13 August 2022

Neonatal Admissions Overview CB Dunbar

Report by:
Dr Sarah Band, Deputy Medical Director MCAI,
Nurse Jessica Fofana, M and E coordinator MCAI
Dr, Rhona MacDonald, Honorary Executive Director, MCAI
Professor David Southall, task-shifting lead, MCAI

Following a recent report from MOH and USAID-STAIP MNHTA and JHEPIEGO recent reports regarding 28 neonatal deaths at CB Dunbar Neonatal Unit please find below an ongoing regular overview of the analysis of data from neonatal admissions available to MCAI. This data is obtained from the neonatal unit admissions book only and individual cases have not been further investigated for the scope of our monitoring and evaluation to date. The purpose of the data is to give an overview of the demand and activity on the Neonatal Unit along with Neonatal Outcomes.

In the table below please find data from the previous years as a comparison.

	2019	2020	2021	2022 (up to 14/7/22)*
Total Admissions	205	199	430	359
Total Number of Deaths	41 (20% mortality)	29 (14.6% mortality)	56 (13% mortality)	34 (9% mortality)

*Note *Data from last 2 weeks in March 2022 and remainder of 2022 yet to be entered*

Data focusing on time period 1st April 2022 to 14th July 2022

The data subsequently presented in this report focuses on the time period **1st April 2022 – 14th July 2022.**

Total Admissions: 237
Total Deaths: 30 (12.7% mortality)
Discharged against medical advice: 12 (5% of admissions)

Place of Birth:

Hospital	Clinic (some from outside Bong County)	Home
201 (200 born in CB Dunbar) (85%)	24 (10%)	12 (5%)

Age at admission:

Day of Birth	1-2 days	3-7 days	8-14 days	15-21 days	>21 days	Unknown
141	72	13	7	2	1	1

Birth Weight:

ELBW (<1000g)	VLBW (1000-1499g)	LBW (1500-2499g)	≥2500-2999g	≥3000g	≥4000g	Unknown
0	3	54	67	99	7	7

Resuscitation:

Yes	No	Unknown
83 (1 required chest compressions)	130	24

Duration of Admission:

1-7d	8-14d	15-21d	>21d	Unknown
186	35	7	6	3

Reason for Admission:

Note: some patients have multiple reasons for admission

Asphyxia	83 (Query Asphyxia = 5; Mild = 24; Mod = 4; Severe = 13)
Sepsis	71 (Early Onset Neonatal Sepsis = 50; Late Onset Neonatal Sepsis = 20)
Risk for Sepsis	60
Preterm	21 (Late preterm 2)
Low Birth Weight	6
TTN	2
Meconium Aspiration	3
Infant of HIV+ve Mother	2
Fetal Macrosomia	2
Birth Trauma	1
Cleft Palate	1
Infected Wound	1
Jaundice	1
Severe Pneumonia	1

Reason for admission in mortality cases:

Note: some patients have multiple reasons for admission

Asphyxia	22 (Severe = 13)
Sepsis	6 (Early Onset Neonatal Sepsis = 1; Late Onset Neonatal Sepsis = 5)
Preterm	2
Infant of HIV+ve Mother	1
Jaundice	1

Information from 1 of the 3 qualified neonatal clinicians relating to the MOH and USAID-STAIP MNHTA and JHEPIEGO report presented at the recent MNDSR meeting concerning neonatal deaths April to June 2022

1. **Regarding oxygen availability**

   Only 2 of 7 oxygen concentrators provided over the years by MCAI are working. The nasal CPAP oxygen concentrator is only intermittently working because of fluctuations and major problems with the new LEC electrical power system provided to CB Dunbar since the previous supplier stopped providing oxygen. However, using the two working oxygen concentrators and the oxygen splitter systems, babies needing oxygen have so far been given this treatment.

   MCAI had not been informed of the broken equipment problem and or that the two large oxygen cylinders were empty and could not be re-filled. The neonatal clinicians had notified Dr Ricks and the MD and CHO of CB Dunbar and apparently Dr Ricks had contacted the biomedical technician for C B Dunbar who stated that the 5 broken concentrators could not be repaired. The MD and CHO informed the neonatal clinicians that the hospital could not afford to fill the cylinders which has to be undertaken in Monrovia (costs 35 USD each cylinder to fill) as the oxygen generator at Phebe Hospital remains broken.

   If MCAI had been notified about the broken oxygen concentrators and empty cylinders, it would have acted immediately as there are in reserve brand-new working oxygen concentrators at the MCAI office in House 13 Phebe Hospital that can be used. MCAI will now contact the Medical Director regarding the empty cylinders.

   MCAI will soon receive funding from the Gould Family Foundation in USA and DAK in Australia for a biomedical technician to start work in September, based at House 13 in Phebe Hospital with a workshop to maintain the equipment provided by MCAI.

   The neonatal clinicians also reported that in an emergency occurring in obstetrics they have been asked to provide an oxygen concentrator from the NICU to help manage the obstetric emergency. The obstetric unit must have its own oxygen concentrator and MCAI will provide this.

2. **Regarding staffing of the NICU**
   Contrary to the report presented at the MNDSR meeting, there are 3 highly qualified neonatal clinicians at CB Dunbar not 1 as presented. There are also 10 nurses who have been trained in neonatal care over the last few years since the unit first opened. The clinicians and nurses work a one in 3 rota. The main problem is the massive increase in admissions, coming not only from the CB Dunbar maternity unit directly, but around 10% coming from clinics in Bong but also from Lofa, Nimba and Margibi. Many of these incoming transfers are critically ill and difficult to keep alive. One of the transfers from Kakata admitted 2 weeks ago had neonatal tetanus and following treatment at CB Dunbar has recovered and is about to go home.

   This is not a skills-based problem but rather a problem of a massive increase in the admissions to the CB Dunbar Neonatal Unit (see Tables above showing that by the end of this year around 615 admissions will have occurred).

   There are a number of possible ways of addressing this problem: 1) to urgently increase the space for neonatal intensive care by additional building 2) To consider transferring more patients to Phebe NICU 3) To stop admitting older infants and children to the NICU and instead send them to

the Paediatric wards at Phebe Hospital (a major cross infection risk). 4) To stop admitting adults with non-maternity problems to CB Dunbar (a major cross infection risk).

The existing neonatal clinicians also suggest that a further 3 neonatal clinicians from the latest cohorts are transferred to CB Dunbar to provide 6 highly trained personnel (neonatal clinicians) to manage the increased numbers of admissions. Also, MCAI suggests that 4 additional nurses are needed to work with the existing 10 nurses. Ways of achieving this safer human resource level are urgently needed.

3. **To improve the electricity supply to ensure that intensive care equipment works safely and effectively.**
   1. MCAI provided a generator some years ago but it is no longer functioning. This issue should be investigated. 2. More solar power is urgently needed. 3 The LEC system needs addressing as an emergency.

4. **The MNDSR report criticised the lack of incubators (only one is available).**
   The approach taken by MCAI in line with that for other low resource countries is to use skin to skin care for keeping babies warm. This approach has worked very well.

   Liberia is not providing a western level neonatal intensive care setup where babies born as early as 22 weeks' gestation are cared for; a situation in which incubators are widely used.