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ASSESSMENT OF AVAILABILITY AND OF NEW BORN CORNERS IN AT PRIMARY HEALTH CENTERS OF SUPAUL, BIHAR

By

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PG/12/096

Under the Guidance of

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Post Graduate Program in Hospital & Health Management

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INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH NEW DELHI

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CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled **"ASSESSMENT OF AVAILABILITY AND OF NEW BORN CORNERS IN PRIMAFUNCTIONALITY RY HEALTH CENTERS OF SUPAUL, BIHAR"** and submitted by Swaroop Pattanayak, Enrollment No. PG/12/096 under the supervision of Vanishree M.R. for award of Postgraduate Diploma in Hospital and Health Management of the Institute carried out during the period from 27th January 2014 to 1st May 2014 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.

Swaroop Pattanayak.

Signature

Certificate from Dissertation Advisory Committee

This is to certify that **Mr. Swaroop Pattanayak,** a graduate student of the **Post- Graduate Diploma in Health and Hospital Management** has worked under our guidance and supervision. He is submitting this dissertation titled **"Assessment of availability and functionality of new born corners in primary health centers of Supual, Bihar."** at **"Care India"** in partial fulfillment of the requirements for the award of the **Post-Graduate Diploma in Health and Hospital Management.**

This dissertation has the requisite standard and to the best of our knowledge no part of it has been reproduced from any other dissertation, monograph, report or book.

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The following dissertation titled **Assessment of availability and functionality of new born corners in primary health centers of SUPAUL, Bihar** is hereby approved as certified study in management carried out and presented in a manner satisfactory to warrant its acceptance as a prerequisite for the award of **Post-Graduate Diploma in Health and Hospital Management** for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein but approve the dissertation only for the purpose it is submitted.

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TO WHOMSOEVER MAY CONCERN

This is to certify that Swaroop Pattanayak student of Post Graduate Diploma in Hospital and Health Management (PGDHM) from International Institute of Health Management Research, New Delhi has undergone internship training at from 26-01-2014 to 01-05-2014 .

The Candidate has successfully carried out the study designated to him during internship training and his approach to the study has been sincere, scientific and analytical.

The Internship is in fulfilment of the course requirements. I wish him all success in all his future endeavors.

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The certificate is awarded to ***Swaroop Pattanayak*** in recognition of having successfully completed his internship in the department of ***Strengthening of Kala Azar elimination Project***. He has successfully completed his Project on ***Assessment of availability and functionality of New Born Care Corner at Primary health centers*** across District Supaul.

Date of completion: 01/05/2014

Organization: Care India Solutions for Sustainable Development

He comes across as a committed, sincere & diligent person who has a strong drive & zeal for learning. We wish him/her all the best for future endeavors.

Sharad Chaturvedi
(Program Manager)
Care India, Bihar

FEEDBACK FORM

Name of the Student: Swaroop Pattanayak

Dissertation Organisation: CARE, INDIA.

Area of Dissertation: Assessment of availability and functionality of new born corners in primary health centres of Supaul, Bihar.

Attendance: 100%

Objectives achieved:

Facility assessment done using the Facility Assessment tool. Gaps identified with the help of standard guidelines. Suggestions given to fulfil these gaps.

Deliverables:

1. IRS monitoring in different blocks of Supaul.
2. Conducted community awareness meeting regarding Kala-Azar at village level in different blocks of Supaul.
3. Participated and gave the training to the squad members for IRS round held in CS office, Supaul.
4. Participated in 3 Monthly review meeting of KTS in CS office, Supaul.
5. Liaisoning with various government stakeholders and other development partners working in Supaul.
6. Participated in Preparing of Micro action Plan for IRS round in Supaul District.
7. Conducted BMs & KLWs meeting in Care Office, Supaul.
8. Participated in HSC meetings in different blocks of Supaul.
9. Participated in ANM weekly meeting in different blocks of Supaul.
10. Participated in Block Level Task Force meeting regarding Immunization by UNICEF & Health Department.

Strengths:

Good communication skills & presenting skills. Apart from this he was observed to be very hard working & punctual. Took initiative for various task & gave innovative ideas to improve documentation & data maintenance system at field level.

Suggestions for Improvement:

Needs to improve his translation skills as he faced few challenges while converting the interaction held with village people due to change of language in interior parts of Bihar.

Signature of the Officer-in-Charge/ Organisation Mentor (Dissertation)

Date: 2nd May 2014

Place: Bihar

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LIST OF AABBREVIATONS

SR.NO	ABBREVIATION	
1	IMR	Infant Mortality rate
2	U5MR	Under 5 Mortality rate
3	NMR	Neonatal Mortality Rate
4	MDG	Millennium Development Goals
5	JSY	Janani Suraksha Yojna
6	FBNC	Facility Based Neonatal Care
7	SNCU	Special New born Care Unit
8	NBSU	New Born Stabilization Unit
9	NBCC	New Born Care Corner
10	HBNC	Home Based Neo Natal Care
11	ENCR	Essential New Born Care and Resuscitation
12	OT	Operation Theatre
13	PHC	Primary Healthcare centre
14	KMC	Kangaroo Mother care

1.0 INTRODUCTION

Bihar is one of India's largest and poorest states with over 100 million people. The state has one of the country's highest rates of maternal, neonatal and infant mortality. Underlying factors that contribute to these negative health outcomes primarily include extreme poverty, gender and social inequality among many others. Despite renewed interest of Government of Bihar and flow of funding from external donors as well as other institutions to improve the health infrastructure and outcomes, the state is far behind achieving the goals. Some of the problems hindering the progress are lack of staff at primary health centers, poor quality of frontline workers, problems in accessibility and availability of health services for the marginalized populations, lack of proper data, and lack of proper management at the facility level, poor training systems, and inadequate infrastructure at public health facilities and poor integration of interventions

The Infant Mortality is the major contributor in U5MR which is 57 for Bihar as per SRS 2012.The IMR is an important indicator of Child Health. As per SRS 2012, the IMR of Bihar is 43 per 1000 live births. Neo-natal mortality (NMR) for Bihar as per SRS 2012 is 28 and accounts for 66% of the IMR. The goal to reduce IMR will only be achieved if comprehensive facility based neo-natal care strategy is implemented in Bihar backed up by Home Care & Timely referral.[1]

TABLE 1 BIHAR MORTALITY INDICATORS

Indicator	Total	Rural	Urban
Under 5 mortality	57	58	39
Infant Mortality	43	44	34
Neonatal Mortality	28	29	12
Early Neonatal Mortality	23	25	8
Late neonatal mortality	4	4	4

Source: SRS Bulletin 2012

1.1 BACKGROUND

Every year, four million newborn babies die in the first month of life—99% in low- and middle-income countries. India carries the single largest share (around 25-30%) of neonatal deaths in the world. Neonatal deaths constitute two-thirds of infant deaths in India; 45% of the deaths occur within the first two days of life. It has been estimated that about 70% of neonatal deaths could be prevented if proven interventions are implemented effectively with high coverage. It was further estimated that health Facility based interventions can reduce neonatal mortality by 23-50% in different settings. Facility-based newborn care, thus, has a significant potential for improving the survival of newborns in India.

Three levels of neonatal care are envisaged. Newborn-care corners are established at every level to provide essential care at birth, including resuscitation. Level I care includes referral of sick newborns from Primary Health Centres (PHCs) to higher centres and care at Neonatal Stabilization Units (NSUs) in the first referral units. Care in the NSUs includes stabilization of sick newborns and care of low birth weight (LBW) babies not requiring intensive care. Level II care includes functioning of Special Care Newborn Units (SCNUs) at the district hospital level.[2]

TABLE 2 NEW BORN CARE FACILITIES AT DIFFERENT LEVELS

Health Facility	All Newborns at birth	Sick Newborns
Primary Health Centre/Sub Centre MCH level 1	New born Care corner in labour room	Prompt referral
Community Health Centre/Referral unit MCH level 2	New born Care corner in labour room and OT	Newborn stabilization unit
District Hospital MCH level 3	New born Care corner in labour room and OT	Special newborn care unit

Source: FBNC Operational guidelines

Newborn care corner provides an acceptable environment for all infants at birth. Services provided in the Newborn care corner include provision of warmth, early initiation of breastfeeding, weighing the neonate and quick baby-check. The configuration of the corner includes clear floor within the labour room, 20-30 sq feet in size, where the radiant warmer is kept, resuscitation kit should be placed in the radiant warmer, availability of oxygen source is desirable and the area should be away from draughts of air and should have appropriate power connection for plugging in the radiant warmer.[3]

One staff nurse or ANM is desirable in addition to the one conducting the delivery for providing appropriate care at birth. All staff posted at the labour rooms should be trained in providing essential care at birth and basic resuscitation. One doctor and one staff nurse should be designated to NBCC to ensure appropriate functioning of the corner. All doctors and nurses who are likely to attend deliveries must be trained in Navjaat Shishu Suraksha Karyakram (NSSK). If NBCC is established at the sub-centre and then the auxiliary nurse midwife (ANM) must also receive NSSK training.

A list of the Essential Equipments required for planning a New-born Care Corner is given below:

TABLE 3- ITEMS OF NEWBORN CARE CORNER:

A) Newborn care corner

Item No	Item Description	Essential	Desirable	Quantity
1	Open care system: radiant warmer, fixed height, with trolley, drawers, O_2 bottles	E		1
2	Resuscitator, hand-operated, neonate, 500ml	E		1
3	Weighing scale, spring	E		1
4	Pump suction, foot operated	E		1
5	Thermometer, clinical, digital, 32°-34°C	E		1
6	Light for examination, mobile, 220-12	E		1
7	Syringe hub cutter	E		1

Source: FBNC operational guidelines

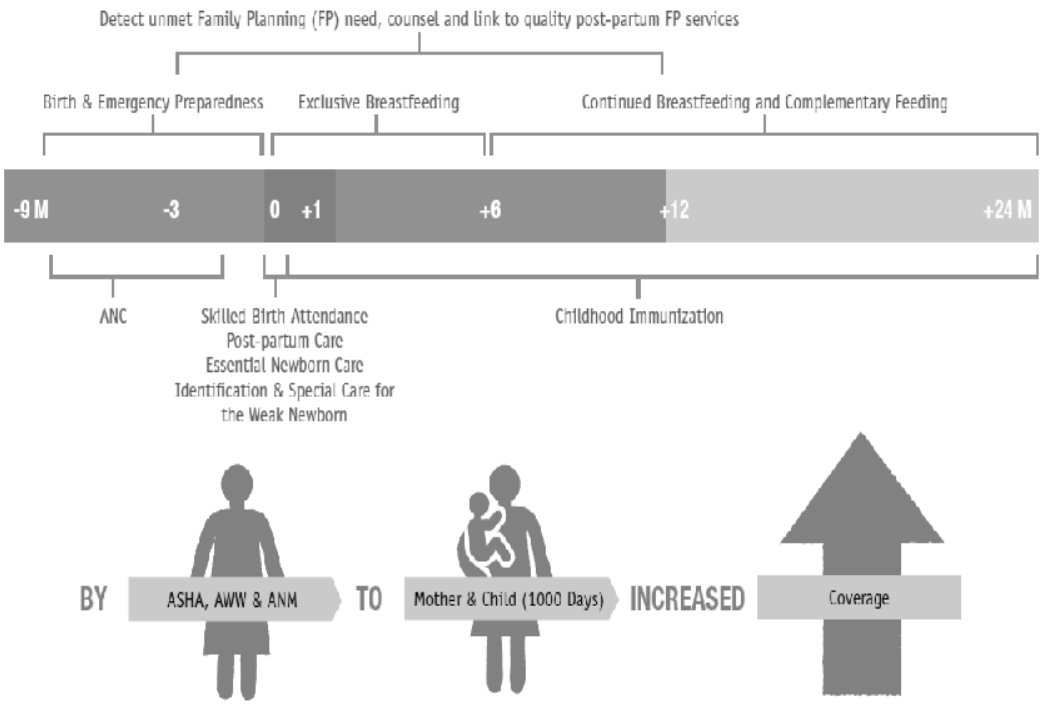
1.2 Organizational profile

CARE has been working in India for 60 years, focusing on ending poverty and social justice. They do this through well-planned and comprehensive programmes in health, education, livelihood and disaster preparedness and response. Their over goal is the empowerment of women and girls from poor and marginalized communities leading to improvement in their lives and livelihoods. They are part of the CARE International Confederation working in 84 countries for a world where all people live in dignity and security.

1.3 Program Profile

IFHI is a five year initiative (2011-2015) led by CARE India with initial focus on all 137 blocks of eight districts within Bihar whose population is 28,100,339 (Census 2011). This is followed by supporting the government in scaling up activities starting in 2013 to the remaining 30 districts of Bihar (refer map in Figure 5 below). IFHI partners include Janani (family planning), Abt Associates (public-private partnership), Columbia University – Averting Maternal Death and Disability/AMDD (maternal health), Emory University (nutrition), Save the Children/Saving New-born Lives/SNL (new born health).

