CHAPTER

21

Feeding of Low Birth Weight Infants

Globally about 20.5 million infants are born with a birth weight of <2500 g every year, with Southern Asia having the highest prevalence of low birth weight (LBW) infants (26.4%) in the world.[1] Though these LBW infants constitute only about 15% of the total live births, they account for 80% of neonatal deaths.[2] Most of these deaths can be prevented with extra attention to warmth, prevention of infections, and more importantly, optimal feeding. Nutritional management influences the immediate survival and subsequent growth and development of LBW infants. Simple interventions such as early initiation of breastfeeding and avoidance of prelacteal feeding have been shown to improve their survival in a resource-restricted settings.[3] Early nutrition could also influence long-term neurodevelopmental outcomes.

HOW IS THE FEEDING OF LBW INFANTS DIFFERENT?

Term infants with normal birth weight can feed directly from their mother's breasts. In contrast, feeding LBW infants is relatively challenging because of the following limitations:

1. Many LBW infants are born premature and have inadequate feeding skills; they might not be able to breastfeed and would require other feeding methods.
2. They are prone to have significant illnesses that often preclude enteral feeding in the first few weeks of life.
3. Because intrauterine accretion of nutrients occurs mainly in the later part of the third trimester, preterm VLBW infants have low body stores at birth requiring supplementation of nutrients after birth.
4. Because of gut immaturity, they are more likely to experience feed intolerance necessitating adequate monitoring and treatment.

DECIDING THE INITIAL METHOD OF FEEDING

It is essential to categorize LBW infants into two major groups—*sick* and *healthy*—before deciding on the initial feeding method.

Sick Infants

This group constitutes infants with significant respiratory distress requiring assisted ventilation, shock requiring inotropic support, seizures, symptomatic hypoglycemia/hypocalcemia, electrolyte abnormalities, acute kidney injury or other organ failures, surgical conditions of the gastrointestinal tract, necrotizing enterocolitis (NEC), hydrops, etc. These infants are usually started on intravenous (IV) fluids. Enteral feeds should be initiated as soon as they are hemodynamically stable. Even infants with respiratory distress on assisted ventilation can be started on enteral feeds once the acute phase is over and their saturation and perfusion have improved. Similarly, sepsis—unless associated with shock/sclerema—is not a contraindication for enteral feeding.

Healthy LBW Infants

Enteral feeding should be initiated immediately after birth in healthy LBW infants with the appropriate feeding method determined by their gestation and oral feeding skills.

Maturation of oral feeding skills: Breastfeeding requires effective sucking, swallowing, and proper coordination between sucking/swallowing and breathing. These complex skills mature with increasing gestation (Table 21.1).

How to Decide on the Initial Feeding Method

Traditionally, the initial feeding method in LBW infants was decided based on their birth weight. This is not ideal because the feeding ability depends mainly on gestation rather than birth weight.

Table 21.1: Maturation of oral feeding skills in LBW infants[4]

Gestational age	*Maturation of feeding skills*
<28 weeks	No proper sucking efforts No propulsive motility in the gut
28–31 weeks	Sucking bursts develop No coordination between suck/swallow and breathing
32–34 weeks	Slightly mature sucking pattern Coordination between breathing and swallowing begins
>34 weeks	Mature sucking pattern More coordination between breathing and swallowing

However, not all infants born at a particular gestation would have the same feeding skills. Hence the ideal method would be to evaluate if the feeding skills expected for the gestation are present and then decide accordingly (Fig. 21.1).

All stable LBW infants should be put on their mother's breasts, irrespective of their initial feeding method. The immature sucking observed in preterm infants born before 34 weeks might not meet their daily fluid and nutritional requirements but helps in the rapid maturation of their feeding skills and improves the milk secretion in their mothers (*'non-nutritive sucking'*).

