



**African
Neonatal
Nutrition
Network**

Nutrition in preterm and low birthweight infants in Africa

MODULE 3: FEEDING METHODS

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Introduction to Module 3



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Welcome to **Module 3: Feeding methods.**

In this module, we will cover various feeding methods, including cup and spoon, gastric tubes, and breastfeeding. Whilst module 2 focused on the importance of breast milk, the breastfeeding content in this module will focus on milk expression techniques and direct breastfeeding challenges in preterm and LBW infants (infants born weighing **less than 2.5kg**).

The key learning objectives from this module include:

- Describe the different approaches to feeding preterm and LBW infants.
- Explain the benefits and potential complications of cup feeding.
- Explain the uses and risks of gastric tube feeding.
- Apply your knowledge of nasogastric and orogastric tube feeding.
- Explain how to start and increase milk feeds.
- Review the effectiveness of monitoring gastric residuals.
- Explain breast milk expression techniques and how expression can be improved.

Cup and spoon feeding

In this step, we will explore the use of cup and spoon feeding in vulnerable infants. We will learn about the benefits of cup feeding, and some of the common risks when feeding by cup.



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When is cup feeding used?

Various methods are used to provide milk to vulnerable infants when breastfeeding is not possible. These include:

- Spoon or Cup feeding
- Nasogastric (NG) tube feeding
- Orogastric (OG) tube feeding

Cup feeding is a feeding method whereby the baby laps milk from a cup. This technique is often used alongside other feeding methods. For example, it can complement breastfeeding, and reduce time using gastric tubes. Cup feeding can also function as a long-term feeding solution for those unable to breastfeed. However, the baby must coordinate lapping, swallowing, and breathing, so cup feeding is typically not used before 30 weeks corrected gestation. Typically cup and spoon is used from 32-34 weeks. It is important to note that **cup feeding** is different to **cup and spoon feeding**.

In 2023, the WHO and UNICEF recommend cup feeding especially in low-resource settings with poor water quality and unreliable electricity, as cups are easier to clean than bottles.

We will discuss the other feeding methods (NG and OG tube feeding) in the next step.

Benefits of cup feeding

Some of the benefits of cup feeding are shown below:

- Cup feeding is safe and widely accessible.
- Encourages eye contact between mother and baby.
- Involvement of the sensory system compared to tube feeding, as the baby's taste and smell is incorporated.
- Less stressful than bottle feeding & permits rest periods from feeding and improves breathing and oxygenation.
- Baby can take the amount of milk they want, at their own pace.
- Heart rate, respiration, and oxygen requirements are better maintained in contrast to bottle feeding.
- Requires less effort to cup feed than to breastfeed.
- A cup is an ordinary type of device that is easily washed and cleaned. There is less chance of contamination compared to bottles.
- The baby is prepared for breastfeeding by exercising the back of the tongue and stretching forward when lapping milk from the cup.
- Widely affordable.

Cup feeding provides many benefits for newborn infants. However, this method can also present a number of complications.

Potential challenges of cup feeding

- **Cup feeding requires a specific technique and mothers may find it difficult to acquire the skill initially.**
- **Risk of aspiration pneumonia if the milk is 'poured' into the infant's mouth rather than allowing the infant to 'lap' or 'sip' the milk.**
- **Inexperienced mothers require supervision by a health care worker.**
- **Cup feeding can be time-consuming.**
- **Cup feeding may not provide sufficient intake because of milk spillage during feeding.**
- **Risk of choking when mothers use cup and spoon feeding whilst the baby is lying down and not held in correct position.**



Comparing cup feeding to other feeding methods

Similar feeding methods

Paladai (or palady) feeding is also used in certain settings, especially in India. This is a device similar to a cup but with a narrow beak. Spoon feeding is also widely used and as with cups, spoons are widely available and can be easily cleaned. Careful technique is still needed to avoid tipping the milk into the mouth of the baby too quickly. Where possible, it seems better to offer cup, paladai or spoon feeding rather than bottle or tube, as these methods may be associated with less risk and cost. The use of fewer utensils for feeding may also lower the risk of contamination. Currently however there are no good comparisons between cup, spoon, and paladai feeding.



Photo provided by African Neonatal Nutrition Network partners with parental consent.

Bottle/tube feeding

There are also currently no conclusive studies comparing cup, spoon or paladai feeding with bottle or tube feeding. Where possible, it seems better to offer cup, paladai or spoon feeding as these methods may be associated with less risk and cost. However, the technique requires more skill and supervision.

Overall, there is good evidence to advise **against** the use of bottles and teats, except where there is no alternative. The key factors are:

- Infant safety (aspiration etc.)
- Feed effectiveness (amount of milk transfer)
- Infection control (equipment cleaning)
- Cost
- Local skills and expertise

ANNN Recommendations

When establishing oral feeds in preterm infants preference should first be given to direct breast feeding, and then be given to using cup, palady or spoon feeding methods. Bottle feeding should be avoided where possible.



