



April 18, 2015

Dear Colleague and Parent:

My name is Christie del Castillo-Hegy and I am an emergency physician, former NIH scientist, with a background in newborn brain injury research at Brown University, and mother to a 6-year-old child who is neurologically disabled.

I am writing you because my child fell victim to newborn jaundice, hypoglycemia and severe dehydration due to insufficient milk intake from exclusive breastfeeding in the first days of life.

As an expectant mom, I read all the guidelines on breastfeeding my first-born child. Unfortunately, following the guidelines and our pediatrician's advice resulted in my child going 4 days with absolutely no milk intake requiring ICU care. He was subsequently diagnosed with multiple neuro-developmental disabilities. Being a physician and scientist, I sought out peer-reviewed journals to explain why this happened. I found that there is ample evidence showing the links between neonatal jaundice, dehydration, hypoglycemia and developmental disabilities. I wish to explain to you how I believe this could apply to my son and the many children whose care you are entrusted with.

My son was born 8 pounds and 11 ounces after a healthy pregnancy and normal uneventful vaginal delivery. He was placed directly on my chest and was nursed immediately. He was nursed on demand for 20-30 minutes every 3 hours. Each day of our stay in the hospital, he was seen by the pediatrician as well as the lactation consultant who noted that he had a perfect latch. He produced the expected number of wet and dirty diapers. He was noted to be jaundiced by the second day of life and had a transcutaneous bilirubin of 8.9. We were discharged at 48 hours at 5% weight loss with next-day follow-up. We were told by the lactation consultant before discharge that he would be hungry and we were instructed to just keep putting him on the breast. Upon getting home, he became fussy and I nursed him longer and longer into the night. He cried even after nursing and latched back on immediately. He did not sleep. By the next morning, he stopped crying and was quiet. We saw our pediatrician at around 68 hours of life (end of day 3). Despite producing the expected number of wet and dirty diapers, he had lost 1 pound 5 ounces, about 15% of his

birth weight. At the time, we were not aware of and were not told the percentage lost, and having been up all night long trying to feed a hungry baby, we were too exhausted to figure out that this was an incredible amount of weight loss. He was jaundiced but no bilirubin was checked. Our pediatrician told us that we had the option of either feeding formula or waiting for my milk to come in at day 4 or 5 of life. Wanting badly to succeed in breastfeeding him, we went another day unsuccessfully breastfeeding and went to a lactation consultant the next day who weighed his feeding and discovered that he was getting absolutely no milk. When I pumped and manually expressed, I realized I produced nothing. I imagined the four days of torture he experienced and how 2 days of near-continuous breastfeeding encouraged by breastfeeding manuals was a sign of this. We fed him formula after that visit and he finally fell asleep. Three hours later, we found him unresponsive. We forced milk into his mouth, which made him more alert, but then he seized. We rushed him to the emergency room. He had a barely normal glucose (50 mg/dL), a severe form of dehydration called hypernatremia (157 mEq/L) and severe jaundice (bilirubin 24 mg/dL). We were reassured that he would be fine, but having done newborn brain injury research, knowing how little time it takes for brain cells to die due to hypoglycemia and severe dehydration, I did not believe it, although I hoped it.



*Born healthy, full-term weighing 8 pounds 11 ounces getting skin-to-skin and immediate breastfeeding after birth*



*Second day of life looking jaundiced and smaller*



*Third day of life after the pediatrician visit. He was no longer crying and he was jaundiced and dehydrated with 15% weight loss. We were reassured that we could keep exclusively breastfeeding*



*Hypernatremic dehydration and encephalopathy from brain injury. Blank staring is a hallmark of newborn brain injury.*

At 3 years and 8 months, our son was diagnosed with severe language impairment, autism, ADHD, sensory processing disorder, low IQ, fine and gross motor delays. He was later diagnosed with a seizure disorder associated with injury to the language area of the brain. Since my child's diagnosis, I have been researching the scientific literature on breastfeeding insufficiency, newborn starvation, brain injury and developmental disabilities for over three years. In addition, I have collected the breastfeeding stories of tens of thousands of women through social media.

In the September, 2015 issue of [Hospital Pediatrics](#), an article was published describing 11 exclusively breastfed newborn babies who developed profound hypoglycemia between the second and fifth day of life from insufficient breast milk intake. The child described in the body of the article was a healthy full-term baby who presented just like my son. He was seen on the third day of life at his pediatrician's office. Despite that, he was found on the fourth day of life lethargic and unable to feed. He had lost 10% of his birth weight and had a low glucose of 20 mg/dL (normal > 47 mg/dL). This child was given IV glucose after which he developed a seizure. They obtained a brain MRI which showed extensive areas of injury to almost the entire brain. In addition to this child, 10 other healthy term newborns

were identified to have developed hypoglycemia from insufficient breastfeeding as well. They were found lethargic, seizing, hypothermic and/or not breathing. 5 out of the 6 MRIs obtained in these babies showed widespread injury to a third to almost the entire brain in varying patterns. They subsequently developed long-term neurological disabilities including seizure disorders, motor weakness, visual impairment and feeding difficulties requiring speech therapy.

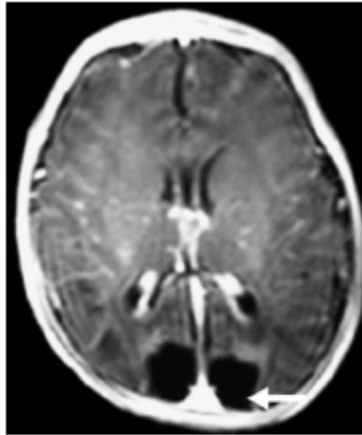
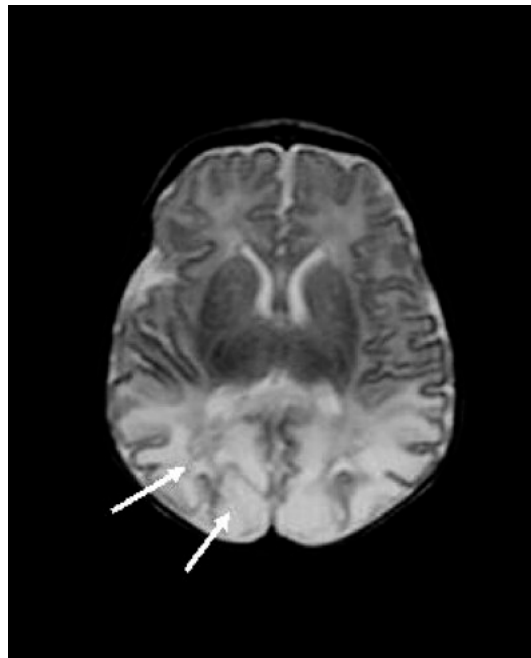


Fig. 1 T1 weighted axial MR image of brain at level of occipital horns showing abnormal hypointense areas in bilateral occipital lobes and parieto-occipital region

*The brain MRI of an exclusively breastfed baby who developed lethargy and hypoglycemia (20 mg/dL) by day 3 of life from insufficient breast milk intake. The dark areas in the posterior part of the brain are the areas of missing brain tissue that resulted one month after the episode of hypoglycemia*



*Brain MRI of acute hypoglycemic brain injury. The light appearance in the posterior part of the brain is swelling and injury caused by caloric deprivation to brain cells due to hypoglycemia.*

The answer to the epidemic of developmental disabilities we are seeing may be found in this vulnerable period. The risk factors for neurological disabilities in children all have to do with brain injury caused by excessive jaundice, loss of oxygen, circulation and glucose delivery to the brain. These include pre-eclampsia, intrauterine growth retardation and prematurity, which are caused by poor function of the placenta and decreased circulation to the baby. Hypoglycemia, umbilical cord prolapse, nuchal cord (cord wrapped around the neck), fetal distress, low Apgar scores, respiratory distress and other labor complications, events that all cause perinatal brain injury also cause long-term neurological disabilities. Although there are many causes of newborn brain injury that we have no control over, we have control over whether or not a child is fed enough for all their neurons to survive. I believe we may be inducing hypoglycemic brain injury to many newborns by asking mothers who may not be producing sufficient milk for their newborn's physiologic need to exclusively breastfeed. We are potentially putting ourselves at odds with the protective natural instinct to respond to a baby's cry by telling mothers that their colostrum is enough (which for many it may not be) and by making them fear failure by giving their child supplementation when they need it.