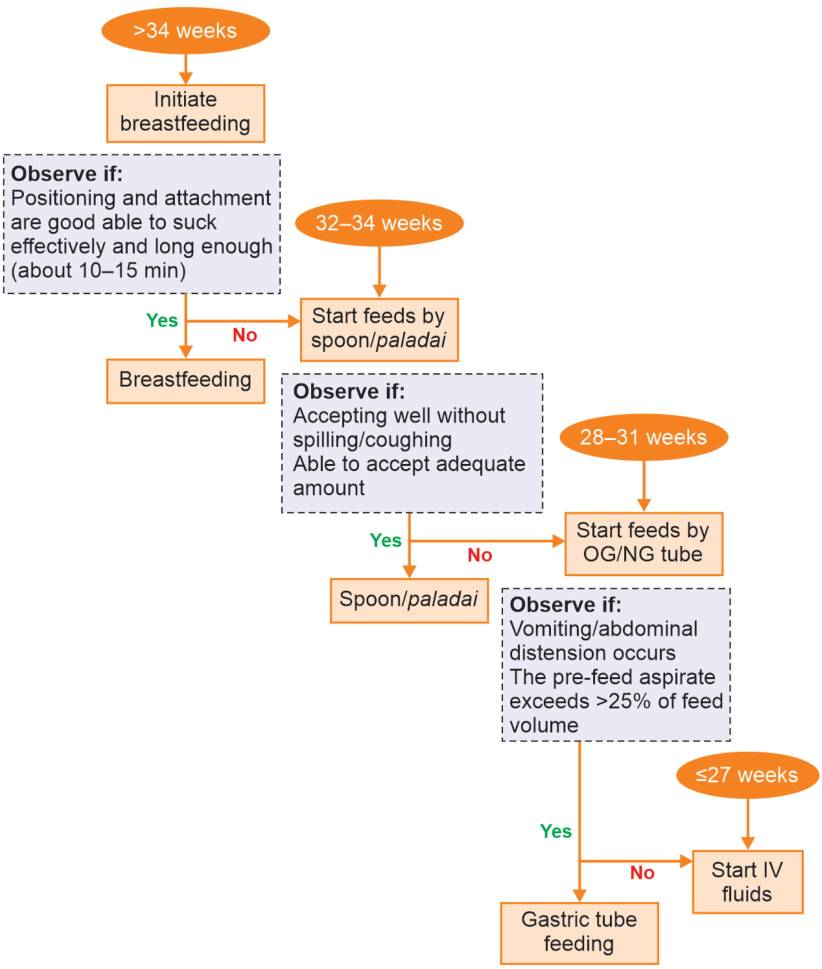

Fig. 21.1: Initial feeding method

Special Situations

Extreme preterm infants: They are usually started on parenteral nutrition from day one of life. Enteral feeds—trophic feeding or minimal enteral nutrition (MEN)—are initiated once the infant is hemodynamically stable. Further advancement is based on the infant's ability to tolerate the feeds.[5]

Antenatally detected Doppler flow abnormalities: Fetuses with abnormal Doppler flow, such as absent/reversed end diastolic flow (A/REDF) in the umbilical artery, are likely to have had mesenteric ischemia *in utero*. After birth, they have a significant risk of developing feed intolerance and NEC.[6,7] Enteral feeding in preterm neonates with A/REDF is usually delayed for 24 hours (*see* Volume 3 Chapter 10: Feeding of Neonates with Umbilical Artery Doppler Abnormalities).

Infants on CPAP/ventilation: These infants can be started on OG tube feeds once they are hemodynamically stable. It is essential to leave the tube open intermittently to reduce gastric distension. We usually keep the tube closed for 30 minutes after a feeding session and leave it open until the next feed.

PROGRESSION OF ORAL FEEDS

All LBW infants, irrespective of their gestation and birth weight, should ultimately be able to feed directly from the mother's breast. For preterm LBW infants started on IV fluids/OG tube/*paladai* feeding, the steps of progression to direct and exclusive breastfeeding are summarized in Fig. 21.2. *Slower advancement of feeds (15–24 ml/kg/day) has not been shown to have any advantage over faster daily increments (30–40 mL/kg/day)*.[8] Term LBW infants started on IV fluids (because of their sickness) should be put on the breast once they are hemodynamically stable.

Choice of Milk

All LBW infants should receive only breast milk regardless of their initial feeding method. This can be ensured even in infants fed by *paladai* or gastric tube by giving expressed breast milk (mother's own milk or human donor milk).

