The mother-baby microbiome

A delicate balance

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I have no conflicts of interest and nothing to declare
Supplementation of breastfed infants

- Dates back to ancient times
- 25%-35% of breastfed infants receive formula supplementation before 48 hours of age
- A major reason is real or perceived insufficient milk
- Infant behaviors that result in supplementation
In-hospital formula supplementation
Grassley et al. Nursing for women’s health 2014;18:196-203

- n= 302 healthy full term infants
- 38% supplemented with formula
- Supplemented at median age of 12 h
- 49% supplemented between 9:00pm and 10:00am
  - Doubled the odds of being supplemented
  - Odds doubled for each additional day in hospital
- 51% of cesarean infants were supplemented
- More supplemented on second night
Reasons for initial formula supplementation of healthy breastfeeding newborns

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<td>Hypoglycemia</td>
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<td>Too few feedings</td>
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<td>Sleepy infant</td>
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<td>Infant fussy at night</td>
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<td>Health provider ordered</td>
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<td>So mothers could sleep</td>
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<th>Interventions</th>
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<td>Reduce visitors</td>
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<td>Quiet time during the day</td>
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Breastfeeding With Diabetes: Yes You Can!

By Marsha Walker, RN, IBCLC

You may have just found out that you have diabetes. Or you may have had it for a while. Happily, breastfeeding is possible. It is good for both you and your baby.

There are 3 basic types of diabetes [see box]. Breastfeeding is helpful with all 3 types. When you breastfeed, it:
- Helps you lose weight between pregnancies.
- Helps your body to use insulin in a better way.
- Lowers your need for insulin. Helps prevent obesity.

Types of Diabetes

Type 1 diabetes
- The pancreas does not produce enough insulin
- Requires insulin injection

Type 2 diabetes
- Obesity and high blood pressure increase the risk for this type of diabetes.
- Is managed by diet or oral medicine
- A woman may be switched to insulin during pregnancy and breastfeeding

Gestational diabetes
- Occurs during pregnancy
- Usually goes away after pregnancy, though it may re-occur
- Women with gestational diabetes who do not breastfeed the baby from that pregnancy are twice as likely to develop type 2 diabetes.

Before Your Baby Is Born

Taking good care of yourself during pregnancy can help your baby to be healthy. You can also get ready for breastfeeding.

Talk with your baby’s doctor about how to monitor your glucose levels after the birth. About half of babies of diabetic mothers may have low blood sugar soon after birth. If you have type 1 diabetes, discuss nighttime insulin dosages, calorie needs, and snacks before each breastfeeding.

Contact a lactation consultant to talk about breastfeeding. Learn how to express colostrum from your breasts in case breastfeeding is delayed and/or your baby needs to be supplemented in the hospital.

After Your Baby Is Born

Your baby may be taken to a special care nursery. If she needs to be supplemented, ask that she receive your colostrum or milk from a human milk bank instead of formula. Standard formula increases the risk for your baby getting diabetes. If formula must be used, ask that a hypoallergenic formula be given to your baby. Keep your baby skin to skin with you. Skin-to-skin contact immediately after birth keeps your baby warm and makes it easy to start breastfeeding. It keeps her blood sugar levels from dropping due to separation or crying.

Breastfeed soon after birth and often [see box]. This will stimulate milk production and stabilize your baby’s blood glucose level. If there are times you cannot breastfeed, express your milk until you are able to put your baby to breast.

Stimulating Milk Production and Preventing Hypoglycemia

- Put your baby to breast within 1 hour after birth
- Nurse once every hour for the next 3 to 4 hours
- Nurse every 2 to 3 hours until 12 hours of age
- Nurse at least 8 times each 24 hours during your hospital stay

If your baby is a little slow nursing at first, you may need to watch closely for feeding cues [see box].