References

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Gastric tube feeding

In this step, we will explore the risks and benefits of gastric tube feeding, including the two types:

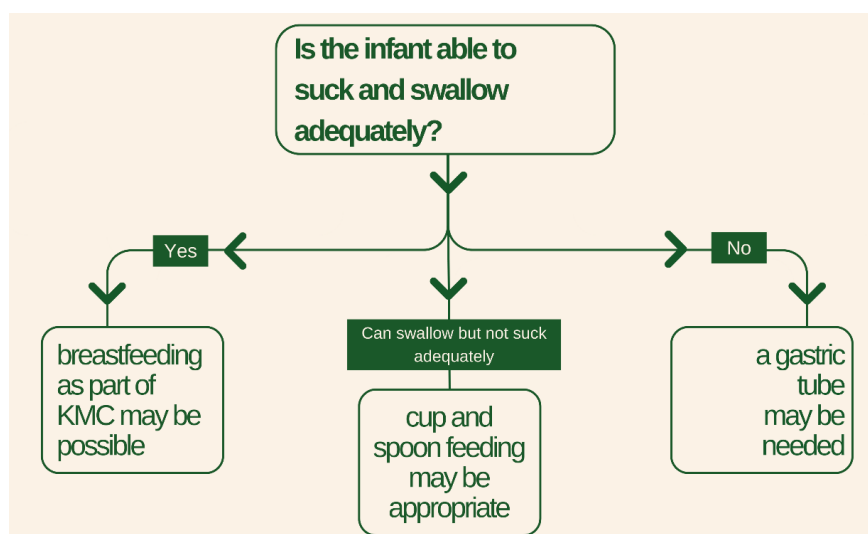
- Nasogastric (NG) tubes
- Orogastric (OG) tubes



Photo of NG feeding provided by African Neonatal Nutrition Network partners with parental consent.

When are gastric tubes used?

Gastric tubes are widely used in neonatal practice and therefore health care practitioners must understand the risks and benefits. The first question to consider is whether the baby really needs a gastric tube. The following flowchart may be able to help with this decision:



The WHO considers that initiation of enteral feeding in unstable babies should be based on clinical judgment. Where possible, the infant's clinical condition including heart rate, breathing, colour, temperature, and oxygen saturation must all be monitored.



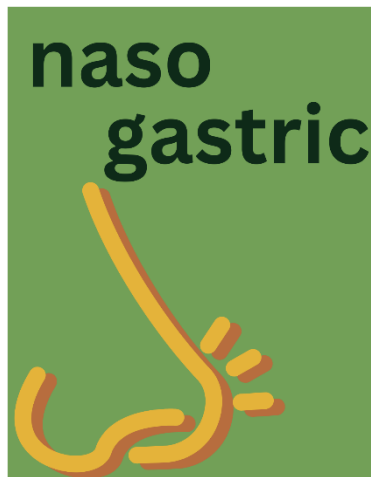
General Risks of Gastric Tubes

- Oesophageal perforation
- Malposition of the tip in an airway
- Malposition of the tip in the duodenum
- Malposition of the tip in the oesophagus

Oesophageal perforation is very rare but can occur in extremely LBW or preterm infants. Careful training is required to ensure the tip of the gastric tube is located in the stomach. Routine checking of tip position by aspirating stomach contents is essential, but confirmatory X-rays are rarely required. Tubes that are too short (tip in the oesophagus) may increase the risk of reflux and choking. Tubes that are too long (duodenum or jejunum) may prevent proper digestion or absorption of foods or medicines.

Nasogastric vs orogastric tube feeding

All gastric tubes have some associated risks, such as those described above. There are also more specific complications associated with either NG or OG tubes. Expand the boxes below to learn more about each of these.



Potential complications of NG tubes

Nasal damage on insertion, and/or bleeding

NG tubes partially occlude the nasal passages

Airway occlusion may increase the work of breathing and worsen respiratory status.

Although some infants experience vagal symptoms on NG insertion, these are temporary.

Potential complications of OG tubes

Whilst OG tubes may avoid the 'airway' complications associated with NG tubes, they still come with a number of their own considerations when deciding on the most appropriate treatment strategy. For example:

- OG tubes are more difficult to secure.
- OG tubes may 'move' more in the hypo-pharynx which may provoke vagally induced bradycardia.
- OG tubes may interfere with oral or direct breastfeeding.



Studies have compared the risks and benefits of NG versus OG tubes, but there is no consistent evidence-based data to recommend one method (Watson *et al.*, 2013), and recommendations generally follow local preferences. Where mothers are giving the tube feeds themselves (independently) then a nasal rather than oral might be preferential as nasogastric tubes may have a lower chance of being dislodged.

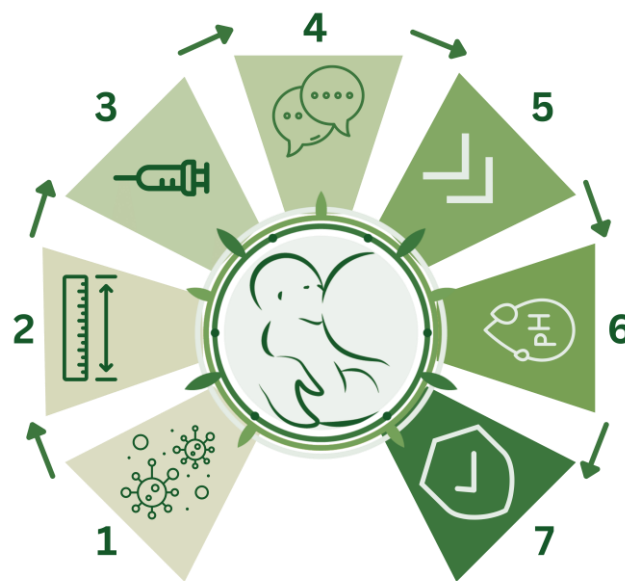
Some neonatal units will use an OG tube in the smallest infants where respiratory complications are greatest, for example on CPAP, and then convert to an NG tube when the babies are bigger.