Expressed breast milk (EBM): All preterm infant's mothers should be counseled and supported in expressing their own milk for

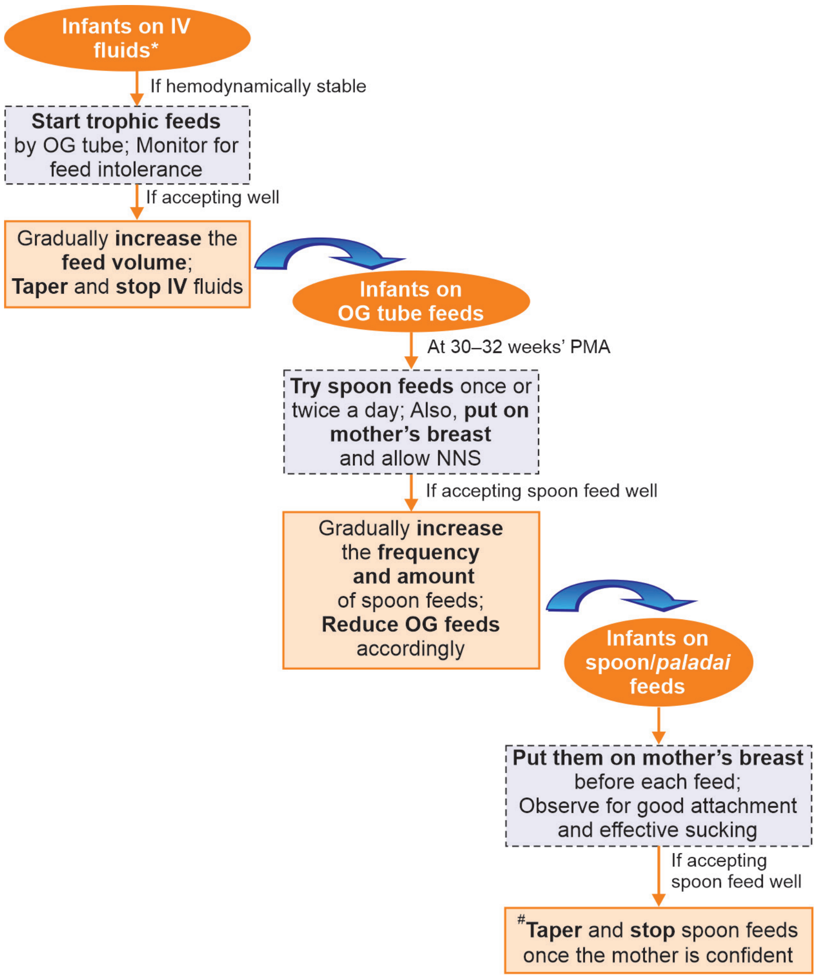

Fig. 21.2: Progression of oral feeding in preterm LBW infants

IV: Intravenous; *OG:* Oro-gastric tube; *PMA:* Postmenstrual age; *NNS:* Non-nutritive sucking

*Term and near-term sick infants started on IV fluids can be initiated on breastfeeding once they are hemodynamically stable;

#Some infants may have to be given spoon feeding for some period even after they start accepting breastfeeding

feeding their infants. Milk expression should ideally be initiated within hours of delivery for the infant to get the benefits of feeding colostrum. After that, it should be done every 2–3 hours to facilitate exclusive breastmilk feeding. This would also help in maintaining lactation in the mother. Expressed breast milk can be stored for about 6 hours at room temperature. We counsel mothers for expression of breast milk soon after delivery by demonstration and by using posters and videos (available on our website: www.newbornwhocc.org).

Donor human milk: In centers where optimal milk banking facilities are available, donor human milk can be used. Pasteurized donor human milk (PDHM) is preferable to formula milk in VLBW neonates because it may reduce the risk of NEC.[9] The process of pasteurization inactivates certain beneficial bioactive factors, and hence it is not a substitute for mother's own milk (MOM). Though there has been a recent surge in establishing human milk banks in India, there is a need to scale up, ensure quality assurance, and strengthen existing services to help bridge the demand–supply gap of PDHM.[10]

Special Situations

Sick mothers/contraindication to breastfeeding: In these rare circumstances, the options available are:

1. Formula feeds:
   a. Preterm formula—in VLBW infants and
   b. Term formula—in infants weighing >1500 g at birth
2. Animal milk, e.g. cow's milk

Once the mother's condition becomes stable (or the contraindication to breastfeeding no longer exists), these infants should be started on exclusive breastfeeding.

