

## Review Article

# Neonatal transitional care unit: a new concept in India

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### ABSTRACT

In this era of increasing healthcare cost, the role of economic evaluation of healthcare interventions has become increasingly important in India. Neonatal Intensive Care Unit (NICU) stays are amongst the most expensive kind of hospitalizations. The Neonatal Transitional Care Unit (NTCU), in an area where the moderately affected new-born babies are managed near the mother. This is widely prevalent in western countries; however, is still a new concept in countries like India. In current scenario in India, any baby born with issues is transferred to NICU. There are certain medical conditions in newborn babies which can be managed in NTCU instead of transferring the babies to NICU. In NTCU these babies are managed under close supervision by qualified nursing staff and pediatricians where the parents act as main carers. This helps in early mother-infant bonding and also cost reduction. This has shown to have improved neonatal outcome, lesser duration of hospital stay, improved maternal and infant bonding and overall cost reductions.

**Keywords:** Neonatal transitional care unit, NTCU, Neonatal intensive care unit, NICU, Cost

### INTRODUCTION

The field of neonatal intensive care has changed dramatically in the past 40 years. Technological and scientific advances have progressively decreased neonatal morbidity and mortality. However, the Neonatal Intensive Care Unit (NICU) environment is one of high stress, crises, and turbulent emotions for the families of premature and ill neonates.<sup>1-8</sup> Poverty, limited resources, and absence of health insurance pose further challenges in third world countries like India.

Less attention has been focused on finding the best ways to meet the psychosocial needs of the infant and family than on meeting the infant's physical needs.<sup>9,10</sup> Parents play a central role in providing for most children's emotional, physical, social, and developmental needs, yet historically they have been limited in participating in their child's care in the

NICU.<sup>11-13</sup> There is growing recognition that environment designed to make delivery of technological care efficient for staff may not be optimal for nurturing the growth and development of sick neonates or for their families.<sup>14-16</sup> Family-centered care places the needs of the individual infant in the context of the family and redefines the relationship between parents and caregivers.

Neonatal Transitional Care Unit (NTCU) is totally different from NICU. This is an area in maternity ward/maternity hospitals usually on or near postnatal ward, where neonates who need a little more nursing care and monitoring can stay with their mothers, rather than going to NICU.

Current evidence has shown that neonatal transitional care benefits the health outcomes of moderately compromised infants and mothers in terms of de-medicalisation of care, improving mother and infant

bonding and the potential for shorter length of hospitalisation.<sup>2</sup>

### **Indications for NTCU Admission**

The NTCU provides an environment to enable mothers to undertake the care of their babies who could fall in one of the below categories:<sup>17,18</sup>

- *Prematurity:* Gestational age 34-37 weeks who are establishing breast feeding
- *Low birth weight:* 1.8-2.5 kg
- *Feeding:* Breast feeding and/or nasogastric tube feeds of expressed breast milk or formula
- *Jaundice:* Requiring phototherapy (PT) usually single surface PT
- *Monitoring:* Monitoring needed for some newborns for blood sugar/infection screen/thermoregulation/respiration/heart rate
- *Antibiotics:* Babies born with neonatal infection risk factors requiring short course of antibiotics
- *Transient hypoglycaemia:* Babies with hypoglycaemia when it is believed there is no underlying serious pathology
- *Mild respiratory distress:* Babies who have mild respiratory disease who do not require oxygen supplementation
- *Substance abuse:* Babies of mothers who are known substance abusers
- *Social factors:* Unaccompanied babies e.g. babies for adoption, babies of mothers who are on intensive care; providing an appropriate level of observation can be maintained
- Babies with cleft lip and palate

In the current scenario, the neonates who fall in the above-mentioned categories and whose condition is not so severe are still transferred to NICU, by pediatricians, as there are no well-defined facilities available, for such babies to be managed on the postnatal ward. In India, as of now there is no concept of NTCU for care of such newborns. These babies who are not well enough to be looked after on regular postnatal wards, can be definitely looked after in NTCU, maintaining the strong advantages in their parents carrying out the bulk of their care with support from doctor and nursing staff.<sup>18</sup>

In NTCU environment, with little support from the pediatrician and nursing staff along with the parents who act as main carers, these newborns can tide over the crisis period without the need for being admitted to the NICU. However during the course of close monitoring, these babies can be transferred to NICU later if the condition warrants.

