

Assessment of Mortality and Mortality Profile of Inborn and
Outborn Newborns admitted at SNCU Departments of
Ahmedabad Municipal Corporation, Gujarat

By

Saista Ismailbhai Master

*Dissertation submitted for the partial fulfillment of the
MBA Hospital and Health Management*

Academic year, 2015-2017



The IIHMR University, Jaipur

1, Prabhu Dayal Marg, Sanganer, Airport
Jaipur 302029, Rajasthan
Ph: 0141 3924700, Fax: 3924738
Website: www.iihmr.edu.in

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TO WHOMSOEVER IT MAY CONCERN

This is to certify that Dr Saista Master, student of MBA Hospital and Health Management from The IIHMR University, Jaipur has undergone internship training at National Health Mission, Gujarat from 4th February to 4th May, 2017.

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

The Internship is in fulfillment of the course requirements.

I wish her success in all her future endeavors.



Col. (Dr.) Ashok Kaushik

Dean, Academics and Student Affairs

The IIHMR University, Jaipur



Dr. P.R. Sodani

Professor,

The IIHMR University, Jaipur



AHMEDABAD MUNICIPAL CORPORATION

MAHANAGAR SEVA SADAN, (Health Department)

Sardar Patel Bhavan, 2nd Floor, New building, Danapith, Khamasa, Ahmedabad.
(TEL.NO 079-25391811 FAX NO. 25463892) email : mohamedabad@ahmedabadcity.gov.in



TO WHOMSOEVER IT MAY CONCERN

This is to certify that Master Saista Ismailbhai, Student of MBA Hospital and Health Management Institute of Health Management and Research; Jaipur 2015-17 has done her Internship programme for period of February 4th to May 04th 2017 under Urban Health Society, Ahmedabad Municipal Corporation; NHM Gujarat under my guidance. During this period she has completed part of fulfillment of course requirements, recommended for Hospital and Health Management with Specialization in Health Management. Topic of the Dissertation during her internship Programme was "Assessment of Morbidity and Mortality Profile of Inborn and Outborn Newborns admitted at SNCU Departments of 3 District Hospitals of Ahmedabad Municipal Corporation". She was also involved in various activities to get better understanding of health system.

I wish her all the best for her future endeavours.

Date: 10/05/2017.



[Signature]

10.5.17

Medical Officer of Health
Ahmedabad Muni. Corporation

THE IIHMR UNIVERSITY, JAIPUR

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled “**Assessment of Mortality and Morbidity Profile of Inborn and Outborn Newborns admitted at SNCU departments of 3 District Hospitals of Ahmedabad Municipal Corporation, Gujarat**” and submitted by **Dr.Saista Master** Enrollment No **IIHMR-U/01/2015-17/0301** under the supervision of **Dr P R Sodani** for award of **MBA in Health Management** of the University carried out during the period from **February 04, 2017 to May 04, 2017** 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

THE IIMMR UNIVERSITY, JAIPUR

CERTIFICATE BY SCHOLAR

This is to certify that all ethical issues have been considered while collecting data for my dissertation titled: Assessment of Morbidity and Mortality Profile of Inborn and Outborn Newborns admitted at SNCU Departments of 3 District Hospitals of Ahmedabad Municipal Corporation, Gujarat.



Signature of student

ACKNOWLEDGEMENT

At the beginning I would like to express my special gratitude and appreciation to Dr.Manisha Chandra, Commisioner of National Health Mission (NHM) Gujarat for allowing me to pursue my internship programme from National Health Mission (NHM) Gujarat.

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I express my gratitude and respectful regards to my mentor, Dr.P.R.Sodani, Institute of Health Management and Research; Jaipur for his guidance and useful suggestions which helped me in completing my project work. This project would have been distinct reality without his guidance and support.

I would like to acknowledge our Institute and Colleagues also hold special mention to support us throughout period and make it a good learning experience.

PREFACE

Internship Training is an integral part of MBA Hospital and Healthcare Management as part of curriculum of the course students of the 2 nd year are required to undergo Internship and get better understanding of Health Care System.

- Overall management of Human and Financial Resources under Package of Reproductive and Child Health Programme/National Rural Health Mission.
- Provision of Managerial Support to Municipal Corporation and peripheral level programme support staff and Grass root level functionaries.
- Management of Human Resources including Contractual Staff under RCH II/NRHM Programme which will include relating to posting, transfer, Performance Monitoring, training etc.
- Overall Control of Financial Matters and guide the accountant in matters related to expenditure, releasing grant, Preparation of budget.
- Supervision and Assign Task to CPMU Staff and establishing proper monitoring System and Provide Feedback Mechanism and Provide feedback for improvement.
- Overall logistic Management in Ahmedabad Municipal Corporation.
- Necessary Support to Technical Consultants appointed at state and field level during the field visits.
- Analysis of Financial and Physical Progress Report and Corrective measures to improve the same.
- Identification of cause of unreasonable delay in achievement of milestones.
- Regular report and feedback on Programme to MOH.