Feeding Your Sleepy Baby

Place baby skin to skin on your chest
Watch for rapid eye movements under the eyelids (the baby will wake easily)
Move baby to breast when baby shows feeding cues
- Sucking movements of the mouth and tongue
- Hand-to-mouth movements
- Body movements
- Small sounds

Make sure you know how to tell when your baby is swallowing. Use alternate massage if your baby doesn’t swallow after every 1 to 3 sucks.

- Massage and squeeze the breast each time she stops between sucks.
- This helps get more colostrum into her and keeps her sucking longer.

Your blood glucose will be monitored in the hospital. Meal plans often have 3 meals and 3 small snacks. Eating something before every breastfeeding will help you remember to eat and keep your blood glucose steady. Ask a lactation consultant to help you write a plan of how you will feed your baby at home.

After You Go Home

Diabetes may delay the rapid increase in milk usually seen on day 3. It may take a day or two longer for your milk to come in.
- Breastfeed 10 to 12 times each day until your milk supply increases.
- Check for at least 6 wet diapers and at least 3 bowel movements every 24 hours after the first 3 days.

Take your baby to see her doctor for a weight check a day or two after you go home.

Don’t feed cereal or other foods until your baby is 6 months old. This may help protect her from developing diabetes.

Taking Care of Yourself

Monitor your blood sugar closely.
- Your blood sugar may fluctuate while you breastfeed.
- Herbal products can affect your blood glucose levels.

If you have type 1 diabetes, you may have low blood sugar within an hour after breastfeeding.
- Eat a snack with carbohydrate and protein before or while nursing.
- Keep a snack, glucose tablets, or fast-acting sugars in places where you nurse in case of an emergency.

Work with a lactation consultant to help avoid sore nipples as your baby learns to latch on and suck.

Diabetic mothers with sore nipples are more likely to develop a yeast infection or a breast infection (mastitis).

Your Local Lactation Consultant
More reasons for supplementation

- Settle a fussy baby
- Assure baby is getting enough & is satisfied after a feeding
- To keep the baby fuller for a longer period of time
- Wants “best of both”
- Breastmilk insufficient to meet needs of growing child
- Desires a chubby baby
- Feeding=good mothering
- Obtain more sleep
- Healthcare provider suggestion for medical or non-medical indication
- Friends or family did so or pressure mother to supplement
- Falls prey to formula company promotion of formula supplementation, believing their unfounded claims
Unfounded claims persuade mothers that supplementing with formula is normal and has no side effects
Effect of Early Limited Formula on Duration and Exclusivity of Breastfeeding in At-Risk Infants: An RCT

WHAT ABOUT THIS? HELPFUL OR HARMFUL?

WHAT'S KNOWN ON THIS SUBJECT: Public health policy focuses on reducing formula use for breastfed infants during the birth hospitalization. Observational evidence supports this approach, but no previous studies have examined the effect of early use of small volumes of formula on eventual breastfeeding duration.

WHAT THIS STUDY ADDS: Use of limited volumes of formula during the birth hospitalization may improve breastfeeding duration for newborns with high early weight loss. Reducing the use of formula during the birth hospitalization could be detrimental for some subpopulations of healthy term newborns.

abstract

BACKGROUND AND OBJECTIVES: Recent public health efforts focus on reducing formula use for breastfed infants during the birth hospitalization. No previous randomized trials report the effects of brief early formula use. The objective of the study was to determine if small formula volumes before the onset of mature milk production might reduce formula use at 1 week and improve breastfeeding at 3 months for newborns at risk for breastfeeding problems.

METHODS: We randomly assigned 40 exclusively breastfeeding term infants, 24 to 48 hours old, who had lost ≥5% birth weight to early limited formula (ELF) intervention (10 mL formula by syringe after each breastfeeding and discontinued when mature milk production began) or control (continued exclusive breastfeeding). Our outcomes were breastfeeding and formula use at 1 week and 1, 2, and 3 months.

RESULTS: Among infants randomly assigned to ELF during the birth hospitalization, 2 (10%) of 20 used formula at 1 week of age, compared with 9 (47%) of 18 control infants assigned during the birth hospitalization to continue exclusive breastfeeding (P < .01). At 3 months, 15
Formula companies work hard to encourage breastfeeding mothers to supplement with formula.