The overall objective of IFHI is support the Government of Bihar in its goal to improve the health and survival of families with pregnant women and women with children less than two years.



The four main objectives of IFHI:

1. Increase delivery of high impact and cost-effective family health interventions.
2. Improve quality of key family health services and delivery processes.
3. Increase utilization of key services and uptake of health promoting behaviors.
4. Facilitate identification and consistent adoption of successful approaches throughout Bihar and communicate successes nationally.

Based on the above main objectives certain technical interventions have been developed. Of the technical interventions 75% were community based and 40% were innovations. The core interventions as part of the package were maternal care, new born care, nutrition, immunization, and family planning.

Maternal Intervention:

1) Counsel families for birth and emergency preparedness.
2) Quality management for routine deliveries at PHCs
3) Facility driven facilitative process to build BEmONC capabilities
4) Post-partum evaluation of the mother and new born, stabilization/referral for complications.

New born Intervention:

1) Essential package of newborn care, including Skin to skin care, for all births (institutional and home).
2) Kangaroo mother care.
3) Community-based identification, referral and management of neonatal infections.

Immunization Intervention:

1) Fully immunized child by ensuring no left outs and reducing drop-outs.

Nutrition Intervention

1) Breastfeeding- a) early initiation, b) exclusive in first six months, c) breastfeeding for 24 months.
2) Appropriate complimentary feeding
3) Iron/Folic acid uptake and use during pregnancy

Family Planning Interventions

1) Community-based counselling: Integrate postpartum and post abortion Family Planning (FP) counselling and referral.
2) Facility-based counselling and services: Promote FP use in public sector through FP corners.
3) Expand access to quality services for family planning.
4) Improved uptake of birth spacing methods.

In order to achieve the above said goals and implement the interventions as well as ensure proper information flow and use IFHI developed a certain set of cross cutting solutions.

1) **Strengthening data driven management.**
2) **Integrating service delivery.**
3) **Improving capabilities of and tools for frontline workers and facility staff.**
4) **Innovations and game changers.**
5) **Creating partnerships with private sector providers.**

Strengthening data driven management:

a) **Paper based mapping, enumeration and name based tracking:**
It is important for the families to receive services universally, consistently and predictably through front line workers. In order to achieve this all the households are to be enumerated and all the pregnant women and women with children less than 2 years are to be identified. Only then can we ensure universal coverage of Integrated child development services. So to ensure this tracking and enumeration the district teams have developed certain tools like survey register, home visit registers and planners, child immunization due list, ANM supervisory tool. The team along with these tools after a detailed situational assessment supported the field level workers in mapping and enumerating all households in their catchment area and blocks. The main goal of this exercise was to identify excluded households. Once they are identified, they are tagged with existing anganwadi centres.

b) **Self-driven Quality Improvement (QI) in facilities:**
As per global evidence and situational analysis most perinatal deaths occur labour and delivery, or within the first 48 hours thereafter. Hence timing is very crucial in preventing maternal and neonatal deaths. Apart from addressing the delays, one more important factor to address is the availability of well-staffed, well equipped and a quality health centre. So to improve the quality of facility based newborn and maternal care, a self-driven quality improvement process has been developed. It is being implemented in District hospital, PHC, FRU and Sub Divisional hospitals. A facility assessment tool to assess the basic functionality of service being delivered has been developed. QI teams have been formed at each facility. It helps in identifying gaps and developing action plans to fulfil those gaps.

c) **Lot Quality Assurance Sampling (LQAS) – based household 'surveys':**
To understand the coverage of services for IFHI outreach interventions LQAS surveys are conducted to generate results at the block level, district level and upwards. Handheld devices are being used to collect data on important summary indicators to provide results on a quarterly basis and for real-time data-driven management. The

results are shared at the district and block levels to generate discussions on specific outcomes, hence setting goals and to plan strategies to achieve outcomes.

d) **Facility-based observation of deliveries to make decisions on program design and planning:**
No data sources exist to measure facility based quality of care. As such, the project is testing the use of direct observations of delivery in facilities to assess the use of correct clinical protocols and associated rapid facility assessment to monitor infrastructure and supply related issues.

e) **Longitudinal cohort studies to assess behaviour changes post intervention:**
The aim of this study is to identify the effect of IFHI interventions on effectiveness of FLWs-clients interaction, and measuring the effect of interactions on key determinants of behaviour change. In this design, client-provider interactions are considered as 'program exposure', which is a combination of frequency, timeliness and quality of interactions between the FLWs and target population. The effect of the intervention on individual's overtime, starting from initial exposure until change or outcome is reached, will be measured. The study is initiated based on the maturity of the relevant community based intervention.

Integrating service delivery:

a) **Health Sub-centre (HSC) level platform for Auxiliary Nurse Midwife (ANM), Accredited Social Health Activist (ASHA) and Anganwadi Worker (AWW):**
Currently an effective platform to bring the front line workers together is absent or if present is too large [Eg: 300 FLWs per block PHC]. Hence, the HSC is one single platform planned where all FLWs come together. It is a solution where the other stand-alone platforms such as ANM Tuesday meeting and Village Health Sanitation and Nutrition Day (VHSND) get structured and the FLWs come together for review, planning and capacity building. In all the thirty eight districts monthly health sub-centre level platform meeting for supportive supervision, on-going capacity building, planning and review of reproductive maternal, new born and child health activities are conducted by ASHA and AWW by ANMs. Existing 137 block level supervisory and program management platforms such as ANM Tuesday meeting, monthly block level meeting and ASHA Diwas are being strengthened. IFHI team aims to maximize participation of FLWs, build their capacity, motivation and leadership skills and through joint planning and coordination ensure better results and higher impact of services delivered.

Improving capabilities of and tools for frontline workers:

a) **Paper based tools and job aids:**
To enhance the capabilities of FLWs, resource materials including audio visual content for health sub-centre platforms, technical reference materials for front line workers have been created. These include ANM management tools, survey register, home visit register, home visit planner, ASHA, AWW analysis tool, IPC cards and job aid kits (uterus model, calibrated bowls and checklist).

b) **Mobile nurse trainers and mini-skill labs:**
To improve clinical skills of facility staff and drive quality improvement, mini-skill labs are set up in each identified facility. On-site support and training is provided through mobile nurse trainer teams in these skill labs for nurses in functional primary health center, sub divisional hospital and district hospital. On-the-job-training for medical, nursing and support staff, has been prioritized as a core solution by the IFHI project. Training is conducted using appropriate inexpensive equipment, mannequins or models of mothers and babies. Training curriculum and modules are developed, as per the Government of India guidelines.

Innovations and Game Changers

a) **ICT - Continuum of Care Services (CCS):**
This innovation will test whether or not frontline workers using ICT (mobile phone) enabled tools are able to achieve greater coverage and higher quality of services compared to traditional paper based tools. CCS pilot is designed by IFHI-CARE for case management by FLWs throughout the continuum of care. The CCS application has been developed by Dimagi as per protocols devised by CARE team. Different multimedia job aids developed by BBC WST are also integrated in CCS to support Interpersonal Communication (IPC) activities. Formative work for this innovation included development of the application through extensive user testing. CARE with technical support of Dimagi has developed the CCS pilot which includes features such as schedulers, check-lists and automated due lists for all the components across the continuum of care with thorough pre-testing with front line workers. Mathematica is the MLE partner for the Randomized Control Trial (RCT) design and will conduct baseline and end-term evaluation of this pilot.

b) **Team-Based Goals and Incentives (TBGI) for bundling of services across the maternal-infant continuum :**
This innovation is for a team of front line workers instead of individuals. Team goals are being set for provision of bundled health services accompanied by team building and motivational activities. Finally the achievements of teams will be linked with non-financial incentives. Whether such an initiative has a positive impact on coverage of bundled services is being tested. This is being implemented with Georgia Institute

of Technology in providing technical expertise. Mathematica is the MLE partner for the RCT design and will participate in baseline and end term evaluation of this pilot.

c) Improved uptake of birth spacing methods :

This innovation is focused on addressing barriers for high unmet need for spacing services among women of reproductive age. The key barriers include, low awareness on birth spacing choices and associated myths, poor quality of counseling, poor quality of clinical service, lack of follow up bias towards limiting methods due to motivator, provider and client incentives. The innovation will provide insights on improving uptake of spacing methods through availability of quality birth spacing services and implementing strategies for overcoming associated barriers.

d) Home Fortification of Complementary Foods:

Home fortification of complementary food with multiple micronutrients is recommended by World Health Organization (WHO) but not yet introduced in programs in India. It is believed that locally generated evidence of effectiveness and feasibility will be an important factor influencing wider use in India. This pilot includes a RCT to examine the impact of the home fortification of foods on complementary feeding practices and anemia when implemented through the Integrated Child Development Services [ICDS] and health platforms at large scale. The lead technical partner for this innovation is Emory University. Further work will also explore optimal delivery platforms, and cost effectiveness.

e) Referral Package for maternal and neonatal emergencies:

Efforts to strengthen availability of definitive Basic Emergency Obstetric and Neonatal Care [BEmONC] and Comprehensive Emergency Obstetric and Neonatal Care [CEmONC] in public facilities will need to be supplemented by timely and effective referral of maternal and neonatal emergencies from lower to higher centres of care. This innovation will conduct formative studies to identify the factors contributing to an opposing effective referrals at household, community and facility levels. Based on the outcome, a set of interventions will be proposed that can potentially improve effectiveness of referrals at all levels, which can either be further tested or implemented at scale, as appropriate. The lead technical partner for this innovation is Columbia University - Averting Maternal Death and Disability.

f) Operational Effectiveness and Feasibility of Community-Based Identification, Referral Management and follow up of Neonatal Sepsis:

This innovation will test models of management of new-born infections through community based identification of infections by trained FLWs and following simple clinical algorithms to provide treatment and/or referrals. The lead technical partner for this innovation is Save the Children-Saving New-born Lives. Formative work for this innovation includes studying the current service delivery platforms and designing various probable context specific models for identification and treatment.

g) Umbilical Cord Cleansing of neonates with 4% Chlorhexidine (CHX) for facility births:

The lead technical partner for this innovation is Save the Children - Saving Newborn Lives. IFHI has been in consultation with the main stakeholders to obtain agreement on the design of a pilot. The pilot will test and generate sufficient evidence to advance the dialogue on national policy with regard to the use of CHX cord cleansing in facility and home births. This could be implemented at a sufficient scale to contribute and project impact on neonatal mortality.

1.4 DISTRICT PROFILE

The District of Supaul had been a part of Mithilanchal since the Vedic period. The area has been referred to as the fishery area (Matsya Kshetra) in the Hindu mythology. The two oldest democracies namely Angutaran and Apadnigam are known for their existence in the Buddhist era, which comprises of today's area of district Supaul. Soil is alluvial type. The river Koshi flows through the district which is consider as the sorrow of not only this area, but whole of the state of Bihar, Tilyuga Chhaimra, Kali, Tilawe, Bhenga, Mirchaiya, Sursar are the tributaries to it .The type of soil is sandy. Some where it is acetic and somewhere it is basic in nature. Supaul district in Bihar covers an area of 2,420 sq km.Supaul district is part of the Koshi division.Supaul town is the administrative headquarter of the district. The district is bounded by Nepal in the north, Saharsa in the south, by Araria district in the east and on the west by Madhubani district.