How to insert an NG tube and give an NG feed

Read below to explore the general principles of how to insert an NG tube and how to give an NG feed.

Please note, it is not possible to safely teach the necessary skills for inserting a gastric tube, or tube feeding itself, within the confines of an eLearning course, so the following information is provided as a guide. Individual hospitals should develop their own teaching packs, policies, procedures and guidelines, and audit their techniques and outcomes.

How to insert an NG tube



1. Ensure careful infection control procedures including use of gloves according to local policies.
2. Measure insertion length following local procedures. Generally this calculates length by measuring from the nose (or mouth) to the ear and then to mid-point between xiphoid process and umbilicus. Check length against a weight based calculator if available to ensure length is not obviously too long or short.
3. Collect equipment and choose the correct size gastric tube for the infant.
4. Speak to the parents and carers and explain the procedure, including why it is needed, and for how long it is likely to be needed. Reassure the parents that it will not hurt the baby.
5. Advance tube gently to desired length, stopping if there is any resistance. Marking the tube at the point of insertion allows easier monitoring of tube position.
6. Check tip position by aspirating stomach contents and/or use of a pH strip according to local policies.
7. Secure in place according to local guidelines.

How to give an NG feed

Step 1: Ask mother to wash the cup with soap and water, and allow to dry.

Step 2: When the cup is clean and dry, the mother should wash her hands with soap and water.

Step 3: Ask anyone assisting (e.g. father, other family member) to wash their hands.

Step 4: Express breast milk into cup.

Step 5: Use a new syringe every day.

Step 6: Draw up the amount of milk required.

Step 7: Fold the NGT in half and open the top.

Step 8: Attach the syringe to the end of the NGT.

Step 9: Remove plunger from the syringe.

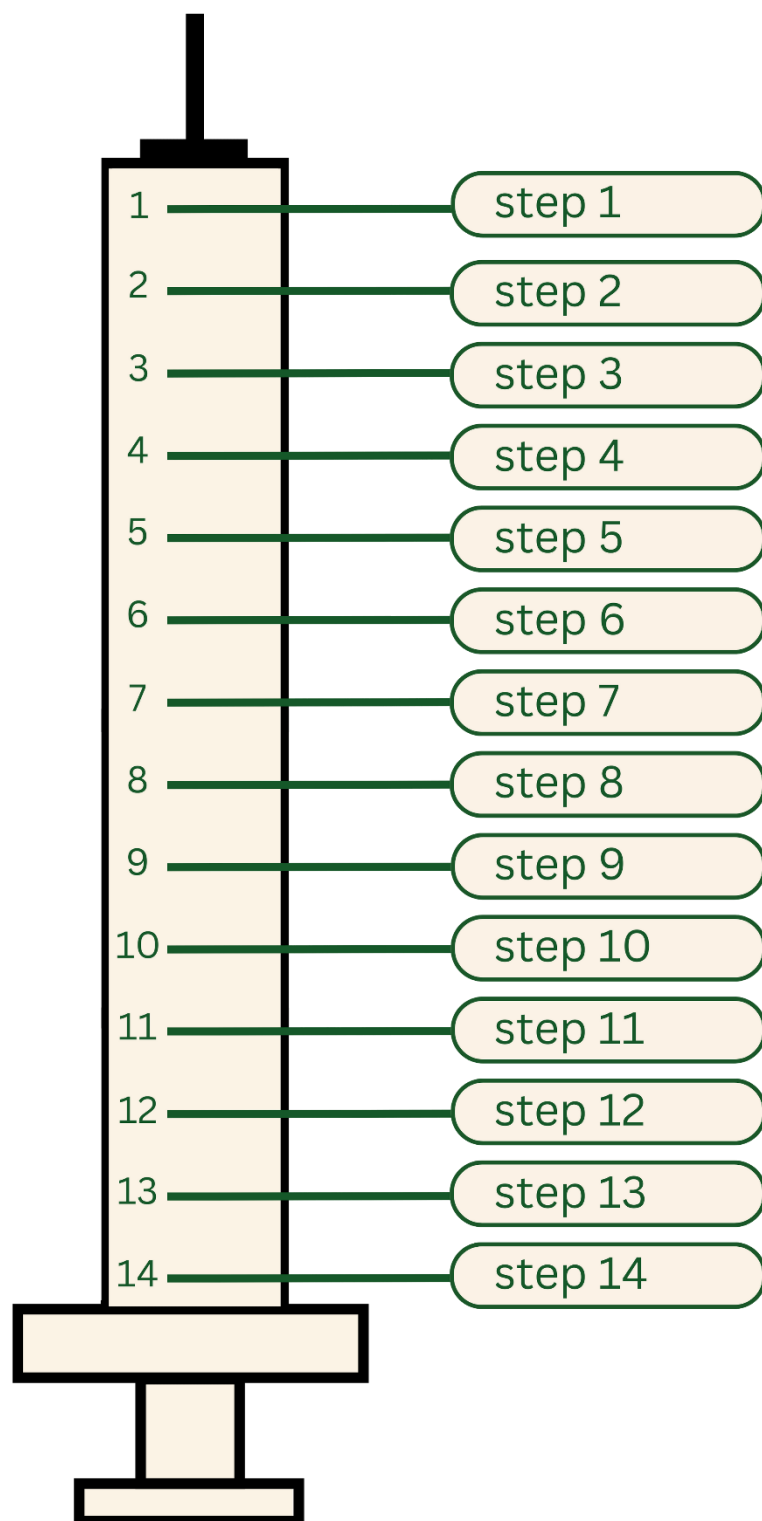
Step 10: Hold the syringe above the baby and allow the milk to flow in. Do not push with the plunger. If the milk does not flow under gravity seek extra advice. Gentle pressure on the top of the syringe may help but carefully check the insertion mark first.

