

Action Plan for the Strengthening of the Existing Newborn Care Corner and Newborn Stabilization Unit

By

Pranamika Sarmah

*Dissertation submitted in partial fulfillment of the requirements of the degree
MBA Hospital and Health Management*

Academic year, 2018-2020



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CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled ‘Action Plan for strengthening of the existing newborn care corner and newborn stabilization unit’ and submitted by Dr. Pranamika Sarmah, Enrollment No. 0800 under the supervision of Dr. Seema Mehta for award of MBA in Hospital and Health Management of the University carried out during the period from February to May 2020 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other institute or other similar institution of higher learning.



Signature

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Sincerely,



(Dr. Pranamika Sarmah)

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Abbreviations

ANC	Ante Natal Care
ANM	Auxiliary Nurse Midwife
ASHA	Accredited Social Health Activist
AWC	Anganwadi Centre
BMW	Biomedical Waste
BP	Blood Pressure
BSU	Blood Storage Unit
CBR	Crude Birth Rate
CFL	Compact Fluorescent Lamp
CH	Child Health
CHC	Community Health Centre
CMO	Chief Medical Officer
CS	Civil Surgeon
CSSD	Central Sterile Supply Department
DH	District Hospital
DP	Delivery Point
EDD	Expected Date of Delivery
ENBC	Essential Newborn Care
FIMNCI	Facility based Integrated Management of Neonatal and Childhood Illnesses
FRU	First Referral Unit
GoI	Government of India
Hb	Hemoglobin
HBNC	Home Based Newborn Care
HMIS	Health Management Information System
HR	Human Resource

ICU	Intensive Care Unit
IEC	Information, Education and Communication
IFA	Iron and Folic Acid
IMNCI	Integrated Management of Neonatal and Childhood Illnesses
IMR	Infant Mortality Rate
IPD	Inpatient Department
IU	International Unit
IV	Intra Venous
JSSK	Janani Shishu Suraksha Karyakram
JSY	Janani Suraksha Yojana
KMC	Kangaroo Mother Care
L1, L2, L3	Level 1, Level 2, Level 3
LBW	Low Birth Weight
LR	Labour Room
LT	Lab Technician
MDG	Millennium Development Goal
MH	Maternal Health
MMR	Maternal Mortality Ratio
MNH	Maternal and Neonatal Health
MO	Medical Officer
MoHFW	Ministry of Health and Family Welfare
NBCC	Newborn Care Corner
NBSU	New Born Stabilization Unit
ND	Normal Delivery
PW	Pregnant woman
PPH	Post-partum Haemorrhage
RCH	Reproductive and Child Health Programme
RDS	Respiratory Distress Syndrome
RMNCH	Reproductive Maternal Newborn and Child Health
SBA	Skilled Birth Attendant
SC	Sub Centre

Chapter I

1. Introduction

1.1 Background of the study

The first two years of a child is the most crucial phase for his growth and development. The first-year accounts for the proper growth and development of the physical as well as a mental health condition. It is, therefore, necessary to provide extreme care for the child in these 1000 days. Moreover, it is also said that “Today’s children are the future for tomorrow.” The future of a good nation is in the hands of a healthy population. India is fighting to reduce neonatal mortality rate, Infant mortality rate, U-5 mortality rate and malnutrition. Every day thousands of children in the age groups between 0-5 years die, in which half of them could be prevented with proper treatment. Even though India managed to reduce the IMR, NMR, U-5MR to a certain extent yet there is still the need to flatten the curve furthermore. The mortality rates in India vary from state to state and regions to regions. More focus should be given in the states with high indicators such as Bihar and UP.

It is estimated that 26.9M babies are born every year and out of which 7000 babies die every day and 9,40,000 babies die within one month. The IMR of India, as of 2018 was 32, whereas in Uttar Pradesh it was 43%, quite higher than the India aggregate. There has been a decrease in Infant Mortality Rate from 64.8 estimated deaths per 1000 births in 1990 to 32 deaths per 1000 live births in 2018 (SRS,2018). The neonatal period of newborns is just 28 days, still, the NMR contributes to about two-thirds of the IMR and half of the U-5 mortality rates. The current neonatal mortality rate of India is 23.

A major portion of the Neonatal deaths can be prevented in the early days of the neonatal period with some basic care. The most common causes of the Neonatal Deaths are Infections, Birth Asphyxia, Prematurity, Low Birthweight and Poor Suckling. Proper counseling upon birth on PNC, Home Based Newborn Care among others are important factors that could reduce these Neonatal deaths to a larger extent. Some interventions such as newborn Resuscitation, breastfeeding of the baby, management and prevention of Hypothermia and Kangaroo Mother care can help in the reduction of Neonatal deaths further.

Talking about the facility front, the Government Program under National Health Mission Titled “Facility Based Newborn Care (FBNC)” is one of the major key interventions along with RMNCH+A aims to improve the neonatal based indicators in the country. In order to further strengthen the system, New Born Care Corners (NBCC) and New Born Stabilization Unit’s (NBSU) in all delivery points and Community Centers respectively have been established and First Referral Units for better management as well as to stabilize the serious and the sick newborns before they are being referred to higher facility.

The National Health Mission launched in 2005, emphasized the Newborn Care in order to improve the Child Health of the country. There is a continuous focus of the Government on the institutional delivery of the child, in order to detect sick and weak newborns and improve newborn care as well as maternal care. “Janani Suraksha Yojana” and “Janani Sishu Suraksha Yojana” are the two flagship programs of the Government which aims to improve the above-mentioned points. This two-flagship program includes specific care to the newborn as well as the mother. The program provides monetary benefits to the mother to increase institutional delivery.

The roll-out of Home-Based Newborn Care by the Health department has increased the field level contact with the newborn and the mother. This includes the Home Visit being done by the ASHA at the field level with some formats to better understand the field reality. The ASHA visits the institutional newborn baby at an interval of 3rd, 7th, 14th, 21st, 28th, 42nd Day while in case of the Home delivery newborn baby, the ASHA visits the baby on the 1st, 3rd, 7th, 14th, 21st, 28th and 42nd day. Similar home visits to the newborn are being done also by AWW from the ICDS side. This has resulted in the identification and referring to the sick newborn from the field level to the referral hospital, where the care could be provided at the facility level. The home visits done by the FLW's are helping in saving the lives of thousands of babies each year.

Main causes of neonatal mortality across the globe include Preterm (40.8%), Intra Partum Complications (27%), Congenital Disorder (10.6%), Sepsis (8%), Pneumonia (4.8%), Tetanus (1%), others (7.3%) and Diarrhea (0.3%) (Oza et al, 2015). In the context of India, the most prevalent causes include Infection (Sepsis) 32.8%, Premature Delivery (16.8%) and Birth Asphyxia (23%) (SNCU Tool, IPGMER Kolkata) (Rakholia et al, 2014) (Saziya et al, 2016). Almost 3 million babies can be saved by the Facility based newborn care as well as Home-based newborn care. With proper executions of the interventions, neonatal deaths can be reduced to a large extend.

The district hospitals are provided with facility-based newborn care such as Special Newborn Care Corners so as to reduce the neonatal mortality rates of India. Also, the establishment of Newborn Care Corners (NBCC) and Newborn Stabilization Units (NBSU) is truly a remarkable move to improve newborn health care services in India. Clinical services play as the backbone of the health care system. Therefore, by strengthening the clinical services as a comprehensive intervention in the health care system we can reduce neonatal deaths in India.

In Uttar Pradesh, according to the SRS data, the Infant Mortality Rate in 2000 was 83, while in 2008 it was 67 and in 2016 it was 43. There is a decline of around 50% in the Infant mortality rate between the period of 2000-2016, yet there is a need of lot to be done. According to a 2018 UNICEF Report, approx. 850 children below 5 years of age die every day. In the 28 days span of the neonatal period, during the first week, 72.9% of neonatal deaths occur, while during the second, third and fourth week 13.5% of deaths occur. A lot of lives can be saved in the first week with proper prevention and treatment.

1.1.1 Prayagraj District



Fig. 1.1.1 Demographic Map of Prayagraj District

Prayagraj is one of the largest and most populous districts in Uttar Pradesh.