- A daily vitamin D supplement is recommended by the American Academy of Pediatrics if you're breastfeeding.
- DHA, a fatty acid in breast milk, supports brain and eye development.

**did you know?** By 3 months after birth, about 64% of moms feed their babies with a combination of breast milk and formula, or exclusively with formula. It's good to start researching your feeding options now so you'll be prepared.
Get inspired by What to Expect's Love-it Lists!

- See products other moms love
- Create your own Love-it List
- Add your must-Have items

Similac® for Supplementation
For breastfeeding moms who choose to supplement

Add this and other Must-Have Similac® products to your Love-it List!

+ ADD TO LIST  GET IT NOW!

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formula

semi-annual bra sale.
bra's starting at $11.
bra deals | offer details

panty sale.
6 for $20, regular $5 each.
panty deals | offer details

new at Target
helps breastfeeding moms introduce formula.

Similac Supplementation
all Similac

baby's hungry. now.
on-the-go formula

it's bottle time.
up & up formula

views: small medium large details
sort by: best seller
results 1 - 60 of 119 page 1 of 2

Like Comment
Every week Dr. Capoullosse puts the babies in his big scale and weighs them. One day he says to Celeste: "Your Majesty, the babies aren’t gaining fast enough any more. You must supplement their feeding with six bottles of cow’s milk, to which you must add a tablespoonful of honey."

The little ones soon get used to the bottles. Arthur and Zephir like to watch them drink. Pom is the greediest and the fattest. He is the one on Celeste’s lap. He always cries when his bottle is empty.
Formula company discharge bags

- Promotes formula supplementation disguised as a gift
- Appears sanctioned by the hospital, nurse, and physician
- Only way to sell more formula is to “sell” less breastmilk
Short term side effects of formula supplementation

- Can alter infant sucking at the breast
- Infants who are supplemented with formula receive not only lower breastmilk volumes but also breastmilk that contains fewer leukocytes
  - ↑ risk for infection
Latches that lead to supplementation
Long term side effects of formula supplementation

- Decreases duration of breastfeeding
- Babies given 2 or more bottles within the first 24 hours are at significant risk for breastfeeding cessation at 7-10 days
- Reduces maternal milk supply
- Increases risk for abandonment of breastfeeding
  - 2 fold risk at 30 days
  - 3 fold risk at 60 days
- But there is another side effect........
The infant gut microbiome

- Immense & diverse community of microorganisms live in the gut
- Critical to nutritive, metabolic, immunological and protective functions
- Totality of microorganisms, their genetic elements and environmental interactions is called the microbiome
- “organ within an organ” or “super organ”
The infant gut microbiome

- Has its own functions
- Executes enzymatic reactions, modulates gene expression involved in mucosal barrier fortification, forming new blood vessels, and promoting intestinal maturation following birth
- Alterations in gut microbiota implicated in certain brain disorders such as autistic spectrum disorder
Central nervous system is affected through gut-brain communication pathways

Enteric nervous system

- Bacteria comes in contact with receptors on cell wall
- Receptors transmit signals to CNS and immune system

Gut-brain axis
Bacteria regulate development of intestinal barrier

- Microbiome’s numerous roles facilitate absorption of nutrients while acting as a barrier to prevent pathogens, toxins, and antigens from entering the body and causing acute or chronic diseases and conditions.
- Illness and conditions associated with intestinal barrier dysfunction are more common in adults who were formula-fed as infants compared with those who were breastfed (Verhasselt, 2010).
The physical barrier is the first line of defense

- Composed of a layer of columnar epithelial cells between which are the tight junctions.
- Tight junctions control gut permeability, allowing passage of fluids, electrolytes, and small macromolecules, but preventing the passage of larger macromolecules.
- Gut is permeable during fetal life and early after birth.
Gut closure