LIST OF ACROYNMS

MoHFW	Ministry of Health and Family Welfare
AMC	Ahmedabad Municipal Corporation
IMNCI	Integrated Mangement of Neonatal and Childhood Illness
FBNC	Facility Based New Born Care
HBNC	Home Based New Born Care
SNCU	Special New Born Care Unit
NICU	Neonatal Intensive Care Unit
IMR	Infant Mortality Rate
LBW	Low Birth Weight
SRS	Sample Registration System
MDG	Millennium Development Goal
HIE	Hypoxic Ischaemic Encephalopathy
IUGR	Intrauterine Growth Restriction

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1.0 Project

1.1 Background:

India stands the highest share of neonatal deaths in the world with around 30% of the global neonatal deaths. About 940,000 babies die before the age of one month in front of 26 million babies born every year in India (1). Basis of the SRS 2015 report, neonatal mortality contributes to about half of under-5 deaths in the country (U-5MR 43 per 1000 live births, two thirds of all infant deaths (NMR 25 per 1000 live births, IMR 37 per 1000 live births). There has been slow decline in NMR (from 37 per 1000 live births in 2004 to 25 per 1000 live births in 2015) although IMR has shown a steady decline over the last few years (from 58 per 1000 live births 2004 to 37 per 1000 live births in 2015). (www.censusindia.gov.in/vital_statistics/SRS_Reports_2015.html)

After the launch of Schemes like JSY, JSSK and NSSK there is significant rise in institutional deliveries and amount of Newborn referring to higher centres for facilities. The following table describes the required facilities at different levels:

Category	Health Facility
Newborn care corner	PHC/Subcentre
Newborn stabilization Unit	CHC/FRU
Special Newborn care unit	District Hospital (MCH Level III)

SNCU is the neonatal unit which is in vicinity of labour room which provide all the care except ventilation and Major Surgery. Any Facility more than 3000 deliveries per year should have an SNCU.

Following are the criterias which require immediate admission in SNCU:

- Birth Weight

- Large baby
- Perinatal Asphyxia
- Central Cyanosis
- Refusal to feed
- Respiratory Distress
- Severe Jaundice
- Diarrhoea/Dysentery
- Hypothermia <35.4
- Hyperthermia 37.5
- Apnea/Gasping
- Coma/Convulsion
- Shock
- Abdominal Distension
- Bleeding
- Major Malformations

1.2 Literature Review:

“Sutapa Neogi et al.[3] conducted cross sectional study to assess the availability of equipments, human resources and quality care. Inputs (resources) and outcomes (morbidity and mortality) were analyzed using descriptive statistics. To assess the performance of the units. Key variable was rate of mortality among neonates “Considering the first year of functionalization as the base trend of case fatality rate over a period of 35 years analyzed by using chi square test. To understand the possible association of case fatality rate with factors, such as bed: doctor ratio, average duration of stay, bed Nurse ratio and bed occupancy rate, correlation coefficient were used, and the asepsis score was determined.” “The admission rates are increased from a median from 16.7 per 100 deliveries in 2008 to 19.5 per 100 deliveries in 2009. The case fatality rate reduced from 4% to 40% within one year of their functioning.” Over two years proportional mortality has been declined significantly due to low birth weight (LBW) and sepsis. The Birth Asphyxia and Low Birth Weight are the major causes of admission and death.”

Patel RB [4] conducted study in slum areas of Bombay which covered 289 newborn from birth till one year of age. Low birth weight babies (less than 2.5 kg) were 52.9%. 9.7 episodes of sickness were suffered from boys, and girls 8.6 episodes of sickness. The mean episodes of various sicknesses, and their impact on feeding pattern, gaining weight and gaining growth are discussed. 4 out of six death were among the low birth weight babies. Mortality in babies born less than 2 kg was 44.4% and above 2 kg was less than 1.

Oestergaard et al.[3] compiled a database comprising 3,551 country-years of information From 1990 to 2009 Reliable civil registration data were available for 38 countries regarding mortality in neonates and <5 years children. To estimate NMRs for the remaining 155 countries a statistical model was developed, Country which had no national data available were 17. Country consultation was undertaken to identify data inputs and review estimates. In 2009, an estimated 3.3 million babies died in the neonatal period of life—compared with 4.6 million neonatal deaths in 1990—and more than half of all neonatal deaths occurred in five countries of the world (44% of global live births): The proportion of child deaths that are in the neonatal period increased in all regions of the world, and globally is now 41%. While NMRs were halved in some regions of the world, Africa's NMR only dropped 17.6% (43.6 to 35.9).

Abhay T Bang et al. [4] conducted study among whom 40 neonatal deaths from 763 neonates studied. “Major six morbidities were associated with the following proportion of deaths: sepsis, 60%; 62% preterm, 27.5% intrauterine growth restriction (IUGR); asphyxia 25%; hypothermia 22.5%, and 15% feeding problems. The CF associated with the number of morbidities per neonate was: with not single morbidity, 0.3%; 2.1% had single morbidity, 15.3% had two morbidities, 41.4% had three or more morbidities, ($p < 0.001$). In all, 82.5% of all deaths occurred in neonates with two or more morbidities.” “The proportion of total deaths associated with only IUGR was 2.5%, preterm was 7.5%, however, with the main morbidity combinations it was 35% preterm + sepsis combination, combination preterm + asphyxia 20%; 15% preterm and hypothermia; and combination preterm and feeding problem 12.5% preterm and feeding problem”. “The % CF with low birth weight (LBW) <2500 g alone was 5.2% and with infection alone was 1.9%, but with LBW + infection it was 31.9%. The estimated excess deaths caused by sepsis over and above LBW was 44% of the total deaths.”