Population – 65,00,000

Population density - 1086 per square km

Sub-divisions - 8

Blocks - 20

Village - 3178

District Hospitals - 5

FRU - 9

CHC - 20

Total delivery points - 137

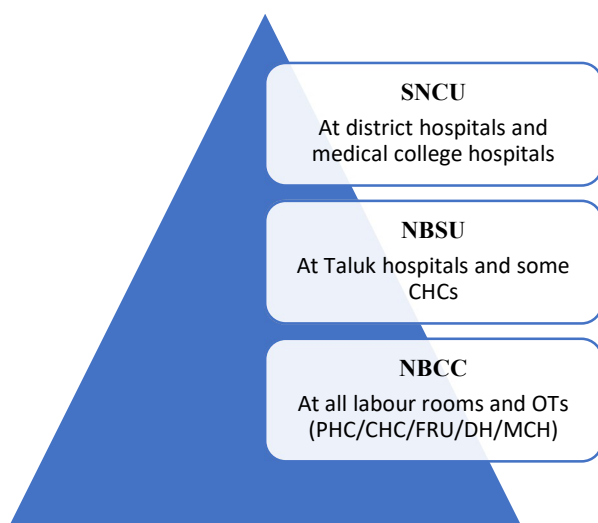
NBSU - 3

SNCU – 1

1.1.2 NBCC and NBSU

National Rural Health Mission and RMNCH+A initiated the Facility-Based Newborn Care (FBNC) program to improve the health status of the newborn. Various efforts are made to provide different levels of care for the newborn at the health care facilities. New Born Care Corners are being attached to all the delivery points so that essential newborn care can be given. Before referring to the higher centers, newborn conditions can be managed and the serious and the sick newborn can be stabilized in New Born Stabilization Units (NBSUs) available in all Community Health Centres as well as the First Referral Units.

Three Tier structure of Facility Based Newborn Care



Newborn Stabilization Unit (NBSU)

NBSU is a facility that lies within or near to the maternity ward where sick and low birth weight babies are looked after for short periods. Neonatal stabilizing units need to be attached in all FRUs/CHCs.

Newborn Care corner (NBCC)

NBCC is a mandatory unit for all health facilities with delivery points. It is a place where immediate care of the newborn is received.

Newborn Care Corner	Stabilization Unit
Care at Birth 1. Prevention of infection 2. Provision of warmth 3. Resuscitation 4. Early Initiation of breastfeeding 5. Weighing of the newborn	Care at Birth 1. Prevention of infection 2. Provision of warmth 3. Resuscitation 4. Early Initiation of breastfeeding 5. Weighing of the newborn
Care of Normal newborn 1. Breastfeeding/feeding support	Care of normal newborn 1. Breastfeeding/feeding support
Care of sick newborn 1. Identification and prompt referral of ‘at risk’ and ‘sick newborn’ 2. Immunization Services	Care of sick newborn 1. Management of low birth weight infants >_1800 grams weight with other complication 2. Phototherapy for newborns with hyper-bilirubinemia 3. Management of newborn sepsis 4. Stabilization and referral of sick newborns and those with very low birth weight (rooming-in) 5. Immunization Services

Fig. 1.1.2: Expected services to be provided in NBCC and NBSU

Equipment and Accessories needed at NBCC	
1. Baby Tray 3. Pediatric Stethoscope 5. Baby Scale 7. Radiant Warmer 9. Self-inflating bad and mask-neonatal size (0 and 1) 11. Oxygen Hood (Neonatal) 13. Laryngoscope and Endotracheal intubation tubes 15. Two Set of Pencil Cell Batteries (One is spare)	2. Mucus extractor with suction tube and a foot-operated suction machine NG tubes 4. Blankets 6. Two dean and dry towels 8. Feeding tubes 10. Empty vials for collecting blood 12. Alcohol hand rub 14. HI.Dysterile gloves

Fig. 1.1.3: Equipment and accessories needed at NBCC

Sites	NBCC	NBSU
HR	• One Doctor • One nurse	• One Doctor • 4 SN
Training	• NSK	• NSSK • F- IMNCI
Space	• 20- 30sq. feet • 1 radiant warmer (bed)	• 200sq. feet (40-50 sq. feet per Bed) • 4 radiant warmer (bed)
Power Supply	• 24X7	• 24X7
Water Supply	• 24X7	• 24X7

Fig. 1.1.4: HR, Training and Supplies

1.2. Rationale

Infant mortality rate (IMR) in India consistently declined from 50/1000 live birth in 2009 to 32/1000 live birth in 2018. There is moderate advancement in NMR decrease. But the reduction of death in the first week of life has the least progress. The major causes of deaths include infections, birth asphyxia, and prematurity or low birth weight (LBW). A comprehensive Interventions of resuscitation, breastfeeding, prevention and management of hypothermia and kangaroo mother care (KMC) can reduce NMR by more than half. In order to reduce IMR and IMR significantly, emphasis should be given on newborn care and survival and more focus on premature/low birth weights and sick newborns at various levels right from birth and throughout the neonatal period. To address this issue of higher neonatal and early neonatal mortality, facility-based newborn care services at health facilities have been underscored. National Rural Health Mission and RMNCH+A initiated the Facility-Based Newborn Care (FBNC) program to improve the health status of the newborn. Various efforts are made to provide different levels of care for the newborn at the health care facilities New Born Care Corners are being attached at all the delivery points so that essential newborn care can be given. Before referring to the higher centers, newborn conditions can be managed and the serious and the sick newborn can be stabilized in New Born Stabilization Units (NBSUs) available in all Community Health Centres as well as the First Referral Units.

Numerous projects/Schemes had been begun uniquely for infants by Government, for example, NSSK, JSSY, F-IMNCI, FBNC. Janani and Bal Suraksha Yojana to drop down the newborn death rate. But there has been an insignificant improvement to lessen IMR and NMR. This study aims to ensure that the newborn care in Prayagraj district follow guidelines and strengthen the NBCC and NBSU to reduce the mortality.

Chapter 2

2. Review of Literature

With the birth of 25 million children each year, India accounts for nearly one-fifth of the world's annual childbirths. Every minute one of those babies dies. "About 46 percent of every single maternal death and 40 percent of neonatal death occur during labor or the first 24 hours after birth. Pre-maturity (35 percent), neonatal infection (33 percent), birth asphyxia (20 percent) and congenital malformations (9 percent) are among the significant reasons for newborn deaths. "Yet, death during and after delivery is largely preventable by enabling access to skilled birth attendants and emergency obstetric care. In the post-new-born period, survival rates additionally rise sharply with early and exclusive breastfeeding and immunization against measles and other vaccine-preventable diseases. "About 3.5 million babies in India are born too early, 1.7 million babies are born with birth defects, and one million new-born are discharged each year from Special New-born Care Units (SNCUs). These new-born remain at high risk of death, stunting, and developmental delay. "India has made progress in the reduction of newborn mortality with its share of the global newborn mortality burden coming down from one-third of newborn deaths in 1990 to below a quarter of total newborn deaths today. There has been nearly one million fewer newborn deaths and 10,000 fewer maternal deaths each month in India as in 2017 as compared to 2000. This is possible due to the result of more and more women are now opting for health facility delivery and deliveries being done at health facilities.

On 18th Sep "2014, India New-born Action Plan was launched in response to global new-born action plan".

