

LATE PRETERM BABIES ARE DIFFERENT – A PRIMER FOR PARENTS by Susan Landers, MD



DEFINITIONS & CAUSES

Late preterm babies are born between **34 0/7 weeks to 36 6/7 weeks gestation**. Near term babies are born between 37 0/7 to 38 6/7 weeks gestation. Full term gestation is 39 0/7 weeks and above.

Causes of late preterm birth include increased use assisted reproductive technologies – IUI (intrauterine insemination) , IVF (invitro fertilization), increased births of multiple gestations (mean gestation for twins is 35 3/7 weeks & for triplets 32 2/7 weeks), older maternal age, increasing rates of medical indications for C-section, premature or prolonged rupture of membranes (PPROM), preeclampsia (pregnancy induced hypertension), diabetes, & chorioamnionitis. Increasing rates of labor inductions also contributes to late preterm birth.

CARE FOR YOUR LATE PRETERM BABY IN THE HOSPITAL

- **Site of care after delivery** – newborn nursery, a transitional stabilization nursery, or the neonatal intensive care unit (NICU) – will vary according to your baby’s needs.
- Whether or not your baby can **transition after birth** with mother depends on your baby, their temperature stability, whether your baby can breastfeed & maintain adequate intake & glucose stability. If your baby has respiratory distress, he or she will most likely go to the NICU.
- **Skin-to-skin holding immediately after birth** with mother is preferable, before your baby is taken to the nursery or NICU. Again, this depends on your baby’s symptoms, whether oxygen is required. Both eye care & Vitamin K can be postponed until later & expect bathing to be delayed as well.
- Late preterm babies are at high risk for **hypothermia (low body temperature)** because of thin skin (& increased insensible water loss), decreased subcutaneous fat insulation, a large body surface area, decreased glycogen stores, smaller brown fat stores, & increased energy requirements for growth.
- Nursery personnel will weigh your baby in **grams** (as well as pounds & ounces) as this allows the medical staff greater accuracy when assessing weight loss.
- Your baby’s **sleep position** will be supine, on their back, both in the hospital & later at home. If your baby is placed on their abdomen in the transition nursery or NCIU, this is only **temporary** & only because the baby’s heart rate, respiratory rate & oxygen saturations are being monitored electronically.
- Late preterm infants are often **separated from their mothers** for evaluation & treatment, which delays breastfeeding & skin-to-skin holding. Your baby will receive close observation & monitoring, especially in the first 12–24 hours when the risk of problems is greatest.

- Late preterm infants have a **50% risk for some clinical problem** during the birth hospitalization & many will require transfer to a higher level of care **at any time** for appropriate care & monitoring.

EXPECT TO SEE EARLY CLINICAL PROBLEMS & SYMPTOMS IN YOUR LATE PRETERM BABY

- Late preterm babies may have **respiratory distress** because of lung immaturity or retained fetal lung water (transient tachypnea) immediately after birth. Your baby may be evaluated for **suspected sepsis** (blood stream infection & pneumonia) & given IV antibiotic therapy for 3 to 7 days.
- If your baby shows **hypothermia** (temperature below 97 degrees) and **apnea** (breathing pauses) he or she will most likely require monitoring in the NICU. Hypothermia & temperature instability occur in around ten percent of late preterm babies.
- About one third of late preterm babies will have trouble with feeding and 15 to 20% of late preterm babies will develop **hypoglycemia** (low blood sugar). For this, some will need IV infusion of glucose, or antibiotics for possible infection.
- Nearly half of late preterm infants will develop significant **jaundice**.
- **Feeding difficulties** occur in one third of late preterm babies & yours may require gavage feedings (tube feedings via the mouth or nose). Nearly half of late preterm babies need **occasional gavage** or tube feedings.
- For those late preterm babies needing care in the NICU, their hospital stay may be 7 to 10 days.

SCREENING FOR LOW BLOOD SUGAR

- Late preterm babies with **hypoglycemia (low blood sugar)** may be symptomatic (rapid breathing, fast heart rate, apnea or breathing pauses, & low temperature), or they may be asymptomatic (have no symptoms).
- Hypoglycemia occurs because of low glycogen reserves, immature hepatic enzymes for glucose production in the liver, unregulated insulin production, & the inability to mount the proper ketogenic response to low glucose.
- Expect your late preterm baby to be **selectively screened** for low glucose. Most hospitals have institutional protocols for screening high risk infants.
- Glucose levels are checked within 30 to 60 min. of age, & then every 2 to 4 hours. If a late preterm baby is symptomatic, the glucose level will be checked more often, & as needed.
- Your baby will be **offered early feedings** of your expressed breast milk (EBM), donor breastmilk, or formula, & then fed every 2 to 3 hours, with breastmilk, additional EBM or formula as needed.
- Late preterm babies typically have an **immature sucking** efficiency, a weak sucking pressure, low sucking frequency, immature swallowing, & abnormal tongue movements. These feeding handicaps generally resolve around 36 weeks corrected age.