1.3 Rationale of the Study:

Most of studies show lack of human Resources and Non functional Equipments and Training Status of the Staff to manage and provide Quality Care to New Born Patients but very few studies which focus on Preventable Aspect of Morbidities like Birth Asphyxia, Respiratory Distress Syndrome So to throw light on this issue, this study is conducted.

1.4 Research Question:

What is the Mortality and Morbidity status of newborns admitted at SNCU in 3 District hospitals under Ahmedabad Municipal Corporation?

1.5 Objectives:

- To assess the morbidity status in terms of Duration of stay and Cause of Morbidity.
- To assess the Mortality status in terms of Duration between time of admission and death, age at death, weight at death, Maturity.

2. Methodolgy:

2.1 Study Design:

Descriptive in nature.

2.2 Study Area: SNCU Departments of 3 District Hospitals of AMC.

2.3 Target Population:

Inbron and Outborn New Borns admitted at SNCU Departments of 3 District Hospitals of AMC.

2.4 Sampling:

Convenient Non Probability Sampling Method is used to carry out the Study.

2.5 Sample Size:

Serial No.	Name of Hospital	Inborn	Outborn	Total
01.	V.S. Hospital	176	113	289
02.	L.G Hospital	58	61	119
03.	Shardaben Hospital	139	36	175
	Total	373	210	583

A total number of 583 cases were selected for the study (New Born admissions which was occurred during the period of (1st March 2017 to 30th April 2017) Also, cases with incomplete records were not taken in the study.

2.6 Study Tool

For quantitative data collection, schedule based survey was conducted, A Collection Tool is Structure based Questionnaire. A self-developed, consisting of closed-ended (checklist) items were used. The study population comprised of Newborns admitted at 3 District Hospitals of AMC. Data was collected during Hospital visits.

A detailed structured schedule was used for the study. The schedule included details of mothers' socio demographic (name, age, duration of stay, place of residence, etc.). Information about the time and date of admission, time and date of death, cause of death, diagnosis at the time of admission, duration of stay in health facility etc were also recorded. whether the newborn was referred from lower-level health facility (if available).

2.7 Ethical Considerations:

An informed Consent Process is carried out at prior to start of Data Collection. Patient's Confidentiality is maintained during the study.

2.8 Ethical Approval

The study will be presented to the ethical committee of IIHMR University, Jaipur.

Quantitative data will be collected as a part of this study, using the above mentioned tools.

2.9 Results:

Birth Weight:

Category	Inborn	Outborn
>2500 gram	144	79
1500-2499 gram	175	107
1000-1499 gram	39	22
<1000 gram	15	2

47 Percent of Inborn Newborn and 50 Percent of Outborn Newborns were low birth weight. Equal number of Inborn and Outborn Patients were having Weight above 2500 grams, and Only below 10 Percent of New Boms having extremely low birth weight

Gestation:

Category	Inborn	Out born
>37 weeks	227	112
34-37 weeks	59	53
<34 weeks	87	35

Approximately half of Inborn and Outborn Newborns admitted at SNCU having Gestational Period above 37 Weeks. Only 23 Percent of Inborns and 17 percent were having gestational age below 34 Weeks.

Morbidity Profile:

Category	Inborn	Outborn
Respiratory Distress Syndrome	68	21
Meconium aspiration syndrome	27	15
Other causes of respiratory distress	12	10
HIE/Moderate-severe birth asphyxia	3	8
Sepsis/Pneumonia/Meningitis	24	26
Major Congenital malformation	15	8

Jaundice requiring phototherapy	67	50
Hypothermia	0	0
Hypoglycemia	3	0
Others- Mild Birth Asphyxia, Lactation Problem	154	72

Around 47 Percent of Inborn Newborn and 34 of Outborn Newborn were suffering from Mild Birth Asphyxia and Lactation Problem and 19 Percent and 35 Percent of Outborn were suffering from Jaundice requiring Phototherapy. Rest were suffering from Respiratory Distress Syndrome and Sepsis/Meningitis, Major Congenital Malformation.

Management :

Category	Inborn	Outborn
Phototherapy	99	60
Antibiotics	160	71
oxygen	83	31

Inborn patients are managed by antibiotics (47 percent), phototherapy (29 Percent) and oxygen(24 Percent) Compare to outborn patients where these figures are respectively 44,37 and 19 Percent.

Outcome:

Status	Inborn	Out born
Discharge	445	207
Referral	11	4
Left Against Medical Advice (LAMA)	36	
Died.		15
	71	27

About Two Third of Inborn Newborns who were admitted got discharged and 4/5th of Outborns were discharged from SNCU Department and 15 percent of Inborn and nine percent of Outborn got died in SNCU Department. Rest were left against Medical Advice and only very few in Number were referred to higher facility for Treatment.

Duration of Stay:

Duration of the stay	Inborn	Outborn
<1 day	22	4
1-3 Days	129	69
4-7 Days	88	48
>7 Days	74	33

Two Fifth of Inborn and 45 Percent of outborn Newborns were stayed in Facility for 1-3 Days, about one forth of inborn and one fifth of outborn patients were stayed in Facility greater than 7 Days.

Approximately 28 Percent newborns were stayed in Facility for 3-7 Days. Below 10 Percent of Inborn and below 5 Percent of outborn Patients were stayed for less than 1 day.

