Neonatal Intensive Care Unit Guideline

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ADMISSION CRITERIA

The Neonatal Ward in Tikur Anbessa is divided into 4 sections. The admission of sick neonates to the different rooms / sections is as follows:

Admission criteria to Room 1

1. Infants less than or equal to 1500 grams
2. Infants less than 34 weeks gestation
3. Infants with hypothermia until corrected

Admission criteria to Room 28

1. Infants greater than 34 weeks and greater than 1500 grams but requiring oxygen, CPAP, has clinical seizures or is considered critical
2. Critical surgical patients
3. Other critical term infants

Admission and transfer criteria to Room 3

1. All observation infants
2. All infants admitted for simple phototherapy
3. All infants admitted for presumed sepsis and who do not require oxygen.
4. Infants admitted for exchange transfusion
5. Stable infants transferred from room one and two

Mother's side

1. On Room air and full feeding
2. Stable post surgical patients
3. Completing antibiotics
4. Kangaroo mother care

Fluid And Electrolyte Therapy Protocol For Newborns

Fluid management to newborn is challenging, especially in those very preterm and (E) VLBW infant. Because

- Transition from fetal to neonatal life is associated with major changes in water & electrolyte homeostasis.
- Wt. Loss is mainly loss of water.
- Loss of water is large, variable & not subjected to feedback control.
- Renal function is limited, inefficient to modulate changes in fluid & electrolyte
- Insensible water loss is major component in EVLBW infant

Fluid requirement

- Daily fluid to be given is calculated based on birth wt. In (kg)
- Caloric expenditure to facilitate loss of fluid from the body is basis for initials & for further modification of fluid

Fluid and Electrolyte requirement

1. **Fluid**:

Table – 1: fluid requirement of newborn in ml/kg/d

Birth wt. In gms.	**Day – 1**	**Day - 2**	**Day - 3**	**Day - 4**
≤ 1000	100 – 120	120 - 130	130 - 140	140 - 150
1000-1500	80 – 100	100 - 120	120 - 140	140
1500-2000	80 – 90	90 - 110	110 - 130	130 - 140
≥ 2000	60 – 80	80 - 100	100 - 120	120 - 140

NB: this fluid requirement includes IV fluid + feeding.

When feeding increased, IV fluid is changed based on total daily fluid volume.

2. **Electrolyte**

   A. Sodium (NaCL): 1 – 2meq/kg/d

   B. Potassium (KCL): 1 – 2meq/kg/d

   - 1meq = 74.6mg; if preparation is 10ml/1.5gm
   - 1gm of KCL = 13.4meq
   - 2meq = 150mg = 1ml

C. Calcium gluconate 10% : 200 – 300mg/k/d; 1ml = 100mg

Guideline for fluid and electrolyte management

A. Type of fluid

Day – 1

- Any birth wt. Start with 10% DW
- If there is a concern of hyperglycaemia; use 7.5%DW

NB: for babies < 1000gm or asphyxiated, add Maintenance 200mg/kg/d Calcium gluconate

Day – 2

- Any birth wt. continued with 10% DW
- ⅓ of the total volume is N/S.
- Calcium gluconate is continued

Day – 3+

- 10%DW in 1/3 N/S
- K can be added
- Calcium gluconate continued

Daily increment of fluid during the 1st few days of life

- ✓ Refer table -1
- ✓ Vary from table -1, if there is excessive weight loss or wt. gain

B. **Electrolytes**

- Na in the form of N/S is added starting form 2nd day of life if there is good diuresis.
- K (Potassium) added from 3rd day of life if :
  Renal function is good (out - put ≥ 1ml/hr.) &/or Serum level < 5meq/L
- Ca added from 1st day of life for EVLBW infants & any asphyxiated infants; from 3rd day of life for all other newborns.

