

## Good Innovative and Replicable Practices in Public Health Care Systems of Madhya Pradesh

1. **Title of the Intervention:**

“Nutrition Rehabilitation Centres of Madhya Pradesh – Innovations for Replication

2. **State:** Madhya Pradesh

**Key highlights of the innovative augmented services provisioned in Nutrition Rehabilitation Centres (NRCs) of Madhya Pradesh (MP):**

- **Maternal health and nutrition needs also met along with managing children with SAM**
- **Catering to unmet needs of family planning**
- **Standardized Counselling through the use of Counselling Tools for NRC**
- **Supplementary Suckling Technique (SST) for young infants**
- **Promoting food diversity through concept of kitchen garden**
- **Pioneer in development of training package for NRC staff; developed the first training package in the country for Feeding Demonstrators**
- **Convergent programming with Department of Women and Child Development (DoWCD) for improved identification and referral of SAM**
- **Leveraging AYUSH support for identification and referral of SAM**
- **Survival tracking through extended follow-up after discharge from NRC**
- **NRC-MIS developed and is being used**
- **‘Take Away Snack’ during follow-up- an approach for increased follow-ups**

3. **Problem Statement:** India is home to approximately 80 lakh children with severe acute malnutrition i.e. one third of severely wasted children worldwide. Madhya Pradesh is in the epitome of nutritional crisis, with 12.6 lakhs severely wasted children; the highest in the country (NFHS-III, 2005-06). Be it known that approximately 15% of the SAM burden is medically complicated hence, as per the nationally represented data; Madhya Pradesh is home to about 1.89 lakhs children with medically complicated SAM. Since mortality rate in these children is approximately 9 times higher than a healthy child, it becomes imperative to provide them with immediate medical treatment and nutritional rehabilitation. Presently, **Madhya Pradesh has the**

highest number of 314 Nutrition Rehabilitation Centres in the country. However, even with such dense network, the State at cent per cent bed occupancy will at the most be able to cater to only 90,000 children with SAM per year wherein about 1.89 lakh medically complicated children with SAM would actually need medical and nutrition rehabilitation in the State.

4. **Project Description (Start date- month & year, description of intervention, other implementing partners, outcomes):** To address the huge burden of severe acute malnutrition in children, the Government of Madhya Pradesh with technical support of UNICEF, launched Bal Shakti Yojna in October 2005, whereby Nutrition Rehabilitation Centres (NRC) were established in District Hospital and later on scaled up across the State up to block level in a need based manner keeping in view the malnourishment burden of the area. There are 314 NRCs in all 51 districts with minimum of one NRC per block, while a majority of states do not have one NRC per district. These NRCs have been established in the premises of every District Hospital/ Civil Hospital and Community Health Centre (CHC). As per need, few NRCs are also functional at the Primary Health Centre (PHC). The Nutrition Rehabilitation Centres of MP and SAM management constitutes the flagship Programme of the State. MP has supported other states in the country in replicating the model.

It would not be an exaggeration to say that MP is a pioneer and a torch bearer in the management of children with SAM. The State has not stopped at facility management, but through constant innovative approaches, it is striving to improve the quality of care being provided in NRCs for the children with SAM and their families. It has expanded the scope of rehabilitative services of NRCs by not only focusing on the curative and preventive services but have initiated steps to improve the health and nutritional status of the mother and family. A few of the innovations are described briefly:

- i. **Promoting maternal health and nutrition:** A study in District Hospital NRC, Sagar (Jan- Jun 2014) revealed that about 46% mothers of admitted SAM children had a Body Mass Index (BMI) of <18 in comparison to only 14% of the mothers of non-SAM children admitted in the Pediatric ward. This strongly suggests the presence of malnutrition in the family of a child with SAM. It would be a wasted opportunity if the mother stays in the NRC with her child for 14 days and no attention is paid to her health and nutritional needs.

