

Development of a maternal service package for mothers of children with severe acute malnutrition admitted to nutrition rehabilitation centres in India

By Vani Sethi, Praveen Kumar and Arjan De Wagt



Vani Sethi PhD is a public health nutritionist in the Nutrition Division, UNICEF India, presently leading a girl's and women's nutrition programme linking nutrition-based livelihoods and empowerment and supporting the Ministry of Health in maternal malnutrition and anaemia programmes. She has 17 years' experience in several Indian programming contexts, including rural, tribal and urban slums.



Dr Praveen Kumar is a paediatrician and Professor of Pediatrics at Lady Hardinge Medical College and Kalawati Saran Children's Hospital in New Delhi. He runs India's national centre of excellence on severe acute malnutrition and supports the Ministry of Health in the development of protocols for management of children with severe acute malnutrition and HIV and capacity-building.



Arjan de Wagt is Chief of the Nutrition Section, UNICEF India country office, New Delhi. He has over 25 years' international experience in several countries, including Nigeria, Zambia, New York and Netherlands and has specialised in the management of severe acute malnutrition, emergency nutrition and nutrition in HIV.

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Location: *India*

What we know: Maternal factors, such as poor nutrition in utero, anaemia and short birth spacing, contribute to undernutrition in children.

What this article adds: The socio-economic, anthropometric, morbidity and biochemical profile of 427 mothers of inpatient children with severe acute malnutrition (SAM) admitted to four nutrition rehabilitation centres (NRCs) in India was assessed. Twenty-five per cent of mothers were low in stature (height <145 cm); 23% were underweight (body mass index (BMI) <18.5 kg/m²); 5% were severely underweight (BMI <16); more than a quarter (27%) were overweight/obese (BMI ≥23 kg/m²); and 71% had moderate or severe anaemia. Of 33 mothers who were also pregnant, 41% had low mid-upper arm circumference (<23 cm). Diarrhoea, urinary tract infection and genital infection were common and use of family planning methods was low (23%). Findings informed the development of a maternal service package integrated within existing government services and according to nutrition/medical risk of mothers. Further research is needed to test the effect of the protocol on maternal nutrition outcomes and its operational feasibility at scale.

Background

In India 8% of children under five years old suffer from severe acute malnutrition (SAM) (NFHS 4, 2015-2016). Underlying causes of SAM in children are directly and indirectly related to maternal factors such as poor nutrition in utero, short birth spacing and household food insecurity. Currently 1,151 functional nutrition rehabilitation centres (NRCs) are set up by the Government of India (GoI) under the Ministry of Health and Family Welfare (MoHFW) to provide inpatient care for children under five years old with SAM with medical complications (~10% of burden of SAM) (MoHFW, 2011). A typical NRC has 10 to 20 beds where mothers/ caregivers stay with admitted children for the duration of treatment (7-14 days) and attend daily

group and individual counselling sessions to prepare them for discharge.

Limited information exists on the nutritional profile of mothers of children with SAM in India. Facility and community-based studies with small sample sizes show that mothers of children with SAM are often underweight (33%-50% of mothers had a body mass index (BMI) <18.5 kg/m² in a study by Bhandari et al, 2016), and anaemic (70%-88% in studies by Rai et al, 2015 and Nagabhushan et al, 2017); however, more research and national protocols are needed to support the effective screening and management of maternal malnutrition (including undernutrition, overweight and obesity) at facility and community levels.

