium in the body
- **Iodine –** is beneficial for the brain development of the fetus
- **Iron and Folate –** helps in preventing anemia
- **Protein –** helps in muscle development and growth
- **Energy –** is required to meet increased requirements of fetal and maternal tissue development
- **Vitamin A –** helps in improving the eyesight and immunity of the body
- **Vitamin C –** helps in iron absorption

CARD5

Meal frequency, quantity and options

Key messages

- Pregnant women should be counselled to consume at least 3 main meals and 1 nutritious snack, in the first trimester. In the second and third trimester, she should have 3 main meals and 2 nutritious snacks
- In case of nausea and/or vomiting, pregnant women should be encouraged to comply with the suggested meal pattern as she will be unable to meet her nutritional needs if she has less than 3 meals in a day

Eat food as per the quantity shown in the daily menu *thali* picture:

Breakfast

2 *Roti/Missi Roti/Paushtik Cheela/Soya Poha/Vegetable Seviyan/Daliya* or *Panjiri* made out of milk or water+ 1 *katori* Vegetable/*Dal Curry*/Egg Curry +
1 glass Milk/1 glass *Chaach*/1 *katori C*urd

Mid-morning snack

2 *Murmura besan Ladoo/1 katori Murmura Chaat/*1 *katori Ankurit Chana Chaat/*3 *Chakli/*1 *katori Paushtik Namakpara+*
1 Seasonal Fruit (Orange/*Mausambi*/Melon/ripe Mango/ripe Papaya/Guava/ripe banana etc)

Lunch

3 *Roti*/ 2 *Roti* +
1 *katori* Rice/1 *katori Jowar Chana Khichdi*/ 1 *katori Daliya Pulao*+ 1 *katori* Vegetable (pumpkin/carrot/other vegetables/amaranth leaves or *saag* or other green leafy vegetables/*Dal Curry*/*Paneer Curry*/Egg *Curry*/Fish *Curry*/Chicken *Curry* +1 *katori* Curd + ½ plate salad

Evening snack
1 glass Milk/1 glass *Chaach*/1 *katori* Fruit *Raita*/1 *katori* Vegetable Soup/handful of roasted groundnuts + 1 Seasonal fruit(Orange/*Mausambi*/Melon/ripe Mango/ripe Papaya/Guava/ripe banana etc)

Dinner
2 *Roti*/1 *Roti*+
1 *katori* Rice/1 *katori Jowar Chana Khichdi*/1 *katori Daliya Pulao*+ 1 *katora* Vegetable/*Dal Curry*/Egg Curry/Fish *Curry*/Chicken *Curry* + ½ plate salad

- Consume supplementary nutrition provided by the *Anganwadi* centres regularly along with daily diet
- Consume at least 8-10 glasses of water daily

Cooked volume in *katori*: 200 ml; 1 glass: 250 ml

CARD6

Consumption of IFA tablets

Key messages

- During pregnancy, red colored IFA tablets are given to prevent anemia, blood loss leading to anemia, fatigue, giddiness, palpitations, shortness of breath, and other symptoms. These tablets are also beneficial for the brain development of the fetus
- All pregnant women without anemia should be counseled to consume IFA daily as per dose below

Dosage

- Consume one folic acid tablet daily in first trimester only
- Consume one IFA tablet daily in the second and the third trimester and continue till 6 months after birth of the child

Important points related to IFA consumption:

- Consume IFA tablet, 2 hours before meals. In case of problems such as indigestion, vomiting/nausea, constipation etc. consume the tablet 1 hour after meals. Do not stop taking the tablets
- IFA and calcium tablets should not be consumed together
- IFA tablets should be consumed with water or lemon juice. Consumption of IFA tablets with citrus fruits (lemon, orange, guava) increase iron absorption
- Do not consume IFA tablets with tea, coffee or milk
- Do not drink tea/coffee1 hour before or after taking the IFA tablets
- IFA tablets are freely available at health centers or can be taken from ASHA, ANM and *Anganwadi* workers
- Consume one deworming tablet in the second trimester of pregnancy

CARD7

Consumption of Calcium tablets

Key messages

- Consumption of calcium reduces the risk of pre-eclampsia/eclampsia, high blood pressure, convulsions during pregnancy and delivery
- All pregnant women should be counseled to consume calcium tablets as per dosage below

Dosage

- Consume two tablets daily in the second and the third trimester and continue till 6 months after birth of the child
- Consume calcium tablets after meals

Important points related to calcium consumption

- Do not take calcium tablets on an empty stomach as it may cause gastritis
- Do not take calcium tablets with iron tablets as calcium interferes with iron absorption and vice versa
- Calcium tablets are freely available at health centres or can be taken from ASHA, ANM and *Anganwadi* workers

CARD8

Personal cleanliness, use of toilets and safe drinking water

Key messages

- All pregnant women should be counselled on personal cleanliness, use of toilets and safe drinking water to prevent infections
- If cases of fluorosis are common in the area, pregnant women should be advised to use alum to remove excess fluoride from water

Hands should be washed with soap and clean running water at critical times listed below:

- Before cooking food, before eating meals and after eating meals
- Before feeding children
- After using the toilet; after cleaning children's feces
- After handling any animal or cleaning its feces
- After cleaning house or disposing garbage
- After returning home

Personal cleanliness should be ensured by doing the following:

- Oral hygiene by rinsing the mouth after every meal and brushing teeth twice daily
- Bathing daily, washing hair and cutting nails
- Use toilets and avoid open defecation
- Clean private parts daily. Clean from front to the back
- Wear slippers

CARD9

Sleep, rest and work pattern

Key messages

Maternal sleep, adequate rest and work pattern play a vital role in maternal health and fetal development

All pregnant women should be counselled to:

- Take adequate rest for 2 hours in the day and 8 hours of sleep at night daily as sleeping ≤6 hours is associated with preterm birth
- Sleep on the left side to increase blood flow to the fetus as reduced blood flow can cause late stillbirths. Also, sleeping flat on back, especially in late pregnancy can cause reduced supply of oxygen to the women's brain leading to a fainting attack

  If the woman prefers to sleep on the back advise use of small pillow under the lower back, at the level of the pelvis
- Avoid doing heavy physical work (such as lifting heavy equipments/goods) or work requiring long duration of standing time or 46 hours or more hours of work in a week as they may lead to preterm birth or low birth weight baby or fetal growth retardation