Global Strategy for Women's and Child Health eliminated preventable newborn and stillbirths and India New Born Action Plan (INAP) was launched to advance the same. INAP has six pillars which are: 1) Preconception and antenatal care, 2) Care during labour and childbirth 3) Immediate newborn care 4) Care of healthy newborn 5) Care of small and sick newborn and 6) Care beyond newborn survival and aims to attain Neonatal Mortality Rate to a single digit by 2030, which is 5 years ahead of the Global Plan. INAP serves as a framework for state/regions to develop their own action plan with measurable indicators. (Ministry of Health and Family Welfare, 2014)

The newborn stabilizing unit should be located within or close to the maternity ward with a space of approximately 40-50sq ft. where four radiant warmers can be kept. In case if it is not a part of delivery room, there should be provision of handwashing and containment of infection control should be made available . One dedicated nurse should be available in the facility round the clock with one Medical Officer where both underwent 3-4days of skill-based training. For New-born Care Corner floor area should be 20-39sq ft. within the labor room with radiant warmer and resuscitation kit with proper power connection for the radiant warmer. Oxygen source is desirable but not essential. Only one ANM is made desirable but should be trained in providing essential care at birth and resuscitation. (UNICEF)

The authors highlighted the improvement in functioning of NBCCs, in terms of provision of vehicles for referral facilities, fulfilling the gaps of staff nurse, availability and functionality of equipments such as resuscitation and monitoring equipment. (Harsha M Solanki, Disha P Mehta, Manindra P Singh, 2019)

Neonatal jaundice, birth asphyxia and sepsis were the most common causes of morbidity. Most of the morbidities and mortalities can be reduced by developing proper infrastructure and training the staff for effective neonatal resuscitation, hand hygiene to reduce sepsis and effective implementation of IMNCI for early diagnosis of danger signs.(Rakesh Kumar, Rajlaxmi Mundhra, Anand Jain, Suchitra Jain, International Journal of Research in Medical Sciences, 2019)

Even though NBCCs were available in every district hospital, yet not all of them were equipped to handle emergencies resulting in unnecessary referral to SCNUs. This unnecessary referral services led to extra burden to SNCU. (Sutapa Bandyopadhyay Neogi, Sumit Malhotra, Sanjay Zodpey and Pavitra Mohan)

The health care providers need to practise their acquired skills in resuscitation which can be done only with the availability of functional bags and masks. They should also know the proper handling of the necessary equipment in order to realize the potential gains that can be achieved through provision of ENC. ENC and neonatal resuscitation are the proven interventions for reducing NMR and still birth rate.(Sumit Malhotra, Sanjay P. Zodpey, Aishwarya L. Vidyasagar, Kavya Sharma, Sunil S. Raj, Sutapa B. Neogi, Garima Pathak, Abhay Saraf, 2014)

The study that was conducted in Bihar, found that there has been shortages in terms of skilled human resources, supply essential drugs and consumables, functionality of equipment, availability and adherence to SOPs and recording and reporting of the data. It was also mentioned in the literature that a similar study of quality assurance model found out that there was infrastructure gaps of 63% in majority of the districts. The study also reported that 25% of the facilities had NBCCs located outside the labor rooms. Whereas the current study reported that the proportion has reduced to 35.1%, which shows that there is a positive change in the NBCCs provisions. (Monika Chauhan, Jyoti Sharma, Preeti Negandhi, Siddharth Reddy, Ghanashyam Sethy, Sutapa B Neogi, 2016)

“Neonatal resuscitation contributes to a better care of newly born infants. Many important issues concerning neonatal resuscitation, have to be answered in the future, such as the effect of endotracheal suction in a meconium-stained, non-vigorous newborn, the outcome of preterm infants treated with occlusive plastic wrapping, the effect of inflation breaths with positive end-expiratory pressure on postnatal adaptation for newborns, the percentage and timing of additional oxygen in newborns not responding initially, the use of continuous positive airway pressure during neonatal resuscitation, the most efficacious intravenous dose of epinephrine in

newborns with an asystole and the outcome of infants treated with hypothermia. In addition, implementation and training of the new guidelines in Neonatal Life Support Programmes will further contribute to the improvement in the care of newborn infants.” (Indu A Chadha, Indian J Anaesth. 2010 Sep-Oct; 54(5): 428–438.)

Obstetric care is most important intervention in reducing intrapartum-related neonatal deaths, preterm birth and intrapartum stillbirths which can be achieved with new born care and resuscitation.(Anne CC Lee , Simon Cousens , Stephen N Wall , Susan Niermeyer , Gary L Darmstadt , Waldemar A Carlo, William J Keenan , Zulfiqar A Bhutta , Christopher Gill , Joy E Lawn, Lee et al. BMC Public Health 2011, 11(Suppl 3):S12)

During the treatment of new born who is in need of aggressive resuscitation, emphasize should be given in optimization of ventilation. Programs such as “Helping Babies Breathe” and simple interventions such as cord clamping, drying and stimulating newborns and bag-mask ventilation along with other technological advancements could help to reduce the mortality and morbidity of newborns.(Payam Vali , Bobby Mathew and Satyan Lakshminrusimha, 2015)

Chapter 3

3. Methodology

3.1 RESEARCH QUESTION

What gaps are to be improved to strengthen existing newborn care corners and Newborn Stabilization Units of Prayagraj district?

3.2. OBJECTIVES

To assess the status of New-born care corner and New-born stabilization unit.

3.2.1 Specific Objective

1. To assess the status of infrastructure of NBCC and NBSU
2. To assess the status of functionality of key equipment of NBCC and NBSU
3. To assess the status of HR availability and training of NBCC and NBSU
4. To assess the availability of drugs and consumables of NBSU
5. To assess the status of admission of NBCC and NBSU
6. To assess the status of morbidity and mortality type.

3.3 Study area

Existing new-born care corners and New-born Stabilization Units of Prayagraj district.

3.4 Study Type

Quantitative study

3.5 Study design

Cross-sectional study

3.6 Study period

60 days

3.7 Type of Sampling

Convenience sampling

3.8 Sample Size

21 NBCC, 3 NBSU of Prayagraj district

3.9 Study Tool

Structured observational schedule

3.10 Data Collection

Primary data has been collected using the NBCC and NBSU (NHM, Govt, of India) tool and UPHMIS data.

3.11 Plan of analysis

The analysis has been done using the NBCC and NBSU tool and data analysis is done using MS excel.

3.13 Study Area

Study was carried out in Existing new-born care corners and New-born Stabilization Units of Prayagraj district

Table 3.1 – Name of the facilities and their newborn services

SI No.	Facility Name	Level	Newborn services
1	CHC Baheria	CHC	NBCC
2	CHC Chaka	CHC	NBCC
3	CHC Dhanupur	CHC	NBCC
4	CHC Handiya	FRU	NBCC
5	CHC Holagarh	CHC	NBCC
6	CHC Jasra	FRU	NBSU, NBCC
7	CHC Karchana	FRU	NBCC
8	CHC Kaundhiara	CHC	NBCC
9	CHC Kaurihar	FRU	NBCC
10	CHC Koraon	CHC	NBCC
11	CHC Kotwa	CHC	NBCC
12	CHC Manda	CHC	NBCC
13	CHC Mauima	CHC	NBCC
14	CHC Meja	CHC	NBSU, NBCC
15	CHC Phoolpur	FRU	NBCC
16	CHC Pratappur	CHC	NBCC
17	CHC Ramnagar	CHC	NBCC
18	CHC Saidabad	CHC	NBCC
19	CHC Shankargar	CHC	NBCC
20	CHC Soraon	FRU	NBSU, NBCC
21	District Women Hospital	DH/FRU	NBCC/SNCU

Chapter 4

ANALYSIS and RESULTS NBSU

4.1 Assessment of Human Recourses at NBSU

4.1.1 Assessment of availability of Pediatrician

As per standard each NBSU must have 1 pediatrician. It was observed, Pediatrician were available at FRU Phoolpur and FRU Jasra. Whereas, FRU Soraon has no Pediatrician availability at the facility.

Table 4.1.1 : Represents availability of Pediatrician, as per standard

NBSU Name	No of availability Pediatrician	Gaps
FRU Soraon	0	1
FRU Phoolpur	1	0
FRU Jasra	1	0

4.1.2 Assessment of availability of Staff Nurses

As per standard each NBSU must have 4 Staff Nurse. A gap of 1 staff Nurse was observed at Soraon and Phoolpur NBSU, out of 4 only 3 Staff Nurses were available. And there was no Staff Nurse available at Jarsa NBSU.

Table 4.1.2 : Represents availability of staff Nurse, as per standard.

NBSU Name	No of availability of Staff Nurse	Gaps
Soraon	3	1
Phoolpur	3	1
Jasra	0	4

4.2 Assessment of Training Status of NBSU Staff

4.2.1 Assessment of F-IMNCI trained staff

As per standard all staff must be trained.

Table 4.2.1 : F-IMNCI training status.

NBSU Name	F-IMNCI Trained	
	Doctors	Staff Nurses
Soraon	1	0
Phoolpur	0	0
Jasra	0	0

Table 4.2.2: RRTC training status.

As per standard all staff must be trained.

