Neonatal nutrition

Enteral feeding, vitamins and minerals

See resources and eHandbook for further details



- Preference for Breast Milk
 Why do you think this is?
- Artificial feed/ formula
 - Preterm/ term/ Low birth weight (LBW)
 - Different composition
 - Lactose free
 - **o**Soy
 - Hydrolysed/ extensively hydrolysed



Suck:

- obreast feeds (preferable)
- other forms of suck feeds (bottle, pipette or finger feeding) if an infant has an adequate and safe ability to suck
- Sucking starts from 34/35 weeks onwards and should be increasingly effective from 36 weeks onwards
- ONG/ Gavage: if an infant is unable to suck safely and efficiently

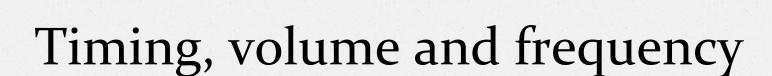


Table 1: Enteral feeding volumes for neonates > 1500g

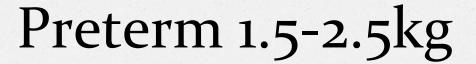
Day of Life	Term (mls/kg/day)	Preterm (mls/kg/day)	Small for Gestational Age (mls/kg/day)
1	30	60	60
2	60	80	90
3	90	100	120
4	120	120	140
5	150	150	160
6	150	180	180
~ 7 - 14 + days	150	180	200 - 220



Term (usually > 2500g)	Suck	4 hourly / on demand
Preterm (1500 - 2500g)	Suck/gavage	3 hourly
Preterm (1000 – 1500g)	IV fluids, then gradual gavage	2 hourly



- Feed soon after birth
- The well term infant is able to suck feeds and is usually fed at 4 hourly intervals or by demand
- Volumes are typically 30-40mL/kg on the first day, increasing by 30mL/kg/day to 150mL/kg/day at the end of the first week
- Term IUGR infants (< 2500g at term) may have higher requirements to initially maintain blood sugar and later to gain weight appropriately (up to 220 ml/kg/d).



- Feed soon after delivery
- If not possible, intravenous fluids (initially as 10% dextrose) may be needed until adequate oral intake is established
- Fresh EBM is used whenever possible, as frozen breast milk lacks some of the immunological advantages of fresh breast milk
- Volumes usually given are 60mL/kg on day 1, increasing to 160mL/kg by the end of the first week. Feeds may be increased to 180 ml/kg/d and occasionally higher volumes to achieve adequate growth (10-15g/kg/d once full feeds established)
- Fortification of feeds will be considered for babies with birthweight ≤ 2000g and SGA, or with poor weight gain or problems tolerating adequate feed volumes
- See notes section/ eHandbook for preterm <1.5kg</p>



- ◆Eg S26, Nan, Karicare have a lactalbumin:casein ratio of 60:40 similar to breast milk.
- Infant formulas have iron and vitamins added. Most term babies who are predominantly formula fed, do not require further supplements.
- Many formulas (eg 'Gold') also contain omega-3fatty acids or probiotics. Manufacturers claim benefits in terms of 'neurodevelopment' and 'immunological health', but evidence for benefits in otherwise normal healthy is slim.



Hydrolysed formula

- These formulas are only available on authority prescription by a paediatrician, gasto-enterologist or allergist
- Soy formulas may be suitable alternatives in 'allergic' babies over 6 months of age



- Babies <1500 grams at birth or < 2000g and SGA</p>
- Provides additional calories, protein, calcium and phosphate.
- Commence once the infant is at least 14 days old and tolerating 120ml/kg/d of feeds.
- Powder fortifier (eg HMF = Human Milk Fortifier, FM85) added to EBM (1 sachet (25g) added to 100mL of EBM) increases the caloric content by ~ 20 kcal/100mL to ~80kcal/100 ml).



- For small preterm babies on formula feeds, the formula is changed to a low birth weight preparation once full volume feeds are tolerated
- Fortification/low birthweight formula is usually stopped when good weight gain is occurring and neonate weight is above 2000- 2500gms. This usually occurs before discharge home.





Growth for SGA/ LBW babies on formula

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- Fortification/low birthweight formula is usually stopped when good weight gain is occurring and neonate weight is above 2000- 2500gms. This usually occurs before discharge home





Caloric content of feeding solutions

For growth to occur the resting infant needs at least 100-120kcal/kg/day.

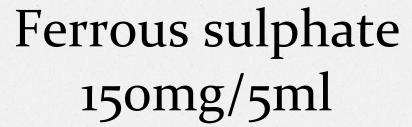
Formula Expressed breast milk (EBM)	kcal/100mL 67	
NAN 1	67	
S26 Pregestimil	67 67	
Nutramigen	67	
Prosobee	67	

The above formulas are also known as "20 Calorie" feeds (i.e. 20kcal/30mL). They may be, on occasions, made up in a more concentrated form to what was known as "25 Calorie" feeds.

Formula	kcal/100mL
S26 Low Birthweight Formula	83
EBM plus Fortifier (Enfamil Human Milk Fortifier)	81



- A premature infant's daily breast milk or breast milk substitute intake will not supply the necessary daily vitamin requirements
- Vitamin D (eg osteovit D) for all <u>preterm</u>; mother vitamin D deficient or with dark skin pigmentation
 - Commence d 5 of enteral feed
- - Commence on day 5 of enteral feeds and when intralipid is ceased.
 - Administer 0.45mL daily during the feed nearest to 1000 hours.
 - Continue throughout the first 12 months of life.



- Premature infants have been deprived of the intra-uterine accumulation of iron and can become rapidly depleted of iron when active erythropoiesis resumes
- Administer prophylaxis to all infants < 32 weeks or < 2kg at birth</p>
- Commence on day 14 only if feeds are fully established (tolerating 150mL/kg/day for 1 week)
 - Administer 0.5mL/kg (3mg/kg elemental iron) daily during the feed nearest to 1000 hours
 - Administration is continued after discharge from Intensive and Special Care Nurseries
 - Exclusively breast-fed infants, until established on solids
 - Formula fed infants, until 3 months post-discharge
- Treatment dose is 0.5mL/kg 12 hourly (6mg/kg/day elemental iron)