



DEDER GENERAL HOSPITAL

NICU LEVEL II SERVICES

PROTOCOL

PREPARED BY: HSQU

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Deder, Eastern Ethiopia

PROTOCOL APPROVAL SHEET

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DGH NICU Level II Services Protocol 2017E.C

TABLE OF CONTENTS

Lists of figures.....	iii
INTRODUCTION	1
PURPOSE.....	1
SCOPE AND APPLICABILITY	2
DEFINITIONS OF TERMS	2
SERVICE OBJECTIVES	3
ADMISSION AND TRANSFER CRITERIA.....	3
CLINICAL SERVICES PROVIDED	5
STAFFING REQUIREMENTS	5
STAFF COMPETENCIES	6
ROLES AND RESPONSIBILITIES	6
EQUIPMENT & SUPPLIES	7
INFECTION PREVENTION PROTOCOL.....	7
STANDARD OPERATING PROCEDURES (SOPS)	8
1. Admission & Initial Assessment	8
2. Oxygen Therapy & CPAP	8
3. Feeding.....	8
4. Phototherapy	8
5. Discharge Criteria.....	8
6. Documentation & Reporting.....	9
7. Referral Procedure.....	9
8. Monitoring & Review.....	9
APPENDICES	9
A. Standard Operating Procedures (SOPs)	9
Appendix 1: Admission & Initial Assessment SOP	10
Appendix 2: Oxygen Therapy & CPAP SOP	10
Appendix 3: Feeding Protocol SOP	11
Appendix 4: Phototherapy SOP	11
Appendix 5: Neonatal Sepsis Management SOP.....	11
Appendix 6. Discharge & Follow-Up SOP	12
B. Checklists	12

C. Workflow Diagrams.....	13
D. Clinical Algorithms & Flowcharts	16
DOCUMENTATION & FORMS	21
Discharge Criteria & Follow-Up	23
Quality Assurance & Safety Measures	24
12.2 Infection Prevention and Control (IPC)	25
12.3 Patient Safety Measures	25
REFERENCES.....	26

Lists of figures

Figure 1: NICU Level II Admission Flowchart.....	13
Figure 2: Oxygen Therapy Decision Tree	14
Figure 3: Phototherapy Workflow	15
Figure 4: NICU Level II Admission & Triage Algorithm	16
Figure 5: CPAP Initiation Flowchart	17
Figure 6: Neonatal Sepsis Management Flowchart	18
Figure 7: Hypoglycemia Management Flowchart	19
Figure 8: Discharge Readiness Flowchart	20

INTRODUCTION

Newborns are among the most vulnerable patients in the healthcare system. Many require specialized monitoring and interventions beyond routine postnatal care. The Neonatal Intensive Care Unit (NICU) Level II provides care for moderately ill or recovering neonates who are at risk for complications but do not require prolonged invasive ventilation or complex surgical interventions.

In Ethiopia, neonatal mortality remains a significant contributor to under-five deaths, with preventable causes such as infections, prematurity, and birth asphyxia leading the burden. Deder General Hospital provides Level II Neonatal Intensive Care Unit (NICU) services to care for moderately ill newborns requiring specialized monitoring and treatment, but not prolonged invasive ventilation.

This protocol is aligned with the Ethiopian Ministry of Health **NICU Guideline 2021** and **EHSTG Maternal, Neonatal & Child Health Standards**, ensuring safe, effective, and evidence-based neonatal care.

PURPOSE

To standardize the delivery of NICU Level II services, ensure patient safety, optimize clinical outcomes, and maintain quality of care in accordance with national and international best practices.

SCOPE AND APPLICABILITY

This protocol applies to all healthcare professionals and support staff involved in the care of neonates admitted to the Level II NICU at Deder General Hospital, including:

- ✎ Pediatricians and General Practitioners assigned to NICU.
- ✎ NICU-trained nurses and midwives.
- ✎ Laboratory, pharmacy, radiology, and biomedical support staff.
- ✎ Cleaners and other NICU support personnel.

The protocol also guides coordination between the NICU and other departments, including maternity, operating room, postnatal ward, emergency department, and referral linkages.

DEFINITIONS OF TERMS

- ✎ **NICU Level II** – A neonatal unit providing specialized care to stable or moderately ill newborns ≥ 32 weeks gestational age and/or birth weight ≥ 1500 g, requiring continuous monitoring, phototherapy, short-term respiratory support, or special feeding assistance.
- ✎ **Moderately ill newborn** – A baby who requires more than basic newborn care but is stable enough to not require invasive ventilation or complex multi-organ support.
- ✎ **Kangaroo Mother Care (KMC)** – Continuous skin-to-skin contact between mother (or caregiver) and newborn to promote thermal regulation, breastfeeding, and bonding.
- ✎ **Bubble CPAP** – A form of non-invasive ventilation providing continuous positive airway pressure to help keep the newborn's lungs open.
- ✎ **Thermal care** – Measures to maintain the newborn's body temperature within the normal range (36.5°C – 37.5°C).

SERVICE OBJECTIVES

- ✎ Stabilize and treat moderately ill newborns.
- ✎ Prevent complications in at-risk neonates.
- ✎ Support breastfeeding and nutrition.
- ✎ Promote early discharge with safe home care instructions.
- ✎ Facilitate timely referral for advanced care.