Table 1 Nutritional status of mothers of children with severe acute malnutrition (N=427)

Nutritional Status	Mothers of children with SAM				p-value
	Pregnant mothers with child 0-59m N=33	Mothers with child 0-<6m N=102	Mothers with child 6-59m N=292	Pooled N=427	
	n (%)	n (%)	n (%)	n (%)	
Height <145 cm	7 (21.2)	20 (19.6)	78 (26.9)	105 (24.6)	0.287
Body Mass Index (kg/m²)					
		N=99	N=290	N=389	
<18.5	NA	10 (10.1)	81 (27.9)	91 (23.4)	0.001
<16	NA	4 (4.0)	16 (5.5)	20 (5.1)	0.001
≥ 30	NA	4 (4.0)	12 (4.1)	16 (4.1)	0.004
≥23	NA	36 (36.4)	70 (24.1)	106 (27.2)	0.021
≥25	NA	21 (21.2)	45 (15.5)	66 (17.0)	0.207
Mid Upper Arm Circumference (cm):					
	N=33	N=102	N=291	N=426	
≥23	18 (54.6)	72 (70.6)	161 (55.3)	251 (58.9)	0.003
<23	15 (45.4)	30 (29.4)	130 (44.7)	175 (41.1)	0.024
≥22-<23.0	6(18.2)	16 (15.7)	36 (12.4)	58(13.6)	0.347
≥19-<22.0	9 (27.3)	11(10.8)	82(28.2)	102 (23.9)	0.002
<19	0	3(2.9)	12(4.1)	15(3.5)	0.448
≥26	7 (21.2)	29 (28.4)	73 (25.1)	109 (25.5)	0.325
≥30	0	6 (5.9)	18 (6.2)	24 (5.6)	0.342
Malnourished by either BMI (<18.5kg/m ²) or MUAC (<23 cm)	15 (45.4)	32 (31.7)	141 (48.2)	188 (44.0)	0.012
Combinations					
<145 cms & BMI < 18.5 kg/m ²	0.0	4 (3.9)	23 (7.8)	27 (6.3)	0.110
<145 cm & MUAC <23 cm	3 (9.0)	9 (8.8)	37 (12.6)	49 (11.4)	0.522
Anaemia					
	N=31	N=88	N=271	N=390	
Any Anaemia	18 (58.1)	88 (100.0)	271(100.0)	377 (96.7)	0.034
Mild	6 (19.4)	23 (26.1)	71 (26.2)	100 (25.6)	
Moderate	11 (35.5)	30 (34.1)	114 (42.1)	155(39.7)	
Severe	1 (3.2)	35 (39.8)	86 (31.7)	122 (31.3)	

NA: Not applicable

*Pregnant women: 10-10.9 g/dl (mild anaemia), 7.0-9.9 g/dl (moderate anaemia) and <7 g/dl (severe anaemia) and for non-pregnant women as 11-11.9 g/dl (mild anaemia), 8.0-10.9 g/dl (moderate anaemia) and <8 g/dl (severe anaemia)

The aim of this study was to bridge this knowledge gap by assessing the nutritional status of mothers of children with SAM admitted to four NRCs in Delhi and Aligarh, Uttar Pradesh, and, based on the results, develop a maternal service package of interventions for mothers to be integrated in routine NRC services.

Methods

The study was conducted in two phases: in phase one the nutritional status of mothers was profiled and in phase two a maternal service package was developed. The first phase was conducted between September 2016 and November 2017 in four NRCs. Three NRCs were located in Delhi (Kalawati Saran Children’s Hospital, Hindu Rao Hospital and Bhagwan Mahavir Hospital) and one in Aligarh (Jawaharlal Nehru Medical College and Hospital of Aligarh Muslim University). In each NRC, once the SAM child had been stabilised, all mothers were invited to enrol in the study and informed consent was obtained. No mothers declined to take part.

Socio-demographic profile was recorded on a pretested proforma. Maternal weight was measured using UNICEF SECA weighing scales (model 874) with at least 100 grams gradation. Height was recorded using UNICEF SECA mi-

croitose (model 216) with 0.1 cm gradation and mid-upper arm circumference (MUAC) using MUAC tape (procured from UNICEF supply department) with a gradation of 0.1 cm. World Health Organization (WHO) classifications were used to classify short stature and thinness based on BMI and anaemia (WHO, 1995, WHO, 2003, 2011). South Asian classifications of overweight (≥23 kg/m²) and obesity (≥26 kg/m²) (WHO, 2003) were also used. MUAC <23 cm and MUAC <19 cm were used as alternative cut-offs to define malnutrition and SAM respectively (MoHFW, 2017). MUAC ≥30 cm was used to define overweight or obesity (Khadivzadeh, 2002). Venous blood sample was collected from consenting mothers for haemoglobin estimation using Erba Sysmex KX-21 auto-analyser. Descriptive statistics were generated using SPSS version 12.0.

