DEDER GENERAL HOSPITAL

NICU SERVICES PROTOCOL

PREPARED BY*: *HSQU

JULY 2016 E.C

DEDER, EASTERN ETHIOPIA

PROTOCOL APPROVAL SHEET

NAME OF PROTOCOL: NICU SERVICES PROTOCOL

PREPARRED BY			
S/N	**NAME**	**RESPONSIBILITY**	**SIGN**
1	Abdi Tofik (BSc, MPH)	Health Service Quality Director (HSQD)	
2	Abdella Aliyi (BSc MW)	HSQ Officer and Reform f/person	
3	Redwan Sharafuddin (BSc Pharm)	HSQ Officer	

APROVED BY			
S/N	**NAME**	**RESPONSIBILITY**	**SIGN**
1	Nureddin Yigezu (BSc, MPH)	Chief Executive Officer (CEO)	
2	Dr. Derese Gosa (MD)	Medical Director	
3	Dr. Isak Abdi (MD, G/Surgeon)	OR Director & SaLTS Team leader	

THIS PROTOCOL IS EFFECTIVE FROM JULY 2016 E.C TO JUNE 2018 E.C

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INTRODUCTION

Globally every year about 2.5 million newborns die in the first 4 weeks of life. A similar number of babies are still born. Most neonatal deaths (99%) occur in low income and middle-income countries and about half of the deaths occur at home. It is tragic that millions of newborn die every year specially when their deaths are so easily preventable. It is estimated that about 75% of neonatal deaths could be avoided with simple, low-cost tools that already exist such as antibiotics for pneumonia and sepsis, sterile blades to cut the umbilical cords using knit caps and kangaroo care to keep babies warm.

In Ethiopia, about 94,978 babies die every year in the first four weeks of life[1]. This accounts for 48% of all deaths in children younger than five years of age. The risk of death is highest in the first 24 hours of life when more than half of deaths occur and about three –quarters of all neonatal deaths occur within the first week of life.

Saving newborn lives is the government priority as reflected in the Health Sector Transformation Plan (HSTP) and the Newborn and Child Survival Strategy (2015-2020). To increase access of high impact essential newborn care interventions to every newborn, the Government of Ethiopia in collaboration with its partners has been implementing several facility- and community-based newborn care interventions. These include the essential newborn care package including newborn corner (NBC) initiative at health center levels; establishment of Neonatal Intensive Care Units (NICU) at all public hospitals across the countryand the community based newborn care (CBNC), which has recently been merged with integrated community case management (iCCM) of childhood illness.

Since 2010 EFY, the government has established NICU services in 184 hospitals to take care ofmost sick and low birth weight newborns.

The FMoH is working to equip 80 hospitals with level III NICU equipment in an equitablemanner.

The massive health sector training of various cadres, infrastructure and systems strengthening in recent years are expected to contribute toward significant newborn health quality improvement. However, in order for hospitals to provide quality NICU service, each hospital needs to align with the national NICU levels and standards.

Currently the FMoH does not have a guiding NICU standard document regarding level of neonatal care services; general setup of NICU including space; required human power, combination and quantity of NICU supplies and equipment

Generally, achieving a reduction in deaths of newborn babies in a country with highest mortality like Ethiopia demands a higher coverage of optimally standard neonatal services with special focus to the poorest segment of the population and at the time of greatest risk, which is at birth and in the first few days of life.

For hospitals in Ethiopia the level of care expected to be provided by different types of hospitalsvaries. District hospitals are expected to have minimum of Level I NICU. Regional referral hospitals should at least have Level II NICU. Specialized teaching hospitals must have Level III NICUs.

According to the estimates of the American Academy of Pediatrics, nearly 5% of all the newborns may require the Level III (or Intensive Care Unit) whilst another 15-20% of all the newborns may require Level I and level II services. At a rate 31.8 crude births per 1000 live births for Ethiopia, nation-wide, up to approximately 397,500 babies in Level I and II and 101,583 babies in Level III

(ICU) services may be required per year. By just considering these figures alone, the neonatal care demand and need (i.e., requirements) are very tremendous; preparedness and readiness are critical.

OBJECTIVES:

The objectives of this protocol are:

- To Define the level of the NICU
- To Define NICU Governance structure
- Human Resource requirement
- Patients flow

NICU LEVEL

The level of **Deder General Hospital NICU** is **Special Care Newborn Units (Level II)** Level II NICU is a hospital special care nursery organized with the personnel and equipment toprovide care to infants born at more than 32 weeks' gestation and weighing more than 1500gwho have physiologic immaturity such as apnea of prematurity, inability to maintain body temperature, or inability to take oral feedings; who are moderately ill with problems that are expected to resolve rapidly and are not anticipated to need subspecialty services on an urgentbasis; or who are convalescing from intensive care.