- Gut closure or closure of the tight junctions starts during the first postnatal week.
- Any delay, change, or insult to the gut that changes this process predisposes the infant to infection, inflammatory states, and allergic sensitization.
- Gut closure is mediated by hormones and growth factors in human milk that facilitate epithelial growth and maturation.
- These are not found in infant formula.
Secretory IgA & oligosaccharides in breastmilk

- Neonatal intestine more permeable to antigens and pathogens
- Prevents attachment and invasion of pathogens by binding and neutralizing bacterial antigens
- Undigested formula in preterm infants attracts the neutrophils, which open the tight junctions allowing pathogens entry into intestine
Gut colonization

- Infants may develop their original gut microbiome while still in the womb.
- Research has shown that meconium of term infants is not a sterile environment, with gut colonization starting before birth.
- Bacteria present in amniotic fluid from the maternal digestive tract may be one of the origins of the first infant gut colonizers.
- Bacterial composition of the maternal gut could affect the bacterial content seen in infant meconium and serve as the pioneer bacteria colonizing the fetal gut.
Bacterial community in the placenta

- Placental microbiome is most similar to that of the maternal mouth
- Differs among women who experienced a preterm birth or had an infection during early pregnancy
Acquisition of the infant’s gut flora continues during and after delivery

- **Mode of delivery** – during a vaginal delivery, bacteria from maternal vaginal and intestinal microbiota colonize the infant gut.

- During a cesarean delivery, infants are deprived of contact with the maternal vaginal microbiota and experience a deficiency of strict anaerobes such as *E. coli*, *Bacteroides*, and *Bifidobacteria* and a higher presence of facultative anaerobes such as *Clostridium* species, compared with vaginally born infants.
Setting the stage

- Improve maternal gut microbiome health
  - Probiotics and probiotic-rich foods to nourish a healthy maternal gut

- Vaginal seeding after cesarean
  - Gauze seeded with vaginal microbes swabbed in infants mouth, skin & eyes
  - Seed & feed!

- Delaying the newborn bath
- Not wiping the infant’s hands
- Avoid shirt cuffs on infant’s hands
- Skin-to-skin contact
- Lots of kissing!
Acquisition of gut flora

- **Gestational age** – the pattern of gut colonization in preterm infants differs from that of healthy term infants.

- Deviation in colonization is due to a number of factors including the use of sterile infant formula and antibiotics, which could also contribute to feeding intolerance and in the development of necrotizing enterocolitis.

- Preterm infants are often born by cesarean section, are colonized with fewer bacteria, and are exposed to pathogenic institutional organisms.
Acquisition of gut flora

- Feeding modality – newborns also acquire gut colonizing bacteria from their mother’s milk.
- Breastmilk is thought to be one of the most important postpartum elements modulating the metabolic and immunologic programming relative to a child’s health.
Formula and breastfed guts are different

- Babies fed formula have a high gut pH of 5.9-7.3 with putrefactive bacterial species
- Enterococci prevail in formula-fed infants
- Infants fed breast milk and formula mean pH is ~ 5.7-6.0 in first 4 weeks
- Formula supplements given to breastfed babies during the first 7 days of life delays strongly acidic environment
- Breastfed infants who receive supplements develop gut flora and behavior like formula-fed infants
Bäckhed et al. assessed the gut microbiomes of 98 Swedish mothers and their infants during the first year of life. Cessation of breast-feeding was identified as a major factor in determining gut microbiota maturation, with distinct shifts in signature species being hallmarks of its functional maturation.
Importance of human milk

- Breastmilk is not sterile, nor is it meant to be.
- Researchers have identified more than 700 bacterial species in human milk that vary from mother to mother depending on mode of delivery and the obesity status of the mother.
- Colostrum has an even higher diversity of bacterial species than does transitional or mature milk.
The probability of appropriate bifidobacterial colonization is higher when the mother is of normal weight, has appropriate bifidobacterial colonization in her own gut, and in her breastmilk, and is actively breastfeeding.

Breastfed infant’s gut is characterized by bacterial diversity.
Mother nature is so smart!