The NTCU environment makes learning comfortable for parents, allows parental care-giver mastery to occur and helps in emotional bonding. Favourable clinical outcomes concurrent with decreased length of hospital stays and readmission rates have been demonstrated.<sup>19</sup>

### **Designing a neonatal transitional care unit (NTCU)**

#### *Location and logistics*

The NTCU could be part of maternity hospital in a well-demarcated area of postnatal ward or other specifically designed rooms like special rooms to take care of such newborn babies. This area should be slightly separated from normal postnatal ward to keep a check on infection. In this facility, mother/parents can look after their own infants with some supervision from trained neonatal unit staff. The neonatal bassinet sometimes with a radiant warmer should be placed besides mother's bedside. There should be provision for oxygen pipeline source or oxygen gas cylinders. The newborn resuscitation kit, emergency pediatric drugs, suction equipment and intravenous line setup equipment like cannula extension set should be kept handy. The neonatal infusion pumps and monitors could also be present in the NTCU if available.

#### *Manpower*

There should be dedicated and trained neonatal staff that could monitor these babies little more than the babies in normal postnatal wards. The baby should be recognised as a transitional care baby at the earliest opportunity by pediatrician. Residential medical officer should be present to monitor the babies and ensure that the babies are well looked after by the allied staff. There should be treating pediatrician who will examine the babies twice a day or more if required.

#### *Admission to NTCU*

Immediately after birth, the baby should be allowed skin-to-skin contact with the mother if health of both permits. The baby along with mother should be transferred to NTCU in skin-to-skin contact or in Kanmed Warming Mattress.

#### *Monitoring and feeding*

On admission to the NTCU, the baby should continue to have observations performed at least 4 hourly by the nursing staff and these be documented in the notes. The baby should be monitored for temperature (maintaining thermoregulation), respiratory rate, heart rate and pulse oximetry (oxygen saturation) if needed. The baby should be further monitored for jaundice, blood sugar and passage of urine and stool.

The feeding should commence within first hour. If breast feeding, hand expression should be commenced within the first hour and possibly hourly for the next few hours if the mother is well and able to do so. This is to stimulate mother's milk supply and have expressed colostrum available for baby.<sup>17</sup>

If a breastfeeding baby is unable to breastfeed the aim is to encourage the mother to hand express at least 8 to 10 times in 24 hours including at night. Babies at risk of hypoglycemia should be fed at least 3 hourly and breast fed babies should also receive small amounts of hand expressed colostrum more frequently than this. If there is no colostrum/breast milk available, the baby at risk of hypoglycemia should receive 7-10 ml of formula. If blood sugar remains stable then this amount is acceptable for 3 hourly feeds during the first 24 hours. If the infant cannot obtain adequate colostrum or milk directly from the breast then supplementation may be required. The best supplementation is expressed breast milk but if unavailable then formula should be used. If the baby is sleepy the feed may need to be given by a nasogastric tube or a cup. Colostrum must be given first. It is acceptable to give frequent feeds of the available hand expressed colostrum.<sup>17</sup>

#### *Daily clinical examination*

All transitional care babies should have a set of medical notes. A pediatrician should review each baby daily and discuss the findings with the mother and record these in the notes. Daily examinations, care plans, evaluations and progress records to be recorded in the notes.

#### *Management in NTCU*

Babies showing any changes in vitals or other findings should be examined by pediatrician and further management decisions can be taken, after sending necessary investigations. Broad spectrum antibiotics to cover common early neonatal sepsis and phototherapy to treat jaundice to be started as and when needed. Special precaution to maintain aseptic measures like diligent hand washing and minimum handling of the baby is taken. Like any normal new-born cord, eye and skin care measures should be followed.

#### *Communication*

The doctors and nursing staff need to keep the parents well informed about the management steps followed for their newborn. The family needs to be involved into the decision making in the best interest of the new born. They should be well aware about the management being provided in the NTCU with likely possibility that the baby may need a transfer to NICU if condition is not stabilised and needs further escalation.

#### *Progress*

Most of these moderately affected babies do respond well to the treatment plan of NTCU and show improvement in their condition. Usually the number of days of NTCU admission can last just for couple of days, rarely for week or two, before they are stable enough to be discharged or shifted to the normal postnatal ward.

#### **CONCLUSION**

Some newborn babies who would otherwise require admission to NICU setup can be treated in maternity hospitals by setting up these specialised NTCUs. This effective intervention will help in overall cost reductions and good neonatal outcome. Setting up more and more NTCUs is the need of an hour in country like India where the healthcare cost is rapidly increasing in private setups. This kind of setup could also possibly reduce the cost burden in government hospitals where there is shortage of NICU beds. The practice of NTCU will effectively lead to a good neonatal outcome, without the need to transfer the newborn babies to the NICU, thereby effectively reducing the cost implications on the parents and the system as a whole. This kind of environment aims to avoid unnecessary separation of mothers and babies and help in emotional bonding. This move has been well appreciated in the western countries and would receive encouragement by obstetricians and pediatricians in India, to jointly participate in care of newborn babies by setting up more and more NTCUs on the postnatal wards.

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