Mortality Profile:

Category	Inborn	Outborn
Respiratory Distress Syndrome	18	5
Meconium aspiration syndrome	3	1
HIE/Moderate-severe birth asphyxia	3	0
Sepsis/Pneumonia/Meningitis	10	8
Major Congenital malformation	9	0
Others	5	2

Majority of Inborn (37 percent) and Outborn (31 Percent) Newborns were died because of Respiratory Distress Syndrome. Approximately 50 percent of Outborn newborns were died because of Sepsis/Pneumonia/Meningitis.

Duration between time of admission and death:

Duration of the stay		
<1 Day	10	3
1-3 Day	25	6
4-7 Day	8	5
>7 Days	6	1

About one fifth of Newborns were died within less than 1 Day of admission.50 Percent of Inborn and 40 Percent of Outborn were died between 1-3 Day of admission. Below 20 Percent of Inborn and 30 percent of Outborn were died between 4-7 day of admission.

Age at Death:

Duration of the stay	Inborn	Outborn
<1 Day	9	1
1-6 Day	34	8
>7 Days	5	7

About 71 Percent of Inborn and 50 percent of outborn newborns were died within 1st week of Birth.19 percent of Inborn and six percent of outborn were died within less than 1 day of life, approximately 44 percent of outborn and ten percent of Inborn were died greater than 7 Days of life.

Weight at Death:

	Inborn	Outborn
>2500 g	12	4
1500-2499 g	12	8
1000-1499 g	11	3
<1000 g	14	0

Approximately 24 percent of inborn Newborn and 53 percent of outborn newborns were low birth weight at time of death and 29 percent of inborn newborns were extremely low birth weight.

Gestation Period :

	Inborn	Outborn
Term	14	7
Preterm	34	9
Post Term	0	0

About 71% of inborn newborn and 56 percent outborn were preterm at time of death.

2.10 Conclusion:

Findings shows 48% of Newborn were low birth weight, 11% were very low birth weight and 3% were extreme low birth weight at time of admission in SNCU Department. 39% of SNCU admitted Newborns were suffering from Birth Asphyxia and Lactation Problem and 15% of Newborns were suffering from RDS. 36% of the Newborns were died because of Respiratory Distress Syndrome. 49% of newborns were died within 1-3 Day of admission and 20% were died within less than 1 day. 81% of Newborns die within Early Neonatal Period of their life.

2.11 Recommendations:

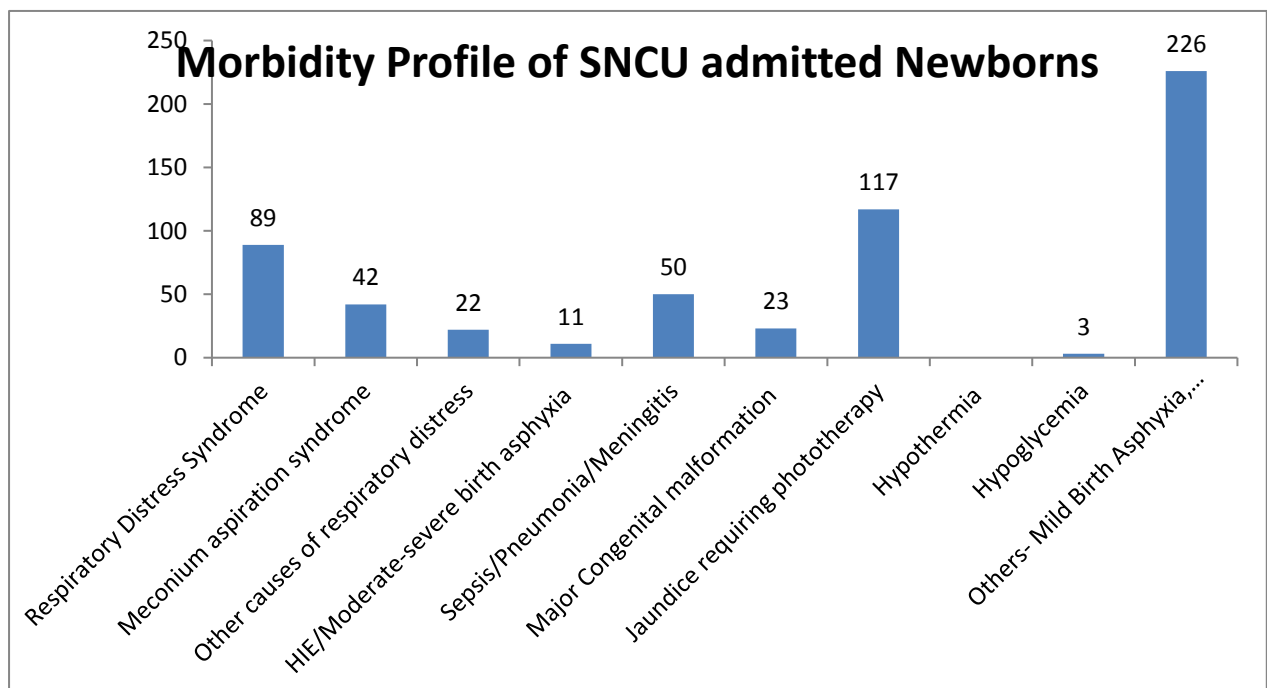
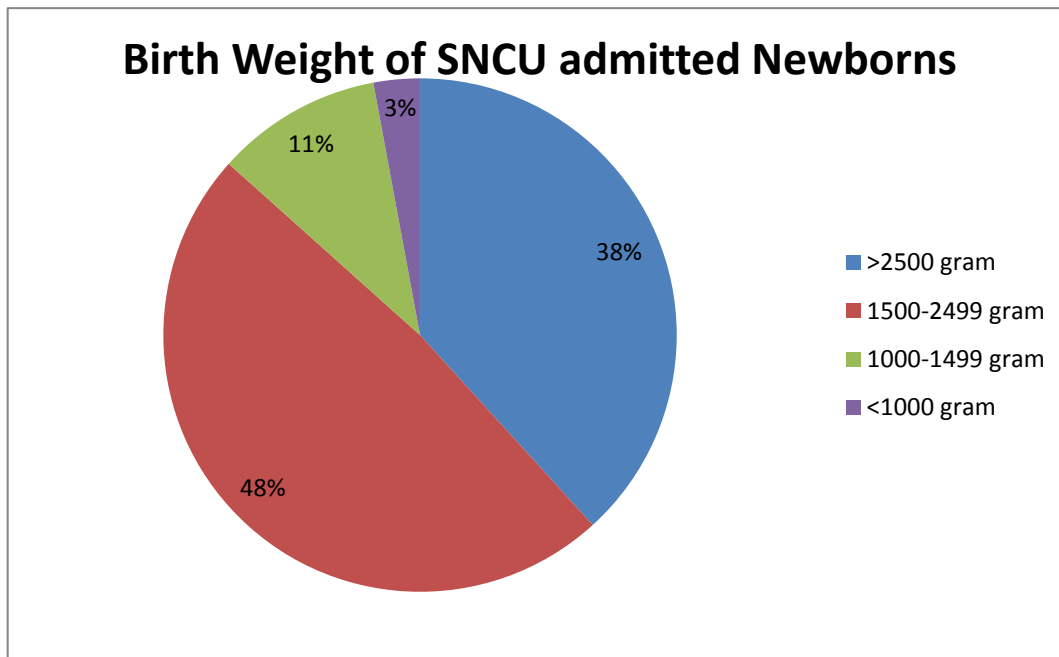
- Antenatal Corticosteroid services should be strengthened to pregnant women specially in Preterm Labour.
- Every Delivery should be assisted by skilled birth attendant either either midwife or nurse should have proficiency in their skills for clean and safe delivery and management of neonates who fail to respiration at birth