C. Special considerations

An additional volume of fluid (10 – 30ml/kg/d) is considered if neonate is :

- Febrile
- Under radiant warmer
- Under phototherapy

Fluid preparation

Formula how to prepare X%DW from a% DW and b% DW

Use general formula –

$$Vb = \frac{(a - x)\,Tv}{(a - x) + (x - b)} \qquad Va = \frac{(x - b)\,Tv}{(a - x) + (x - b)}$$

When: -

x = conc. of DW wanted Vb = volume of b

a = highest conc. of DW Va = volume of a

b = lowest conc. of DW Tv = total volume needed (Vb + Va)

Example- 1

How to prepare Tv of 10%DW from 40%DW & 5% DW.

$$Vb = \frac{(a - x)\,Tv}{(a - x) + (x - b)} \qquad Va = \frac{(x - b)\,Tv}{(a - x) + (x - b)}$$

i.e. a = 40% b = 5% x = 10%

Vb = volume of 5%; Va = volume of 40%; Tv = total volume then

$$Vb = \frac{(40 - 10)\,Tv}{(40 - 10) + (10 - 5)} = (30)\,Tv/35 \qquad Va = \frac{(10 - 5)\,Tv}{(40 - 10) + (10 - 5)} = (5)\,Tv/35$$

To prepare 300ml of 10% DW: Tv = 300ml

Vb = 30 x 300/35 = **257.1ml** Va = 5 x 300/35 = 42.85ml

Thus total volume = V of b (257.1) + V of a (42.85) ml.

= 299. 95ml (~ 300 ml)

Example – 2

To prepare 15%DW from 40%DW & 5% DW: Tv = 200ml

X = 15 % a = 40 % b = 5 %

Then

$Vb = \frac{(40 - 15)\ 200}{35}$ $Va = \frac{(15 - 5)200}{35}$

= 5000/35 = 2000/35

= 142.86ml = 57.14ml

Tv = Vb + Va

= 142.86 + 57.14

= 200ml

- This type of fluid (15%DW) is used when preparing 10%DW with ⅓NS.
- If ⅓ NS is added to 15%DW, the new fluid combination will have concentration of 10%DW
- Solute effect of the NS assumed to be negligible.

Example -3

To prepare ⅓ N/S in 10% DW

Prepare 10% DW in ⅓NS for a baby requiring total fluid vol. of 300ml from 40%DW & 5%DW

Step – 1, to get proportions of fluid to be combined

a. 1/3 of the fluid is NS : - ⅓NS = Tv/3 = 300/3

Vol. of NS = 100ml

b. 2/3 of the fluid is from 10% DW = ⅔Tv

= ⅔300

= 200ml

Step – 2, preparing x%DW, which when diluted to ⅓NS, gives 10%DW.

In this case x = 15% a = 40% b = 5% Tv = 300ml

$$Vb = \frac{(a - x)\ 2/3Tv.}{(a - x) + (x - b)} \qquad Va = \frac{(x - b)\ 2/3Tv}{(a - x) + (x - b)}$$

$$= \frac{(25)2/3.300}{25 + 10} \qquad = \frac{(10)2/3.300}{25 + 10}$$

= 5000/35 = **142.86ml** = **57.14ml**

- Volume of b(5%DW) will be 142.86ml and that of a (40%DW) will be 57.14ml which gives 200ml, i.e. ⅔Tv.

Step – 3, combine the different type of fluid to get Total volume (Tv) required.

= Vol. of NS ⅓ + vol. of ⅔Tv (DW)
= 100ml + 200ml
= 300ml/d of 10% DW in1/3NS.

NB: how x =15% was found? It is calculated from observation that the total volume of fluid (Tv)will consist the same amount of glucose in the ⅔Tv.
Example:
In 300ml ⅓NS in 10%DW: glucose is 30gm.this same amount should come from ⅔Tv of fluid.

DW+NS = 300ml ---------- 30gm
⅔ of 300ml ---------- 30gm
200ml ---------- 30gm
100ml ---------- 15gm or 15/100 (15%)

References

- Kenneth B. Roberts, MD: fluid& electrolyte; paediatric in review, vol. 22 No 11; Nov. 2001.
- Lorenz JM, Klienman LI, Kotagal UR, Reller, MD: Water balance in VLBW infants: relationship to water & sodium intake; effort on outcome; J paediatric, 1989; 115; 285-90.
- Nelson: Text book of paediatrics, 17th ed.; 2006.

FEEDING PROTOCOL FOR NEWBORN INFANTS

Proper nutrition is essential for normal growth, resistance to infection, long term health and optimal neurologic and cognitive development.