Results are presented for all mothers, in three stratified categories: those who were pregnant and had a SAM child aged 0-59 months (n=33); non-pregnant mothers with a SAM child aged less than six months (n=102); and non-pregnant mothers with a SAM child aged 6-59 months (n=292). Chi-square test was used to compare the nutritional status of mothers between the three groups.

Phase two entailed the development of a maternal service package. A nodal pre-testing centre was identified (Kalawati Saran Children’s Hospital, paediatric ward NRC), a technical expert group formed and GoI/WHO nutrition guidelines reviewed. The findings of phase one were presented to technical experts and GoI officials and a protocol and counselling aids were developed and refined. The final protocol was implemented as part of routine service provision in the NRC by a nutrition counsellor post-graduate nutrition researcher on a sample of 100 mothers over a period of six months (December 2017 to May 2018). During this time changes were continuously made to the algorithm and counselling aids for further contextualisation. The maternal service package was then presented to the GoI.

Results

Phase 1: Profiling the nutritional status of mothers

General characteristics

A total of 427 mothers with a child admitted to an NRC participated in the study: 203 (47.5%) from Kalawati Saran Children’s Hospital, 144 (33.7%) Hindu Rao Hospital, 64 (15%) Jawaharlal Nehru Medical College and 16 (3.8%) Bhagwan Mahavir Hospital. Of the 427 mothers, 102 (24%) had an infant aged 0 to less than 6 months of age; 292 (68%) had a child aged 6 to 59 months; and 33 (8%) were pregnant (as well as having an admitted child of 0-59 months of age). The mean age of mothers was 18.9 years (range: 16-32 years). The majority of mothers were Hindus (65%), unemployed (89%) and had more than four family members (89%). Forty per cent of mothers had never attended school and 23% had studied until higher secondary school. Adoption of family planning methods was low (23%).

Anthropometry

Of the 427 mothers assessed, 25% were low in stature (stunted, height <145 cm) and 44% of mothers were malnourished either by BMI or MUAC. By BMI, 23% were underweight (BMI <18.5kg/m²), which is comparable to the national average of 22.9% (NFHS 4 2015-2016), and 5% were severely underweight (BMI <16 kg/m²). By MUAC, 41% were malnourished (MUAC <23cm) and 3.5% were severely malnourished (MUAC <19cm) (no national data to compare).

Overweight or obesity was documented in 27% (by Asian cut-off, BMI ≥ 23 kg/m²) and 17% (by WHO cut off of ≥25kg/m²), which is slightly lower than the national female average of 20.6% by WHO cut-off (NFHS 4 2015-2016)). Obesity was documented in 13% by Asian cut-off of BMI ≥ 26 kg/m² and 4% by WHO cut-off of ≥30kg/m². According to MUAC ≥30 cm obesity was observed in 6% of mothers.

Anaemia

Haemoglobin concentration was measured in 390 consenting mothers, of whom 377 (97%) were anaemic and 71% were moderately or se-



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verely anaemic. Morbidities such as diarrhoea (15%), urinary tract infection (UTI) and genital infection (20%), chronic cough (12%), Bitot's spot (4%) and fluorosis (1.3%) were common among mothers who were stunted, underweight or overweight/obese. Cases of diarrhoea were higher in mothers who were underweight compared to mothers who were overweight (5% vs 1%) (Table 1).