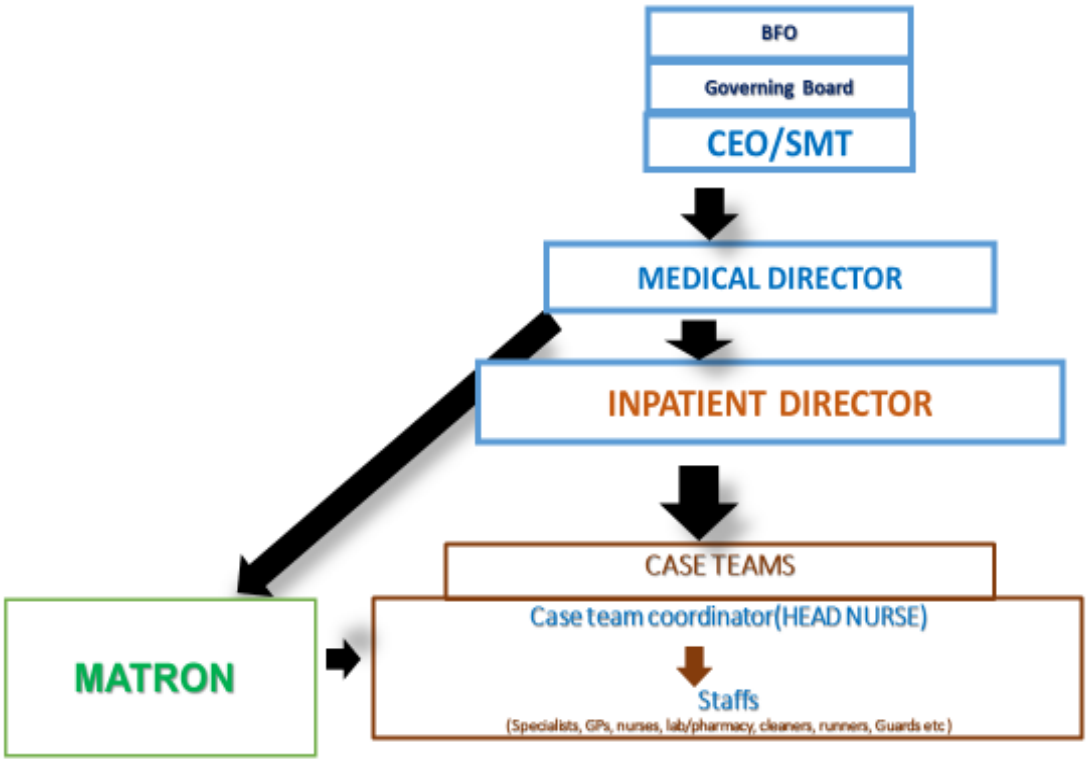
Hence, this Special care newborn unit (SCNU) is a neonatal unit adjacent to the delivery roomof the hospital that provides care to all sick newborns (except for those requiring assisted ventilation or major surgery).

SERVICE PROVIDED AT DGH NICU

- Care at birth including resuscitation of asphyxiated newborns

- Managing sick newborns
- Kangaroo Mother Care
- Assessment/screening of newborn
- Follow up of high risk newborns
- Referral services
- Linked with Immunization services

GOVERNANCE STRUCTURE



SPACE /ROOMS REQUIRED FOR BASIC CARE NEWBORN UNITS

- The Unit is located in the block of the Hospital near to Emergency get of the Hospital next to Surgical and Gynecology ward Nursing Station.
- The Unit is approximately 25-30 Meter away from the Delivery unit

- Has rooms for KMC, critically ill neonates and septic room
- Triage area
- Resuscitation area

CONFIGURATION OF THE UNIT

- The ideal design should provide constant surveillance of each bed area from the nurses' station, with minimal walking distance for the staff. The design should allow for flexibility and creativity to achieve the stated objective.
- Minimum space requirements
- Each newborn space shall contain a minimum 8 - 12 m^2 of clear floor space, excluding handwashing stations and columns.
- This should be utilized as follows :
- The baby care area (3-4 M^2 per bed) while the general support and ancillary area is 5 M^2
- This should be divided into two interconnected rooms separated by transparent observation windows with the nurses' work place in between. This facilitates temporary closure of one section for disinfection.
- Space for ancillary (supplementary) services
- Distinct support space should be provided for all clinical services that are routinely performed in the SCNU.
- The ancillary area should include space for the following:
- Gowning area at the entrance
- Main Hand washing stations outside of the NICU preferably to be handled by elbow or foot
- Small Hand washing area after procedure in the procedure room

- Examination area
- Clean area for mixing intravenous fluids and medications
- Mother's area for expression of breast milk, breastfeeding and learning mother crafts
- Side laboratory (selected investigations) is shared with Emergency and critical care unit Laboratory service
- Boiling and autoclaving
- General support area
- Procedure room