TERM INFANTS

Nutritional requirement for term infants:

- Energy: 100 kcal/kg/day
- Protein: 1.3 – 1.4 g/kg/day

Feeding protocol:

1. Breast Feeding: every 3 hrs
    - Adequacy of feeding should be checked and assured
2. Standard Formula Milk: every 3 hrs if the following indications present
    - As a substitute or supplement - For mothers who do not or cannot provide human milk
    - As a substitute – infants whose mothers have certain infections caused by organisms known to transmitted in human milk

    N. B: in HIV-exposed infants, mother's feeding option should be taken in to consideration.

PRETERM / LOWBIRTH WEIGHT INFANTS

(< 34 WEEKS & OR < 2000 GRAMS)

Providing adequate nutrition to preterm infants is challenging because of several problems which include:

> **Immaturity of bowel function, inability to suck and swallow, high risk of Necrotizing Enterocolitis (NEC), illnesses that may interfere with enteral feedings and medical interventions that preclude feeding.**

Nutritional requirement for preterm infants:

- Energy: 110 - 120 kcal/kg/day
- Protein: 3 - 3.8g/kg/day

Feeding protocol: The following are guidelines for the initiation and advance of enteral feedings in preterm infants.

1. **Method of Feeding:**
   - Oro-gastric
   - Cup feeding
2. **Content of feeds:** begin either with:
   - Breast milk or
   - Preterm milk (local preparations from breast milk, skimmed cow's milk and standard formula milk)
3. **What is the local preparation of preterm milk?**
   The local Preterm milk is prepared from mother's milk (when available), skimmed cow's milk and standard formula milk powder. The combination formulas are as follows:

   ****Abbreviations** used below – **NPM**=New Preterm Milk, **HM**=Human Milk, **SCM**=Skimmed Cow's Milk, **FM**=Standard Formula Milk, **PFM**=Preterm Formula Milk

   - For Preterm Infants whose mothers can provide breast milk
     - **NPM 1** = 50ml of 2/3 SCM + 40ml of Mother's milk + 2 Spoons of FM
     - **NPM 2** = 40ml of SCM + 60ml of Mother's milk + 1 Spoon of FM
   - For Preterm Infants without mother's milk
     - **NPM 3** = 90ml of 1/3 SCM + 3 Spoons of FM
   - Values per 100ml

Contents	Type of milk preparation								
	HM	FM	PFM	SCM	2/3 SCM	1/3 SCM	NPM 1	NPM 2	NPM 3
Protein (g)	1.1	1.5	2.5	3.5	2.3	1.16	2.67	2.5	2.5
Calories (kcal)	67	67	80	35	23	12	85	74	77
Calcium (mg)	22	50	90	120	80	40	85	76	86
Phosphorus (mg)	15	33	70	90	60	30	58	54	60
Protein g /100 kcal	1.6	2.2	3.1	10	10	10	3.14	3.3	3.2

4. **Guideline for feeding:** initiation of feedings, their volume and the rate of advance of feeds are related to birth weight, gestational age and how the infant has tolerated the feeds to date. General guidelines include:
    - Trophic feeding – initial volume of 2 ml/kg per feeds
    - Do not advance feeding faster than 20 ml/kg/day
    - Do not advance feedings if there are signs of intolerance
    - The goals for 'full feedings' are:
        - Volume 140 ml/kg/day
        - Calories 110 – 120 kcal/kg/day

Detailed recommendations are in the following table:

Gestational Age (Weeks)	Vol. of first feeds (ml)	Rate of feeding	
		Frequency	Advance
24 to 26	2	6 to 8 hours	None for 5-7 days, then 10-15ml/kg/day
26 to 28	2	6 to 8 hours	None for 3-5 days, then 10-20ml/kg/day
28 to 32	2	6 to 8 hours	As tolerated, but aim full feeds by 7 days

N.B:
All preterm or low birth weight infants should be started on NPM **2** or **NPM 3** depending on availability of mother's breast milk. Infants on **NPM 2** should be advanced to the fortified **NPM 1** once they have achieved full feeding volume at about 140 – 150 ml/kg/day so that they will get a slightly increased Calcium, Phosphorus, protein, and caloric intake. (Please see definition of **NPM** above)

5. **Assessment of feeding adequacy:**
    - All infants should be weighed daily
    - Both term and preterm LBW infants tend to lose weight the first 7 days (10 – 15 % respectively)
    - Thereafter, weight gain should be at least:
        - 15-20g/kg/day till 2 to 2.5 kg is reached
        - 20-30g/day then after is considered appropriate

    N.B: When infant has achieved a weight of 2 – 2.5 kg should be shifted to human milk or standard Formula milk!