- Beneficial bacteria are directly transported to the baby’s gut by breastmilk
- The oligosaccharides in breastmilk support the growth of these bacteria.
- Non-human oligosaccharides added to infant formula are structurally different from human oligosaccharides and do not appear to be functionally equivalent.
It’s not nice to fool mother nature!

- Perturbations to the normal healthy colonization patterns of the gut can result in lifelong disease.
- Such perturbations can be specifically caused by the use of infant formula which changes the bacterial population.
- Breastmilk’s protective action relies mainly on its ability to modulate intestinal microflora composition during the early days of life.
- The early bacterial colonizers of the infant’s gut regulate the gene expression of the cells that line the digestive tract, creating a favorable environment for themselves which inhibits the growth of potentially pathogenic bacteria.
Just one bottle

- Formula added to the breastfed gut delays its closure
- Relatively small amounts of formula given to breastfed infants (one supplement per 24 hours) result in shifts from a breastfed to a formula-fed gut flora pattern
- The feeding of a cow’s milk based infant formula as a supplement to breastfeeding in the hospital has been shown to increase the risk of cow’s milk allergy as does occasional exposure to cow’s milk formula during the first eight weeks following discharge
Side effects of supplementation

- Infant formula supplementation is associated with the development of Type 1 diabetes in susceptible infants.
- May occur due to inflammation in the gut and/or the increased permeability of the gut when it encounters cow’s milk based infant formula.
- Nutrition in this time frame has a profound effect on the shape and trajectory of the body’s microbiome.
- Preterm infants are at an even higher risk when breastmilk is supplemented with infant formula.
- Preemies receiving >75% breastmilk had significantly lower intestinal permeability compared with formula-fed infants or those who received only small amounts of breastmilk.
Formula can contribute to NEC

- Undigested casein, a protein in infant formula, can function as a chemoattractant for neutrophils, exacerbating the inflammatory response and opening the tight junctions between intestinal epithelial cells, disrupting the integrity of the epithelium barrier, and allowing the delivery of whole bacteria, endotoxin, and viruses directly into the bloodstream.

- Infant formula may produce colonization of the intestine with pathogenic bacteria, resulting in an exaggerated inflammatory response.

- slgA from colostrum & milk (which is absent in infant formula) coats the gut, preventing attachment and invasion of pathogens by competitively binding and neutralizing bacterial antigens.
DIGESTED FORMULA IS TOXIC TO INTESTINAL CELLS & CAN LEAD TO NEC

- Microscopic image of cells shows the effects of breast milk vs. infant formula digestion.
- Cells are alive and healthy after the digestion of breast milk (top row) with only one cell having any deformation.
- In contrast, the cells in the bottom row all ruptured after being exposed to the digestion of infant formula.


(Credit: Alexander Penn, Department of Bioengineering, UC San Diego Jacobs School of Engineering. Blue tint added for visual clarity.)
Genetically modified soy

- Formulas with genetically modified (GM) soy can contain high residue levels of glyphosate, Monsanto’s Roundup Ready herbicide.
- GM soybeans differ in nutrient composition compared with soy beans grown conventionally or organically.

- GM soybeans contain ↓ levels of protein, glucose, fructose, sucrose, and maltose as well as producing a less healthy profile of fatty acids.
- Unbalanced intake of fatty acids is a potential risk factor for developing obesity.
- In human cells, Roundup’s glyphosate may induce endocrine disturbances.
Aluminum contamination

Al content of formulas is 10-40 times higher than human milk.

- Soy formula and the powdered version of formula contained the highest levels of aluminum.
- Aluminum toxicity has been associated with alterations of neurodevelopment and bone health.
Nighttime bottles—so what’s the problem?