CARD10

Physical activity

Key messages

All pregnant women should be counseled to undertake regular physical activity as it helps in improving physical fitness, preventing metabolic disorders, reducing stress, developing the strength to carry extra weight gain through pregnancy and facilitates labour. It also helps in losing extra weight after delivery. Yogic practices increase strength, flexibility and endurance of pelvic floor muscles needed for childbirth. Yoga also helps to develop proper breathing and more comfortable labour

Pregnant woman should be counseled to:

- Do 2½ hours of yoga or brisk walk per week, which means 20-25 minutes everyday
- Always begin with 5 minutes of slow walking or stationary cycling with low resistance to warm up your muscles
- Perform simple yoga exercises which include neck (3 rounds), shoulder (3 rounds), knee (5 rounds) and ankle (5 rounds) movements each for 8 minutes
- Perform other yoga exercises listed below:

Asana	Benefits
Katicakrasana	Tones up the waist, back, hips muscles, prevents spinal deformity and eases childbirth
Badhakonasana	Improves flexibility in groin and hip region, makes easy and smooth delivery for pregnant women as well as stimulates and improves the function of the reproductive system
ParivrataSukhasana	Tones up the spinal nerves, ease back pain, and enhance the womb space for easy and healthy growth of the foetus
Dandasana	Strengthens the spinal muscles of pregnant women and prevents back pain

Avoid

- Exercises that require lying with the back on the floor for more than a few minutes, after 20 weeks of gestation
- Continuing to exercise if symptoms of severe pain, vaginal bleeding, dizziness, shortness of breath, irregular or rapid heartbeat, difficulty walking or pain in back or pubic area are felt

CARD11

Restricting caffeine intake, avoiding alcohol, tobacco and other substances

Key messages

All pregnant women should be counselled on restricting caffeine intake, avoiding alcohol, tobacco and other substances

- **Caffeine intake**
  - Caffeine is a stimulant found in tea, coffee, cola type soft-drinks, chocolate, and some over-the-counter medicines
  - Do not have more than 2 cups of tea or coffee daily. Excess caffeine may be associated with higher risk for low birth weight and pregnancy loss

- **Smoking and chewing tobacco**
  - Consumption of tobacco in the form of *beedi*, cigarettes and *gutka*can lead to increased risks for ectopic pregnancy, premature rupture of membranes, premature separation of placenta

from uterus, placenta covering the cervix (outlet of the uterus), miscarriage, stillbirth, preterm birth, low birth weight, small for gestational age, and congenital anomalies such as cleft lip
    - Any member of the household habituated to smoking should either avoid it or do so outside the home

- **Substance Abuse (Alcohol and drug use)**
    - Pregnant women should avoid consuming alcohol during pregnancy as it can lead to physical impairment and brain damage in the fetus. Other harms include spontaneous abortion, stillbirth, low birth weight, prematurity and birth defects

CARD12

Sex during pregnancy and family planning

Key messages

- Pregnant woman should be counselled on family planning especially in the third trimester along with their husband
- Concerns related to sexual activity in pregnancy should be addressed

Importance of Family Planning

The measures adopted to control the number of children and to maintain the spacing between children is known as Family Planning

- Spacing of at least 3 years is desirable to allow the mother to restore her health and to avoid malnutrition in children due to frequent pregnancies
- Family planning methods are available free of cost at any public health facility

Family Planning methods are:

Permanent methods

- Vasectomy
- Tubectomy

Temporary

- Condoms (Male and Female)
- Intra Uterine Devices (CopperT),
- Contraceptive pills
- Contraceptive injections

Sex during pregnancy

- Sexual activity can be performed without any risk of miscarriage or early labour, if there are no complications in pregnancy as confirmed by the medical officer
- A barrier form of protection (condom) should be used while performing sexual activity
- Sexual activity should be avoided if there is heavy bleeding, low-lying placenta, lower genital tract infection, water has broken, twin pregnancy or previous history of preterm/early labour, later stage of pregnancy
- Sexual activity after pregnancy should be resumed as per woman's level of comfort

CARD13

Early and exclusive breastfeeding

Key messages

All pregnant women should be counseled on early and exclusive breastfeeding especially in third trimester

She should be counseled on the following points:

- Immediate skin-to-skin contact and initiation of breastfeeding immediately after birth

- Mother's first milk which is thick and yellow in colour (Colostrum) should be given. It provides immunity to the child and enhances digestion
- Nothing should be given to the baby other than mother's milk, not even water
- Exclusive breastfeeding should be continued till the baby is six months old
- Mother's milk is a complete food. No other fluid like plain water, sugar water, packed milk, juice, glucose, jaggery water, gripe water, honey etc. should be given to the baby. It might cause infection in the newborn
- For the baby to suckle well, make sure baby suckles with mouth wide open, chin close and touching the breast, lower lip turned outward, and with more areola seen above the baby's mouth than below

Benefits for baby:
- Easy to digest
- Provides the ability to fight against diseases
- Protects the child from any type of infection like diarrhoea, pneumonia
- Strengthens mother-baby bonding
- Helps in the mental and physical development of the baby

Benefits for mother:
- Reduces bleeding after childbirth
- Helps in prevention of breast engorgement
- Helps in prevention of ovarian and breast cancers
- Helps in regaining pre-pregnancy weight

CARD 14
Nine danger signs during pregnancy
Key message
All pregnant women should be counselled on identifying nine danger signs of pregnancy and seeking doctor's consultation as soon as any sign is observed

Following are the danger signs and symptoms upon which the doctor should be consulted immediately:
1. Excessive swelling in the feet and puffiness on face
2. Difficulty in breathing
3. Severe pain and burning sensation during urination
4. Repeated fever during pregnancy or within one month of delivery
5. Severe stomachache
6. Bleeding from vagina
7. Bursting of water bag prior to delivery
8. Headache, blurring of vision, convulsions
9. Not able to feel baby's movement inside the womb

CARD 15
Role of husband
Key messages
Husband should be counseled along with his wife on his role in ANC and postnatal care on as many contacts as possible

Husband should be counseled on the following points:
- Ensuring wife is registered at health facility as soon as pregnancy is confirmed
- Accompany wife in regular ANC checkups and participate in consultation
- During the entire pregnancy, maintain the atmosphere of peace and affection in the house