ADMISSION AND TRANSFER CRITERIA

Admission Criteria for Level II NICU

- ✎ **GA:** 32–36 weeks
- ✎ **Birth weight:** 1500–2500 g
- ✎ **Conditions requiring care include:**
 - + **Respiratory distress** (mild to moderate; requiring oxygen therapy or CPAP, but not invasive ventilation)
 - + **Feeding difficulties** (requiring NG/OG tube feeding or IV fluids)
 - + **Hyperbilirubinemia** requiring phototherapy or exchange transfusion
 - + **Sepsis** – confirmed or suspected, but clinically stable
 - + **Hypoglycemia or electrolyte imbalance** requiring monitoring/treatment
 - + **Temperature instability** requiring incubator or warmer
 - + **Stable post-operative** neonates
 - + **Recovery/convalescence** from Level III NICU

Exclusion Criteria (Require Level III or Referral)

- ✗ **Gestational age <32 weeks GA or <1500 g** requiring prolonged mechanical ventilation.
- ✗ Unstable post-operative conditions
- ✗ Severe congenital anomalies needing advanced surgical or cardiac intervention
- ✗ Severe HIE (Hypoxic-Ischemic Encephalopathy) needing intensive ventilation.
- ✗ Unstable multi-organ failure.

Transfer Criteria to Lower Level of Care

- ✗ Stable vital signs for at least 48 hours
- ✗ Feeding adequately without support
- ✗ No oxygen requirement for >24 hours
- ✗ Satisfactory weight gain trend

Escalation to Higher-Level NICU or Referral

- ✗ Worsening respiratory distress requiring invasive ventilation
- ✗ Persistent or recurrent apnea/bradycardia despite CPAP
- ✗ Severe sepsis with hemodynamic instability
- ✗ Complicated surgical cases needing specialist intervention

CLINICAL SERVICES PROVIDED

✎ The Level II NICU at Deder General Hospital provides the following essential services for moderately ill newborns.

- ✚ Thermal regulation (incubators, radiant warmers, KMC).
- ✚ Oxygen therapy and CPAP.
- ✚ Phototherapy.
- ✚ IV fluid therapy and medications.
- ✚ NG/OG feeding and lactation support.
- ✚ Continuous monitoring of vitals and oxygen saturation.
- ✚ Infection prevention and control measures.
- ✚ Family education and counseling.

✎ All care must adhere to the **Ethiopian National Newborn Care Standards**, **STGs**, and **WHO Quality Standards for Newborn Care**:

STAFFING REQUIREMENTS

Category	Requirement	Responsibilities
Medical Doctors	✎ 1 Pediatrician (lead), ✎ 2 GPs = 1 GP per shift	✎ Daily rounds by pediatrician or ✎ medical Doctor trained in newborn care
Nursing	NICU-trained nurse: 24	1 nurse for every 4–6 babies
Support	✎ Cleaner trained in NICU IPC=2 ✎ Biomedical technician on call=1	1 cleaner per shift (trained in NICU IPC

STAFF COMPETENCIES

All NICU staff must be trained and competent in:

- ✎ Neonatal resuscitation
- ✎ Thermoregulation and feeding support
- ✎ Oxygen therapy and CPAP use
- ✎ Infection prevention & control
- ✎ Pain assessment and comfort care
- ✎ Documentation and use of monitoring charts

ROLES AND RESPONSIBILITIES

Nurse:

- ✎ Admit and assess newborns per protocol
- ✎ Monitor and record vitals, feeding, and treatment
- ✎ Administer medications and fluids
- ✎ Educate and support parents
- ✎ Report deterioration promptly

Pediatrician/Medical Doctor:

- ✎ Lead daily ward rounds and care planning
- ✎ Approve admission/discharge/referral
- ✎ Guide management of complex cases
- ✎ Supervise and train staff

Support Staff:

- ✎ Maintain cleanliness of the NICU
- ✎ Assist in equipment cleaning/disinfection
- ✎ Ensure safe waste disposal

EQUIPMENT & SUPPLIES

Essential Equipment:

- ✎ Incubators & radiant warmers.
- ✎ Oxygen concentrators/cylinders & flow meters.
- ✎ CPAP machine.
- ✎ Multiparameter monitors.
- ✎ Phototherapy units.
- ✎ Suction machines.
- ✎ Feeding pumps & NG tubes.
- ✎ Pulse oximeters.
- ✎ Resuscitation trolley (Ambu bags, masks, laryngoscope).

Essential Medicines:

- ✎ Antibiotics (ampicillin, gentamicin, cefotaxime).
- ✎ IV fluids (D10%, normal saline, Ringer's lactate).
- ✎ Vitamin K, surfactant, anticonvulsants.
- ✎ Paracetamol, phototherapy eye shields.

INFECTION PREVENTION PROTOCOL

- ✎ Strict hand hygiene before/after patient contact.
- ✎ PPE according to task.
- ✎ Dedicated incubator/equipment per patient if possible.
- ✎ Disinfect surfaces twice daily and between patient use.
- ✎ No jewelry, artificial nails, or loose hair in NICU.

STANDARD OPERATING PROCEDURES (SOPS)

1. Admission & Initial Assessment

- ✗ Receive neonate from delivery room, maternity, or referral.
- ✗ Confirm eligibility for Level II care.
- ✗ Record admission details (weight, GA, vitals, Apgar score).
- ✗ Start treatment per diagnosis.

2. Oxygen Therapy & CPAP

- ✗ Start oxygen if $\text{SpO}_2 < 90\%$ on room air.
- ✗ Use humidified oxygen.
- ✗ CPAP initiation criteria: grunting, nasal flaring, retractions with $\text{SpO}_2 < 90\%$.
- ✗ Monitor hourly for improvement or deterioration.

3. Feeding

- ✗ Start breastfeeding ASAP if stable.
- ✗ NG/OG feeding for infants unable to suck.
- ✗ Use expressed breast milk; formula only if breast milk unavailable.

4. Phototherapy

- ✗ Initiate per bilirubin nomogram.
- ✗ Eye protection mandatory.
- ✗ Monitor bilirubin levels per protocol.