Step down area

- Our NICU has A total of five beds step down area where recovering neonates can stay with their mothers before discharge is of added advantage to a SCNU.
- Our NICU has Six bed for kangaroo mother care room in the special newborn unit
- a toilet and shower, TV and chair (reference to adult ward) will be shared with surgical and Gynecology ward
- The unit provides service 24/7

HUMAN RESOURCE

- At least six dedicated staff nurses per shift are necessary for a 24-bedded unit (1:4 ratio).
- Thirty per cent extra staffing is recommended to account for nights off and leave vacancies. There should be staff uniformly assigned for 24 hours aday and 7 days a week.
- There should be an adequate number of doctors to be able to take a round of the newborns once in each shift (every eight hours) and to be on call round-the-clock.
- Dedicated support staff should be there to clean the nursery at least once everyshift and

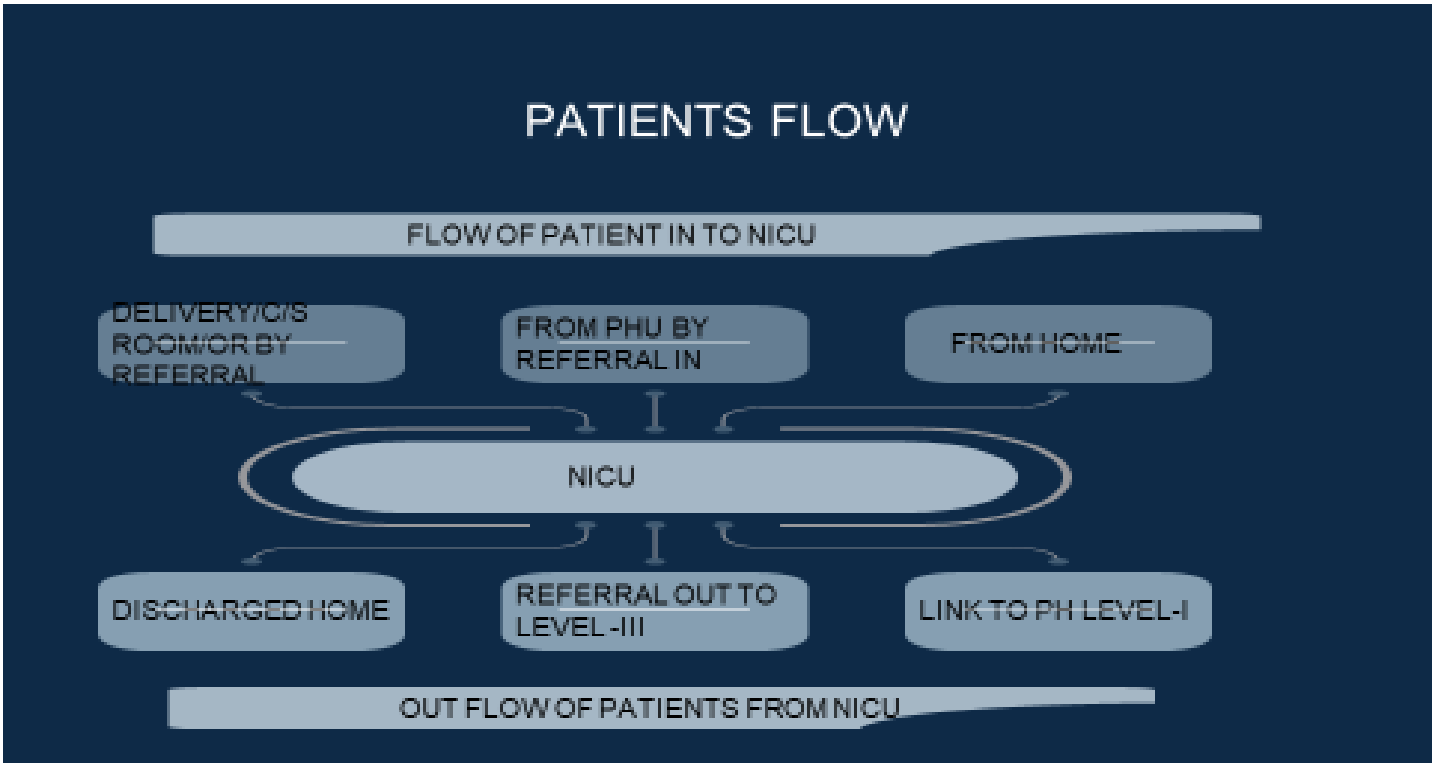
more often, depending on the need.