Step 11: When the milk has flowed in, remove the syringe.

Step 12: Replace the top of the NGT.

Step 13: Wash all equipment.

Step 14: Discard any un-used milk.



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Case study: Introduction

Imani is born at 30 weeks weighing 1000g. Her mother had a C-section and Imani is receiving care in an incubator. Read through the graphic below to learn more:



Case study: Expert opinion

Now, we will look at an expert opinion of how to treat the infant in this particular case study. Read through and consider similarities and differences to your own patient management.

Expert Opinion

“Firstly, examine Imani carefully, observing respiratory status and vital signs (heart rate (RR), temperature etc.)

If Imani appeared well, then waiting a few hours and repeating the milk feed of 10mls might be appropriate. Some clinicians might give a smaller feed volume, for example, 7.5mls every 3 hours. A feed volume of 15mls every 3 hours would be a larger amount than many clinicians would commence. There are no good data to say what starting feed volume is optimal. A volume of 25-50mls per kg per day might be appropriate

If Imani’s RR had increased dramatically, then waiting for it to settle before giving a further milk feed might be considered. If there is a raised RR then feeds should not be advanced too quickly. Giving a few drops of the breast milk into the mouth (oropharyngeal colostrum) in addition to the milk via the gastric tube might improve the care.

Measuring blood glucose is important. Preterm babies are at risk of hypoglycemia, but IV 10% Dextrose at 80-100mls/kg/day will supply sufficient calories for most babies in the first 24-48 hours.

Speak to the mother and reassure her that Imani is well, that small vomits are common, and acknowledge (congratulate!) the importance of providing breast milk. Ensure she is adequately supported to keep increasing her lactation, and that she has access to food and drink. If possible, see if her mother can come to the neonatal ward and give Imani skin-skin or KMC as this may aid lactation even if Imani is receiving IV fluids.”

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Starting and increasing milk feeds

In this step, you will learn about how to start and increase milk feeds in preterm and LBW infants, including the benefits and complications commonly associated with each.

Starting milk feeds

Traditionally, many hospitals did not provide preterm or LBW infants with milk feeds in the first few days of life. This increases the risk of malnutrition and could potentially lead to increased risks of gut complications due to a lack of nourishment for the gut.

However, it is now accepted that early milk feeding is appropriate, with the exception of the very sickest infants, such as those requiring cardio-respiratory support. Many hospitals now provide buccal colostrum (see module 2) within the first few hours after birth even in preterm infants as small as 500g. Remember that many preterm infants can be tried immediately at the breast as part of immediate KMC, although additional milk feeds via a cup or gastric tube may still be required.

‘Minimal enteral feeding’ is the same term as ‘trophic feeding’ and refers to the provision of small amounts of milk up to 10-20ml/kg/day over the first few days. The main aim of trophic feeding is to provide nourishment to the gut and limit starvation, rather than to promote growth itself. There is no good evidence that using trophic feeds without increases (e.g. maintaining intake volumes at <20ml/kg/d for several days) is more effective than slowly increasing the milk volume each day based on the time taken to achieve full feeds.

Benefits of early initiation of feeding

- Quicker attainment of full enteral feeding.
- Faster transit time.
- Improved gut epithelial health and endocrine activity.
- Improved gut motility.



Due to the benefits above, we recommend starting small volumes of milk feeds as soon after birth as possible and increasing as **clinically tolerated**.

According to WHO, early initiation of feeding appears to **decrease length of hospital stay** and may **reduce mortality**, though this benefit was not noted in the Cochrane review (Young *et al.*, 2022). Some studies show decreased rates of sepsis, but again the effects are not consistent across studies. Where parenteral nutrition (PN) is used, earlier feed advancement results in a shorter duration of PN, thereby saving costs. There appears to be little or no effect on NEC, feed tolerance, and growth.

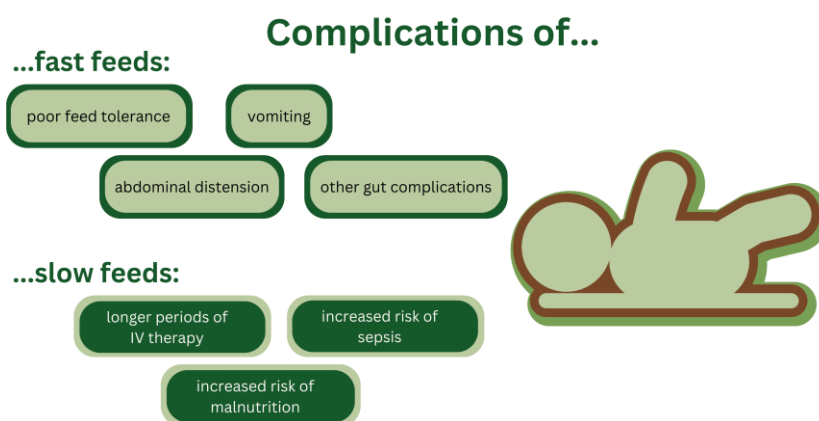
WHO Recommendation

Preterm and low-birth-weight (LBW) infants, including very preterm (< 32 weeks' gestation) and very LBW (< 1.5 kg) infants, should be fed as early as possible from the first day after birth. Infants who are able to breastfeed should be put to the breast as soon as possible after birth. Infants who are unable to breastfeed should be given expressed mother's own milk as soon as it becomes available. If mother's own milk is not available, donor human milk should be given wherever possible. (Strong recommendation, moderate-certainty evidence)