- Their feeding is compromised by breathing abnormalities, apnea, & oxygen desaturations that may occur. It is common to see an **uncoordinated suck-swallow-breathing pattern** in your late preterm baby for several days to several weeks.

SCREENING FOR JAUNDICE

- Late preterm babies are at a greater risk for **jaundice** (hyperbilirubinemia). If they have a cephalohematoma or scalp bruising, if they are exclusively breastfeeding, & if they show a large weight loss after birth (greater than 10%), they are more likely to become jaundiced.
- Jaundice occurs more often in babies of East Asian ethnicity.
- Despite the cause, **phototherapy** for significant jaundice is required for nearly half of late preterm babies.
- Your delivery hospital will have nursery protocols for evaluation of jaundice. These protocols allow the nursing staff to obtain levels for total serum bilirubin or transcutaneous (through the skin) bilirubin.
- Serum bilirubin levels will be obtained & interpreted by age in hours on a **bilirubin nomogram** that adjusts for your late preterm baby's gestational age.
- All hospitals will assess a predischarge bilirubin relative to your baby's age in hours on this bilirubin nomogram.
- Late preterm babies will need to be seen within the first few days after discharge by their physician. It is not uncommon to delay hospital discharge of your late preterm baby until appropriate follow up care & assessment of jaundice can be secured.

CARE DURING YOUR LATE PRETERM BABY'S HOSPITAL STAY

- Late preterm babies tend to develop **excessive weight loss & dehydration**. If breastfeeding is not supplemented, they may develop hypoglycemia at any time.
- **Supporting breastfeeding** in the late preterm infant is paramount during the initial hospital stay. Where your infant is cared for will depend on nursing staffing available & how the mother–infant dyad can be supported to breastfeed.
- Close observation of your baby will be continued during skin-to-skin care, breastfeeding, & rooming-in.
- **Breastfeeding should be allowed within one hour after birth**. If your infant is physiologically stable & healthy, he or she should be allowed free access to the breast and encouraged to breastfeed at least every three hours.
- **Rooming-in 24 hours a day**, with frequent extended periods of skin-to-skin contact when the mother while she is awake is always preferable. The goal is to avoid separation of mother & her late preterm infant.
- If the mother is separated from her infant, she should begin **hand expression of colostrum** within the first hour of birth & continue to express every three hours. Some studies demonstrate that hand expression is as-good-as or better than pumping to establish breastmilk supply.

- Some late preterm infants will **not effectively suckle when first offered the breast**, so you may have to consider hand expression & feeding expressed colostrum to the infant with a spoon, dropper, or other device after the first attempted breastfeed.
- It will be **necessary to wake your infant** if he or she does not indicate hunger cues within 4 hours of the previous feed. This is not unusual during the initial hospital stay in the late preterm infant.
- The infant should be breastfed (or breast milk fed) **8 to 12 times per 24-hour period**.
- You will be instructed to **initiate milk expression by pump or hand expression** when your infant is unable to successfully latch in the first 24 hours.
- Small & very sleepy infants, especially those with intrauterine growth retardation (IUGR), will need **supplemental feeds** (preferably of expressed breast milk) for low blood glucose levels, or for excessive weight loss.

SUPPORT FOR BREASTFEEDING IS CRUCIAL

- Strategies to support breastfeeding the late preterm baby include **extended rooming-in**, developing a practical, individualized approach, & the mother's ability to pump &/or hand express to stimulate breastmilk production.
- In the hospital, a formal evaluation of breastfeeding effectiveness by a RN or **Lactation Consultant (LC)** is necessary to assess position, latch, & milk transfer. The feeding plan, including frequency of feeds, amount of supplementation, frequency of pumping or hand expression of milk, should be documented for you.
- You will be shown **techniques to facilitate effective latch**, with careful attention to adequate support of your baby's jaw. Transitioning your late preterm baby to breastfeeding will present you with significant **challenges with positioning & latch**.
- Late preterm babies have a proportionately larger head, weak neck muscles, smaller mouth in relationship to areola, & limited physical reserves. Late preterm babies **tend to fall asleep at breast** from fatigue rather than satiety.
- Your baby may need physical assistance to latch, help with proper positioning, & an asymmetric latch to effectively breastfeed. The breast will need to be contoured to fit into the baby's mouth more easily. Oftentimes, a **silicone nipple shield** is needed temporarily.
- During the transition to full, exclusive breastfeeding, **liberal supplementation** is commonly needed for late preterm babies. The amounts needed are small – **only 5 to 10 ml per feed on day one, & 10 to 30 ml per feed after first day**.
- Supplementation with expressed breastmilk (EBM), donor breastmilk (DBM), &/or standard formula are all acceptable, unless you have a preference. Supplementation with glucose water alone is NOT sufficient.
- Your late preterm baby can be supplemented (during their transition to breastfeeding) with **bottle feedings or gavage feedings**.
- Some LCs may propose use of a **supplemental nursing systems, cup feedings, &/or finger feedings**. These are all acceptable methods for supplementation, but each takes extra time & energy to accomplish. These methods are not as efficient as bottle feeds.