6. **Intolerance to feedings:** common in very small preterm infants, and needs temporary discontinuation or delay in advance of feeding. Any sign of intolerance should be taken seriously because of the increased risk of NEC. Signs that indicate intolerance are:
    - Gastric residuals or emesis
    - Abdominal distension
    - Blood in stool , loose stool or diarrhea
    - Temperature instability
    - Onset of apneic episodes
    - Hyperglycemia or
    - Metabolic acidosis

References:

1. Feeding of preterms, UCSF children's Hospital, intensive care nursery house staff manual, 2004.
2. Feeding of the preterm infant, BMJ Vol. 329, Nov. 20, 2004.
3. Robert T. Hall, MD,* and Robin E. Carroll, MS, RD. Infant Feeding, Pediatrics in review, Vol. 21, June, 2000.

MEDICATION & DOSAGE GUIDELINE

I. ANTIBIOTICS

1. ***Ampicillin:*** 25 to 50 mg/kg/dose IV slow push or IM

   - **Meningitis and severe Group B streptococcal sepsis -** 100 mg/kg/dose

Dosing Interval Chart

PMA (weeks)	PostNatal (days)	Interval (hours)
≤ 29	0 to 28 >28	12 8
30 to 36	0 to 14 >14	12 8
37 to 44	0 to 7 >7	12 8
≥ 45	All	6

2. ***Cefotaxime:*** 50 mg/kg/dose IV over 30 minutes or IM.

   - **Gonococcal infections:** 25 mg/kg/dose IV over 30 minutes or IM.

   - **Gonococcal ophthalmia prophlaxix in newborns whose mothers have gonorrhea at the time of delivery:** 100 mg/kg/IV over 30 minutes or IM, single dose. (Note: topical antibiotics therapy alone is inadequate and is unnecessary if systemic treatment is administered.)

Dosing Interval Chart

PMA (weeks)	PostNatal (days)	Interval (hours)
≤ 29	0 to 28 >28	12 8
30 to 36	0 to 14 >14	12 8
37 to 44	0 to 7 >7	12 8
≥ 45	All	6

3. ***Ceftazidime***: 30 mg/kg/dose IV over 30 minutes or IM .

Dosing Interval Chart

PMA (weeks)	PostNatal (days)	Interval (hours)
≤ 29	0 to 28 >28	12 8
30 to 36	0 to 14 >14	12 8
37 to 44	0 to 7 >7	12 8
≥ 45	All	6

4. ***Ceftriaxone***:

- **Sepsis and disseminated gonococcal infection:** 50 mg/kg every 24 hours IV over 30 minutes or IM
- **Meningitis: 100 mg/kg loading dose, then 80 mg/kg every 24 hours IV over 30 minutes or IM**
- **Uncomplicated gonococcal ophthalmia: 50 mg/kg (maximum 125 mg) single dose. (Note: Topical antibiotic therapy alone is inadequate and is unnecessary if systemic treatment is administered)**
- **Not recommended for use in neonates with hyperbilirubinemia. It displaces** bilirubin from albumin binding sites resulting in higher free bilirubin serum concentrations

5. ***Clindamycin*** : 5 to 7.5 mg/kg/dose IV over 30 minutes or PO.

Dosing Interval Chart

PMA (weeks)	PostNatal (days)	Interval (hours)
≤ 29	0 to 28 >28	12 8
30 to 36	0 to 14 >14	12 8
37 to 44	0 to 7 >7	12 8
≥ 45	All	6

- **Increase dosing interval in patients with significant liver dysfunction**

6. ***Erythromycine***:

- **Treatment of Pertussis and Chlamydial pneumonitis and conjunctivitis: 12.5 mg/kg/dose PO every 6 hours.**
- **Other infections and prophylaxis: 10 mg/kg/dose every 6 hours.**
- **Severe infection when PO route unavailable: 5 to 10 mg/kg/dose IV over 60 minutes every 6 hours**
- **Do not administer IM.**

7. ***Gentamicin***: IV over 30 minutes. IM injection is associated with variable absorption, especially in the very small infant.