Increasing milk feeds

Controlling the speed of milk feeds is very important in newborn infants. Some of the issues commonly associated with fast and slow feeds are shown in the graphic below:



Several trials and systematic reviews have been conducted in this area over the last few years. There is no evidence that complications such as sepsis or NEC are more common with faster feed increases (around 30ml/kg/day) than with slower feed increases (15-20ml/kg/day). There is also no strong data to show that SGA babies or those with IUGR require different policies.

These rates of milk feed increases are relevant if the baby is receiving tube or cup feeds. Remember, **if a newborn baby is able to safely breastfeed directly there is no need to restrict the baby from feeding on demand.**

It is also important to note that **complications are much more likely to occur when formula milk is used instead of breast milk.**

WHO Recommendation

In preterm or LBW infants, feed volumes can be increased by up to 30 ml/kg per day. (Conditional recommendation, moderate-certainty evidence)



Kenyan Paediatric Association recommendation

Other professional organisations, such as the [Kenyan Paediatric Association](#), recommend that infants <1000g birth weight reach full enteral feeds of 180ml/kg/day within 2 weeks, and infants weighing 1000-1500g at birth should reach full enteral feeds within 1 week.

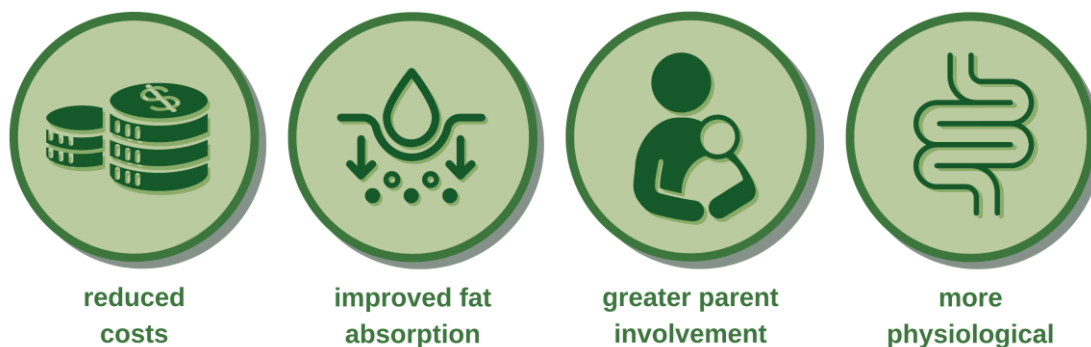
You can find out more about these recommendations [here](#).

Maximum feed volumes for LBW or preterm infants

Feed volumes of 150ml/kg/day of mother's own breast milk are unlikely to meet nutrient requirements for most LBW or preterm infants unless extra nutrients are provided. It is therefore common for these infants to be fed milk volumes of around 180ml/kg/day. There is also some data to show that intakes as high as 200ml/kg/day improve growth in LBW infants (Travers *et al.*, 2020). Feed volumes greater than this have also been used.

Continuous vs bolus feeding

Finally, it is important to consider whether milk from gastric tubes is given by **bolus** (intermittently, e.g. every 2-3 hours) or **continuously**. Systematic reviews have concluded that whilst there are no major differences in outcomes, bolus feeding has several potential advantages, some of which are shown in the graphic below. Read below to learn more.



Reduced cost - Continuous gastric feeds can be more costly as they require expensive electric pumps. However, there may be occasional very small infants who are struggling to tolerate milk feeds where continuous feeds or giving more regular bolus feeds, e.g. every 1-2 hours, may help.

Improved fat absorption - Continuous feeds can result in the human milk fat 'settling' in the upper portion of the syringe, and more fat may adhere to the inside of the syringe or tube. This means fat absorption is lower with continuous feeds.

Greater parent involvement - Unlike in continuous feeds, parents can help hold the syringe when giving a bolus feed, enabling them to feel more involved in the nutritional care of their baby. Bolus feeds can also be administered whilst the baby is maintained in the 'Kangaroo position'.

More physiological - Bolus feeding is more similar to breastfeeding and may improve gastric emptying and intestinal motility.

Give gastric tube feeds of milk every 2-3 hours where tolerated



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Gastric residuals

In this step, we discuss 'gastric residuals' and the problems commonly associated with their use when feeding preterm and LBW infants.