2.12 References:

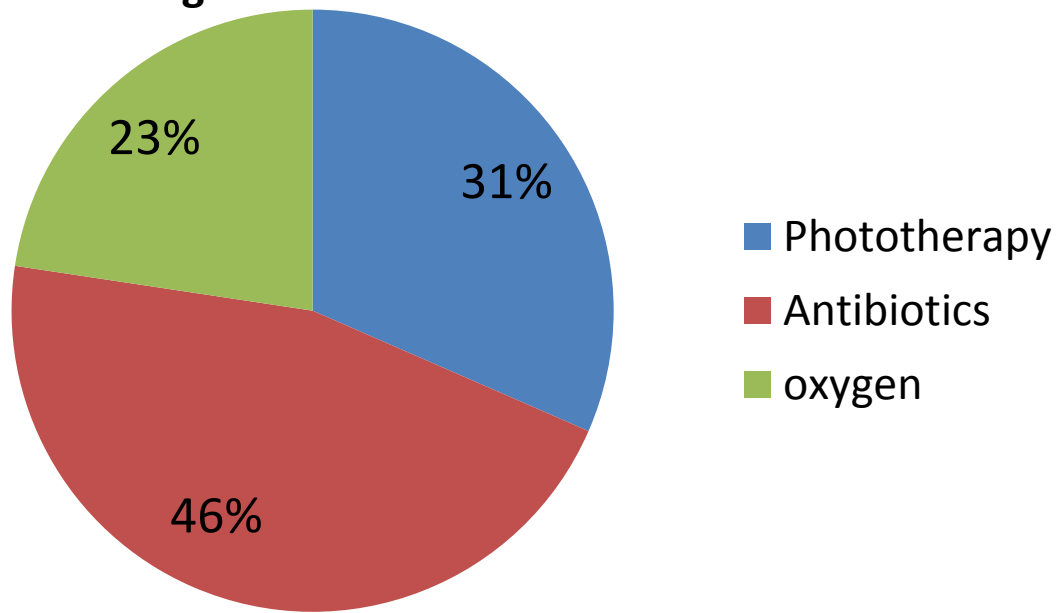
1 Operational Guidelines for implementation of Integrated Management of Neonatal and Childhood Illnesses (GOI)