My child's story is not rare. In a [study of 280 mother-baby dyads](#), 22% of motivated mothers intending to exclusively breastfeed who received close lactation support experienced delayed onset of copious milk production, or lactogenesis II, which put her child at 7-fold increased risk of excessive weight loss greater than 10%. This means more than 1 in 5 newborns are at risk of starvation-related complications if exclusively breastfed from birth. In [another study](#), it has been found that 10% of well-monitored exclusively breastfed babies undergoing the Baby-Friendly Hospital Initiative protocol develop hypoglycemia of less than 40 mg/dL within the first 48 hours. This incidence was even higher in babies born to first-time mothers as 23% developed hypoglycemia. This level of hypoglycemia has been shown in other studies to result in brain injury on MRI and long-term declines in cognitive function. One study showed that a [glucose of less than 46 mg/dL](#) within the first 24 hours of life was associated with a 3.7-fold increased risk of brain injury on MRI and a 4.8-fold increased odds of lower motor, cognitive and language scores at 1 year of age. This cognitive impairment persists as evidenced by another [study of 1395 newborns](#) showing that newborns who develop transient hypoglycemia of less than 40 mg/dL had a 50% reduction in passing their fourth-grade proficiency test in literacy and math. Even a glucose less than 45 mg/dL resulted in a 38% reduction in passing the literacy test. The current standard of care [tolerates a glucose between 40 and 45 mg/dL](#) within the first 4 hours of life when there is no evidence that neurons have greater tolerance for hypoglycemia in the first hours than they do at any other time.

I hope you feel the same sense of urgency that I do. Since we received our diagnosis, I have come to personally know 43 mothers whose children experience starvation-related complications from exclusive breastfeeding, including pediatricians, other doctors, nurses and lactation consultants. All of them have children with long-term neurodevelopmental impairments. While the literature cites poor education in breastfeeding as the cause of these starvation-related complications, in my research of breastfeeding mothers, it is the most educated in breastfeeding that are at highest risk. The least educated will respond to



a baby's cry by offering a bottle. The mothers that are most educated in breastfeeding are the ones who have been taught that offering just one bottle will ruin her breastfeeding and potentially harm her child. I have learned that this is a distortion of reality created by breastfeeding education to pressure mothers to exclusively breastfeed that can put her child's life at risk.

I am writing to let you know I believe the current practice guidelines are dangerous. My son suffered an incredible amount of weight loss by the third day, which is often when mothers produce milk. How many newborns are experiencing this same fate? To date, there are no rigorously done studies on the safety of newborn weight loss and exclusive breastfeeding before lactogenesis II on the newborn brain. In fact, a study has shown that exclusive breastfeeding at discharge is associated with an [11-fold higher risk of rehospitalization](#) for underfeeding and dehydration. In addition, the [Academy of Breastfeeding Medicine jaundice protocol](#) clearly states that 10-18% of exclusively breastfed baby develop starvation jaundice from insufficient milk intake, a fact disclosed by no breastfeeding manual. While the epidemiological literature has found that moderate to severe jaundice, hypernatremic dehydration and hypoglycemia are risk factors for long-term disability, we need more data looking at the prevalence of specific developmental disabilities in insufficiently fed exclusively breastfed newborns versus supplemented newborns, so we can be absolutely certain of the effects of poor feeding on a newborn's long-term neurological outcomes.

I would like to advocate for a patient safety initiative to increase monitoring and supplementation to prevent adverse neurologic conditions in all exclusively breastfed newborns as described by the following:

- 1) Mothers should be instructed on how to manually express to confirm presence of milk, which is available [through this link](#). Any baby whose mother has little to no colostrum should be offered supplementation immediately.
- 2) Twice daily weighing for exclusively breastfed newborns in the hospital and at home as it has been shown that the least-fed newborns can lose the maximum recommended [weight loss of 7% within the first 24 hours](#). This practice should be continued at home until breastfeeding meets the child's full metabolic requirement as signaled by the onset of daily weight gain. The 7% weight loss threshold should be provided to the mother to help signal the need for supplementation in the hospital and at home.
- 3) Universal daily transcutaneous bilirubin checks and glucose monitoring while in the hospital for exclusively breastfed newborns before the onset of daily weight gain as the scientific literature has now identified them as a [high-risk population for hypoglycemia](#). The physical exam is insufficient to rule out hypoglycemia and pathological hyperbilirubinemia. Any inconsolable child should also have a glucose check as this is an often-missed sign of hypoglycemia. Supplementation with breast milk or formula as well as IV glucose should be given immediately at a [glucose level less than 47 mg/dL](#) as this is the only prospectively validated glucose threshold that if corrected immediately prevents the development of developmental delay. Supplementation should also be offered for bilirubin levels exceeding 15 mg/dL or any level considered high risk on the [bilirubin](#)

nomogram. Not only does supplementation for underfed newborns protect a child's brain and stabilize glucose but it also doubles the rates of exclusive breastfeeding at 3 months.

4) Pre- and post-breastfeeding weights after lactogenesis II to measure the amount of milk transferred to the baby. The caloric requirement of a newborn baby is 100-120 kcal/kg/day and a mother's production should be around 2 ounces per feed every 3 hours to meet that demand. This is roughly 5.5 oz/kg/day (2.5 ounces/lb/day, please use kg to prevent feeding errors). Some babies with medical conditions may need more than the above volumes.

5) Next day after discharge follow-up with pediatricians and lactation consultants with universal bilirubin and glucose checks in the office. Children who are crying inconsolably at home especially before lactogenesis II should be supplemented after nursing UNTIL they reach their health care provider in order to prevent the development of hypoglycemia, dehydration and negative neurological consequences.

6) I advocate for mothers to be informed of the possibility that her child can become dehydrated, jaundiced and hypoglycemic from insufficient breast milk intake and that these conditions can cause developmental and neurological disability. Signs of this are a child that is not sleeping or crying repeatedly after breastfeeding as well as nursing near-continuously. Lethargy, poor feeding, seizures, hypothermia (low body temperature) and bradycardia (slow heart rate) are late signs that suggest the presence of profound brain injury from near-complete glucose deprivation to the brain. Lethargic hypoglycemic babies deserve a brain MRI to provide vital information to parents so that they can closely monitor their development and obtain early intervention as needed.

7) Every mother should be educated on supplementation after nursing in order to continue the stimulation needed to promote milk production in case the need for supplementation arises, particularly before discharge if lactogenesis II has not occurred. If a child is hypoglycemic, greater than 7% below the birth weight, hyperbilirubinemic, hypernatremic or crying inconsolably out of hunger, supplementation can be offered 15 mLs at a time as the newborn stomach has been in fact measured to be 20 mL in size at birth, much larger than commonly taught to mothers and health professionals. Supplementation should be offered until a child's laboratory markers are corrected and the child is no longer in distress. A child's brain will not wait for food. Once the child is adequately fed, the breastfeeding may then be evaluated to identify the cause of underfeeding. Supplemented breastfeeding is a valid choice as NO BENEFIT of exclusive breastfeeding justifies the risk of life-long disability caused by hypoglycemic brain injury. Any mother sent home without a supplementation plan is being sent home to potentially starve and disable her child if her milk does not arrive on time.

Mothers are taught by breastfeeding manuals that they will uniformly be able to produce enough milk for their baby's needs and will feed them near-continuously for weeks without question if their doctors and lactation consultants tell them not to give formula. But as you have witnessed as a matter of routine, breastfeeding jaundice is very common and mothers do not uniformly produce enough milk for their babies' needs. The learned wisdom of grandparents who know instinctively the sound of a hungry baby is being supplanted by

breastfeeding manuals that cannot teach that sound to the new parent. If you observe non-Western cultures all around the world, babies are given [pre-lacteal feeds](#) or [milk through wet nurses](#) when mother's milk is not enough in the first days of life because instinctively, we as a species protected our newborns by responding to their hungry cry. Thousands of years of evolution have wired mothers to respond to this cry and we are interfering with a biologically protective instinct by telling mothers that their child is getting enough when it is apparent to them that they are not. Babies get admitted to the ICU lethargic, jaundiced and dehydrated every day because their mother did not know it was possible to have insufficient milk. The scientific literature has shown that [1-6%](#) of breastfed babies all around the world are rehospitalized for complications associated with exclusive breastfeeding in the first days of life. The most recent publication on hospitalizations for newborn jaundice at a Baby-Friendly hospital system showed that out of 104,460 babies born in a 3 year period, 10,583 or 1 in 10 babies were [hospitalized for phototherapy](#), the majority of these cases completely preventable with early supplementation. That means millions of babies have been hospitalized since the 1991 publication of the Baby-Friendly Hospital Initiative which codified this protocol. The Baby-Friendly Hospital Initiative and the WHO breastfeeding protocol protects the breastfeeding more than it protects the baby and countless babies have endured days, weeks and even months of hunger in order to meet its goals.