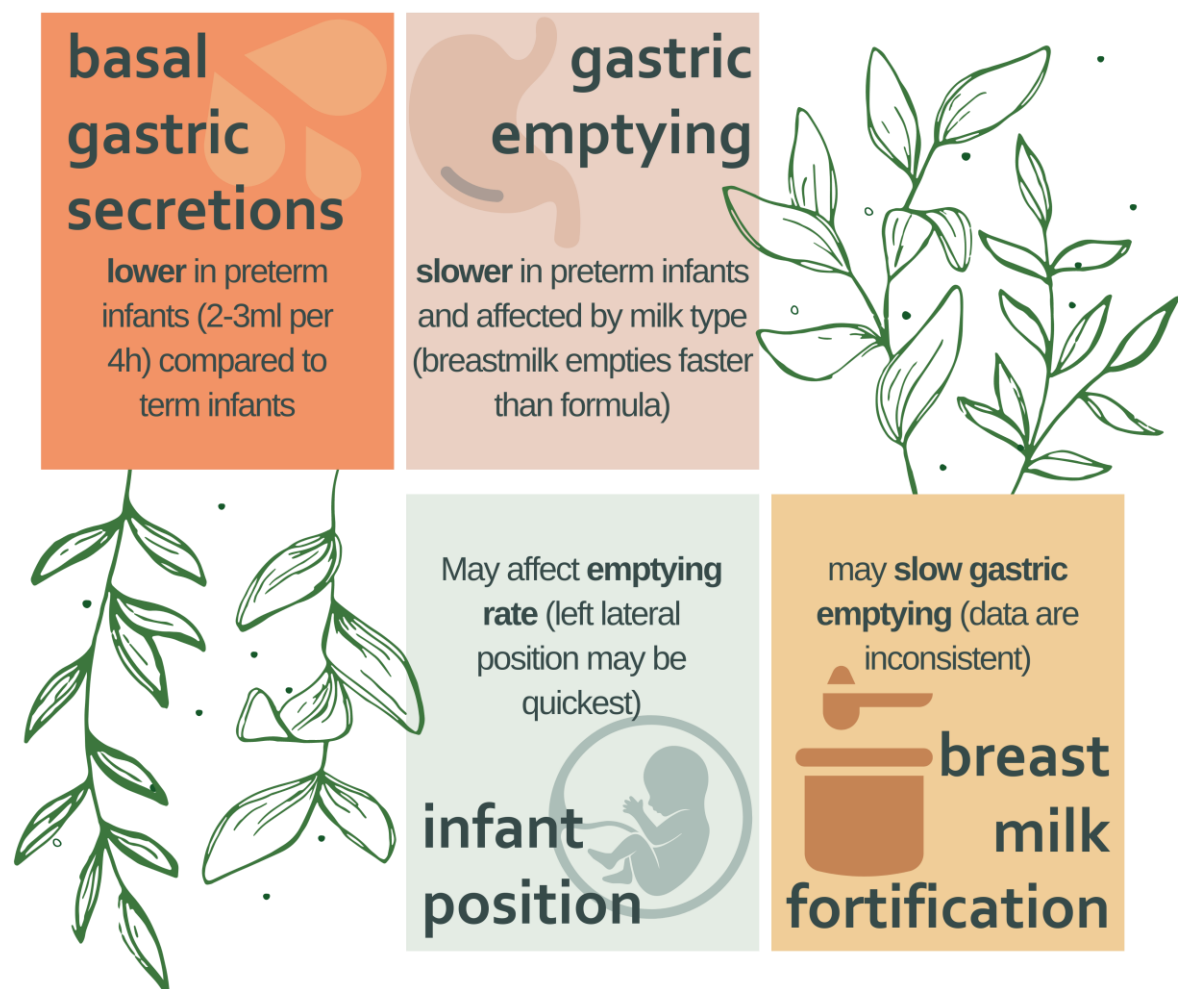
What is a gastric residual?

The '**gastric residual**' is the fluid remaining in the stomach prior to the next enteral feeding. Gastric residuals are sometimes used to predict feeding tolerance and NEC, although there is no good data on the significance of its volume and colour.

Gastric residuals are a normal finding in preterm infants who have immature gastric motility and low average basal gastric secretions of around 2-3ml every 4 hours.

The factors influencing gastric residuals are described in the graphic below:

Factors influencing the gastric residual:



Management of gastric residuals

Studies on the effectiveness of monitoring gastric residuals are currently inconclusive. There are no conclusive studies showing that routinely measuring gastric residuals can predict feed tolerance or NEC. Definitions of 'clinically significant' residuals vary – for example, some studies use 33%-50% of the previous feed, whilst others use 2-5ml/kg. There is no agreement on whether the colour of aspirate is helpful.

There is also no consensus on whether to re-feed or discard the aspirated residual. Refeeding gastric residuals may replace partially digested milk, gastrointestinal enzymes, bile acids, hormones, and trophic substances that support digestion and promote gastrointestinal motility and maturation. However, they may also result in further feed intolerance.

A retrospective study of >600 preterm infants (Mangapally *et al.*, 2023) concluded that routine pre-feed gastric residual monitoring in the absence of concerning clinical exam findings does not reduce the incidence of NEC, but instead may delay important nutritional outcomes such as starting feeds and achieving full feeds.

In summary, routine monitoring of residuals is not recommended, however health care practitioners will still want to aspirate the gastric tube periodically to check the tip position is in the stomach.

ANNN Recommendation

Routine monitoring of gastric residual volume is not recommended (ESPGHAN 2022, Grade of Recommendation B)



References

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Expression of breast milk

In this step, you will learn about the expression of breast milk in new mothers. You will explore different techniques for the expression of mother's own milk (MOM), common risks, and strategies to increase milk expression through holistic techniques.