- Mother is exhausted
  - Childbirth itself
  - Too many visitors preventing naps and tiring out mothers
  - Too many daytime interruptions (average 54 interruptions)
  - Mother told by friends to send baby back to nursery at night
  - Staff wants to help mothers

- Change visiting hours
- Reduce interruptions
- Explain cluster feeding
- Feeding plan for second night
  - Assure adequate intake at each feed (alternate massage, expressed colostrum fed by spoon)
  - Nap during the day and after dinner
  - Cluster feed prior to maternal sleep time
  - Place baby down 20 minutes after feed when in deep sleep state

- Side effects of good intentions
Helping mothers understand

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<tr>
<th>Teachable opportunities</th>
<th>Sample script</th>
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</thead>
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<tr>
<td>Prenatal</td>
<td>“It’s important that your baby gets just breastmilk. Most of the immune system lives in the gut. Breastmilk directs how good bacteria are lured to the gut and bad bacteria are routed into the diaper.”</td>
</tr>
<tr>
<td>Obstetric visits</td>
<td>“Formula supplements can mess up the programming of the immune system and increase the chances of bowel infections, allergies, obesity, diabetes, and other diseases and conditions.”</td>
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<tr>
<td>Breastfeeding classes</td>
<td>“Formula is not the same as breastmilk and its ingredients do not act the same as what is in breastmilk.”</td>
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<tr>
<td>Childbirth classes</td>
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<td>WIC visits</td>
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<td>Social media/electronic resources</td>
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<td>Mothers’ groups</td>
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<td>Publications/handouts</td>
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Helping mothers understand

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<tr>
<td><strong>Postpartum</strong></td>
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<tr>
<td>Mother wants to do both</td>
<td>“Your milk has all the vitamins and ingredients that your baby needs.”</td>
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<tr>
<td>Mother thinks she does not</td>
<td>“Adding formula if it is not needed can disrupt the development of baby’s immune system.”</td>
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<tr>
<td>have enough milk</td>
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<tr>
<td>Baby is not satisfied after feeding</td>
<td>“I am concerned that adding formula will upset the process of programming baby’s immune system. Let me see if I can help with what is troubling you.”</td>
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<tr>
<td>Baby cries when put down</td>
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<tr>
<td>Mother wants baby to sleep</td>
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<tr>
<td>Mother thinks baby needs vitamins in formula</td>
<td>“With your family history of diabetes I am uneasy about giving the baby formula.”</td>
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## Helping mothers understand

<table>
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<tr>
<th>Teachable opportunities</th>
<th>Sample script</th>
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<tbody>
<tr>
<td>Mother wants to send baby back to nursery at night</td>
<td>“It looks like you are really tired. Let’s work on ways to help you get more sleep so it is easier to nurse your baby at night.”</td>
</tr>
<tr>
<td>Mother wants baby to get nighttime bottle</td>
<td>“Let’s look at ways to help baby take in more colostrum and sleep a little longer at night.”</td>
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<tr>
<td>White board in room with feeding expectations for each day</td>
<td>“Here is a feeding plan to help you get more sleep at night.”</td>
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<tr>
<td></td>
<td>“Bottles of formula at night can cause breastfeeding problems during the day and affect your milk production.”</td>
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<td></td>
<td>Second day—“all day buffet”</td>
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</tbody>
</table>
Checklist of interventions

- Offer prenatal education and/or education immediately postdelivery to improve mothers’ expectations on the availability and amount of colostrum
- Teach them that not all crying indicates hunger
- Educate mothers regarding the frequency of newborn feeding, how to rest between feedings, and the importance of minimizing the number of visitors and interruptions
Checklist of interventions

- Assure mothers are taught techniques to maximize colostrum intake at each feeding, such as correct latch and alternate massage.