- Purchase local and seasonal foods rich in energy (wheat, bajra, ragi, jowar), protein (Bengal gram, soybean, green gram), vitamin C (lemon, guava, sprouts), calcium (milk, curd, paneer) fruits, vegetables, meat, chicken, fish, and double fortified (iron and iodine)salt
- Have atleast one meal in a day with your wife and ensure she consumes a healthy diet and micronutrient supplements
- Be patient and empathize with your wife, as she may have emotional ups and downs, which are common in pregnancy
- If you smoke, avoid smoking or smoke outside the home. Protect your wife from secondhand smoke
- Be aware of danger signs and symptoms during pregnancy and prepare for such a situation. Keep contact number of ASHA worker, ambulance service or any maternity helpline services
- Be aware of government entitlements and maternity benefit schemes: JSY, PMSMA, JSSK, PMMVY and others and ensure your wife avails them
- Make prior preparation for delivery. Identify institution for delivery, arrange transport, keep medical records and some cash handy, and carry all garments and other essential items required for mother and the baby to the hospital at time of delivery
- After delivery adopt a suitable family planning method in consultation with wife

*If any other family member other than the husband accompanies the woman, modify the messages accordingly

CARD16

Common food related myths

- **MYTH 1: Pregnant mothers must eat for two**
  FACT: Recommendation is to consume 3 main meals and one or two nutritious snacks, daily, for appropriate weight gain and to meet additional nutrition needs during pregnancy

- **MYTH 2: Pregnant mothers crave for pickles, ice cream/chocolate/cake and inedible substances**
  FACT: Food cravings are not universal. In fact, some food cravings may be indicative of underlying nutritional deficiencies for example craving for dirt, clay or laundry detergent can be a sign of anemia

- **MYTH 3: Pregnant women should not consume fish and fish oil**
  FACT: Fish contain high-quality protein and essential oils that promote brain development in the fetus. However, fish should be carefully selected, as some may be high in mercury content that can harm fetal nervous system. Fish like *hilsa, rohu,* salmon (*raavas*) and catfish (*singhara)* are safe to eat as they are low in mercury

- **MYTH 4: Drinking coffee adversely affects pregnancy**
  FACT: Lower daily consumption of caffeinated beverages as intake of more than 5 cups of instant coffee, and more than 6 cups of tea/green tea/soft drink may be associated with higher risk for low birth weight and pregnancy loss

- **MYTH 5: Eating something white first thing in the morning will result in a fair-skinned baby**
  FACT: The color of the food a pregnant woman eats has no bearing on the complexion of the baby

- **MYTH 6: Consumption of ghee during childbearing phase eases delivery and in postpartum period quickens the healing of uterus**
  FACT: Ghee neither eases parturition nor helps in swift healing of uterus. Ghee should be included in the diet due to its nutritional benefits, but in moderation.

- **MYTH7: Drinking coconut water after the seventh month of pregnancy makes the baby's head as large as the coconut**
  FACT: Coconut water is a good source of potassium and should be consumed in moderation for optimum gut health. It will have no impact on the size of the baby's head

- **MYTH 8: Eating papaya causes abortion**
  FACT: Raw papaya is suspected to induce abortion or early labor. But ripe papaya is considered to be safe and is a good source of vitamin A

- **MYTH 9: Eating hot and spicy foods can cause abortion**
  FACT: Some foods like jowar, bajra, ragi, brinjal, nuts, ripe papaya, egg, meat, fish, oilseeds, fenugreek and jaggery are considered hot. These and spicy foods if eaten in moderation cause no harm to the baby. However, one should avoid consumption of very spicy foods during pregnancy as it may lead to heartburn

- **MYTH 10: Pregnant women should avoid exercise**
  FACT: Exercise and staying physically active during pregnancy have positive effects on both mother and the newborn. Planned exercise programme involving light stretches; walking, yoga etc. if done regularly may relieve many discomforts of pregnancy and aid in smooth delivery

Annex 5.2 Important information in "Maternal nutrition for safe motherhood" by-gestational month cards

- **Who is the user of these by-gestational month cards?**

Auxiliary Nurse Midwife (ANM) in health facility and during outreach activities like Village Health Sanitation Nutrition Days (VHSNDs). To be used with pregnant women, and also their husband or other family members, if available

**In situations where ANMs are unable to provide counselling services, a trained ASHA or AWW or other nurses should provide the counselling*

- **How much time is needed to go through a by-gestational month card?**

8 minutes (In addition 2 minutes to discuss common cards- relevant to any stage of pregnancy)

- **How to use these by-gestational month cards?**

1) By-gestational month cards consist of messages specific to the month of pregnancy. Thus, there are nine cards. In addition there are two cards on messages relevant for all months of pregnancy
2) The by-gestational month cards have illustrations with its explanation in the front and key messages on the reverse
3) On the first contact, congratulate the pregnant woman on confirmation of pregnancy. On every contact, ANM should greet and appreciate the pregnant woman for availing antenatal care (ANC) services
4) Pregnant woman should be then asked to sit such that she is at the same eye level as the ANM
5) After being seated comfortably ANM should check record for month of pregnancy and confirm with pregnant woman. According to the month, ANM should pick up the relevant by gestational month card and counsel
6) After the month-wise counselling, the ANM should also deliver common messages by using the common cards
7) At the end of the counselling session, any queries or doubts should be cleared by the ANM
8) ANM should repeat and reinforce the messages
9) It is very important for the ANM to familiarize with the content of the by-gestation month cards before conducting the counseling session
10) These cards are designed for individual counselling but may be used for group counselling if it is possible to form a homogenous group of pregnant women that is, all being in the same month of pregnancy

CARD 1 (1stmonth)

Your baby is smaller than a rice grain but vital organs like heart, brain, spinal cord have already started forming

What is important to know?

1. Congratulations! Your pregnancy is confirmed. Register soon so that you get a unique ID number, Mother Child Protection card and start getting ANC services
2. You should get ANC services 8 times throughout your pregnancy (including PMSMA on 9thof every month). Services should include:

Today we will measure your	You will be tested for	You will also be checked for any signs of
Weight	Blood hemoglobin level	Pallor (conjunctivae, tongue, oral mucosa and palms)
Height		
Body Mass Index (BMI)	Blood sugar level (OGTT)	Palpable goiter
Mid Upper Arm Circumference (MUAC)	Other blood parameters	Dental and skeletal fluorosis
Blood pressure	Urine sugar and albumin	Pedal edema or puffiness of face

This is important for timely identification and treatment of pregnancy related problems
3. It is normal to experience nausea and vomiting in early pregnancy. Still you should try to eat at least 3 main meals and 1 nutritious snack as this will help you and your baby to meet nutrient requirements
4. As your baby's brain and spinal cord are developing, to ensure their proper development, remember to include foods rich in folate such as catla fish, moth beans, kidney beans, soyabean, spinach, *sem ki phali, sarson ka saag,* chicken liver in your meals and snack
5. In addition, consume one Folic Acid tablet (400mg) daily

Card 2 (2nd Month)

Now your baby has grown to a size of a rajma (kidney bean). That still seems small but, you can already hear your baby's heartbeat. Your baby's nervous system is developing rapidly. The bones are still soft but they are beginning to harden. If an ultrasound is done then the baby's face can be clearly seen

What is important to know?