Techniques for milk expression



Photo above provided by African Neonatal Nutrition Network partners with parental consent.

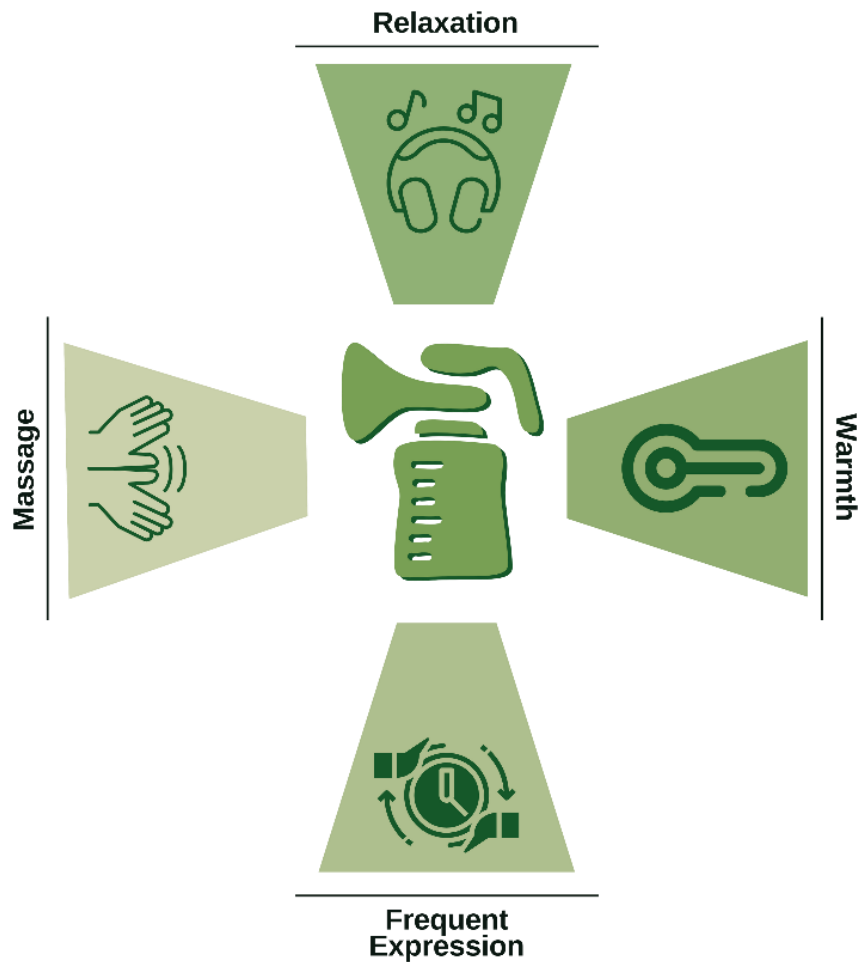
Whilst many preterm and LBW infants will be able to breastfeed from birth, many will require expressed MOM. There are many methods and techniques that are used to express the milk, including **hand expression** and **electric pumps**. A Cochrane review (Becker *et al.*, 2016) identified over 40 trials, many of which compared different techniques, and concluded that there is **no clear preference** for one type of milk pump or technique.



Many hospitals only ever use hand expression. Electric pumps are expensive and use by multiple mothers raises significant infection control issues. In Becker's review, there were no clear differences in infection control aspects or breast/nipple soreness when the techniques were used with training and high quality control. However, with poor technique and especially with multiple users, there is a **risk of microbial transmission**, especially HIV.

Furthermore, the studies highlight that different settings may impact on success, for example in terms of population, culture, resources, and equipment. **An optimal technique in one setting may not be the optimal technique for a different resource setting.**

Techniques for increasing milk expression



- **Relaxation:** More milk is expressed when mothers are relaxed, for example when listening to music or other techniques.
- **Warmth:** More milk is expressed when the breast is warmed, for example using a warm towel.
- **Frequent expression:** Initiating expression soon after birth is more successful than delaying the start. Many hospitals recommend expression at least every 3 hours initially, using a suitable breast shield.
- **Massage:** More milk is expressed by gently massaging the breast between the forefinger and thumb.
- There is some evidence that hand expression or larger electrical pumps produced milk with a slightly **higher protein content**. Hand expression produced milk with more sodium than pumps, and fat content was higher with breast massage during expression. Many of the studies comparing different mechanical pumps received commercial support. Few studies provided data on other aspects such as resources for mothers including food and drink, places to rest, and environmental aspects e.g. noise (Becker *et al.*, 2016).

Parent communication and support

The available evidence strongly suggests that direct and careful support of parents has a major impact on the success of milk expression. The hospital environment (e.g. noise, food and fluid access, rest areas) and the ability to express milk privately, or whilst sitting next to the infants' incubator, can be important to mothers. Cultural aspects should also be considered.

KMC promotes mother-infant togetherness and is optimal for expression. In other settings, providing mothers with a photo of their baby may help. Multiple other healthcare interventions and processes are likely to impact on successful and continued MOM expression, some of which are shown below. Read below to learn more.



Factors improving provision of mother's own milk

- Positive attitudes amongst healthcare staff.
- Involvement of doctors in speaking with parents about the importance of MOM.
- Antenatal education and/or consultations.
- Promotion of KMC or skin-to-skin care. If skin-to-skin / KMC is not possible, mothers usually express more milk if they are in the presence of their baby.
- Availability of lactation consultants or healthcare workers.
- Physical resources, e.g. space for a mother to express, including at the cotside.
- Staff training and education.
- Adoption of the UNICEF Baby Friendly Initiative.
- Hospitals that conduct regular audit and QI.
- Talking about the gift of 'liquid gold' on ward rounds.