**Learning from the observations from Sagar, the State has also started focussing on health and nutrition needs of mothers of admitted children during their NRC stay.** Mothers are provided with free balanced and nutritive diet. Daily menu

is planned keeping in view the RDA of an adult pregnant/ lactating mother. Maternal micronutrient supplementation especially IFA supplementation is ensured along with examination of co-existent medical ailments and are provisioned with free drugs and diagnostics accordingly.

- ii. **Linking of family planning service and catering to unmet need:** It is well known that early pregnancies, quick successive pregnancies and large family size have an immense bearing on both maternal and child nutrition. As a step further to improve maternal health by birth spacing and indirectly curb child malnutrition, mothers of admitted children with SAM are given family planning services using cafeteria approach. It is well known that there is only a small percentage of mothers who have already adopted some kind of family planning method prior to admission of her child with SAM in the NRC. As per the data available on NRC MIS (launch date: 1<sup>st</sup> Sept 2014), 44,024 children were admitted between Sept 2014 and March 2015, of which nearly 52% i.e. 23,045 mothers were found eligible and were intensively counselled on temporary or permanent methods of family planning. **It is remarkable to note that family planning service uptake during NRC stay has been very encouraging and about 54% i.e. 12,367 eligible mothers have accepted some form of family planning method during their NRC stay.**
  
- iii. **Promoting standardized counselling through use of counselling tools for NRCs:** It is well known that, counselling plays a vital role in the realization of the goals of a public health programme. It is a way of working with people wherein one tries to understand the problems of beneficiaries and barriers to behaviour change. It helps to clarify existing myths and doubts, identify needs of the beneficiaries and provide timely and relevant services. An effective counselling involves effective inter-personal communication (IPC) i.e. one-to-one counselling as well as group counselling.

In Madhya Pradesh, the Feeding Demonstrator of NRC is well capacitated on IPC skills which enables her to provide counselling to all mothers/caregivers of admitted SAM children on various health and nutrition issues such as appropriate care and feeding practices, hygiene and sanitation, family planning, preparation of low cost nutritional recipes etc through a well designated 14-days counselling plan. The other paramedical staff of the NRC supports the FD in the process. **However, there was no standardized counselling tool for counselling on above said topics; until recently when NHM, GoMP with the help of UNICEF in partnership with Kalawati Saran Children's Hospital, New Delhi developed an illustrative flipbook guide on essential nutrition package which will equip the feeding demonstrators /ANMs / grass root level health**

**volunteers with appropriate knowledge and skills related to good child caring practices.** The standardized counseling tool – a first of its kind contains key messages in simple clear language on antenatal care, IYCF practices, nutrition during various stages of life, family planning, sanitation and hygiene, growth monitoring and immunization, importance of follow up after discharge, care during illness and after recovery, play therapy and sensory stimulation etc. **In addition, a questionnaire also has been developed to assess the socio-demographic causes of undernourishment in children with SAM.** This will be used for individual counseling of mothers/caregivers of admitted SAM children in the NRC at the time of admission.

- iv. **Promoting Infant and Young Child Feeding (IYCF) practices in NRCs through Supplementary Suckling Technique (SST):** Infants <6m are a unique group due to their exclusive breastfeeding needs, physiological and developmental differences, vulnerability to different pathologies and increased mortality risk as compared to older children. The period of 0-6 months has a tremendous impact on under-nutrition with both immediate and long term adverse consequences. They are more prone to death and disability due to inadequate dietary intake resulting from various causes like reduced breastfeeding potential, inadequate artificial feeding, maternal and infant diseases. In all admitted infants <6m rigorous counselling is done to address feeding problems by correct positioning and attachment.

**Supplementary Suckling technique (SST)** is a technique where ‘Mother’s Milk Insufficiency’ (MMI) is addressed by supporting the mother to breastfeed while simultaneously administering supplemental milk via an oro-pharyngeal gastric tube attached to the breast. As breast milk production increases, amount of supplemental milk is gradually reduced. Mother is counselled to put the infant more often on the breast, thus, stimulating adequate galactogenesis.