The time for magical thinking has ended. Breastfeeding education is based on many premises not consistent with reality. No time in the history of this planet have we allowed babies to cry out for milk for as long as we tolerate for the purpose of breastfeeding. The first law of nature is and has always been that Fed is Best. Many parents are led to harm their own babies because of what they have been taught about breastfeeding. As you can see, if such a severe case of jaundice and dehydration can occur to two physicians taking home their first-born son, it can happen to anyone.

To all doctors and parents, my message is simple. Feed your baby. Provide your baby its physiologic needs every minute, including the days before milk production. The only person who knows what a newborn needs is that newborn. The accidental starvation of a newborn child is a tragedy by any definition. We are allowing newborns to receive less than their nutritional requirement and telling parents that they are doing what is best for their children. We must be certain an infant is actually getting fed by every available mean. I hope you join me in informing your colleagues, friends and family of the data and make changes to your practice. Please feel free to share this letter with whomever you wish.

Respectfully,  
Christie del Castillo-Hegy, MD  
[christie@fedisbest.org](mailto:christie@fedisbest.org)

The citations to scientific articles referred to in the letter are available through the links found within the text of the article.



**To learn how to prevent newborn feeding complications, please go to the following:**

- [Resources for Parents](#) – information on how to supplement while maintaining the breastfeeding relationship and how to closely monitor infants for underfeeding
- [Feeding Plan](#) – a way to communicate your feeding preferences to your health providers
- [Weighing Protocol](#) – a way to monitor your baby's growth and prevent dehydration

**To learn more about the Fed is Best Foundation, please go to our [About](#) page.**



THE  
**FED IS BEST**  
FOUNDATION

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# THE BRAIN-PROTECTIVE GUIDE TO INFANT FEEDING



## FEEDING PLAN



I do not want my baby to  
lose greater than 7% of  
their birth weight.

Birth weight \_\_\_\_\_kg

7% wt. loss \_\_\_\_\_kg

$(BW \times 0.93)$

*ex.  $3\text{ kg} \times 0.93 = 2.79\text{ kg}$*

Patient: \_\_\_\_\_  
DOB: \_\_\_\_\_



## FEEDING PLAN FOR MY BABY

Name of baby: \_\_\_\_\_ DOB: \_\_\_\_\_

I wish to get assistance from my nurses, doctors and lactation consultants to achieve my feeding goals without risking my child's health. I am aware that the most common reason an exclusively breastfed (EBF) newborn is rehospitalized is due to problems with insufficient feeding. I am aware that 22% of mothers have been found to have delayed onset of copious milk production, which puts her child at 7-fold risk of complications. I wish to feed my child to optimize my feeding success and minimize the risks of feeding complications. Outlined below are my feeding goals and what I would like to do if problems arise during the course of my child's feeding.

### MY CURRENT RISK FACTORS FOR FEEDING COMPLICATIONS, PATHOLOGICAL JAUNDICE AND/OR REHOSPITALIZATION ARE THE FOLLOWING: [1][2][3]

<u>Risk Factors for Feeding Complications:</u>	<u>Risk Factors for Pathological Jaundice or Hyperbilirubinemia:</u>
<input type="checkbox"/> First-time mother	<input type="checkbox"/> First-time mother
<input type="checkbox"/> Exclusive breastfeeding	<input type="checkbox"/> Exclusive breastfeeding
<input type="checkbox"/> Cesarean section	<input type="checkbox"/> History of low milk supply, delayed or failed lactogenesis II
<input type="checkbox"/> Complicated/prolonged labor > 12 hrs	<input type="checkbox"/> Rapid or excessive weight loss
<input type="checkbox"/> History of low milk supply, delayed (>72 hours) or failed lactogenesis II	<input type="checkbox"/> Prior history of jaundiced newborn
<input type="checkbox"/> Pre-term baby (< 37 weeks gestation)	<input type="checkbox"/> Male gender
<input type="checkbox"/> Small-for-Gestational-Age baby/IUGR	<input type="checkbox"/> Maternal age $\geq 25$
<input type="checkbox"/> Large-for-Gestational Age baby	<input type="checkbox"/> Asian race
<input type="checkbox"/> Diabetes	<input type="checkbox"/> Jaundice within the first 24 hours
<input type="checkbox"/> Hypertension	<input type="checkbox"/> Jaundice before discharge
<input type="checkbox"/> Obesity	<input type="checkbox"/> Pre-term baby < 37 weeks
<input type="checkbox"/> Smoking	<input type="checkbox"/> Gestation 37-38 weeks
<input type="checkbox"/> Hypothyroidism	<input type="checkbox"/> Large-for-Gestational Age baby
<input type="checkbox"/> Hypopituitarism	<input type="checkbox"/> Small-for-Gestational Age baby
<input type="checkbox"/> Polycystic ovarian syndrome	<input type="checkbox"/> Blood type incompatibility, G6PD deficiency, other hemolytic disease
<input type="checkbox"/> Prior breast surgery/injury	<input type="checkbox"/> Cephalohematoma or bruising and swelling on the scalp from birth
<input type="checkbox"/> Minimal growth of breast tissue during pregnancy (breast hypoplasia), tubular or asymmetric breasts	<input type="checkbox"/> Vacuum-delivery
<input type="checkbox"/> Infertility history	<input type="checkbox"/> Discharge at 48 hours or less
<input type="checkbox"/> Excessive blood loss during delivery or low blood pressure	
<input type="checkbox"/> Psychosocial considerations that may interfere with nursing	
<input type="checkbox"/> Retained placenta	

Patient: \_\_\_\_\_  
DOB: \_\_\_\_\_



I understand the risks of exclusive breastfeeding before onset of copious milk production include increased incidence and severity of jaundice, dehydration, excessive weight loss, hypernatremia, hypoglycemia and possible brain injury if my child gets insufficient breast milk. initial \_\_\_\_\_

I understand the risks of supplementation include insufficient breast milk supply if my child is supplemented without continuing the frequent breastfeeding (or self expression or bilateral breast pumping, if indicated) needed to stimulate milk production and theoretical changes to the gut microbiome. initial \_\_\_\_\_

**1. I wish to: (choose one)**

- ☐ Breastfeed while supplementing until my milk comes in, then exclusively breastfeed thereafter
- ☐ Exclusively breastfeed from birth
- ☐ Extended mixed-feeding with breast milk and formula (combo-feeding)
- ☐ Formula-feed exclusively

**2. I want to know the birth weight in kilograms at birth so that I may calculate the 4% and the 7% weight loss thresholds. 4% weight loss at 24 hours and 7% weight loss by 48 hours predicts the development of hyperbilirubinemia (>15 mg/dL), which may require treatment with phototherapy.[4] 7% is also the maximum weight loss recommended by the AAP.[5]**

Birth weight \_\_\_\_\_ kg  
4% weight loss \_\_\_\_\_ kg (BW x 0.96)  
7% weight loss \_\_\_\_\_ kg (BW x 0.93)

(No weight loss threshold protects a newborn from [hypoglycemia](#) and its negative effects on the brain. Only glucose checks and providing sufficient calories protects against hypoglycemia.)[6]

**3. I wish for my child to not lose greater than (select all that apply):**

- ☐ 4% by 24 hours
- ☐ 7% at any time
- ☐ I wish for my child to be supplemented to their satisfaction and lose as little weight as possible (supplementation must occur only after nursing to stimulate milk production)

**4. I wish for my child to be weighed and would like to know the percent weight loss with each weigh in to prevent excessive weight loss. The highest percentile weight loss in vaginally-delivered exclusively breastfed babies is 7% within 24 hours. [7]**

- ☐ Twice daily to closely monitor weight loss (*recommended for exclusively breastfed babies*)
- ☐ Once daily (*maybe sufficient for combo-fed and formula-fed babies*)

Patient: \_\_\_\_\_  
DOB: \_\_\_\_\_





**5. In order to avoid excessive weight loss, I would like assistance with learning how to feed my child on the first day.**

- ☐ Manual expression of breasts **before every feeding** to check for presence of milk (Video tutorial <http://newborns.stanford.edu/Breastfeeding/HandExpression.html>)
- ☐ Assistance with latch and position
- ☐ Assistance with hearing swallows to ensure intake of milk
- ☐ Assistance with learning how to pump my milk, especially if baby is sleepy at breast and is not actively breastfeeding every 2- 3 hours on both breasts for at least 10-15 minutes.
- ☐ A pre- and post-breastfeeding weight or "weighted feed" to measure the amount my child is gaining in a feeding session after my milk comes in
- ☐ I would like education on formula-feeding
- ☐ I would like education on combo-feeding