HOW MUCH MILK IS TO BE GIVEN?

Calculating the fluid requirements and feed volumes is essential for infants on paladai/gastric tube feeding. The daily fluid requirement is determined based on the estimated insensible water loss, other losses, and urine output. Extreme preterm infants need more fluids in the initial weeks of life because of the high insensible water loss.

We usually start fluids at 80 ml and 60 ml/kg/day for infants with <1500 g and ≥1500 g, respectively. We usually allow rapid increments of 30–40 ml/kg/day for enteral feeds, depending on the tolerance. We typically reach a maximum of 180 ml/kg/day by day 14.[11]

Nutritional Supplementation in LBW Infants

LBW infants, especially those born preterm, require supplementation of various nutrients to meet their high demands. The requirements of VLBW infants differ significantly from those with birth weights of 1500 to 2499 grams.

Supplementation in VLBW Infants

These infants, usually born before 32–34 weeks ofgestation, have inadequate body stores of most nutrients. The amount of protein, energy, calcium, phosphorus, trace elements (iron, zinc), and vitamins (D, E and K) present in expressed breast milk is often unable to meet their high daily requirements (Table 21.2). Hence, these infants require multi-nutrient supplementation till they reach term gestation (40 weeks of PMA).

Multi-nutrient supplementation can be ensured by one of the following methods:

1. Supplementation of individual nutrients, e.g. calcium, phosphorus, vitamins, etc.
2. Fortification of expressed breast milk by using either human milk fortifiers (HMF) or preterm formula.

Supplementing with individual nutrients: The following nutrients must be added to the expressed breast milk:

1. Calcium and phosphate supplements[a]
2. Vitamin A, B complex and zinc supplements[b] usually in the form of multivitamin drops
3. Vitamin D3 drops[c]
4. Folate drops[d]
5. Iron drops[e]

Since supplementation of minerals and vitamins would not meet the high protein requirements of these infants, this method is usually not preferred. If used, the supplements should be added at different times of the day to avoid an abnormal increase in osmolality.

Fortification with HMF: Fortification of expressed breast milk with HMF increases the nutrient content of the milk without compromising its other beneficial effects, such as reduction in

[a]e.g. Syr. Ostocalcium (GlaxoSmithKline Co.), Syr.Ossopan-D (TTK Healthcare)
[b]e.g. Dexvita (Tridoss Co.), Visyneral-zinc drops (Lifeon Co.)
[c]e.g. Arbivit (Raptakos, Brett & Co.), Sunsips (Endura Co.)
[d]e.g. Folium (Speciality Meditech Co.), Folvite (Wyeth Lederle Co.)
[e]e.g. Ferrochelate (Albert David Co.), Tonoferon (East India Co.)

Table 21.2: Recommended dietary allowance (RDA) of nutrients in preterm LBW infants and their estimated intake with fortified and unfortified human milk

	RDA (Units/kg/day)*[9]	*At daily intake of 180 mL/kg*							
		Only expressed breast milk (EBM)#	*EBM fortified with new Lactodex-HMF (4 g/100 ml)*	*EBM fortified with HIJAM-HMF (4 g/100 ml)*	*EBM fortified with NiQuHMoF (4 g /100 ml)*	*EBM fortified with Preterm formula (4 g/100 ml; Dexolac Special care)*	*Lactodex LBW formula*	*PreNAN LBW formula*	*Dexolac Special Care formula*
Energy (kcal)	115–140	117	141	142	141.5	152.2	144.2	144	142.5
Protein (g)	3.5–4.0[€]	2.5	4.4	4.3	4.66	3.68	3.96	4.7	4.8
Carbohydrates (g)	11.0–15.0	11.6	15.1	12	15.2	15.5	15.4	15.1	15.9
Fat (g)	4.8–8.1	6.8	7.1	8.6	7.1	8.4	7.8	7.2	6.7
Calcium (mg)	120–200	43	157	223	151	88.4	187.8	178.1	183.7
Phosphate (mg)	70–115	22	79	112	79.6	44.7	93.9	89.1	91.8
Vitamin A (IU)	1330–3330	680	2120	1796	4040	1192	1878	1752	2074
Vitamin D (IU)	400–700 (<1000)	3.5	960	724	1155	47	188	175	175
Vitamin E (mg)	2.2–11	1.8	7.8	6.3	5.8	2.9	4.8	3.5	4.6

(Contd.)