**The admission profile reflects that in the year 2014-15; admission of infants <6m accounted for 4% (n=2911) of total admissions in NRCs. SST was introduced in 27.4% of total 2911 admitted SAM infants aged <6m. Re-lactation from SST was successfully established in 71% (n=565) infants. 2015 mothers of admitted SAM children <6m were subjected only to breastfeeding counselling, out of which,**

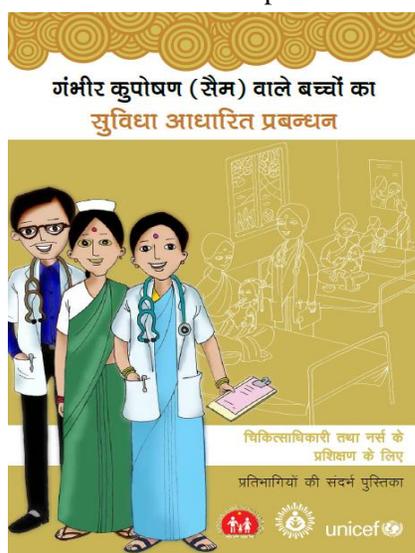
successful re-lactation was established in 74% mother (n=1487). Rest 99 <6m old SAM infants either defaulted or were referred to higher facility for treatment (Table-1).

**Table: 1**

Year	2014-15	
	N	%
Total Admissions in NRC	73200	-
Total No. of admitted infants <6m	2911	4
No. of infants <6m initiated SST	797	27.4
No. of infants <6m showing weight gain with establishment of successful re-lactation through SST	565	74
No. of infants <6m showing weight gain with establishment of successful re-lactation through counseling only	1487	74

(Source - NRC MPR)

- v. **Promoting food diversity through concept of kitchen garden:** Mothers/ caregivers of children with SAM are provided with an assorted pack of seeds of seasonal creeper vegetables for promoting kitchen garden and food diversity at home. An intervention first of its kind in the country and well acknowledged by national level mentors.
- vi. **Pioneering development of training module on facility based management of SAM for medical personnel, staff and other front line functionaries:** The F-SAM training modules have been developed in consultation with the National Stalwarts in the field of



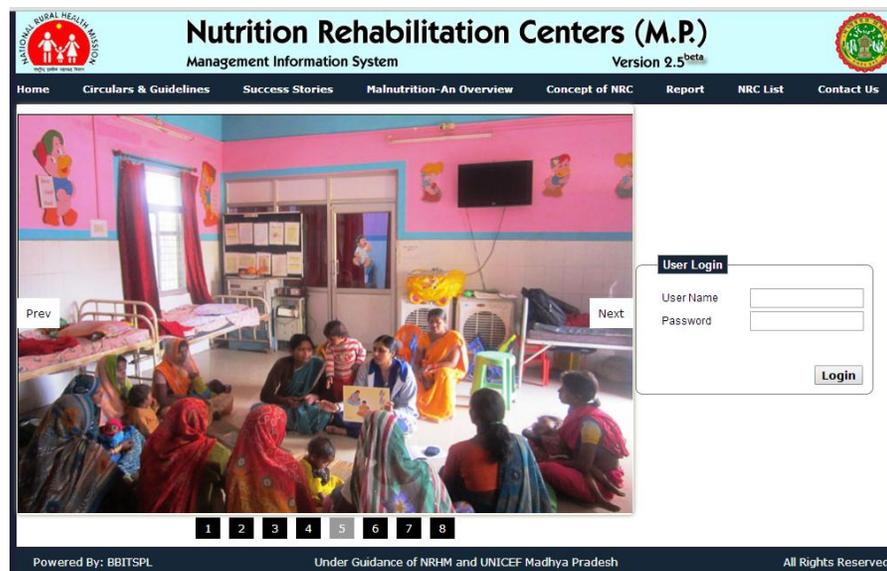
SAM management through UNICEF support in both English and Hindi. **This is one of the key initiatives pioneered by the State.** These modules are in line with the National Guidelines and can be replicated all over the country. Based on the developed module, a comprehensive 3-4 days training package have been developed for training of NRC doctors and paramedical staff. In the first phase, trainings of untrained backlog have been completed from Jan 2015.