TABLE 4- INDICATORS OF SUPAUL:

SL. NO.	INDICATORS	2011
1	Population	2,229,076
2	Male	1,155,283
3	Female	1,073,793
4	Proportion to Bihar Population	2.14%
5	Average Literacy	57.67
6	Male Literacy	69.62
7	Female Literacy	44.77

TABLE 5- COMPARISON OF INDICATORS OF SUPAUL:

SL. NO.	INDICATORS	URBAN	RURAL
1	Population (%)	95.26 %	4.74 %
2	Total Population	2,123,518	105,558
3	Male Population	1,099,495	55,788
4	Female Population	1,024,023	49,770
5	Sex Ratio	931	892
6	Average Literacy	56.89 %	72.74 %
7	Male Literacy	69.03 %	80.78 %
8	Female Literacy	43.82 %	63.64 %
9	Child Percentage (0-6)	19.76 %	16.72 %
10	Male Child Percentage	19.63 %	16.38 %
11	Female Child Percentage	19.91 %	17.11 %

TABLE 6- COMPARISON OF MORTALITY INDICATORS:

SL.NO.	MORTALITY INDICATORS	BIHAR (2010-12)	SUPAUL (2010-12)	BIHAR (2012-13)	SUPAUL (2012-13)
1	U5MR	77	89	70	82
2	NMR	35	45	32	42
3	IMR	55	64	48	58

2.0 REVIEW OF LITERATURE

- Krishna Kumar Sahu et al conducted a cross sectional facility based survey from Oct 2011 to March 2012 at six Bal Mahila Chikitsalyas (BMCs) in Lucknow district. Conclusion drawn from this study were new born care corner was present in all the BMCs and adequate light was present in those new born care corner. 2 generators were functional whereas 4 were not functional due to defect or not availability of fuel. Nurses were available 24*7 in all BMCs, radiant warmer was present only in 3 BMCs and Self inflating resuscitation bag with mask was present in all BMCs. Oxygen facility was there in all the BMCs. Feeding tube was available in only 4 BMCs. In all BMCs Suction pump / mucus trap was present and functional. IV infusion set for new born was present in only 4 BMCs.Mechanical body weight scale was present and functional in all BMCs. Phototherapy unit was present and functional in 2 BMCs, Present but not functional in 3 BMCs & not present in one BMC. Drugs like dextrose normal saline, Ampicillin, Gentamicin, Aminophylline were available in all 6 BMCs but Adrenaline & Calcium gluconate was available in only in 2 BMCs. Vitamin K was available in only one BMC. [1]
- Linda Vesel et al in 2012 conducted a study on Quality of new born care: a health facility assessment in rural Ghana using survey, vignette and surveillance data. The study was conducted seven districts in Brong Ahafo Region, Ghana in 64 different facilities. The conclusion drawn from above study was (52)81% got clean water supply, only (19)30% reliable electricity, (55)86% got fridge for storage, (60)94% got sink with soap. Bag and mask were available in (52)81%, (31)48% facilities got oxygen cylinder, (59)92% facilities got nasal suction. [2]
- In 2013, a study on Current Neonatal Resuscitation Practices among Paediatricians in Gujarat, India was conducted by Satvik C. Bansal et al. In this study they took 126 paediatricians. Out of those, 74 (58.7%) were trained in neonatal resuscitation. Neonatal Intensive Care Unit with mechanical ventilation facilities was available for 68(54%) of respondents. Only 34 (27%) reported availability of oxygen blender. Self-inflating resuscitation bag with mask was available with 81.7% paediatrician. Only 73(57.9%) reported to conduct resuscitation of high risk / unstable infants in the new born corner in the delivery room under radiant warmer. Only 46(36.5%) paediatrician applied plastic bags/ thermal rappers for extremely low birth weight new born. Many participants 78 (61.9%), adopted the current

recommendations of endotracheal suctioning of non-vigorous new born in cases of meconium stained liquor. 35(27.8%) followed oral cavity suctioning before delivery of shoulder. [3]

- In 2012, Alma M Martinez et al conducted a study on Barriers to neonatal care in developing countries: Parents and providers perceptions. This project involved collaboration between the University of California San Francisco and four hospitals in Southeast Asia. In this study they took interviews of 198 parents and 212 new born care providers. 39% reported that hospitals are too distant; almost 20% did not know where to obtain care. Parents cited lack of cleanliness (46%), poor availability of medications (42%) or services (36%), staff friendliness (42%), poor infant outcome (45%), poor communications with staff (44%) and costs of care (34%) as significant problems during prior new born care. Providers cited lack of equipment (74%), lack of staff training (61%) and poor infrastructure (51%) as barriers to providing neonatal care. [4]
- In 2000-2002, Pattinson RC conducted a study on ‘’Why babies die – a perinatal care survey of South Africa’’. According to this study there were preventable delays associated with perinatal deaths in rural areas of South Africa. Out of which the followings are associated with new born care such as 4.9% of perinatal death occur due to inadequate facilities and equipment in neonatal units and nurseries. 3.5% perinatal death occur due to non-existent or poor antenatal care. 3.2% perinatal death due to poor intra-partum foetal monitoring. 0.8% of perinatal death due to delay in medical personnel calling for expert assistance. 0.8% perinatal death due to inadequate neonatal management plan. [5]
- Sutapa B Neogi in 2013 conducted a study on Setting up a Quality Assurance Model for Newborn Care to Strengthen Health System in Bihar, India. The first quarter data (from 37 districts and 420 NBCCs) was collected in the month of January 2012 and the second set (38 districts, 463 NBCCs) in April 2012. The data collection process continued for one month. The conclusion drawn from this were as follows 12%, 63%, and 25% units were categorized as good, average and poor based on infrastructure. For equipment, 68% of units performed poorly; for stock maintenance 64% and 35% of NBCCs fell under good and average categories respectively; most (54%) NBCCs had average scores for aseptic measures; 30% fell in the poor category. [6]

- In April 2009 to March 2010, Sumit Malhotra et al conducted a study on Assessment of Essential New born Care Services in Secondary-level Facilities from Two Districts of India. In this study they include Nagaur district in Rajasthan and Chhatarpur district in Madhya Pradesh were included. Six secondary-level facilities from the districts two district hospitals (DHs) and four community health centres (CHCs) were evaluated, where maximum institutional births within districts were taking place. Two CHCs in Chhatarpur did not have suction device. The average knowledge score amongst service providers in resuscitation was 76%. At the time of this assessment, both the DHs at Nagaur and Chhatarpur did not have separate functional units for new-borns but, within the paediatric ward, each of the two beds with radiant warmer was used for providing new-born care. In two out of three facilities in Nagpur, NCCs were not used and maintained poorly. Only in half of all facilities, the NCC was kept draught-free. Medical thermometers were available in about half of the facilities but none of the facilities was equipped with room thermometers. Other basic physical facilities relating to new-born care, such as cord-tie, cord-cutter, and infant- weighing scale were available at most facilities, except in one of the CHCs in Nagaur. Hand gloves were brought by the mother or other attendants was common. Other items for asepsis, such as disinfectants, disposable syringes and needles, gowns, and slippers were available and being used in most facilities. Equipment for new born resuscitation was available and functioning in most of the study facilities. Resuscitation bags with masks were available in four out of six facilities. However, masks of different sizes were not available. Oxygen supply was present in most facilities, and suction devices were present and functional in all facilities, except the two CHCs in Chhatarpur. A locally-prepared suction device, made by cutting intravenous (IV) tube, was in use. Laryngoscopes and endotracheal tubes for infants were available at the DH in Nagaur but not in Chhatarpur. At the CHC level, even if available, these were not being used.Radiant warmers were available in only three facilities (all in Chhatarpur) but were functional only in two. The warmers were also available and functional in both district hospitals in their paediatric wards. Regular inspection and maintenance of these equipment were not carried out, and delay in reporting of repair workers was a frequent problem. Cups and spoons for feeding the new-born were not available in any of the facilities, and nasogastric tubes for feeding sick infants were available only at the district hospitals. Almost all assessed facilities did not have a phototherapy unit. The one available in

the Chhatarpur District Hospital was not in working condition. Drugs like ampicillin, gentamicin, adrenaline, aminophylline & vitamin k were available in all facilities. All the facilities git trained personnel's. [7]

- Leif Eriksson et al in 2008 conducted a study on Evidence-based practice in neonatal health: knowledge among primary health care staff in northern Viet Nam. The study was conducted in 18 hospitals and 187 community health centres. This study shows according to Guidelines of reproductive health (2003) by the Ministry of Health in Viet Nam availability of infrastructure were as follows: Soap 100% (18) hospitals & 94% (175) CHCs, Clean gloves 100% (18) hospitals & 97% (181) CHCs, Clean water 100% (18) hospitals & 81% (151) CHCs, Alcohol for disinfection 94% (17) hospitals & 95% (178) CHCs, Iodine for disinfection 100% (18) hospitals & 92% (172) CHCs, Antibiotics 100% (18) hospitals & 99% (185) CHCs, Forceps 44% (8) hospitals & 2% (3) CHCs, Vitamin K 67% (12) hospitals & 11% (21) CHCs, Radiant heater 89% (16) hospitals & 11% (21) CHCs, Towels for new born 78% (14) hospitals & 38% (71) CHCs, Thermometer 100% (18) hospitals & 99% (185) CHCs and Face mask and ambo for new born 89% (16) hospitals & 10% (18) CHCs. [8]
- In September 2013, VIMARSH consultancy group conducted study on EVALUATION OF COMPREHENSIVE CHILD SURVIVAL PROGRAMME UNDER NRHM IN UTTAR PRADESH. The study was conducted in 17 districts of UP. The total sample covered for the study was 8256. The sample comprised of 7491 Eligible Women, 340 ASHA, 340 ANM, 34 MOICs, 17 ACMO (RCH)/Nodal Officer CCSP, 17 DPM (NRHM) and 17 District Level Trainers (paediatricians). According to this study only 58.4% of total respondents have been counselled by ASHAs on Kangaroo Mother Care whereas for immunization it is 92.7% of the respondents interviewed told that they were counselled by ASHA regarding immunization of new born. 98.5% respondent stated that mother's milk is the best food for baby. In response to breastfeeding practices, 79.5% women reported that they have given colostrums to new born and 79.3% stated that they exclusively breastfed infants for first six months or are exclusively breastfeeding their babies. Nearly, 52% respondents informed that their infants fell sick during first two months. It is important to state here that only 12.3% infants have been treated at government run hospitals, private hospitals in this regard accounted for 74.4%. For remaining 13.3% infants, treatment was reportedly given at home. 79.1% cases ASHA's provide home

base new born care. It was reported by some of the ASHAs that many health facilities are running with poor infrastructure. They reported that there is no regular supply of electricity, lack of safe drinking water, lack of proper sitting arrangements, unhygienic toilets, dirty room & galleries etc. Some health facilities are running in rented buildings, which are in poor condition & need repair. Poor infrastructure is one of the major reasons why people do not prefer to get treatment done at government run health facilities, as reported by ASHAs. NBCC are established in majority of the BHPC/CHC. It is observed during the visits to BHPC/CHC that though NBCC are established, these are not fully functional. There are only few equipment and some medicines available. In few cases it has been observed that 20 items required as per guidelines for NBCC have not been received. Radiant warmers in few BHPC were found to be non-functional; instead 200 watts bulbs were being used. Moreover it is further observed that height of the bulb had been kept very low as against norm of 60 cms height. As per CCSP Protocol, no records of sick children treated in these NBCC are available. No records are being kept for which life support services (resuscitation) have been provided. Referral cases are not being recorded or followed up at BHPC/CHC. Availability of trained staff is another big issue at BHPC/CHC. In few BHPC/CHC, MOICs were not aware of the basic requirements for NBCC. At few BHPC/CHC, it has been also observed that material received for NBCC had been lying unpacked. [9]

- Zakir Husain, 2011; in association with the Population Research Centre, Institute of Economic Growth, Delhi on Health of National Health Rural Mission. Data from the health ministry reveals that 11% of the PHCs do not have a doctor (this is 17% in high focus states). At the CHC level, only 49% of the required specialist posts have been sanctioned so far, and 25% positioned. Less than a third of the required number of staff nurses has been positioned. None of the PHCs surveyed in Shrawasti (UP) had oxygen cylinder, infant warmer, baby cradles and laryngoscope. Shortage of baby cradles & laryngoscope seen in Sidhi district of MP. [10]

3.0 RATIONALE

As per the norms of the government of India a New born care corner is mandatory is each and every government facility where deliveries are conducted. The major issue is not just the availability of new born care corner, but its functionality. The current infant mortality rate in Bihar is 43/1000 live births, neonatal mortality rate is 35/1000 live births and under 5 mortality rate is 77/1000 live births. In Supaul district the IMR is 58, NMR 42 and U5MR 82 per 1000 live births.

The major causes for neonatal deaths in India are Prematurity and low birth weight, neonatal infections, birth asphyxia and birth trauma, pneumonia and diarrheal diseases. So in order to achieve the MDG-4 we need to improve institutional deliveries. Interventions combining resuscitation of new-born baby, breastfeeding, prevention and management of hypothermia and kangaroo mother care (KMC) can reduce NMR by more than half. NBCC is a space within the delivery room in any health facility where immediate care is provided to all newborns at birth. This area is mandatory for all health facilities where deliveries are conducted.

This study was thus designed to assess the availability of various equipment, infrastructure, manpower and neonatal management practices with regards to immediate care, infection control and bio medical waste.

4.0 OBJECTIVES

4.1 GENERAL OBJECTIVE:

To assess the availability and functionality of new born corners in primary health centres of Supaul district in Bihar.

4.2 SPECIFIC OBJECTIVES:

1) To check the availability of new born corners at PHC level.
2) To assess the gaps in each new born corner.
3) To suggest a road map to full-fill these gaps.
4) To assess the infrastructure & human resource of the NBCC.
5) To assess the availability of essential equipments, IV fluids and essential drugs in NBCC.
6) To assess the protocols followed for new-born care, biomedical waste disposal & hygiene practice in NBCC.

5.0 RESEARCH METHODOLOGY

STUDY AREA:

The study was conducted in Supaul district of Bihar, having population of 2,229,076. The district is bounded by Nepal in the north, Saharsa in the south, by Araria district in the east and on the west by Madhubani district. There are total 11 blocks & 9 PHCs and 2 referral units in Supaul.