5. Discharge Criteria

- ✗ Stable vitals without oxygen support for ≥ 24 hrs.
- ✗ Feeding well orally.
- ✗ Weight gain or stable weight for 3 days.
- ✗ Family educated on newborn care.

6. Documentation & Reporting

- ✍ Daily progress notes.
- ✍ Nursing charts (feeding, medications, vitals).
- ✍ NICU register.
- ✍ Monthly quality report to Hospital Quality Unit.

7. Referral Procedure

- ✍ Pre-transfer stabilization.
- ✍ Complete referral form.
- ✍ Communicate with receiving facility.
- ✍ Ensure neonatal transport incubator/portable warmer.

8. Monitoring & Review

- ✍ Monthly clinical audit.
- ✍ Annual protocol review.
- ✍ Continuous training for NICU staff.

APPENDICES

A. Standard Operating Procedures (SOPs)

- ✍ **Appendix 1:** Admission Checklist
- ✍ **Appendix 2:** NICU Daily Monitoring Chart
- ✍ **Appendix 3:** Phototherapy Nomogram
- ✍ **Appendix 4:** Neonatal Sepsis Treatment Chart
- ✍ **Appendix 5:** Discharge Counseling Form

Appendix 1: Admission & Initial Assessment SOP

Step	Action	Responsible	Documentation
1	Receive newborn from delivery, maternity, or referral facility	NICU Nurse	Admission log
2	Verify Level II eligibility (GA \geq 32 wks, weight \geq 1500 g, moderate illness)	Pediatrician/GP	Admission form
3	Record full history, weight, GA, Apgar, vitals	NICU Nurse	Neonatal chart
4	Initiate stabilization (thermal care, oxygen if needed)	NICU Nurse	Vital signs sheet
5	Notify Pediatrician	Nurse-in-charge	—

Appendix 2: Oxygen Therapy & CPAP SOP

Step	Criteria	Action
Start O ₂	SpO ₂ <90% on room air	Give humidified oxygen via nasal prongs
CPAP initiation	Signs of respiratory distress with SpO ₂ <90% despite oxygen	Set CPAP at 5–6 cmH ₂ O, FiO ₂ 21–40%
Monitoring	Every 30–60 min	Assess distress signs, SpO ₂ , HR
Weaning	SpO ₂ stable \geq 94% on \leq 30% FiO ₂	Reduce gradually

Appendix 3: Feeding Protocol SOP

Feeding Method	Indication	Notes
Direct breastfeeding	Stable, able to suck	Encourage rooming-in/KMC
NG/OG feeding	Weak suck, moderate illness	Use EBM; 2–3 hrly
IV fluids	Unable to tolerate enteral feeds	Calculate per weight, avoid overload

Appendix 4: Phototherapy SOP

Criteria	Action
TSB \geq threshold for GA/age	Start phototherapy
Before starting	Check TSB, rule out hemolysis, ensure hydration
During therapy	Eye shield, monitor TSB daily, reposition infant every 2 hrs
Stop	TSB < threshold for 24 hrs and trending down

Appendix 5: Neonatal Sepsis Management SOP

Step	Action
Suspect sepsis	Clinical signs or risk factors
Start antibiotics	Ampicillin + Gentamicin empirically
Supportive care	Maintain warmth, feeding support, monitor vitals
Duration	7 days for suspected, 10–14 days for confirmed sepsis

Appendix 6. Discharge & Follow-Up SOP

Criteria	Action
Stable vitals off O ₂ ≥24 hrs	Educate mother on newborn care
Feeding well orally	Demonstrate proper breastfeeding
Weight stable/gaining	Schedule follow-up within 3–5 days
Completed antibiotics	Provide discharge summary

B. Checklists

Admission Checklist

- ☐ Confirm Level II eligibility
- ☐ Record weight, GA, vitals
- ☐ Thermal care initiated
- ☐ Feeding plan started
- ☐ ID band placed
- ☐ Family oriented to NICU rules

Daily Care Checklist

- ☐ Hand hygiene before every patient contact
- ☐ Vitals charted 3–4 hourly
- ☐ Feeding recorded
- ☐ Phototherapy settings checked
- ☐ Oxygen source functioning
- ☐ Incubator/radiant warmer temperature within range

Discharge Checklist

- ☐ Meets discharge criteria
- ☐ Mother counseled on feeding, danger signs

- ✎ Immunization status updated
- ✎ Follow-up date given
- ✎ Discharge summary completed