Table 21.2: Recommended dietary allowance (RDA) of nutrients in preterm LBW infants and their estimated intake with fortified and unfortified human milk (*Contd.*)

	RDA (Units/kg/day)[9]*	*At daily intake of 180 mL/kg*							
		Only expressed breast milk (EBM)#	*EBM fortified with new Lactodex-HMF (4 g/100 ml)*	*EBM fortified with HIJAM-HMF (4 g/ 100 ml)*	*EBM fortified with NiQuHMoF (4 g /100 ml)*	*EBM fortified with Preterm formula (4 g/100 ml; Dexolac Special care)*	*Lactodex LBW formula*	*PreNAN LBW formula*	*Dexolac Special Care formula*
Folic acid (μg)	23–100	6	96	150	99.6	22.2	57.8	55.5	65.6
Zinc (mg)	2–3	0.6	0.88	0.89	1.58	1.1	1.1	1.87	2.1
Iron (mg)	2–3	0.2	2.4	2.8	3.08	0.92	3.5	2.6	2.9
Remarks		Deficient in protein, calcium, phosphate, vitamins B_6 and D, and zinc	Deficient in zinc	Deficient in zinc	Deficient in zinc	Deficient in calcium, phosphate, vitamins A, D, and folic acid, zinc, and iron	Deficient in vitamin D and zinc	Deficient in vitamin D and zinc	Deficient in vitamin D

*ESPGHAN 2022
#Based on the milk of mothers who have delivered preterm neonates (after 2–3 weeks of delivery)
€increased up to 4.5 g/kg/day if growth is slow with no other causes of suboptimal growth
(RDA, recommended dietary allowance; EBM, expressed breast milk)

NEC, infections, etc. The Cochrane review on fortification found short-term improvement in in-hospital weight gain, linear and head growth without any increase in adverse effects such as NEC. However, more evidence for benefits on long-term growth and neurodevelopment outcomes is needed.[12]

The preparations of HMF available in India include Lactodex-HMF (1 g/sachet; Raptakos, Brett and Co. Ltd; ₹28.5/- per sachet) *HIJAM* (1 g/sachet; Endocura Pharma; ₹25/- per sachet), and NiQuHMoF (0.6 g/sachet and 1g/sachet; NeoWinn Biotech; ₹46/- and ₹76/- per sachet, respectively); *Similac HMF* (0.9 g/sachet; Abbott Nutrition) is costlier and not readily available. The recommended dietary allowances (RDA) and the estimated intakes with fortified human milk are given in Table 21.2. *As the table shows, VLBW infants on fortified breast milk with HMF would require zinc supplementation*.

Fortification with the preterm formula: The other option available for fortification is adding preterm formula powder (e.g. *Dexolac Special Care* [Wockhardt Co.], *Pre-NAN* [Nestle Co.], Lactodex LBW [*Raptakos*, Brett and Co. Ltd]). The recommended concentration is 0.4 g per 10 mL of breast milk. A study from our center showed that fortification with preterm formula was non-inferior to human milk fortifier and could serve as a cost-effective alternative.[13] Though more economical, this method has two significant drawbacks:

1. It is difficult to measure such small amounts of formula powder; and
2. The RDA of calcium, phosphorus, vitamin D, folic acid, etc. are not met even after fortification.

While the former issue can be managed by using a small scoop of 1 g size for 25 ml of milk, the latter needs to be addressed by additional supplementation (Table 21.2).

The protocols for nutritional supplementation in VLBW infants until 40 weeks PMA and beyond are described in Tables 21.3 and 21.4.

We use fortification with preterm formula powder for all preterm (<32 weeks) or VLBW (<1500 g) infants. Fortification is started once the infants reach 100 mL/kg/day of enteral feeds. Since calcium, phosphorus, vitamin D, zinc, and iron intake is low even after fortification with preterm formula, we supplement these nutrients additionally (Table 21.3).

We continue fortification till the infant reaches 40 weeks PMA or attains 2 kg (whichever is earlier).