STUDY DESIGN:

A Cross-Sectional study was conducted in between 1st February 2014 to 30th April 2014.

Up till 20th March a thorough review of literature was done with the help of various national and international studies and a quantitative questionnaire was designed using close ended questions regarding the general conditions of infrastructure in new-born care corner, electricity & illumination of NBCC, hygiene practices in facilities, protocols followed in facilities, human resource in facilities, Essential Surgical Equipments, Essential Equipments, IV Fluids & Antibiotics, Essential Drugs, Biomedical Waste Disposal.

Data was collected between 24th March 2014 to 10th April 2014 and after that data was compiled and analysed with the help of facility assessment tool developed by CARE, INDIA.

STUDY SAMPLE:

There are 9 PHCs available in Supaul district. For this study all those 9 PHCs were taken as sample.

SAMPLING TECHNIQUE:

For collecting the sample convenient sampling was used because the major constraint while collecting the data was the election time & ongoing IRS round so it was bit difficult to leave the district and go to other district for data collection. Though it was difficult for travelling from one block to other at that time but 9 PHCs were covered that is present in Supaul district.

STUDY RESPONDENTS:

ANM, BHM, MOIC

METHODS OF DATA COLLECTION:

A structured pre tested facility assessment tool was used to collect the data.

TOOL:

-For Primary data collection a quantitative questionnaire was used using closed ended questions. The questionnaire covered the information on infrastructure of the NBCC, equipment's of NBCC, hand wash facilities in NBCC, emergency drugs availability in NBCC, biomedical waste management & infection control. A minimum of 20 minutes time was spent on each respondent and before filling the questionnaire consent was taken with the respondents that their identity and name will not be disclosed.

-Secondary data taken from internet source & other related studies done before in Saharsa district & Supaul district regarding IFHI by CARE, INDIA. The data collected by secondary sources was to know more about the NBCC. This mainly covers the instruments needed for NBCC, drugs required for the NBCC, infectious & non-infectious waste material disposal, hygiene practices in the NBCC, breastfeeding & kangaroo mother care, IV fluids & essential drug availability in NBCC etc.

-Data Analysis was analyzed with Facility Assessment Tool & Microsoft Excel sheet.

STUDY PERIOD: 27th January 2014 to 30th April 2014.

6.0 DATA ANALYSIS & INTERPRETATION

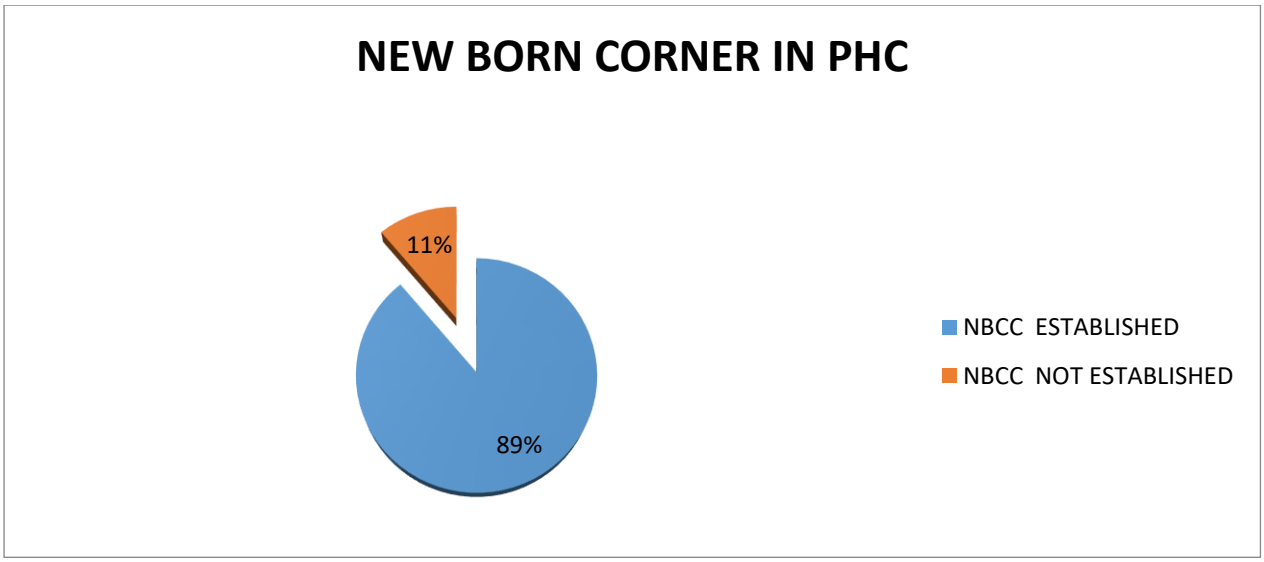


FIGURE 1.0: NEW BORN CORNER IN PHC

Figure 1 represents the percentage of new born corner established in PHCs. NBCC are established in 89% of PHCs that is 8 out of 9 PHCs. Only 11% i.e. only one PHC doesn't have NBCC.

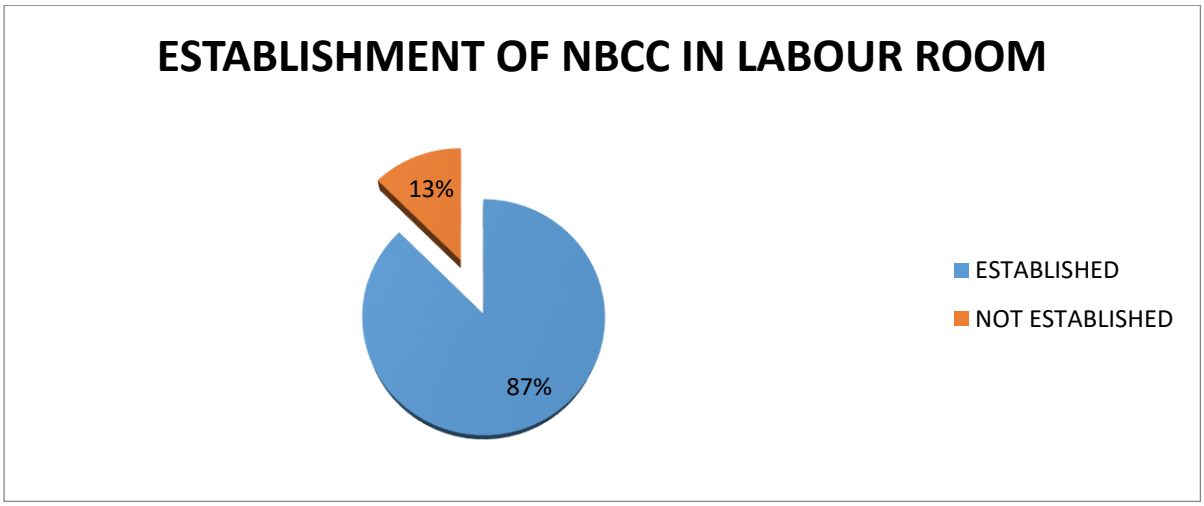


FIGURE 1.1: ESTABLISHMENT OF NBCC IN LABOUR ROOM

Figure 1.1 represents the percentage of NBCC in Labour room. Out of those PHCs where NBCC is established, 87% of NBCC are established in Labour room where only 13% i.e. one PHC have individual NBCC outside Labour room.

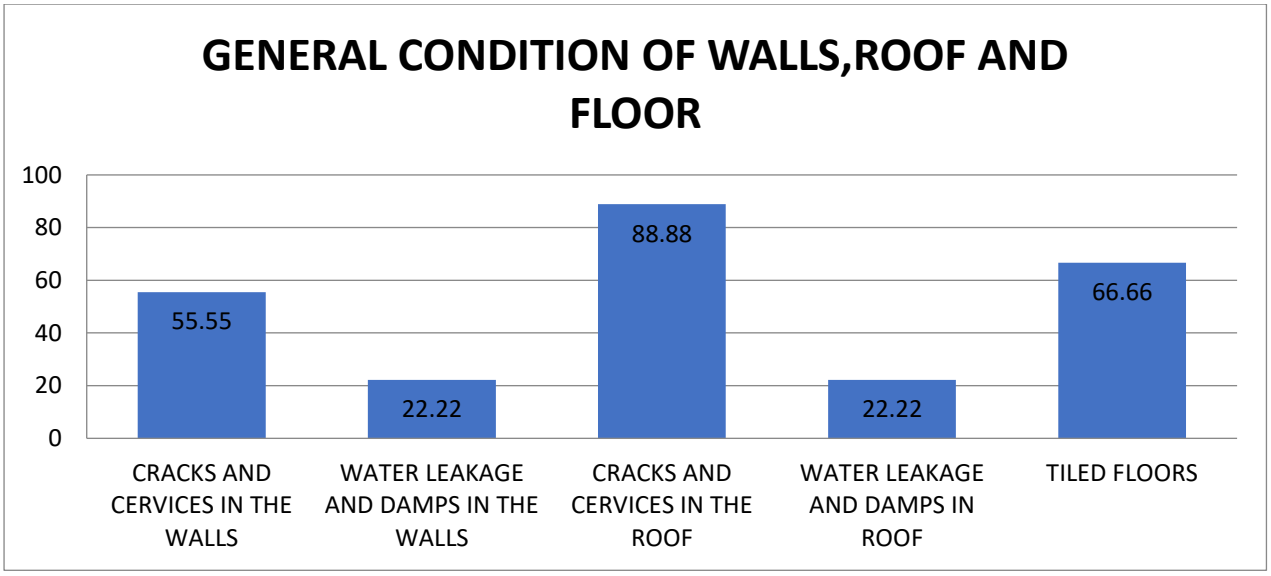


FIGURE 2: GENERAL CONDITION OF WALLS, ROOF AND FLOOR

Figure 2 represents the general condition of NBCC in PHCs like condition of walls, roof and floor. Approximately 55.55% of walls have cracks & cervices, in 22.22% of walls there is a problem of water leakage & damps. 88.88% of NBCC roofs have cracks & cervices, in 22.22% of roofs got the problem of water leakage & damps. In 66.66% of NBCC there is tile on the floor.

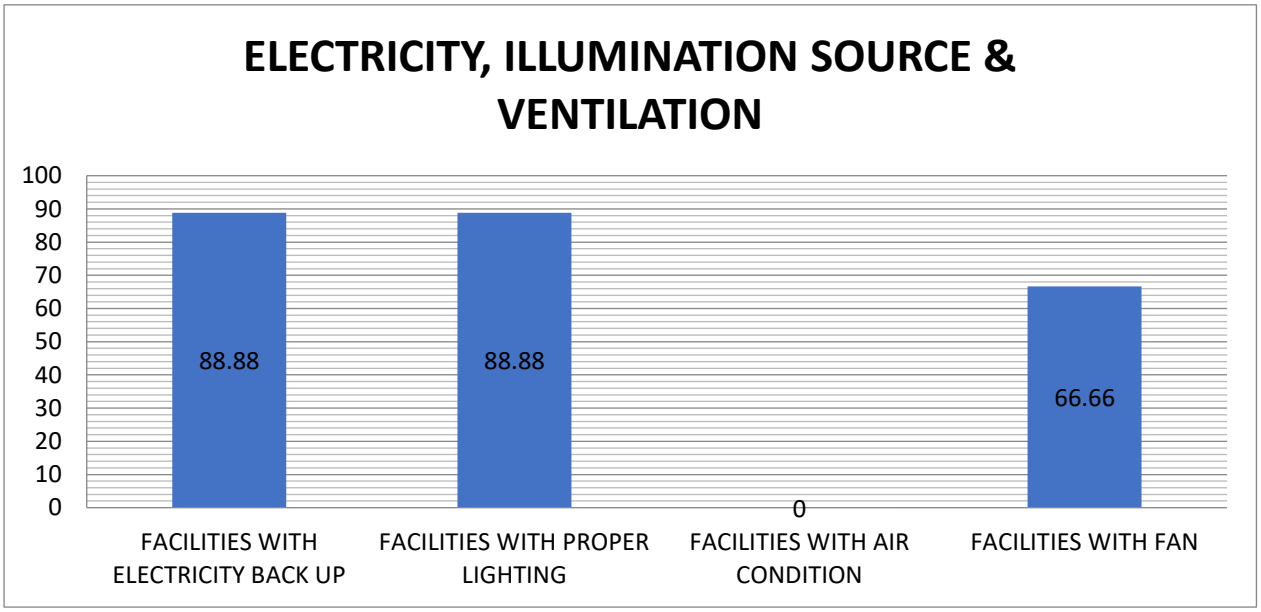


FIGURE 3: ELECTRICITY, ILLUMINATION SOURCE & VENTILATION

Figure 3 represents electricity, illumination source & ventilation. Approximately 88.88% of facilities have electricity back up like generator & invertors. In 88.88% of facilities they are using either CFLs / tube light or electrical bulbs for lighting. No facilities got air conditioning. Around 66.66% of facilities have ceiling fan and exhausted fan.