C. Workflow Diagrams

Figure 1: NICU Level II Admission Flowchart

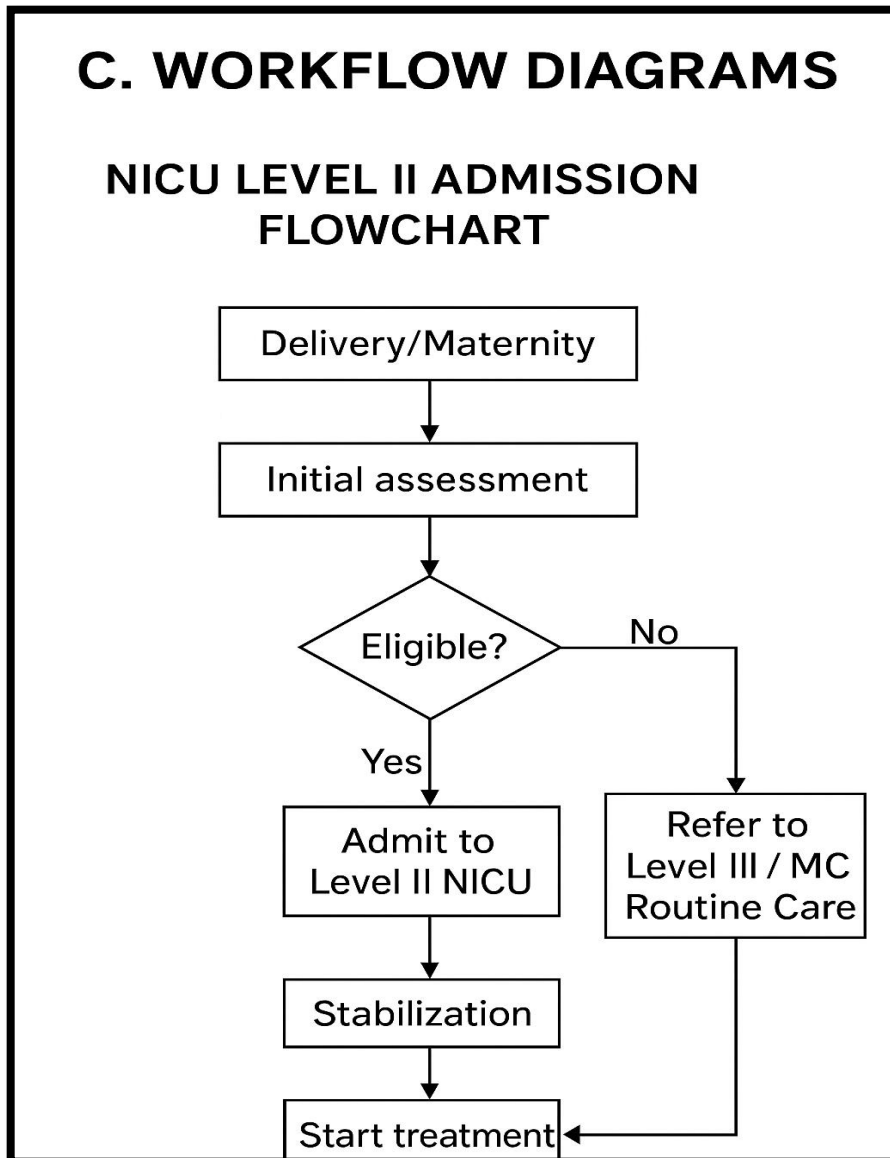


Figure 2: Oxygen Therapy Decision Tree

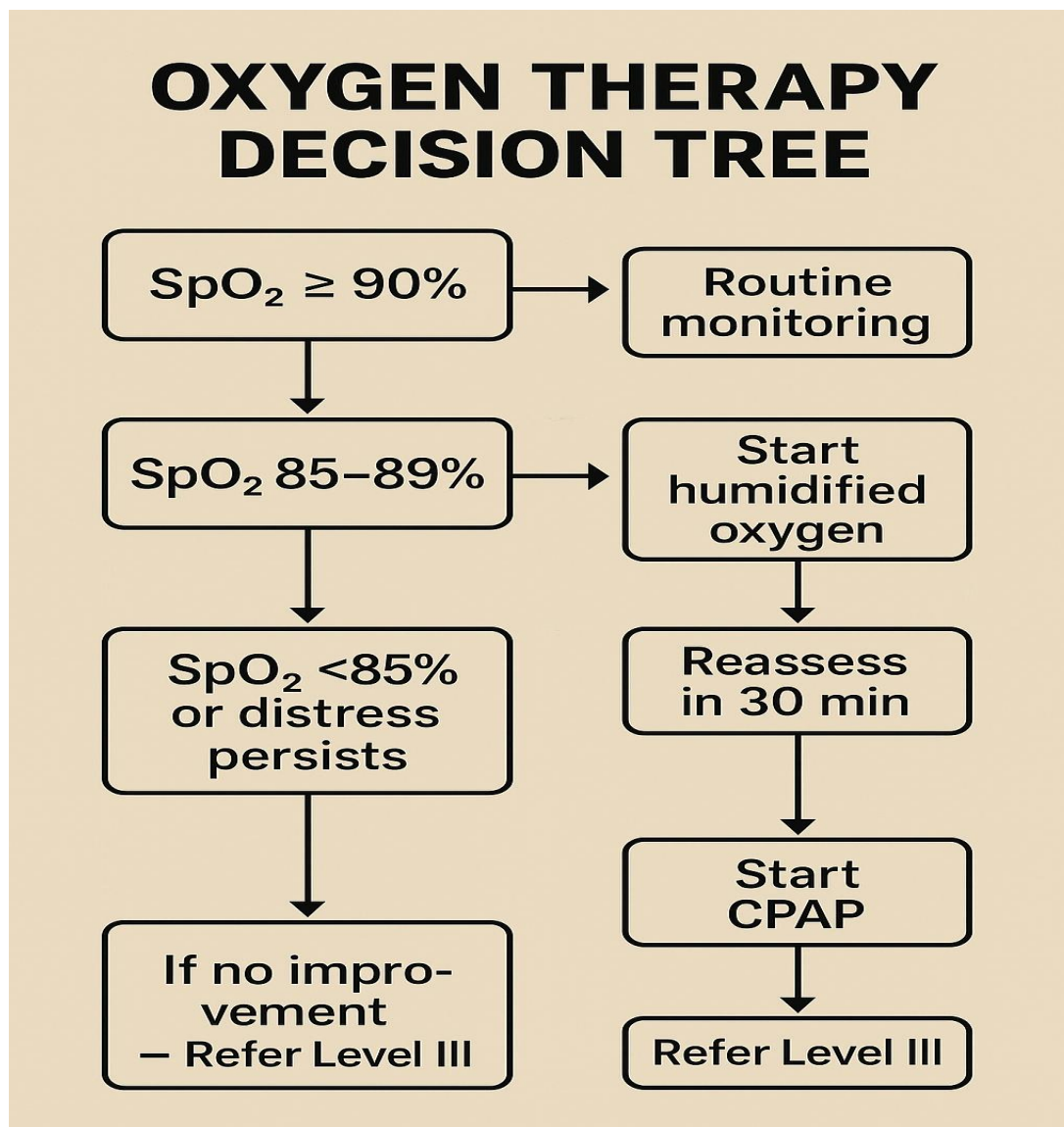
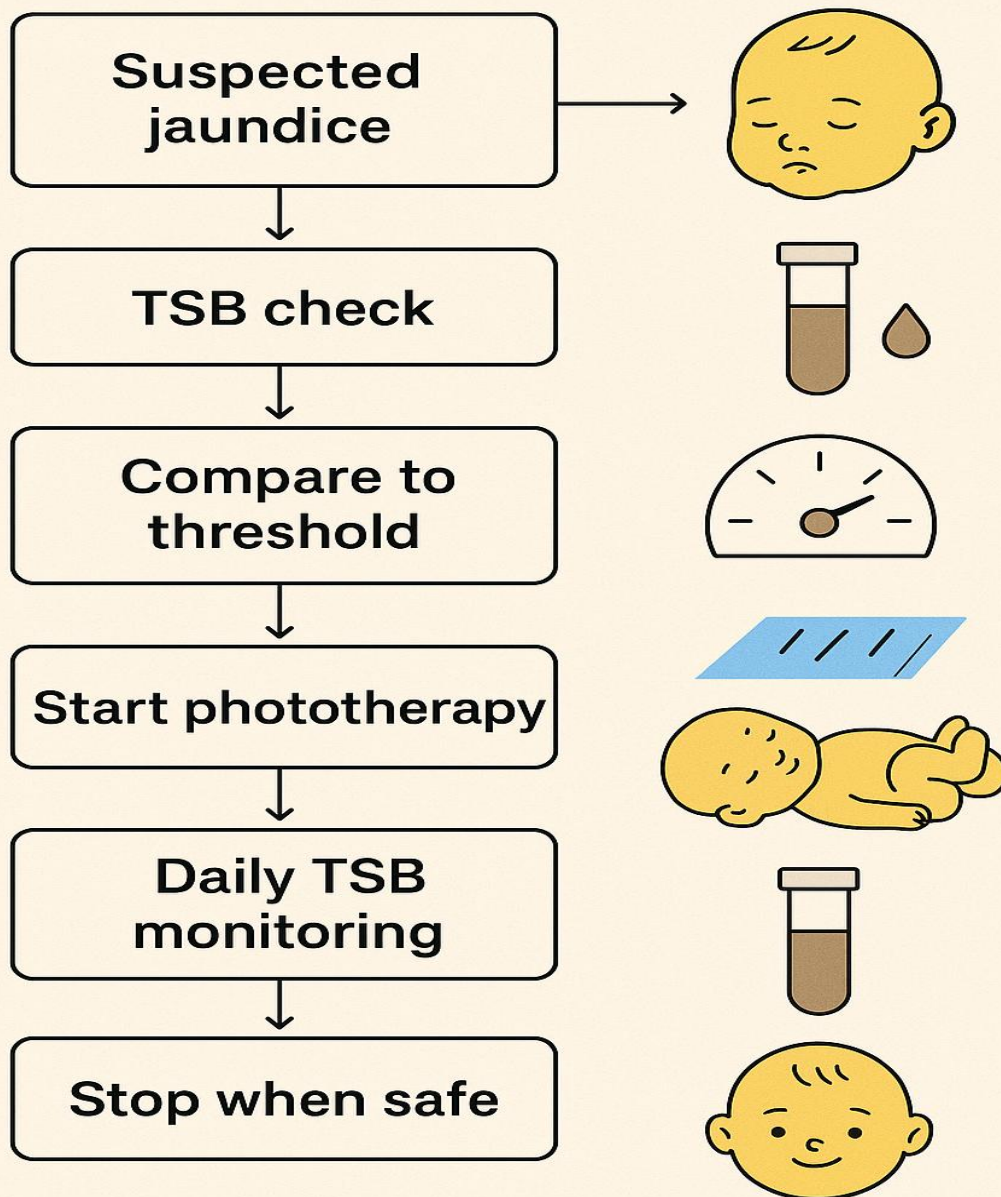


Figure 3: Phototherapy Workflow

Phototherapy Workflow



D. Clinical Algorithms & Flowcharts

These algorithms provide quick visual guidance for common neonatal conditions in the Level II NICU.

Figure 4: NICU Level II Admission & Triage Algorithm

NICU LEVEL II ADMISSION & TRIAGE ALGORITHM

1. Newborn Identified for NICU Admission



Assess Gestational Age & Weight

≥32 weeks & ≥1500g → Continue

<32 weeks or <1500g → Refer Level III
Regional Hospital



3. Assess Condition Severity

Mild–moderate distress → Admit Level II

Severe distress (ventilation required)



4. Stabilization Measures

Thermal care, oxygen, glucose check,
IV access if needed



5. Assign Bed & Begin Monitoring

Figure 5: CPAP Initiation Flowchart

CPAP Initiation Flowchart



Baby with respiratory distress,
 $\text{SpO}_2 < 90\%$ on oxygen therapy



Exclude contraindications
(pneumothorax, severe apnea, snck)



Start bubble CPAP
(FiO_2 21–40%)