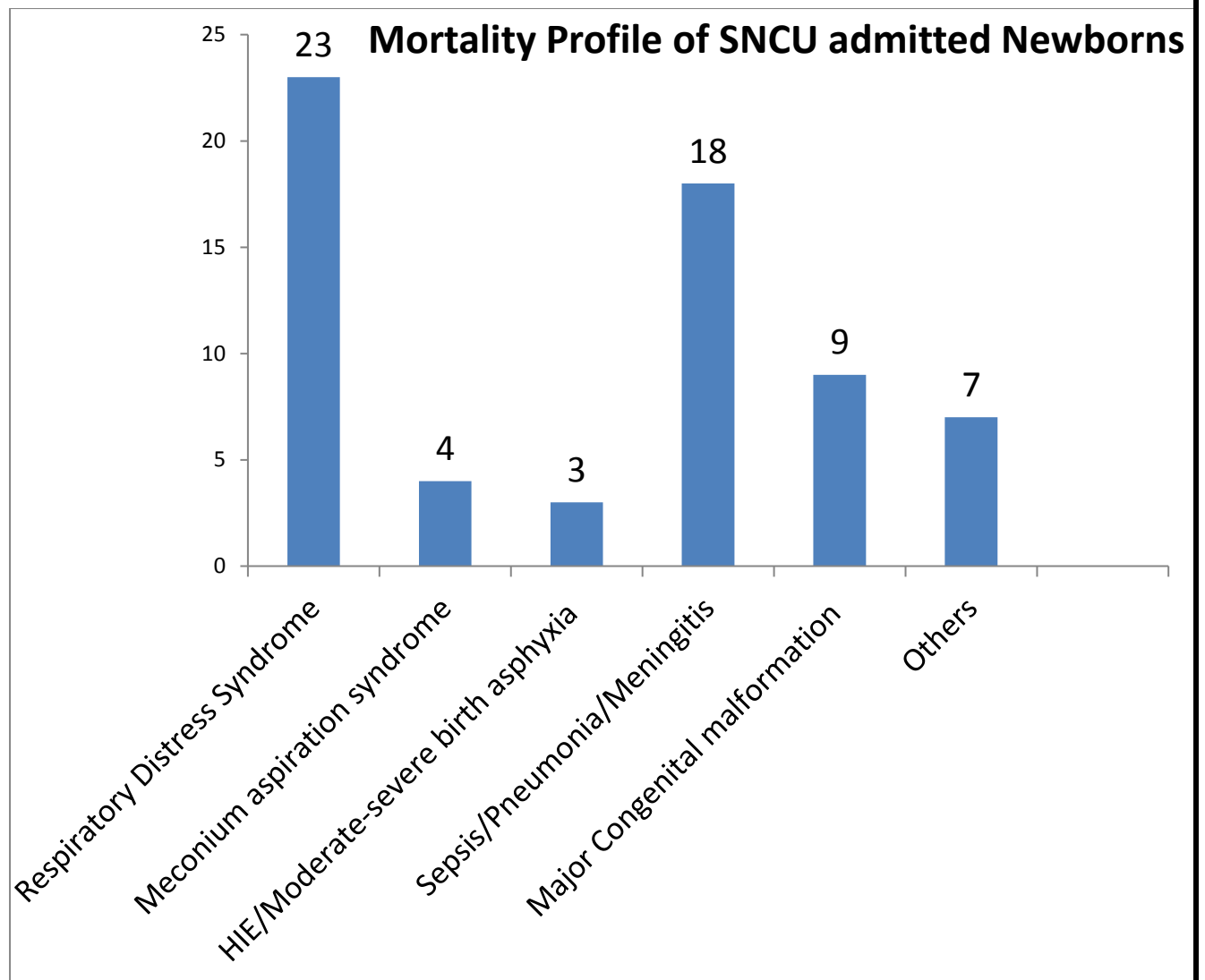
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ANNEXURES:

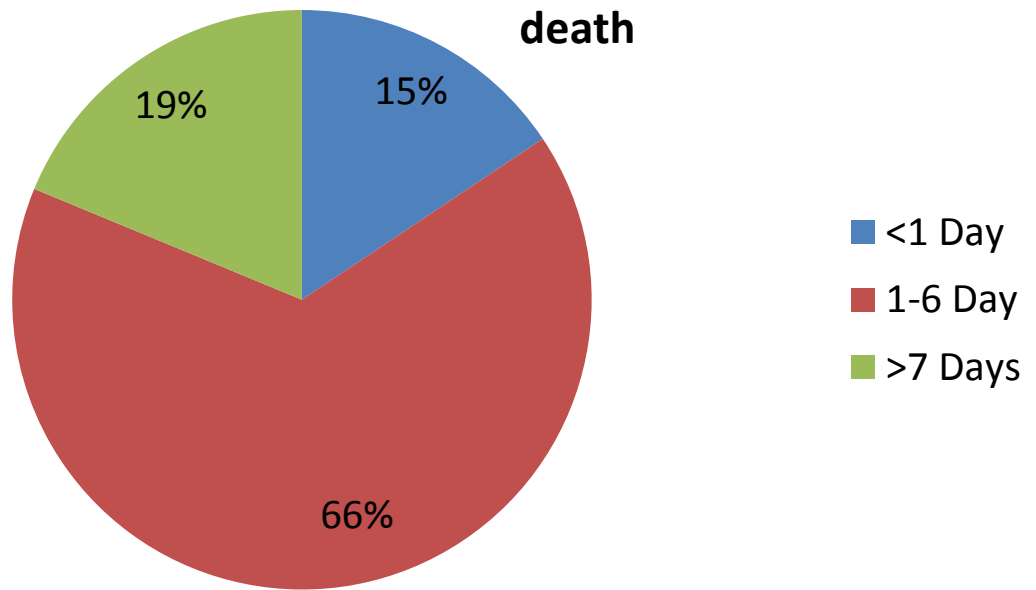


Management of SNCU admitted newborns

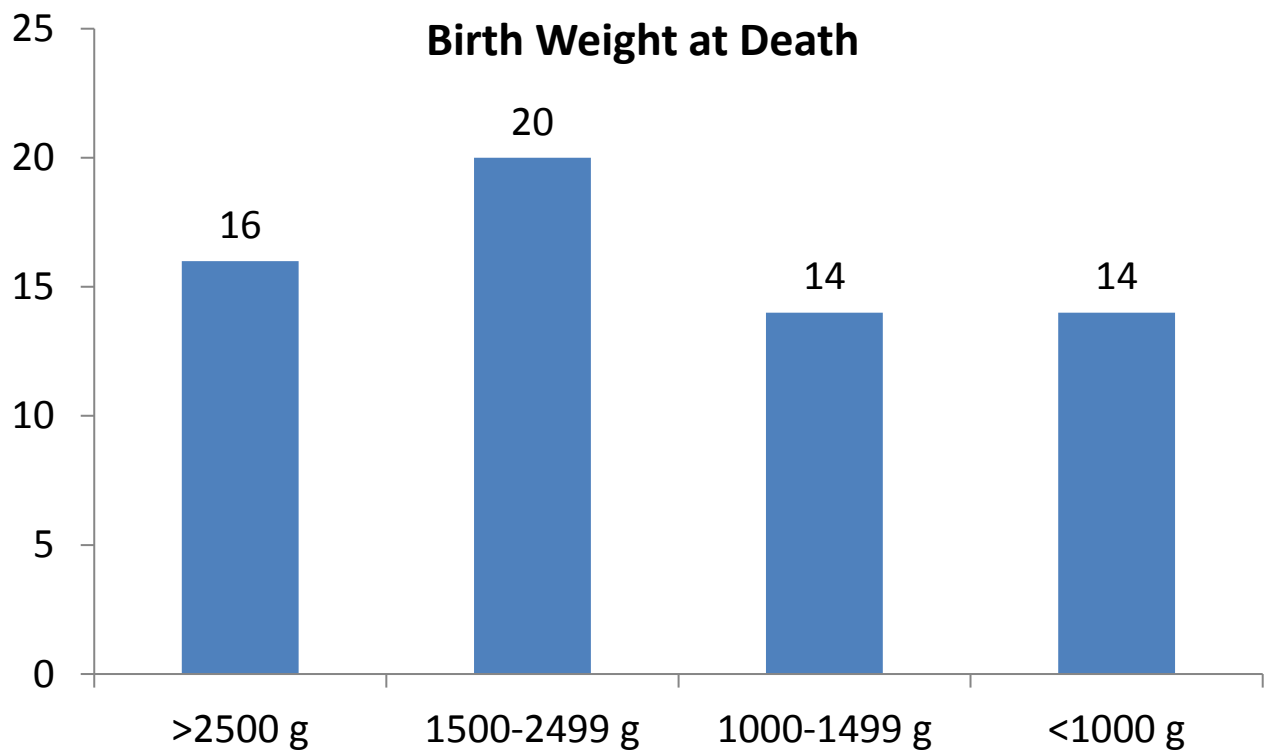




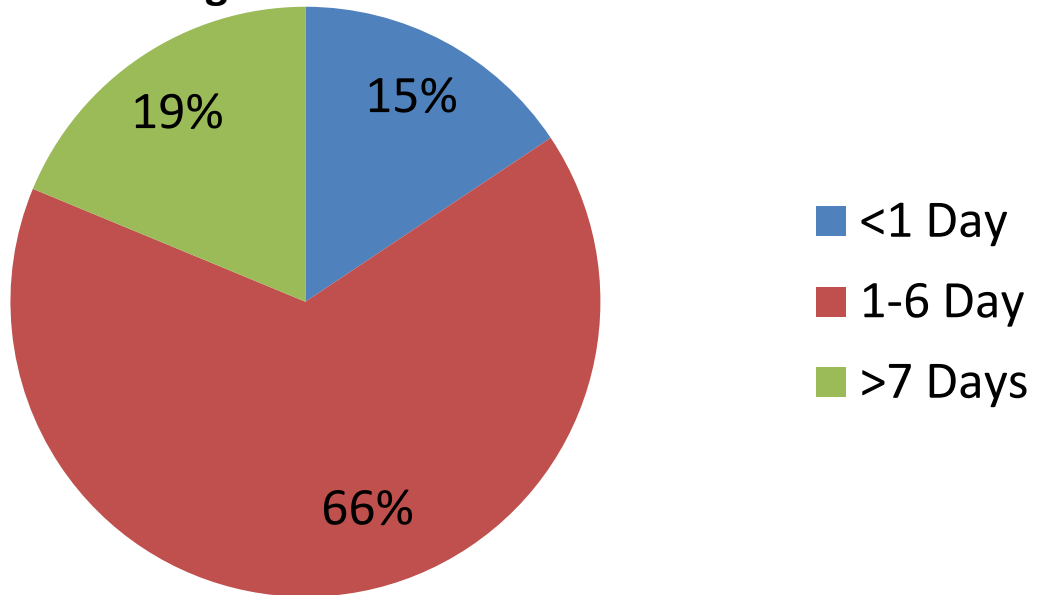
Duration between time of SNCU admission and death