- Inform them that many newborns do not feed effectively the first time they are put to breast.
Checklist of interventions

- Intervene immediately to correct nipple pain or soreness
- Explain the capabilities and behavior of a newborn
- Ascertain how the mother interprets her infant’s behavior
- Assure that mothers learn and can perform the basic skills necessary to recognize hunger cues, latch the infant with no pain, feed enough times each 24 hours, and maximize milk intake at each feeding
Hierarchy of Supplements

- Fresh mother’s own milk/colostrum
- Refrigerated mother’s own milk
- Frozen and thawed mother’s own milk
- Fortified (if necessary) preterm mother’s own milk
- Pasteurized donor banked human milk
- Hypoallergenic formula
- Elemental infant formula
- Cow’s milk based infant formula
- Soy infant formula
- Water or glucose water
Average intake of colostrum by healthy breastfed infants

<table>
<thead>
<tr>
<th>Time</th>
<th>Intake (mL/feed)</th>
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<tbody>
<tr>
<td>1st 24 hours</td>
<td>2-10</td>
</tr>
<tr>
<td>24-28 hours</td>
<td>5-15</td>
</tr>
<tr>
<td>48-72 hours</td>
<td>15-30</td>
</tr>
<tr>
<td>72-96 hours</td>
<td>30-60</td>
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</table>
How much to supplement

- 3-5ml/kg/feeding, or
- 5-10ml per feeding on day 1
- 10ml-20ml per feeding on day 2
- 20ml-30ml per feeding on day 3
Methods of Supplementation

Artificial Nipples

- Less elastic, minimal elongation, varying flow rates
- May deliver milk using only vacuum or only compression, rather than both
- Can eliminate central grooving of the tongue
- Can extinguish extrusion reflex
- Can interrupt respiratory and ventilation patterns
- Muscles involved with breastfeeding can be:
  - Weakened or immobilized (masseter, obicularis oris)
  - Overactive (chin)
  - Malpositioned (tongue pushed backwards)
Alternatives to Artificial Nipples

- Feeding tube devices
- Finger feeding
- Syringe
- Dropper
- Spoon
- Cup
Alternative feeding methods
Morton et al. Five steps to improve bedside breastfeeding care.
Nursing for Women’s Health 2014; 17:478-488
Reducing hospital supplementation

- Formula supplementation started in hospital is often continued post discharge
- Maternity units should have clear policies on supplementation of breastfed infants
White board in room for feeding plan each day

- **Day 1**
  - Feed 8-12x in 24 hours on cue
  - Feeding cues
  - Hand express colostrum and spoon feed if not latching

- **Day 2**
  - All day buffet!
Stemming the flow of formula

- Staff members may perceive infant formula to be free and is used and given away liberally.
- Hospital staff may give large quantities of formula to breastfed mothers at discharge.
- To restrict formula use in breastfed infants to actual medical indications, lock up the formula and require staff to log out the formula, noting the formula batch number in case there is a recall, date and time of formula use, patient and staff member's name, and reason for use.
Stemming the flow of formula

- Some hospitals manage formula use by placing it in a medication distribution system such as Pyxis.
- Helps provide information on where additional staff education may be needed and helps reduce unnecessary formula supplementation.
Stemming the flow of formula

- Appropriate staffing of IBCLCs
- Use of pasteurized donor human milk instead of formula
- Prenatal expression of colostrum for diabetic mothers
- Educate staff regarding side effects of formula supplements
- Avoid distributing commercial discharge bags or extra bottles of formula
Contributors to supplementation following discharge

- Sleepy baby
- Fussy baby
- Latch difficulties
- Sore nipples
- Prolonged colostral phase
  - Obese mother
  - Diabetic mother
  - Cesarean delivery
Bottle-Feeding Myths and Facts

It may help your baby switch from breastfeeding to bottle-feeding if:

- You try it at night, when she’s sleepy and less likely to notice.
- You try it in the place where she usually breastfeeds.
- Someone besides Mom offers the bottle.
Finding Good Resources

- Model Hospital Policy Recommendations Toolkit
  http://www.cdph.ca.gov/HealthInfo/healthyliving/childfamily/Pages/MainPageofBreastfeedingToolkit.aspx
- Academy of Breastfeeding Medicine
  http://www.bfmed.org/Resources/Protocols.aspx
- Melrose Wakefield Hospital, Melrose, MA
- SOFT Program
- California Baby Behavior Campaign
  http://www.cdph.ca.gov/programs/wicworks/Pages/WICCAliforniababyBehaviorCampaign.aspx