Dosing Interval Chart

PMA (weeks)	Postnatal (days)	Dose (mg/kg)	Interval (hours)
≤ 29 *	0 to 7 8 to 28 ≥ 29	5 4 4	48 36 24
30 to 34	0 to 7 ≥ 8	4.5 4	36 24
≥ 35	ALL	4	24

*or significant asphyxia, PDA, or treatment with indomethacin

8. Metronidazole (Flagyl)

- Loading dose: 15 mg.kg PO or IV over 60 minutes
- Maintenance dose: 7.5 mg/kg PO or IV over 60 minutes. Begin dosing interval after initial dose

Dosing Interval Chart

PMA (weeks)	PostNatal (days)	Interval (hours)
≤ 29	0 to 28 >28	48 24
30 to 36	0 to 14 >14	24 12
37 to 44	0 to 7 >7	24 12
≥ 45	All	8

9. ***Tetracycline/Erythromycin ointment***:

- **Prophylaxis of ophthalmia neonatorium**: Instill a single ribbon of ointment in each conjunctival sac.

10. ***Vancomycin***:

- **Meningitis:** 15 mg/kg/dose
- **Bacteremia:** 10 mg/kg/dose

Dosing Interval Chart

PMA (weeks)	PostNatal (days)	Interval (hours)
≤ 29	0 to 14 >14	18 12
30 to 36	0 to 14 >14	12 8
37 to 44	0 to 7 >7	12 8
≥ 45	All	6

II. CNS DRUGS

1. Phenobarbital:

- **Loading dose**: 20 mg/kg IV over 10 to 15 minutes
  If IV dose is not available then use same dose but PO.
  i. Refractory seizure: additional 5 mg/kg doses up to a total of 40 mg/kg.
- **Maintenance**: 3 to 4 mg/kg/day beginning 12 to 24 hours after the load every 24 hours IV slow push, IM, PO, or PR

2. Phenytoin (Dilantin):

- Loading dose: 15 to 20 mg/kg IV over 30 minutes
  If IV dose is not available then use same dose but PO
- Maintenance dose: 4 to 8 mg/kg every 24 hours IV slow push or PO.
- Up to 8 mg/kg/dose every 8 to 12 hours after 1 week of age.

III. DIURETICS

1. Furosemide (Lasix)

- Initial dose: 1mg/kg IV slow push or PO
  May increase to maximum of 2 mg/kg IV or 6 mg/kg/dose PO
- Initial intervals: Premature infant: every 24 hours
  Fullterm infant: every 12 hours
  Fullterm infant older than 1 month: every 6 to 8 hours
- *consider alternate day therapy for long-term use.

IV. GI DRUGS

1. Cimetidine

- 2.5 to 5 mg/kg/dose every 6 to every 12 hours PO or IV infusion over 15 to 30 minutes.

V. RESPIRATORY

1. *Albuterol inhaler*

- One to two puffs every 6 to 12 hours

2. Aminophylline

- **Loading dose**: 8mg/kg IV infusion over 30 minutes, or PO
- **Maintenance**: 1.5 to 3mg/kg/dose PO, or IV slow push every 8 hours to 12 hours (start maintenance dose 8 to 12 hours after loading dose)

3. Caffeine Citrate

- **Loading dose**: 20 to 25 mg/kg IV over 30 minutes or PO.
- **Maintenance dose**: 5 to 10 mg/kg/dose IV slow push or PO every 24 hours.

VI. OTHER DRUGS

1. Sodium Bicarbonate

a. 1 – 2 mEq/kg IV over at least 30 minutes

2. Epinepherine (Adrenaline):

- **For resuscitation and severe bradycardia**: 0.1 to 0.3 ml/kg of 1:10,000 concentration (0.01 to 0.03mg/kg of 1:10,000 concentration)

3. Calcium gluconate 10 %

- **For symptomatic hypocalcemia**-acute treatment: 100 to 200 mg/kg/dose (1 to 2ml/kg/dose) diluted in 10 ml of D5W.
- **During exchange transfusion**: 100 mg per 100 ml of citrated blood exchanged (equals to 1 ml per 100 ml of blood exchanged). Infuse IV over 10 minutes.