**6. In the event that my child reaches the 4% weight loss threshold by 24 hours, I would like to:**

- ☐ Express colostrum/transitional milk and feed it to my child by syringe
- ☐ If little to no milk is present, I would like to offer screened and pasteurized donor milk if available and if my child has medical indication for it (prematurity)
- ☐ If little to no milk is present, I would like to supplement my child with my preferred formula (see below)
- ☐ I would like assistance to assess the breastfeeding before supplementing
- ☐ I would like my pediatrician's opinion on supplementation

**7. In the event that my child reaches 7% weight loss at any time, I would like to:**

- ☐ Express colostrum/transitional milk and feed it to my child by syringe / spoon
- ☐ If little to no milk is present, I would like to offer screened and pasteurized donor milk if available and if my child has medical indication for it (prematurity)
- ☐ If little to no milk is present, I would like to supplement my child with formula
- ☐ I would like assistance to assess the breastfeeding before supplementing
- ☐ I would like my pediatrician's opinion on supplementation
- ☐ I would like a "weighted feed" to be done
- ☐ I would like an immediate glucose check

(Note: > 7% weight loss has been associated with the development of pathological hyperbilirubinemia and hypernatremia, which can cause brain injury and developmental disabilities)[4][8]

Patient: \_\_\_\_\_  
DOB: \_\_\_\_\_



8. **If I am exclusively breastfeeding**, to protect my baby's brain from insufficient milk intake, I would like my child to be monitored:

- ☐ Once daily transcutaneous bilirubin checks (or serum bilirubin test if necessary)  
(the [ABM](#) has cited that 10-18% of EBF newborns experience starvation jaundice from insufficient intake of milk)[9]
- ☐ Glucose monitoring per hospital protocol for high-risk babies (hypoglycemia in healthy, full-term, exclusively breastfed babies has been shown to occur in 1 in 10 babies overall and 1 in 4 first-born babies in the first 48 hours)[10]

9. **If my child appears hungry and unsatisfied at the breast:**

- ☐ I would like an immediate glucose checks and supplementation to maintain a normal glucose above 50 mg/dL. (Note: 47 mg/dL is the only prospectively validated glucose level that has been shown to protect newborns from developing long-term developmental delay. [11] The Pediatric Endocrine Society recommends a threshold of > 50 mg/ dL in the first 48 hours and > 60 mg/dL thereafter)
- ☐ I would like assistance with manual expression to evaluate for presence of milk
- ☐ I would like to supplement with my own breast milk first
- ☐ I would like to supplement with screened and pasteurized donor milk if available to my child
- ☐ I would like to supplement with formula
- ☐ I would like to supplement until my child is satisfied and no longer crying or lethargic (15 mL at a time)
- ☐ I would like to supplement only after nursing sessions to continue stimulation of milk production.

\*The size of the newborn stomach at birth has been found to be 20 mL, much larger than the volumes per feed previously published by the Academy of Breastfeeding Medicine.[12]

10. **If I am supplementing, I would like to supplement by:**

- ☐ Syringe
- ☐ Spoon
- ☐ Supplemental nursing system
- ☐ Bottle (slow-flow, nursing-friendly preferred if breastfeeding)

11. **If I am supplementing, I would like to supplement with:**

- ☐ Screened and pasteurized donor milk if available to my child
- ☐ Elemental formula
- ☐ Hydrolyzed formula
- ☐ Standard formula

12. **Other preferences:**

Patient: \_\_\_\_\_  
DOB: \_\_\_\_\_



- ☐ No pacifiers
- ☐ I want a pacifier for my baby and understand the possibility of nipple confusion or decreased desire to suckle directly at the breasts
- ☐ Rooming-in with my baby
- ☐ Option to sleep during the day / night by sending my child to the nursery so I may recover from delivery for the safety of my baby
- ☐ No bed-sharing while breastfeeding to avoid suffocation.
- ☐ I do not want to be left alone while breastfeeding in bed, while recovering to avoid accidental suffocation.
- ☐ I do not want to be left alone while doing skin-to-skin, while recovering to avoid accidental suffocation (falling asleep, immobility, pain medication effect)

I wish to feed my child in the best way that I can and to reach my feeding goals without risking any harm and rehospitalization. Please help me reach my feeding goals and help protect my child from the dangers of underfeeding.

I have additional concerns and requests:

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Respectfully,

Signature

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Mother's name

Disclaimer: This document does not replace in-person physician evaluation and treatment. This document is meant to inform parents of the most recent data regarding infant feeding and to increase their knowledge on how to protect their newborns from hyperbilirubinemia, dehydration, hypernatremia, hypoglycemia and extended or repeat hospitalizations due to complications from underfeeding. Earlier supplementation may be needed for babies who are premature or have medical conditions. It is recommended that a parent seeks evaluation by a pediatrician for any concerns regarding the health and safety of her baby if they arise.  
initial \_\_\_\_\_

Note: Many errors can be made when using pounds and ounces for weight. You can convert pounds and ounces to kilograms with the following equation: (Weight in lbs + ounces/16) divided by 2.2 = weight in kilograms. Or go to the following weight converter:

[http://www.retrowow.co.uk/retro\\_britain/old\\_money/pounds\\_to\\_kilograms.html](http://www.retrowow.co.uk/retro_britain/old_money/pounds_to_kilograms.html)

#### TRACKING BABY TO PROTECT THE BRAIN

Patient: _____
DOB: _____



Hours/ Time	Birth	12 hrs	24 hrs	36 hrs	48 hrs	60 hrs	72 hrs
Glucose (Normal > 50 mg/dl)							
Bilirubin* (see chart)							
Weights# (kg)/% loss							

\*To calculate the bilirubin risk category, please go to <http://bilitool.org> or the see last page.

#To calculate the percent weight loss, go to <https://www.newbornweight.org>.

**Percent weight loss = (Birth weight - current weight)/birth weight x 100%)**

## HOW TO SUPPLEMENT AFTER NURSING TO CONTINUE THE STIMULATION NEEDED FOR MILK PRODUCTION

*Please consult with a lactation consultant, nurse or breastfeeding educator to optimize breastfeeding technique. Medical necessity for supplementation is primarily based on the judgment of a pediatrician, who is the only person qualified to protect your child's brain from underfeeding. **However, the person with the ultimate authority over supplementation is the mother.** Early limited supplementation after nursing has been shown to DOUBLE the rates of exclusive breastfeeding at 3 months for underfed babies, relative to those who are not supplemented.[13]*

- 1. Manually express your breasts to check for presence of breast milk.**
- Breastfeed your baby with optimal latch and positioning for 20-30 minutes every 2-3 hours while assisting your baby through manual expression of your breasts. (see Stanford Video Tutorial)
- If your child needs supplementation, you may do so with either expressed breast milk, donated screened and pasteurized breast milk, if available, or formula. This can be done through the following methods.
  - Supplementing 12 mL at a time with a periodontal syringe slipped into the corner of baby's mouth while baby is latched at the breast.
  - Supplementing 15 mL at a time with a supplemental nursing system, a tube taped to the nipple or slipped into the mouth while baby is latched at the breast.
  - Bottle-feeding 15 mL at a time, ideally through a slow-flow, nursing-friendly bottle.
- Burp baby after each 15 mL feeding to prevent gas and regurgitation.
- Supplement until indications for supplementation and newborn distress are resolved.

Please note that wet and dirty diaper counts are not tracked on this feeding plan because they have not been shown to have any correlation with actual breast milk intake or prevention of excessive weight loss.[14] It is important to track eliminations on the hospital records to be sure your baby is eliminating normally.

