

## INNOVATIVE WAYS TO MANAGE SEVERE ACUTE MALNUTRITION IN CHILDREN LESS THAN SIX MONTHS OF AGE - A MADHYA PRADESH EXPERIENCE

### Problem Statement

A recent survey conducted by National Institute of Nutrition, Hyderabad (2010), revealed that SAM prevalence in children of Madhya Pradesh is 8.3% i.e. ~ 8.3 lakh children with SAM. While the guidelines for management of children 6-59 months with SAM exist, there is little clarity on management of malnutrition in infants <6 m (MAMI), making them more prone to death and disability. Poor birth weight, prevalence of sub-optimal breastfeeding practices, use of pre-lacteal feeds, ignorance regarding correct positioning and attachment prevent breastfed infants from obtaining requisite nutrition. Infants <6m suffering from SAM are often too weak to suckle therefore; they stimulate lesser amount of oxytocin and prolactin release, necessary for adequate galactogenesis. Paradoxically, the mother presumes she is suffering from milk insufficiency. Since these infants are also extremely weak to cry and demand feed, therefore more often than not tend to get neglected.

The felt need for addressing the burden SAM in small infants <6m, prompted the state to include Mother Milk Insufficiency "MMI" in NRC admission criteria.

### Program Description

**NRC:** MP conceptualized the NRCs to be a child friendly 10/20 bedded institution with provision of kitchen, play room for children, counselling room for mothers and toilet facilities. Considering the emotional and psycho-sensory developmental needs of such children, NRC walls are brightly painted with attractive pictures for sensory stimulation and also to reduce austerity of traditional hospital settings.

**Management of Acute Malnutrition in infants <6m:** Infants having difficulty in breastfeeding (Mother Milk Insufficiency "MMI", baby too weak/feeble to suckle effectively) are identified alongside regular screening of children less than 5 years in the community using MUAC and brought to the NRCs for treatment of SAM.

In the NRCs, prioritised identification of mothers with MMI and lactation failure is done so that prompt initiation of SST can be ensued and adequately sustained lactation can be re-established. SST is an innovative technique where a mother is supported to breastfeed while simultaneously administering supplemental milk via an oro-gastric tube (OGT) attached to the breast. The baby is allowed to latch on to the breast and the tube. The free end of the tube is then dipped into a cup/syringe filled with F100D<sup>1</sup>. The baby suckles on the breast with the tube in its mouth which causes the formula milk to flow. The mother is encouraged to breastfeed every 3 hours for at least 20 minutes and SST is initiated in the following hour i.e. after 1 hour of each breastfeed. As breast milk production increases, quantity of supplemental milk is gradually reduced. The weight gain in the infant is monitored daily. If the infant is taking the same



<sup>1</sup> F100 is diluted by adding one third extra water to make the re-constituted volume up to 135ml in place of 100ml and supplemented via infant feeding tube (size 8 or 6.). Since, wasted infants <6m require ~100 kcal/kg body weight and more of water, these infants are fed with this diluted catch-up formula feed.

quantity of F100D with incremental weight gain, it implies that the breast-milk quantity is increasing. At an incremental weight gain of 20g per day, the quantity of F100D is halved. If the weight gain in infant is maintained at 10g per day then SST is withdrawn and the mother is motivated to continue regular breastfeeding on discharge. In refractory cases showing no weight gain, SST is stopped and the infant is re-assessed for underlying complications.

This type of the feeding is the best supplemental method because it encourages latching, equates suckling with receiving milk, stimulates milk production and allows easiest transition to full breastfeeding, as sometimes infants continue to suckle even when the tube runs dry. In oedematous infants <6m with SAM, F75<sup>2</sup> is given through OGT in place of diluted F100 (F100D). After resolution of oedema, SST is continued with F100D.

The infant is discharged from NRC on attainment of following criteria

- Infant gaining weight on breast milk alone
- Absence of bipedal pitting oedema since last 10 days
- No medical complication.

After discharge from NRC, the child is brought back to the NRC at fortnightly intervals for follow-up and discharged from the program after 60 days as per the standard protocol

### Program Impact

In 2012, Infants <6m accounted for ~3% of the total admissions as against global average of 13.6 %<sup>[3]</sup>. In the SST centres of the state, 78% (mean) infants could achieve successful re-lactation through SST. The proportion of admissions discharged as cured is significantly higher in infants <6m than in infants aged 6 to 59m.

Year	2009-10		2010-11		2011-12 (till Mar 2012)	
	n	%	n	%	n	%
<b>Total Admissions in NRC</b>	<b>34369</b>	<b>-</b>	<b>50690</b>	<b>-</b>	<b>54881</b>	<b>-</b>
<b>Total No. of admitted infants &lt;6m</b>	1039	<b>3.02</b>	1192	<b>2.35</b>	1998	<b>3.60</b>
<b>No. of infants &lt;6m initiated SST</b>	303	<b>29.16</b>	509	<b>42.70</b>	632	<b>31.63</b>
<b>No. of infants &lt;6m showing weight gain with successful re-lactation through SST</b>	257	<b>84.82</b>	422	<b>82.91</b>	427	<b>67.56</b>

### Scalability

Given the high rates of SAM across Indian states, it is plausible that early interventions could prevent the escalation of SAM. This is a good model which may be adopted or adapted by the states to cover acute malnutrition in children <6 months. There are varied experiences with supplementary suckling across the centres of the state which elicit staff time, age of infants, co-existing maternal morbidity and experience of the care givers as most important factors. Success in re-lactation is most evident between infants aged 1m to 3m which declines as age increases. Categorically, younger infants have better re-lactation establishment rates than older infants.