4. KCL:

- **For hypokalemia:** 1 to 2 meq/kg/dose IV diluted in 10 ml of D5W to run over one hour.
- **Note**: Give replacement KCL IV only if the hypokalemia is documented and K is less than 3.5. Otherwise give the KCL in maintanance IV fluid. Check K level 12 hours after the replacement dose is given.

5. Vitamin K

- **Recommended Prophylaxis**: 0.5-1mg IM at birth.

  For infants greater than 32 weeks 1 mgIM if BW >1.5kg
  For infants greater than 32 weeks 0.5mg IM if BW < 1.5kg.
  For preterm infants <32 weeks gestation
  BW > 1000 grams: 0.5 mg IM
  BW < 1000 grams: 0.3 mg IM

- **For hemorrhagic disease of the new born**: ?????

REFERENCE:

1. Neofax 2008, Twenty-First Edition.
2. Thomas E. Young, MD and Barry Mangum, Pharmd

Procedure and Policy For Respiratory Care At The Black Lion Nicu

OXYHOOD

Giving oxygen by head box needs relatively high flow to achieve adequate concentration of oxygen and avoid carbon dioxide accumulation. A gas flow of 2-3 litter/kg/minute is necessary. In the patient population that are at the Black Lion NICU this will translate to about 5 – 8 litter/minute of flow.

SUPPLIES NEEDED

- High flow meter (15 litter flow meter) attached to an oxygen outlet
- Oxygen tubing
- Humidification water bottle
- Distilled water

HOW TO APPLY TO A PATIENT

1. Use one of the head boxes available
2. Attach clear oxygen tubing to a high flow meter (15litter flow meter) that is attached to the water bottle for humidification (make sure the water in the bottle is distilled).
3. Adjust the flow meter between 5 – 8 litters (5 litters for the smaller infants and up to 8 litters for the larger infants
4. Pipe in the oxygen into the head box
5. Place the head box in such a way that there is minimal amount of oxygen leak
6. Remove the head box, Oxygen tubing, and the water bottle after each patient use and clean thoroughly.

NASAL CANULA

If an infant is to be on nasal canula the maximum flow that is to be given is 2 litters. Since the oxygen is not heated and humidified, one can actually cause more damage giving dry air at a higher flow. Until such time that proper humidification and heating is available we need to be careful not to give higher litter/minute flow.

HOW TO APPLY TO A PATIENT

1. As it is currently practiced, use the intra nasal tube attached to the oxygen tubing.
2. Attach the oxygen tubing to the flow meter.
3. As long as the infant is to be on 1 or 2 liters/minute of flow any one of the flow meters can be used
4. Once the infant's clinical status improves and the infant is ready to wean from one litter of flow one will need to use the low flow meters. There are two kinds of these flow meters currently available in the unit. The first kind has markings of ¾ litters, ½ litters and ¼ litters. The second kind has markings of 0.1, 0.2, 0.3 etc up to 1 litter.
5. Remove the water bottle and oxygen tubing after each patient use and clean thoroughly
6. Discard the intranasal tubing after each patient use

NASAL BUBBLE CPAP

CPAP works by maintaining positive pressure in the airway only during spontaneous breathing thereby increasing functional residual capacity and improving oxygenation. It does this, by stabilizing airspaces that have a tendency to collapse during expiration.

SUPPLIES NEEDED

- 1000 cc empty plastic bottle in which currently the D5W comes in
- High flow meter (15 litter)
- Oxygen outlet from the wall
- Humidification bottle
- Clear oxygen tubing.
- The blue and white corrugated tubings
- 3 cc syringe with the plunger removed
- A tape measure marked 1 cm apart from 0 cm to 10 cm.

- Distilled water.
- High flow nasal canula which is in current use

HOW TO APPLY TO A PATIENT

1. Attach the high flow meter (15 litters) to the wall oxygen outlet.
2. To gain the appropriate pressure, open the flow meter to 5 to 10 liters/minute.
3. Fill the clear humidifying water bottle with distilled water mid way between the maximum and the minimum mark
4. Attach the clear humidifying water bottle that is filled with the distilled water to the flow meter.
5. Attach one end of the clear oxygen tubing to the humidifying water bottle and the other end to the three way connector.
6. Insert the blue corrugated tubing on the Hudson prong into the bubble CPAP bottle down to the desired CM marking.
7. Attach the other end of the corrugated tubing to one of the three way connector port.
8. Attach the nasal canula that is going to the patient to the third opening of the three way connector port.