1. Last month you underwent a blood and urine test. This time we will only measure your weight and blood pressure
2. As last time we will look for any signs of deficiencies or disorders
3. The nausea and vomiting will continue for some more weeks. Try to eat at least 3 main meals and 1 nutritious snack as this will help you and your baby to meet nutrient requirements
4. As your baby's bones are hardening at this time, remember to include calcium rich foods such as milk, curd, *paneer, ragi,* sesame seeds, *bathua leaves, methi leaves,etc.*
5. Continue consuming one Folic Acid tablet (400mg) daily and dietary sources of folate such as catla fish, moth beans, kidney beans, soybean, spinach, *sem ki phali, sarson ka saag, chicken liver* which are important for the normal development of your baby's brain and spinalcord

If the pregnant woman is receiving her first ANC contact in this month, then refer 'what is important to know?' from card 1 (Messages 1 to 5)

Card 3 (3rd Month)

Your baby is the size of a *nimbu* (lemon). All the vital organs are fully formed. The arms, hands, fingers, feet and toes are visible in an ultrasound. Nails and teeth begin to develop

What is important to know?

1. We will measure your weight and blood pressure and will look for any signs of deficiencies or disorders
2. Hope your nausea and vomiting are subsiding. Ensure that you eat 3 main meals and 1 nutritious snack
3. As your baby's bones are hardening and teeth have also begun to form, remember to include calcium rich foods such as milk, curd, *paneer*, ragi, sesame seeds, *bathua leaves, methi leaves,etc.*
4. Continue consuming one Folic Acid tablet (400microgram) daily and dietary sources of folate such as catla fish, moth beans, kidney beans, soybean, spinach, *sem ki phali, sarson ka saag, chicken liver* which are important for the normal development of your baby's brain and spinalcord
5. From next month, start consuming 1 Iron-Folic Acid tablet and 2 calcium tablets daily

If the pregnant woman is receiving her first ANC contact in this month, then also refer 'what is important to know?' from card 1 (Message 2 only)

CARD 4 (4th Month)

Your baby is almost the same size as an apple and weighs approximately 110 grams. You may be able to feel your baby's movement now. The baby's blood circulation has begun and the brain, spinal cord and nerve network has become fully functional. Teeth and bones have become denser

What is important to know?

1. As the 4thmonth has started, we will have to repeat some of the tests. Your physical examination and tests will include the following:

Measurements	Tests	Check for
Weight	Blood hemoglobin level	Pallor (conjunctivae, tongue, oral mucosa and palms)
Blood pressure	Urine sugar and albumin	Palpable goiter
		Dental and skeletal fluorosis
		Pedal edema or puffiness of face

2. As your baby is rapidly increasing in size now, eat at least 3 main meals and 2 nutritious snacks to meet the increased nutrient requirements to ensure proper growth and development of thebaby

3. As your baby's blood circulation has begun, include rich sources of iron and folic acid like *Bajra, ragi*, fenugreek leaves (*methi)*, spinach, amaranth leaves (*chaulai),* moth beans, Bengal gram whole, horse gram whole, *rajma*, soyabean, raisins, egg, catla fish, chicken liver in your diet and consume one IFA tablet daily without fail. This will also prevent you from being anemic

- Ideally IFA tablet should be consumed on an empty stomach. However, some women experience gastritis, vomiting or nausea, which is normal side effects of IFA tablet and can be minimized by consuming 1 hour after meal

- Consume one deworming tablet today to prevent or treat worm infestation. Worm infestation can lower your nutrient absorption and is one of the causes of anemia

4. Vitamin C rich foods like *amla*, citrus fruits (orange, guava, lemon, *mausambi*) and sprouted grains/pulses should be included in meals as it improves absorption of iron in the body. IFA tablet may be taken with the with lemon juice for better absorption of iron. IFA tablet should never be consumed with tea or coffee, milk or calcium tablets

5. As your baby's bones and teeth are becoming denser, remember to include calcium rich sources of food like milk, *paneer,* curd, *ragi,* and consume 2 calcium tablets every day with water or milk immediately after meals to avoid gastritis. Calcium also reduces your risk of increased blood pressure and convulsions. Calcium tablets should never be taken along with IFA tablet as they interfere each other's absorption

If the pregnant woman is receiving her first ANC contact in this month, then also refer 'what is important to know?' from card 1 (Message 2 only)

CARD 5 (5thMonth)

Your baby is now as long as a carrot and weighs half a kg. Your baby is growing rapidly and muscle and skin are also forming

What is important to know?

1. We will measure your weight and blood pressure and will look for any signs of deficiencies or disorders

2. As your baby is growing rapidly include energy and protein rich foods such as wheat flour, *bajra*, rice, maize, lentil dal, Horse gram, whole (*Kulthi*), soyabean, sweet potato, banana, groundnut, walnut, milk, *paneer*, egg, chicken, jaggery/sugar, fish, oils

3. Ensure that you eat at least 3 main meals and 2 nutritious snacks to meet increased nutrient requirements

4. Continue consuming one Iron-Folic Acid tablet with water or lemon juice 1 hour after meal

5. Consume 2 calcium tablets every day with water or milk immediately after meals

If the pregnant woman is receiving her first ANC contact in this month, then also refer 'what is important to know?' from card 1 (Message 2 only) and from card 4 (Message 3, 4 and 5)

CARD 6 (6thMonth)

Your baby is now as long as a *bhutta* (corn cob) and weighs almost 1 kg. The internal parts of your baby's eyes are developing. The baby's reflexes and hearing are improving making the baby respond better to sound and touch

What is important to know?