NBSU Name	FBNC/RRTC Trained	
	Doctors	Staff Nurses
Soraon	0	0
Phoolpur	0	0
Jasra	0	0

4.3 Assessment of Infrastructures of NBSU

4.3.1 Assessment of NBSU Infrastructures

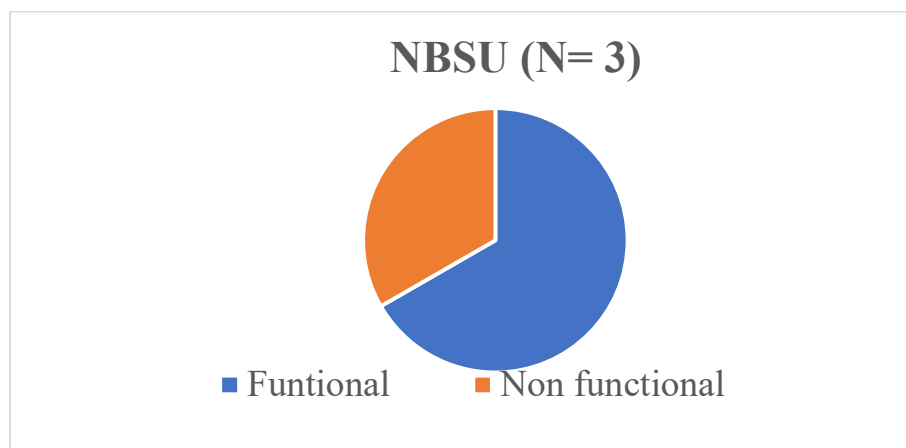


Fig. 4.3.1: Represents functionality status of NBSU (Soraon, Phoolpur, Jasra)

Table 4.3.1:Represents status of total floor area and availability of beds of NBSU as per standards.

NBSU Name	Total floor area (in sq. ft) < 200	Total floor area (in sq. ft) ≥ 200	Beds <4	Beds ≥4
Soraon	√	×	√	×
Phoolpur	√	×	√	×
Jasra	×	√	√	×

Table 4.3.2: Represents status of infrastructure of NBSU as per standards.

NBSU Name	INFRASTRUCTURE		
	NBSU located close to postnatal ward and labour room	walled with washable tiles up to 7 feet	Hand washing facilities (elbow operated tap +running water + soap present)
Soraon	√	√	Absent
Phoolpur	√	√	√
Jasra	√	√	√

The data says Hand washing facilities (elbow operated tap +running water + soap present) was absent only at Soraon NBSU.

Table 4.3.3: Represents status of 24*7 water supply, 24*7 electrical supply and power back up as standards.

NBSU Name	24*7 water supply			24*7 electrical supply			Power back Up Available at facility but not in Unit
	Not available	Available at facility but not in Unit	Available in unit	Not available	Available at facility but not in Unit	Available in unit	
Soraon	×	√	×	×	√	×	√
Phoolpur	×	×	√	×	×	√	×
Jasra	×	×	√	×	×	√	√

4.4 Assessment of Functionality of equipment

4.4.1 Assessment of availability of Radiant warmer & Phototherapy

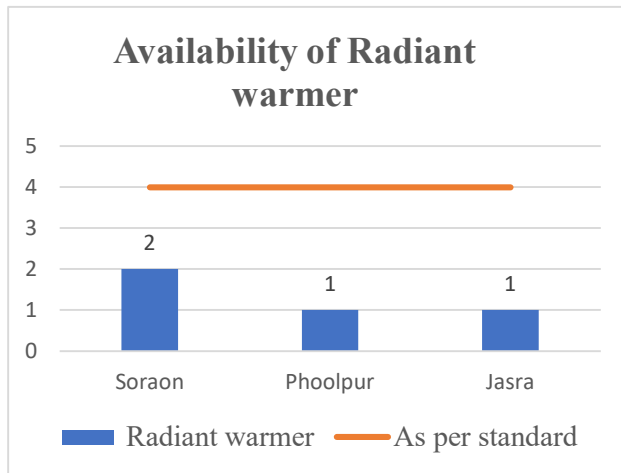


Fig. 4.4.1.1

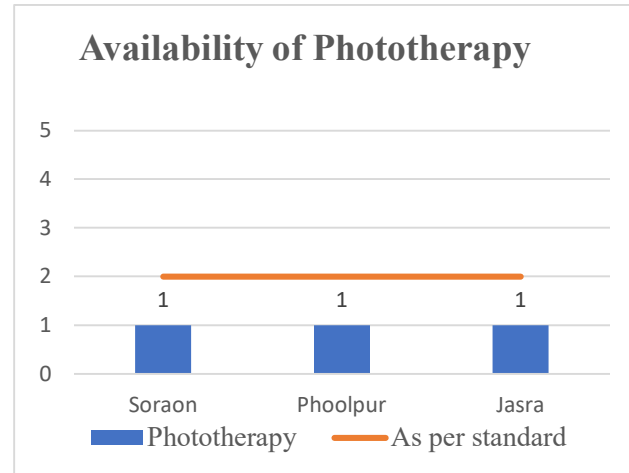


Fig. 4.4.1.2

Fig.4.4.1.1 & Fig.4.4.1.2: Represent the status of availability of Radiant Warmer and Phototherapy. As per data the standards were not meet in any facility. Out 4 only 2 Radiant warmers were available at Soraon, 1 each at PHoolpur and Jasra. Whereas, out of 2 only 1 Phototherapy were available at Soraon, Phoolpur and Jasra.

4.4.2 Assessment of functionality of Radiant warmer & Phototherapy

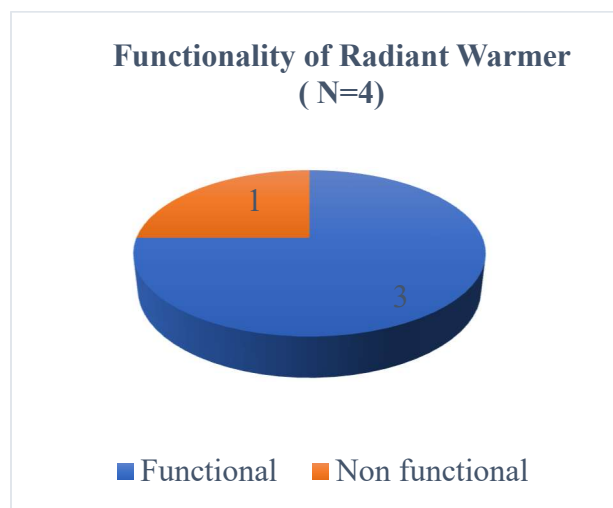


Fig.4.4.2.1

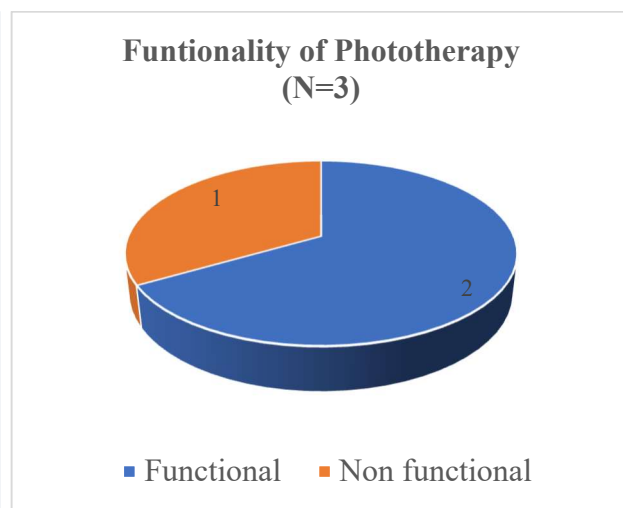


Fig.4.4.2.2

Figure 4.4.2.1 & Fig.4.4.2.2: Represents the status of Functionality of Radiant Warmer & Phototherapy. The data says, out of 4 Radiant Warmer, 3 were functional, and out of 3 Phototherapy 2 were functional.