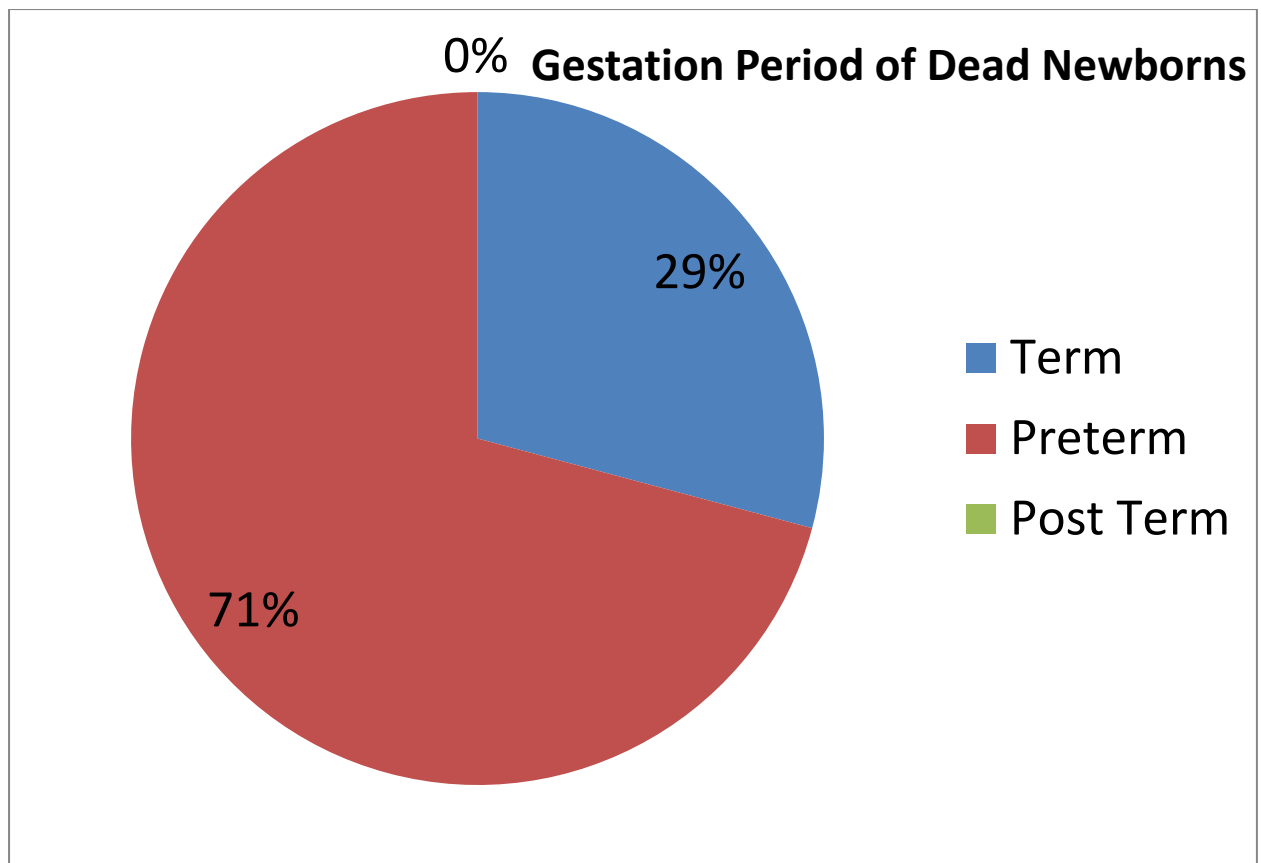


Birth Weight at Death



Age of Newborns at Death





SR NO	QUESTION	RESPONSE
1.	Name of the SNCU Unit:	
2.	Name of the patient:	
3.	Type of Admission: 1.Inborn 2.Outborn	
4.	What is Birth weight at admission? 1.>2500 gram 2.1500-2499 gram 3.1000-1499 gram 4.<1000 gram	
5.	What is Gestation Period? 1.>37 weeks 2.34-37 weeks 3.<34 weeks	
6.	Which Disease New born is suffering from? 1.Respiratory Distress Syndrome 2.Meconium aspiration syndrome 3. Causes of respiratory distress 4.HIE/Moderate-severe birth asphyxia 5.Sepsis/Pneumonia/Meningitis 6.Major Congenital malformation 7.Jaundice requiring phototherapy 8.Hypothermia 9.Hypoglycemia 10.Others- Mild Birth Asphyxia, Lactation Problem	
7.	Newborn have received which treatment? A. Phototherapy B. Antibiotics C. oxygen	
8.	Is the baby transferred from Post Natal Ward/Step Down Care to SNCU?	
9.	Is the baby transferred to step down Unit from SNCU?	
10	What is the duration of the stay? A.<1 Day B.1-3 Day C.3-7 Day D.>7 Day	
11	What is the outcome? A. Discharge B. Referral C. LAMA D. Died (If Answer is D Than Proceed for 12 to 17)	

12	If Died, What is the cause of death? 1.Respiratory Distress Syndrome 2.Meconium aspiration syndrome 3.Other causes of respiratory distress 4.HIE/Moderate-severe birth asphyxia 5.Sepsis/Pneumonia/Meningitis 6.Major Congenital malformation 7.Others	
13	What is the duration between time of admission and death? 1.<1 Day 2.1-3 Day 3.4-7 Day 4. >7 Days	
14	Duration between time of admission and death?? <1 Day 1-3 Day 4-7 Day >7 Day	
15	What is the age at death?? <1 Day 1-6 Day >7 Day	
16.	What is weight at time of death? 1.<1000 gram 2.1000-1499 gram 3.1500-2499 gram 4.2500 gram	
17.	What is the gestational period? A. Term B. Pre term C. Post term	