1. We will measure your weight and blood pressure and will look for any signs of deficiencies or disorders. In this month it is critical to screen for diabetes, so blood sugar level will be tested again
2. Ensure you eat at least 3 main meals and 2 nutritious snacks to meet increased nutrient requirements and proper growth and development of the baby
3. As your baby's eyes are developing, to ensure their proper development, remember to include vitamin A rich sources of green leafy vegetables like drumstick leaves (*sehjan ke patte*), fenugreek leaves (*methi*) and yellow and orange colour fruits and vegetables like papaya, tomato, musk melon, carrot, sweet potato, pumpkin, milk and milk products and egg and goat liver in your meals and snacks daily
4. Continue consuming one IFA tablet with water or lemon juice 1 hour after meal
5. Continue consuming 2 calcium tablets every day with water or milk immediately after meals

If the pregnant woman is receiving her first ANC contact in this month, then also refer 'what is important to know?' from card 1 (Messages 2 only) and from card 4 (Message 3, 4 and 5)

CARD 7 (7thMonth)

Now your baby is as long as a bottle gourd and weighs almost 2 kg. Your baby is building fat stores and the brain is growing in size. Your baby can now respond to light and sound

What is important to know?

1. As you have entered 3rdtrimester, we will have to repeat some of the tests. Your physical examination and tests will include the following:

Measurements	Tests	Check for
Weight	Blood hemoglobin level	Pallor (conjunctivae, tongue, oral mucosa and palms)
Blood pressure	Urine sugar and albumin	Palpable goiter
		Dental and skeletal fluorosis
		Pedal edema or puffiness of face

2. Ensure you eat at least 3 main meals and 2 nutritious snacks to meet increased nutrient requirements and proper growth and development of the baby
3. Your baby's rapidly growing brain and developing vision needs a variety of cooking oils (mustard oil, groundnut oil, soybean oil, coconut oil), nuts and oilseeds and fish. Ensure you eat these sources of "good fat" and avoid "bad fat" like *vanaspati*, margarine, and reused oil
4. Continue consuming one IFA tablet with water or lemon juice 1 hour after meal and 2 calcium tablets every day with water or milk immediately after meals. You will continue to consume these tablets after delivery till your baby is six months
5. When your baby is born, initiate breastfeeding as soon as possible and within 1 hour of birth. The baby should not be given any other liquid, not even water, except mother's milk till the baby is six months old

If the pregnant woman is receiving her first ANC contact in this month, then also refer 'what is important to know?' from card 1 (Messages 2 only) and from card 4 (Message 3, 4 and 5)

CARD 8 (8thMonth)

Your baby is 1.5 feet in length and weighs about 2.3 kg. Your baby will gain more weight and the brain and lungs will continue to develop in this month

What is important to know?

1. We will measure your weight and blood pressure and will look for any signs of deficiencies or disorders
2. As your baby is gaining weight you should include energy dense food items like cereals (wheat, rice, *jowar, ragi, bajra*), pulses (green gram, Bengal gram, soya bean), milk and milk products, cooking oils (mustard oil, soyabean oil, groundnut oil, coconut oil), nuts and oilseeds (sesame seeds, groundnuts, flax seeds) and jaggery. Ensure you eat at least 3 main meals and 2 nutritious snacks to meet increased nutrient requirements and proper growth and development of thebaby
3. Continue consuming one IFA tablet with water or lemon juice 1 hour after meal and 2 calcium tablets every day with water or milk immediately after meals. You will continue to consume these tablets after delivery till your baby is six months
4. When your baby is born, initiate breastfeeding as soon as possible and within 1 hour of birth. The baby should not be given any other liquid, not even water, except mother's milk till the baby is six months old
5. Spacing of at least 3 years is desirable to allow you to restore your health and to avoid malnutrition in children due to repeated pregnancies. Family planning methods are available free of cost at any public health facility. In consultation with your husband opt for a suitable family planning method after delivery

If the pregnant woman is receiving her first ANC contact in this month, then also refer 'what is important to know?' from card 1 (Message 2 only) and from card 4 (Message 3, 4 and 5)

CARD 9 (9thMonth)

Your baby is little over 1.5 feet in length and weighs about 3 kg. Now your baby is fully developed and will gain more weight

What is important to know?

1. We will measure your weight and blood pressure and will look for any signs of deficiencies or disorders. Since this is the last month of pregnancy, keep all your medical records and some cash handy
2. As your baby is gaining weight you should include energy dense food items like cereals (wheat, rice, *jowar, ragi, bajra*), pulses (green gram, Bengal gram, soya bean), milk and milk products, cooking oils (mustard oil, soyabean oil, groundnut oil, coconut oil), nuts and oilseeds (sesame seeds, groundnuts, flax seeds) and jaggery. Ensure you eat at least 3 main meals and 2 nutritious snacks to meet increased nutrient requirements and proper growth and development of the baby
3. Continue consuming one IFA tablet with water or lemon juice1 hour after meal and 2 calcium tablets every day with water or milk immediately after meals. You will continue to consume these tablets after delivery till your baby is six months
4. When your baby is born, initiate breastfeeding as soon as possible and within 1 hour of birth. The baby should not be given any other liquid, not even water, except mother's milk till the baby is six months old
5. Spacing of at least 3 years is desirable to allow you to restore your health and to avoid malnutrition in children due to repeated pregnancies. Family planning methods are available free of cost at any public health facility. In consultation with your husband opt for a suitable family planning method after delivery

If the pregnant woman is receiving her first ANC contact in this month, then also refer 'what is important to know?' from card 1 (Message 2 only) and from card 4 (Message 3, 4 and 5)

Common Card1

1. You should know your early pregnancy (1sttrimester) weight, BMI, monthly weight gain and results of all the blood and urine investigations
2. As your baby's nutrient requirements increase with progressing pregnancy, it is important to include variety of food in your diet along with roti/rice

Food groups	Food items	Nutrients
Pulses (Non-vegetarians may include meat products)	•Whole moong, *arhar,* lentil, *chana*, kidney beans etc. •Meat, egg, fish, chicken	•Protein •Energy •Iron
Milk and milk products	Milk, *paneer,* curd, buttermilk etc.	•Calcium •Energy •Protein •Vitamin A •Fat
Fresh dark green leafy vegetables	Spinach, fenugreek, mustard, amaranthus, *Bathua* etc.	•Vitamin A •Iron •Calcium •Vitamin C
Yellow/orange pulpy fruits and vegetables	Papaya, pumpkin, carrot, mango etc.	•Vitamin A
•Citrus fruits •Other vegetables	•Lemon, *amla*, guava, orange, sweet lime etc. •Cauliflower, capsicum, tomato etc.	•Vitamin C
Fats/Oils, nuts and oilseeds and jaggery/sugar	• Vegetable oil (mustard oil, soybean oil, groundnut oil) •Butter •Nuts and oilseeds [peanuts, flaxseeds (*alsi*), sesame seeds(*til*)] •Jaggery/sugar	• Energy • Vitamin A • Vitamin D • Vitamin E •Protein •Essential fattyacids