4.4.3 Assessment of availability of equipment

Table 4.4.3: Represents availability of different equipment

Equipment	NBSU Soraon	NBSU Phoolpur	NBSU Jasra
Neonatal Bag & Mask (0 &1 size)	2	1	1
Laryngoscope	0	0	1
Endotracheal Tubes 3mm	1	1	0
Electronic Weighing machine	1	1	1
Foot operated/ Mechanical suction machine	0	1	1
Digital Thermometer	0	1	0
Stethoscope with neonatal chest piece	1	0	0
Pulse Oximeter	1	0	1
Glucometer with strips	0	1	0

4.5 Assessment of Oxygen supply

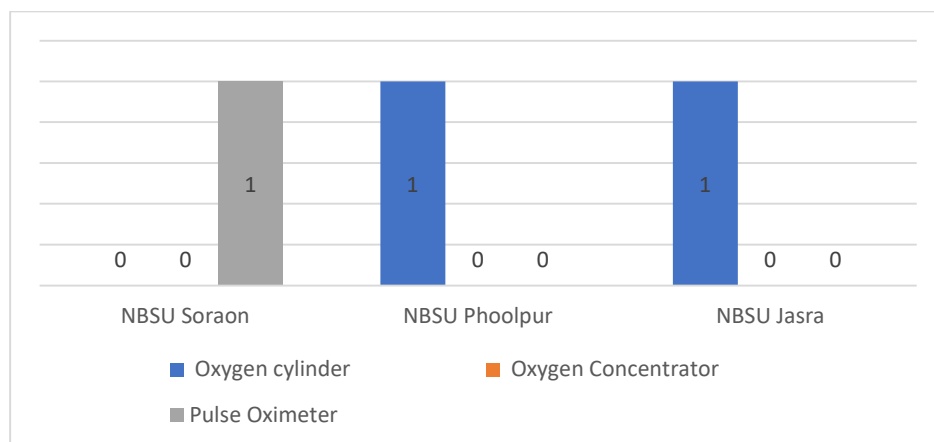


Fig. 4.5: Functionality of Oxygen supply equipment. Oxygen concentrator is not available in max.NBSU, if available its not functioning properly.

4.6 Assessment of the availability of drugs and consumables of NBSU

Table 4.6: Assessment of availability of essential drug at NBSU.

Drug list	NBSU Soraon	NBSU Phoolpur	NBSU Jasra
Inj. Adrenaline	√	√	√
Inj. Ampicillin	√	√	√
Inj. Gentamicin/Amikacin	√	√	√
Other antibiotic	√	√	√
Normal saline	√	√	√
10% dextrose	√	√	√
Isolyte-P	√	√	√
Inj. Phenobarbitone	Absent	√	Absent
Inj. Phenytoin	Absent	√	Absent
Inj. Vitamin K1	√	√	√

The data says, Inj. Phenobarbitone and Inj. Phenytoin were not available at Soraon and Jasra NBSU. Whereas, all the essential drugs were available at Phoolpur NBSU.

4.7 Assessment of consumables availability

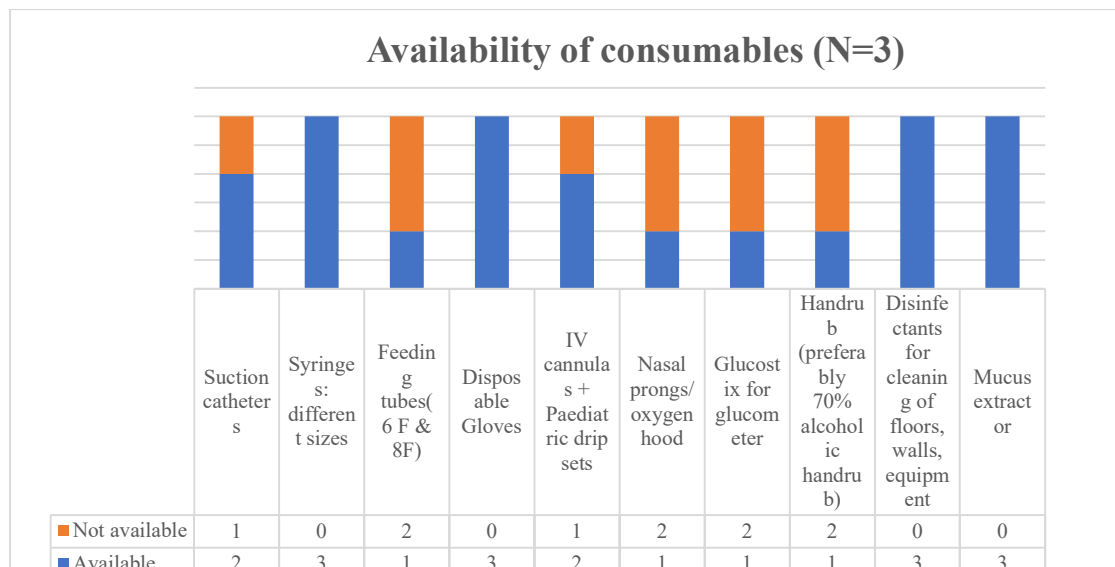


Fig.4.7: The data shows, availability of various consumables, out of 3 only 2 suction catheters, 1 feeding tube (6F & 8F), 2 IV cannulas + paediatric drip sets, only 1 Glucostix for glucometer, and 1 handrub (preferably 70% alcoholic handrub) were available.

Chapter 5

5 Analysis and Discussion on NBCC

5.1_Assessment of Infrastructures of NBSU

5.4.3 Assessment of functionality of Radiant warmer of NBCC in LR

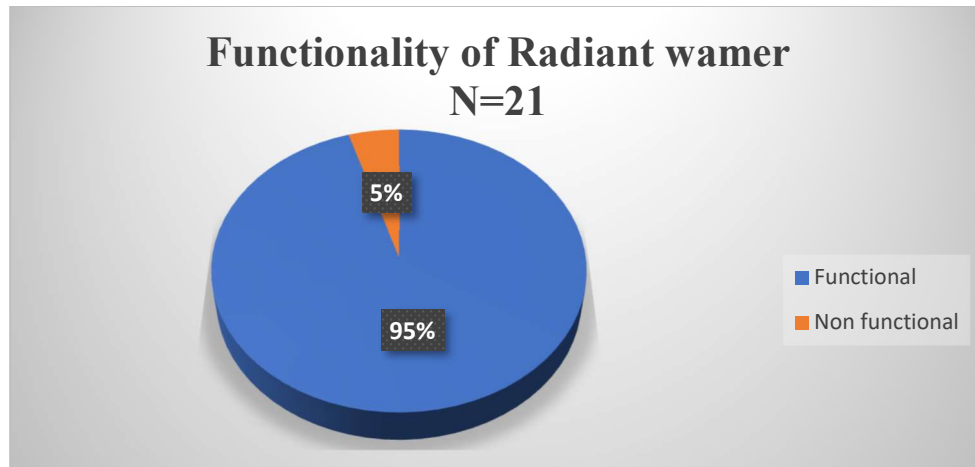


Fig. 5.1.1: The data says, 95% of radiant warmer present in Labour room of twenty blocks and District women hospital were functional. There is nonfunctional radiant warmer in only block CHC Dhanupur.

5.1.2 Assessment of availability of Radiant warmer in OT (FRU)

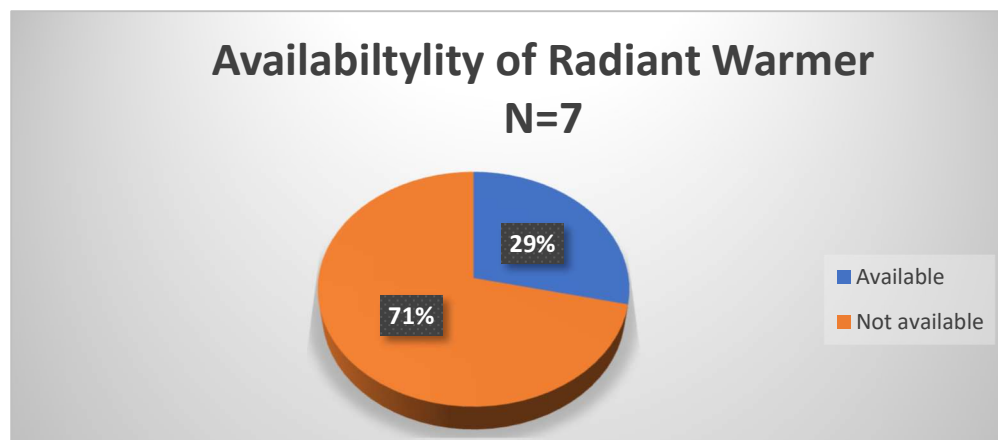


Fig.5.1.2 The data says, only 29% of radiant warmer are available in OT(FRU) where LSCS performed.