Phase 2: Development of a maternal service package

The GoI offers a service package to mothers through various antenatal and postnatal care

platforms, targeted at pregnant mothers and those with infants aged 0 to 6 months. These include: i) physical examination (height and weight); ii) laboratory investigation (haemoglobin estimation and oral glucose tolerance test); iii) iron and folic acid (IFA) and calcium supplementation; iv) deworming; and v) counselling (on healthy eating and diet diversity, family planning, micronutrient supplementation, personal hygiene, and food and recipe demonstration). Additionally, there are protocols in place for screening and management of adult severe thinness and severe anaemia which are used in tuberculosis wards and haematology departments.

The protocol developed for this study examined these guidelines in the context of routine services provided in an NRC setting with a view to expanding the appropriate support to all mothers with a SAM child admitted to an NRC. Building on what exists, a protocol was developed whereby mothers are screened using the criteria outlined in Table 2 and classified as: i) not at nutritional risk; ii) at some nutritional risk; or iii) at severe nutritional risk/medical risk. Nutrition interventions for each group were developed as follows:

1. Universal interventions for all mothers not at nutritional risk

i. Hospital diet

As per the Operational Guidelines on Facility Based Management of Children with SAM (MoHFW, 2011) and Janani Shishu Suraksha Karyakaram (JSSK) diet guidelines (MoHFW 2018), the mother or the caregiver staying with the child is provided with food by the NRC, funded by the State Program Implementation Plans (PIPs) approved by the MoHFW.

ii. Micronutrient supplementation and deworming

As per GoI guidelines, IFA and calcium supplements are provided to pregnant mothers from the second trimester onwards to six months post-partum if not already provided elsewhere (one IFA tablet daily (60 mg iron and 500 mcg folic acid) and two calcium tablets (500mg)). As per GoI guidelines, mothers in the second trimester of pregnancy are provided with a

Table 2 Maternal services package for Nutrition Rehabilitation Centres

Assess	Classify	Supplement/Treat/Refer
Ask: • Age • History of illness • Sudden weight loss Measure: • Weight • Height • Check/plot BMI (or MUAC if over 20 weeks pregnant) • Blood pressure Examine: Presence of any symptoms including fever, cough, blood in sputum, increased urinary frequency/ burning during urination, recurrent or prolonged illness, clinical sign of goitre or fluorosis or vitamin A deficiency (night blindness, Bitot's spot), oedema (Grade +,++), for post-partum women Test: • Haemogram • Fasting blood glucose	Not at nutritional risk <i>All of the following:</i> • Age ≥ 20 years • No signs of malnutrition (height ≥150 cm and BMI 18.5-22.9 kg/m ² if not pregnant/ or less than 20 weeks of pregnancy; if over 20 weeks pregnant use MUAC 23-25.9cm) • No anaemia (≥12g/dl non-pregnant and ≥11g/dl for pregnant) • No medical risk	1. Hospital diet as per national guidelines 2. Mother-focused group counselling on 5 thematic areas (30 minutes) 3. Micronutrient supplementation (IFA, calcium) and deworming as appropriate, as per national guidelines 4. If the mother is pregnant or lactating give catch-up diet (F100) 350ml once/day
	At some nutritional risk <i>Any of the following:</i> • Young (age 18-20 years) • Short (height 145-<150 cms) • Thin (BMI 16.0-<18.5 Kg/m ² if not pregnant or less than 20 weeks of pregnancy or MUAC 19-22.9 cm if over 20 weeks pregnant) • Overweight/ pre-obese (23-24.9 kg/m ²) if not pregnant or less than 20 weeks pregnant or MUAC 26-30cm if over 20 weeks pregnant) • Mild/moderate anaemia (haemoglobin 7-10.9g/dl (pregnant)/ 8-11.9 g/dl (non-pregnant)) And no medical risk	1-4 (as above) PLUS 5. Bedside individual mother-focused need-based counselling for 15 minutes daily, based on the condition identified (in addition to 15 minutes child-focused bedside counselling) 6. Recipe book and demonstration if mother is underweight and counselling if overweight.
	At severe nutritional risk/medical risk <i>Any of the following:</i> • Mothers breastfeeding infants 0-6 months • Very young (age <18 years) • Very short (height <145 cms) • Severely thin (BMI <16.0kg/m ² if not pregnant or less than 20 weeks pregnant or MUAC <19cm if over 20 weeks pregnant) • Obese (BMI >25kg/m ² if not pregnant or less than 20 weeks pregnant or MUAC >30cm if over 20 weeks pregnant) • Severe anaemia (hemoglobin <8g/dl if not pregnant or <7g/dl if pregnant) • Presence of symptoms/ signs suggesting medical illnesses, including: - Fever with chills ≥3 days - Cough >2 weeks/blood in sputum - Urinary complaints - Recurrent or prolonged illness - Signs of goitre or Vitamin A deficiency or fluorosis - Raised blood pressure or raised fasting blood sugar	1-6 (as above) PLUS 7. Provide catch-up diet (F100) 350ml two times/day if severely thin or breastfeeding infant <6 months and once per day if pregnant (and not severely thin) 8. Therapeutic treatment according to government guidelines of severely anaemic 9. Link for confirmation of medical illness to appropriate ward/unit in hospital and subsequent medical care as per national guidelines 10. Counselling for obesity and recipe book for obese mothers