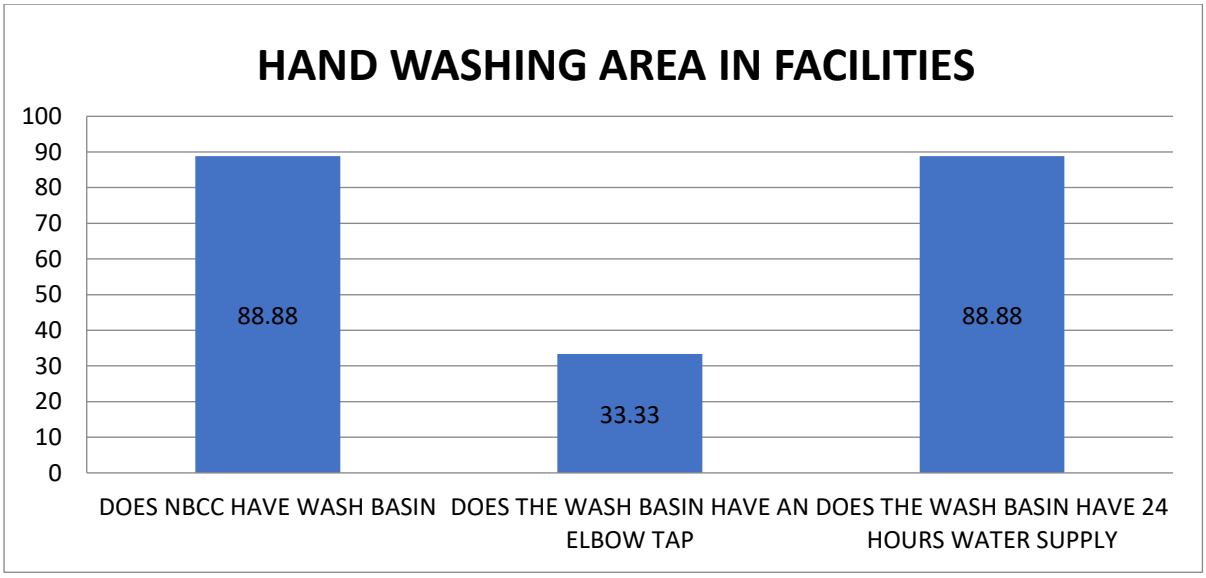


FIGURE 4: HAND WASHING AREA IN FACILITIES

Figure 4 represents hand washing area in facilities in the labour room of facilities. 88.88% of labour room got wash basin, 33.33% wash basin has elbow tap & 88.88% wash basin have 24 hours water supply.

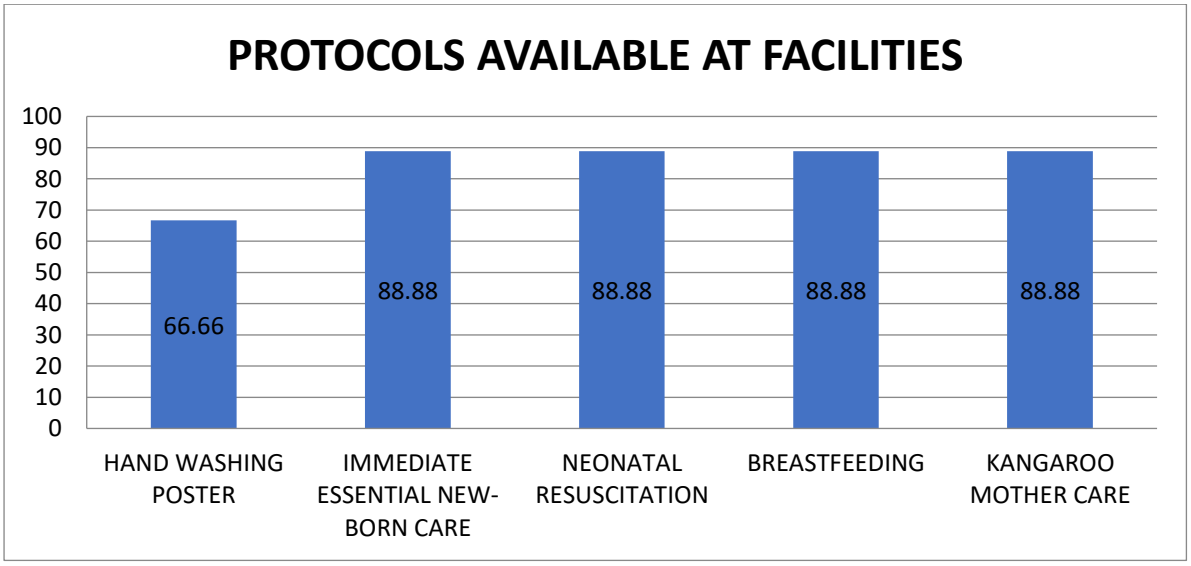


FIGURE 5: PROTOCOLS AVAILABLE AT FACILITIES

Figure 5 represents the protocols that have been followed in labour room facilities. 66.66% of labour room have hand washing poster, 88.88% of labour room have immediate essential new born care, 88.88% of facilities have neonatal resuscitation and 88.88% follows breast feeding & 88.88% of facilities have KMC.

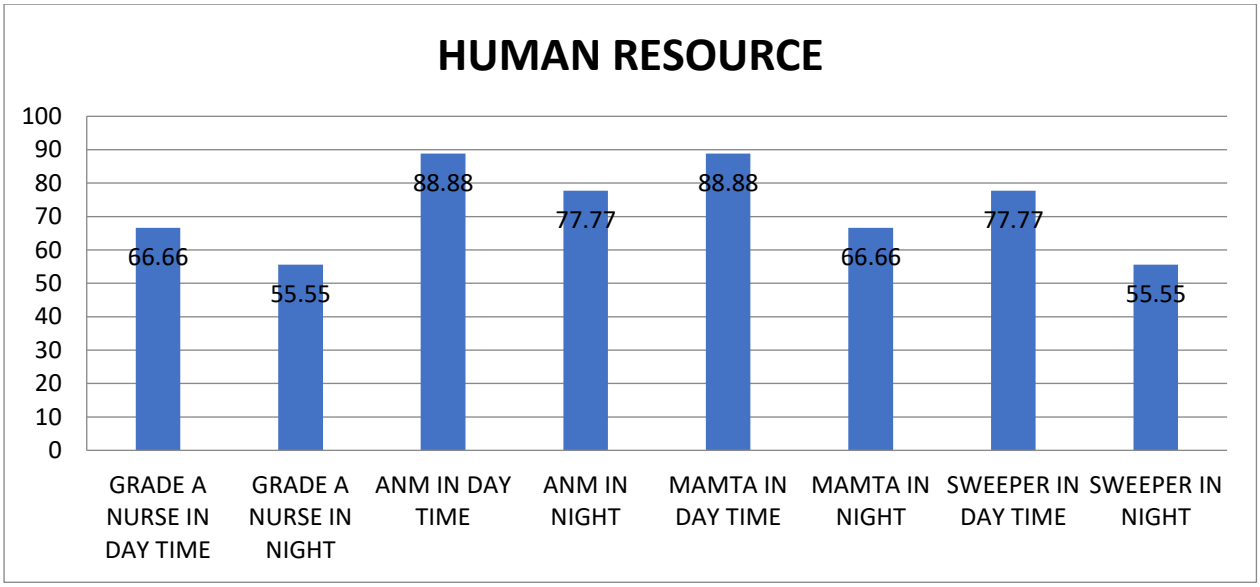


FIGURE 6: HUMAN RESOURCE

Figure 6 represents the human resource availability. During day time Grade A nurse, ANM, MAMTA & Sweeper present in 66.66%, 88.88%, 88.88% & 77.77% NBCC respectively. During day time Grade A nurse, ANM, MAMTA & Sweeper present in 55.55%, 77.77%, 66.66% & 55.55% NBCC respectively.

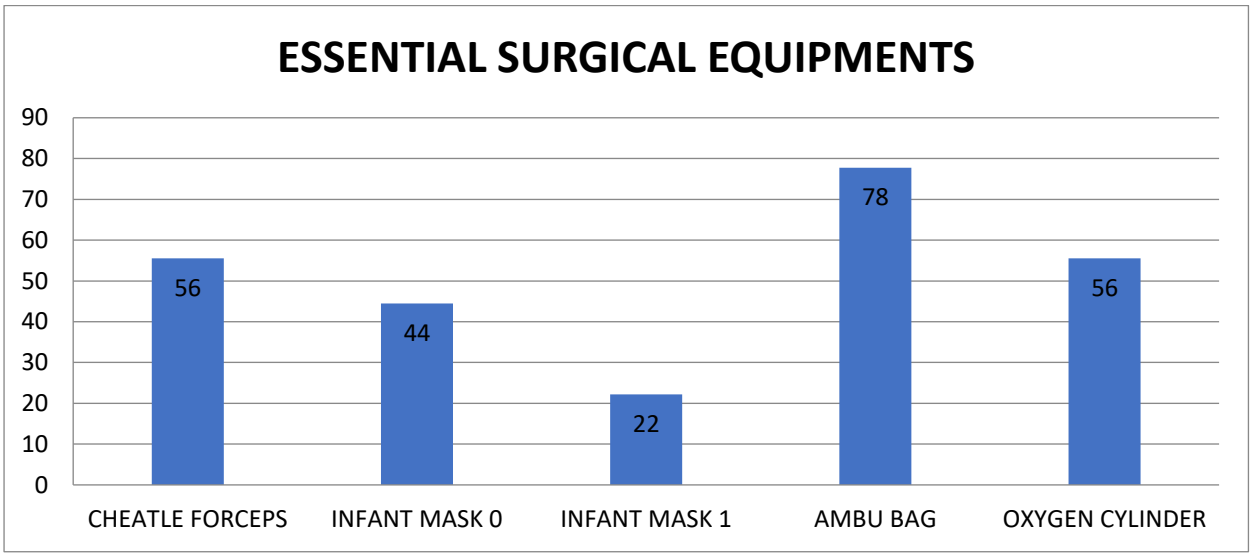


FIGURE 7: ESSENTIAL SURGICAL EQUIPMENTS

Figure 7 represents essential surgical equipment's availability in NBCC, PHCs. In 56 % NBCC facility cheatle forceps was present, infant mask 0 & 1 size present in 44% & 22% NBCC facilities respectively. Ambu bag was present in 78% facilities. Oxygen cylinder was present in 56 % NBCC facilities.

FIGURE 8: ESSENTIAL EQUIPMENTS

Figure 8 represents availability of essential equipment's in NBCC. Radiant warmer, weighting scale, light & syringe cutter available in 89% of NBCC, in 78% NBCC resuscitators & pump suction were available. Thermometer was available in 44% NBCC. Phototherapy machine was available in 89% NBCC.

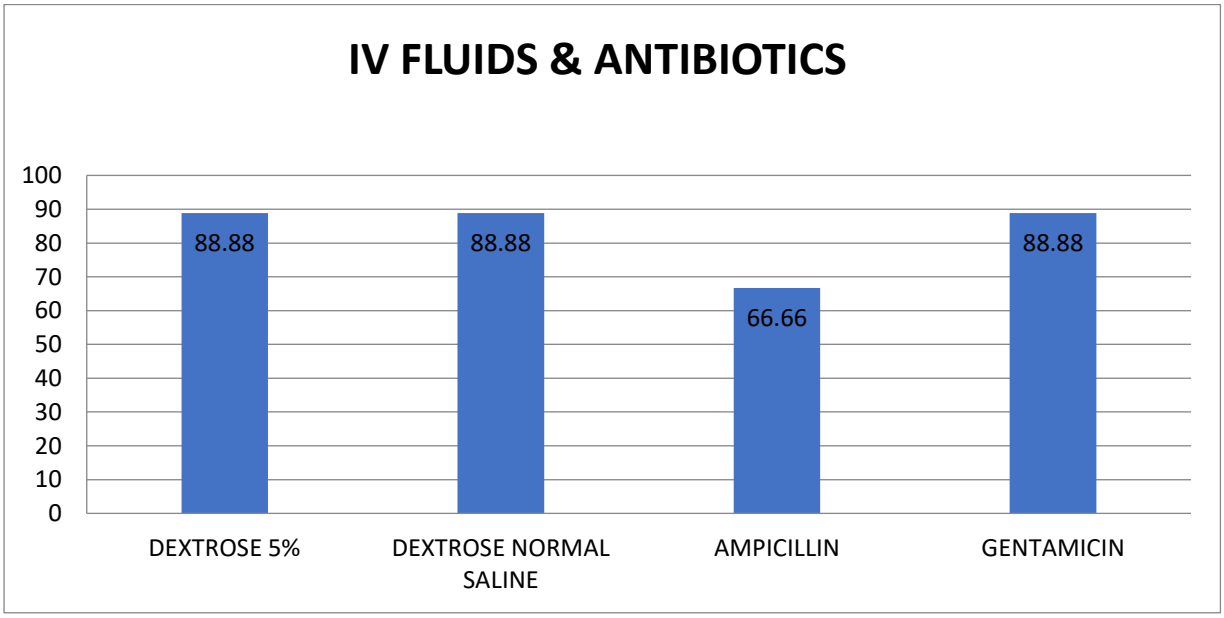


FIGURE 9: IV FLUIDS & ANTIBIOTICS

Figure 9 represents the IV fluids & antibiotics availability in NBCC. Dextrose 5%, Gentamicin & Normal saline was available in 88.88% of NBCC. In 66.66% NBCC ampicillin was available.