5.5 Assessment of HR and Training

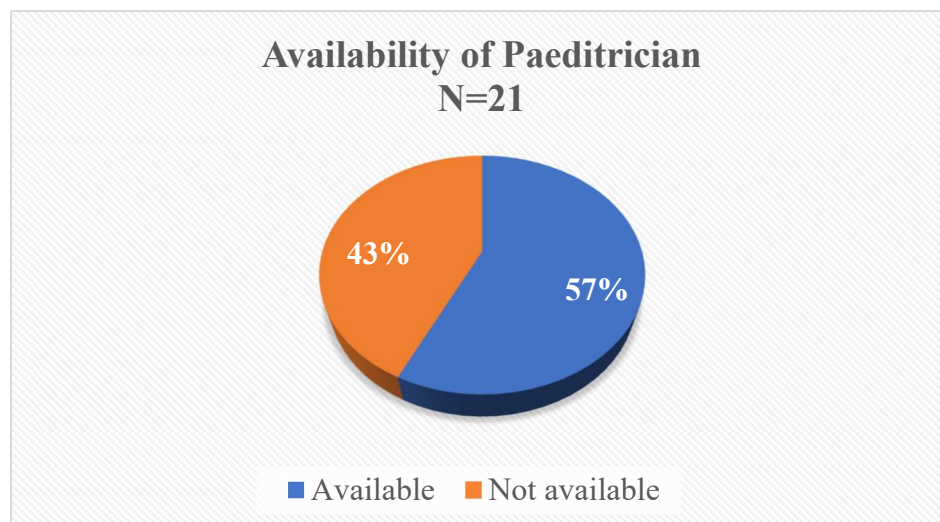


Fig.5.2 : Represents availability of pediatrician as per standards. Only 57% pediatrician are available in 21 delivery point (CHC) of Prayagraj

5.3 Assessment of training status of Staff nurse

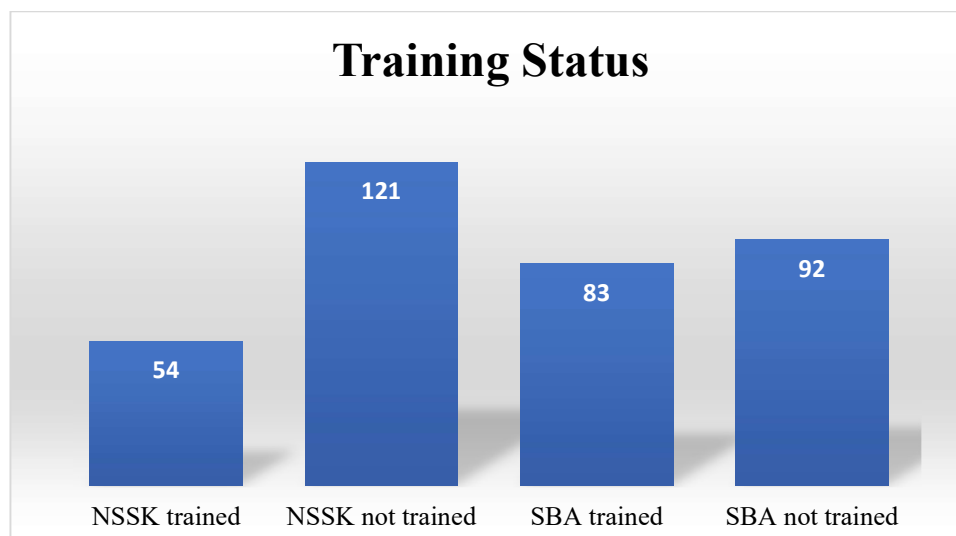


Fig.5.3: Represents SBA and NSSK trained staff. As per standards all LR staff nurse must be SBA or NSSK trained. But In Prayagraj less than 50% staff nurse are trained.

5.6 Assessment of Admission status

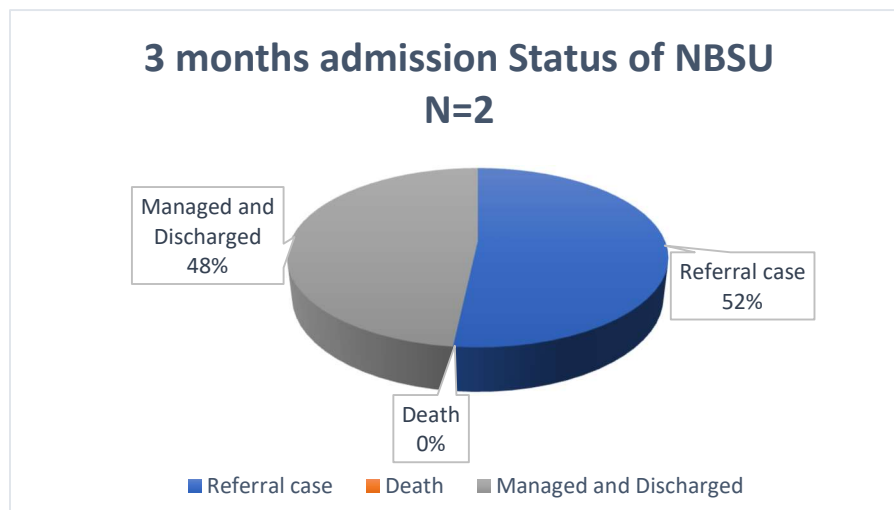


Fig.5.4: Represents total admission status of February, March, and April in functional NBSU Soraon and Phoolpur where 29 infants was admitted and 52% of admission was referral case which is high and only 48% case was managed and sent home healthy. Admission status is very low and need to improve functionality and clinical management.

5.7 Assessment of Morbidity type of newborn

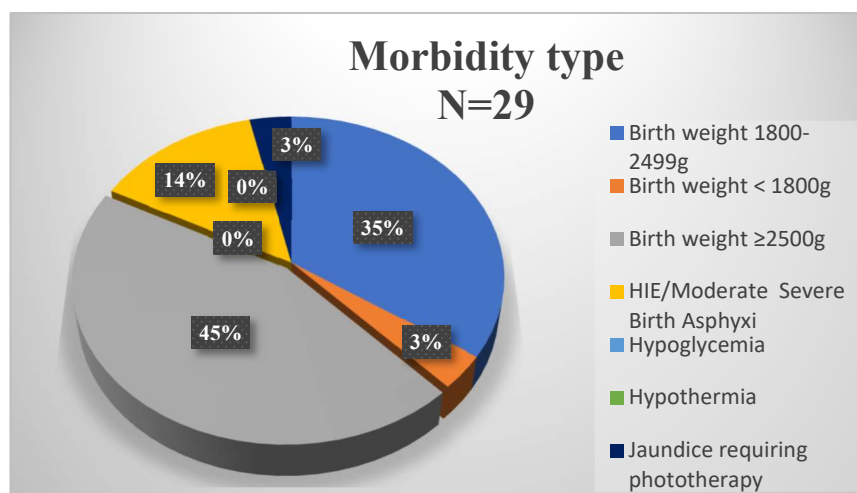


Fig.5.5: Represents morbidity type during admission in functional NBSU Soraon and Phoolpur. Total admission of last 3 months (Feb, March, April) was 29 which is very low because of lack of clinical practices, functionality, and availability of logistics issues.

5.8 Assessment of Mortality type of newborn (According to Lanchet 12th May 2020)

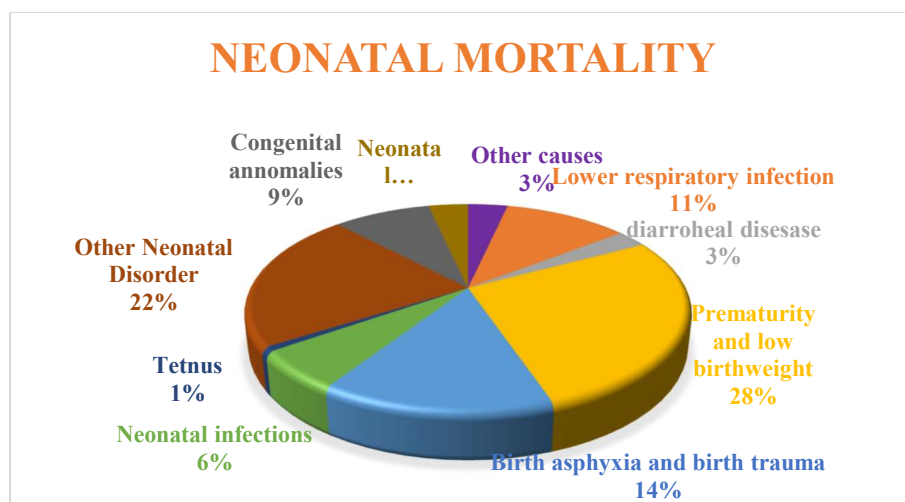


Fig.5.6: Represents leading causes of neonatal mortality. NMR of India reduced 38% of 38/1000 in 2000 to 23/1000 in 2017 according to SRS bulletin 2018-2019