Table 3 Composition and nutrient content of the recipes developed for food demonstration using local ingredients

Recipe	Recipe	Serving Size	Nutrient composition
Cereal pulse premix	Whole wheat flour - 20g Bengal gram roasted - 50g Milk Powder - 20g Peanut - 40g Jaggery - 25g Sesame seeds - 20g	170g	Energy - 412 Kcal Protein - 17.1g Calcium - 244mg Iron - 5.7mg
Daliya Chikki	Daliya - 10g Peanuts - 60g Sesame seeds - 15g Jaggery - 70g Cooking oil - 3g	140g	Energy - 500 Kcal Protein - 14.2 g Calcium - 216 mg Iron - 5.6 mg
Paushtik Ladoo	Bajra - 10g Besan - 40g Green gram whole - 5g Peanut - 40g Jaggery - 40g Ghee - 24ml	7 ladoos (1 ladoo = 20g)	Energy - 500 Kcal Protein - 14.2 g Calcium - 94 mg Iron - 4.8 mg
Energy-dense biscuit	Whole wheat flour - 30g Bengal gram roasted - 55g Soya granules - 15g Milk Powder - 20g Jaggery - 20g Cooking oil - 20g Sesame seeds - 10g Baking powder - ¼ tsp Salt - a pinch	14 biscuits (1 biscuit - 15g)	Energy - 333 Kcal Protein - 13 g Calcium - 135 mg Iron - 4.1 mg



Mother receiving individual counselling session by the nutrition counsellor, 2018

single oral dose deworming tablet (400 mg of albendazole) if not already provided elsewhere.

iii. Group-based nutrition education and counselling

Child-focused group counselling is provided in most NRCs daily for one hour. In the proposed NRC protocol, daily group counselling is extended by 30 minutes to focus on the mother as well. Group counselling takes place five days per week, covering one of five thematic areas per day (micronutrients and anaemia; diet diversity; personal hygiene and sanitation; breastfeeding, family planning; and non-communicable and communicable diseases, including TB, HIV, malaria, obesity, hypertension and diabetes). During Phase 2, group counselling aids were developed to help staff deliver the counselling (pictorial flip book, game, food plate model, recipe book for underweight and obese and pocket cards for testing their knowledge).¹ Pretesting showed that the counselling aids are easy to carry around the wards and simple to use and understand, with emphasis on important points. They were also found to increase the interest and involvement of the mothers.

2. Additional interventions for mothers at some nutritional risk

In addition to the universal interventions, 15 minutes of individual, mother-focused, bedside counselling is provided for mothers deemed to be at some nutritional risk in addition to the routine 15 minutes of child-focused bedside counselling. Counselling is tailored to the mother's specific nutritional risk. In addition, those mothers identified as having mild or moderate anaemia are provided with a therapeutic dose of oral IFA, as per GoI guidelines.