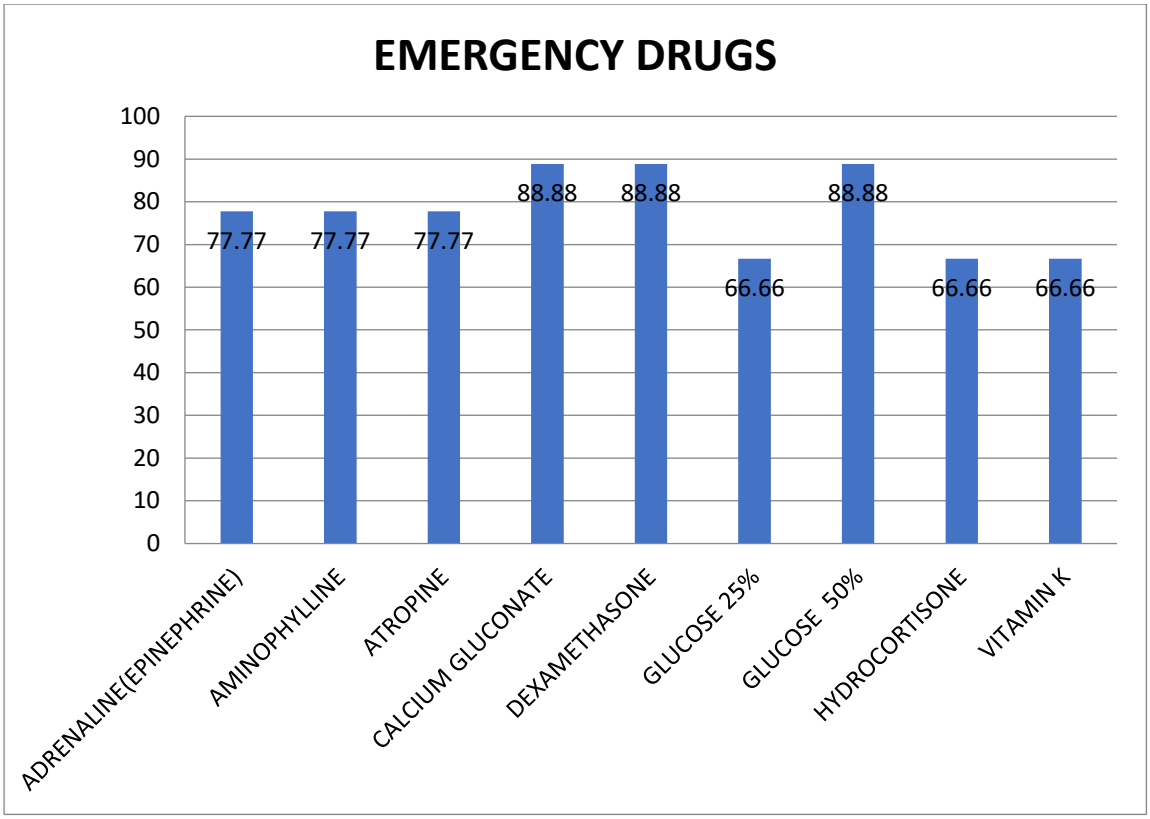


FIGURE 10: ESSENTIAL DRUGS

Figure 10 represents the availability of essential drugs in NBCC. Calcium gluconate, Dexamethasone & Glucose 50% was available in 88.88% of NBCC. Adrenaline, Aminophylline & Atropine was available in 77.77% of NBCC. Glucose 25%, hydrocortisone & Vitamin K were present in 66.66% of NBCC.

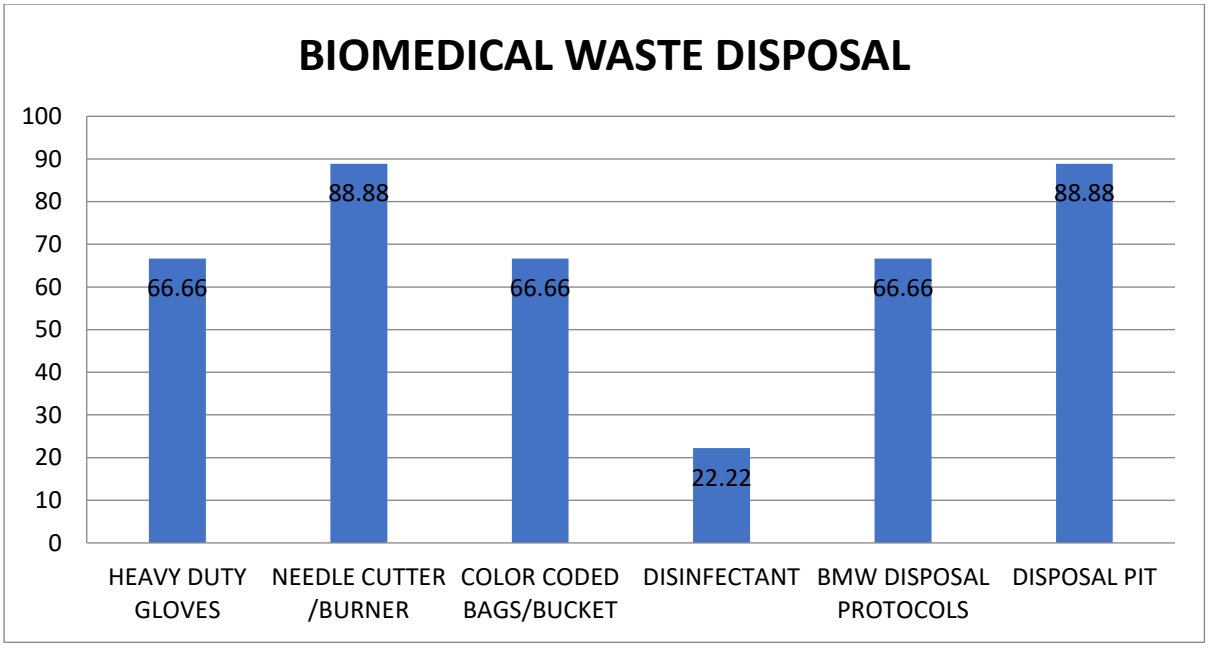


FIGURE 11: BIOMEDICAL WASTE DISPOSAL

Figure 11 represents the biomedical waste disposal. In 66.66% of NBCC heavy duty gloves are used, 88.88% use needle cutter or burner, colour coded bags / buckets are used in 66.66% of NBCC. Disinfectant is used in only 22.22% of NBCC. BMW disposal protocols like BMW disposal posters were present in 66.66% of NBCC & Disposal pit were available in 88.88% of NBCC.

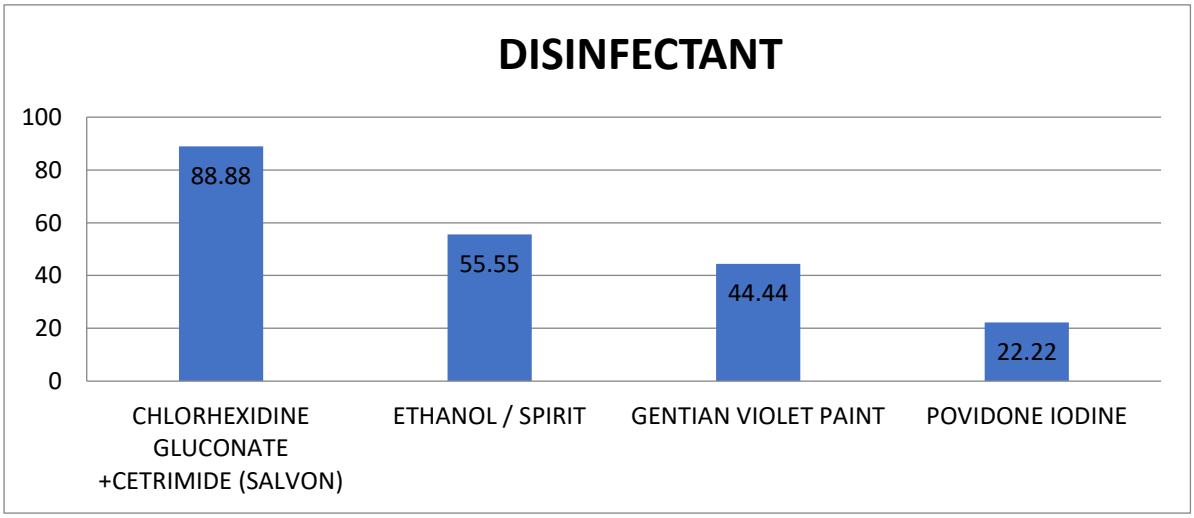


FIGURE 12- DISINFECTANT

Figure 12 represents the various types of disinfectants that have been used in NBCC. Most commonly used disinfectant is savlon i.e.88.88% followed by spirit/ ethanol i.e. 55.55%. In 44.44% of NBCC gentian violet paint is used & Iodine is used in 22.22% of NBCC.

7.0 FINDINGS

In Supaul district there are 11 blocks. Out of these PHCs are present in 9 blocks i.e. Sadar (Supaul), Saraigarh Bhaptihai, Basantpur, Nirmali, Marauna, Pratapganj, Kishanpur & Chhatapur. Other two blocks i.e. Raghopur & Tribeniganj there is referral unit present. Out of these PHCs Sadar (NBCC) PHC doesn't have NBCC in it as it is nearer to District Hospital. In Nirmali NBCC isn't present inside the labour room.

According to A cross sectional facility based survey" conducted from Oct 2011 to March 2012 at six Bal Mahila Chikitsalyas (BMCs) in Lucknow district by Krishna Kumar Sahu et al report shows that 2 generators were functional, Nurses were available 24*7 in all BMCs, radiant warmer was present only in 3 BMCs and Self inflating resuscitation bag with mask was present in all BMCs. Oxygen facility was there in all the BMCs. Feeding tube was available in only 4 BMCs. In all BMCs Suction pump / mucus trap was present and functional. Mechanical body weight scale was present and functional in all BMCs. Phototherapy unit was present and functional in 2 BMCs, Present but not functional in 3 BMCs & not present in one BMC. Drugs like dextrose normal saline, Ampicillin, Gentamicin, Aminophylline were available in all 6 BMCs but Adrenaline & Calcium gluconate was available in only in 2 BMCs. Vitamin K was available in only one BMC.

On the contrary to the above study the findings in current study were as follows electricity back up was present in 88.88% of PHCs. During day time Grade A nurse, ANM, MAMTA & Sweeper present in 66.66%, 88.88%, 88.88% & 77.77% NBCC respectively. During day time Grade A nurse, ANM, MAMTA & Sweeper present in 55.55%, 77.77%, 66.66% & 55.55% NBCC respectively. Self-inflating resuscitation bag with mask was present in 78% of the NBCC. Oxygen cylinder was present in 56 % of NBCC. Suction Pump was present in 78% NBCC. Mechanical body weight was present in 89% NBCC. Phototherapy machine was present in 89% NBCC. Drugs like dextrose normal saline, Ampicillin, Gentamicin, Aminophylline, Adrenaline & Calcium gluconate were 88.88%, 66.66%, 88.88%, 77.77%, 77.77% & 88.88% respectively. Vitamin K was available in 66.66% of NBCC.

According to the study on "A study on Evidence-based practice in neonatal health: knowledge among primary health care staff in northern Viet Nam" conducted in the year 2008 by Leif Eriksson et al report that availability of infrastructure were as follows: Clean water 100% (18) hospitals & 81% (151) CHCs, Alcohol for disinfection 94% (17) hospitals & 95% (178) CHCs, Iodine for disinfection 100% (18) hospitals & 92% (172) CHCs,

Antibiotics 100% (18) hospitals & 99% (185) CHCs, Forceps 44% (8) hospitals & 2% (3) CHCs, Vitamin K1 67% (12) hospitals & 11% (21) CHCs, Radiant heater 89% (16) hospitals & 11% (21) CHCs, Thermometer 100% (18) hospitals & 99% (185) CHCs and Face mask and ambo for new born 89% (16) hospitals & 10% (18) CHCs.