PREPARATION OF BUBBLE CPAP BOTTLE

1. Tape a 10 cm pre cut measuring tape to the 1000 cc bottle making sure the 0 cm mark is at 500 cc.
2. Fill the 1000 cc bottle with distilled water to the 500 cc mark
3. Once the blue corrugated tubing is inserted into the prepared bubble CPAP bottle, advance it to the 5cm mark to obtain a CPAP of 5 cm water or to 6 cm to obtain a CPAP of 6 cm water.
4. Insert the 3 cc syringe with the plunger out on to the bottle next to the blue corrugated tube. This will keep the blue corrugated tubing in place.

5. Make sure that the bubble CPAP bottle is placed securely where it is visible (it is never to be kept on the floor). If the infant is on the warmer keep the bottle on one of the shelves and if need be secure it with a tape. If the infant is in an isolate then keep the bottle on the side of the bed and secure it with a tape.
6. Make sure the system is functioning by occluding the nasal canula. If it is functioning you will note the water bubbling in the 1000 cc bottle.
7. Adjust the blue corrugated tubing to the appropriate cm marking.
8. Secure the nasal canula in the infant's nare
9. Once the infant is taken off CPAP, the oxygen tubing, the humidification bottle, the nasal canula, the blue and white corrugated tubes, the 3 cc syringe and the bubble CPAP bottle will be removed and cleaned appropriately.

APPLYING AND WEANING CPAP

1. Start CPAP at a PEEP of 4 to 5 cm H2O.
2. Depending on the clinical status of the infant, the PEEP may be increased up to 6 cm of H2O.
3. If the patient is still requiring higher support the PEEP may be increased up to 8 cm of H2O in consultation with the neonatology fellow or the attending/consulting physician.
4. Once the infant's respiratory status improves, wean the PEEP by 1cm H2O as tolerated and discontinue CPAP once infant is stable on 4 cm of H2O. Note that this wean can continue every hour if the patient's respiratory status is stable.
5. Once off CPAP, if the infant still has oxygen requirement start on 2 litters of nasal canula and wean from the nasal canula as tolerated by ½ to 1 litter/minute.
6. Discontinue nasal canula once the infant has no oxygen requirement.

MAINTAINACNE OF CLEAN RESPIRATORY CARE SUPPLIES

1. At all times keep clean extra respiratory supplies in the supply closet in room one.
2. Only use distilled water in the humidification bottle and the bubble CPAP bottle.
3. Each flow meter will need to have an empty humidification bottle and a clear oxygen tubing ready at all time.
4. When a patient is admitted to that bed, the humidification bottle will be filled with distilled water.
5. Once the patient is discharged from that bed, all tubing and the humidification bottle will need to be changed and washed for future use.
6. The intra nasal cannula that was used on a patient needs to be discarded. This piece is never to be reused on another patient
7. Once a week, change all the humidification bottles. Replace them with new once and empty and wash the used once.
8. If there is unused distilled water discard it.

ADDIS ABABA UNIVERSITY FACULTY OF MEDICINE

TIKUR ANBESSA HOSPITAL NEONATAL INTENSIVE CARE UNIT NURSING FLOW SHEET

NAME:_____RECORD NUMBER:_____GESTATIONAL AGE:_____BW:_____gm ADMISSION WEIGHT_____gm
DATE:___/___/____ DAILY WEIGHT:_____gm

TIME	TEMP.	HR	RR	O2 SAT.	RESPIRATORY SUPPORT	FEEDING TYPE	FEEDING INTAKE (ml)	EMESIS	IV INTAKE (ml)	URINE (ml)	STOOL	NAME & SIGN.
8AM												
11AM												
2PM												
5PM												
8PM												
11PM												
2AM												
5AM												
TOTAL												

NAME:_____
RECORD #:_____
DATE:____/____/_____

MEDICATION	DOSE	ROUTE	TIME AND SIGNITURE

NURSING PROGRESS NOTE:

DAY SHIFT

_____

_____

NIGHT SHIFT