## CLINICAL SIGNS OF NEWBORN HYPOGLYCEMIA which causes brain injury if uncorrected

Patient: _____ DOB: _____
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(< 50 mg/dL per the [Pediatric Endocrine Society Guidelines, March 2015](#)) *From Early to Late*

- 10% of EBF babies and 23% of first-born EBF babies have hypoglycemia with no symptoms
- Jitteriness or shakiness, especially with hands
- Prolonged and unsatisfied nursing (>45 minutes)
- Baby wants to nurse constantly, heightens after 24 hours of life
- Inconsolable and high-pitched crying despite nursing
- Low body temperature
- Having weak muscle tone
- Being very sleepy or difficult to arouse
- Falling asleep at breast after a few suckles or needs constant stimulation for a satisfactory breastfeeding session
- Seizures (eyes rolling back in head or jerking rhythmic motions)
- Blueness of skin, usually starting around the mouth
- Poor breathing or cessation of breathing

- 
- [1] [Recognizing and Treating Delayed or Failed Lactogenesis II](#). Nancy M. Hurst, RN, DSN, IBCLC. J Midwifery Womens Health. 2007;52(6):588-594.
- [2] [Management of Hyperbilirubinemia in the Newborn Infant 35 or More Weeks of Gestation. Subcommittee on Hyperbilirubinemia.](#) Pediatrics, July 2004, 114 (1): 297-316
- [3] [Predicting Nonhemolytic Neonatal Hyperbilirubinemia](#). Norman, M, et al. Pediatrics. 2015 Dec;136(6):1087-94. doi: 10.1542/peds.2015-2001. Epub 2015 Nov 9.
- [4] [Bodyweight loss in predicting neonatal hyperbilirubinemia 72 hours after birth in term newborn infants](#). Wen-Chieh Yang et al., BMC Pediatrics 2013, 13:145
- [5] [Breastfeeding and the Use of Human Milk](#). AAP Breastfeeding Section, Pediatrics, March 2012, Volume 129 (3): e827-e841.
- [6] [Late-Onset Hypoglycemia in Term Newborns With Poor Breastfeeding](#). Laura M. Seske, et al. Hospital Pediatrics Sep 2015, 5(9) 501-504
- [7] [Early weight loss nomograms for exclusively breastfed newborns.](#), Flaherman VJ et al. Pediatrics. 2015 Jan;135(1):e16-23.
- [8] [Moderate hyponatremic dehydration in newborn infants: retrospective evaluation of 64 cases](#). Uras N et al. J Matern Fetal Neonatal Med. 2007 Jun;20(6):449-52.
- [9] [ABM Clinical Protocol #22: Guidelines for Management of Jaundice in the Breastfeeding Infant Equal to or Greater Than 35 Weeks' Gestation](#) BREASTFEEDING MEDICINE 2010. 5 (2): 87-93
- [10] [Study of Asymptomatic Hypoglycemia in Full Term Exclusively Breastfed Neonates in First 48 Hours of Life](#). Purnima Samayam, et al. J Clin Diagn Res. 2015 Sep; 9(9): SC07-SC10. Published online 2015 Sep 1.
- [11] [Neonatal Glycemia and Neurodevelopmental Outcomes at 2 Years](#). Christopher J.D. McKinlay, Ph.D., et al. N Engl J Med 2015;373:1507-18. DOI: 10.1056/NEJMoa1504909
- [12] [Neonatal stomach volume and physiology suggest feeding at 1-h intervals](#). Bergman NJ. Acta Paediatr. 2013 Aug;102(8):773-7. [13] [Effect of early limited formula on duration and exclusivity of breastfeeding in at-risk infants: an RCT](#). Flaherman, V.J., et al. (2013). Pediatrics, 2013. 131: 1059-1065.
- [14] [Newborn Wet and Soiled Diaper Counts and Timing of Onset of Lactation as Indicators of Breastfeeding Inadequacy](#). Laurie A. Nommsen-Rivers, PhD, et al. J Hum Lact 24(1), 2008

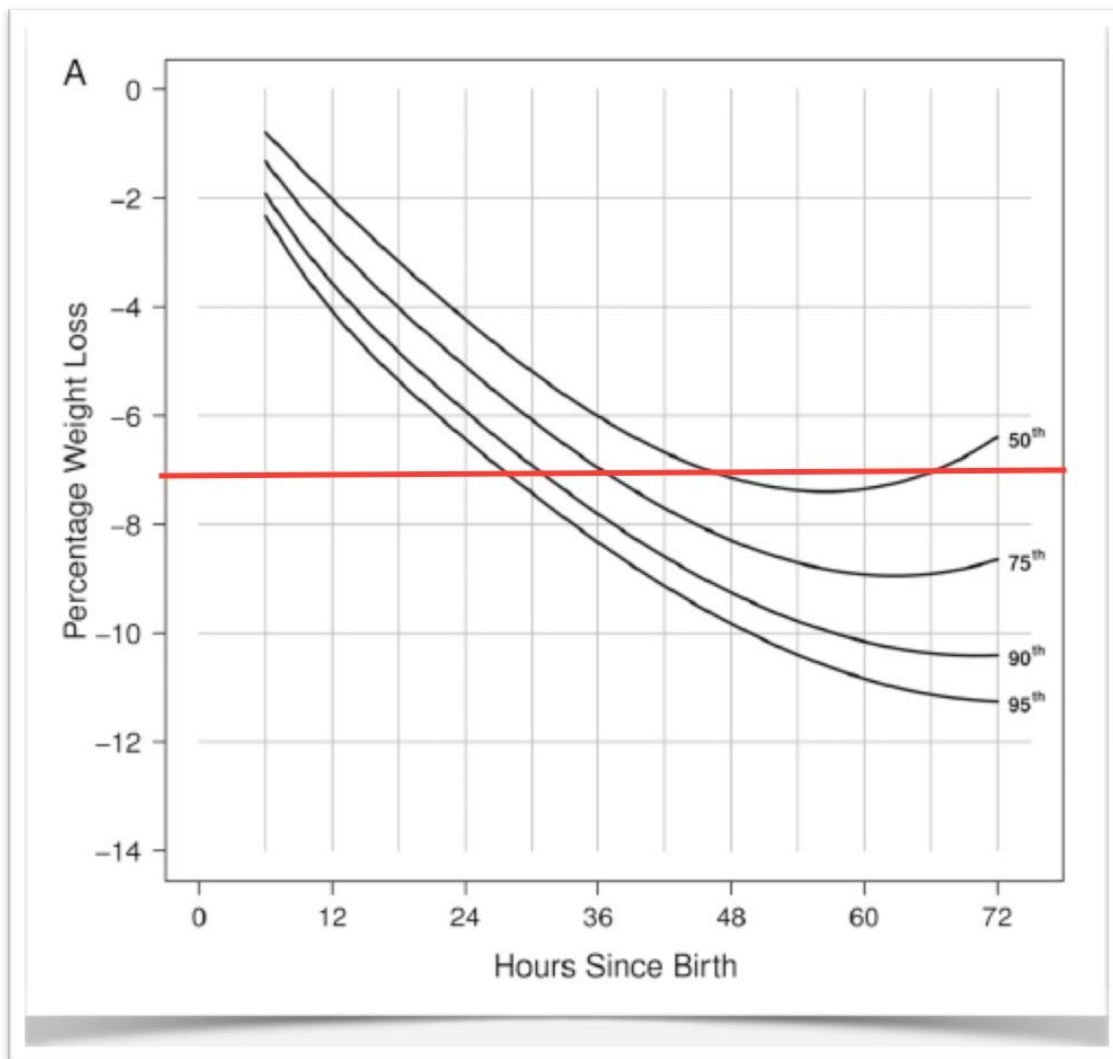
Patient: \_\_\_\_\_  
DOB: \_\_\_\_\_





## WEIGHT LOSS NOMOGRAM FOR EXCLUSIVELY BREASTFED VAGINALLY-DELIVERED NEWBORNS [7]

(Red line indicates 7% threshold)



To calculate the newborn weight loss percentage, go to <https://www.newbornweight.org>