- vii. **Strengthening convergence with line department viz DoWCD for improved identification and referral of SAM:** There is a strong convergence between NHM and ICDS in Madhya Pradesh. The frontline functionaries of ICDS i.e. AWWs have been trained with UNICEF support and provisioned with MUAC tapes for early identification and referral of SAM. **90% AWWs are trained in SAM identification using MUAC. This has helped in reducing incorrect admissions in NRC (0.2%) with a major share of referrals i.e. 65% through AWWs (2014-15).**
- viii. **Leveraging AYUSH support for identification and referral of SAM:** As a step forward for enhanced SAM referrals from the community, NHM have leveraged and capacitated AYUSH doctors recruited under *Rashtriya Baal Swasthya Karyakram* (RBSK) on early identification and referral of SAM. These doctors screen sick children on Integrated Management of Neonatal and Childhood Illnesses (IMNCI) protocols and children with SAM are referred to NRC.
- ix. **Tracking survival in children with SAM following discharge from NRC:** For the first time in the country, UNICEF in collaboration with Gajaraja Medical College, Gwalior undertook an evaluation study to assess impact of NRC programme in MP on six month extended follow-up and post one year survival tracking of NRC discharged children in 23 NRCs of eight districts viz Shivpuri, Guna, Sheopur, Balaghat, Rewa, Sagar, Bhopal, Khargone during the period Dec'2013 to Jan'2014. The key findings of the study reveal that:
- a. Most of the children admitted in NRCs in the study period were girls (54.3%), less than 2 years of age (76%) and belonged to Scheduled Tribes (54.6%).
  - b. MUAC was inversely proportionate to percent cases of reported deaths.
  - c. Children registered in AWC and regularly observed for growth monitoring had lower incidences of death.

**Thus, the study overall revealed that the NRC programme in MP, even if not completed fully, had a positive impact on survival of children. Children completing**

more stages of NRC programme had better survival rates than those who were leaving the programme earlier.

- x. **Emphasizing performance based monitoring and hand holding:** Poor performing NRCs are short listed based on output indicators and quarterly reviewed as well as re-oriented on the updated NRC protocols. **122 FDs and 31 ANMs from 150 poor performing NRCs were reviewed and re-sensitized on NRC protocols in the year 2014-15.**
- x. **Strengthening monitoring through NRC-MIS:** The tracking of admitted SAM children have been strengthened by development and scale up of dedicated software, NRC MIS.

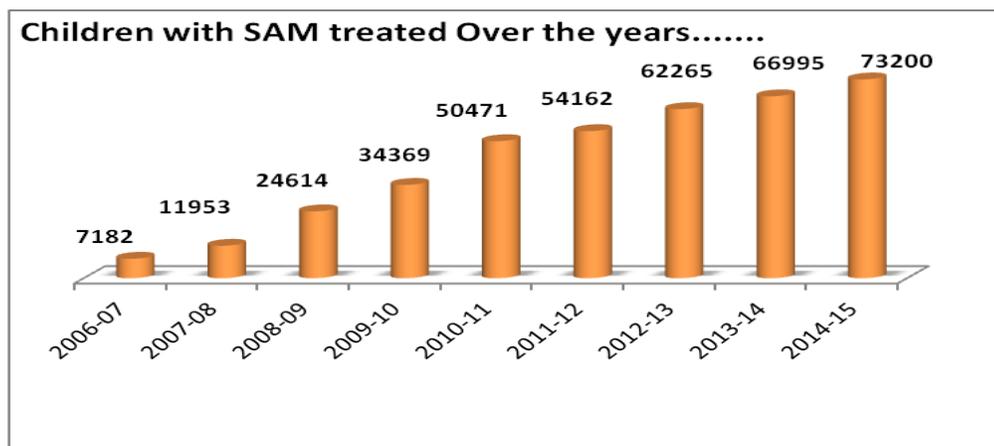


- xi. **‘Take Away Snack’ during follow-ups-** As a supportive therapy, discharged children on follow-ups are provided with a pack of 400g of ‘Take Away Snacks’ providing approximately 125Kcal per 25-30 gm per day and supplements as a top-up to the calories available from home food.