Table 21.3: Nutritional supplementation in preterm VLBW infants until 40 weeks PMA

Nutrients	*EBM fortified with Lactodex-HMF**	*EBM fortified with preterm formula*
Calcium	Not needed	Start calcium supplements to meet the RDA once the infant is on 100 mL/kg/day. (e.g. *Syr. Ostocalcium at 5–6 ml/kg/d*)
Phosphorus	Not needed	Same as above
Zinc and vitamins A, B_6, etc.	Start multivitamin supplements once the infant is on 100 ml/kg/day (e.g. *ViSyneral zinc/ Dexvita* drops at 1.0 ml/day)	Start multivitamin supplements once the infant is on 100 mL/kg/day. (e.g. *ViSyneral zinc/Dexvita drops at 1.0 ml/day*)
Vitamin D	Not needed	Start vitamin D_3 drops if the total intake is less than the RDA. (e.g. *Arbivit/Sunsips at 0.5 ml/day*)
Folic acid*	Not needed	Start supplements once the infant is on 100 ml/kg/day. (e.g. *Folvite/folium at 0.1 ml/day*)
Iron	Not needed	Start iron (2 mg/kg/d) at 4–6 weeks of life. (e.g. *Tonoferon drops at 2 drops/kg/day*)

PMA: Postmenstrual age; *EBM:* Expressed breast milk; *HMF:* Human milk fortifier
Note: The examples quoted are only indicative; Readers are encouraged to use similar products.
*Needed only if the iron drops/syrup does not have folic acid.

Table 21.4: Nutritional supplementation in preterm VLBW infants after 40 weeks PMA

Nutrients	*Method of supplementation*	*Dose*	*Till when?*
Vitamin D*	Vitamin D_3 drops	800–1000 IU/day	Till 2 years of age
Iron	Iron drops/syrup	2 mg/kg/day (maximum 15mg/day)	Till 2 years of age

Supplementation for Infants with birth Weights of 1500–2500 g

These infants who are more likely to be born at term or near-term gestation (>32 weeks) do not require multinutrient supplementation

Table 21.5: Nutritional supplements for infants with birth weights of 1500–2499 g

Nutrients	*Method of supplementation*	*Dose*	*When to start*	*Till when?*
Vitamin D	Multivitamin drops/syrup	1 ml/day (to provide 400 IU/ day of vitamin D)	2 weeks of age	Till 2 years of age
Iron	Iron drops/syrup	2 mg/kg/day (maximum 15 mg/day)	4 weeks of age	Till 2 years of age

or fortification of breast milk (cf. VLBW infants). However, vitamin D, iron, and zinc might still have to be supplemented in them.

We supplement both vitamin D and iron in infants with birth weights of 1500–2499 grams; vitamin D (400 IU) is started at 2 weeks and iron (2 mg/kg/day) at 4 weeks of life; both are continued till 2 years of age (Table 21.5).

Growth Monitoring of LBW Infants

Regular growth monitoring helps assess the nutritional status and adequacy of feeding; it also identifies those infants with inadequate weight gain. All LBW infants should be weighed daily until discharge from the hospital. Other anthropometric parameters, such as length and head circumference, should be recorded weekly. Both term and preterm LBW infants tend to lose weight (about 10% and 15%, respectively) in the first 7 days of life; they regain their birth weight by 10–14 days. After that, the weight gain should be at least 15–20 g/kg/day till a weight of 2–2.5 kg is reached. After this, a gain of 20–30 g/day is considered appropriate (refer to the protocol on 'Postnatal growth monitoring').[14]

LBW infants should be discharged after they:

- Reach 34 weeks PMA and are above 1500–1600 g and
- Show consistent weight gain for at least three consecutive days.

Feed Intolerance

The inability to tolerate enteral feedings in extremely premature infants is a significant concern in the NICU. Feed intolerance is often the predominant factor affecting the infant's hospitalization duration. There are no universally agreed-upon criteria to define feed intolerance in preterm infants.[9] Various clinical features that are usually considered to be the indicators of feed intolerance are summarized in Table 21.6.

