

Feeding & Fluids in Neonates



KEMRI | Wellcome Trust

saving children's lives
ETAT+
Emergency Triage Assessment and
Treatment **plus admission**



University of Nairobi



**KENYA
PAEDIATRIC
ASSOCIATION**

Objectives

- Breastfeeding
- How to feed the low birth weight / premature infant.
- How to give fluids to low birth weight / preterm babies

Breastfeeding

- ▶ Early initiation(within 30min – 1hr)
- ▶ On demand
- ▶ Positioning and attachment
- ▶ Exclusive breastfeeding for 6 months
 - Exclusive breast feeding to 6 months might save 1.3m lives a year
 -

Signs of good attachment

- * The mouth is widely open
- * The lower lip is turned outwards
- * The chin is touching the breast
- * More areola is visible above the baby's mouth than below it



**Good
attachment**

Expressed Breast Milk and cup feeding

- An ideal cup can hold 50 to 90 mls of milk.
- It can be glass or plastic and easily washable
- The edge of the cup should be rounded and smooth
- A cup with a lid is useful for storing expressed breast milk



Neonatal Feeding Recommendations

- Is baby stable ? (page 49)
 - Stable – Feed
 - Unstable – Convulsions, Unconscious, Severe respiratory distress evidenced by severe chest wall in drawing, absent bowel sounds
IV fluids based on weight
- Ability to breastfeed
 - Breastfeed
 - NG tube feed
- Weight :
 - < 1500 g 80mls/kg/day on Day 1 of life
 - > 1500 g 60 mls/kg/day on Day 1 of life

Neonatal Feeding Recommendations

Assess shortly after birth:
Stable ?

Weight \leq 1500g

Start feeds with EBM of 5 mls and increase by 5 mls **each 3 hourly feed** until required three hourly feed volume is reached

Weight $>$ 1500g and not able to breastfeed adequately

For first feed give EBM **7.5mls** and increase by this amount each feed until required three hourly feed volume is reached

Neonatal Feeding Recommendations

Assess shortly after birth:
Sick?

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graph TD; A[Assess shortly after birth: Sick?] --> B[Any of ; Convulsions, Unconscious, Severe respiratory distress evidenced by severe chest wall in drawing, absent bowel sounds]; B --> C[Withhold feeds for 24 hours( start IV Fluids)];
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Any of ; Convulsions, Unconscious, Severe respiratory distress evidenced by severe chest wall in drawing, absent bowel sounds

Withhold feeds for 24 hours(start IV Fluids)

IV fluids and transition to breastmilk (Day 1 and 2)

- Day 1
 - Weight :
 - < 1500 g 80mls/kg/day on Day 1 of life
 - > 1500 g 60 mls/kg/day on Day 1 of life
 - Fluid 10% Dextrose

From Day 2 of life

Introduce feeds(EBM) with standardized volumes based on weight and continue IV Fluids have other electrolytes (K, Na)

Transition

- ▶ Standard regimen starts:
 - < 1.5kg at 5mls feeds on Day 2
 - 1.5 – 2.0 kg at 7.5mls feeds on Day 2
 - >2.0kg at 10mls feeds on Day 2
- ▶ On day 3 the feed volume is increased (once) by the starting vol:
 - < 1.5kg is 10mls (5 + another 5)
 - 1.5 – 2.0 kg is 15mls (7.5 + another 7.5)
 - >2.0kg is 20 mls (10+ another 10)
- ▶ The process is repeated until on full volume feeds for weight

Weight (kg)	1.1 - 1.2	
	IVF mls per hr	NGT 3hrly feed
Day 1	4	0
Day 2	3	5
Day 3	2	10
Day 4	1	15
Day 5	0	18
Day 6	0	21
Day 7+	0	24

Full feeds – increase over the first week

Age	Total Daily Fluid / Milk Vol.
Day 1	60 mls/kg/day
Day 2	80 mls/kg/day
Day 3	100 mls/kg/day
Day 4	120 mls/kg/day
Day 5	140 mls/kg/day
Day 6	160 mls/kg/day
Day 7	180 mls/kg/day