**Partner in implementing (if any):** UNICEF, Field office for MP have been the technical associate in planning, implementation and monitoring of the facility based programme for management of SAM in Madhya Pradesh.

**Outcomes:** There has been a positive impact of the facility based programme in the State with maximal number of children with SAM identified, referred and managed in NRCs. In the year 2014-15, a total of 73,200 children were managed in **314 functional NRCs**, till the month of

March, 2015. Thus, cumulatively over the years nearly 3,85,211 children with SAM have been stabilized in NRCs of Madhya Pradesh.



Here it is noteworthy that out of 1, 28,000 SAM children treated in 2014-15 in the entire country, 73200 were treated in Madhya Pradesh.

#### Output of F-SAM programme:

Whilst the number of NRCs and treated children has increased substantially in the past years, concerns on maintaining quality of care has been the foremost. Though developed for emergency conditions, benchmarks developed by the Sphere project are used globally for interpreting the functioning of various nutrition programs. Details of the output is illustrated in (Figure 1)

Outcomes of the program	OI at facility in MP (2013-14 )
Recovered	56%
Deaths	0.04%
Defaulters	17%
Medical transfers	3%
Non responders	24%
Total	100 %
Average weight gain (g/kg body weight/day)	6.8gm/kg/day
Average length of stay (days)	14.2 days

FIGURE 1. Output details of treated children at NRCs (Source : MP NRC Quarterly Progress Report)

As per the international Sphere standards, recovery rates of <50% and defaulter rate of >25% are considered to be alarming while a defaulter rate of <15% is considered acceptable.

#### 5. Evaluation (any internal/external agency evaluation):

- i) A third party impact assessment study of Nutrition Rehabilitation Centers in Madhya Pradesh was done by Public Health Foundation, India (PHFI), New Delhi in 2012-13.
- Study title: Evaluation of Nutrition Rehabilitation Centers and prospect of children after rehabilitation during the period July 2011- July 2013 in Madhya Pradesh
  - Study site: 20 NRCs of 3 districts viz Guna, Hoshangabad and Khandwa
  - Study period: Cross sectional and prospective study during the period July 2011 to July 2013
  - Key findings of cross sectional study (study of children after 1 year of discharge from NRC in July – Aug 2011) and prospective study (children discharged in July-Aug 2012 and prospective assessment for 9 months after discharge )
    - a. There was no significant difference observed between male and female children in trends of weight for height at the time of admission in NRCs.
    - b. All children showed significant weight improvement that reflected in their higher Z scores. The mean Z score improved to the moderate range  $-2.5SD$  to  $-2SD$ , which was likely due to the feeding of therapeutic diet, close medical care at NRCs as well as due to the fact that rapid weight gain occurs in children with weight for height deficit. However, after the discharge children did not seem to sustain this high rate in NRCs and there was a decline in their weight for height status in the community, wherein the decline was found to steepest in female children.
    - c. The median frequency of breastfeeding was found to be 6 times and 5 times per day in the age group of 6-11 months and 12-24 months respectively.
    - d. Food consumption pattern in admitted children of NRCs reflected that cereal was consumed by a high percentage children (92.5%) daily, wheat being the staple food. 52.8% children reported consumption of pulses which are a good source of protein. 61.9% children in the study sample reported consumption of milk and milk products in the form of plain milk, powder milk or tea. Only 4% children were found to have a daily consumption of non-vegetarian food items. 57% of the children were found to consume snacking items in form of biscuits, rusks, packaged chips, puffs and local savoury items in 24-hour dietary recall data.
    - e. Consumption frequency of main meal and snack at home showed that very few children were offered balanced meals as meals served predominantly constituted of only cereals (Rice/wheat with either daal or some thin gravy vegetables). About 25% children were not provided any more small meal or snacks between the main meals of the day at home.
    - f. All the caregivers during their stay in NRCs were informed about the care and feeding of the child like how to feed the child and procedure to be followed

during feeding. 80.6% of the caregivers were found to have been provided an advice regarding care and feeding of the children.