Table 21.6: Indicators of feed intolerance[9]
Symptoms: • Vomiting (altered milk/bile or blood-stained)* • Systemic features: lethargy, apnea
Signs: • Abdominal distension (with or without visible bowel loops)* • Increased gastric residuals: >2 mL/kg or any change from previous pattern • Abdominal tenderness • Reduced or absent bowel sounds • Systemic signs: cyanosis, bradycardia, etc.

**Common signs*

Of these, vomiting, abdominal distension, and increased gastric residual volume form the 'triad' for defining feed intolerance.

Vomiting: The characteristic of vomitus is essential in assessing the cause: while altered milk is usually innocuous, bile- or blood-stained vomiting should be thoroughly investigated.

Abdominal distension: Monitoring the abdominal girth in all preterm VLBW infants admitted to the ICU is essential. This helps in the early identification of feed intolerance and eliminates the need for routine gastric aspirate.

Gastric residual volume: It indicates the rapidity of gastric emptying. Since several factors (both systemic and local) influence gastric emptying, the residual volume is a poor and nonspecific indicator of fed intolerance. Measures to enhance the specificity, such as quantifying the volume or using different cut-offs for defining feed intolerance, are not much useful. Moreover, repeated gastric aspiration to look for residuals could injure the delicate mucosa aggravating the local pathology.

We monitor the abdominal girth every 2 hours in all preterm LBW infants admitted to the nursery. We do not routinely aspirate the gastric contents before giving the next feed. *Aspiration is done only if there is an increase in abdominal girth by ≥2 cm from the baseline.*

Management of Feed Intolerance

The common factors attributed to feed intolerance in preterm infants are immature intestinal motility, immaturity of digestive enzymes, underlying medical conditions such as sepsis, inappropriate feed volume, hyperosmolar medications/feedings, and, importantly,

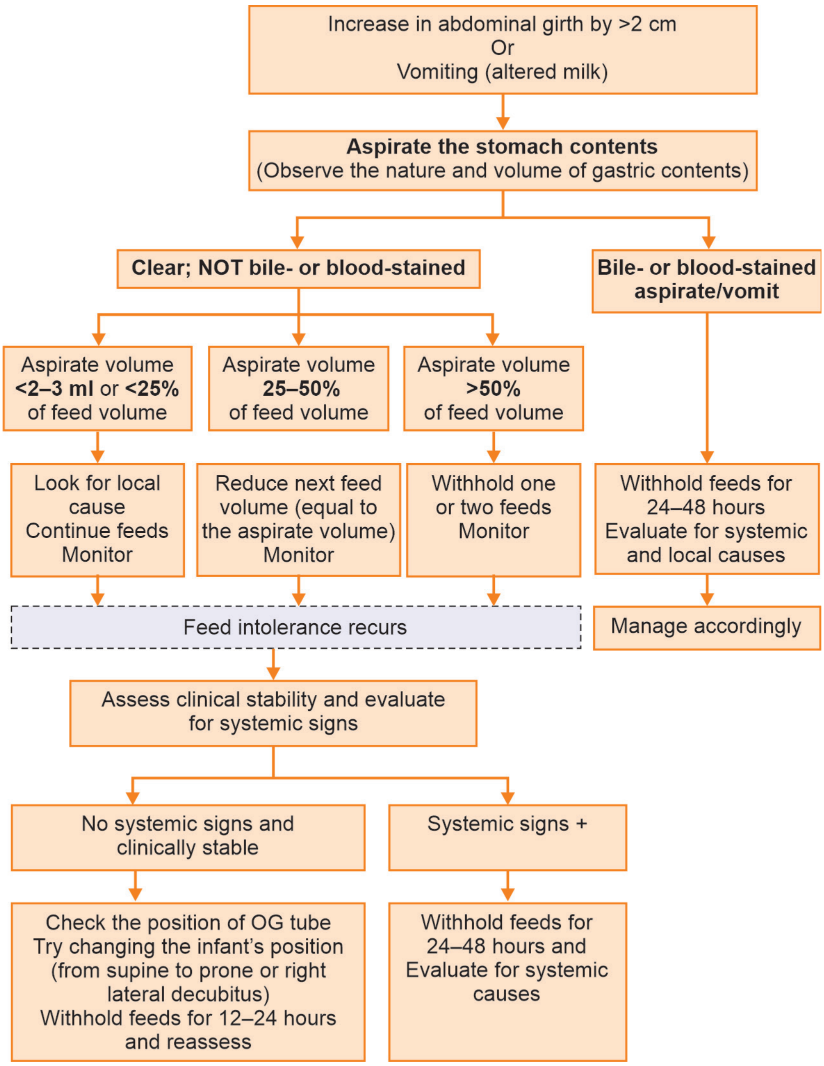

Fig. 21.3: Approach to feed intolerance in LBW infants

necrotizing enterocolitis (NEC). The steps in evaluating and managing an infant with feed intolerance are given in Fig. 21.3.