A recipe book was developed for underweight mothers, which was explained through live demonstration sessions based on four local recipes (see Table 3). Pretesting showed that mothers took a keen interest in these sessions, which were successful in increasing their involvement and practical knowledge.

3. Additional interventions for mothers at severe nutritional risk/medical risk

In addition to universal interventions and those targeted to mothers at some nutritional risk, extra support is provided to mothers deemed to be at severe nutritional or medical risk (see Table 2 for criteria). Several options for an enhanced energy-dense supplement were developed but, after pre-testing with mothers, F-100² was found to be the most feasible as it is already provided to the SAM child after stabilisation (for 'catch-up' growth) and therefore no extra cooking and ingredients were required. F-100 (350ml) is provided once per day to pregnant mothers and twice per day (700ml) to mothers breastfeeding infants under six months of age and severely thin mothers to cover estimated additional energy requirements. Therapeutic treatment is provided to women with severe anaemia as per government guidelines. Many of these mothers also have other signs of underlying illness (such as TB) and are referred to respective wards for treatment.

Obese mothers were provided with counselling on physical exercise and given a recipe book tailored to obesity. Very young mothers were given additional counselling on family planning and very short mothers were counselled on diet and family planning.

Limitations of the study

The present opportunistic study on a reasonable sample size was restricted to anthropometric measurements and anaemia, which precluded use of robust biomarkers of nutritional profile as well as co-morbidities not routinely gathered in NRCs. Furthermore, mothers of children without SAM were not assessed to determine if the maternal anthropometric profile was simply a reflection of all mothers visiting these facilities. This study helped inform the development of a maternal package, using a common-sense approach based on available evidence and feasibility and practicality in the given context. It was not possible to test the effectiveness of the package on nutrition outcomes of mothers.

Discussion

Prevalence of malnutrition was high among mothers of children admitted with complicated SAM; one third of the mothers were malnourished, similar to that found in a multi-centre trial in India (Bhandari et al, 2016). The present study also found a double burden of malnutrition in around one quarter of households, where the child was acutely undernourished and the mother was overweight or obese. Eight per cent of mothers were pregnant and almost half were malnourished, highlighting the need for intervention involving counselling and dietary supplementation as per GoI norms and, looking ahead, to address family planning. This is an important preventive action as a mother being

¹ Counselling aids are available on request from the authors.
² The composition of F-100 is cow's milk/toned dairy milk (treated buffalo milk) 315 ml, sugar 26.2g and vegetable oil 7g, which has 350 Kcal, 10.1 g of protein and 14.7 g of lactose.

stunted, wasted or underweight preconception or during pregnancy predisposes the unborn child to undernutrition (Bhutta, 2013). The pregnant mother's stay in the NRC with their admitted child (and non-pregnant mothers) presents an important opportunity to improve the mother's own nutritional status and that of her future children.

The capacity required to roll out the maternal services package is minimal, given that the programme is operated through existing NRCs, which already have kitchen facilities and adequate human resources for cooking and nutrition counselling. The IFA, calcium supplementation and deworming can be procured from the hospital supply, already funded by the GoI. Ad-

ditional costs will be incurred in the provision of MUAC tapes and in the extension of the time input by existing nutrition counsellors for group and bedside counselling, which we estimate is possible within current capacity.

Conclusion

In conclusion, facility-based centres for treatment of SAM in children present an opportunity to capture the attention of mothers and target support to them for a duration of at least one to two weeks, to address the maternal double burden of malnutrition, anaemia and family planning practices. Co-morbidities are common among mothers who may be stunted and/or underweight or overweight. More research is needed in similar settings to corroborate this

evidence and urgent pilot testing is needed of the proposed service package in NRCs to determine operational feasibility and effectiveness on nutrition outcomes.