Monitor SpO_2 & work of breathing
every 30 minutes for first 2 hours



If no improvement or worsening
→ escalate to Level III

Figure 6: Neonatal Sepsis Management Flowchart

NEONATAL SEPSIS MANAGEMENT FLOWCHART

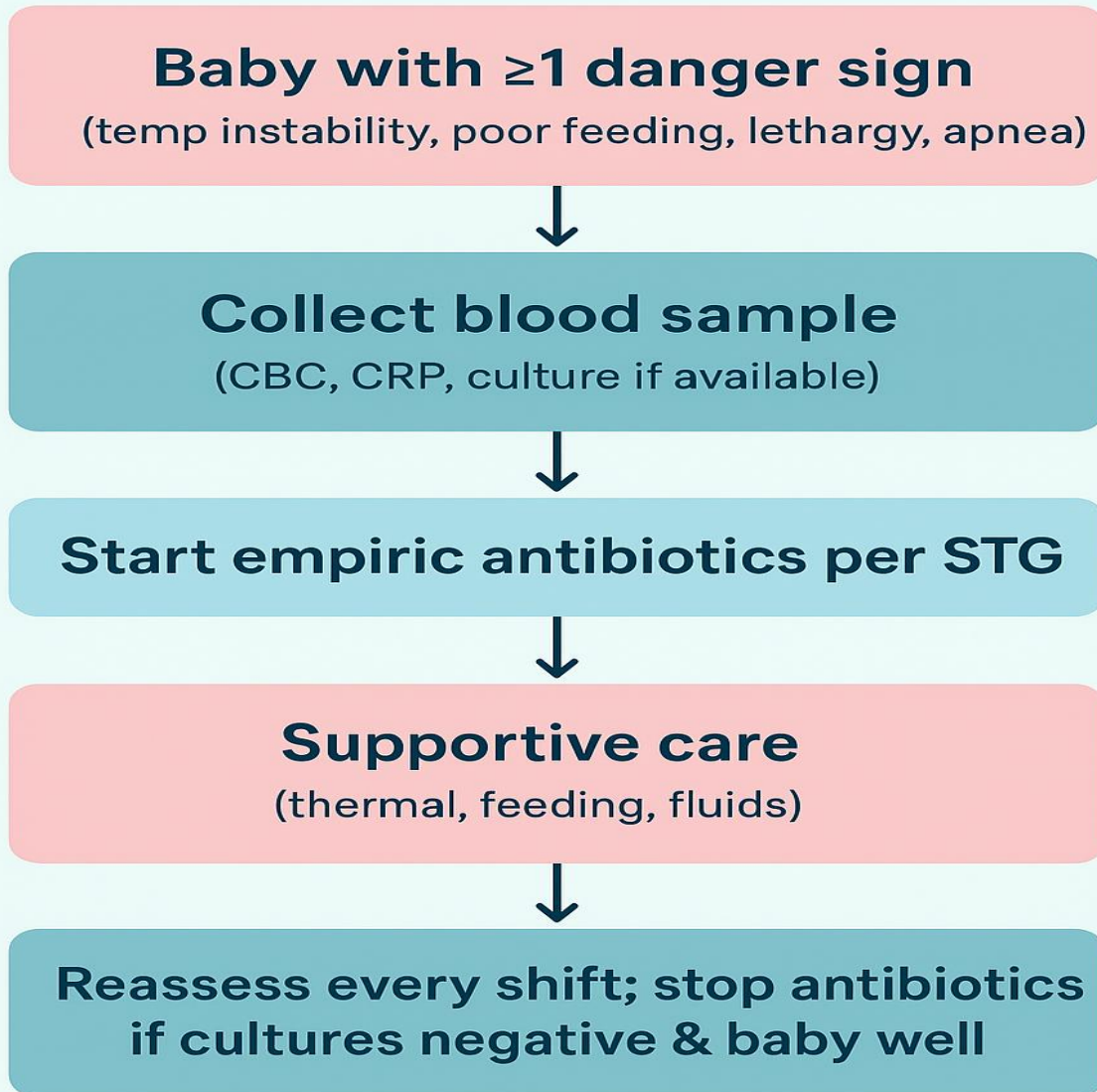


Figure 7: Hypoglycemia Management Flowchart

HYPOGLYCEMIA MANAGEMENT FLOWCHART

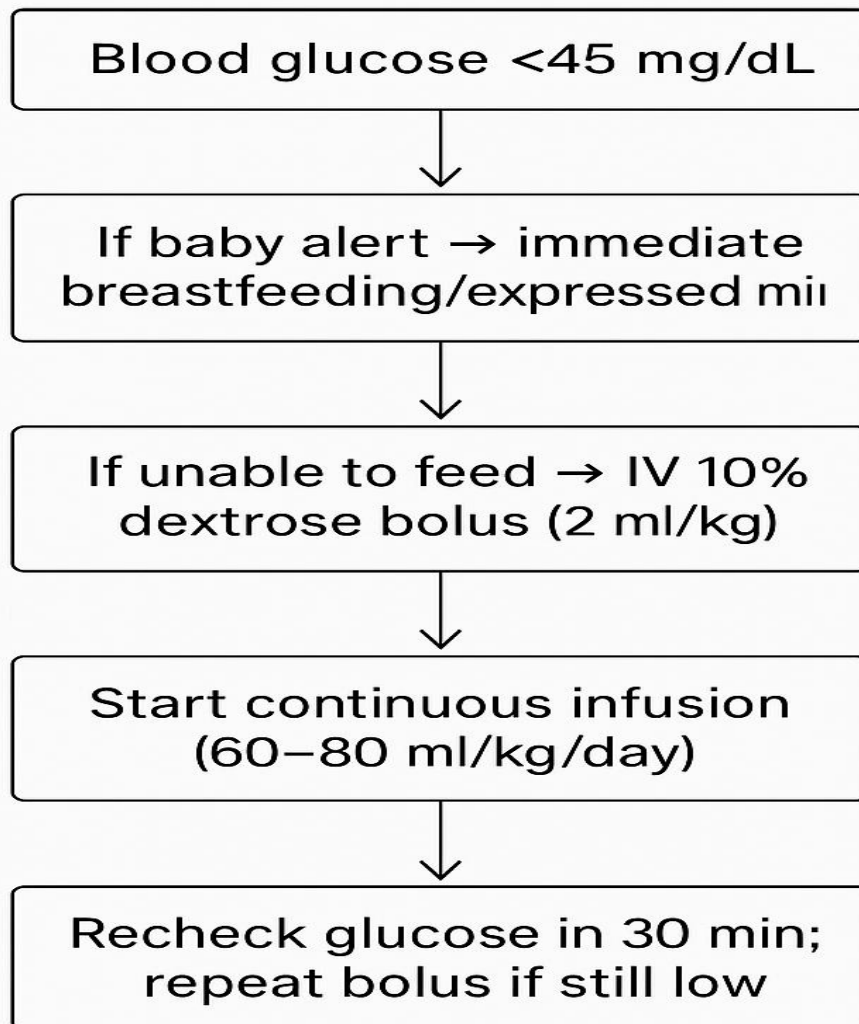
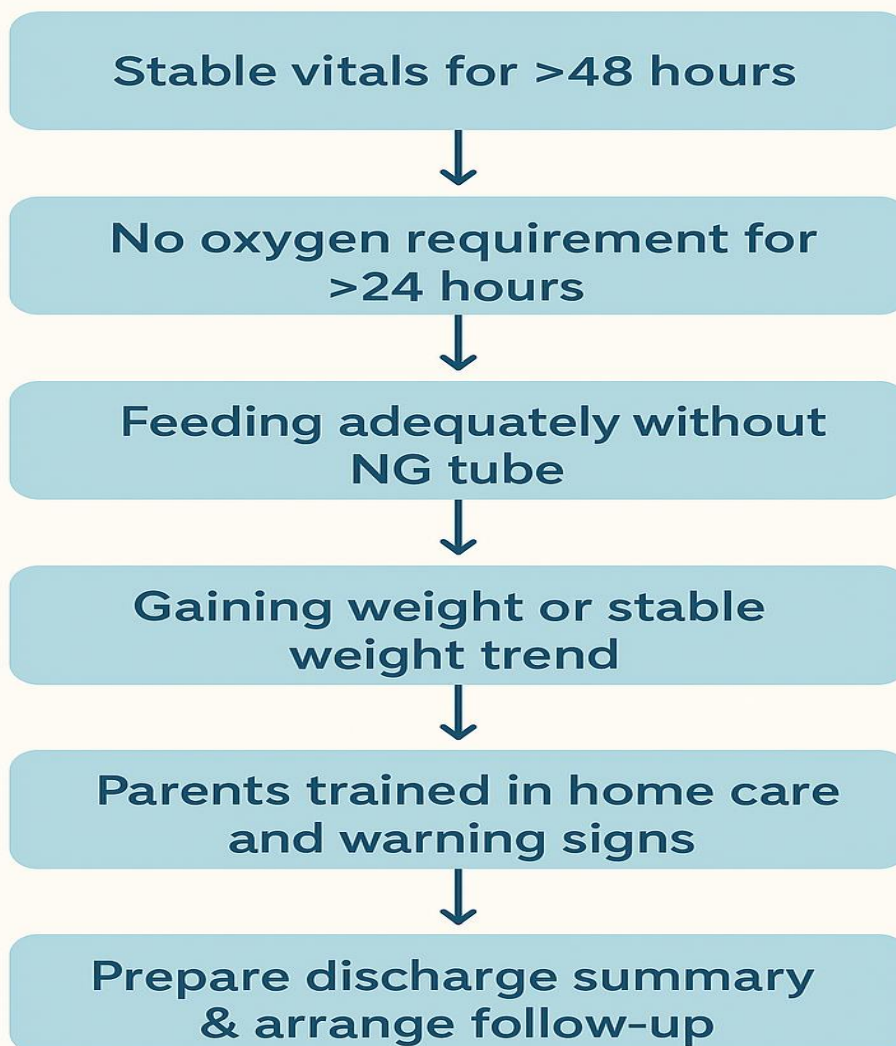








Figure 8: Discharge Readiness Flowchart

Discharge Readiness Flowchart



D. Infection Prevention Checklist for NICU

-  Hand hygiene station at entry
-  No outdoor shoes inside
-  Dedicated equipment for each baby
-  Twice daily cleaning of surfaces
-  Linen changed daily or if soiled
-  Visitors limited & hand washed

E. Monitoring & Quality Indicators Form

Indicator	Target	Frequency	Responsible
Neonatal mortality $\geq 1500\text{g}$	<5%	Monthly	Pediatrician
HAIs per 100 admissions	<10	Monthly	NICU Nurse-in-charge
Exclusive breastfeeding at discharge	>80%	Monthly	Nutritionist
Readmission within 7 days	<5%	Monthly	Quality Office

DOCUMENTATION & FORMS

All NICU Level II admissions must be documented using **standard forms** to ensure continuity of care, accurate reporting, and medico-legal safety.