- g. 89% of the caregivers recalled that they were advised about personal and hygiene practices during their stay. More than 90% of the caregivers recalled the advice in NRCs and stated that they washed their hands before cooking, before feeding, after defecation and after cleaning the child.
- h. 76% of the caregivers recalled that they were advised to bring their children 4 times to the NRCs for check-up. About 95.6% of the studied children visited NRCs for their 1<sup>st</sup> follow-up, 86.5% children visited for their 2<sup>nd</sup> follow-up (drop by 9%) while for the 3<sup>rd</sup> visit 83.3% children turned up in the NRCs and for the 4<sup>th</sup> follow-up, 81% children visited.
- i. About 90% of the caregivers who visited the NRCs thrice were reminded by the frontline workers.
- j. Percentage distribution of children in NRCs revealed 38% and 47.9% of the children belonging to scheduled caste and scheduled tribe respectively.
- k. About 88% of children in NRCs were found to be referred by AWWs. And 6% specified that they were referred by ASHA. Rest 6% mentioned that they were referred by ANM or during OPD services.
- l. Anthropometric longitudinal trends in the prospective 9 month period showed improvement in mean Z scores to the moderate range of -2.5 SD. However, after the discharge the children did not seem to sustain this high weight gain on community feeding practices.

ii) In 2013-14, UNICEF in collaboration with Gajaraja Medical College, Gwalior undertook an evaluation study to assess impact of NRC programme in MP.

- Study title: Tracking survival in children with SAM following discharge from NRC through six month extended follow-up and post one year survival tracking of NRC discharged children during the period Jul 2012- Mar 2013.
- Study site: 23 NRCs of eight districts viz Shivpuri, Guna, Sheopur, Balaghat, Rewa, Sagar, Bhopal, Khargone
- Study period: Dec'2013 to Jan'2014.
- Key findings of the study:
  - a. Most of the children admitted in NRCs in the study period were girls (54.3%), less than 2 years of age (76%) and belonged to Scheduled Tribes (54.6%).
  - b. MUAC was inversely proportionate to percent cases of reported deaths.
  - c. Children registered in AWC and regularly observed for growth monitoring had lower incidences of death.

- d. Children completing more stages of NRC programme had better survival rates than those who were leaving the programme earlier.

6. **Financial management:** Under NHM GoMP, illustrative cost of 3090/- per SAM child (bifurcated as treatment cost @ Rs. 1880/- and Follow up cost @ Rs. 1210/-) is approved. This cost is inclusive of:
  - a. Stay and food for the child
  - b. Wage loss compensation to mother/caregiver of SAM child
  - c. To and fro transportation cost of the child
  - d. Monetary incentives to ICDS and Health frontline functionaries or any community motivator or guardians of SAM child for timely referral
  - e. Contingency cost as well as for follow-up cost.

Cost of free diet and diagnostics for mothers of admitted SAM children are borne through state budget. In order to ensure maximum utilization of budget provision; follow up cost is calculated only for 70% of treated children. In addition, an annual maintenance cost of Rs. 30,000/- and Rs. 50,000/- for 10 and 20 bedded NRCs respectively is provisioned for taking care of minor repair of equipments, provision of age appropriate toys, replacement of damaged essential logistics etc of these centres. Further provision for procurement of specialized medicines and diagnostics @ Rs. 500/- and 1000/- respectively is budgeted for 10 and 20 bedded NRCs. Separate budgetary provision for the dedicated HR (viz one dedicated doctor, one feeding demonstrator, one or three nurse, one or two cook and one or three care takers and one cleaning staff) is planned as per norms under NHM.