- Porter to transport the waste product and
- Guard to prevent over crowding
- For a 24-bed unit, the recommended staffing is:
- Staff Nurses: 24 (at least 25% being neonatal nurses)
- Physicians: (a Pediatrician and two general practitioners)

TRAINING:

- An initial training program for 4-5 days and,
- Neonatal nurses with formal pre service education on newborn health
- An observer ship at level III NICU at least two weeks

PATIENTS FLOW



EQUIPMENT LISTS

ItemNo	Item description	Essential	Desirable	Quantity for 12 bed unit
1	Open care system: radiant warmer, fixedheight, with trolley, drawers, 02-bottles	E		6
2	Bubble CPAP	E		6
3	Incubator	E		4
4	Phototherapy unit, single head, high intensity with LED light	E		5
5	Resuscitator, hand-operated, neonate, 250ml	E		2
6	Resuscitator set, hand-operated, neonate, 500ml [includes ambubags, face mask]	E		4
7	Laryngoscope set, neonate	E		6
8	Pump, suction, portable, 220V, w/access	E		2
9	Pump, suction, foot-operated	E		2

10	Surgical instrument suture/SET	E		2
11	Syringe pump 10, 20, 50 ml, single phase	E		3
12	Oxygen hood, S and M, set of 3 each, including connecting tubes	E		5
13	Oxygen concentrator	E		4
14	Thermometer,clinical,digital,32-43ºC	E		12
13	Scale, baby, electronic, 10 kg <5g>	E		4
14	Pulse oximeter, bedside, neonatal	E		6
15	Stethoscope, binaural, neonate	E		12
16	Sphygmomanometer, neonate, electronic	E		6
17	Light, examination, mobile,220-12V	E		6
18	Umbilical catheter	E		Consumable
19	Exchange transfusion set	E		Consumable
20	Nasal prong, oxygen tube	E		Consumable
21	Newborn Bed	E		24
22	KMC bed	E		6
23	Maternal bed (Short-leg)	E		20
24	Hub cutter, syringe	E		2
25	Tape, measure, vinyl-coated, 1.5m.	E		2
26	Basin, kidney, stainless steel, 825ml	E		4
27	Tray,dressing,ss,300x200x30mm	E		4
28	Stand, infusion, double hook, on castors	E		1
29	Indicator, TST control spot/PAC-300		D	1
30	Irradiance meter for phototherapy units		D	2
31	Monitor, vital sign, NIBP, HR,SpO2, ECG, RR, Temp		D	6
32	Infantometer, plexi, 3½ft/105cm	E		1
33	X-Ray, mobile		D	1
34	Ultrasound		D	1
35	Oxygen System; Oxygen cylinder with blender and Flow meter,		D	1

36	Transport incubator, basic, with battery and O2, w/o ventilator		D	1
37	Autoclave, steam, bench top, 20L, electrical		D	1
38	Laundry washer dryer, combo, 5kg		D	1
39	Embrace	E		2
40	LP set	E		3
41	Bilirubin meter	E		3
42	Photometer, HemoCue**Hb** 301/SET	E		Consumable
43	Three-way valve, Luer, w/caps, box/50	E		,,
44	Tube,endotrach,3,w/o cuff,ster,disp	E		,,
45	Photometer, HemoCue **Glucose** 201+/SET	E		,,
46	Infusion pump, with accessories	E		4
47	Neonatal room Thermometer	E		2
48	Glucometer	E		3
49	Computer	E		1
50	TV	E		1

LABORATORY SERVICE

Laboratory service (all services should be provided by the general hospital laboratory)

- ✓ CBC (WBC& Diff, RBC, Hgb, HCT Platelet count) using small size test tubes for newborns (0.5 ml volume)
- ✓ Blood Morphology

- ✓ Blood Film
- ✓ Bleeding time & Coagulating time
- ✓ C-Reactive Protein
- ✓ Reticulocyte count
- ✓ Blood group& Rh
- ✓ VDRL
- ✓ Blood Chemistry (SGOT/AST, SGPT/ALT, Bilirubin direct & total, BUN,Creatinine, RBS/FBS, Total Protein, Albumin)
- ✓ Serum electrolytes (Sodium, Potassium, Chloride, Phosphorous, Calcium)
- ✓ HBSAg.
- ✓ Blood Gas Analysis
- ✓ CSF
- ✓ Gram stain
- ✓ FNAC
- ✓ Urine analysis
- ✓ Stool for Occult blood
- ✓ Culture and sensitivity of any body fluid

IMAGING

- ✓ X-Ray (Chest, skull, plain abdomen, contrast, bones)
- ✓ Ultrasound

PROCEDURES

- ✓ IV- Canalization
- ✓ Lumbar Puncture
- ✓ Insertion of Naso-Gastric Tub
- ✓ Umbilical Catheterization
- ✓ Blood/Plasma Transfusion
- ✓ Partial Exchange
- ✓ Double Exchange

- ✓ Dressing 1-5
- ✓ Wound care and stitching
- ✓ Life-saving surgery

REGISTRATION

Registrations should include both manual and electronically made by using registration logbook or software data bas