10.1 NICU Admission Form

Patient ID: _____

Name: _____

DOB: _____

Gestational Age: _____

Birth Weight: _____

Admitting Diagnosis: _____

Date/Time of Admission: _____

Condition on Admission:

☐ Stable ☐ Unstable ☐ Critical

Interventions on Admission:

☐ Oxygen ☐ CPAP ☐ IV fluids ☐ NG tube ☐ Phototherapy

10.2 Daily Monitoring Chart

Da te	Ti me	Te mp (°C)	HR (bpm)	RR (/min)	Sp O ₂ (%)	Fee d Ty pe	Feed Amo unt (ml)	Uri ne	Sto ol	Notes/Ev ents	Nur se Sign

10.3 Feeding Chart

Date	Time	Method (Breast/NG/Cup)	Amount (ml)	Tolerance	Notes	Sign

10.4 Phototherapy Record

Dat e	Tim e	Bilirubi n Level	Type of Phototherap y	Lamp Distanc e (cm)	Eye Shiel d (Y/N)	Tem p (°C)	Note s	Sig n

10.5 Discharge Summary Form

Patient ID: _____

Name: _____

DOB: _____

Gestational Age at Birth: _____

Birth Weight: _____

Discharge Weight: _____

Primary Diagnosis: _____

Secondary Diagnosis: _____

Summary of Hospital Course: _____

Feeding at Discharge: ☐ Exclusive Breastfeeding ☐ Cup Feeding

Follow-up Date: _____

Caregiver Education Given: ☐ Yes ☐ No

Warning Signs Explained: ☐ Yes ☐ No

Prepared by: _____ **Sign:** _____

Discharge Criteria & Follow-Up

11.1 Discharge Criteria (All must be met unless otherwise specified)

- ☒ Stable vital signs for **at least 48 hours**
- ☒ Feeding adequately by breast or cup without NG tube support
- ☒ No oxygen requirement for **>24 hours**
- ☒ Weight gain trend or stable weight for **3 consecutive days**
- ☒ Completion of planned antibiotic or other treatment course
- ☒ Caregiver competent in home care, feeding, and recognition of danger signs
- ☒ Follow-up appointment arranged and documented

11.2 Caregiver Education Before Discharge

- ✎ **Feeding techniques:** Proper latch, feeding frequency, expressing breast milk
- ✎ **Thermal care:** Keeping baby warm, KMC at home
- ✎ **Hygiene:** Handwashing before handling the baby
- ✎ **Danger signs:**
 - + Fast or difficult breathing
 - + Fever or low temperature
 - + Poor feeding
 - + Convulsions
 - + Yellowing of eyes/skin worsening after discharge
- ✎ **Immunization schedule:** First doses given before discharge, with follow-up dates

11.3 Follow-Up Plan

- ✎ **First follow-up:** Within 48–72 hours of discharge
- ✎ **Subsequent visits:** As per pediatrician's advice
- ✎ **High-risk neonates:** More frequent follow-ups (weekly until stable weight gain and good feeding established)

Quality Assurance & Safety Measures

12.1 Monitoring Quality of Care

- ✎ **Monthly Mortality and Morbidity Review (MMR)** to analyze deaths and near-misses
- ✎ **Quarterly Protocol Adherence Audit** using standardized checklist
- ✎ **Annual NICU** performance report (admissions, survival rates, average length of stay)

12.2 Infection Prevention and Control (IPC)

- ✎ **Hand hygiene compliance** monitored by IPC focal person
- ✎ **Daily environmental cleaning log** maintained and signed by cleaner and nurse-in-charge
- ✎ **HAI surveillance** in collaboration with hospital IPC team
- ✎ **Equipment disinfection checklist** completed after each use

12.3 Patient Safety Measures

- ✎ Double-checking medication doses before administration
- ✎ Two-person verification for blood transfusions
- ✎ Clear patient identification bands on all admitted neonates
- ✎ Preventing hypothermia during transfers by using pre-warmed blankets or KMC

REFERENCES

1. Ethiopian National Newborn and Child Health Strategy (2021–2025)
2. Ethiopian Hospital Service Improvement Guidelines (EHSIG, 2024 Edition)
3. Ethiopian Standard Treatment Guidelines (STGs) – Neonatal Conditions
4. WHO Standards for Improving the Quality of Care for Small and Sick Newborns in Health Facilities (2020)
5. WHO Pocket Book of Hospital Care for Children – 2nd Edition (2013)
6. Ethiopian National Kangaroo Mother Care Guidelines (2022)

DEDER GENERAL HOSPITAL

NICU LEVELLING CHECKLIST

Name of assessors: _____

Role: Quality officers sign _____ **Date:** _____

Configuration of the unit	1/0	Remark
<ul style="list-style-type: none"> Does the design 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. 		
<ul style="list-style-type: none"> Does the room fulfill Minimum space requirements? 		
<ul style="list-style-type: none"> Each newborn space shall contain a minimum 8 - 12 m² of clear floor space, excluding handwashing stations and columns. 		
<ul style="list-style-type: none"> This should be utilized as follows : 		
<ul style="list-style-type: none"> The baby care area (3-4 M² per bed) while the general support and ancillary area is 5 M² . 		
<ul style="list-style-type: none"> This should be divided into two interconnected rooms separated by transparent observation windows with the nurses' work place in between.. 		
<ul style="list-style-type: none"> This facilitates temporary closure of one section for disinfection 		
<ul style="list-style-type: none"> Space for ancillary (supplementary) services 		
<ul style="list-style-type: none"> 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: 		
<ul style="list-style-type: none"> Gowning area at the entrance 		
<ul style="list-style-type: none"> Main Hand washing stations outside of the NICU preferably to be handled by elbow or foot 		
<ul style="list-style-type: none"> Small Hand washing area after procedure in the procedure room 		
<ul style="list-style-type: none"> 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		
There should be a Six bed kangaroo mother care room in the special newborn unit,		
• with a facility of toilet and shower		
• TV and chair (reference to adult ward)		
• The unit provides service 24/7		
HUMAN RESOURCES		
• At least 12 dedicated staff nurses per shift are necessary for a 24-bedded unit (1:2 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		

EQUIPMENT LISTS

ItemNo	Item description	Essential	Desirable	Quantity for 12 bed unit	1/0	Remark
1	Open care system: radiant warmer, fixed height, with trolley, drawers, O2-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, 32-43°C	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, 3½ ft/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 (all services should be provided by the general hospital laboratory)	1/0	Remark
✓ 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		