3. No food should be restricted during pregnancy. At the same time, under or over consumption of any food should be avoided as it may lead to malnutrition in pregnant woman and her baby
4. To get the right nutrition during pregnancy and after delivery register your name under government schemes such as *Anganwadi* services, *Janani Shishu Suraksha Karyakram*(JSSK), and *Janani Suraksha Yojana* (JSY), *Pradhan Mantri Matru Vandana Yojana* (PMMVY), *Pradhan Mantri Surakshit Matritva Abhiyaan* (PMSMA) Public Distribution System (PDS), National Rural Livelihoods Mission (NRLM). Some registrations require mandatory documents like *Aadhaar* card
5. Always use double fortified salt (iodine and iron). Iodine is very critical for your baby's brain development and iron is necessary for blood formation and overall growth and development. It is important to store double fortified salt in an airtight container, away from heat and humidity

Common Card2

1. Follow all personal cleanliness practices: 1) Oral hygiene by rinsing the mouth after every meal and brushing teeth twice daily, 2) bathing daily, 3) washing hair and cutting nails, 4) use toilets and avoid open defecation. Wash hands with soap and running water before cooking, eating food, feeding children, and after using toilet, disposing child feces, handing any animal or cleaning its feces, cleaning house, disposing garbage and returning from outside home
2. Do at least 20 to 25 minutes of brisk walking or light exercise/yoga every day. It is important to be in sunlight for formation of Vitamin D which is essential for baby's bone development
3. Take rest for 2 hours during the day and sleep for 8 hours at night. Sleep on your left side as this improves blood circulation in the baby. Further, be careful about lifting heavy loads or work requiring long duration of standing time or 46 hours or more of work in a week as they may lead to preterm birth, low birth weight baby or fetal growth retardation
4. Do not have more than 2 cups of tea or coffee in a day as caffeine in these beverages may lead to low birth weight baby and pregnancy loss. Avoid intake of alcohol and tobacco as these may impair baby's physical growth and brain development

5. Consult to a doctor as soon as you experience any of the nine danger signs- 1.) Excessive swelling in the feet and puffiness on face 2.)Difficulty in breathing 3.) Severe pain and burning sensation during urination 4.) Repeated fever during pregnancy or within one month of delivery 5.) Severe stomach ache 6.) Bleeding from vagina 7.) Bursting of water bag prior to delivery 8.) Headache, blurring of vision, convulsions 9.) Not able to feel baby's movement inside the womb
   *Use institutional delivery services irrespective of risk.

Baby is sensitive to the external environment the moment it is conceived, in fact second trimester onwards; the baby is receptive towards external sounds. Therefore, during the entire pregnancy, family should maintain an atmosphere of peace and affection in the house and ensure pregnant woman is never under mental or physical stress.

5.3 Key messages in at risk cards for specific conditions

(Messages for pregnant women at nutritional risk are in the main text of the document under section 3.5)

Constipation

Do's:

- Consume fibrous vegetables and fruits and whole lentils in the daily diet.
- Drink more fluids, such as coconut water, lemonade, buttermilk, *lassi*, etc.
- Drink 8-10 glasses of water daily.
- Get enough sleep.

Special items to be included in diet:

- Eat fiber rich leafy vegetables and fruits.
- Drink plenty of fluids.

Don'ts:

- Eat too much food at a time.
- Consume spicy, fried and oily foods.

When and what to get examined? Seek medical advice, if problem persists for long duration.

Adverse health effects:

- Stomachache, flatulence and other gastro-intestinal issues.

If constipation is not treated for a long time, then it can result in serious consequences.

Fluorosis

Do's:

- Have a balanced diet.
- Consume citrus fruits such as lemon, orange, *amla*, guava, etc. in daily diet.
- Include calcium rich foods like milk and milk products (curd, *paneer* etc.), dark green leafy vegetables (amaranth, knol-khol and drumstick leaves), *til* seeds, ragi,etc.
- Clean the water with alum and use it.

Special items to be included in the diet: Daily diet must include items made from milk and milk products, soybean, dark green leafy vegetables, *daliya*, sesame seeds, etc.

Don'ts:

Foods containing excessive amount of fluoride must be avoided like black tea, black rock salt and foods containing black salt like pickles, fruit juices, etc.

When and what to get examined? Symptoms for dental and skeletal fluorosis.

Adverse health effects:

- Paleness of teeth, discoloration of teeth, presence of yellow lining on teeth.
- Crooked hands and feet, swelling in and around knees.

- Pain in joints.

Gestational diabetes mellitus

Do's:

- Include roti, whole pulses, fruits and vegetables in your diet.
- Drink tea and coffee without sugar.
- Drink more quantity of buttermilk, water and homemade soup.
- Eat tomato, cucumber, radish, onions, etc. insalad.
- Consume mixed cereals like *missi chapatti* (1 part black gram +3 part wheat).
- Mild exercise or brisk walk for 30 minutes daily.
- Consume low fat milk or milk without cream and its products and egg and lean meats (chicken or fish).
- If the sugar is not controlled by proper diet and exercise, consult the doctor immediately for treatment.

Special items to be included in diet:

- Whole grains and pulses.
- Fiber rich vegetables and fruits.

Don'ts:

- Consume food items made from refined wheat flour, spicy and fried food items or excessive sweets.
- Fasting, overeating and skipping breakfast.
- Sweet fruits such as banana, *chikoo*, mango, pineapple, grapes, *sharifa* and litchi.
- Large amounts of energy giving foods at one time.

When and what to be examined? Regular blood tests and associated symptoms.

Adverse health effects: Risks to both the pregnant woman and the fetus.

Goitre

Do's:

- Use only iron and iodine double fortified salt in the food.
- Store salt in an airtight container.
- Keep salt away from direct sunlight, fire, heat and cooking stove.
- Instead of adding salt during cooking, add salt after the food is cooked.

Special items to be included in diet: Eggs, double fortified salt, shrimps, etc.

Don'ts:

- Store salt in an open container.
- Purchase and use unpackaged salt.

When and what to get examined? Symptoms of iodine deficiency, such as visible swelling of neck.