Weight (kg)	1.5 to 1.6	1.7 to 1.8	1.9 to 2.0
Day 1	12	14	15
Day 2	15	18	20
Day 3	19	23	25
Day 4	24	27	30
Day 5	28	32	35
Day 6	32	36	40
Day 7	36	41	45

Table gives 3 hourly feed volumes

Full intravenous fluids (sick newborns Bwt < 1.5 Kg)

Age	Total Daily Fluid / Milk Vol.
Day 1	80 mls/kg/day
Day 2	100 mls/kg/day
Day 3	120 mls/kg/day
Day 4	140 mls/kg/day
Day 5	160 mls/kg/day
Day 6	180 mls/kg/day
Day 7	180 mls/kg/day

Weight (kg)	0.8 to 0.9	0.9 to 1.0	1.1 to 1.2	1.3 to 1.4	1.4 to 1.5
Day 1	3	3	4	4	5
Day 2	4	4	5	5	6
Day 3	5	5	6	7	8
Day 4	5	6	6	8	9
Day 5	6	7	7	9	10
Day 6	7	8	8	10	11
Day 7+	7	8	8	10	11

Table gives 1 hourly fluid volumes
(Starting volume 80mls/kg/day as weight < 1.5kg)

Changing from iv fluids to NGT feeds Bwt <1.5 Kg

Age	Total Daily Fluid / Milk Vol.
Day 1	80 mls/kg/day
Day 2	100 mls/kg/day
Day 3	120 mls/kg/day
Day 4	140 mls/kg/day
Day 5	160 mls/kg/day
Day 6	180 mls/kg/day
Day 7	180 mls/kg/day

Weight (kg)	0.8 - 0.9		0.9 - 1.0	
	IVF mls per hr	NGT 3hrly feed	IVF mls per hr	NGT 3hrly feed
Day 1	3	0	3	0
Day 2	2	5	3	5
Day 3	1	10	2	10
Day 4	0	15	1	15
Day 5	0	16	0	18
Day 6	0	18	0	20
Day 7+	0	21	0	22

Table gives 1 hourly iv fluid volumes and 3 hourly NGT feed volumes

Unsafe to give iv fluids?

- If it is not safe to give iv fluids then **start ngt feeds immediately.**
- Day 1 iv fluid rate for a 1.3kg infant = 3mls every hour
- Therefore fluid amount needed in 3hrs =
 $3 \times 3\text{mls} = 9\text{mls}$
- So give 9 mls EBM by ngt every 3 hours for a 1.3kg baby.

Which Feed?

- Colostrum – low fat, high protein and minerals.
- Breast milk lowers the risk of NEC
- Oral glucose solutions can cause diarrhoea
- Always use EBM unless contraindicated
- Cows milk is **NOT** recommended

We do not have iv nutrition –
10% dextrose has < 50% the calories of EBM

To feed orally or not to feed?

Withhold Feeds

- Inadequate growth
- Risks of prolonged iv's
- Risks of long hospital stay



Early Feeds

- Intolerance
- Risks of NEC
- Risks of diarrhoea



We do not have iv nutrition –
10% dextrose has < 50% the calories of EBM

Complications

- Feeding VLBW, Asphyxiated and SGA may be complicated by intolerance of enteral feeds and high rates of NEC



Risk factors for NEC

- Prematurity / SGA
- Asphyxia
- Enteral Feeding
- **Formula feeds**

Supplements for preterms

- ▶ When infant on full enteral feeds
 - Vitamin D 400 units -1000 per day until 6 months
 - Calcium 120-140mg /kg per day for first month of life
 - Phosphorus 60-90 mg /kg /day

- ▶ At 2 weeks of age
 - Iron(2-4mg/kg/d upto 6 months of age
 - Folate 2.5 mg weekly upto 6 months

QUESTION?

Summary

- Breastfeeding(exclusive) is important
- Early introduction of feeds is recommended
- Simple, stepwise approach to increasing oral feeding.