Storage, labelling and usage of expressed human milk

A detailed discussion of the storage, labelling and usage of expressed human milk is not possible in this eLearning course. Careful labelling of any stored breast milk is vital, especially in settings where HIV-positive infection is a possibility. Storage facilities such as freezers and fridges need careful policies and procedures, and regular maintenance. Breast milk cannot be stored at room temperature. If breast milk is stored frozen, guidelines need to describe how this is defrosted and where this takes place.

Summary

Multiple factors impact on the success of breast milk expression. Careful policies, procedures, and guidelines are needed. Given the potential for MOM to stop infants from dying, for example from NEC, but also the risk of inadvertent HIV transmission through poor infection control, the importance of **audit and QI should be given high priority.**

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Establishing direct breastfeeding

In this step, you will learn about some of the challenges of direct breastfeeding in preterm infants. We will cover how breastfeeding is initiated and discuss the transition period between tube and breast feeding.

Challenges of direct breast feeding for preterm and LBW infants

One of the most challenging tasks for preterm infants is learning to feed directly from the breast whilst they coordinate breathing. Whilst many preterm infants born at 35 weeks or more will breastfeed from birth, this is less common in newborn infants at 32-34 weeks. Very preterm infants (less than 32 weeks) are rarely able to feed directly from the breast, although many will demonstrate suck and swallow. The key challenge for most very preterm infants is coordinating **safe breathing** alongside the suck/swallow. Establishing oral feeding requires the coordination of:

- Sucking
- Swallowing
- Oesophageal transport
- Breathing

Explore below to learn more about the other important factors affecting feeding success.



Factors affecting feeding success include:

- Milk availability.
- NICU environment, e.g. sound.
- Caregiver feeding approach.
- History of non-nutritive sucking.
- Sensorimotor interventions.
- Bottle vs breastfeeding.
- Neonatal morbidities, e.g. BPD.

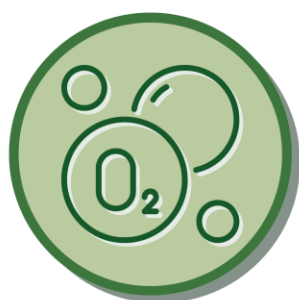
Initiating direct breastfeeding

Whilst many tools have been developed to help assess feed readiness, few are widely used, and **the decision to start direct breastfeeding is best taken by experienced neonatal nurses and lactation consultants** (Crowe *et al.*, 2016). If babies develop apnea, raised respiratory rate, or signs of aspiration, then direct breastfeeding should be halted.

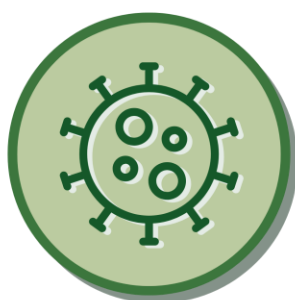
In recent years, there has been increasing recognition that preterm infants can latch to the breast, suck and swallow, and attain full breastfeeding at earlier gestational ages than previously believed (Nykqvist, 2008).

Prior to establishment of full breastfeeding, the use of gastric tube and cup or spoon feeds are preferred to the use of bottles or teats. The graphic below shows some of the contraindications commonly associated with the use of bottle feeding.

Bottle feeding is associated with...



Lower oxygen saturations



Increased risk of infection due to difficulties cleaning bottles and teats



Increased apnea compared to breast

Non-nutritive sucking with a clean finger or pacifier when the mother is not available may improve feeding success, and may have stress relieving effects. Pacifiers must be kept clean.

Transitioning to direct breastfeeding

There is no consensus on how best to transition a baby from tube feeding to the breast. Some will place the infant directly to the breast, and this seems most logical when KMC is being practiced. Others may have a transition phase with the mother carefully expressing the milk directly into the baby's mouth (UNICEF, 2020). Many very preterm infants do not display feed readiness cues prior to 32-34 weeks and the WHO considers that scheduled feeding (e.g. feeding the baby every 2-3 hours) can be appropriate. In more mature infants, responsive feeding is generally practiced.

WHO Recommendation

In health-care facilities, scheduled feeding may be considered rather than responsive feeding for preterm infants born before 34 weeks' gestation, until the infant is discharged. (WHO Conditional recommendation, low-certainty evidence)



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End of Module 3

In this module, we introduced the key concepts of feeding methods in preterm and LBW infants. We described the general principles of a number of different methods, learned how to implement gastric residuals, and explored techniques to increase expression of breast milk. Finally, we used what we had learned to work through a case study involving a preterm/LBW infant.

From completing this step, you should now be able to:

- **Describe** the different approaches to feeding preterm and LBW infants.
- **Explain** the benefits and potential complications with cup feeding.
- **Explain** the uses and risks of gastric tube feeding.
- **Apply** your knowledge of NG and OG tube feeding.
- **Explain** how to start and increase milk feeds.
- **Review** the effectiveness of monitoring gastric residuals.
- **Explain** breast milk expression techniques and how expression can be improved.

If you are unsure about any of these goals, make sure to go back through the previous steps and refresh yourself.



African
Neonatal
Nutrition
Network