Adverse health effects

- Abortions and still births.
- Mental retardation and poor physical growth of the baby.
- Goitre (swelling in the neck).

Heartburn/nausea/vomiting

Do's:

- Take a toast or rusk early in the morning.
- Consume small frequent meals at regular intervals.
- Consume more fluids, such as coconut water, lemonade, buttermilk, *lassi*, etc.
- Consume cold milk as it reduces heartburn.

Special items to be included in diet: Plenty of fluids every day.

Don'ts:

- Consuming heavy meals at one time.
- Consuming fried and spicy food items.
- Consumption of tea on empty stomach.

- Lying down immediately after a meal.

When and what to get examined? Seek medical advice, if problem persists for long duration.
Adverse health effects: Deterioration in mother's health.

HIV

Do's:

- Eat a balanced diet.
- Consume HIV medicines regularly as prescribed by the doctor.
- To avoid any kind of infection, maintain personal hygiene and sanitation.
- Deliver your child only in the hospital.
- Consume hygienically prepared home foods and clean drinking water.
- Adequate rest.

Special items to be included in diet: Yellow or orange colored fruits and green leafy vegetables.
Don'ts: Unprotected sex.
When and what to get examined? During pregnancy, the pregnant woman should get herself and the fetus examined for HIV infection at regular intervals.
Adverse health effects: Life threat to the pregnant woman and the fetus.

Hypertensive disorders

Do's:

- Eat a balanced diet.
- Eat calcium-rich food items such as milk or milk products, green leafy vegetables, ragi, sesame etc.
- Also eat potassium-rich fruits and vegetables like banana, amaranth leaves, spinach, sweet lime (*Musambi*), tomatoes, etc.
- Do meditation and yoga as it relieves stress.
- Do light exercise or walk for atleast 30 minutes 5 days in a week.
- Take adequate rest.
- Go to the nearest health centre in case of high blood pressure.

Special items to be included in diet

- Milk or milk products, green leafy vegetables and fruits.
- Calcium tablets as they are beneficial in preventing eclampsia, pre-eclampsia and high blood pressure.
- Seasonal fruits and raw vegetables in the form of salads regularly.

Don'ts:

- Salty food items such as pickles, *papad*, chutneys, chips, sauces, bakery items etc.
- More than one teaspoon (six grams) of salt throughout the day.
- Fried food items like samosa, *pakora, kachori*,etc.
- Sprinkle salt over salad, curd and other food items.

When and what to get examined? Regular blood pressure monitoring.
Adverse health effects:

- Complications indelivery.
- Preeclampsia and eclampsia.

Malaria

Do's

- Consume excess fluids such as *lassi*, buttermilk, lemonade, etc.
- Have a balanced diet.
- Continue taking malaria medicines on time.

For further Prevention

- Do not allow water to collect inside house, nearby drains, pits, old tires, pots or nearby surroundings of the house.
- Use mosquito net at bed time regularly.

- Wear full sleeves clothes.
- Keep windows and doors closed, especially during evenings.

Special items to be included in the diet: Increase daily intake of fluids.

Don'ts: Fried and spicy food items in case of nausea and vomiting.

When and what to be examined? Blood tests

Adverse health effects: Risks to both the pregnant woman and the foetus.

(Malaria screening and treatment is available free of charge in all government health centres)

Thyroid disorders

Hypothyroidism

Do's

- Thyroid medicine is safe during pregnancy for mother and baby and should not be stopped.
- Take thyroid medication empty stomach.
- Keep a gap of at least 30-45 minutes before you eat/drink anything except water after taking medicine.
- Make sure your hands are dry before opening the bottle.
- Keep thyroid medicine in cool, dry and dark place, away from humidity.
- Discard discoloured or expired medication.
- Do not miss thyroid medication while travelling or if you are sick.
- IFA and calcium tablets are advised for daily consumption in pregnancy. Minimum gap of 4 hours is required between thyroid medicine and calcium/IFA tablet.

Special items to be included in diet:

- Add iodized salt in your food. Always check for the iodized salt logo on the packet before buying.
- Eat iodine rich food daily such as milk and milk products (curd, *paneer, khoa*), egg, fish, chicken and meat.
- Include whole wheat, *bajra, ragi,* rice flakes, pulses, milk, curd, *paneer, khoa,* egg, chicken, meat, amaranth leaves, fenugreek leaves, pumpkin, apricot dried, guava, dates, mustard seeds, poppy seeds, gingelly seeds, jaggery in your diet as they are high in nutrients selenium, iron, zinc and Vitamin A.
- Goitrogenic foods such as vegetables (cauliflower, cabbage, broccoli, spinach), soyabean and soy products can be consumed after cooking or steaming. Keep a gap of 1 hour from the intake of thyroid medicine.

Don'ts

- Taking thyroid medicine with calcium/iron tablets.
- Skipping thyroid medicine.
- Consuming goitrogenic foods immediately after the intake of thyroid medicine.
- Taking excessive salt in diet
- Consuming iodine free salt
- Use of mineral water

When and What to get examined?

Blood test for TSH levels in blood, as advised by your doctor.

Adverse health effects:

- Pregnant women experience cold intolerance, dry skin, constipation, tiredness and excessive bleeding during delivery.
- Complications in new born such as preterm birth, low birth weight infants, low mentation/IQ, poor motor skills, etc.

Hyperthyroidism

Do's

- Get yourself checked after an interval of 3 months by the doctor.
- Follow up with the doctor after every 3 months.
- Medicine given by the doctor is safe during pregnancy for mother and baby and should not be stopped without consulting doctor.
- Keep thyroid medicine in cool, dry and dark place, away from humidity

- Discard discoloured or expired medication.
- Do not miss thyroid medication while travelling or if you are sick.
- Include a variety of foods in your diet, such as cereals, pulses, green leafy vegetables, yellow and orange fruits and vegetables, citrus fruits milk, meat, chicken, fish, egg, nuts, oils, sugar/jaggery).
- Goitrogenic foods or those inhibiting production of thyroid hormones such as vegetables like cauliflower, cabbage, broccoli, spinach, soybean, soy products and peanuts can be easily consumed in hyperthyroidism.

Special items to be included in diet:

- High calorie and nutritious foods like milk, meat, chicken, egg, pulses and wheat.
- Make your food energy dense by adding ghee, butter, cream, nuts, sugar/jaggery.
- Eat all fruits and vegetables.
- Drink lot of fluids, which could be milk, water, lemon water or coconut water.

Don'ts

- Skipping thyroid medicine.
- Taking excessive salt in diet.