On the contrary to the above study the findings in current study were as follows clean water supply 24 *7 was there in 88.88% NBCC, Alcohol for disinfection55.55% NBCC, Iodine for disinfection 22.22% NBCC, Antibiotics like Ampicillin & Gentamicin was present in 66.66% & 88.88% NBCC respectively, Forceps 56% NBCC, Vitamin K present in 66.66% NBCC, Radiant heater 89% NBCC, Thermometer 44% NBCC and Face mask of size 0 & 1 were present in 44% & 22% NBCC respectively. Ambu bag was present in 78% NBCC.

According to the study on Assessment of Essential New born Care Services in Secondary-level Facilities from Two Districts of India; conducted by Sumit Malhotra et al. 76% NBCC got resuscitation, thermometers were present half of the NBCC but room thermometer was absent in all NBCC. Infant- weighing scale was available at most facilities. Disinfectants, disposable syringes and needles were available in almost all the NBCC. Resuscitation bags with masks were available in four out of six facilities. Different sizes of masks were not available. Oxygen supply was present in most facilities, and suction devices were present and functional in all facilities. Drugs like ampicillin, gentamicin, adrenaline, aminophylline & vitamin k were available in all facilities.

Similar kind of findings were found in the current study in 78% NBCC got resuscitation, thermometers were present in 44% of the NBCC & room thermometers were also present & functional in those NBCCs. Infant weighting scale was available in 89% of NBCC. Disposable syringes & needles were available at almost all NBCC. Disinfectants were used in only 22.22% of NBCC. Most commonly used disinfectant is savlon followed by spirit/ ethanol, gentian violet paint & Iodine.Resuscitation bags with mask were available in 78% NBCC facilities. Different sizes of infant mask i.e. 0 & 1 size present in 44% & 22% NBCC facilities respectively. Oxygen supply was present in 56 % NBCC facilities. Drugs like ampicillin, gentamicin, adrenaline, aminophylline & vitamin k were available in 66.66%, 88.88%, 77.77%, 77.77% & 66.66% of NBCC respectively.

According to the study on “Quality of new born care: a health facility assessment in rural Ghana using survey, vignette and surveillance data” was conducted by Linda Vesel et al in

2012. 81% got clean water supply, only 30% reliable electricity, 94% got sink. Bag and mask were available in 81%, 48% facilities got oxygen cylinder, 92% facilities got suction.

Similar kind of findings found in the current study in 88.88% got water supply, in 88.88% got electrical back up in terms of either invertors or generator, 88.88% got washbasin. Bag & mask were available in 78% cases, 56% facilities got oxygen cylinder, 78% facilities got pump suction.

8.0 LIMITATIONS

The information collected was based on responses of MOIC, BHM & ANM and by personal observations. Although the study was one of the initial ones to give an evidence of feasibility of operating these block-level new-born care corners, yet it has its own limitations.

1. The major issue that we came across during the data collection was the election. Due to election in Supaul district transportation from one block to other became difficulty as there was checking going on everywhere. Also there was a communal violence due to murder of local leader by opposite party.
2. The second issue was ongoing IRS round. We need to do regular monitoring of IRS round at different villages of different blocks of Supaul.
3. The third issue was time constrain.
4. The fourth issue; as we need to check for the each equipments & infrastructure of NBCC the number of questionnaire was more, to answer that number of questions BHM, ANM & MOIC needed to spend that much of time from their busy schedule. As it minimum take continuous 3 hours to complete one full NBCC assessment, we did the interview according to their convenience on that day only so it took whole day to finish NBCC assessment. But interviewees were very cooperative and they gave all the answers as per their knowledge.

9.0 RECOMMENDATION

- NBCC can be made fully functional. MOICs can be asked to submit the list of requirements relating to medicines and equipment's. He can be directed to report the requirements once in a fortnight.
- Availability of trained staff can be ensured. MOIC can take initiative to train the staffs. Any materials related to staff training can be reported to the higher authorities.
- Record for assisted delivery and referral records can be prepared. Soft copy of the record can be maintained regularly & can be cross checked by MOIC in a regular basis.
- RKS funds can be utilized to meet urgent needs such as medicines; surgical equipment's & other needed entities.
- Infant Mortality and Mother Mortality can be reported and cause of death can also be reported by the ground level workers such as ASHAs and AWWs. Because they do the regular rounds in the village. By doing this there will be decrease in number of unreported cases.
- To motivate ASHAs for home visits, incentive to them can be streamlined as at present they feel distracted due to lack of any incentive for this activity and have shown less interest due to non payment. ASHAs can be categorized into three categories - A, B & C based on her performance. Their capacity can be built as per their capability to handle the situation and based on their academic qualifications.
- Competency base training of all staff can be done. This is a cost effective way of training and it will reduce overall cost of the training.
- Regular meeting of all staffs can be done for capacity building, continuous education upon new things in the field, to know the obstacles faced by the staffs while performing their work.
- More focus can be given upon the functional equipments. The equipment which are non-functional for a longer period of time and can't be repaired should be replaced by new ones.
- Skilled persons or those staffs who knew about the functionality of the equipment can handle that equipment not everyone.
- Soft copy of each record can be maintained. For future reference soft copy of record will save much time.
- Strict rules can be followed in NBCC that other than the staff of NBCC nobody can use the equipments or infrastructures present in the NBCC.

- Equipments can be kept clean at a regular basis & maintained properly. Cheatle forceps can be kept inside savlon solution & that savlon also changed at a regular basis. Suction jar can be clean daily basis as it more prone to infection.
- Ambu bags & Mask of different size can be provided to all the NBCC.
- Inventory control, Supply chain management can be check at regular basis by the store keeper to avoid stock out. And if there is overstock in one PHC and other have stock out then they can supply them the stocks so that stock can be utilized properly and they will be less chance of expiry of stocks.
- For biomedical waste disposal some of the NBCC's were following the protocols partially but not fully. Guidelines can be given to all the NBCC to follow the biomedical waste disposal protocols & where there is needed old coloured buckets should replaced by the new ones. Posters for hygiene purpose & biomedical waste disposal purpose can be displaced at different walls with in the PHCs. So that people will start to follow it.
- Infection control protocol can be followed in the NBCC like usage of disinfectants, keeping the forceps in the savlon solution & regular changing of the solution, cleaning of radiant warmer, usage of clean towels, cleaning of phototherapy machine and regular cleaning of suction jar.
- Round the clock manpower can be present in NBCC to provide immediate care at necessary time. More number of staffs required during night time. As the study shows most of the staffs present during day time in comparison to night time.
- For quality assurance external consultants can be hired on a temporary basis to maintain quality in NBCC.
- Micro action plan can be prepared to follow up every action that can be taken for the betterment of the NBCC.

10.0 CONCLUSION

The study was conducted in all PHCs present in Supaul district. In supaul there were 11 blocks out of which 9 blocks got PHCs i.e Sadar, Saraigarh Bhaptiahi, Nirmali, Marauna, Kishanpur, Basantpur, Chhatapur & Pratapganj and reset two blocks i.e. Raghopur & Tribeniganj there was referral unit present. Out of these 9 PHCs Sadar PHC don't have new-born care corner. Out of those 8 PHCs where there was new-born care corner was available one PHC i.e. Nirmali PHC got separate new-born care corner and other 7 PHCs got new-born care corner inside the labour room itself.

According to FBNC operational guidelines essential equipments that should be present in NBCC are radiant warmer, weighting scale / spring, light, syringe cutter, resuscitators, pump suction, thermometer & phototherapy machine. In 89% of NBCC were using radiant warmer, weighting scale, light & syringe cutter. In 78% NBCC resuscitators & pump suction were used. Thermometer was available in 44% NBCC. Phototherapy machine was used in 89% NBCC. In those where there was pump suction used out of them 42.8% NBCC clear suction jar within a week & rest clear within 10 days. In those where radiant warmer was present out of that 62.5% NBCC they clean at a regular basis i.e. one day or two and rest 37.5% NBCC clean in 15 days.

Protocols like immediate essential new-born care, breast feeding, neonatal resuscitation and kangaroo mother care were followed in almost all NBCC i.e. 88.88% NBCC.

For hygiene practice, we surveyed whether there was washbasin present or not & hand wash posters were there or not. Washbasin was present in 88.88% NBCC & all of them got 24 * 7 water supply but hand wash posters was present only in 66.66% of NBCC. In some NBCC washbasin were used by the staffs of other department and patient's relatives as well.

Except Pipra all other NBCC got human resource present 24 * 7 i.e. Grade-A nurse, ANM, MAMTA and sweeper.

Essential surgical equipments were not present in all NBCC. Oxygen cylinder & cheatle forceps were present in 56% of NBCC. Infant mask size 0 & 1 was present in 44% & 22% of NBCC. Ambu bag was there in 78% of NBCC. In those NBCC where there was cheatle forceps present all of them keep forceps inside savlon except Chhatapur & Marauna. In those NBCC where they keep forceps inside Savlon out of them 60% change Savlon solution within a week rest change within two weeks.

IV fluids & antibiotics like dextrose 5%, normal saline & gentamicin were there in 88.88% NBCC. Only 66.66% of NBCC got ampicillin.

Essential drugs like Calcium gluconate, Dexamethasone & Glucose 50% was available in 88.88% of NBCC. Adrenaline, Aminophylline & Atropine was available in 77.77% of NBCC. Glucose 25%, hydrocortisone & Vitamin K were present in 66.66% of NBCC.

For biomedical waste disposal we surveyed for the uses of heavy duty gloves for removal of waste products, needle cutter or burner, colour coded bags/buckets, disinfectant uses, uses of disposal pits & was there any biomedical waste product disposal protocols followed or not. In 66.66% of NBCC there was use of heavy duty gloves for waste material removal. Colour coded buckets & bags were used in 66.66% of NBCC but some of the buckets needed to be replaced as it had been used for a long period the buckets got hole in it or crack in it. Disinfectants were used in only 22.22% of NBCC & most commonly used disinfectant was Savlon in 88.88% cases followed by spirit, gentian violet pain & iodine. Disposable pit were used in 88.88% NBCC. Biomedical waste protocols were followed in 66.66% like biomedical waste posters, non infectious waste posters and ways to how to dispose infectious / non-infectious waste materials.

All the NBCC doesn't follow particular record keeping method. They all keep the hard copy of the records. So it becomes difficult while referring them afterwards. As Supaul is a flood prone area, so during rainy season when all the areas drown in the water at that time records also got destroyed. As it already happened during 2008 flood, after that also they don't keep soft copy of all records. In all PHCs they have computers & data operators but still they don't keep all the records on computer because all the data operators have other data's to feed where they get paid and sometimes NBCC staffs don't feel it necessary to keep all the records on computer.

In some PHCs they don't keep data of inventories available there. That's why sometime when instruments were already present they didn't know about that and they keep ordering new ones. Where there is new instruments available there is nobody to operate those instruments so due to lack of skilled full professionals those instruments don't come in to use and became damaged.

ASHA's & AWW's don't do the follow up of all the new-borns once they got discharge from the PHCs. So if there is any dead of infant occur that goes unreported. So in that way many

infant deaths go unreported mostly in the backward class peoples like mushari & dalit caste people. There is lack of proper follow up is seen.

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ANNEXURE

1. Does this facility have a new born corner?	A) Yes B) No If no then do not fill the form
2. Does this facility have a new born corner inside the labor room?	A) Yes B) No
3. If new born corner is outside the labor room, what is the distance from labor room(in metres)?	

New Born Care Assessment

4. General Condition
5. Walls

6. Are the walls completely plastered?	A) Yes B) No
7. Are the walls without cracks and cervices?	A) Yes B) No
8. Do the walls have tiles?	A) Yes on all walls up to roof B) Yes on all walls not up to roof C) No If A then Shift Q.10
9. Are the walls Whitewashed?	A) Yes B) Yes but needs repainting C) No
10. Is there a problem of water leakage/dampness from the walls during anytime of the year?	A) Always B) Occasionally C) Never

11. Roof

12. Is there a false ceiling?	A) Yes B) No
13. Is the roof without cracks and Cervices?	A) Yes B) No
14. Is the roof whitewashed?	A) Yes B) No
15. Is there a problem of water leakage/dampness from the walls during anytime of the year?	A) Always B) Occasionally C) Never

16. Floor

17. Does the have tiles?	A) Yes B) No
18. Is the floor without cracks and cervices?	A) Yes B) No

19. Doors and Windows

20. Does the new born corner have a door that can be shut to ensure privacy?	A) Yes B) No
21. Does the door have an automatic door closure?	A) Yes and functioning B) Yes, but not functioning C) No
22. Can the door be locked?	A) Yes and functioning B) Yes, but not functioning C) No
23. Does the new born corner have window(s)?	A) Yes B) No If No then skip to Q27
24. Can the windows be completely closed?	A) Yes B) No
25. Do the windows have missing/broken glass panes?	A) Yes B) No
26. Do the doors and windows have mosquito screens?	A) Yes without holes B) Yes with holes C) No

27. Layout and Usage

28. Does the new born corner have condemned articles lying around?	A) Yes B) No
29. Does the new born corner have cobwebs?	A) Yes B) No
30. What is the size of the new born corner? (Length*width*height in feet)?	