- **Cup feedings** have proven safety in late preterm infants, with careful attention to appropriate technique, allowing infants to “lap up” the feeding at their own pace. Some studies have found that cup feeding takes longer with less intake compared with bottle feeds. There is little evidence about the safety or efficacy of other alternative feeding methods or their effect on breastfeeding.
- A recent study, however, found no difference in weight gain, feeding times, & length of hospital stays in the **cup versus bottle-fed infants**. Cup feeding was associated with a significant protective effect on any & exclusive breastfeeding at hospital discharge & at both 3 & 6 months after-discharge.
- Smaller IUGR (intrauterine grown restriction) or immature late preterm infants may not have regular **sleep/wake periods** for quite some time. For these infants, consider offering expressed breast milk (by bottle, cup, etc.) when sleepy & breastfeeds when more alert.
- A caution about supplementation: whenever the late preterm baby is supplemented, his or her mother should continue pumping, either with or without hand expression of EBM. Some call this set of instructions “**triple feeds**” defined by 1) actual nursing at the breast, followed by 2) supplementation, & then 3) pumping or hand expression to stimulate breastmilk supply.
- Triple feeds work to secure breastfeeding & breastmilk supply, but this technique is time consuming & most mothers quickly find **triple feeds to be exhausting**.
- **Time-limited breastfeeding** may be advocated and attempts to limit the time spent nursing at the breast to 15 to 20 minutes (so as not to exhaust the baby).
- If there is evidence of ineffective milk transfer, **breast compressions while the infant suckles** may be helpful & the use of an ultrathin silicone nipple shield could be considered.
- If a **nipple shield** is used, the mother & infant should be followed closely by a Lactation Consultant (LC) or a knowledgeable healthcare professional until the nipple shield is no longer needed.
- **Tests weights** are an ancillary tool to guide your baby’s need for supplementation. Test weights occur before & after feedings for some (but not all) breastfeeds to assess the quantity of milk transferred. Infants are weighed immediately before the feed on an **electronic scale** (with accuracy at minimum –5 grams) & then reweighed immediately after the feed under the exact same conditions (wearing the same clothes & diaper).
- Studies have documented that the weight difference found before & after breastfeeding is remarkably close to the actual intake from the breast. This number helps to **guide the amount of supplementation** needed (in addition to take taken in at the breast) to provide adequate nutrition to your baby.
- As the late preterm baby advances in his or her nursing ability, increased time breastfeeding can be added depending on your baby’s growth, strength & stamina. Each day the medical staff will assess percent of weight loss, hydration status, serum glucose & bilirubin levels.
- Your baby may **lose up to 10 to 12% of their birth weight** in the first days & few weeks.
- Parents should not expect **feeding competency** & temperature stability to be seen within the first 48 hours after delivery. Most late preterm babies do not achieve this until they are 36 to 37 weeks corrected age or later.

MINIMAL DISCHARGE CRITERIA

- Late preterm & early term infants require **close follow up** in the early postpartum period. The first follow-up appointment or home health visit should normally occur within 1 or 2 days after hospital discharge.
- If your baby is breastfeeding well, has a normal physical exam, has lost a normal amount of weight (less than 10%), & blood work is acceptable, he or she can be discharged. Some other things will need to be accomplished, prior to discharge, however.
- **Car seat safety** is best accomplished by direct observation of your baby in their car seat for at least one hour. Many late preterm babies do not fit securely into their car seat & may show oxygen desaturations during testing. Up to **15% of late preterm babies will have apnea & bradycardia** while in their car seat. This finding will delay your baby's discharge.
- Your baby's passage of at least one stool & demonstrating at least 24 hours of successful feeding, either at the breast or by bottle is usually required. Dehydration must be ruled out, & specific amounts of supplementation prescribed, when there is weight loss greater than 10%.
- If a **circumcision** is done, there should be no bleeding for at least four hours after the procedure, & your baby should void within 24 hours. A final serum bilirubin & risk assessment for severe hyperbilirubinemia (on the nomogram), with a specific timed follow-up appointment will be required.
- **Hepatitis B immunization** can be given at hospital discharge or in the office at the one month follow up visit. The **state metabolic newborn screening test** must be obtained & a **hearing screening** test will be performed. Babies who do not pass their hearing screening will be rescheduled for repeat screen &/or follow-up with an audiologist.