5.9 Assessment of Neonatal mortality of Prayagraj District

Table 5.7: Represents neonatal mortality of Prayagraj district. Source- UP HMIS data

Prayagraj							
Period / Data	Asphyxia Died at facility	Birth anomalies Died at facility	Children died 0-28 days (Neonatal death)	Infection / sepsis (NB) Died at facility	Low birth weight (<2500 grams) Died at facility	Preterm birth (<37 weeks gestation) Died at facility	Live Birth
Apr 2019 to Mar 2020	5	1	13	0	0	6	78417

5.10 Assessment of Admission, clinical practices status and Birth asphyxia management of 21 NBCC

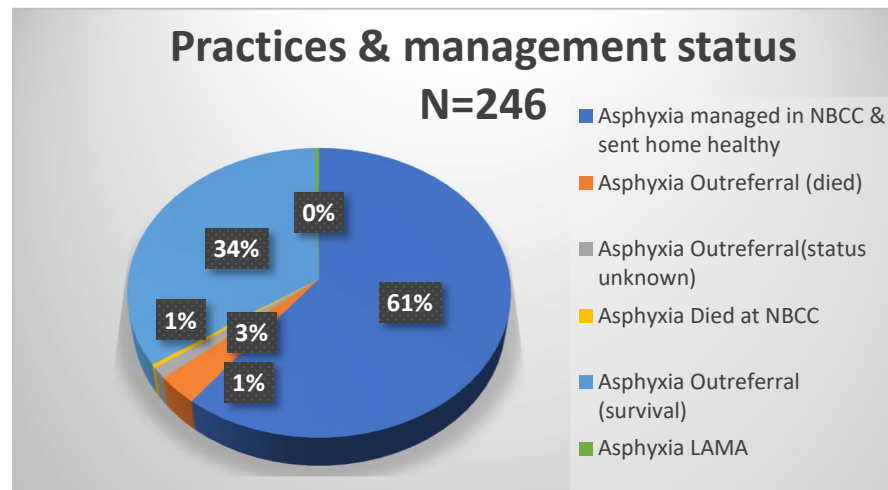


Fig.5.8 Represents status of 3months (Feb, March, April) clinical practices in NBCC and Birth Asphyxia management in 21 blocks.

Chapter 6

6 Recommendation

- ❖ **HR availability:** Human resource is a big challenge for every public health facility to provide timely service. Promoting partnership with private organization or health institution in providing HR
- ❖ **Training:** Provide essential training to all staff who are working in NBSU and NBCC to improve their practices and confidences.
- ❖ **Knowledge skill practices improvement:** Improve knowledge skills and practices of care providers with the help of nurse mentoring program of UPTSU. Improve clinical practices and motivate care providers for right practices and respectful maternity care on time. Observing the existing practices.
- ❖ **Follow up of Newborn:** Ensure of quality care and proper follow up of all newborn after discharge or referral from NBCC or NBSU.
- ❖ **Availability of logistics:** There was acute shortage of all essential equipment needed in NBSU. Important daily usable consumables are not available in NBCC and NBSU.
- ❖ **Functionality Status:** Functionality of NBSU is very poor. Being a newborn stabilizing unit the radiant warmer and the phototherapy need to be improved for proper functioning of the new born unit.
- ❖ **Quality care:** Providing awareness and education to all staffs, implementation of standardized guideline and Quality improvement initiative. Govt. must work on patient trust, most of the parents do not rely on public health facility services.
- ❖ **Protocol:** Set Protocol for regular monitoring of the NBSU of each public health facilities.
 - For the calibration of equipment's and devices such as radiant warmer, incubation machine.
 - Building a checklist for quarterly audit of NBSU infrastructure
 - Building a checklist for regular monitoring of drugs and consumables
 - Regular updating of the Training manual (SOP) for educating and awareness of the staff with new technologies or standards.
 - A set protocol for the attendance of the medical staff including Doctors, Staff nurses, Lab technicians.

7 Conclusion

In Praygraj, Uttar Pradesh 69.8% of institutional delivery are conducted in public health facilities (HMIS 2019-20). Neonatal morbidity and mortality have been a global health challenge. As per global reviews that roughly 15% of newborn require facility-based care. It is also observed that critically ill infants are continuously getting exposed to various risk factors and require proper management. As most of these causes can be prevented, adoption of various quality improvement initiatives is important which will help to improve outcomes of neonatal care. Thus, NBCC and NBSU play a vital role in the improvement of the neonatal health indicators. Gaps, we found for strengthening of NBSU is crucial to address neonatal mortality and infant mortality. This study emphasized an utmost need of high skill building training of health personal posted in NBSU with practice of skills in resuscitation is also critical. Availability of functional equipment, basic skills to handle the equipment can also reduce neonatal mortality rate. Essential equipment and facility-based care are proven intervention for reducing neonatal mortality rate. Similarly, aseptic techniques must be strictly followed to reduce sepsis and other infection-related mortality.

Quality of intrapartum care in labor rooms and new born care need to be reviewed from time to time. Periodic inspection and audit should be done for efficient use of resources and proper functioning of these units.

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ANEXXURE

NBSU TOOL

NBSU Assessment Form

GENERAL INFORMATION

Name of the State: _____ Name of the District: _____

Name of the block: _____ Name of the facility: _____

Address of facility	
Type of designated facility	DH ☐ SDH ☐ FRU ☐ CHC ☐ 24X7 PHC ☐
Number of beds in the facility	
Is there 24-hour coverage for delivery and newborn?	YES ☐ NO ☐

II INFRASTRUCTURE

A. NBS unit functional/operational since:/...../..... (DD/MM/YY)

B. Total floor area of NBSU (in sq. feet)

C. No. beds in NBSU

D. Availability of Newborn Care Corner

- Within labour Room: YES ☐ NO ☐
- Within operation theatre: YES ☐ NO ☐

E. Is the labour room in close proximity to NBSU: YES ☐ NO ☐

If no, give remarks _____

F. Where does the mother stay while the newborn is admitted to NBSU _____

G. Is a room thermometer available in NBSU? YES ☐ NO ☐

H. Is the temperature maintained in NBSU? YES ☐ NO ☐

I. Is the unit walled with washable tiles up to 7 feet YES ☐ NO ☐

J. Is continuous water supply available to the NBSU? YES ☐ NO ☐

If YES check

K. If NO, no. of hours of water supply to NBSU.....hrs.

- Is there a dedicated overhead tank for water? YES ☐ NO ☐

K. If NO, no. of hours of water supply to NBSU.....hrs.

- Is there a dedicated overhead tank for water? YES ☐ NO ☐
- Is a dedicated hand washing area available? YES ☐ NO ☐
- Is a wash-basin with elbow operated tap available? YES ☐ NO ☐
- Is there 24*7 electrical Supply: YES ☐ NO ☐

If yes check

L. Is the day-light visible in the NBSU? YES ☐ NO ☐

M. Is the NBSU well lit? YES ☐ NO ☐

N. Is there a power supply YES ☐ NO ☐

O. Provision of stabilized power back-up YES ☐ NO ☐

Provision of Power back-up	Equipment	Available	If available		Functional	If not functional	
			Number	Capacity		Since when	
	Generator	Y ☐ N ☐			Y ☐ N ☐		
	Inverter	Y ☐ N ☐			Y ☐ N ☐		
Provision of safety of electrical devices and equipments	Centralized servo stabilizer	Y ☐ N ☐			Y ☐ N ☐		
	Voltage stabilizer	Y ☐ N ☐			Y ☐ N ☐		

Overall rating:

Criteria	Score		
	0	1	2
Total floor area (in sq. ft)	< 200		≥ 200
24*7 water supply	Not available	Available at facility but not in Unit	Available in unit
24*7 electrical supply	Not available	Available at facility but not in Unit	Available in unit
Number of beds	< 4		≥ 4

HUMAN RESOURCE

- A. How many posts of staff nurses have been sanctioned for the NBSU?
- B. How many staff nurses are deployed at the NBSU?
 - Regular staff nurses
 - Contractual staff nurses
- C. The average number of staff nurses deployed at NBSU during the last one month or how frequently they are rotated within the facility?