31. Electricity

32. Does the new born corner have inverter connection?	A) Yes B) No
33. Does the new born corner have generator connection?	A) Yes B) No

34. What are the various equipment's in the new born corner that runs on electricity?
35. List equipment available

36. Radiant warmer	A) Yes, 15 amp B) Yes, 5 amp 3 pin C) Yes, 5 amp 2 pin
37. Low pressure electric suction machine	A) Yes, 15 amp B) Yes, 5 amp 3 pin C) Yes, 5 amp 2 pin
38. Mobile lamp with stand	A) Yes, 15 amp B) Yes, 5 amp 3 pin C) Yes , 5amp 2 pin

39. Phototherapy machine	A) Yes, 15 amp B) Yes, 5 amp 3 pin C) Yes, 5 amp 2 pin
40. Oxygen concentrator	A) Yes, 15 amp B) Yes, 5 amp 3 pin C) Yes, 5 amp 2 pin
41. Digital Weighing scale for baby	A) Yes, 15 amp B) Yes, 5 amp 3 pin C) Yes, 5 amp 2 pin
42.	A) Yes, 15 amp B) Yes, 5 amp 3 pin C) Yes, 5 amp 2 pin
43.	A) Yes, 15 amp B) Yes, 5 amp 3 pin C) Yes, 5 amp 2 pin
44.	A) Yes, 15 amp B) Yes, 5 amp 3 pin C) Yes, 5 amp 2 pin

45. How many functioning sockets are available in the new born corner?

46. Details of the electric socket	Required	Available
47. 3-pin 15 amp		
48. 3-pin 5 amp		
49. 2-pin 5 amp		

50. Is there need to relocate any switchboards or install new switchboards for greater convenience?
51. Do any Switchboards need replacement?
52. If yes then the number of switch boards that need replacement?
53. How many functional illumination sources (from the below) are available in new born corner?

54. Tube Lights	Number-
55. Electric Bulbs	Number-
56. CFLs	Number-
57. Does the new born corner have at least one high capacity torch with rechargeable batteries?	A) Yes B) No

58. Does the new born corner have open/exposed/hanging electric wires?	A) Yes B) No

59. Air Conditioner/ Fans/ Heating

60. Does the new born corner have an air conditioner?	A) Yes and functioning B) Yes but not functioning C) No If No then Skip to Q 65.
61. For each air conditioner as the following information	
62. Type of air conditioning?	A) Window B) Spilt
63. Capacity in tonnage	
64. Frequency of cleaning the filter	A) Weekly B) Once in fifteen days C) Once in a month D) Never
65. Does the new born corner have fans?	A) Yes and functioning B) Yes but not functioning C) No If No then skip to Q72.
66. If yes how many fans are available?	
67. Ceiling/Wall mounted?	
68. Pedestal/Table?	
69. Exhaust	
70. How frequently are the fans cleaned?	A) Weekly once B) Monthly once C) Not fixed
71. Is there dust on fan blades?	A) Yes B) No

72. Hand washing area

73. Does this corner have a wash basin?	A) Yes, Separate for new born corner B) Yes, common between labor room and

	new born corner C) No If the answer is no then skip to 85
74. How far is wash basing from new born corner? (In feet)	
75. Which type of washbasin is available in new born corner?	A) Ceramic Washbasin used regularly in bathroom B) Constructed Washbasin (masonry) C) Surgical type of washbasin
76. Does this washbasin have an elbow tap?	A) Yes and functioning B) Yes and not functioning C) No
77. Does this washbasin have 24 hours water supply	A) Yes B) No
78. What is the size of the Wash basin (Length*width*Depth)? In Cm	
79. Distance (in CM) between the floor and top edge of the washbasin?	
80. Distance (in cm) between the top edge of the washbasin snout of the tap?	
81. Is there a hand washing poster on top of the washbasin	A) Yes B) No
82. Is there a timer available(to know the exact time taken for hand washing)	A) Yes B) No
83. Is there a facility for warm water during winters?	A) Yes B) No
84. Is there any leakage from the wash basin?	A) Yes B) No

85. Human Resource

86. How many of the following are given newborn corner duty?	During Day	During Night
87. Grade A Nurses		
88. Auxiliary Nurse Midwife(ANM)		
89. Mamta		
90. Sweepers		

91. Either ANM or Grade A nurse available	A) Yes

for round the clock duty in labor room?	B) No

92. Equipment's
93. Does the new born corner have the following equipment?

94. Watch/Clock with a second's hand?	A) Yes and functioning B) Yes and not functioning C) No
95. Infant/pediatric stethoscope?	A) Yes and functioning B) Yes and not functioning C) No
96. Baby Weighing machine/Scale (spring type)?	A) Yes and functioning B) Yes and not functioning C) No
97. Room thermometer?	A) Yes and functioning B) Yes and not functioning C) No
98. Low pressure electric Suction machine?	A) Yes and functioning B) Yes and not functioning C) No
99. Foot operated suction machine?	A) Yes and functioning B) Yes and not functioning C) No
100. Cheatle forceps?	A) Yes B) No
101. Radiant warmer?	A) Yes and functioning B) Yes and not functioning C) No If no skip to Question 109
102. How many radiant warmers are available in the new born corner?	

103. Check for the following in each radiant warmer

104. Mobile new born resuscitation table/Trolley?	A) Yes B) No
105. Mattress on it	A) Yes B) No
106. Fixed Height radiant warmer	A) Yes B) No
107. Skin temperature probe	A) Yes B) No
108. Air temperature probe	A) Yes B) No
109. Phototherapy machine	A) Yes B) No If no skip to Question 114

110. Check for the following in each phototherapy machine

111. Is there a fluxmeter in the phototherapy unit?	A) Yes B) No
112. If, yes what is the reading on the fluxmeter?	
113. When was the tube lights last changed?	

114. How many mobile lamps with stands are available in this new born corner?	
115. How many functioning IV stands are available in the new born corner?	
116. Does the new born corner have new born tray?	A) Yes B) No If No skip to question 121

117. For each new born tray check the availability of the following items. Enter the number available, if not enter 0.

118. Stainless steel tray	
119. Towels-2	
120. How many complete new born trays are available?	

121. Surgical instruments for new born care

122. Check availability of following equipment's for new born resustication

Equipment		Required	Available
123.	Infant mask, Size 0	1	
124.	Infant mask, Size 1	1	
125.	Infant mask, Size 2	1	
126.	D- Ambu bag – 500 ml	1	
127.	Infant laryngoscope	1	
128.	Infant laryngoscope blade, size 0	1	
129.	Infant laryngoscope blade, Size 1	1	
130.	Infant laryngoscope , Spare bulb	2	
131.	Infant Laryngoscope, spare batteries	2	

132.	Oxygen cylinder	1	
133.	Oxygen cylinder pressure meter	1	
134.	Oxygen cylinder flow meter	1	
135.	Oxygen cylinder Humidifier	1	
136.	Oxygen cylinder key	1	
137.	Oxygen concentrator	1	

138. Equipment maintenance

139. Does this facility have annual maintenance contract for the maintenance of the following equipment's?

140.	Radiant warmer	A) Yes B) No
141.	Photo therapy machine	A) Yes B) No
142.	Suction machine	A) Yes B) No
143.	Oxygen concentrator	A) Yes B) No

144. Consumables

145. Does the facility have following consumables in the new born corner?

146.	Soap	A) Yes B) No
147.	Detergent	A) Yes B) No

148. Drugs and surgical items

149. Does the facility have the following drugs in the new born corner?

150.	IV Fluids	A) Yes B) No If no Skip to Question 153
151.	Dextrose 5%	A) Yes B) No
152.	Dextrose normal saline	A) Yes B) No
153.	Antibiotics	A) Yes B) No If no skip to question 156
154.	Ampicillin (Injection)	A) Yes B) No
155.	Gentamicin (Injection)	A) Yes

	B) No

156. Emergency Drugs

157. Adrenaline (epinephrine) (Injection)	A) Yes B) No
158. Aminophylline (Injection)	A) Yes B) No
159. Atropine (Injection)	A) Yes B) No
160. Calcium glacunate (Injection)	A) Yes B) No
161. Dexamethasone (Injection)	A) Yes B) No
162. Glucose 25% (Injection)	A) Yes B) No
163. Glucose 50% (Injection)	A) Yes B) No
164. Hydrocortisone (Injection)	A) Yes B) No
165. Vitamin K (Injection)	A) Yes B) No

166. Surgical items

167. Does this facility have following surgical items in the new born corner?

168. Cap	A) Yes B) No
169. Face mask	A) Yes B) No
170. Gloves 6.0	A) Yes B) No
171. Gloves 6.5	A) Yes B) No
172. Gloves 7.0	A) Yes B) No
173. Gloves 7.5	A) Yes B) No
174. Gloves 8.0	A) Yes B) No
175. Hypodermic needle 23G	A) Yes B) No
176. Hypodermic needle 25G	A) Yes B) No
177. Intra Venous Cannula 22G	A) Yes B) No
178. Intra Venous Cannula 24G	A) Yes B) No
179. Intra Venous Set (preferably micro set)	A) Yes B) No

180. Syringe (2ml)	A) Yes B) No
181. Syringe(5ml)	A) Yes B) No
182. Syringe(10ml)	A) Yes B) No
183. Mucus extractor, 20ml, sterile, disposable	A) Yes B) No
184. Suction catheter 10F	A) Yes B) No
185. Suction catheter 12 F	A) Yes B) No
186. Disposable uncuffed tracheal tubes, Sizes 2.5	A) Yes B) No
187. Disposable uncuffed tracheal tubes, Sizes 3.0	A) Yes B) No
188. Disposable uncuffed tracheal tubes, Sizes 3.5	A) Yes B) No
189. Umbilical catheter	A) Yes B) No
190. Naso Gastric feeding tube for new born 7 F, 40 cm length, disposable	A) Yes B) No
191. Cord clamp	A) Yes B) No

192. Dressing materials

193. Thread (cord tie)	A) Yes B) No
194. Adhesive tape	A) Yes B) No
195. Gauze Piece	A) Yes B) No

196. Disinfectants and antiseptic solutions

197. Chlorhexidine gluconate + cetrimide (Savlon)	A) Yes B) No
198. Ethanol/spirit	A) Yes B) No
199. Gentain violet paint	A) Yes B) No
200. Povidine iodine	A) Yes B) No

201. Protocols

202. Does this facility have the following protocols?

203. Immediate essential new born care	A) Yes B) No
204. Neonatal resuscitation	A) Yes B) No
205. Breastfeeding	A) Yes B) No
206. Kangaroo Mother care	A) Yes B) No

207. Biomedical Waste management

208. Does the facility have the following items in the new born corner?

209. Heavy duty gloves	A) Yes B) No
210. Bleach or bleaching powder	A) Yes B) No
211. Dis infective solution	A) Yes B) No
212. Yellow color puncture proof container	A) Yes B) No
213. Red color puncture proof container	A) Yes B) No
214. Blue color puncture proof container	A) Yes B) No
215. Yellow color bags	A) Yes B) No
216. Red color bags	A) Yes B) No
217. Blue color bags	A) Yes B) No
218. Needle cutter/burner	A) Yes B) No
219. Scissor	A) Yes B) No
220. Container for the non-infectious waste	A) Yes B) No
221. Buckets are overflowing?	A) Yes B) No
222. Waste cleared within 48 hours?	A) Yes B) No
223. Bins are cleared regularly?	A) Yes B) No
224. Waste is transported in closed containers?	A) Yes B) No
225. Waste is transferred in predefined route	A) Yes B) No
226. Needle cutter is in working condition?	A) Yes B) No
227. Barrel and plunger detached before disinfecting syringe	A) Yes B) No

228. Blood bags are punctured before disinfection	A) Yes B) No
229. Disinfection is done before disposal	A) Yes B) No
230. Liquid waste is treated with disinfectant before disposal	A) Yes B) No
231. The cloth used for wiping liquid waste was not reused without disinfecting	A) Yes B) No
232. The cloth used for wiping liquid waste was not used for any other purpose	A) Yes B) No
233. Gloves used while dealing with infectious waste	A) Yes B) No
234. Anatomical waste disposed in a deep burial pit	A) Yes B) No
235. Red/White bucket wastes are disposed in sharps pit	A) Yes B) No
236. Is there a bio medical waste disposal poster on top of containers	A) Yes B) No
237. Is there a Non infectious waste disposal poster on top of containers	A) Yes B) No
238. In the new born corner, do you collect different categories of bio medical waste in different color containers?	A) Yes B) No

239. Infection control

240. Do you keep the cheatle forceps in the savlon bottle	A) Yes B) No
241. How often do you change the savlon from the cheatle forceps bottle	
242. How frequently do you empty the suction jar?	
243. How frequently do you clean the radiant warmer	

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