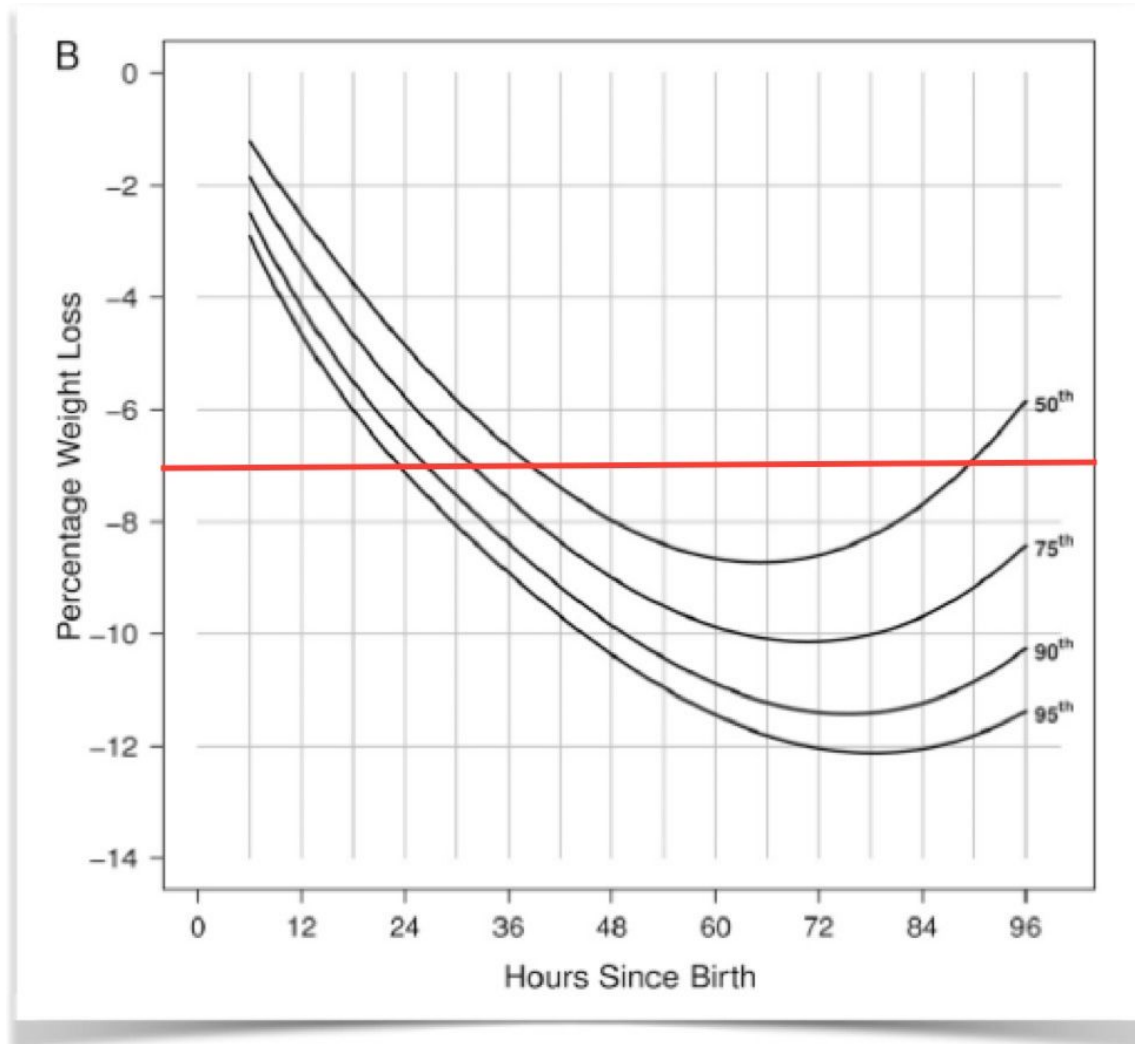
Note: This weight loss nomogram has not been tied to clinical outcomes. Therefore, a child at the 50% percentile can still experience complications like hyperbilirubinemia and hypoglycemia. Every child has their own tolerance for weight loss. A child that is crying inconsolably and displaying signs of distress may in fact require supplementation sooner than 7%.

Patient: \_\_\_\_\_  
DOB: \_\_\_\_\_



## WEIGHT LOSS NOMOGRAM FOR EXCLUSIVELY BREASTFED CESAREAN DELIVERED NEWBORNS [7]

(Red line indicates 7% threshold)

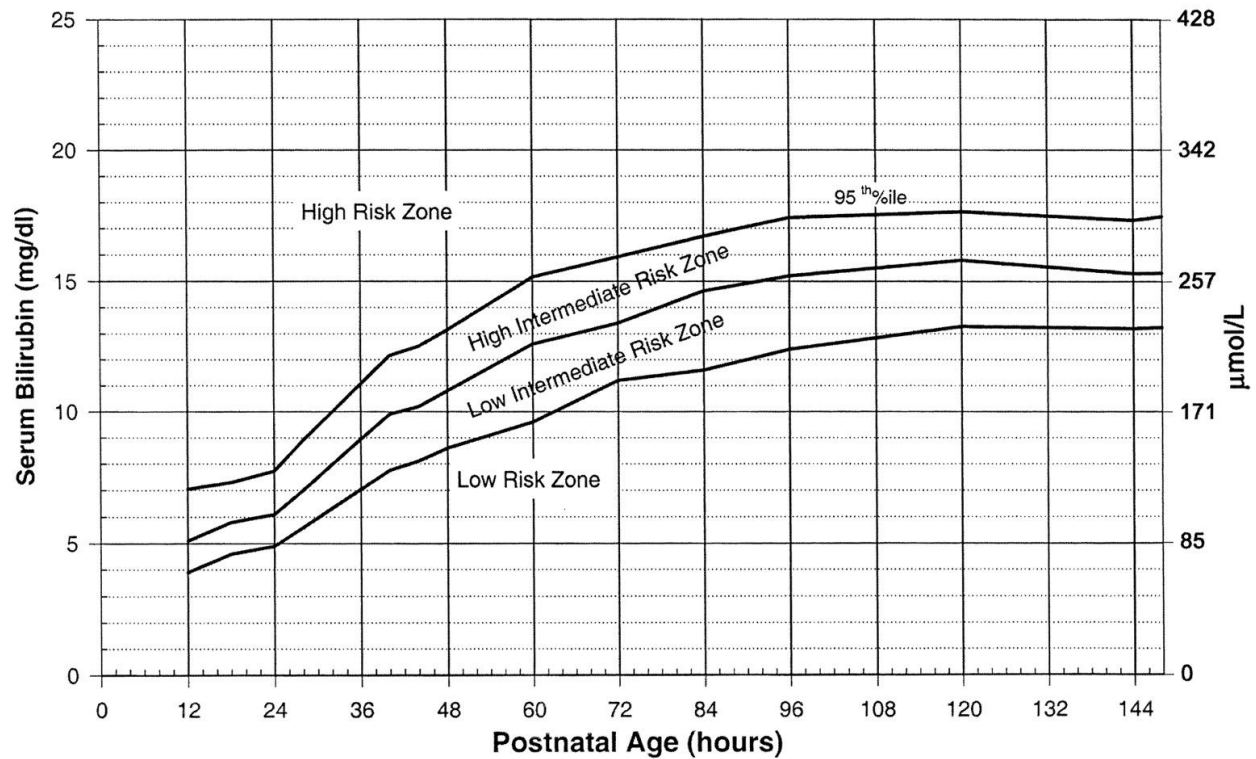


To calculate the newborn weight loss percent, go to <https://www.newbornweight.org>

Note: This weight loss nomogram has not been tied to clinical outcomes. Therefore, a child at the 50% percentile can still experience complications like hyperbilirubinemia and hypoglycemia. Every child has their own tolerance for weight loss. A child that is crying inconsolably and displaying signs of distress may in fact require supplementation sooner than 7% weight loss.

Patient: \_\_\_\_\_  
DOB: \_\_\_\_\_

# SERUM BILIRUBIN NOMOGRAM BY HOUR



\*To calculate the bilirubin risk category on the Bhutani nomogram, please go to <http://bilitool.org>

Patient: \_\_\_\_\_  
 DOB: \_\_\_\_\_



# THE FED IS BEST FOUNDATION

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**Recent data trends show a concerning rise in hospitalizations among exclusively breastfed newborns. This is due to feeding complications from insufficient breastmilk intake, including jaundice, hypoglycemia, and dehydration – which can threaten a newborn’s brain.**

**Know the signs to look for when your baby is HUNGRY. In the first days of life, watch your newborn for:**

**H** Hypoglycemia, characterized by high-pitched, inconsolable crying, jittery hands, seizures, turning blue

**U** Unsatisfied nursing - lasting longer than 30 minutes and occurring more frequently than every 2 hours and crying despite nursing

**N** Not waking for feeding every 3 hours, lethargic, limp, difficult to wake up

**G** Gaining weight by day 5. Weight loss exceeding 4% in first 24 hours and 7% at any time, requires a medical exam checking colostrum production and transfer.

**R** Red brick dust on diapers and reduced wet and dirty diapers (no wet diapers in 6 hours).

**Y** Yellow skin or jaundice below the face.

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**If you see any signs that your baby is HUNGRY, seek medical assistance from your pediatrician immediately and supplement your baby. Don’t wait until it’s too late. For more resources about how safely breastfeed your newborn baby, visit <http://fedisbest.org/resources-for-parents>**





# THE FED IS BEST GUIDE TO SUPPLEMENTING

*In the First Days of Life*

***Supplementing does not ruin your chances at breastfeeding!***

Early limited supplementation has been shown to encourage breastfeeding duration<sup>1</sup> and recent research confirms that nipple confusion is a myth.<sup>2</sup>

1 in 5 mothers can experience delayed milk onset,<sup>3</sup> which may lead to brain-threatening jaundice, dehydration, and hypoglycemia from underfeeding. These complications are the leading causes of newborn hospitalization in the world<sup>4</sup>

***You can supplement from birth to protect your baby's brain while also protecting your milk supply:***

- 1. Manually express breasts to check for milk/colostrum (important before milk comes in)**
- 2. Nurse baby, both breasts for 15-20 minutes, every 2-3 hours.**
- 3. If baby still shows signs of hunger (fussiness, rooting), supplement 15 ml at a time until full and content.**

Feed....