#### **7. Conclusions (for established)/ Lessons learnt (for introductory or emerging):**

**NRCs of Madhya Pradesh have focused on facility based management of SAM. This is primarily because a suitable nutrition therapy that can be used in the community is still not available in the country. However, it is evidence based that the perilous burden of malnutrition can be tackled only if a continuum of care is present which links the community based management with the facility based management of children with SAM.**

Community based management focuses on "fundamental principle that people whose lives are at risk from malnutrition should receive appropriate care and assistance and that it should be impartial and targeted solely on the basis of need. These are basic humanitarian principles. It stresses upon identifying and addressing acute malnutrition at an early phase i.e., before it's metabolic and immunological aspects become marked and requires inpatient treatment. Evidence shows that 85% of SAM children without medical complication can be managed through a community and/or home base care approach. In light of the enormous case load in the state, it is of vital importance to initiate a strong system of community based management of SAM, so that only those severely medically complicated SAM cases requiring facility based care reach to the NRCs/facilities. Such a strategy

will integrate both facility and community and would result in expected recovery rates as per the standards.

A valid impediment to the urgent operationalization of community management of SAM is the paucity of local evidence, which precludes clarity about the possible therapeutic protocols and their practical implementation. The challenges include identification of appropriate expertise and technical support which will help the local production of a product having the recommended nutritive value while ensuring bio-safety and reasonably long shelf life. Building upon a sound logistic supply chain which might be linked to the existing public distribution system can also be a restraining factor. Thereafter, initiation of community based management will mandate intensive training efforts targeting field level functionaries with strict monitoring and vigilance.

**The State is trying to build upon context specific evidence through a pilot which will provide an opportune platform for all stakeholders for collectively making concerted efforts for addressing the malnutrition menace. The lesson thereby learnt from the State's experience can be a beacon to the entire nation.**

**8. Potential for scale up:** The interventions in Nutrition Rehabilitation Centers of Madhya Pradesh are scalable across the country. Presently, there are 891 NRCs in the country of which the State constitutes the major share. The following interventions are noteworthy for replication in other states:-

- a. **Linkage of mother care and family planning services with NRC services**
- b. **Promotion of kitchen garden by provision of assorted seed packets of creepers which require minimal space in case food insecure population.**
- c. **Strengthening convergence with line department for identification and referral of SAM cases.**
- d. **Strengthening of monitoring mechanism through NRC MIS.**
- e. **Promoting IYCF practices and initiating re-lactation through SST in NRCs**
- f. **Provision of Take Away Snack during follow-ups as a strategy for improved follow-ups**
- g. **Strengthening convergence through allied departments as a holistic approach to address the problem of malnutrition.**

**9. References:**

- i. Guidelines for the inpatient treatment of severely malnourished children, WHO, 2003
- ii. Recommendations from IAP Guidelines on Hospital Based Management of Severely Malnourished Children (Adapted from the WHO Guidelines), 2006

- iii. WHO child growth standards and the identification of severe acute malnutrition in infants and children- A Joint Statement by the World Health Organization and the United Nations Children's, 2009
- iv. Operational Guidelines on Facility Based Management of Children with Severe Acute Malnutrition, MoHFW, GoI, 2011
- v. Manual for Facility Management of Severe Acute Malnourished Children in MP, NRHM- State level, 2011

**10. Contact person:**

- a. **Mr. Faiz Ahmed Kidwai, Mission Director, NHM GoMP.**  
Email id: [missiondirectormp@gmail.com](mailto:missiondirectormp@gmail.com)
- b. **Dr. Pragya Tiwari, Deputy Director, Child Health –Nutrition, NHM, GoMP.**  
Email id: [drpragyatiwari.health@gmail.com](mailto:drpragyatiwari.health@gmail.com)

**Address: National Health Mission, 8, Arera Hills, Old Jail Road, Bhopal-462004, Madhya Pradesh, India**

---