A. Check the duty roster for number of staff nurses available and note their names as below:

Name	Full time/part time for NBSU	At facility since	Training		Training dates/ Duration
			FIMNCI	FBNC	

Paediatricians / Medical Officers engaged with NBSU

SN	Name MO	Qualification Degree /Dip.	Designated for NBSU	At facility since when	Medical officer	Training		Training dates /Duration
					On call / residing in the campus	FIMNCI	FBNC	
1								
2								
3								

Overall rating:

Criteria	Score		
	0	1	2
24*7 availability of manpower	No system	Nurses and MO available during <u>day time</u> only	24*7 availability of nurses with MO on call
Number of dedicated nurses posted at NBSU	None	< 4	≥ 4
Availability of MO & training status	Not available	Available but not F-IMNCI/FBNC trained	F-IMNCI/FBNC trained MO or <u>Paediatrician</u>
Training of Nurses	Not trained	At least 50% trained	All (100%) trained

Data	Last 3 months						Total
	1 st Month		2 nd Month		3 rd Month		
	Inborn	<u>Outborn</u>	Inborn	<u>Outborn</u>	Inborn	<u>Outborn</u>	
Total number of deliveries in facility							
Total number of Caesarean sections							
Total number of live births							
• < 1000 gm							
• 1000 – 1499 gm							
• 1500 – 2499 gm							
• ≥ 2500 gm							
Total number of LBW newborns							
Number of still births							
Total no. of admissions in NBSU							
Male							
Female							
Total No. of cases admitted to NBSU							
• Birth weight ≥ 2500 gm							
• 1500 – 2499 gm							
• 1000 – 1499 gm							
• < 1000 gm							
Morbidity Profile (Primary diagnosis)							
• Neonatal sepsis							
• Birth asphyxia							
• Pre-maturity/LBW							

+

• Hypothermia							
• Jaundice							
• Any other - specify							
Management (no. of babies who received)							
• Oxygen							
• Antibiotics							
• Gavage feeding							
• IV fluid							
• Phototherapy							
• Enteral feed							
Outcome							
• Discharge							
• Referral							
• Left against medical advice (LAMA)							
• Died							
Cause of death							
• Neonatal sepsis							
• Birth asphyxia							
• Pre-maturity/LBW							
• Hypothermia							
• Jaundice							
• Any other - specify							

DRUGS & EQUIPMENT

A. Drugs

Name of Drug	Availability at time of visit (Yes / No)	Adequacy of stock (Yes / No)	Any stock out in last 6 months (Yes / No)	Remarks
Drugs				
Inj. Adrenaline				
Inj. Ampicillin				
Inj. Gentamycin				
Other antibiotics				
Inj. Calcium gluconate				
Normal saline				
10% dextrose				
Isolyte-P				
Inj. Phenobarbitone				
Inj. Vitamin K				
Disinfectants				
Soap				
Handrub (Alcohol-based)				
Spirit				
10% Betadine				
Gluteraldehyde				
Surface disinfectant				
Floordisinfectant (Lysol 5%)				
Slippers				

DRUGS & EQUIPMENT

Consumables / Disposables				
Gloves				
Different colour polythene				
I/V cannulas (24)				
Needles				
Syringes				
Feeding tubes				
Endotracheal tube				
Nasal prongs				
O2 Hood				
Pedia set				
Suction catheter				
Glucostix				

EQUIPMENT

S. N.	Equipment	Available Number	Functional YES/NO (Check functionality)	If not functional since when	Use of equipment in last 1 month (Determined by used for number of babies and no. Of days)
1	Radiant warmer				
2	Phototherapy CFL/Conventional				
3	Neonatal Bag & Mask (0 & 1 size)				
4	Laryngoscope				
5	Weighing machine				
6	Foot operated/ Mechanical suction machine				
7	Thermometer				
8	Mobile examination light				
9	Hub cutter				
	Stethoscope with neonatal chest piece				
11	Oxygen cylinder				
12	Oxygen concentrator				

NBCC TOOL

NBCC ASSESSMENT FORM

Instruction Sheet

The assessment of NBCC should be done at the Labour Room and OT where the LSCS are performed.

GENERAL INFORMATION*(note when assessing only NBCC)

Name of the State: _____ Name of the District: _____

Name of the block: _____ Name of the facility: _____

Address of facility	
Type of designated facility	DH ☐ SDH ☐ <u>FRU</u> ☐ CHC ☐ 24*7 ☐ Others ☐ (Other specify.....)

A. Human Resource

- A. How many posts of staff nurses are designated for labour room?
- B. How many staff nurses are deployed at LR?
- a. Regular staff nurses
- b. Contractual staff nurses
- C. Training Status

S. No.	Health Personnel	Number Available	Number trained		
			SBA	NSSK	FIMNCI
1	Medical Officer				
2	Staff Nurse				
3	ANM				
4	Others				

A. Logistics

S. No.	Logistics	Availability at time of visit (Yes / No)	Adequacy of stock (Yes / No)	Remarks
1	Wall clock (with seconds hand)			
2	Clean dry sheets			
3	Clean towels			
4	Mucus extractor			
5	Disposable gloves			
6	Clean blade			
7	Clean cord ties /staples			
8	Clean Cotton and gauze			
9	IVF (NS)			
10	Inj. Vitamin K			
11	Syringes			

Newborn Care Corner in Labour Room

A. Infrastructure

1. Is Newborn Care Corner available within Labour Room? YES ☐ NO ☐
2. Is 20-30 sq ft area earmarked / dedicated for NBCC? YES ☐ NO ☐

B. Equipment

S. No.	Equipment	Availability Yes / No	Available Number	Functional YES/NO (Check functionality)*	If not functional since when
1	Radiant warmer				
2	Self Inflating Bag (250ml, 500 ml)				
3	Face mask (No. 0 and 1)				
4	Weighing Scale				
5	Room Thermometer				
6	Low Reading Clinical (32- 34C) Thermometer				
7	Light for Examination				
8	Mucus Extractor				
9	Suction Machine				
10	Feeding Tubes				
11	Oxygen Cylinder				
12	Syringe Hub Cutter				

A. Assessment of practices



1	Are all babies after delivery kept in the warmer?	YES ☐ NO ☐
2	Are babies kept on the <u>mothers</u> abdomen immediately after birth	YES ☐ NO ☐
3	Is breast feeding started immediately after birth?	YES ☐ NO ☐
4	Is hand washing done before handling each baby?	YES ☐ NO ☐
5	Are sterile sheets used for the baby? If yes are the sheets pre warmed?	YES ☐ NO ☐ YES ☐ NO ☐
6	Frequency of cleaning of general <u>equipments</u>	Once a day ☐ Once a week ☐ During Fumigation ☐ Not done ☐
7	Disinfection of baby care equipment	After each use ☐ Daily ☐ When visibly soiled ☐ Not done ☐
8	Waste segregation and disposal (<i>Mention type you seen</i>)	Appropriate ☐ Not appropriate ☐

Overall rating:

Criteria	Score		
	0	1	2
Separate area for NBCC	No separate area	Separate area but <20 sq. ft.	20 – 30 sq. ft. separate area
Radiant warmer	Not available	Available but not functional	Available & functional
Bag & Mask	Not available	Available but not functional	Available & functional
Training of nurses (SBA, NSSK)	Not trained	50% trained	100% trained
Hand washing	Not done	Sometime	Regular

Newborn care corner in OT

A. Infrastructure

1. Is Newborn Care Corner available within Labour Room? YES ☐ NO ☐
2. Is 20-30 sq ft area earmarked / dedicated for NBCC? YES ☐ NO ☐

B. Equipments

S. No.	Equipment	Availability Yes / No	Available Number	Functional YES/NO (Check functionality)	If not functional since when
1	Radiant warmer (E)				
2	Self Inflating Bag (500 ml)				
3	Face mask (No. 0 and 1)				
4	Weighing Scale				
5	Room Thermometer				
6	Low Reading Clinical Thermometer				
7	Light for Examination				
8	Mucus Extractor				
9	Suction Machine				
10	Feeding Tubes				
11	Oxygen Cylinder				
12	Syringe Hub Cutter				

NBCC PHOTOS



NBSU PHOTOS