Read the maternal malnutrition guideline here: <https://www.enonline.net/resources/maternal-nutritionalcarenrc>

For more information, please email Vani Sethi at vssethi@unicef.org

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Maternal services package for Nutrition Rehabilitation Centres

ASSESS	ASK	MEASURE	LOOK FOR (clinical examination)	TEST
	Age/History of Illness	Weight, Height, Check/Plot BMI, Mid Upper Arm Circumference, Neck circumference, Blood pressure	Fever, Cough, Blood in sputum, Increased urinary frequency/burning during urination, Recurrent or prolonged illness, Neck swelling, Any sign of fluorosis or vitamin A deficiency (night blindness, Bitot's spot), Oedema (Grade +,++) for postpartum women	Hemogram, Fasting blood glucose
CLASSIFY	NOT AT NUTRITIONAL RISK		AT SEVERE NUTRITIONAL RISK/ MEDICAL RISK	
	<ul style="list-style-type: none"> 20 years or above Normal height Neither thin nor obese No Anemia/Vitamin A deficiency/Fluorosis No Medical risk 		<ul style="list-style-type: none"> Severe Thin or Obese Severe Anemia Signs of Vitamin A deficiency/Fluorosis Presence of symptom/sign suggesting medical illnesses 	
SUPPLEMENT/COUNSEL/TREAT	<ol style="list-style-type: none"> Hospital diet as per national guidelines Group counseling on 5 thematic areas (30-45 minutes) for healthy maternal diet & lifestyle; and recipe demonstration Micronutrient supplementation (IFA, Calcium) and deworming as appropriate, as per national guidelines 		<ol style="list-style-type: none"> 1 2 3 PLUS 4 Bed side individual need-based counseling for the condition identified 	
	<p>Age: >20 years and</p> <p>Height: >145cm and</p> <p>BMI: 18.5-24.9 kg/m² if not pregnant/less than 20 weeks of pregnancy and</p> <p>No Anemia: >12g/dl non-pregnant and >10g/dl for pregnant and</p> <p>No medical risk: None if BMI is not available; hemoglobin (g/dl) in pregnancy, more than 20 weeks, then use MUAC >23.5 cm and Neck Circumference >35cm.</p>		<p>Young (Age): <20 years or</p> <p>Short (Height): <145cm or</p> <p>Thin (BMI): <18.5 kg/m² if not pregnant/less than 20 weeks of pregnancy or</p> <p>Obese (BMI): >29.9 kg/m² if not pregnant/less than 20 weeks of pregnancy or</p> <p>Mild/Moderate Anemia (Hemoglobin): 7-10.5g/dl (PW) & 11g (NFW)</p> <p>No medical risk: None if BMI is not available; hemoglobin (g/dl) in pregnancy of more than 20 weeks, then use MUAC >23.5 cm, cut off for moderate acute malnutrition and neck circumference >34-36.5cm for overweight. If both BMI & Neck circumference are not available, then MUAC >26.5cm (overweight)</p>	
	<p>Severe Thin (BMI): <16.0 kg/m² if not pregnant/less than 20 weeks of pregnancy or</p> <p>Obese (BMI): >29 kg/m² if not pregnant/less than 20 weeks of pregnancy or</p> <p>Severe Anemia (Hemoglobin): <7.5g/dl (non-pregnant) and <7 g/dl for pregnant or</p> <p>Presence of symptom/sign suggesting medical illnesses:</p> <ul style="list-style-type: none"> Fever with chills > 3 days Cough > 2 weeks/blood in sputum Urinary complaints Recurrent or prolonged illness Neck swelling Signs of Vitamin A deficiency or Fluorosis or Raised blood pressure or Raised fasting blood sugar <p>Note: If BMI is not available, then use MUAC <19cm cut off for severe acute malnutrition and MUAC >30cm as the risk score for severe.</p>		<ol style="list-style-type: none"> 1 2 3 4 PLUS 5 Provide Catch-up diet (F100) 350ml two times/day 6 Link for confirmation of medical illness and subsequent medical care as per national guidelines 	

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