**Safe Donor Milk:**

from a medically regulated milk bank

**Commercial Infant Formula:**

"ready to feed" is ideal when accessible for newborns

With a...

**Bottle:**

newborns usually prefer a slow flow nipple

**Supplemental Nursing System (SNS):**

tube taped to the nipple and into the mouth while baby is latched at the breast

**Syringe or spoon:**

hospital may provide periodontal (curved mouth) syringe or teaspoon

If your baby is still showing signs of hunger, please get help from a trained professional regarding latch and transfer of milk with a weighed feed. If you replace an entire nursing session, manually express or use a breast pump instead to help maintain supply.

For more information on bottle feeding, syringe, SNS, tube feeding, breastfeeding, and pumping, please visit <https://fedisbest.org/resources-for-parents>

It is important to make sure your baby is safely fed first while you and your baby learn how to breastfeed.

**#fedisbest**

1. "Effect of early limited formula on duration and exclusivity of breastfeeding in at-risk infants: an RCT". Flaherman, V.J., et al. (2013). Pediatrics, 2013. 131: 1059-1065

2. "Clarifying Nipple Confusion". Thompson, K., Zimmerman, E. (2015). Journal of Perinatology, 2015. Nov;35(11): 895-9.; "Pacifier Use in the first month of life". Goldman, Ran D. (2013). Can Fam Physician, 2013. May; 59(5): 4

3. "Risk Factors for Suboptimal Infant Breastfeeding Behavior, Delayed Onset of Lactation, and Excess Neonatal Weight Loss". Dewev, Kathryn G., et al. (2003). Pediatrics, 2003. September; 112(3).

4. "The burden and management of neonatal jaundice in Nigeria: A scoping review of the literature". Olusanya, B. et al (2016). Niger J Clin Pract. 2016. 19: 1-17.

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# HOW TO POWER PUMP

PRESENTED BY THE FED IS BEST FOUNDATION



## ABOUT POWER PUMPING

Power Pumping utilizes a breast pump to pump in rapid intervals which helps you ramp your milk supply. It aims to stimulate the hormone Prolactin by completely expressing the milk out of your breasts. It is most effective when done immediately after a nursing session or in lieu of a nursing session.

## THE SPECIFICS

In the best case scenario, a power pumping session should take place over **1 hour**, but can be broken up into **2 30 minute sessions**. **Pump for 10 minutes then rest for 10 minutes.** Repeat this throughout the session. You can try to pump hands-on while massaging to make sure breasts are fully emptied. For two 30 minute sessions, you will pump-rest-pump, break, then pump-rest-pump again to finish it off.

## IMPORTANT TO REMEMBER

- Ensure the pump flange fits the breast to prevent discomfort or pain while pumping
- Don't use herbal supplements. Use medication under the care of a prescribing physician.

## HELPFUL TIPS

- Use a warm compress to encourage let-down.
- Listen to music, watch videos or look at your baby to encourage milk production.
- Use a hands-free pumping bra so you can massage breasts while pumping.
- Try pumping in the morning. 75% of moms have more milk in the early morning hours.



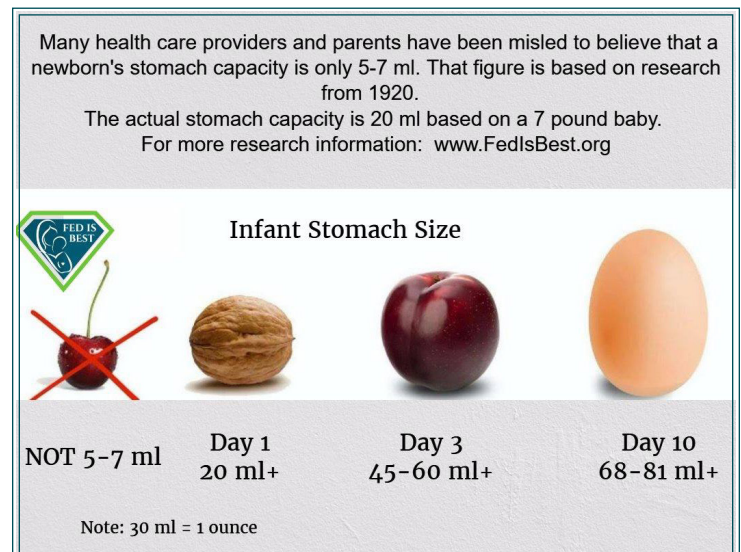
# THE FED IS BEST FOUNDATION PRESENTS: THE NEWBORN STOMACH SIZE MYTH

When working in the special care nursery, babies are always fed according to their weight and cumulative losses, to determine their caloric requirements for intake amounts and optimal growth. That is contrary to a lot of non-clinical discussion you'll read out there on the internet about an infant's intake needs, which suggest it's mostly based on stomach size. So what's fact and what's fiction?

## CALORIES AND FEEDING AMOUNTS FOR BREASTMILK, FORMULA, AND COLOSTRUM

What science tells us is that mature breastmilk averages around 20 calories per ounce (~30ml) and formula contains approximately 20 calories per ounce as well. Thus their per-milliliter (mL) calorie count is on average the same. Colostrum, a key substance that imparts passive maternal immunity to a newborn in the first few days of life if a mother breastfeeds, is lower in fat and carbohydrates than those two, and comes in around 17 calories per ounce (~30ml) (Guthrie 1989). With that knowledge in mind, current hospital feeding protocols for formula-fed babies range from feeding 10-30 ml for newborns less than 6 pounds' every 2-3 hours and feeding newborns over 6 pounds 10-30 ml every 3 hours on the first day of life.

But according to the newly updated Academy of Breastfeeding Medicine's Supplementation Protocol, they suggest exclusively breastfed babies be fed 2-10 ml per feeding and they reference the infant stomach size according to outdated studies (1992 and 1920) to reflect intake volume. As you can see, that's substantially less for a feeding than our current hospital clinical protocols state. They also say there is no definitive research available and the amount of supplement given should reflect the normal amounts of colostrum available, the size of the infant's stomach and the age and size of the infant. Intake on day 2, post birth is generally higher than day 1 in relation to infant's caloric demand. Based on the limited research available, suggested breast milk intakes for healthy, term infants their feedings should be based



on satisfaction cues despite their guidelines.

Why the volume difference between formula and breastfeeding newborns despite the same caloric amount? Why are hospitals able to feed an infant 10-30ml on day one if their stomach size is allegedly at most, 7ml? And where did the current idea of newborn stomach size (and with it, an "optimal" calorie amount) originate from?

## THE MYTH OF THE NEWBORN STOMACH SIZE: WHERE DID IT COME FROM?

Nonclinically, one may search on google since that is where most lactation consultant patients go. You will be led to a plethora of visual images depicting newborn stomach size. Some of the most popular images were the belly ball models that lactation consultants wear on their lanyards so they can visually educate new mothers how big their newborn's stomach size "is."

Digging back into the science behind these belly balls, in the 2008 Journal of Human Lactation you can find a published article that reveals a completely different utility for belly ball models.

*Marble/ball models are often used to represent newborn stomach capacity; however, their accuracy has not been determined:*

“Measurement of infant stomach capacity has been attempted for over 100 years. Exact volumes cannot be standardized, but data suggest that anatomic stomach capacity and physiologic stomach capacity vary widely.” In addition, “It is important to note that because a wide range of feeding volumes on day 1 (1.1-20.4 mL) and day 3 (13.1-103.3 ml) has been reported, and the reasons for these variances are unclear, it may be best to simply acknowledge that feeding volumes vary widely and like stomach capacity, do not lend well to visual representation given our current knowledge.”

Despite that qualification, new moms are inundated with images where there are a series of bottles filled with milk depicting the size of an infant stomach according to each day after birth, sometimes compared with fruit or different sized marbles and balls.

In continuing the search, this popped up. Recent research in 2013 from Dr. Nils Bergman who published this study, which says:

“There is insufficient evidence on optimal neonatal feeding intervals, with a wide range of practices. The stomach capacity could determine feeding frequency. A literature search was conducted for studies reporting volumes or dimensions of stomach capacity before or after birth. *Six articles were found, suggesting a stomach capacity of 20 ml at birth.*”

According to Dr. Bergman, “There is reasonable consensus on the amount of milk that human term newborn infants need per day, figures given vary from 150 to 160 mL/kg/day.” This means that an average 3 kg or 6.6 lb newborn requires 450-480 mL or 16 ounces of milk a day. At 66 Calories/dL, this would roughly be 100-106 Cal/kg/day, which is the published daily caloric requirement for a newborn. This total volume can be given in smaller volumes more frequently or larger volumes less frequently, 2 ounces every 3 hours or 1.3 ounces every 2 hours.