YOUR LATE PRETERM BABY'S RISK FOR HOSPITAL READMISSION

- Late preterm babies are at **high risk for hospital readmission** if they are breastfeeding poorly, previously had jaundice in nursery after birth, or had a truly short hospital stay (less than 48 hours).
- Most late preterm babies are readmitted to hospital for jaundice, &/or dehydration.
- Late preterm babies who were never cared for in the NICU also have higher rates of readmission. Late preterm babies who are of East Asian decent or born to a diabetic mother will also be at high risk of readmission.

CARE OF YOUR LATE PRETERM BABY AT HOME

- Once your baby is discharged to home, you will be advised to keep a **recorded log of feedings** at home, with specific attention to frequency & approximate duration of feeding at the breast, & method & type (expressed breast milk, infant formula) of supplementation.
- It is helpful to **record daily stool & urine output**, color of stools, & the infant's behavior (e.g., crying, not satisfied after a feed, sleepy & difficult to keep awake at the breast during a feed, etc.).
- If the parents have a **written feeding record**, it is extremely helpful to your healthcare provider. Your infant will be examined carefully, noting state of alertness & hydration. An accurate infant weight without clothing will be used to calculate percentage change in weight from birth & change in weight from hospital discharge.
- **Poor weight gain (<20 g/day) is almost always the result of inadequate milk intake.** The median daily weight gain of a healthy full-term newborn is 28–34 g/day. Your baby's healthcare provider will determine whether the problem is insufficient milk production, inability of the infant to transfer sufficient milk, or a combination of both.
- The infant who is **getting enough breast milk** should have at least 6 voids & 3 to 4 sizable yellow, seedy stools **daily** by day 4. He or she should be satisfied after 20 to 40 minutes of breastfeeding. Your baby will be expected to have an age-appropriate weight loss & weight gain (once effective feeding is achieved).
- A **10% weight loss** may be acceptable in larger, healthy late preterm or early term infants who are effectively breastfeeding & whose mother is achieving adequate breastmilk supply.
- In some situations, a maximum of **7% weight loss** is more appropriate for the smaller &/or IUGR (intrauterine growth restricted) infant.
- Your healthcare provider or LC will assess **mother's breasts** for nipple shape, pain, trauma, engorgement, & mastitis. The **mother's emotional state** & degree of fatigue will be considered, especially when determining supplemental feeding routines.
- Whenever possible at follow up visits, your baby will be **observed feeding at the breast**, for complete evaluation of latch, suck, & swallow.
- The process of **transitioning from expressing breastmilk & supplemental feeds to exclusive breastfeeding** can be extremely challenging & often exhausting for some parents.
- Mothers should not taper breastmilk expressing sessions too rapidly to ensure the maintenance of a generous milk supply that will allow for more effective milk transfer.
- **Poor weight gain (<20 g/day)** is almost always due to inadequate breastmilk transfer. The response to this is usually to begin or to increase frequency of expressing breastmilk (by hand or pumping), especially after a breastfeed.
- Parents will need to explore ways for the mother to relax while expressing her milk. It is helpful to arrange for help with other chores & for mother to get more sleep.
- The **triple feeding regimen** (breastfeeding, followed by supplementation & then expressing) for every feed is effective, but some mothers cannot sustain this physically & emotionally, especially if she has limited support at home.
- **Electronic scales for performing test weights** can be rented for home use.

- Your physician may consider the use of a **galactagogue** (a medicine or herb to increase your milk supply) if there is documented low breast milk supply despite all other efforts to increase milk production.
- Infants who are not gaining weight well & for whom adjustments are being made to the feeding plan must be evaluated by healthcare professional frequently (e.g., daily or every 2–3 days depending on the situation) after each feeding adjustment either in the clinic or office, or by a home healthcare provider with feedback to the primary care provider.
- The late preterm infant should have **weekly weight checks** until 40 weeks of corrected age or until he or she is thriving. **Weight gain should average 20–30 g/day**, & length & head circumference should each increase by an average of 0.5 cm/week.
- Breastfed late preterm infants are at increased risk for **iron deficiency** & iron deficiency anemia compared with term infants, & **routine iron supplementation** is recommended.
- **Multiple gestations** (twins, triplets etc.) more often result in preterm or late preterm birth. The issues of having enough breast milk for two or more infants & feeding two babies at the breast are more challenging than managing a singleton baby. Supplemental feeds are more frequently required.
- The mother of **late preterm twins** will usually not be able to feed them in tandem until they are older & each baby is effectively feeding at the breast alone. This is due to their immaturity & need for more help with positioning, latch, & continued attention during a feed.
- Some mothers will never produce enough milk to exclusively breastfeed more than one infant, & those infants will need supplementation with donor human milk or infant formula. Your healthcare provider will assist you throughout this process.



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