REFERENCES

1. UNICEF-WHO Low birthweight estimates: Levels and trends 2000–2015 | UNICEF [Internet]. 2019 [cited 2023 Apr 21]. Available from: https://www.unicef.org/reports/UNICEF-WHO-low-birthweight-estimates-2019.

2. Blencowe H, Krasevec J, Onis M de, Black RE, An X, Stevens GA, et al. National, regional, and worldwide estimates of low birthweight in 2015, with trends from 2000: a systematic analysis. The Lancet Global Health. 2019 Jul 1;7(7):e849–60.
3. Edmond KM, Kirkwood BR, Tawiah CA, Owusu Agyei S. Impact of early infant feeding practices on mortality in low birth weight infants from rural Ghana. J Perinatol. 2008 Jun;28(6):438–44.
4. Kara Gross Margolis, Joseph A Piccaro. Fetal and Neonatal Physiology. 5th ed. Vol. 2. 881–7 p.
5. Mishra S, Agarwal R, Jeevasankar M, Deorari AK, Paul VK. Minimal enteral nutrition. Indian J Pediatr. 2008 Mar;75(3):267–9.
6. Dorling J, Kempley S, Leaf A. Feeding growth restricted preterm infants with abnormal antenatal Doppler results. Archives of Disease in Childhood - Fetal and Neonatal Edition. 2005 Sep 1;90(5):F359–63.
7. Martini S, Annunziata M, Della Gatta AN, Aceti A, Brunetti M, Pilu G, et al. Association between Abnormal Antenatal Doppler Characteristics and Gastrointestinal Outcomes in Preterm Infants. Nutrients. 2022 Jan;14(23):5121.
8. Oddie SJ, Young L, McGuire W. Slow advancement of enteral feed volumes to prevent necrotising enterocolitis in very low birth weight infants. Cochrane Database of Systematic Reviews [Internet]. 2021 [cited 2023 Apr 21];(8). Available from: https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD001241.pub8/full.
9. Embleton ND, Moltu SJ, Lapillonne A, van den Akker CHP, Carnielli V, Fusch C, et al. Enteral Nutrition in Preterm Infants (2022): A Position Paper From the ESPGHAN Committee on Nutrition and Invited Experts. J Pediatr Gastroenterol Nutr. 2023 Feb 1;76(2):248–68.
10. Sachdeva RC, Mondkar J, Shanbhag S, Sinha MM, Khan A, Dasgupta R. A Landscape Analysis of Human Milk Banks in India. Indian Pediatr. 2019 Aug 15;56(8):663–8.
11. Chawla D, Agarwal R, Deorari AK, Paul VK. Fluid and electrolyte management in term and preterm neonates. Indian J Pediatr. 2008 Mar;75(3):255–9.
12. Brown JVE, Lin L, Embleton ND, Harding JE, McGuire W. Multi-nutrient fortification of human milk for preterm infants. Cochrane Database of Systematic Reviews [Internet]. 2020 [cited 2020 Sep 16];(6). Available from: https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD000343.pub4/full.
13. Chinnappan A, Sharma A, Agarwal R, Thukral A, Deorari A, Sankar MJ. Fortification of Breast Milk With Preterm Formula Powder vs Human Milk Fortifier in Preterm Neonates: A Randomized Noninferiority Trial. JAMA Pediatrics [Internet]. 2021 May 10 [cited 2021 Jun 22]; Available from: https://doi.org/10.1001/jamapediatrics.2021.0678.
14. Colaizy T, DeMauro SB, Mcnelis K, Poindexter BB. Enteral nutrition for the High-risk neonate. In: Avery's Disease of the Newborn. 10th ed. p. 1009–22.