His article poses the hypothesis that the feeding interval should be 20 mL every 1 hour assuming that the stomach empties only once every hour. However, the real-life clinical application of this feeding interval would quickly lead to maternal and newborn exhaustion from lack of sleep and increased risk of postnatal depression, breastfeeding cessation and

even suffocation from a mother falling asleep with her newborn during breastfeeding. In addition, his feeding interval does not take into account that the stomach actually empties during feeding and therefore the feeding capacity of a newborn is higher than 20 mL. Feeding capacity and satisfaction actually depend on the release of the hormones CCK and amylin, which slow down stomach emptying and signals the brain to stop accepting food. The clinical experience of health professionals has shown that even one-day old newborns are able to easily tolerate 15-30 mLs per feeding. 30-60 mL every 2-3 hours would in fact meet a newborn's full daily caloric requirement and therefore prevent starvation and brain-threatening low blood sugar (hypoglycemia).

As a long-time NICU nurse and IBCLC, my concern has always been why mothers are taught universally that their exclusively-breastfed newborn baby only needs 5-7 mL of colostrum per feeding when clearly there is no scientific evidence that supports it (and why clinical experts currently feed infants more, based on science that is available)? Gastric emptying is complete in one hour into the small intestine which allows for milk volume to be more than 5-7 ml every 2-3 hours as recommended. Restricting a child's feeding to 5-7 mL even as often as every one hour will not meet the daily caloric requirement of a newborn and can quickly lead to starvation and hypoglycemia.

#### SO HOW OFTEN SHOULD BREASTFED BABIES EAT?

There is no single right answer to this question because each baby has a different weight and unique calorie requirements. Babies should also be fed by infant cue to satisfaction. It's time to ditch the belly models, update our breastfeeding education resources according to the current scientific resources and practice science based infant feeding practices!

For more information, visit: <https://fedisbest.org/2017/06/newborn-stomach-size-myth-not-5-7-ml/>





May 11, 2017

Dear Obstetrics Care Provider,

I am writing to you as a mother and advocate for [Fed is Best](#).

You may have seen the [story of Landon Johnson](#), who was welcomed into the world by his parents in February 2012. Like most new parents, Landon's mom and dad were lead to believe that Jillian would produce enough breast milk to meet Landon's caloric needs. The hospital where they delivered was "Baby-Friendly" and would only provide formula with a doctor's prescription.

While in the hospital, Landon cried whenever he was not latched onto his mom's breast. Jillian described him as inconsolable. She was told that this was normal. At less than 3 days of life they were discharged from hospital after having the appropriate number of wet and dirty diapers. However, less than 12 hours later, Landon was readmitted to hospital after suffering cardiac arrest due to severe dehydration. He suffered brain injury and ultimately died in the arms of his parents when life support was terminated. His is a story that you cannot read without tears in your eyes.

Because of the Fed is Best Foundation, I learned about the [risk of accidental newborn starvation](#) and my husband and I were able to come up with a plan to reduce the possibility of any adverse health outcomes while we waited for my milk to come in. Almost 5 years to the day of Landon's birth, on February 22, 2017 we welcomed our daughter to the world. After every nursing session, my husband offered a bottle of formula. In this manner, we were able to minimize her weight loss. Interestingly, she did not go through the "second night" of crying that we were warned about. In fact, she rarely cried but instead ate and slept, no doubt because she had a full tummy from our supplementing efforts. She remains, to this day, a happy breastfed baby.

The goal of the Fed is Best Foundation is to ensure that no newborn suffers complications while they wait for mother's milk to come in. Landon's parents tell the story about how [just one bottle](#) could have saved him and that is the message that the Fed is Best Foundation wants to spread: that *just one bottle* can protect a newborn from potentially serious consequences from being underfed. Jillian Johnson and Dr. Christie del Castillo-Hegyi, Co-Founder of the Fed is Best Foundation, recently spoke about Landon's story and the importance of being aware of the signs of accidental infant starvation [on the Doctors Show](#).

According to peer-reviewed literature on breastfeeding complications as collected by the Fed is Best Foundation.

- 10% of vaginally-delivered and 25% of cesarean-delivered exclusively breastfed (EBF) babies lose excessive weight in the first days of life.[i]
- 10-18% of babies experience "starvation jaundice" from insufficient milk intake, according to the Academy of Breastfeeding Medicine jaundice protocol, a fact to which no breastfeeding or new parent educational manual alert new parents.[ii]

- 10% of EBF babies undergoing current breastfeeding protocols experience levels of hypoglycemia (low blood sugar), which can be associated with developmental complications.[iii]
- 10% of well-monitored exclusively breastfed babies undergoing the World Health Organization's Baby-Friendly Hospital Initiative protocol develop hypoglycemia of less than 40 mg/dL within the first 48 hours. This incidence is reported as 23% in babies born to first-time mothers.[iv]
- In a study of 280 mother-baby dyads, 22% of motivated mothers intending to exclusively breastfeed who received close lactation support experienced delayed onset of copious milk production which put her child at a 7-fold increased risk of excessive weight loss greater than 10%. This means more than 1 in 5 newborns are at risk of starvation-related complications if exclusively breastfed from birth.[v]
- A glucose of less than 46 mg/dL within the first 24 hours of life has been associated with a 3.7-fold increased risk of brain injury on MRI and a 4.8-fold increased odds of lower motor, cognitive and language scores at 1 year of age.[vi]
- Cognitive impairment can have life-long effects as evidenced by a study of 1395 newborns showing that newborns who develop transient hypoglycemia of less than 40 mg/dL had a 50% reduction in passing their fourth-grade proficiency test in literacy and math. Even a glucose less than 45 mg/dL resulted in a 38% reduction in passing the literacy test.[vii]
- The current standard of care tolerates a glucose between 40 and 45 mg/dL within the first 4 hours of life when there is no evidence that neurons have greater tolerance for hypoglycemia in the first hours than they do at any other time.[viii]
- Exclusive breastfeeding at discharge has been associated with an 11-fold higher risk of rehospitalization for underfeeding and dehydration.[ix]

The Fed is Best Foundation would like to offer you printed materials to make available to your patients so that they can learn about the potential negative health consequences of underfeeding and how to prevent feeding complications through the Fed is Best Foundation [parent resource page \(fedisbest.org/resources\)](http://fedisbest.org/resources). If you are interested in helping your patients learn how to best feed their babies safely, through breastfeeding, formula-feeding or any combination of both, please consider counseling them on the importance of prioritizing the health and safety of their babies through adequate feeding and please email the Fed is Best Foundation with your mailing address at [contact@fedisbest.org](mailto:contact@fedisbest.org).

Sincerely,

Alysha Bayes

Mother and Fed is Best Advocate

[Fedisbest.org](http://Fedisbest.org)

[i] Valerie J. Flaherman, MD, MPH, et al., Early Weight Loss Nomograms for Exclusively Breastfed Newborns, *Pediatrics*, 2015 Jan; 135(1): e16–e23.  
 [ii] ABM Clinical Protocol #22: Guidelines for Management of Jaundice in the Breastfeeding Infant Equal to or Greater Than 35 Weeks' Gestation, The Academy of Breastfeeding Medicine Protocol Committee, *Breastfeeding Medicine*, Vol. 5(2):87-93. [iii] Purnima Samayam, et al., Study of Asymptomatic Hypoglycemia in Full Term Exclusively Breastfed Neonates in First 48 Hours of Life, *J Clin Diagn Res*. 2015 Sep; 9(9): SC07–SC10.  
 [iv] *Id.* [v] Dewey KG, et al., Risk factors for suboptimal infant breastfeeding behavior, delayed onset of lactation, and excess neonatal weight loss, *Pediatrics*, 2003 Sep;112(3 Pt 1):607-19. vi] Emily W.Y. Tam et al., Hypoglycemia is associated with increased risk for brain injury and adverse neurodevelopmental outcome in neonates at risk for encephalopathy, *J Pediatr.*, 2012 Jul; 161(1): 88–93. [vii] Jeffrey R. Kaiser, MD, MA et al., Newborn Hypoglycemia and Fourth-Grade Achievement Test Proficiency: A Population-Based Study, *JAMA Pediatr.*, 2015;169(10):913-921. [viii] Postnatal Glucose Homeostasis in Late-Preterm and Term Infants, Committee on Fetus and Newborn, *Pediatrics*, 2011;127:575–579. [ix] Escobar GJ, et al., Rehospitalization for neonatal dehydration: a nested case-control study, *Arch Pediatr Adolesc Med.*, 2002 Feb;156(2):155-61.