When and what to get examined?

- Failure to attain appropriate weight gain.
- Blood test for Thyroid Stimulating Hormone (TSH) levels in blood, as advised by your doctor.

Adverse health effects:

- It may cause high blood pressure and heart problem in mother. Child may be preterm or low birth weight.

Tuberculosis

Do's:

- Eat balanced diet containing all food group sources.
- Have a diet rich in milk, *paneer*, meat, fish, eggs, pulses, green leafy vegetables and fruits.
- Include vitamin C rich fruits and vegetables (lemon, guava, orange, *amla*, sweet lime) or sprouted pulses.
- Cover your mouth while coughing or sneezing.
- Visit DOTS centre regularly and get complete treatment.
- Eat hygienically prepared home food.
- Take adequate rest.
- Consume plenty of fluids like *lassi*, buttermilk, lemonade, etc.

Special items to be included in diet:

- Increase intake of milk, *paneer,* curd, meat, fish, egg and pulses.
- Fresh seasonal fruits and vegetables.

Don'ts:

- Food items made from refined wheat flour, fried and spicy food items.
- Spitting openly anywhere in the surrounding.
- Carbonated beverages.
- Excess intake of tea and coffee.

When and what to be examined? Regular visit to the doctor and examination of sputum.
Adverse health effects: Risks to both the pregnant woman and the fetus.
(T.B. screening and treatment is available free of charge in all government health centers)

UTI/STI

Do's:

- Drink lots of water.
- Eat vitamin C rich food sources like lemon water, orange, sprouts.
- Clean your private parts always from front to back.
- Use condoms during sexual intercourse.

- Urinate immediately after having sexual intercourse.

Special items to be included in diet: Consume plenty of fluids.
Don'ts: Wear tight fitting and nylon underwear.
When and what to get examined? Seek medical advice on appearance of symptoms such as white discharge or burning/itching during urination.
Adverse health effects: Risk of infections to the pregnant woman.

6. Contributors

Ministry of Health and Family Welfare (MoHFW), Government of India (GoI)

- Dr Dinesh Baswal, Deputy Commissioner In-charge, Maternal HealthDivision
- Dr Sila Deb, Deputy Commissioner, Child HealthDivision
- Dr SumitaGhosh, Deputy Commissioner (Maternal Health)
- Dr Salima Bhatia, Lead Consultant, Maternal HealthDivision
- Dr Hari, Lead Consultant, Maternal HealthDivision
- Dr Jyoti Singh, Consultant, Maternal HealthDivision

State Government

- Dr Archana Mishra, Deputy Director, Maternal Health, Department of Health and Family Welfare, Government of MadhyaPradesh

National Health Systems Resource Centre, MoHFW, GoI

- Ms Ima Chopra, ASHA Division
- Ms Haifa Thaha,Fellow

National Rural LivelihoodMission

- Dr Prabhat Kumar, Senior Mission Executive

Academia

Lady Irwin College, New Delhi (Dr AnupaSiddhu, Dr Neena Bhatia, Dr ManishaSabharwal, DrMansi Chopra, Dr Shalinee, Dr Abdul Jaleel, Dr Pallavi Gupta, Dr NighatSofi, Dr SomilaSurabhi, Ms TashiChoedon, Ms Priyanshu, Ms Naman Kaur, Dr PoojaRaizada, Dr Swati Jain, Ms Suruchi Gupta, Ms Prerna Gupta), **Lady Hardinge Medical College, New Delhi** (Dr ManjuPuri), **PGIMER Chandigarh** (Dr MadhurVerma), **All India Institute of Medical Sciences** (Dr Naval Vikram, Dr Shashi Kant, Dr KapilYadav), **St. John's Research Institute** (Division of Nutrition), Bangalore (Dr PratibhaDwarkanath), **Indian Council of Medical Research** (Dr Shalini Singh), **Guru TekBahadur Hospital, New Delhi** (Dr ShikhaNayar), **King George Medical College, Lucknow**(Dr Vinita Das), **Kalawati Saran Children's Hospital, New Delhi** (Dr Virender Kumar, Dr Praveen Kumar, Ms Romika Mehta, Ms Swati Dogra, Ms Shikha Sayal), **Yenepoya Medical College, Mangalore** (Dr AnuragBhargava, Dr Madhavi Bhargava), **National Institute of Nutrition** (Dr AvulaLaxmaiah, Dr Raghavendra, Dr M Nair), **Maulana Azad Medical College** (Dr Suneela Garg), **Safdarjung Hospital** (Dr Saritha)

Independent Experts (Dr Audrey Prost, Dr H.P.S Sachdev, Dr JP Kapoor, Ms Rekha Sharma, Dr Kalyani Singh, Dr Sheila Vir, Dr Veenu Seth, Dr Alka Mohan, Dr Shavika Gupta, Ms ArtiBhanot, Dr AnjaniBakshi, Dr NehaBakshi)

Development Partners

Nutrition International (Dr Jennifer Hatchard, MsSucharitaDutta, Ms Mini Varghese, Ms Sona Sharma), **Society for Applied Sciences**, New Delhi (Dr RanadipChowdhury), **Basic Health Services** (Dr Pavitra Mohan), **Ekjut** (SuchitraRath), **Alive and Thrive** (Dr Sebanti Ghosh, Ms Archana Chowdhury, Dr Rajeev Aggarwal, Ms Ruchin Sharma), **SNEHA** (Dr Sushma Shende), Society for Applied Sciences (Dr Nita Bhandari, Dr Ranadeep Chowdhary), **EnVisions**(Ms Varsha Chanda), **Public Health Resource Network** (Dr Vandana Prasad), **IFPRI** (Dr Purnima Menon, Dr Rashmi Avila)

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World Health Organization, India (Dr Amrita Kansal, Dr MallikParmar), **UNICEF** (Dr VaniSethi, Dr Kavita Sharma, Dr Abner Daniel, Dr AsheberGaym, Dr Keya Chatterjee, DrRicha Singh Pandey, Dr JayatiMitra, Dr Sameer ManikraoPawar, Ms PushpaAwasthy, Dr VaneshMathur, Dr VanitaDutta, Mr Rabi Parhi, Mr MahendraPrajapati, Dr Khyati Tiwari, Ms Rachana Sharma, Mr Arjan de Wagt, Dr Harriet Torlesse, DrZivaiMurari, Dr Roland Kupka)

National Centre of Excellence and
Advanced Research on Diets
Lady Irwin College